
The following Motions and Documents were considered by the GFC Programs Committee at its Thursday, November 09, 2023 meeting:

Agenda Title: **Course, Minor Program, and Minor Regulation Changes**

- Agricultural, Life and Environmental Sciences (ALES)
- Arts
- Augustana and Education
- Education
- Engineering
- Kinesiology, Sport and Recreation
- Medicine & Dentistry
- Native Studies
- Nursing
- Science

CARRIED MOTION:

THAT the GFC Programs Committee approve, with delegated authority from General Faculties Council, the attached submissions from the Faculties of Agricultural, Life and Environmental Science, Arts, Augustana and Education, Education, Engineering Kinesiology, Sport, and Recreation, Medicine and Dentistry, Native Studies, Nursing, and Science.

Final Item 4.

Agenda Title: **Proposed New Option in Clean Energy and Sustainable Process Systems under the Existing BSc in Chemical Engineering**

CARRIED MOTION:

THAT the GFC Program Committee, with delegated authority from General Faculties Council, approve the proposed second-level specialization, Clean Energy and Sustainable Process Systems, for the Bachelor of Science in Chemical Engineering for implementation by July 1, 2024.

Final Item 5.

Agenda Title: **Master of Science in Laboratory Medicine and Pathology with specialization in Transfusion Science**

CARRIED MOTION:

THAT the GFC Program Committee, with delegated authority from General Faculties Council, approve the proposed second-level specialization of Transfusion Science for the Master of Science in Laboratory Medicine and Pathology, for implementation in the next calendar and first cohort in Fall 2024.

Final Item 6.

Agenda Title: **Proposed Second-level Specialisations from the Department of Renewable Resources in the Faculty of Agricultural, Life and Environmental Sciences:**

- (1) Accredited professional Master of Forestry with Specialization in Sustainable Forest Management;
 - (2) Master of Forestry with a Specialization in International Forestry
 - (3) Master of Forestry with Specialization in Environmental and Wildlife Conservation
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- (4) Master of Forestry with Specialization in Ecology and Ecosystem Restoration,
- (5) Master of Agriculture with Specialization in Conservation and Restoration of Land and Water

CARRIED MOTION:

THAT the GFC Program Committee, with delegated authority from General Faculties Council, approve the proposed five new second-level specializations for the course-based Master of Forestry and Master of Agriculture: (1) Accredited professional Master of Forestry with Specialization in Sustainable Forest Management; (2) Master of Forestry with a Specialization in International Forestry; (3) Master of Forestry with Specialization in Environmental and Wildlife Conservation; (4) Master of Forestry with Specialization in Ecology and Ecosystem Restoration; (5) Master of Agriculture with Specialization in Conservation and Restoration of Land and Water, for implementation upon final approval.

Final Item 7.



Decision **Discussion** **Information**

ITEM OBJECTIVE: To approve course, minor program, and minor regulations changes.

DATE	November 9, 2023
TO	GFC Programs Committee
RESPONSIBLE PORTFOLIO	Provost and Vice-President (Academic)

MOTION: THAT the GFC Programs Committee approve, with delegated authority from General Faculties Council, the attached submissions from the Faculties of Agricultural, Life and Environmental Science, Arts, Augustana and Education, Education, Engineering Kinesiology, Sport, and Recreation, Medicine and Dentistry, Native Studies, Nursing, and Science.

EXECUTIVE SUMMARY:

All routine course, minor program, and minor regulation changes that do not involve or affect other Faculties or units, and do not form part of a proposal for a new program or a substantive program change, are approved regularly by the GFC Programs Committee in an omnibus motion.

See individual item for Faculty Council approval information.

Supporting Materials:

Attachments:

1. Agricultural, Life and Environmental Sciences
2. Arts
3. Augustana & Education
4. Education
5. Engineering
6. Kinesiology, Sport, and Recreation
7. Medicine and Dentistry
8. Native Studies
9. Nursing
10. Science

2024/2025 Calendar Changes

Graduate Course Changes

Faculty (& Department or Academic Unit):	ALES
Contact Person:	Dr. Nat Kav (nat@ualberta.ca), Stephanie Dickie (sdickie@ualberta.ca)
Level of change: (choose one only)	<input type="checkbox"/> Undergraduate
	<input checked="" type="checkbox"/> Graduate
Type of change request: (check all that apply)	<input checked="" type="checkbox"/> Courses
	<input type="checkbox"/> Regulation
For which term is this intended to take effect?	Fall 2024/Winter 2025
Does this proposal have corresponding course changes? (Should be submitted at the same time)	

AFNS 598 Course Change

Rationale

Things to consider (maximum 500 words): Why is this being changed; How will it benefit students/department/unit; How is this comparable to similar programs (internal or external); Historical context; Impacts to administration or program structure; Consultation with stakeholders

AFNS 598 is one of two alternative capstone courses for Course Based MSc students in the Food Safety and Quality or the Meat Quality Specializations. The course will be offered in Spring Terms; the revised language is necessary to provide flexibility in scheduling of the course. Additional changes ensure that Course Based MSc students in the Meat Quality Specialization are explicitly included in the calendar description.

Course Template

Current: Removed language	Proposed: New language
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<p>Subject & Number: AFNS 598 Title: Integrative Project in Food Safety and Quality Course Career: Graduate Units: 3 Approved Hours: 0-3S-3 Fee index: 6 Faculty: Agric, Life & Environ Sciences Department: Agric, Food & Nutr Sci Typically Offered: second term Description A team-based capstone course exploring broad areas of food safety and quality. Students will work in groups with mentors on a project involving experiential learning and skill development related to the field. Restricted to students in the MSc Food Safety and Quality that have completed *20 of the program requirements. Prerequisite: consent of instructor.</p>	<p>Subject & Number: AFNS 598 Title: Integrative Project in Food Safety and Quality Course Career: Graduate Units: 3 Approved Hours: 0-3S-3 Fee index: 6 Faculty: Agric, Life & Environ Sciences Department: Agric, Food & Nutr Sci Typically Offered: either term Description A team-based capstone course exploring broad areas of food safety and quality. Students will work in groups with mentors on a project involving experiential learning and skill development related to the field. Restricted to students in the MSc Specializations Food Safety and Quality and Meat Quality that have completed *20 of the program requirements. Prerequisite: consent of instructor.</p>
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Reviewed/Approved by:

Approved by ALES ACC May 17, 2023
OPTIONAL: Other internal faculty approving bodies, consultation groups, or departments, and approval dates. Discussed and revised at AFNS Chair's Team on March 9 th , 2023 and approved at AFNS Department Council on March 17, 2023

FOREC 645 New Course

Rationale

Things to consider (maximum 500 words): Why is this being changed; How will it benefit students/department/unit; How is this comparable to similar programs (internal or external); Historical context; Impacts to administration or program structure; Consultation with stakeholders

The Department of Renewable Resources has designed a course-based Master of Forestry Program of which REES is responsible for delivering three core course requirements (FOREC 673, either RSOC 560 or RSOC 551, and FOREC 645. This course does not yet exist, and will be offered in conjunction (slash) with FOREC 345.
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Course Template

Current: Removed language	Proposed: New language
<p>Subject & Number</p> <p>Title</p> <p>Course Career</p> <p>Units</p> <p>Approved Hours</p> <p>Fee index</p> <p>Faculty</p> <p>Department</p>	<p>Subject & Number: FOREC 645 Title: Economics of Forestry Course Career: Graduate Units: *3 Approved Hours 3-0-0 Fee index 6 Faculty: ALES Department: REES Typically Offered: First</p>

<p>Typically Offered</p> <p>Description</p>	<p>Description</p> <p>Economic aspects of forest production, marketing, finance, and policy. Not to be taken if credit received for FOREC 345. Prerequisite: ECON 101</p>
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Reviewed/Approved by:

Approved by ALES ACC September 22, 2023

OPTIONAL: Other internal faculty approving bodies, consultation groups, or departments, and approval dates.
 REES Department Council Approval: March 23 (electronic vote).

REN R 518 New Course

Rationale

Things to consider (maximum 500 words): Why is this being changed; How will it benefit students/department/unit; How is this comparable to similar programs (internal or external); Historical context; Impacts to administration or program structure; Consultation with stakeholders

New course. This course has been given as REN R 501 for some years. For better visibility and to increase enrollment numbers, we propose this course to be formally listed as an undergraduate/graduate slash course (also see entry REN R 418).

Course Template

	<p>REN R 518 - Trace Elements in the Environment Course Career Graduate Units 3 Approved Hours 3-0-3 Fee index 6 Faculty Agric, Life & Environ Sciences Department Renewable Resources Typically Offered first term</p> <p>Description Abundance, distribution, behaviour, and geochemical cycling of trace elements in the environment, including micronutrients essential to plants and animals, and potentially toxic heavy metals; geochemical behaviour of trace elements in the hydrosphere-biosphere-atmosphere system and the relative importance of natural and anthropogenic contributions to the cycling of these elements. Not to be taken if credit received for REN R 418.</p>
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Reviewed/Approved by:

Approved by ALES ACC May 17, 2023

Proposed by Nadir Erbilgin (REN R Department Chair) and William Shotyk (Instructor). Approved by REN R Department Council (Mar 17, 2023).

REN R 526 Course Change

Rationale

Things to consider (maximum 500 words): Why is this being changed; How will it benefit students/department/unit; How is this comparable to similar programs (internal or external); Historical context; Impacts to administration or program structure; Consultation with stakeholders

Change of term to allow more flexibility to accommodate student demand for this course.

Course Template

REN R 526 - Geographical Information Systems Applications in Renewable Resources
Course Career Graduate
Units 3
Approved Hours 0-0-3
Fee index 6
Faculty Agric, Life & Environ Sciences
Department Renewable Resources
Typically Offered first term

Description

This course is a combination of lecture/lab and directed studies to develop advanced GIS skills. A focus of the course is an individual spatial analysis project. Not to be taken if credit received for REN R 426 or REN R 712.

REN R 526 - Geographical Information Systems Applications in Renewable Resources
Course Career Graduate
Units 3
Approved Hours 0-0-3
Fee index 6
Faculty Agric, Life & Environ Sciences
Department Renewable Resources
Typically Offered either term

Description

This course is a combination of lecture/lab and directed studies to develop advanced GIS skills. A focus of the course is an individual spatial analysis project. Not to be taken if credit received for REN R 426 or REN R 712.

Reviewed/Approved by:

Approved by ALES ACC September 22, 2023

Proposed by Nadir Erbilgin (REN R Department Chair) and Rick Pelletier (Instructor). Approved by REN R Department Council (Sep 1, 2023).

REN R 545 Course Change

Rationale

Things to consider (maximum 500 words): Why is this being changed; How will it benefit students/department/unit; How is this comparable to similar programs (internal or external); Historical context; Impacts to administration or program structure; Consultation with stakeholders

Change of lab hours to reflect additional lab times planned for Winter 2025.

Course Template

<p>REN R 545 - Advanced Plant Nutrition Course Career Graduate Units 3 Approved Hours 3-0-4 Fee index 6 Faculty Agric, Life & Environ Sciences Department Renewable Resources Typically Offered second term</p> <p>Description Essential plant nutrients; driving factors of nutrient bioavailability and cycling; plant uptake and utilization of nutrients; evaluation of soil fertility in terms of nutrient deficiencies and responses; management of soil fertility challenges from both productivity and environmental perspectives; assessment of options of nutrient sources. Lab exercises may include field trips. Requires payment of additional student instructional support fees. Refer to the Tuition and Fees page in the University Regulations section of the Calendar. Not to be taken if credit received for REN R 445 or REN R 745. Prerequisite: consent of instructor.</p>	<p>REN R 545 - Advanced Plant Nutrition Course Career Graduate Units 3 Approved Hours 3-0-3 Fee index 6 Faculty Agric, Life & Environ Sciences Department Renewable Resources Typically Offered second term</p> <p>Description Essential plant nutrients; driving factors of nutrient bioavailability and cycling; plant uptake and utilization of nutrients; evaluation of soil fertility in terms of nutrient deficiencies and responses; management of soil fertility challenges from both productivity and environmental perspectives; assessment of options of nutrient sources. Lab exercises may include field trips. Requires payment of additional student instructional support fees. Refer to the Tuition and Fees page in the University Regulations section of the Calendar. Not to be taken if credit received for REN R 445 or REN R 745. Prerequisite: consent of instructor.</p>
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Reviewed/Approved by:

Approved by ALES ACC May 17, 2023
Proposed by Nadir Erbilgin (RENR Department Chair) and Guillermo Hernandez Ramirez (Instructor). Approved by RENR Department Council (Sep 1, 2023).

REN R 552 Course Change

Rationale

Things to consider (maximum 500 words): Why is this being changed; How will it benefit students/department/unit; How is this comparable to similar programs (internal or external); Historical context; Impacts to administration or program structure; Consultation with stakeholders

Title and description change to better reflect the broadened content of this course.
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Course Template

<p>REN R 552 - Environmentally Sustainable Agriculture Course Career Graduate Units 3 Approved Hours 3-0-0 Fee index 6 Faculty Agric, Life & Environ Sciences Department Renewable Resources Typically Offered second term</p> <p>Description Land management issues that influence the sustainability of both agriculture and the land resource. Role of ecological processes in determining sustainability and the development and adoption of practices that facilitate long-term viability of both agriculture and biophysical resources. The concept of the agroecosystem and application of ecological principles to agricultural land management. Use of environmental indicators to measure and predict longterm sustainability of agricultural land management. Not to be taken if credit received for REN R 450 or REN R 752.</p>	<p>REN R 552 - Agricultural Sustainability and the Environment Course Career Graduate Units 3 Approved Hours 3-0-0 Fee index 6 Faculty Agric, Life & Environ Sciences Department Renewable Resources Typically Offered second term</p> <p>Description Sustainability assessment of land ecosystems and land resources management. Implementation of sustainable development goals and pillars of sustainability as frameworks for evaluating cases of study around the globe when focusing on multifunctional land ecosystems. Design and modelling of whole farming systems while identifying externalities, developmental phases, and ecological valence. Analyses of underlying ecological processes and adoption of sustainable management. Long-term evolution of environmental problems and opportunities associated with agricultural landscapes and the biosphere. Conceptualization of sustainability. Not to be taken if credit received for REN R 450 or REN R 752</p>
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Reviewed/Approved by:

Approved by ALES ACC May 17, 2023
Proposed by Nadir Erbilgin (RENR Department Chair) and Guillermo Hernandez Ramirez (Instructor). Approved by RENR Department Council (Mar 17, 2023).

REN R 596 Course Change

Rationale

Things to consider (maximum 500 words): Why is this being changed; How will it benefit students/department/unit; How is this comparable to similar programs (internal or external); Historical context; Impacts to administration or program structure; Consultation with stakeholders

Change of hours to reflect the scheduled mix of lab and integrated lecture times.

Course Template

<p>REN R 596 - Conservation Planning Course Career Graduate Units 3 Approved Hours 1-0-3 Fee index 6 Faculty Agric, Life & Environ Sciences Department Renewable Resources Typically Offered second term</p>	<p>REN R 596 - Conservation Planning Course Career Graduate Units 3 Approved Hours 1-0-2 Fee index 6 Faculty Agric, Life & Environ Sciences Department Renewable Resources Typically Offered second term</p>
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<p>Description Conservation Planning is a quantitative, inter-disciplinary applied science that prioritizes conservation actions in a spatially-explicit manner. It seeks to understand trade-offs between biological, social and economic factors associated with land use activities. The course is a combination of computing labs that demonstrate key principles and software, lectures to discuss key issues, and a student-led final project to apply key concepts and quantitative techniques. Special emphasis is given to Alberta's land use planning challenges, although North American examples and exercises are also used. Not to be taken if credit received for REN R 496 or REN R 796.</p>	<p>Description Conservation Planning is a quantitative, inter-disciplinary applied science that prioritizes conservation actions in a spatially-explicit manner. It seeks to understand trade-offs between biological, social and economic factors associated with land use activities. The course is a combination of computing labs that demonstrate key principles and software, lectures to discuss key issues, and a student-led final project to apply key concepts and quantitative techniques. Special emphasis is given to Alberta's land use planning challenges, although North American examples and exercises are also used. Not to be taken if credit received for REN R 496 or REN R 796.</p>
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Reviewed/Approved by:

<p>Approved by ALES ACC May 17, 2023</p>
<p>Proposed by Nadir Erbilgin (RENR Department Chair) and Scott Nielsen (Instructor). Approved by RENR Department Council (Mar 17, 2023).</p>

REN R 690 Course Change

Rationale

Things to consider (maximum 500 words): Why is this being changed; How will it benefit students/department/unit; How is this comparable to similar programs (internal or external); Historical context; Impacts to administration or program structure; Consultation with stakeholders

Change reflects the emergence of new and powerful machine learning and artificial intelligence tools that surpass classical techniques offered in this class.

Course Template

<p>REN R 690 - Multivariate Statistics for Environmental Sciences Course Career Graduate Units 3 Approved Hours 3-0-3 Fee index 6 Faculty Agric, Life & Environ Sciences Department Renewable Resources Typically Offered second term</p> <p>Description Focuses on visualizing and analyzing complex biological or environmental data for the purpose of prediction and scientific hypothesis testing. Covers classical and modern approaches to ordination and classification, direct and indirect gradient analysis, and models of ecological and environmental interactions. Participants engage in problem-based learning by analyzing data from their thesis research project. Students without a suitable</p>	<p>REN R 690 - Multivariate Statistics and Machine Learning for the Environmental Sciences Course Career Graduate Units 3 Approved Hours 3-0-3 Fee index 6 Faculty Agric, Life & Environ Sciences Department Renewable Resources Typically Offered second term</p> <p>Description Covers methods for visualization, analysis and prediction for complex biological or environmental data. Includes classical and modern approaches to ordination and classification, analysis of multivariate relationships, and the application of deep neural networks and other machine learning tools for prediction. Participants engage in problem-based learning by analyzing data from their thesis research project. Students without a suitable</p>
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dataset should enroll in two or more *1 REN R 58X courses instead. Prerequisite: *3 introductory statistics recommended.	dataset should enroll in two or more *1 REN R 58X courses instead. Prerequisite: *3 introductory statistics recommended.
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Reviewed/Approved by:

Approved by ALES ACC September 22, 2023
Proposed by Nadir Erbilgin (RENR Department Chair) and Andreas Hamann (Instructor). Approved by RENR Department Council (Sep 1, 2023).

REN R 701 New Course

Rationale

Things to consider (maximum 500 words): Why is this being changed; How will it benefit students/department/unit; How is this comparable to similar programs (internal or external); Historical context; Impacts to administration or program structure; Consultation with stakeholders

Graduate course corresponding to the existing REN R 290 - Field Skills in Environmental, Conservation, and Forest Sciences. This new course is for students participating in our course-based Master of Forestry program.

Course Template

	<p>REN R 701 - Forestry and Environmental Sciences Field Skills Course Career Graduate Units 2 Approved Hours 7 DAYS Fee index 4 Faculty Agric, Life & Environ Sciences Department Renewable Resources Typically Offered either first or Summer term</p> <p>Description Combines the concepts and practices of environmental, conservation and forest sciences in an off-campus field experience. Proficiency in sampling, identification, and measurement of biophysical components of terrestrial and aquatic environments is emphasized. Students in the Master of Forestry program should complete this course in their first term. Not to be taken if credit received for REN R 290.</p>
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Reviewed/Approved by:

Approved by ALES ACC May 17, 2023
Proposed by Nadir Erbilgin (RENR Department Chair) and Andreas Hamann (Director, Academic and Communications). Approved by RENR Department Council (Mar 17, 2023).

REVIEW REN R 702 New Course

Rationale

Things to consider (maximum 500 words): Why is this being changed; How will it benefit students/department/unit; How is this comparable to similar programs (internal or external); Historical context; Impacts to administration or program structure; Consultation with stakeholders

Graduate section corresponding to the existing REN R 295 - Special Topics in Field Skills and Their Application in Forest Sciences. This section is intended for students participating in our course-based Master of Forestry program.

Course Template

<p>new course</p>	<p>REN R 702 - Forestry Field School for Professionals Course Career Graduate Units 1 Approved Hours 4 DAYS Fee index 2 Faculty Agric, Life & Environ Sciences Department Renewable Resources Typically Offered either first or Summer term</p> <p>Description Focuses on specialized field skills and their application in professional forest management. The course involves off-campus field experiences. Students in the Master of Forestry program should complete this course in their first term. Pre- or corequisite: REN R 701 or REN R 290. Not to be taken if credit received for REN R 295.</p>
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Reviewed/Approved by:

Approved by ALES ACC September 22, 2023

Proposed by Nadir Erbilgin (RENR Department Chair) and Andreas Hamann (Director, Academic and Communications).
 Approved by RENR Department Council (Mar 17, 2023).

REN R 728 Course Change

Rationale

Things to consider (maximum 500 words): Why is this being changed; How will it benefit students/department/unit; How is this comparable to similar programs (internal or external); Historical context; Impacts to administration or program structure; Consultation with stakeholders

The instructor proposes to add the slash course REN R 430/727 as recommended prerequisite. REN R 728 builds directly on the material from REN R 430/727 and students without this background are at a distinct disadvantage.

Course Template

<p>REN R 728 - Integrated Forest Management Course Career Graduate Units 3 Approved Hours 3-0-2 Fee index 6 Faculty Agric, Life & Environ Sciences Department Renewable Resources Typically Offered second term</p> <p>Description Problem solving, decision making and planning in relation to the management of forest resources. Application of models and related tools. Public involvement and issues management will be addressed. Not to be taken if credit received for REN R 431.</p>	<p>REN R 728 - Integrated Forest Management Course Career Graduate Units 3 Approved Hours 3-0-2 Fee index 6 Faculty Agric, Life & Environ Sciences Department Renewable Resources Typically Offered second term</p> <p>Description Problem solving, decision making and planning in relation to the management of forest resources. Application of models and related tools. Public involvement and issues management will be addressed. Not to be taken if credit received for REN R 431. Prerequisite: REN R 430 or REN R 727.</p>
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Reviewed/Approved by:

Approved by ALES ACC September 22, 2023

Proposed by Nadir Erbilgin (RENR Department Chair) and Glen Armstrong (Instructor). Approved by RENR Department Council (Mar 17, 2023).

WKEXP 989

Rationale

Things to consider (maximum 500 words): Why is this being changed; How will it benefit students/department/unit; How is this comparable to similar programs (internal or external); Historical context; Impacts to administration or program structure; Consultation with stakeholders

WKEXP 986 is currently listed as alternative capstone course for the Course Based MSc students in the Food Safety and Quality or the Meat Quality Specializations. The course is, however, currently restricted to undergraduate students in the Food Science and Technology students as these have been the only students in NU FS that can take the internship for credit. A change of the course description of WKEXP 986 to include the Course Based MSc students in the Food Safety and Quality or the Meat Quality Specializations has been approved by the NU FS Program Committee, the AFNS Graduate Student Committee and AFNS Dept. Council in Fall 2022, however, it proved to be impossible to have the same course listed as graduate AND undergraduate course. In addition, the internship course for the graduate students includes a writing assignment to meet FGSR's requirements for MSc degrees. Discussions on how this can be taught / delivered supports the separation of the graduate course with a separate course number.

Course Template

Current: Removed language	Proposed: New language
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<p>Subject & Number</p> <p>Title</p> <p>Course Career</p> <p>Units</p> <p>Approved Hours</p> <p>Fee index</p> <p>Faculty</p> <p>Department</p> <p>Typically Offered</p> <p>Description</p>	<p>Subject & Number WKEXP 989</p> <p>Title: Graduate Work Experience</p> <p>Course Career: Graduate</p> <p>Units : 3</p> <p>Approved Hours: UNASSIGNED</p> <p>Fee index: 6</p> <p>Faculty: ALES</p> <p>Department: AFNS</p> <p>Typically Offered: Either term, spring or Summer</p> <p>Description A four-month work placement for Course Based MSc students in the Food Safety and Quality or the Meat Quality Specializations. The work experience provides the student with exposure to the practical application of their specialization and the general work environment. The course additionally includes an assessed writing assignment.</p>
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Reviewed/Approved by:

<p>Approved by ALES ACC September 22, 2023</p>
<p>OPTIONAL: Other internal faculty approving bodies, consultation groups, or departments, and approval dates. Approved at AFNS Department Council on March 17, 2023</p>

2024/2025 Calendar Changes

Undergraduate Course Changes

Faculty (& Department or Academic Unit):	ALES
Contact Person:	Dr. Nat Kav (nat@ualberta.ca), Stephanie Dickie (sdickie@ualberta.ca)
Level of change: (choose one only)	<input checked="" type="checkbox"/> Undergraduate
	<input type="checkbox"/> Graduate
Type of change request: (check all that apply)	<input checked="" type="checkbox"/> Courses
	<input type="checkbox"/> Regulation
For which term is this intended to take effect?	Fall 2024/Winter 2025
Does this proposal have corresponding course changes? (Should be submitted at the same time)	

AFNS 401 Course Change

Rationale

Things to consider (maximum 500 words): Why is this being changed; How will it benefit students/department/unit; How is this comparable to similar programs (internal or external); Historical context; Impacts to administration or program structure; Consultation with stakeholders

AFNS 401 and AFNS 601 are taught by the same instructor in the same classroom with the same contact hours. This calendar change ensures that description of both courses appropriately refers to 2 Seminar hours (currently AFNS 401 is listed as 0-3S-0). In addition, the calendar entry now refers to “either term” to match the description of AFNS 601 and to provide flexibility with course offering.

Course Template

Current: Removed language	Proposed: New language
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<p>Subject & Number AFNS 401</p> <p>Title Honors Seminar</p> <p>Course Career Undergraduate Units 3 Approved Hours 0-3S-0 Fee index 6 Faculty ALES Department AFNS Typically Offered Second Term</p> <p>Description Covers specialized topics of current interest to BSc Honors in Food Science students. Presentations by students, faculty and invited speakers. Pre- or corequisite: NU FS 407.</p>	<p>Subject & Number AFNS 401</p> <p>Title Honors Seminar</p> <p>Course Career Undergraduate Units 3 Approved Hours 0-2S-0 Fee index 6 Faculty ALES Department AFNS Typically Offered Either Term</p> <p>Description Covers specialized topics of current interest to BSc Honors in Food Science students. Presentations by students, faculty and invited speakers. Pre- or corequisite: NU FS 407.</p>
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Reviewed/Approved by:

REQUIRED: ALES ACC May 17, 2023
OPTIONAL: Other internal faculty approving bodies, consultation groups, or departments, and approval dates. Approved at AFNS Department Council Meeting on March 17, 2023

AN SC 205 New Course

Rationale

Things to consider (maximum 500 words): Why is this being changed; How will it benefit students/department/unit; How is this comparable to similar programs (internal or external); Historical context; Impacts to administration or program structure; Consultation with stakeholders

<p>Justification: Experiential learning is an important component of undergraduate programs. While some paid internships and positions exist (see <i>Comparison to Existing Programs</i>), there is considerable demand for part-time experiential learning while students are also attending classes. Currently, there are many informal opportunities to gain animal husbandry experience by assisting in on-going research studies and education programs, but students do not learn about these opportunities until they are already taking classes in an animal bioscience program.</p> <p>Target Enrollment: This internship is intended to cover students whose work with animals is not covered by employment (Edmonton Research Station, NSERC USRA) or by full-time internships (WKEXP). Different sections could be set up either by project, or by species, if needed. Based on past experience and student feedback, enrollment is recommended to be limited to 5 undergraduate students per graduate student, with a weekly commitment of 0.5h of meeting time and 5-10h of hands-on work. Interns typically report to a graduate student on a daily basis.</p> <p>Comparison to Existing Programs: Employment opportunities, while ideal, are entirely dictated by budgetary constraints and do not match the demand by qualified students. Academically, WKEXP is established for students to take a semester off classes and pursue a full-time and paid internship. The proposed animal husbandry internship part-time and unpaid, so covers students not hired due to budget restraints and/or ineligible for WKEXP credit.</p>

Benefit to Department: Formalizing a part-time, unpaid internship structure that markets hands-on animal husbandry experience beyond introductory animal science courses. Having animal husbandry internships as a calendar listing would greatly increase visibility of the hands-on opportunities AFNS already offers. Successful uptake will, in turn, greatly increase student contact hours with the animal research and teaching facilities on South Campus, which is critical for maintaining and increasing the value-add of our animal facilities.

Benefit to Faculty: Student volunteers are under-incentivized, as no distinction is made between a student working 10h a week and one working 5 hours during samplings. Consequently, motivation is more tentative and unpredictable, especially after the novelty wears off. This program allows faculty to train students according to project demand/capacity as well as supply of qualified students, rather than budget. As students work directly with grad students, impact on faculty time is minimal. Recommended practices are to have a 0.5h progress meeting weekly. Because of the semesterly structure, there are clear entry and exit points for students. Additionally, this course is an effective pipeline for future ANSC400 and graduate students.

Consultation: This proposal has been supported by ERS, especially as it holds potential to greatly increase the number of documented undergraduate contact hours with animal research facilities, bolstering the teaching value of our animal facilities.

Course Template

Current: Removed language	Proposed: New language
Subject & Number	Subject & Number ANSC 205
Title	Title Animal Husbandry Internship
Course Career	Course Career Open
Units	Units 0
Approved Hours	Approved Hours 0 – 0.5 – 5
Fee index	Fee index (0)
Faculty	Faculty Agricultural, Life and Environmental Sciences
Department	Department Agricultural, Food and Nutritional Science
Typically Offered	Typically Offered Either semester
Description	Description Hands-on internship with food production animals. Students will develop skills in animal husbandry practices and record keeping. <i>Pre- or co-requisite:</i> ANSC 101 and consent of instructor.

Reviewed/Approved by:

ALES ACC May 17, 2023

OPTIONAL: Endorsed at AFNS Department Council meeting – Feb 10 2023

AN SC 325 Course Change

Rationale

Things to consider (maximum 500 words): Why is this being changed; How will it benefit students/department/unit; How is this comparable to similar programs (internal or external); Historical context; Impacts to administration or program structure; Consultation with stakeholders

1. Adjust to Second Term- To facilitate feasibly for the instruction of the course by the new course's instructor. Importantly, the adjusted term and the scheduled time will not interfere with other courses during the term nor adversely affect student enrollment course. This course change has also been vetted by student services.
2. The prerequisite adjustment will allow more flexibility for students (ie with different backgrounds) to enroll in the course, yet maintaining some advance course (*30) prerequisite to ensure student success

Course Template

Current: Removed language	Proposed: New language
Subject & Number ANSC 325 Title Equine Science Course Career Undergraduate Units3 Approved Hours 3-0-0 Fee index 6 Faculty ALES Department AFNS Typically Offered First Term Description Description An in-depth study of equine anatomy, physiology, husbandry and diseases, both infectious and non-infectious. Equine nutrition, behaviour and the horse industry will also be examined. Not to be taken if credit received for AN SC 110. Prerequisite: BIOL 107 and BIOL 108	Subject & Number ANSC 325 Title Equine Science Course Career Undergraduate Units3 Approved Hours 3-0-0 Fee index 6 Faculty ALES Department AFNS Typically Offered Second Term Description Description An in-depth study of equine anatomy, physiology, husbandry and diseases, both infectious and non-infectious. Equine nutrition, behaviour and the horse industry will also be examined. Not to be taken if credit received for AN SC 110. Prerequisite: *30 or (BIOL 107 and BIOL 108)

Reviewed/Approved by:

REQUIRED: ALES ACC May 17, 2023
OPTIONAL: Endorsed at Department Council Meeting – Feb 10 2023.

AN SC 375 Course Change

Rationale

Things to consider (maximum 500 words): Why is this being changed; How will it benefit students/department/unit; How is this comparable to similar programs (internal or external); Historical context; Impacts to administration or program structure; Consultation with stakeholders

The prerequisites of both ANS 100 and (ANSC AN SC 101 or ANSC 200) have been restrictive and require numerous prerequisites waivers. As such the prerequisites are being adjusted to: 3 units of ANSC 100, ANSC 101, or ANSC 200.

Course Template

Current: Removed language	Proposed: New language
<p>Subject & Number ANSC 375</p> <p>Title Animal Health and Disease</p> <p>Course Career Undergraduate Units3 Approved Hours 3-0-0 Fee index 6 Faculty ALES Department AFNS Typically Offered Second term</p> <p>Description</p> <p>Principles of maintaining healthy animals, and an examination of current issues related to animal health and disease. Infectious and non-infectious diseases that affect both animal and human health and may impact international trade and export. Principles and mechanisms of immunity, disease surveillance, pathophysiology, treatment, prevention, management and economic impact of specific diseases and risks of bioterrorism. Prerequisite: AN SC 100 and (AN SC 101 or 200) or consent of instructor. AN SC 310 or PHYSL 210 or (ZOO 241 and 242) are recommended.</p>	<p>Subject & Number ANSC 375</p> <p>Title Animal Health and Disease</p> <p>Course Career Undergraduate Units3 Approved Hours 3-0-0 Fee index 6 Faculty ALES Department AFNS Typically Offered Second term</p> <p>Description</p> <p>Principles of maintaining healthy animals, and an examination of current issues related to animal health and disease. Infectious and non-infectious diseases that affect both animal and human health and may impact international trade and export. Principles and mechanisms of immunity, disease surveillance, pathophysiology, treatment, prevention, management and economic impact of specific diseases and risks of bioterrorism. Prerequisite: 3 units of AN SC 100, AN SC 101, or ANSC 200 or consent of instructor. AN SC 310 or PHYSL 210 or (ZOO 241 and 242) are recommended.</p>

Reviewed/Approved by:

ALES ACC May 17, 2023.
OPTIONAL: Approved by: Richard Uwiera AFNS Divisional Director Endorsed at Department Council on Feb 10 2023

AN SC 473 New Course

Rationale

Things to consider (maximum 500 words): Why is this being changed; How will it benefit students/department/unit; How is this comparable to similar programs (internal or external); Historical context; Impacts to administration or program structure; Consultation with stakeholders

AFNS students have been involved in the yearly Dairy Challenge, an international competition involving students working as a team to conduct comprehensive evaluation of dairy operations, since 2009. This year, Dr. Laarman developed a local version of Dairy Challenge, where teams of students would evaluate an Alberta dairy operation, with similar objectives and work as the students participating in the international Dairy Challenge. Typically, these students are registered in the ANSC 472 (Applied Dairy Production Science) course, but the additional work associated with Dairy Challenge has been previously counted as meeting the requirements for the capstone course, and students have been able to register for ANSC 400 (individual study) with a descriptor of the capstone nature of the work. The Ag Program

Committee suggests that we assign the Dairy Challenge (whether international or local) its own course number, to avoid confusion and avoid having to deal with registrations on a student-by-student basis.

Course Template

Current Calendar Entry	Proposed Calendar Entry
None	<p>Subject & Number AN SC 473</p> <p>Title Dairy Challenge</p> <p>Course Career Undergraduate</p> <p>Units 3</p> <p>Approved Hours 0-3s-3</p> <p>Fee index 6</p> <p>Faculty ALES</p> <p>Department AFNS</p> <p>Typically Offered Second Term</p> <p>Description A team-based capstone course to train students to participate in the North American Intercollegiate Dairy Challenge programs held in the US or equivalent local programs. Students will work in groups to gain integrative and experiential learning and develop skills related to comprehensive evaluation of dairy operations and consulting presentation.</p> <p>Prerequisite: AN SC 472 or consent of instructor.</p>

Reviewed/Approved by:

ALES ACC May 17, 2023

OPTIONAL: Other internal faculty approving bodies, consultation groups, or departments, and approval dates. Approved at Department Council with revisions on March 17, 2023

AN SC 499 Course Change

Rationale

Things to consider (maximum 500 words): Why is this being changed; How will it benefit students/department/unit; How is this comparable to similar programs (internal or external); Historical context; Impacts to administration or program structure; Consultation with stakeholders

Brief request: Two courses are amalgamated into one course as described below. Course listing AN SC 479 will be removed from the calendar. Title of course listing ANSC 499 will be reworded to be inclusive.

Proposed by: Ruurd Zijlstra (instructor) and Martin Zuidhof (co-instructor).

Rationale for Change: It is the same course! Students are sitting at the same time, in the same room, with the same instructor, and some students are even in the same groups. At best misleading to suggest that two separate courses exist. Needless duplication of courses in the course calendar, Bear Tracks, etc.

Detailed Rationale: For around 15 years, two course separate listings have existed. For at least 10 years, the two courses have physically amalgamated into 1 course, with two separate course listings. The two listings are error prone during group formation, such as ensuring that a student is not missed.

The Program Committee needs to update the description for the many ways that the capstone requirement can be for Animal Health and Animal Science students.

Course Template

Current: Removed language	Proposed: New language
<p>AN SC 499 - Integrative Project in Animal Science ★ 3 (fi 6) (second term, 0-3S-3) A team-based capstone course exploring broad areas of animal agriculture. Students will work in groups with mentors on a project involving experiential learning and skill development related to the field.</p> <p>and</p> <p>AN SC 479 – Integrative Project in Animal Health Science ★ 3 (fi 6) (second term, 0-3S-3) A team-based capstone course exploring broad areas of animal health. Students will work in groups with mentors on a project involving experiential learning and skill development related to the field.</p>	<p>AN SC 499 - Integrative Project in Animal Health or Animal Science ★ 3 (fi 6) (second term, 0-3S-3) A team-based capstone course exploring broad areas of animal health or animal science. Students will work in groups with mentors on a project involving experiential learning and skill development related to the field. Credit cannot be obtained in both AN SC 499 and AN SC 479.</p>

Reviewed/Approved by:

Approved by ALES ACC May 17, 2023

Submitted to Division Director on 2023 Jan 18 and Program Chair on 2023 Jan 18.
 Approved by Ag Program Committee.
 Discussed at AFNS Chairs Team on 2023 Feb 9.
 Approved at AFNS Departmental Council on 2023 Feb 10.

AN SC 312 Course Change (early implementation, Fall 2023)

Rationale

Things to consider (maximum 500 words): Why is this being changed; How will it benefit students/department/unit; How is this comparable to similar programs (internal or external); Historical context; Impacts to administration or program structure; Consultation with stakeholders

Detailed Rationale Historically, ANSC 312 has included lecture and lab time. Lab time was used to reinforce concepts introduced during the lectures with a combination of demonstrations, discussions and wet-lab activities. As course enrollment has grown there have been issues with scheduling these labs due to conflicts with other courses and the availability of appropriate lab teaching space. However, since the Winter term of 2020, students have been using an on-line platform developed by the Editors of the Textbook used for AN SC 312 (Pathways to Parturition and Pregnancy) to replace the course lab sessions. When needed student support can easily be provided on-line or through in-person meetings. The on-line platform includes interactive learning activities, tutorial sessions and quizzes that student are required do to reinforce their knowledge and understanding of the reproductive

physiology of domestic animals. Feedback from student on the on-line textbook based platform have been overwhelmingly positive and have allowed for the learning objectives of the course to be met without the need for structured lab sessions. Removal of structured lab time also means that enrollment of AN SC 312 can be increased. The workload for marking assignments and dealing with student inquiries etc. will remain so continued support of a Marker for the course is expected.

Course Template

Current: Removed language	Proposed: New language
<p>Subject & Number AN SC 312</p> <p>Title Reproductive Physiology of Domestic Animals</p> <p>Course Career Undergraduate Units 3 Approved Hours 3-0-3 Fee index 6 Faculty ALES Department AFNS Typically Offered first term</p> <p>Description The physiological basis of reproduction, fertility and embryonic development in domestic animals in relation to animal productivity. The study of the physiological mechanisms regulating gonadal function, fertilization, implantation, pregnancy and parturition as well as the physiological basis for sound reproductive management. Prerequisite: AN SC 310</p>	<p>Subject & Number AN SC 312</p> <p>Title Reproductive Physiology of Domestic Animals</p> <p>Course Career Undergraduate Units 3 Approved Hours 3-0-0 Fee index 6 Faculty ALES Department AFNS Typically Offered first term</p> <p>Description The physiological basis of reproduction, fertility and embryonic development in domestic animals in relation to animal productivity. The study of the physiological mechanisms regulating gonadal function, fertilization, implantation, pregnancy and parturition as well as the physiological basis for sound reproductive management. Prerequisite: AN SC 310</p>

Reviewed/Approved by:

Approved by ALES ACC May 17, 2023

OPTIONAL: Submitted to Animal Science Division Director and Agriculture/Animal Health Program Committee Chair on Jan 27, 2023. Approved at Department Council on Feb 10 2023

REN R 418 New Course

Rationale

Things to consider (maximum 500 words): Why is this being changed; How will it benefit students/department/unit; How is this comparable to similar programs (internal or external); Historical context; Impacts to administration or program structure; Consultation with stakeholders

New course. This course has been given as REN R 501 for some years. For better visibility and to increase enrollment numbers, we propose this course to be formally listed as an undergraduate/graduate slash course (also see entry REN R 418)

Course Template

	<p>REN R 418 Trace Elements in the Environment Course Career Undergraduate Units 3 Approved Hours 3-0-3 Fee index 6 Faculty Agric, Life & Environ Sciences Department Renewable Resources Typically Offered first term</p> <p>Description Abundance, distribution, behaviour, and geochemical cycling of trace elements in the environment, including micronutrients essential to plants and animals, and potentially toxic heavy metals; geochemical behaviour of trace elements in the hydrosphere-biosphere-atmosphere system and the relative importance of natural and anthropogenic contributions to the cycling of these elements.</p>
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Reviewed/Approved by:

Approved by ALES ACC May 17, 2023
Proposed by Nadir Erbilgin (REN R Department Chair) and William Shotyk (Instructor). Approved by REN R Department Council (Mar 17, 2023).

REN R 100 Delete Course

Rationale

Things to consider (maximum 500 words): Why is this being changed; How will it benefit students/department/unit; How is this comparable to similar programs (internal or external); Historical context; Impacts to administration or program structure; Consultation with stakeholders

<p>We propose to replace REN R 100 with REN R 200 implemented as course deletion and new course (see other document). This service course has been redesigned and broadened to meet need for a general course on contemporary challenges to sustainability of forests to meet needs of society. The course number change enables students across allied (Science, Engineering) and other university faculties to register for credit across diverse programs.</p>

Course Template

<p>REN R 100 – Forests: Ecology, Use and Society Course Career Undergraduate Units 3 Approved Hours 3-0-0 Fee index 6 Faculty Agric, Life & Environ Sciences Department Renewable Resources Typically Offered first term</p> <p>Description An introduction to forest trees, plants, insects, fungi, fire,</p>	
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<p>biodiversity and ecology. Discusses the use of forests for wood products recreation, watersheds, wildlife, carbon, and overall management and policies in Alberta and elsewhere.</p>	
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Reviewed/Approved by:

<p>Approved by ALES ACC May 17, 2023</p>
<p>Proposed by Nadir Erbilgin (RENR Department Chair) and Uldis Silins (Instructor). Approved by RENR Department Council (Mar 17, 2023).</p>

REN R 200 New Course

Rationale

Things to consider (maximum 500 words): Why is this being changed; How will it benefit students/department/unit; How is this comparable to similar programs (internal or external); Historical context; Impacts to administration or program structure; Consultation with stakeholders

<p>We propose to replace REN R 100 with REN R 200 implemented as course deletion (see other document) and a new course. This service course has been redesigned and broadened to meet the need for a general course on contemporary challenges to sustainability of forests to meet the needs of society. The course number change enables students across allied (Science, Engineering) and other university faculties to register for credit across diverse programs that limit 100-level courses.</p>
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Course Template

	<p>REN R 200 - Forests and Society Course Career Undergraduate Units 3 Approved Hours 3-0-0 Fee index 6 Faculty Agric, Life & Environ Sciences Department Renewable Resources Typically Offered first term</p> <p>Description Forests are key to sustaining biodiversity and critical services for society. This course examines interrelationships among forest ecosystem components including climate, soils, trees, plants, insects, wildlife, water, and people. Exploration of the scientific basis, and contemporary challenges in the protection and sustainable management of forests ecosystems. Not to be taken if credit received for REN R 100. Not open to students in the BSc in Forestry or BSc in Forest Business Management programs.</p>
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Reviewed/Approved by:

<p>Approved by ALES ACC May 17, 2023</p>
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Proposed by Nadir Erbilgin (RENR Department Chair) and Uldis Silins (Instructor). Approved by RENR Department Council (Mar 17, 2023).

REN R 213 New Course

Rationale

Things to consider (maximum 500 words): Why is this being changed; How will it benefit students/department/unit; How is this comparable to similar programs (internal or external); Historical context; Impacts to administration or program structure; Consultation with stakeholders

This new option course addresses student competency to perform simple data management tasks and data visualizations, particularly useful for other undergraduate courses that evaluate field measurements.

Course Template

REN R 213 - Data Science for Resource Analysis

Course Career Undergraduate

Units 3

Approved Hours 1.5-0-1.5

Fee index 6

Faculty Agric, Life & Environ Sciences

Department Renewable Resources

Typically Offered either

Description

Introduces concepts of data science for analysis of problems related to the science and management of renewable resources. The course will use the R programming languages and R packages for manipulating, visualizing and analysing data, and for communicating results of analyses through graphics and literate programming. The use of R for statistics and analysis of spatial data will be introduced.

Reviewed/Approved by:

Approved by ALES ACC May 17, 2023

Proposed by Nadir Erbilgin (RENR Department Chair) and Glen Armstrong (Instructor). Approved by RENR Department Council (Mar 17, 2023).

REN R 290 Course Change

Rationale

Things to consider (maximum 500 words): Why is this being changed; How will it benefit students/department/unit; How is this comparable to similar programs (internal or external); Historical context; Impacts to administration or program structure; Consultation with stakeholders

The instructor noticed students occasionally enrolling after their first year, but this field course is designed for students who have completed their second year. A *60 prerequisite is not needed and would exclude some students who should take the class. The modified sentence to the description provides the required guidance.

Course Template

<p>REN R 290 - Field Skills in Environmental, Conservation, and Forest Sciences Course Career Undergraduate Units 2 Approved Hours 7 DAYS Fee index 4 Faculty Agric, Life & Environ Sciences Department Renewable Resources Typically Offered either term</p> <p>Description Combines the concepts and practices of environmental, conservation and forest sciences in an off-campus field experience. Proficiency in sampling, identification, and measurement of biophysical components of terrestrial and aquatic environments is emphasized. Prerequisites: *30 and REN R 110. REN R 205, REN R 210 and REN R 120 are recommended. Students must complete this course prior to completion of the final *30 of their program.</p>	<p>REN R 290 - Field Skills in Environmental, Conservation, and Forest Sciences Course Career Undergraduate Units 2 Approved Hours 7 DAYS Fee index 4 Faculty Agric, Life & Environ Sciences Department Renewable Resources Typically Offered either term</p> <p>Description Combines the concepts and practices of environmental, conservation and forest sciences in an off-campus field experience. Proficiency in sampling, identification, and measurement of biophysical components of terrestrial and aquatic environments is emphasized. Prerequisites: *30 and REN R 110. REN R 205, REN R 210 and REN R 120 are recommended. Students must take this course after their second program year and prior to completion of the final *30 of their program.</p>
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Reviewed/Approved by:

Approved by ALES ACC May 17, 2023

Proposed by Nadir Erbilgin (RENR Department Chair) and Simon Landhäuser (Instructor). Approved by ENCS and Forestry program committees (Mar 31, 2023).

REN R 364 Course Change

Rationale

Things to consider (maximum 500 words): Why is this being changed; How will it benefit students/department/unit; How is this comparable to similar programs (internal or external); Historical context; Impacts to administration or program structure; Consultation with stakeholders

The instructor received many requests for permission to take RENR 364 in the second year, even though students do not have the prerequisite 60 credits. The instructor would be happy to formally allow this, as the second year students seem to do fine in the course.

Course Template

<p>REN R 364 - Principles of Managing Natural Diversity Course Career Undergraduate Units 3 Approved Hours 3-0-2 Fee index 6 Faculty Agric, Life & Environ Sciences Department Renewable Resources Typically Offered second term</p> <p>Description</p>	<p>REN R 364 - Principles of Managing Natural Diversity Course Career Undergraduate Units 3 Approved Hours 3-0-2 Fee index 6 Faculty Agric, Life & Environ Sciences Department Renewable Resources Typically Offered second term</p> <p>Description</p>
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<p>Introduction to the theoretical foundation for conservation science. Elements of population, community and landscape ecology will be reviewed, and their application to realworld challenges discussed. Objective is to provide students with the scientific tools to evaluate and develop conservation strategies for maintaining diversity in human-altered systems. Ethical and philosophical aspects of the sociopolitical arena in which conservation decisions are made and implemented are also explored. Not to be taken if credit received for ENCS 364 or BIOL 367. Prerequisites: *69, and BIOL 208 or (BIOL 108 and REN R 110).</p>	<p>Introduction to the theoretical foundation for conservation science. Elements of population, community and landscape ecology will be reviewed, and their application to realworld challenges discussed. Objective is to provide students with the scientific tools to evaluate and develop conservation strategies for maintaining diversity in human-altered systems. Ethical and philosophical aspects of the sociopolitical arena in which conservation decisions are made and implemented are also explored. Not to be taken if credit received for ENCS 364 or BIOL 367. Prerequisites: *30, and BIOL 208 or (BIOL 108 and REN R 110).</p>
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Reviewed/Approved by:

<p>Approved by ALES ACC May 17, 2023</p>
<p>Proposed by Nadir Erbilgin (RENR Department Chair) and Carol Frost (Instructor). Approved by ENCS and Forestry program committees (Mar 31, 2023).</p>

REN R 496 Course Change

Rationale

Things to consider (maximum 500 words): Why is this being changed; How will it benefit students/department/unit; How is this comparable to similar programs (internal or external); Historical context; Impacts to administration or program structure; Consultation with stakeholders

<p>Change of hours to reflect the scheduled mix of lab and integrated lecture times. Prerequisites are updated as well. Statistics prerequisite no longer required, which has not been an issue for this senior undergraduate course. REN R 364 can be taken as co-requisite to allow scheduling flexibility.</p>

Course Template

<p>REN R 496 - Conservation Planning Course Career Undergraduate Units 3 Approved Hours 1-0-3 Fee index 6 Faculty Agric, Life & Environ Sciences Department Renewable Resources Typically Offered second term</p> <p>Description Conservation Planning is a quantitative, inter-disciplinary applied science that prioritizes conservation actions in a spatially-explicit manner. It seeks to understand trade-offs between biological, social and economic factors associated with land use activities. The course is a combination of computing labs that demonstrate key principles and software, lectures to discuss key issues, and a student-led final project to apply key concepts and</p>	<p>REN R 496 - Conservation Planning Course Career Undergraduate Units 3 Approved Hours 1-0-2 Fee index 6 Faculty Agric, Life & Environ Sciences Department Renewable Resources Typically Offered second term</p> <p>Description Conservation Planning is a quantitative, inter-disciplinary applied science that prioritizes conservation actions in a spatially-explicit manner. It seeks to understand trade-offs between biological, social and economic factors associated with land use activities. The course is a combination of computing labs that demonstrate key principles and software, lectures to discuss key issues, and a student-led final project to apply key concepts and</p>
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quantitative techniques. Special emphasis is given to Alberta's land use planning challenges, although North American examples and exercises are also used.

Prerequisites: Consent of instructor, or (REN R 364 or ENCS 364) and (REN R 201 or EAS 221) and (STATS 141 or SCI 151) and *81 university level credits.

quantitative techniques. Special emphasis is given to Alberta's land use planning challenges, although North American examples and exercises are also used.

Prerequisite: (REN R 201 or EAS 221), prerequisite or corequisite: REN R 364, and *90 of university level credits.

Reviewed/Approved by:

Approved by ALES ACC May 17, 2023

Proposed by Nadir Erbilgin (REN R Department Chair) and Scott Nielsen (Instructor). Approved by REN R Department Council (Mar 17, 2023).

2024/2025 Calendar Changes

Undergraduate Program Changes

Faculty (& Department or Academic Unit):	ALES
Contact Person:	Dr. Nat Kav (nat@ualberta.ca), Stephanie Dickie (sdickie@ualberta.ca)
Level of change: (choose one only)	<input checked="" type="checkbox"/> Undergraduate
	<input type="checkbox"/> Graduate
Type of change request: (check all that apply)	<input checked="" type="checkbox"/> Program
	<input type="checkbox"/> Regulation
For which term is this intended to take effect?	Fall 2024/Winter 2025
Does this proposal have corresponding course changes? (Should be submitted at the same time)	

AH040 Requirement Change REN R 250/350

Rationale

Things to consider (maximum 500 words): Why is this being changed; How will it benefit students/department/unit; How is this comparable to similar programs (internal or external); Historical context; Impacts to administration or program structure; Consultation with stakeholders

Both REN R 250 and REN R 350 meet ENCS core program requirements for an introductory water resources course.

Calendar Copy

https://calendar.ualberta.ca/preview_program.php?catoid=36&poid=42223&returnto=11330

Change applies to:

- Conservation Biology Major
- Environmental Economics and Policy Major
- Human Dimensions of Environmental Management Major
- Land Reclamation Major
- Northern Systems Major
- Wildlife and Rangeland Resources Management Major

Current Copy:

Proposed Copy:

<p>Program Requirements (72 units)</p> <p>...</p> <ul style="list-style-type: none"> ● REN R 250 - Water Resource Management <p>...</p>	<p>Program Requirements (72 units)</p> <p>...</p> <p>3 units selected from</p> <ul style="list-style-type: none"> ● <u>REN R 250 - Water Resource Management</u> ● <u>REN R 350 - Physical Hydrology</u>
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Reviewed/Approved by:

Approved by ALES ACC May 17, 2023
Proposed by Nadir Erbilgin (REN R Department Chair), endorsed by the ENCS/Forestry Program committee (Jan. 24, 2023), approved by REN R Department Council (Mar 17, 2023).

AH045 Requirement Change REN R 250/350

Rationale

Things to consider (maximum 500 words): Why is this being changed; How will it benefit students/department/unit; How is this comparable to similar programs (internal or external); Historical context; Impacts to administration or program structure; Consultation with stakeholders

Both REN R 250 and REN R 350 meet ENCS core program requirements for an introductory water resources course.
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Calendar Copy

https://calendar.ualberta.ca/preview_program.php?catoid=36&poid=42226&returnto=11330	
<p>Current Copy:</p> <p>Program Requirements (72 units)</p> <p>...</p> <ul style="list-style-type: none"> ● REN R 250 - Water Resource Management <p>...</p>	<p>Proposed Copy:</p> <p>Program Requirements (72 units)</p> <p>...</p> <p>3 units selected from</p> <ul style="list-style-type: none"> ● <u>REN R 250 - Water Resource Management</u> ● <u>REN R 350 - Physical Hydrology</u>

Reviewed/Approved by:

Approved by ALES ACC May 17, 2023
Proposed by Nadir Erbilgin (REN R Department Chair), endorsed by the ENCS/Forestry Program committee (Jan. 24, 2023), approved by REN R Department Council (Mar 17, 2023).

AH120 Program Language Change

Rationale

Things to consider (maximum 500 words): Why is this being changed; How will it benefit students/department/unit; How is this comparable to similar programs (internal or external); Historical context; Impacts to administration or program structure; Consultation with stakeholders

The revised language for student accommodations is necessary to clarify that the University of Alberta's Duty to Accommodate procedure is administered through the Academic Success Centre, and that students should discuss approved accommodations with the ALES Undergraduate Student Office one full term prior to professional practice courses.

Calendar Copy

https://calendar.ualberta.ca/preview_program.php?catoid=36&poid=42244&returnto=11330

Current Copy: Removed language	Proposed Copy: New language
<p>Accommodation for Persons with Disabilities The Faculty of Agricultural, Life and Environmental Sciences supports the principle of accommodation and all reasonable efforts to meet the disability-related needs of students enrolled in the Dietetics Specialization. Student's in need of accommodations must submit a written request for and formalize a professional practice accommodation plan one term prior to the planned start of a professional practice course. Detailed information on the Faculty's policies and procedures related to accommodations during professional practice courses can be obtained from the Faculty Student Services Office</p>	<p>The Faculty of Agricultural, Life and Environmental Sciences follows the University of Alberta Duty to Accommodate procedure and makes all reasonable efforts to meet the disability-related needs of students enrolled in the Dietetics Specialization. Students with approved accommodations through the University of Alberta's Duty to Accommodate procedure (as administered through the Academic Success Centre) are eligible for reasonable accommodations during professional practice courses. Please discuss your needs with your student advisor at least one full term prior to your planned start of your professional practice courses.</p>

Reviewed/Approved by:

REQUIRED: ALES ACC approval May 17, 2023

OPTIONAL: Other internal faculty approving bodies, consultation groups, or departments, and approval dates.
 Approved NU FS program committee March 6, 2023. Approved at AFNS Department Council Meeting on March 17, 2023

AH010 Capstone Change

Rationale

Things to consider (maximum 500 words): Why is this being changed; How will it benefit students/department/unit; How is this comparable to similar programs (internal or external); Historical context; Impacts to administration or program structure; Consultation with stakeholders

During the 2022/2023 academic year, the Ag and AH Program Committee approved the removal of ANSC 479 as the Capstone for Animal Science and Sustainable Ag majors for ANSC 499 as the Capstone instead. However, the paperwork for this change was not submitted. Students in ANSC 479 and ANSC 499 have been taught together in one class (same instructor, classroom, schedule), with BAnimHealth students taking ANSC 499 and BAg students taking ANSC 479 as the only distinction between the two cohorts. However, because there are fewer ANSC and Sustainable Ag students compared with Animal Health students, this arrangement has led to challenges with arranging group projects and has not allowed ANSC and Sustainable Ag students to opt for capstone projects with more of an Animal Health focus. This change so all animal students would take ANSC 499 as their capstone will enable greater flexibility in assigning capstone projects to students in animal majors, as well as greater efficiency in the administration of the course with all students being united under one course number.

Calendar Copy

URL in current Calendar (or "New page") Program: Bachelor of Science in Agriculture - University of Alberta - Acalog ACMS™ (ualberta.ca)	
Current Copy: Removed language	Proposed Copy: New language
<p>Animal Science Major [ALES] General Information Students registered in the Animal Science Major are eligible for Pre-Veterinary Medicine.</p> <p>Program Requirements (39 units) 3 units in ENGL 6 units in Free Electives ALES 204 - Communication Fundamentals for Professionals AN SC 101 - Principles of Animal Agriculture AREC 200 - Current Economic Issues for Agriculture and Food BIOL 107 - Introduction to Cell Biology ECON 101 - Introduction to Microeconomics ECON 102 - Introduction to Macroeconomics PL SC 221 - Introduction to Plant Science REN R 210 - Introduction to Soil Science STAT 151 - Introduction to Applied Statistics I 3 units selected from MATH 134 - Calculus for the Life Sciences I MATH 144 - Calculus for the Mathematical and Physical Sciences I MATH 154 - Calculus for Business and Economics I Major Requirements (78 units) 6 units from Organic Chemistry, Inorganic Chemistry or Physics 18 units in Approved Program Electives 6 units in Free Electives AN SC 310 - Physiology of Domestic Animals</p>	<p>Animal Science Major [ALES] General Information Students registered in the Animal Science Major are eligible for Pre-Veterinary Medicine.</p> <p>Program Requirements (39 units) 3 units in ENGL 6 units in Free Electives ALES 204 - Communication Fundamentals for Professionals AN SC 101 - Principles of Animal Agriculture AREC 200 - Current Economic Issues for Agriculture and Food BIOL 107 - Introduction to Cell Biology ECON 101 - Introduction to Microeconomics ECON 102 - Introduction to Macroeconomics PL SC 221 - Introduction to Plant Science REN R 210 - Introduction to Soil Science STAT 151 - Introduction to Applied Statistics I 3 units selected from MATH 134 - Calculus for the Life Sciences I MATH 144 - Calculus for the Mathematical and Physical Sciences I MATH 154 - Calculus for Business and Economics I Major Requirements (78 units) 6 units from Organic Chemistry, Inorganic Chemistry or Physics 18 units in Approved Program Electives 6 units in Free Electives AN SC 310 - Physiology of Domestic Animals</p>

<p>AN SC 311 - Metabolic Physiology of Domestic Animals AN SC 312 - Reproductive Physiology of Domestic Animals AN SC 375 - Animal Health and Disease AN SC 377 - Food Animal Behaviour AN SC 384 - Principles of Animal Genetics AN SC 461 - Ruminant Digestion, Metabolism, and Nutrition AN SC 462 - Monogastric Nutrition AN SC 485 - Animal Genetics and Breeding BIOL 108 - Introduction to Biological Diversity BIOL 207 - Molecular Genetics and Heredity BIOL 208 - Principles of Ecology 3 units selected from AREC 323 - Introduction to Management for Agri-Food, Environmental, and Forestry Businesses SEM 301 - Behavior in Organizations 3 units selected from 3 units in NUTR AN SC 260 - Fundamentals of Animal Nutrition 6 units selected from AN SC 471 - Applied Poultry Science AN SC 472 - Applied Dairy Production Science AN SC 474 - Applied Beef Cattle Science AN SC 476 - Applied Swine Science Capstone Requirement (3 units) AN SC 479 - Integrative Project in Animal Science</p>	<p>AN SC 311 - Metabolic Physiology of Domestic Animals AN SC 312 - Reproductive Physiology of Domestic Animals AN SC 375 - Animal Health and Disease AN SC 377 - Food Animal Behaviour AN SC 384 - Principles of Animal Genetics AN SC 461 - Ruminant Digestion, Metabolism, and Nutrition AN SC 462 - Monogastric Nutrition AN SC 485 - Animal Genetics and Breeding BIOL 108 - Introduction to Biological Diversity BIOL 207 - Molecular Genetics and Heredity BIOL 208 - Principles of Ecology 3 units selected from AREC 323 - Introduction to Management for Agri-Food, Environmental, and Forestry Businesses SEM 301 - Behavior in Organizations 3 units selected from 3 units in NUTR AN SC 260 - Fundamentals of Animal Nutrition 6 units selected from AN SC 471 - Applied Poultry Science AN SC 472 - Applied Dairy Production Science AN SC 474 - Applied Beef Cattle Science AN SC 476 - Applied Swine Science Capstone Requirement (3 units) AN SC 499 - Integrative Project in Animal Health or Animal Science</p>
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Calendar Copy

URL in current Calendar (or "New page") Program: Bachelor of Science in Agriculture - University of Alberta - Acalog ACMS™ (ualberta.ca)	
Current Copy: Removed language	Proposed Copy: New language

<p>Sustainable Agricultural Systems Major [ALES] Program Requirements (39 units) 3 units in ENGL 6 units in Free Electives ALES 204 - Communication Fundamentals for Professionals AN SC 101 - Principles of Animal Agriculture AREC 200 - Current Economic Issues for Agriculture and Food ECON 101 - Introduction to Microeconomics ECON 102 - Introduction to Macroeconomics PL SC 221 - Introduction to Plant Science REN R 210 - Introduction to Soil Science STAT 151 - Introduction to Applied Statistics I 3 units selected from MATH 134 - Calculus for the Life Sciences I MATH 144 - Calculus for the Mathematical and Physical Sciences I MATH 154 - Calculus for Business and Economics I 3 units selected from BIOL 107 - Introduction to Cell Biology BIOL 108 - Introduction to Biological Diversity BIOL 207 - Molecular Genetics and Heredity BIOL 208 - Principles of Ecology (see Note) Note BIOL 108 and BIOL 208 are required for the Sustainable Agricultural Systems and Animal Science Majors, and the Pre-Veterinary Medicine Program.</p> <p>Major Requirements (78 units) 3 units in ENGL OR WRS 27 units in Approved Program Electives 6 units in Free Electives AREC 214 - Applications of Quantitative Models to Food, Resources and the Environment AREC 365 - Natural Resource Economics REN R 350 - Physical Hydrology REN R 341 - Soil Formation and Landscape Processes REN R 446 - Climates and Ecosystems REN R 450 - Environmentally Sustainable Agriculture R SOC 355 - Rural Communities and Global Economies 3 units selected from AREC 323 - Introduction to Management for Agri-Food, Environmental, and Forestry Businesses SEM 301 - Behavior in Organizations 3 units selected from</p>	<p>Sustainable Agricultural Systems Major [ALES] Program Requirements (39 units) 3 units in ENGL 6 units in Free Electives ALES 204 - Communication Fundamentals for Professionals AN SC 101 - Principles of Animal Agriculture AREC 200 - Current Economic Issues for Agriculture and Food ECON 101 - Introduction to Microeconomics ECON 102 - Introduction to Macroeconomics PL SC 221 - Introduction to Plant Science REN R 210 - Introduction to Soil Science STAT 151 - Introduction to Applied Statistics I 3 units selected from MATH 134 - Calculus for the Life Sciences I MATH 144 - Calculus for the Mathematical and Physical Sciences I MATH 154 - Calculus for Business and Economics I 3 units selected from BIOL 107 - Introduction to Cell Biology BIOL 108 - Introduction to Biological Diversity BIOL 207 - Molecular Genetics and Heredity BIOL 208 - Principles of Ecology (see Note) Note BIOL 108 and BIOL 208 are required for the Sustainable Agricultural Systems and Animal Science Majors, and the Pre-Veterinary Medicine Program.</p> <p>Major Requirements (78 units) 3 units in ENGL OR WRS 27 units in Approved Program Electives 6 units in Free Electives AREC 214 - Applications of Quantitative Models to Food, Resources and the Environment AREC 365 - Natural Resource Economics REN R 350 - Physical Hydrology REN R 341 - Soil Formation and Landscape Processes REN R 446 - Climates and Ecosystems REN R 450 - Environmentally Sustainable Agriculture R SOC 355 - Rural Communities and Global Economies 3 units selected from AREC 323 - Introduction to Management for Agri-Food, Environmental, and Forestry Businesses SEM 301 - Behavior in Organizations 3 units selected from</p>
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<p>EAS 221 - Introduction to Geographical Information Systems and Remote Sensing REN R 201 - Introduction to Geomatic Techniques in Natural Resource Management 3 units selected from AREC 333 - Economics of Production and Resource Management AREC 384 - Food Market Analysis AREC 473 - Food and Agricultural Policies 6 units selected from Organic Chemistry Inorganic Chemistry PHYS BIOCH 200 - Introductory Biochemistry OR PL SC 331 BIOL 107 - Introduction to Cell Biology BIOL 207 - Molecular Genetics and Heredity EAS 100 - Planet Earth EAS 105 - The Dynamic Earth Through Time 6 units selected from AN SC 471 - Applied Poultry Science AN SC 472 - Applied Dairy Production Science AN SC 474 - Applied Beef Cattle Science AN SC 476 - Applied Swine Science ENCS 356 - Principles of Rangeland Conservation and Habitat Management PL SC 354 - Forage Crops PL SC 355 - Cereal, Oilseed, and Pulse Crops Capstone Requirement (3 units) 3 units selected from AN SC 479 - Integrative Project in Animal Science ENCS 471 - Practical Case Studies in Rangeland Management and Conservation PL SC 499 - Cropping Systems</p>	<p>EAS 221 - Introduction to Geographical Information Systems and Remote Sensing REN R 201 - Introduction to Geomatic Techniques in Natural Resource Management 3 units selected from AREC 333 - Economics of Production and Resource Management AREC 384 - Food Market Analysis AREC 473 - Food and Agricultural Policies 6 units selected from Organic Chemistry Inorganic Chemistry PHYS BIOCH 200 - Introductory Biochemistry OR PL SC 331 BIOL 107 - Introduction to Cell Biology BIOL 207 - Molecular Genetics and Heredity EAS 100 - Planet Earth EAS 105 - The Dynamic Earth Through Time 6 units selected from AN SC 471 - Applied Poultry Science AN SC 472 - Applied Dairy Production Science AN SC 474 - Applied Beef Cattle Science AN SC 476 - Applied Swine Science ENCS 356 - Principles of Rangeland Conservation and Habitat Management PL SC 354 - Forage Crops PL SC 355 - Cereal, Oilseed, and Pulse Crops Capstone Requirement (3 units) 3 units selected from AN SC 499 - Integrative Project in Animal Health or Animal Science ENCS 471 - Practical Case Studies in Rangeland Management and Conservation PL SC 499 - Cropping Systems</p>
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Reviewed/Approved by:

Approved by ALES ACC September 22, 2023

OPTIONAL: AFNS Departmental Approval September 23, 2023. The name change for ANSC 499 to reflect Integrative Project in Animal Health or Animal Science was previously approved at AFNS Dept Council on Feb 10, 2023.

This package contains: [Graduate - Courses](#)

Faculty approval date:

AAC Date: September 26, 2023

Page	Department or Unit	What is Changing
2	Art & Design	HADVC 555
3	Linguistics	LING 509
4	Linguistics	LING 510
5	Linguistics	LING 601
6	Linguistics	LING 602
7	Music	MUSIC 546
8	Music	MUSIC 511,512,535,536

Faculty of Arts	Art & Design
Level of change (choose one only)	<input type="checkbox"/> Undergraduate <input checked="" type="checkbox"/> Graduate
Contact Person:	Elizabeth Boone
Department/Unit Approval Date:	September 7, 2023

Rationale for change (Indicate other consultation groups, departments, units or faculties)

Things to consider (maximum 500 words, delete these questions before entering your own text):

This course number is no longer used as faculty members teaching topics in the 19th century prefer to use the less restrictive course number and title: HADVC 511: Special Topics in the History of Art, Design, and Visual Culture. Deleting the class from the calendar will simplify and clarify the curriculum.

This change has been approved by the HADVC division and the department of Art and Design

Calendar Copy

Current: Removed language (Include all parts of course)	Proposed: New language
<p>HADVC 555</p> <p>Title: Topics in Art, Design and Visual Culture in the Second Half of the 19th Century</p> <p>Course Career: graduate Units: 3 Approved Hours: 0-3S-0 Fee index: 6 Faculty: Arts Department: Art & Design Typically Offered: either term:</p> <p>Description: Prerequisite: consent of Department. Variable content course which may be repeated if topic(s) vary.</p>	

Faculty of Arts	Linguistics
Level of change (choose one only)	<input type="checkbox"/> Undergraduate <input checked="" type="checkbox"/> Graduate
Contact Person:	Grace Jamieson
Department/Unit Approval Date:	March 13, 2023

Rationale for change (Indicate other consultation groups, departments, units or faculties)

Changes to course description will make LING 509 align better with the more advanced syntax course, LING 602, and with the 500-level phonology course, LING 510. Changes to description better reflect current course content. Existing course description is over 10 years old.

Calendar Copy

Current: Removed language (Include all parts of course)	Proposed: New language
Subject & Number: LING 509 Title: Syntactic Theory Course Career: Graduate Units: 3 Approved Hours: 3-0-0 Fee index: 6 Faculty: Arts Department: Linguistics Typically Offered: Every year Description: Advanced syntactic analysis and related theoretical issues . Prerequisite: LING 309 or consent of Department.	Subject & Number: LING 509 Title: Syntactic Theory Course Career: Graduate Units: 3 Approved Hours: 3-0-0 Fee index: 6 Faculty: Arts Department: Linguistics Typically Offered: Every year Description: Advanced syntactic analysis and discussion of theoretical approaches in syntax . Prerequisite: LING 309 or consent of Department.

Faculty of Arts	Linguistics
Level of change (choose one only)	<input type="checkbox"/> Undergraduate <input checked="" type="checkbox"/> Graduate
Contact Person:	Grace Jamieson
Department/Unit Approval Date:	March 13, 2023

Rationale for change (Indicate other consultation groups, departments, units or faculties)

Changes to course description will make LING 510 align better with the more advanced phonology course, LING 601, and with the 500-level syntax course, LING 509. Changes to description better reflect current course content. Existing course title and description are over 10 years old.

Calendar Copy

Current: Removed language (Include all parts of course)	Proposed: New language
Subject & Number: LING 510 Title: Current Phonological Theory Course Career: Graduate Units: 3 Approved Hours: 3-0-0 Fee index: 6 Faculty: Arts Department: Linguistics Typically Offered: Every year Description: Current approaches to phonological theory, focusing on constraint-based analysis. Prerequisite: LING 310 or consent of Department.	Subject & Number: LING 510 Title: Phonological Theory Course Career: Graduate Units: 3 Approved Hours: 3-0-0 Fee index: 6 Faculty: Arts Department: Linguistics Typically Offered: Every year Description: Overview of phonological theory, comparing different approaches to selected theoretical issues. Prerequisite: LING 310 or consent of Department.

Faculty of Arts	Linguistics
Level of change (choose one only)	<input type="checkbox"/> Undergraduate <input checked="" type="checkbox"/> Graduate
Contact Person:	Grace Jamieson
Department/Unit Approval Date:	March 13, 2023

Rationale for change (Indicate other consultation groups, departments, units or faculties)

Changes to course description and title will make LING 601 align better with the 500-level phonology course, LING 510, and with the 600-level syntax course, LING 602. Changes to description better reflect current course content. Existing course title and description are over 10 years old.

Calendar Copy

Current: Removed language (Include all parts of course)	Proposed: New language
Subject & Number: LING 601 Title: Phonology ! Course Career: Graduate Units: 3 Approved Hours: 0-3S-0 Fee index: 6 Faculty: Arts Department: Linguistics Typically Offered: Every year Description: Current approaches to phonological theory, focusing on constraint-based analysis-advanced level. Prerequisite: consent of Department.	Subject & Number: LING 601 Title: Advanced Phonology Course Career: Graduate Units: 3 Approved Hours: 0-3S-0 Fee index: 6 Faculty: Arts Department: Linguistics Typically Offered: Every year Description: Critical examination of selected theoretical issues in phonology. Prerequisite: consent of Department.

Faculty of Arts	Linguistics
Level of change (choose one only)	<input type="checkbox"/> Undergraduate <input checked="" type="checkbox"/> Graduate
Contact Person:	Grace Jamieson
Department/Unit Approval Date:	March 13, 2023

Rationale for change (Indicate other consultation groups, departments, units or faculties)

Changes to course description and title will make LING 602 align better with the 500-level syntax course, LING 509, and with the 600-level phonology course, LING 601. Changes to description better reflect current course content. Existing course title and description are over 10 years old.

Calendar Copy

Current: Removed language (Include all parts of course)	Proposed: New language
Subject & Number: LING 602 Title: Seminar in Syntax Course Career: Graduate Units: 3 Approved Hours: 0-3S-0 Fee index: 6 Faculty: Arts Department: Linguistics Typically Offered: Every year Description: Critical examination of selected theoretical issues in morpho syntax. Prerequisite: consent of Department.	Subject & Number: LING 602 Title: Advanced Syntax Course Career: Graduate Units: 3 Approved Hours: 0-3S-0 Fee index: 6 Faculty: Arts Department: Linguistics Typically Offered: Every year Description: Critical examination of selected theoretical approaches to topics in syntax. Prerequisite: consent of Department.

Faculty of Arts	Music
Level of change (choose one only)	<input checked="" type="checkbox"/> Undergraduate <input type="checkbox"/> Graduate
Contact Person:	John Tessier
Department/Unit Approval Date:	April 8, 2022

Rationale for change (Indicate other consultation groups, departments, units or faculties)

Three of the four course number associated with this course the Title were changed. This course number was missed and appears in the calendar with the incorrect title. All four course numbers should have the same name. The numbers previously changed were Mus 446, Mus 646 and Mus 746.

Calendar Copy

Current: Removed language (Include all parts of course)	Proposed: New language
<p>MUSIC 546 – Opera Workshop</p> <p>Course Career undergraduate Units 3 Approved Hours 0-4L-0 Fee index 6 Faculty Arts Department Music Typically Offered two term</p> <p>The coaching and staging of opera literature. Prerequisite: Consent of the Department, based on Audition.</p>	<p>MUSIC 546 – University Opera Theatre</p> <p>Course Career undergraduate Units 3 Approved Hours 0-4L-0 Fee index 6 Faculty Arts Department Music Typically Offered two term</p> <p>The coaching and staging of opera literature. Prerequisite: Consent of the Department, based on Audition.</p>

Faculty of Arts	Music
Level of change (choose one only)	<input type="checkbox"/> Undergraduate <input checked="" type="checkbox"/> Graduate
Contact Person:	John Tessier
Department/Unit Approval Date:	December 14, 2022

Rationale for change (Indicate other consultation groups, departments, units or faculties)

These courses are to be taught in conjunction with MUS 321 & 322, Diction for singers I & II as well as MUS 435 & 436, Vocal Pedagogy I & II. Approved by performance area committee and Music Department Council.

Calendar Copy

Current: Removed language (Include all parts of course)	Proposed: New language
	<p><u>MUSIC 511 – Advanced Diction for Singers I</u></p> <p>Course Career Graduate Units 3 Approved Hours 0-3L-0 Fee index 6 Faculty Arts Department Music Typically Offered either term</p> <p>An advanced application of the International Phonetic Alphabet (IPA) to singing in English and German.</p> <p><u>MUSIC 512 – Advanced Diction for Singers II</u></p> <p>Course Career Graduate Units 3 Approved Hours 0-3L-0 Fee index 6 Faculty Arts Department Music</p> <p>Typically Offered either term An advanced application of the International Phonetic Alphabet (IPA) to singing in French and Italian.</p>

Music 535 Advanced Vocal Pedagogy I

Course Career Graduate

Units 3

Approved Hours 3-0-0

Fee index 6

Faculty Arts

Department Music

Typically Offered either term

An advanced study of vocal techniques, and methods of vocal training in classical singing including the physicality of the instrument.

Music 536 Advanced Vocal Pedagogy II

Course Career Graduate

Units 3

Approved Hours 3-0-0

Fee index 6

Faculty Arts

Department Music

Typically Offered either term

A continuing advanced study of vocal techniques, and methods of vocal training in classical singing, including the physicality of the instrument. Prerequisite: MUSIC 535.

This package contains: [Undergraduate - Courses](#)

Faculty approval date:

AAC Date: September 26, 2023

Page	Department or Unit	What is Changing
2	Art & Design	HADVC 202, 203, 205, 206, 209, 214, 216, 217, 246, 256, 257, 455
9	History	HIST 493
10	Linguistics	LING 319
11	MLCS	GERM 303, 304, 306, 316, 317, 318, 320, 340, 342, 343, 353, 409, 416, 443, 444, 451, 453, 454, 460, 461, 462
20	St. Josephs College	CHRTC 394
21	St. Josephs College	PHIL 369
27	Women's and Gender Studies	WGS 290

Faculty of Arts	Art & Design
Level of change (choose one only)	<input checked="" type="checkbox"/> Undergraduate <input type="checkbox"/> Graduate
Contact Person:	Elizabeth Boone
Department/Unit Approval Date:	September 6, 2023

Rationale for change (Indicate other consultation groups, departments, units or faculties)

These changes have been approved by the HADVC division and the department of Art and Design.

202: This change makes the geographical focus of the course (Europe) clear and removes a note that is no longer relevant. This change will benefit students by providing a more accurate list of courses offered at the UofA.

203: This change makes the geographical focus of the course (Europe) clear and removes a note that is no longer relevant. This change will benefit students by providing a more accurate list of courses offered at the UofA.

205: Faculty vacancies no longer allow us to offer two courses on the nineteenth century (205 and 255). Therefore, the two classes are being combined into one, which will introduce students to the entire 19th century. This change will benefit students by providing a more accurate list of courses offered at the UofA.

206: Faculty vacancies no longer allow us to offer three courses on the twentieth and twenty-first centuries (206, 246, and 256). This course will now cover material through the mid-20th century rather than up to the Second World War. It also more accurately describes the class, which focuses on early 20th century art in Europe rather than around the world. This change will benefit students by providing a more accurate list of courses offered at the UofA.

209: This change better describes the geographical focus of the course (Europe and North America). It also updates old fashioned language. This change will benefit students by providing a more accurate list of courses offered at the UofA.

214: This change better describes the focus of the course. It also mirrors the description for the complementary course on the History of Art Design, and Visual Culture in Japan, which is also offered by the division. This change will benefit students by providing a more accurate list of courses offered at the UofA.

216: This change better describes the focus of the course. This change will benefit students by providing a more accurate list of courses offered at the UofA.

217: This change better describes the content of the course. After teaching the course several times, the instructor has deleted the section on anime due to a lack of time. This change will benefit students by providing a more accurate list of courses offered at the UofA.

246: Faculty vacancies no longer allow us to offer this course, and we are therefore deleting it. The material will now be covered in either HADVC 206 (early and mid-20C) or 256 (late 20C to the present). This change will benefit students by providing a more accurate list of courses offered at the UofA.

255: Faculty vacancies no longer allow us to offer two courses on the nineteenth century (205 and 255). Therefore, the two classes are being combined into one, which will introduce students to the entire 19th century. This change will benefit students by providing a more accurate list of courses offered at the UofA.

256: Faculty vacancies no longer allow us to offer three courses on the twentieth and twenty-first centuries (206, 246, and 256). This course will now cover material from the mid-20th century to the present rather than from the 1970s to the present. This change will benefit students by providing a more accurate list of courses offered at the UofA.

257: This course is no longer taught by the faculty member who wrote the description. The faculty member now teaching the class has reorganized the course and written the new description. This change will benefit students by providing a more accurate description of courses offered at the UofA.

455: This course number is no longer used as faculty members teaching topics in the 19th century prefer to use the less restrictive course number and title: HADVC 411: Special Topics in the History of Art, Design, and Visual Culture. Deleting the class from the calendar will simplify and clarify the curriculum.

Calendar Copy

Current: Removed language (Include all parts of course)	Proposed: New language
<p>Subject & Number: HADVC 202</p> <p>History of Art, Design, and Visual Culture in the Renaissance</p> <p>Course Career: Undergraduate Units: 3 Approved Hours: 3-0-0 Fee index: 6 Faculty Arts Department: Art & Design Typically Offered: either term</p> <p>Description: History of art, design and visual culture in the 15th and 16th centuries, with a focus on the Italian Renaissance, covering global exchange, anatomical illustration, and the invention of the artist. Not open to students with credit in ART H 252.</p>	<p>Subject & Number: HADVC 202</p> <p>History of Art, Design, and Visual Culture in the 15th and 16th Century</p> <p>Course Career: Undergraduate Units: 3 Approved Hours: 3-0-0 Fee index: 6 Faculty Arts Department: Art & Design Typically Offered: either term</p> <p>Description: History of art, design and visual culture in the 15th and 16th centuries, with a focus on the Italian Renaissance, covering global exchange, anatomical illustration, and the invention of the artist.</p>
<p>Subject & Number: HADVC 203</p> <p>History of Art, Design, and Visual Culture in the 17th Century</p> <p>Course Career: Undergraduate Units: 3 Approved Hours: 3-0-0 Fee index: 6 Faculty Arts Department: Art & Design Typically Offered: either term</p> <p>Description: History of art, design and visual culture in the 17th century. Highlights the visual culture of Italy, Spain, France, the Netherlands and Flanders,</p>	<p>Subject & Number: HADVC 203</p> <p>History of Art, Design, and Visual Culture in 17th-Century Europe</p> <p>Course Career: Undergraduate Units: 3 Approved Hours: 3-0-0 Fee index: 6 Faculty Arts Department: Art & Design Typically Offered: either term</p> <p>Description: History of art, design and visual culture in the 17th century. Highlights the visual culture of Italy, Spain, France, the Netherlands and Flanders,</p>

covering representations of the body, politics, and identity in the work of artists such as Caravaggio, Rembrandt, Velázquez, and Rubens. ~~Not open to students with credit in ART H 253.~~

Subject & Number: HADVC 205

History of Art, Design, and Visual Culture, ~~1700-1848~~

Course Career: Undergraduate

Units: 3

Approved Hours: 3-0-0

Fee index: 6

Faculty Arts

Department: Art & Design

Typically Offered: either term

~~Description: History of art, design and visual culture in Europe during the 18th and early 19th centuries, focusing on the Enlightenment and response. Includes discussion of work from the Rococo, Neoclassical, and Romantic periods.~~

Subject & Number: HADVC 206

History of Art, Design, and Visual Culture in ~~the~~ ~~Early 20th Century~~

Course Career: Undergraduate

Units: 3

Approved Hours: 3-0-0

Fee index: 6

Faculty Arts

Department: Art & Design

Typically Offered: either term

~~Description: History of art, design and visual culture from the beginnings of expressionism in the early twentieth century to the onset of the Second World War. Focuses on modernist and avant-garde modes of art and design in their historical context.~~

covering representations of the body, politics, and identity in the work of artists such as Caravaggio, Rembrandt, Velázquez, and Rubens.

Subject & Number: HADVC 205

History of Art, Design, and Visual Culture in 19th-Century Europe

Course Career: Undergraduate

Units: 3

Approved Hours: 3-0-0

Fee index: 6

Faculty Arts

Department: Art & Design

Typically Offered: either term

Description: History of art, design, and visual culture in Europe during the 19th century, focusing on work produced during this socially and politically turbulent time. Includes discussion of Neoclassicism, Romanticism, Realism, Impressionism, and Symbolism.

Subject & Number: HADVC 206

History of Art, Design, and Visual Culture in Early 20th-Century Europe

Course Career: Undergraduate

Units: 3

Approved Hours: 3-0-0

Fee index: 6

Faculty Arts

Department: Art & Design

Typically Offered: either term

Description: History of art, design and visual culture in Europe from the early to mid-20th century. Focuses on modernist and avant-garde modes of art and design in their historical context. Includes discussion of Expressionism, Cubism, Surrealism, and more.

Subject & Number: HADVC 209

History of Modern Design

Course Career: Undergraduate

Units: 3

Approved Hours: 3-0-0

Fee index: 6

Faculty Arts

Department: Art & Design

Typically Offered: either term

Description: History of design from the 18th-century Industrial Revolution to the present. This course includes examples of communication, industrial, fashion and architectural design and urban planning, considering historical socio-political and environmental contexts.

Subject & Number: HADVC 214

Perspectives on the Arts of China

Course Career: Undergraduate

Units: 3

Approved Hours: 3-0-0

Fee index: 6

Faculty Arts

Department: Art & Design

Typically Offered: either term

Description: Introduction to art history as a field of cultural production, studying the arts, design, and visual cultures in China from the neo-lithic era through today.

Subject & Number: HADVC 216

China's Design Revolution

Course Career: Undergraduate

Units: 3

Approved Hours: 3-0-0

Fee index: 6

Subject & Number: HADVC 209

History of Modern Design in Europe and North America

Course Career: Undergraduate

Units: 3

Approved Hours: 3-0-0

Fee index: 6

Faculty Arts

Department: Art & Design

Typically Offered: either term

Description: This course explores how modern design in Europe and North America are shaped by global flows of knowledge, things, and people. The course focuses on decolonizing graphic design, industrial design, fashion design, architectural design, and urban planning.

Subject & Number: HADVC 214

History of Art, Design, and Visual Culture in China

Course Career: Undergraduate

Units: 3

Approved Hours: 3-0-0

Fee index: 6

Faculty Arts

Department: Art & Design

Typically Offered: either term

Description: Introduction to the historical study of art, design, and visual culture in China from the neolithic era to modern times.

Subject & Number: HADVC 216

China's Design Revolution

Course Career: Undergraduate

Units: 3

Approved Hours: 3-0-0

Fee index: 6

Faculty Arts
Department: Art & Design
Typically Offered: either term

Description: ~~This course raises the question: when will China stop manufacturing and start designing? Students will study the historical foundations, theory and practice of sustainable design in China since the end of the Maoist era.~~

Subject & Number: HADVC 217

History of Art, Design, and Visual Culture in Japan

Course Career: Undergraduate
Units: 3
Approved Hours: 3-0-0
Fee index: 6
Faculty Arts
Department: Art & Design
Typically Offered: either term

Description: Introduction to the historical study of art, design, and visual culture in Japan. Includes painting, sculpture, architecture, gardens, decorative arts, prints, ~~and anime~~ and addresses such concerns as identity, nation, tradition, and modernity.

~~Subject & Number: HADVC 246~~

~~History of Art, Design, and Visual Culture in the Mid-20th Century~~

~~Course Career: Undergraduate
Units: 3
Approved Hours: 3-0-0
Fee index: 6
Faculty Arts
Department: Art & Design
Typically Offered: either term~~

~~Description: History of art, design and visual culture in the context of the Cold War and consumer society. Focuses on the persistence of modernism in the postwar era and the diverse challenges to it~~

Faculty Arts
Department: Art & Design
Typically Offered: either term

Description: Students will study the historical foundations, theory, and practice of sustainable design in China in response to our global environmental crisis.

Subject & Number: HADVC 217

History of Art, Design, and Visual Culture in Japan

Course Career: Undergraduate
Units: 3
Approved Hours: 3-0-0
Fee index: 6
Faculty Arts
Department: Art & Design
Typically Offered: either term

Description: Introduction to the historical study of art, design, and visual culture in Japan. Includes painting, sculpture, architecture, gardens, decorative arts, ~~and~~ prints, and addresses such concerns as identity, nation, tradition, and modernity.

Delete this course

from 1940 to 1975. Not open to students with credit in ART H 256 (*3) offered prior to 2012-13.

Subject & Number: HADVC 255

History of Art, Design, and Visual Culture, 1848-1900

Course Career: Undergraduate

Units: 3

Approved Hours: 3-0-0

Fee index: 6

Faculty Arts

Department: Art & Design

Typically Offered: either term

Description: This course examines art, design and visual culture in Europe from the socially and politically turbulent period of 1848 to the end of the long 19th century. Includes discussion of Realism, Impressionism, Symbolism, and Art Nouveau.

Subject & Number: HADVC 256

History of Art, Design, and Visual Culture in the Contemporary Era

Course Career: Undergraduate

Units: 3

Approved Hours: 3-0-0

Fee index: 6

Faculty Arts

Department: Art & Design

Typically Offered: either term

Description: Introduction to key issues in art, design, and visual culture from 1970 to the present, including art and identity, performance and politics, social sculpture, institutional critique, new media,

Delete this course

Subject & Number: HADVC 256

History of Art, Design, and Visual Culture in the Contemporary Era

Course Career: Undergraduate

Units: 3

Approved Hours: 3-0-0

Fee index: 6

Faculty Arts

Department: Art & Design

Typically Offered: either term

Description: Introduction to key issues in art, design, and visual culture from the mid-20th century to the present, including art and identity, performance and politics, social sculpture, institutional critique, new media, bio art, relational

bio art, relational aesthetics, social practice, and the pedagogical turn.

Subject & Number: HADVC 257

History of Art, Design, and Visual Culture in Canada

Course Career: Undergraduate

Units: 3

Approved Hours: 3-0-0

Fee index: 6

Faculty Arts

Department: Art & Design

Typically Offered: either term

Description: ~~History of art, design and visual culture in Canada, from the colonial period to the present. Includes work created by and depicting women and Indigenous peoples, addressing such issues as nature, religion, gender, and national identity.~~

~~Subject & Number: HADVC 455~~

~~Title: Topics in Art, Design and Visual Culture in the Second Half of the 19th Century~~

~~Course Career: undergraduate~~

~~Units: 3~~

~~Approved Hours: 0-3S-0~~

~~Fee index: 6~~

~~Faculty: Arts~~

~~Department: Art & Design~~

~~Typically Offered: either term:~~

~~Description: Prerequisite: consent of Instructor. Note: Students are required to have successfully completed one 300-level HADVC course with a minimum grade of B. Variable content course which may be repeated if topic(s) vary.~~

aesthetics, social practice, and the pedagogical turn.

Subject & Number: HADVC 257

History of Art, Design, and Visual Culture in Canada

Course Career: Undergraduate

Units: 3

Approved Hours: 3-0-0

Fee index: 6

Faculty Arts

Department: Art & Design

Typically Offered: either term

Description: This course covers issues related to land, region, war, and cultural institutions in Canada. Key examples of contemporary art will be used to introduce these histories with a particular focus on art from First Nations, Métis, and Inuit visual culture, leading to discussions of political identity, colonization, and settler colonial relations.

Delete this course.

Faculty of Arts	History, Classics and Religion
Level of change (choose one only)	<input checked="" type="checkbox"/> Undergraduate <input type="checkbox"/> Graduate
Contact Person:	Jane Samson
Department/Unit Approval Date:	10 February, 2023.
For which term will this change take effect?	EARLY IMPLEMENTATION

Rationale

HIST 493 - This course has been taught in recent years as a topics course; the change in title will make clear that the course has variable topics, like our other 400-level topical seminars, and will open its temporal range to include earlier periods. The change can also accommodate honors students whose thesis research can give them an interest in researching in a second topic in this subject area. (Honors students take three 400-level research seminars). Faculty teaching war and society courses approved the change

Course Template

Current: Removed language (Include all parts of course)	Proposed: New language
<p>HIST 493 - War and Society in the Modern World Course Career Undergraduate Units 3 Approved Hours 0-3S-0 Fee index 6 Faculty Arts Department History, Classics, & Religion Typically Offered either term</p> <p>Description Prerequisite: *3 in HIST at the 300-level or consent of Department.</p>	<p>HIST 493 – Topics in War and Society Course Career Undergraduate Units 3 Approved Hours 0-3S-0 Fee index 6 Faculty Arts Department History, Classics, & Religion Typically Offered either term</p> <p>Description Addresses topics examining the impact of military conflict on society. Can be repeated if course content varies. Prerequisite: 3 units in HIST at the 300-level or consent of Department.</p>

Faculty of Arts	Linguistics
Level of change (choose one only)	<input checked="" type="checkbox"/> Undergraduate <input type="checkbox"/> Graduate
Contact Person:	Grace Jamieson
Department/Unit Approval Date:	Dept Meeting Date: April 24, 2023

Rationale for change (Indicate other consultation groups, departments, units or faculties)

This change was brought about as CSD course number changed from CSD 211 from CSD 311 effective Fall 2023.

Calendar Copy

Current: Removed language (Include all parts of course)	Proposed: New language
Subject & Number: LING 319 Title: Child Language Acquisition Course Career: UG Units: 3 Approved Hours: 3-0-0 Fee index: 6 Faculty: Arts Department: Linguistics Typically Offered: every year Description: Basic issues in first language acquisition: theories, research methods, and major findings. Sections may be offered at an increased rate of fee assessment; refer to the Tuition and Fees page in the University Regulations sections of the Calendar. Prerequisite: LING 101, LING 204 and 205 recommended. Not open to students with credit in CSD 211.	Subject & Number: LING 319 Title: Child Language Acquisition Course Career: UG Units: 3 Approved Hours: 3-0-0 Fee index: 6 Faculty: Arts Department: Linguistics Typically Offered: every year Description: Basic issues in first language acquisition: theories, research methods, and major findings. Sections may be offered at an increased rate of fee assessment; refer to the Tuition and Fees page in the University Regulations sections of the Calendar. Prerequisite: LING 101, LING 204 and 205 recommended. Not open to students with credit in CSD 211 or 311 .

Faculty of Arts	Modern Languages and Cultural Studies
Level of change (choose one only)	<input checked="" type="checkbox"/> Undergraduate <input type="checkbox"/> Graduate
Contact Person:	Dr. Natalie Van Deusen
Department/Unit Approval Date:	09/11/23

Rationale for change (Indicate other consultation groups, departments, units or faculties)

The German program currently does not have enough staff to offer a wide range of specific courses. The proposed course changes are meant to streamline and diversify curricular content in German in the framework of the MLCS Major. The goal of the proposed changes and new courses is to:

- 1) create a strong foundational basis with the 300-level courses that we are keeping,
- 2) enrich the curriculum and provide more content flexibility at the 400-level.

The deletion of our advanced language courses GERM 303 and 304 allows students to enter content courses at the 300-level earlier. In order to ensure their adequate language skills, all 300-level content courses in German will include language-building components.

The proposed new 400-level courses will be taught in English and cross-listed with other departments to offer students more choices and flexibility.

The proposed change will allow the German program and its students to have greater flexibility in course options. Students will be able to take a range of courses with a variety of topics and will thus be able to fulfill their requirements in a timely manner.

Consultation was made with the German faculty on July 24, 2023. The proposal was approved by the Department of Modern Languages and Cultural Studies on September 11, 2023.

Calendar Copy

Current: Removed language (Include all parts of course)	Proposed: New language
GERM 303 Advanced German I Course Career Undergraduate Units 3 Approved Hours 4-0-0 Fee index 6	

Faculty Arts

Department Modern Languages & Cult St

Typically Offered either term

Description

A high-intermediate to advanced-level course intended to improve overall proficiency in spoken and written German. Prerequisite: GERM 212 or consent of Department. Note: not to be taken by students with native or near native proficiency.

GERM 304 – Advanced German II

Course Career Undergraduate

Units 3

Approved Hours 4-0-0

Fee index 6

Faculty Arts

Department Modern Languages & Cult St

Typically Offered either term

Description

Prerequisite: GERM 303 or consent of Department. Note: not to be taken by students with native or near native proficiency.

GERM 306 – German/English Phonetics and Phonology

Course Career Undergraduate

Units 3

Approved Hours 3-0-0

Fee index 6

Faculty Arts

Department Modern Languages & Cult St

Typically Offered either term

Description

Phonetic and phonemic analysis of English and German. Contrastive study includes application to teaching and learning. Co-requisite: GERM 303 or consent of Department.

GERM 316 – Introduction to German Applied Linguistics
Course Career Undergraduate
Units 3
Approved Hours 3-0-0
Fee index 6
Faculty Arts
Department Modern Languages & Cult St
Typically Offered either term

Description

Broad introduction to the main fields of German applied linguistics; multilingualism, second language acquisition, sociolinguistics, and discourse analysis. Co-requisite: GERM 303 or consent of Department.

GERM 317 - Teaching German as a Foreign Language
Course Career Undergraduate
Units 3
Approved Hours 3-0-0
Fee index 6
Faculty Arts
Department Modern Languages & Cult St
Typically Offered either term

Description

Issues relevant to teaching German as a foreign language to adult learners. Co-requisite: GERM 303 or consent of Department.

GERM 318 - Language and Society in the German-Speaking World
Course Career Undergraduate
Units 3
Approved Hours 3-0-0
Fee index 6
Faculty Arts
Department Modern Lang & Cultural Studies
Typically Offered either term

GERM 317 - Teaching German as a Foreign Language
Course Career Undergraduate
Units 3
Approved Hours 3-0-0
Fee index 6
Faculty Arts
Department Modern Languages & Cult St
Typically Offered either term

Description

Issues relevant to teaching German as a foreign language to adult learners. Pre-requisite: GERM 212 or consent of Department.

GERM 318 - Language and Society in the German-Speaking World
Course Career Undergraduate
Units 3
Approved Hours 3-0-0
Fee index 6
Faculty Arts
Department Modern Lang & Cultural Studies
Typically Offered either term

Description

This course introduces students to the study of the relationship between the German language and the societies of the German- speaking countries. **Co-**requisite: GERM **303** or consent of Department.

GERM 320 - From Masterpieces to Bestsellers

Course Career Undergraduate

Units 3

Approved Hours 3-0-0

Fee index 6

Faculty Arts

Department Modern Lang & Cultural Studies

Typically Offered either term

Description

Interrogating the popular in texts and reception. **Co-requisite: GERM 303 or consent of Department.**

GERM 340 - Introduction to the Study of Modern

German Literature

Course Career Undergraduate

Units 3

Approved Hours 3-0-0

Fee index 6

Faculty Arts

Department Modern Lang & Cultural Studies

Typically Offered first term

Description

A survey of German-language literature in context since the Enlightenment. **Co-**requisite: GERM **303** or consent of Department.

GERM 342 - Introduction to Translation: German and English

Course Career Undergraduate

Units 3

Approved Hours 3-0-0

Fee index 6

Faculty Arts

Description

This course introduces students to the study of the relationship between the German language and the societies of the German- speaking countries. **Pre-**requisite: GERM **212** or consent of Department.

GERM 340 - Introduction to the Study of Modern

Literature

Course Career Undergraduate

Units 3

Approved Hours 3-0-0

Fee index 6

Faculty Arts

Department Modern Lang & Cultural Studies

Typically Offered first term

Description

A survey of German-language literature in context since the Enlightenment. **Pre-**requisite: GERM **212** or consent of Department.

Department Modern Lang & Cultural Studies

Typically Offered either term

Description

Practice in translating texts in a variety of genres.

Co-requisite: GERM 303 or consent of Department.

Note: This course can also be applied to the MLCS

Certificate in Translation Studies. Not open to

students with credit in GERM 441.

GERM 343 - Postwar Cultures

Course Career Undergraduate

Units 3

Approved Hours 3-0-0

Fee index 6

Faculty Arts

Department Modern Lang & Cultural Studies

Typically Offered either term

Description

Developments in society, politics, and popular as well as high culture from 1945 to the present in German-speaking countries. Co-requisite: GERM 303 or consent of Department.

GERM 353 - Myths, Tales, and Legends

Course Career Undergraduate

Units 3

Approved Hours 3-0-0

Fee index 6

Faculty Arts

Department Modern Lang & Cultural Studies

Typically Offered either term

Description

Storytelling throughout the German-speaking world since the medieval period, focusing on the development and proliferation of oral and written myths, tales, and legends. Co-requisite: GERM 303 or consent of Department.

GERM 343 – Cultures in the 20th and 21st Centuries

Course Career Undergraduate

Units 3

Approved Hours 3-0-0

Fee index 6

Faculty Arts

Department Modern Lang & Cultural Studies

Typically Offered either term

Description

Developments in society, politics, and popular as well as high culture in German-speaking countries in the 20th and 21st centuries. Pre-requisite: GERM 212 or consent of Department.

GERM 353 - Myths, Tales, and Legends

Course Career Undergraduate

Units 3

Approved Hours 3-0-0

Fee index 6

Faculty Arts

Department Modern Lang & Cultural Studies

Typically Offered either term

Description

Storytelling throughout the German-speaking world since the medieval period, focusing on the development and proliferation of oral and written myths, tales, and legends. Pre-requisite: GERM 212 or consent of Department.

GERM 409 – German Dialects

Course Career Undergraduate

Units 3

Approved Hours 0-3S-0

Fee index 6

Faculty Arts

Department Modern Lang & Cultural Studies

Typically Offered either term

Description

A close look at some widely differing German dialects. Basic principles of German dialectology.

Prerequisite: One of GERM 306, 316, 318, or consent of Department.

GERM 416 - Second Language Acquisition: German

Course Career Undergraduate

Units 3

Approved Hours 0-3S-0

Fee index 6

Faculty Arts

Department Modern Lang & Cultural Studies

Typically Offered either term

Description

The course deals with the principles and processes in structured and unstructured language learning and with the different hypotheses and theories concerning language learning, in particular German.

Prerequisite: One of GERM 306, 316, 317, or consent of Department.

GERM 443 – Advanced Translation: German into

English

Course Career Undergraduate

Units 3

Approved Hours 0-3S-0

Fee index 6

Faculty Arts

Department Modern Lang & Cultural Studies

Typically Offered either term

Description

Theories, methods, and strategies of translation in a variety of genres. Prerequisite: GERM 342 or consent of Department. Note: This course can also be applied to the MLCS Certificate in Translation Studies.

GERM 444 - Exercises in Translation: English into German

Course Career Undergraduate

Units 3

Approved Hours 0-3S-0

Fee index 6

Faculty Arts

Department Modern Lang & Cultural Studies

Typically Offered either term

Description

Theories, methods, and strategies of translation in a variety of genres. Prerequisite: GERM 342 or consent of Department. This course can also be applied to the MLCS Certificate in Translation Studies.

GERM 451 - Genre and Aesthetics

Course Career Undergraduate

Units 3

Approved Hours 0-3S-0

Fee index 6

Faculty Arts

Department Modern Lang & Cultural Studies

Typically Offered either term

Description

Examination of a genre such as epic, drama, lyric, satire, crime, melodrama, documentary, etc. and its aesthetic features. Prerequisite: GERM 340 or 343 and MLCS 210 or consent of the department.

GERM 453 - Cultural and Literary Theories
Course Career Undergraduate
Units 3
Approved Hours 0-3S-0
Fee index 6
Faculty Arts
Department Modern Lang & Cultural Studies
Typically Offered either term

Description

Explores theories either of a specific topic or by a specific scholar and their application to texts.
Prerequisite: GERM 340 or 343 and MLCS 210 or consent of the department.

GERM 454 - Gender and Sexuality
Course Career Undergraduate
Units 3
Approved Hours 0-3S-0
Fee index 6
Faculty Arts
Department Modern Lang & Cultural Studies
Typically Offered either term

Description

Studies texts and issues related to gender and sexuality. Prerequisite: GERM 340 or 343 and MLCS 210 or consent of the department.

GERM 460 - Seminar in Literature
Course Career Undergraduate
Units 3
Approved Hours 0-3S-0
Fee index 6
Faculty Arts
Department Modern Lang & Cultural Studies
Typically Offered either term

Description

This course covers literary texts, their generic and aesthetic features, and cultural contexts. Taught in English. This course will not fulfill the Language Other than English requirement of the Faculty of Arts. Course may be taken three times when topics

vary. Prerequisite: consent of Department.

GERM 461 – Seminar in Film

Course Career Undergraduate

Units 3

Approved Hours 0-3S-0

Fee index 6

Faculty Arts

Department Modern Lang & Cultural Studies

Typically Offered either term

Description

This course covers films, their formal and aesthetic features, and cultural contexts. Taught in English.

This course will not fulfill the Language Other than English requirement of the Faculty of Arts. Course may be taken three times when topics vary.

Prerequisite: consent of Department.

GERM 462 – Seminar in Culture

Course Career Undergraduate

Units 3

Approved Hours 0-3S-0

Fee index 6

Faculty Arts

Department Modern Lang & Cultural Studies

Typically Offered either term

Description

This course covers aspects of culture (art, language, environment, etc.) and their meaning and place in history and relationship to society. Taught in English. This course will not fulfill the Language Other than English requirement of the Faculty of Arts. Course may be taken three times when topics vary. Prerequisite: consent of Department.

Faculty of Arts	St. Joseph's College
Level of change (choose one only)	<input checked="" type="checkbox"/> Undergraduate <input type="checkbox"/> Graduate
Contact Person:	Sara McKeon sara.mckeon@ualberta.ca
Department/Unit Approval Date:	St. Joseph's College Faculty Council February 13, 2023

Rationale for change (Indicate other consultation groups, departments, units or faculties)

This request to delete CHRTC 394 (Business Ethics and Christianity) is submitted in tandem with the request to create the new PHIL 369 (Business Ethics) course.

Calendar Copy

Current: Removed language (Include all parts of course)	Proposed: New language
<p>CHRTC 394 – Business Ethics and Christianity</p> <p>Undergraduate 3-0 3-0-0 6 Arts St. Joseph's College Either Term</p> <p>A theological study of ethical issues in business settings, dealing with such themes as employer-employee relations, job security, advertising, distribution of wealth, acquisitive individualism, the common good, and decisions on ethical issues in light of contemporary Catholic teaching.</p>	

Faculty of Arts	St. Joseph's College
Level of change (choose one only)	<input checked="" type="checkbox"/> Undergraduate <input type="checkbox"/> Graduate
Contact Person:	Sara McKeon sara.mckeon@ualberta.ca
Department/Unit Approval Date:	St. Joseph's College Faculty Council February 13, 2023

Rationale for change (Indicate other consultation groups, departments, units or faculties)

St. Joseph's College is the only unit in the Faculty of Arts that offers an undergraduate course in business ethics. Moving the subject, title, and description over from theology to philosophy reflects the appropriateness of the course for students regardless of religious affiliation and without previous theological background. The course content fits with the Mission & Identity of St. Joseph's College, furthers our goal of providing relevant and distinct elective courses to UofA students, and supports students in disciplines such as Business and Commerce. We have requested that CHRTC 394 be deleted and this course created to replace it.

Attachments:

- Support from Dr. Leo Wong, Associate Dean, Education, Alberta School of Business
- Support from Dr. Jack Zupko, Interim Chair, Department of Philosophy (Winter 2023 term)

Calendar Copy

Current: Removed language (Include all parts of course)	Proposed: New language
	<p>PHIL 369 - Business Ethics</p> <p>Undergraduate 3.0 3-0-0 6 Arts St. Joseph's College Either Term</p> <p>Ethical issues in business settings, dealing with such themes as employer-employee relations, job security, advertising, distribution of wealth, acquisitive individualism, the common good, and decision-making. Recommended preparation: 3 units in PHIL. Note: Not available for credit with CHRTC 394.</p>

Faculty of Arts	Women's and Gender Studies
Level of change (choose one only)	<input checked="" type="checkbox"/> Undergraduate <input type="checkbox"/> Graduate
Contact Person:	Michelle Meager
Department/Unit Approval Date:	02/23/23

Rationale for change (Indicate other consultation groups, departments, units or faculties)

This is a **new course** that reflects the primary area of research of one of the department’s faculty members. It will be an introductory level course providing students with a foundation for higher level courses in feminist environmental humanities and posthumanities already offered in the department (e.g. WGS 390: Environmental Feminisms and Social Justice and topics courses such as Anthropocene Feminisms and Feminism at the End of the World.) A version of the course was taught in Fall 2018 (WGS 298 Current Issues, with 25 students), and topics related to animals and feminism have been popular in existing courses including WGS 244 Critical Disability Studies and WGS 240 Feminism and Food.. In addition to serving students in WGS, this course will be of interest to students from across the faculty and the university; it has direct support from both the Sustainability Council and the Department of Philosophy

OPTIONAL: Within the Faculty of Arts there is one course taught with a focus on animals: PHIL 345 Humans and Animals. Our proposed course is quite distinct from PHIL 345 insofar as it will be all about links between anti-speciesism and feminism, anti-racism, anti-colonialism, disability and sexual liberation movements, and interlocking oppressions including speciesism. In an email dated May 2nd, 2023, outgoing Philosophy Chair Jack Zupko reported that “the Philosophy Department officially has no concerns about "Feminism and Animals" moving forward.”

A more recent correspondence with Philosophy (July 14, 2023), the current Chair Jennifer Welchman has agreed to include WGS 290 on the approved course list for the undergraduate Certificate in Ethics.

Additionally, we have consulted with the Sustainability Council, who report in an email dated July 14, 2023: “We are supportive of adding this course as a Related course to our new course list for students who enrolled in the certificate after July 1, 2022 and as an Elective course to our old list for students who enrolled prior to July 1, 2022”

Calendar Copy

Current: Removed language (Include all parts of course)	Proposed: New language
	<p>WGS 290 -Feminism and Animals</p> <p>Course Career Undergraduate Units 3 Approved Hours 3-0-0 Fee index 6 Faculty Arts Department Women’s and Gender Studies Typically Offered either term</p> <p>Description Feminist contributions to animal ethics, critical</p>

	<p>animal studies, and animal-focused work in feminist environmental humanities and social sciences.</p>
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This package contains: [Undergraduate - Minor Program Changes](#)

Faculty approval date:

AAC Date: September 26, 2023

Page	Department or Unit	What is Changing
2	Arts Work Experience	Arts Page
8	Arts Work Experience	Planning Page
11	Arts Work Experience	Psychology Page
15	Philosophy	BA - adding PHIL 202 and 203
17	Philosophy	BA Honors - adding PHIL 202 and 203

Faculty of Arts	Faculty / Undergraduate Student Services
Level of change	<input checked="" type="checkbox"/> Undergraduate <input type="checkbox"/> Graduate
Type of Change	<input checked="" type="checkbox"/> Program <input type="checkbox"/> Regulation
Are there corresponding course changes?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Additional Documentation Attached	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Contact Person:	Laura Kerslake
Department/Unit Approval Date:	Arts EXP+ Learning Hub/USS – September 19, 2023

Rationale for change (Indicate other consultation groups, departments, units or faculties)

Things to consider (maximum 500 words, delete these questions before entering your own text):

The reason for the outlined changes are to better align our program eligibility requirements and calendar entry wording with other co-operative education and work-integrated learning programs on campus. The changes will benefit our students' overall understanding of Arts Work Experience (AWE) and by lowering the amount of credits required to be eligible, students can join AWE earlier in their degree. By making the suggested wording and credit changes to the program we will be able to communicate our program requirements to students more clearly and by having similar requirements to other programs on campus it creates less confusion for both staff and students. With one of the biggest changes being the amount of credits required for acceptance, historically students took 30 credits in their first year. We are seeing less of that and students are only taking 24. By lowering the credit limit to 24 credits, first year students can apply at the end of their first year rather than waiting another semester before applying. This provides them with the opportunity to participate in the career education and services available to them earlier in their degree programs.

<https://calendar.ualberta.ca/content.php?catoid=39&navoid=12229#cooperative-education-work-experience-program>

Calendar Copy

Current: Removed language (Include name of program)	Proposed: New language
Co-operative Education (Work Experience) Program The Faculty of Arts offers a flexible range of options for students in Arts undergraduate degree programs to add career-related work experience to their degree. These work experience opportunities are normally paid, though alternative forms of compensation may be considered and approved on an individual basis.	Co-operative Education (Work Experience) Program The Faculty of Arts offers a flexible range of options for students in Arts undergraduate degree programs to add career-related, paid, full-time work experience to their degree. Students in Arts Work Experience can complete four, eight, 12 or 16 months of work experience with one or more employers beginning in September,

Any questions should be directed to the Arts Work Experience (AWE) office (artsworkeexperience@ualberta.ca or uab.ca/awe). Specific questions related to students' academic programs will be referred to an Academic Advisor in Arts Undergraduate Student Services.

Arts Co-operative Education Program - The Arts Co-op Program is structured so that students integrate study with periods of paid, skill-building work experience in cooperating employer organizations. ~~Work terms are typically 4 to 8 months in duration.~~ To graduate with the designation of "Arts Co-operative Education Program," students must successfully complete the following requirements:

- i. [WKEXP 801](#), [WKEXP 802](#), [WKEXP 803](#), [WKEXP 804](#) (with a minimum of one work term during the Fall or Winter Terms).
- ii. Required pre- and post-employment career education.
- iii. All degree program requirements.
- iv. Degree requirements must be completed in a term following the final work term.
- v. **A minimum cumulative total of 12 months of work experience, and not more than 16 months.** [Move Up]

January or May. Any questions should be directed to the Arts Work Experience (AWE) office (artsworkeexperience@ualberta.ca or uab.ca/awe). Specific questions related to students' academic programs will be referred to an Academic Advisor in Arts Undergraduate Student Services.

Arts Co-operative Education Program - The Arts Co-op Program is structured so that students integrate study with periods of paid, skill-building work experience with cooperating employer organizations. To graduate with the designation of "Arts Co-operative Education Program," students must successfully complete the following Arts Co-operative Education requirements:

- i. **A minimum cumulative total of 12 months of work experience, and not more than 16 months.** [Moved]
- ii. [WKEXP 801](#), [WKEXP 802](#), [WKEXP 803](#), [WKEXP 804](#) (with a minimum of one work term during the Fall or Winter Terms).
- iii. Required pre- and post-employment career education.
- iv. All degree program requirements.
- v. Degree requirements must be completed in a term following the final work term.

Discipline Specific Internships - Students enrolled in the BA Planning, BA Psychology, or BA Environmental Studies may add paid, full-time work experience to their degree programs by successfully completing at least 8-months of work experience. Upon completing 8-months of work experience with one or more employers, Students will receive an "Arts Co-operative Education Program" designation on their degree parchment. To graduate with the designation of "Arts Co-operative Education Program," students must

Individual Work Terms - Students may ~~also~~ add paid work experience to their degree by ~~registering in individual WKEXP courses. This option allows students to take~~ on single 4- or 8-month work term(s). A student who completes one or more Arts WKEXP course(s) ~~successfully~~, as well as the required pre- and ~~postemployment~~ career education, but does not complete all the requirements of the Co-op program, will have completion of the courses noted on their transcript, but will receive no ~~other~~ designation.

~~Note that WKEXP courses require the submission of a report by the student on their work experience and are graded on a CR/NC basis. WKEXP courses do not carry any associated course weight towards degree requirements.~~

~~To participate in the Arts Co-op program or individual work terms, apply to the Arts Work Experience office. For more information please visit: uab.ca/awe.~~

successfully complete the following Discipline Specific Internship requirements:

- i. A minimum cumulative total of 8-months of work experience
- ii. Completion of WKEXP 801 and WKEXP 802, at minimum. WKEXP 803 and WKEXP 804 are optional.
- iii. Required pre- and post-employment career education.
- iv. All degree program requirements. Degree requirements must be completed in a term following the final work term.

Individual Work Terms - Students may add paid, full-time, work experience to their degree by taking on a single 4- or 8-month work term(s) and registering in individual WKEXP courses. A student who ~~successfully~~ completes one or more Arts WKEXP course(s), as well as the required pre- and ~~post-employment~~ career education, but does not complete all the requirements of the Co-op program, will have ~~the~~ completion of the courses noted on their transcript, but will receive no designation.

Work Experience (WKEXP) Courses - Once a work term is secured, students are registered in a WKEXP course (WKEXP 801, WKEXP 802, WKEXP 803 or WKEXP 804). Participants are considered to be full-time students at the University of Alberta when enrolled in WKEXP courses. Students should not register in academic credit courses for the period(s) during which they are on a work term.

Eligibility Requirements:

- Be a continuing student in a Faculty of Arts undergraduate degree program.
- Normally have completed between 30 and 105 units of course weight at the time of entry.
- Have a minimum Grade Point Average (GPA) of 2.3. Admission is competitive and presentation of the minimum GPA may not be sufficient to qualify for participation.

Notes:

- Some Arts disciplines (e.g. Psychology, Planning) run Department Specific Internships. More information about these Internship Programs is available by referencing the associated Department's Calendar entry or by contacting the Arts Work Experience office (see contact information above).
- Student participation in all Arts Work Experience options is voluntary. It is not possible to guarantee that all students wishing to participate will be able to do so.
- All job opportunities secured by AWE staff are posted. Students who are interested in developing their own job opportunity must have it approved by staff of the Arts Work Experience office. Students may not find a suitable job opportunity, or might not be successful in the job application process. Every effort will be made to assist students in finding suitable job opportunities; however, students who wish to participate are ultimately responsible for securing employment.

All WKEXP courses require the submission of a final report, providing the student with the opportunity to reflect on their work experience. All work experience courses are graded on a pass/fail basis and are recorded on the student's transcript with CR/NC notations following the completion of the work term. WKEXP courses do not carry any associated credit weight towards degree requirements.

To participate in Arts Work Experience, students can apply online. For more information please visit: uab.ca/awe or email artsworkexperience@ualberta.ca.

Eligibility Requirements:

- Be a continuing student in a Faculty of Arts undergraduate degree program.
- Normally have completed between 24 and 105 units of course credit weight at the time of entry.
- Have a minimum Grade Point Average (GPA) of 2.3. Admission is competitive and presentation of the minimum GPA may not be sufficient to qualify for participation.

Notes:

- Student participation in all Arts Work Experience options is voluntary. It is not possible to guarantee that all students wishing to participate will be able to do so.
- All suitable job opportunities are posted by AWE staff and are available to students enrolled in AWE. Students who are interested in proposing their own job opportunity must have it approved by Arts Work Experience staff. Students may not find a suitable job opportunity, or might not be successful in the job application process. Every effort will be made to assist students in finding suitable job opportunities; however, students who wish to participate are

- The Work Experience Coordinator maintains contact with the student and the employer designate to ensure the experience for both parties is progressing satisfactorily. If the placement is not satisfactory for either the student or the employer, the internship may be terminated and the student would then return to classes at the next available opportunity.
- Students should not register in academic credit courses for the period(s) during which they participate in work experience. Students are considered to be full-time students at the University of Alberta when enrolled in WKEXP courses.
- Participating students should be aware that adding work experience to their degree may result in challenges enrolling in required courses which may not be available every term.

Students should be aware that under the Protection of Persons in Care Act, students can be required to satisfy a criminal records check before being allowed to serve a period of work experience. Refer to [Requirement for Police Information Checks](#).

ultimately responsible for securing employment.

- The Work Experience Coordinator maintains contact with the student and the employer designate to ensure the experience for both parties is progressing satisfactorily. If the work term is not satisfactory for either the student or the employer, the work term may be terminated and the student would then return to classes at the next available opportunity.
- To accommodate Work Experience terms, students normally require between four and five years to complete their full degree requirements.
- Participating students should be aware that adding work experience to their degree may result in potential challenges in enrolling in required courses that may not be available every term.

Under the *Protection for Persons in Care Act*, all new employees, volunteers and other people engaged for services by designated agencies (hospitals, nursing homes, lodges, group homes, etc.) must complete a Police Information Check (also known as a Criminal Record Check, Security Clearance Check, or Police Clearance), which must include a Vulnerable Sector Check. In addition, certain other agencies, organizations, and educational facilities may require students to present a Police Information Check prior to entering a practicum, work placement term, internship, or field experience placement. Students who have concerns related to their ability to provide a clear Police Information Check should consult with the Associate Dean, Undergraduate. Students will be informed of the need for a Police Information Check prior to specific practicum (field experience) placement. See [Requirement for Police Information Checks](#) for more information on the general requirements concerning Police

	<p>Information Checks and the fees associated with them.</p>
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Faculty of Arts	Arts Work Experience – USS
Level of change	<input checked="" type="checkbox"/> Undergraduate <input type="checkbox"/> Graduate
Type of Change	<input checked="" type="checkbox"/> Program <input type="checkbox"/> Regulation
Are there corresponding course changes?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Additional Documentation Attached	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Contact Person:	Laura Kerslake
Department/Unit Approval Date:	Planning/ Arts EXP+ Learning Hub/USS – September 19, 2023

Rationale for change (Indicate other consultation groups, departments, units or faculties)

Things to consider (maximum 500 words, delete these questions before entering your own text):

We have decided to centralize Cooperative Education (Work Experience) Route information for all programs in the main calendar entry for Arts program options. This will benefit students by keeping information central, streamlined and accurate among our shared programs with the Faculty of Science. Additionally the Faculty of Science no longer has a separate calendar entry for Planning and Psychology, programs that the Faculty of Arts shares. Finally no other department has a separate calendar entry for Cooperative Education (Work Experience) Route, so this change will make the information more consistent and up to date.

This calendar entry change was approved by the Department of Earth & Atmospheric Sciences on July 27, 2023. The approval was made through email by Robert Summers, Director – School of Urban and Regional Planning and Melissa Dhillon, Program Administrator for the Department of Earth & Atmospheric Sciences.

◀ https://calendar.ualberta.ca/preview_program.php?catoid=39&poid=47349 ▶

Calendar Copy

Current: Removed language (Include name of program)	Proposed: New language
<p>Cooperative Education (Work Experience) Route</p> <p>The Cooperative Education (Work Experience, Planning Internship) Route, gives students enrolled in the BA Planning Major an opportunity to participate in flexible, paid, full-time work experience. Students in Arts Work Experience, Planning Internship can complete four, eight, 12 or 16 months of work experience with one or more employers beginning in September, January or May. Students who successfully complete at least 8 months of work experience will receive an “Arts Co-operative Education Program” designation on their degree parchment. To graduate with the</p>	

designation of "Arts Co-operative Education Program," students must successfully complete the following requirements:

- A minimum cumulative total of 8-months of work experience.
- Completion of WKEXP 801 and WKEXP 802, at minimum. WKEXP 803 and WKEXP 804 are optional.
- Required pre- and post-employment career education.
- All degree program requirements. Degree requirements must be completed in a term following the final work term.

Work Experience (WKEXP) Courses – Once a work term is secured, students are registered in a WKEXP course (WKEXP 801, WKEXP 802, WKEXP 803 or WKEXP 804). Participants are considered to be full-time students at the University of Alberta when enrolled in WKEXP courses. Students should not register in academic credit courses for the period(s) during which they are on a work term.

All WKEXP courses require the submission of a final report, providing the student with the opportunity to reflect on their work experience. All work experience courses are graded on a pass/fail basis and are recorded on the student's transcript with CR/NC notations following the completion of the work term. WKEXP courses do not carry any associated credit weight towards degree requirements.

To participate in Arts Work Experience, the Planning Internship Program, apply online. For more information please visit: uab.ca/awe or email artsworkeexperience@ualberta.ca.

Eligibility Requirements:

- Be a continuing student in the BA Planning Major undergraduate degree program.
- Normally have completed between 24 and 105 units of course credit weight at the time of entry.
- Have a minimum Grade Point Average (GPA) of 2.3. Admission is competitive and presentation of the minimum GPA may not be sufficient to qualify for participation.

Notes:

- Student participation in all Arts Work Experience options is voluntary. It is not

possible to guarantee that all students wishing to participate will be able to do so.

- All suitable job opportunities are posted by AWE staff and are available to students enrolled in AWE. Students who are interested in developing their own job opportunity must have it approved by Arts Work Experience staff. Students may not find a suitable job opportunity, or might not be successful in the job application process. Every effort will be made to assist students in finding suitable job opportunities; however, students who wish to participate are ultimately responsible for securing employment.
- The Work Experience Coordinator maintains contact with the student and the employer designate to ensure the experience for both parties is progressing satisfactorily. If the placement is not satisfactory for either the student or the employer, the internship may be terminated and the student would then return to classes at the next available opportunity.
- Participating students should be aware that adding work experience to their degree may result in a degree extension and potential challenges in enrolling in required courses that may not be available every term.

Under the *Protection for Persons in Care Act*, all new employees, volunteers and other people engaged for services by designated agencies (hospitals, nursing homes, lodges, group homes, etc.) must complete a Police Information Check (also known as a Criminal Record Check, Security Clearance Check, or Police Clearance), which must include a Vulnerable Sector Check. In addition, certain other agencies, organizations, and educational facilities may require students to present a Police Information Check prior to entering a practicum, work placement term, internship, or field experience placement. Students who have concerns related to their ability to provide a clear Police Information Check should consult with the Associate Dean, Undergraduate. Students will be informed of the need for a Police Information Check prior to specific practicum (field experience) placement. See Requirement for Police Information Checks for more information on the general requirements concerning Police Information Checks and the fees associated with them.

Faculty of Arts	Arts Work Experience – USS
Level of change	<input checked="" type="checkbox"/> Undergraduate <input type="checkbox"/> Graduate
Type of Change	<input checked="" type="checkbox"/> Program <input type="checkbox"/> Regulation
Are there corresponding course changes?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Additional Documentation Attached	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Contact Person:	Laura Kerslake
Department/Unit Approval Date:	Psychology/ Arts EXP+ Learning Hub/USS – September 19, 2023

Rationale for change (Indicate other consultation groups, departments, units or faculties)

Things to consider (maximum 500 words, delete these questions before entering your own text):

We have decided to centralize Cooperative Education (Work Experience) Route information for all programs in the main calendar entry for Arts program options. This will benefit students by keeping information central, streamlined and accurate among our shared programs with the Faculty of Science. Additionally the Faculty of Science no longer has a separate calendar entry for Planning and Psychology, programs that the Faculty of Arts shares. Finally no other department has a separate calendar entry for Cooperative Education (Work Experience) Route, so this change will make the information more consistent and up to date.

This calendar entry change was approved by the Department of Psychology on July 31, 2023. The approval was made through email by Deanna Singhal, Faculty Service Officer, Associate Dean, Teaching and Learning Faculty of Science and Sandra Ziolkowski, Internship Coordinator, Faculty of Arts Department of Psychology.

◀ https://calendar.ualberta.ca/preview_program.php?catoid=39&poid=47439 ▶

Calendar Copy

Current: Removed language (Include name of program)	Proposed: New language
<p>Cooperative Education (Work Experience) Route</p> <p>The Cooperative Education (Work Experience, Psychology Internship) Route, gives students enrolled in the BA Honors Psychology or BA Psychology an opportunity to participate in flexible, paid, full-time work experience. Students in Arts Work Experience, Psychology Internship can complete four, eight, 12 or 16 months of work experience with one or more employers beginning in September, January or May. Students who successfully complete at least 8-months of work</p>	

experience will receive an "Arts Co-operative Education Program" designation on their degree parchment. To graduate with the designation of "Arts Co-operative Education Program," students must successfully complete the following requirements:

- A minimum cumulative total of 8-months of work experience.
- Completion of WKEXP 801 and WKEXP 802, at minimum. WKEXP 803 and WKEXP 804 are optional.
- Required pre- and post-employment career education.
- All degree program requirements. Degree requirements must be completed in a term following the final work term.

Work Experience (WKEXP) Courses – Once a work term is secured, students are registered in a WKEXP course (WKEXP 801, WKEXP 802, WKEXP 803 or WKEXP 804). Participants are considered to be full-time students at the University of Alberta when enrolled in WKEXP courses. Students should not register in academic credit courses for the period(s) during which they are on a work term.

All WKEXP courses require the submission of a final report, providing the student with the opportunity to reflect on their work experience. All work experience courses are graded on a pass/fail basis and are recorded on the student's transcript with CR/NC notations following the completion of the work term. WKEXP courses do not carry any associated credit weight towards degree requirements.

To participate in Arts Work Experience, the Psychology Internship Program, apply [online](#). For more information please visit: uab.ca/awe or email artsworkexperience@ualberta.ca.

Eligibility Requirements:

- Be a continuing student in the BA Honors Psychology Major or BA Psychology Major undergraduate degree program.
- Normally have completed between 24 and 105 units of course credit weight at the time of entry.
- Have a minimum Grade Point Average (GPA) of 2.3. Admission is competitive and

presentation of the minimum GPA may not be sufficient to qualify for participation.

Notes:

- Student participation in all Arts Work Experience options is voluntary. It is not possible to guarantee that all students wishing to participate will be able to do so.
- All suitable job opportunities are posted by AWE staff and are available to students enrolled in AWE. Students who are interested in developing their own job opportunity must have it approved by Arts Work Experience staff. Students may not find a suitable job opportunity, or might not be successful in the job application process. Every effort will be made to assist students in finding suitable job opportunities; however, students who wish to participate are ultimately responsible for securing employment.
- The Work Experience Coordinator maintains contact with the student and the employer designate to ensure the experience for both parties is progressing satisfactorily. If the placement is not satisfactory for either the student or the employer, the internship may be terminated and the student would then return to classes at the next available opportunity.
- Participating students should be aware that adding work experience to their degree may result in a degree extension and potential challenges in enrolling in required courses that may not be available every term.

Under the *Protection for Persons in Care Act*, all new employees, volunteers and other people engaged for services by designated agencies (hospitals, nursing homes, lodges, group homes, etc.) must complete a Police Information Check (also known as a Criminal Record Check, Security Clearance Check, or Police Clearance), which must include a Vulnerable Sector Check. In addition, certain other agencies, organizations, and educational facilities may require students to present a Police Information Check prior to entering a practicum, work placement term, internship, or field experience placement. Students who have concerns related to their ability to provide a clear Police Information Check should consult with the

Associate Dean, Undergraduate. Students will be informed of the need for a Police Information Check prior to specific practicum (field experience) placement. See [Requirement for Police Information Checks](#) for more information on the general requirements concerning Police Information Checks and the fees associated with them.

Faculty of Arts	Philosophy
Level of change	<input checked="" type="checkbox"/> Undergraduate <input type="checkbox"/> Graduate
Type of Change	<input checked="" type="checkbox"/> Program <input type="checkbox"/> Regulation
Are there corresponding course changes?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Additional Documentation Attached	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Contact Person:	Phil Corkum
Department/Unit Approval Date:	April 13, 2023

Rationale for change (Indicate other consultation groups, departments, units or faculties)

The history requirement for the BA Honors major has long been a part of our program, since we follow the view, standardly held in the field, that appreciation of the history of philosophy is a pedagogically important part of one's education in philosophy.

The requirement is currently 6 units that the student may choose from a selection of six courses often offered and which together provide good coverage of historical periods of Western philosophy. These two new additions to what classes can contribute to satisfying the history requirement offer students greater breadth of coverage and greater diversity of history of philosophy, by including courses that cover historical periods of non-Western philosophy. They are both courses that have been offered in previous years, and are both being offered in the 2023-24 year.

https://calendar.ualberta.ca/preview_program.php?catoid=39&poid=47393

Calendar Copy

Current: Removed language (Include name of program)	Proposed: New language
Honors in Philosophy [Arts] Honors in Philosophy General Information Students planning to apply for admission to the Honors program should consult BA Honors for admission requirements. See BA Honors for Faculty regulations concerning the Honors program. Program Requirements Honors in Philosophy requires a minimum of 48 units to a maximum of 60 units in Philosophy. Course Requirements PHIL 498 - Honors Essay	Honors in Philosophy [Arts] Honors in Philosophy General Information Students planning to apply for admission to the Honors program should consult BA Honors for admission requirements. See BA Honors for Faculty regulations concerning the Honors program. Program Requirements Honors in Philosophy requires a minimum of 48 units to a maximum of 60 units in Philosophy. Course Requirements PHIL 498 - Honors Essay

In addition to PHIL 498 above, a least 12 units at the 400-level in PHIL is required.

3 units selected from
(Formal Reasoning)

PHIL 120 - Symbolic Logic I
PHIL 220 - Symbolic Logic II
PHIL 325 - Risk, Choice, and Rationality

6 units selected from
(History of Philosophy)

PHIL 230 - Ancient Greek Philosophy
PHIL 233 - Trial and Execution of Socrates
PHIL 240 - Descartes to Hume
PHIL 333 - Aristotle
PHIL 336 - Medieval and Renaissance
Philosophy
PHIL 343 - Kant to Nietzsche

In addition to PHIL 498 above, a least 12 units at the 400-level in PHIL is required.

3 units selected from
(Formal Reasoning)

PHIL 120 - Symbolic Logic I
PHIL 220 - Symbolic Logic II
PHIL 325 - Risk, Choice, and Rationality

6 units from
(History of Philosophy)

PHIL 202 Indian Philosophy
PHIL 203 Islamic Philosophy
PHIL 230 - Ancient Greek Philosophy
PHIL 233 - Trial and Execution of Socrates
PHIL 240 - Descartes to Hume
PHIL 333 - Aristotle
PHIL 336 - Medieval and Renaissance
Philosophy
PHIL 343 - Kant to Nietzsche

Faculty of Arts	Philosophy
Level of change	<input checked="" type="checkbox"/> Undergraduate <input type="checkbox"/> Graduate
Type of Change	<input checked="" type="checkbox"/> Program <input type="checkbox"/> Regulation
Are there corresponding course changes?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Additional Documentation Attached	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Contact Person:	Phil Corkum
Department/Unit Approval Date:	April 13, 2023

Rationale for change (Indicate other consultation groups, departments, units or faculties)

The history requirement for the BA major has long been a part of our program, since we follow the view, standardly held in the field, that appreciation of the history of philosophy is a pedagogically important part of one's education in philosophy.

The requirement is currently 6 units that the student may choose from a selection of six courses often offered and which together provide good coverage of historical periods of Western philosophy. These two new additions to what classes can contribute to satisfying the history requirement offer students greater breadth of coverage and greater diversity of history of philosophy, by including courses that cover historical periods of non-Western philosophy. They are both courses that have been offered in previous years, and are both being offered in the 2023-24 year.

https://calendar.ualberta.ca/preview_program.php?catoid=39&poiid=47349

Calendar Copy

Current: Removed language (Include name of program)	Proposed: New language
<p>Major in Philosophy [Arts] General Information See Bachelor of Arts for additional regulations and requirements.</p> <p>Requirements for the Major Minimum of 30 units to a maximum of 48 units at the senior level in PHIL, including:</p> <p>3 units from (Formal Reasoning)</p> <p>PHIL 120 - Symbolic Logic I (as a junior level course, this does not apply to the 30-unit senior level requirement) PHIL 220 - Symbolic Logic II PHIL 325 - Risk, Choice, and Rationality</p>	<p>Major in Philosophy [Arts] General Information See Bachelor of Arts for additional regulations and requirements.</p> <p>Requirements for the Major Minimum of 30 units to a maximum of 48 units at the senior level in PHIL, including:</p> <p>3 units from (Formal Reasoning)</p> <p>PHIL 120 - Symbolic Logic I (as a junior level course, this does not apply to the 30-unit senior level requirement) PHIL 220 - Symbolic Logic II PHIL 325 - Risk, Choice, and Rationality</p>

6 units from
(History of Philosophy)

PHIL 230 - Ancient Greek Philosophy
PHIL 233 - Trial and Execution of Socrates
PHIL 240 - Descartes to Hume
PHIL 333 - Aristotle
PHIL 336 - Medieval and Renaissance
Philosophy
PHIL 343 - Kant to Nietzsche

6 units from
(History of Philosophy)

PHIL 202 Indian Philosophy
PHIL 203 Islamic Philosophy
PHIL 230 - Ancient Greek Philosophy
PHIL 233 - Trial and Execution of Socrates
PHIL 240 - Descartes to Hume
PHIL 333 - Aristotle
PHIL 336 - Medieval and Renaissance
Philosophy
PHIL 343 - Kant to Nietzsche

Faculty (& Department or Academic Unit):	Augustana Faculty/Faculty of Education
Contact Person:	
Level of change: (choose one only)	<ul style="list-style-type: none"> • Undergraduate
Type of change request: (check all that apply)	<ul style="list-style-type: none"> • Program • Regulation
For which term is this intended to take effect?	Fall 2024, with admissions beginning in Fall 2023
Does this proposal have corresponding course changes? (Should be submitted at the same time)	No

Rationale

Things to consider (maximum 500 words): Why is this being changed; How will it benefit students/department/unit; How is this comparable to similar programs (internal or external); Historical context; Impacts to administration or program structure; Consultation with stakeholders

The new Bachelor of Education in Elementary Education (Augustana/Education) was approved at the October 12, 2023 Programs Committee (see [Motion and Final Document Summary](#) pages 4-16).

At the September 21, 2023 Faculty of Education UAAC meeting it was noted that the admission requirements sections regarding After-Degree Applicants, and Special, and Visiting Students be removed as they are not eligible for this program and was added in error. The October 12th Programs Committee materials did not have these sections deleted – an edit was agreed upon by both Augustana and Education and this edit is now reflected in the calendar language. This Calendar Change proposal to delete these 3 sections can come forward as course and minor program changes to the November 9th meeting of the GFC Programs Committee.

Additionally, an editorial error was noted in the terminology of course requirements that did not align with the use of the terminology for Education courses in BEd programs. Minor edits were made to align the terminology to both Augustana and Education Faculties' terminologies (attached pg 13).

The admission deadlines for the Bachelor of Education in Elementary Education (Augustana/Education) will be the same as the standard admission deadlines for Augustana Faculty (See [current Calendar page](#)) This will require the Augustana Faculty Admission Deadline Chart heading that currently reads "Bachelor of Arts, Bachelor of Management, Bachelor of Science, Bachelor of Science/Bachelor of Education (Secondary) Combined Degrees Program (Augustana)" to be updated to include "Bachelor of Education Elementary Education (Augustana/Education)" in the program listing with admissions deadlines that align with the Faculty of Education.

Calendar Copy

URL in current Calendar (or "New page")	
Current Copy: Removed language	Proposed Copy: New language
<p>Admission Requirements</p> <p>Bachelor of Education in Elementary Education (Augustana/Education)</p> <p>High School Applicants</p> <p>High school applicants will be considered for admission based on their average on five subjects noted below.</p> <p>Subject Requirements</p> <ol style="list-style-type: none"> 1. English Language Arts 30-1 2. Three subjects from Group A, and/or C. 3. One additional subject from Group A, B, C, or Physical Education 30 (5 credits), or 30-level CTS course (5 credits). 4. Mathematics 30-2 may be used for admission to the Bachelor of Education in Elementary Education (Augustana/Education) program <p>High school-level courses are based on the Alberta Education curriculum. Prospective students who completed high school education from outside Alberta should review the Admission Course Equivalents for acceptable high school courses in the three categories at www.admissions.ualberta.ca.</p> <p>For general high school admission requirements refer to High School Applicants.</p> <p>Note: Proficiency in an Indigenous language recognized in Canada (e.g., Cree, Slavey, etc.) will be accepted to meet a Group A admission requirement. Proficiency is measured either by a test, administered by the University if such can be arranged, or by boards of examiners appointed by the University. Candidates having passed the required test of an Indigenous language have their averages calculated on the remaining four matriculation subjects.</p>	<p>Admission Requirements</p> <p>Bachelor of Education in Elementary Education (Augustana/Education)</p> <p>High School Applicants</p> <p>High school applicants will be considered for admission based on their average on five subjects noted below.</p> <p>Subject Requirements</p> <ol style="list-style-type: none"> 1. English Language Arts 30-1 2. Three subjects from Group A, and/or C. 3. One additional subject from Group A, B, C, or Physical Education 30 (5 credits), or 30-level CTS course (5 credits). 4. Mathematics 30-2 may be used for admission to the Bachelor of Education in Elementary Education (Augustana/Education) program <p>High school-level courses are based on the Alberta Education curriculum. Prospective students who completed high school education from outside Alberta should review the Admission Course Equivalents for acceptable high school courses in the three categories at www.admissions.ualberta.ca.</p> <p>For general high school admission requirements refer to High School Applicants.</p> <p>Note: Proficiency in an Indigenous language recognized in Canada (e.g., Cree, Slavey, etc.) will be accepted to meet a Group A admission requirement. Proficiency is measured either by a test, administered by the University if such can be arranged, or by boards of examiners appointed by the University. Candidates having passed the required test of an Indigenous language have their averages calculated on the remaining four matriculation subjects.</p>

Postsecondary Transfer Applicants**General Requirements:**

- a. Applicants must present successful completion of at least 24 units transferable course weight applicable to the specific degree program for which they have applied. Those applicants who do not present at least 24 units of course weight, are considered as high school applicants. See [High School Applicants](#) for admission information.
- b. Satisfactory standing in the Faculty or postsecondary institution from which they wish to transfer.
- c. An AGPA of at least 2.0. (See [Transfer from a Postsecondary Institution](#) for information about the calculation of the AGPA.)

Notes

1. **Recommended Courses for the first year(s) of study:** Applicants should present those postsecondary courses relevant to the Bachelor of Education in Elementary Education (Augustana/Education) program.
2. **Admission with Transfer Credit:** A maximum of 30 units of course weight obtained at another postsecondary institution may be granted as transfer credit toward the Bachelor of Education in Elementary Education (Augustana/Education) program. The year of program to which an applicant is admitted depends on the number of transferable credits applicable to the BEd program for which they have applied. Year 2: 24-30 units of course weight.
3. Students who are granted transfer credit should be aware that receiving transfer credit toward a BEd program does not guarantee that all of the courses will be counted toward their placement on the teacher salary grid by the Teacher Qualifications Service (TQS). The TQS is a provincial agency that has the sole authority for evaluating courses for teacher salary purposes.

After-Degree Applicants**General Requirements****Postsecondary Transfer Applicants****General Requirements:**

- a. Applicants must present successful completion of at least 24 units transferable course weight applicable to the specific degree program for which they have applied. Those applicants who do not present at least 24 units of course weight, are considered as high school applicants. See [High School Applicants](#) for admission information.
- b. Satisfactory standing in the Faculty or postsecondary institution from which they wish to transfer.
- c. An AGPA of at least 2.0. (See [Transfer from a Postsecondary Institution](#) for information about the calculation of the AGPA.)

Notes

1. **Recommended Courses for the first year(s) of study:** Applicants should present those postsecondary courses relevant to the Bachelor of Education in Elementary Education (Augustana/Education) program.
2. **Admission with Transfer Credit:** A maximum of 30 units of course weight obtained at another postsecondary institution may be granted as transfer credit toward the Bachelor of Education in Elementary Education (Augustana/Education) program. The year of program to which an applicant is admitted depends on the number of transferable credits applicable to the BEd program for which they have applied. Year 2: 24-30 units of course weight.
3. Students who are granted transfer credit should be aware that receiving transfer credit toward a BEd program does not guarantee that all of the courses will be counted toward their placement on the teacher salary grid by the Teacher Qualifications Service (TQS). The TQS is a provincial agency that has the sole authority for evaluating courses for teacher salary purposes.

All applicants must present the following:

1. A three or four year degree from an accredited postsecondary institution.
- 2.
3. An Admission GPA (AGPA) of at least 2.0, or equivalent, based on the most recent graded and transferable 24 units of course weight.

Note: Bed programs in the Elementary Route vary in length (see [BEd and BEd \(After Degree\)](#)). The length of the program will depend on the courses that a student presents at the time of admission. The Elementary After Degree program is normally two years in length.

Students whose BEd After Degree program consists of fewer than 60 units of course weight may need additional postsecondary courses in order to receive two full years of credit toward their placement on the teacher salary grid when they are evaluated by the Teacher Qualifications Service (TQS). The TQS is a provincial agency that has the sole authority for evaluating post-secondary studies for teacher salary purposes.

Nonmatriculated Applicants

General Requirements

- 1.
2. 1. English Language Arts 30-1 or 6 units in transferable English at the 100-level
- 3.
4. 2. Another 30-level subject from Group A, B, or C
5. (or equivalent).
6. 3. Presentation of Faculty minimum average on (1)
7. and (2), and a competitive AGPA if any
8. postsecondary-level coursework is presented.
9. 4. Presentation of no more than 21 units of course
10. weight of graded and transferable
11. postsecondary-level coursework.

Note: Any applicant who has successfully completed 24 units of course weight of graded and transferable postsecondary-level coursework or more at the postsecondary level will be considered a transfer

Nonmatriculated Applicants

General Requirements

1. English Language Arts 30-1 or 6 units in transferable English at the 100-level
2. Another 30-level subject from Group A, B, or C (or equivalent).
3. Presentation of Faculty minimum average on (1) and (2), and a competitive AGPA if any postsecondary-level coursework is presented.
4. Presentation of no more than 21 units of course weight of graded and transferable postsecondary-level coursework.

Note: Any applicant who has successfully completed 24 units of course weight of graded and transferable postsecondary-level coursework or more at the postsecondary level will be considered a transfer applicant (see [Transfer from a Postsecondary Institution](#) and [High School Applicants](#)).

Admission of Indigenous Applicants

The Augustana Faculty encourages Indigenous students' study toward the Bachelor of Education degree. The Faculty recognizes that Indigenous applicants (including status and non-status Indians, Inuit, and Métis) have traditionally been under-represented in the teaching field. To assist more Indigenous students to achieve education degrees, the Admissions Committee will consider additional qualified applicants over and above the Indigenous

applicant (see [Transfer from a Postsecondary Institution](#) and [High School Applicants](#)).

Admission of Indigenous Applicants

The Augustana Faculty encourages Indigenous students' study toward the Bachelor of Education degree. The Faculty recognizes that Indigenous applicants (including status and non-status Indians, Inuit, and Métis) have traditionally been under-represented in the teaching field. To assist more Indigenous students to achieve education degrees, the Admissions Committee will consider additional qualified applicants over and above the Indigenous students who may be admitted in the regular competition for places in the Faculty. Until the Indigenous enrolment of the Faculty reaches 10% of total enrolment, up to 5% of admissions to the Faculty will be allocated to Indigenous applicants. Indigenous students who wish to be considered for these places must attain the minimum admission requirements of their chosen route. Also see [Admission of Indigenous Applicants](#).

Readmission After an Absence of 12 Months or Longer

A candidate returning to the Augustana Faculty after a break of 12 months or longer must apply and compete for readmission unless prior approval to stop out was granted, in which case only application for readmission is necessary.

Special Students

See [Special Students](#).

To be considered for admission as a Special Student in the Faculty of Education, applicants must normally

1. Possess a Bachelor of Education degree from an
2. accredited postsecondary institution;
3. Present a minimum AGPA of 2.0;
4. Be in satisfactory standing in their previous
5. postsecondary institution;
6. Meet the English Language proficiency
7. requirements as specified in Language
8. Proficiency Requirements.

students who may be admitted in the regular competition for places in the Faculty. Until the Indigenous enrolment of the Faculty reaches 10% of total enrolment, up to 5% of admissions to the Faculty will be allocated to Indigenous applicants. Indigenous students who wish to be considered for these places must attain the minimum admission requirements of their chosen route. Also see [Admission of Indigenous Applicants](#).

Readmission After an Absence of 12 Months or Longer

A candidate returning to the Augustana Faculty after a break of 12 months or longer must apply and compete for readmission unless prior approval to stop out was granted, in which case only application for readmission is necessary.

In certain circumstances, practising teachers from outside Alberta may be admitted as Special Students to meet the certification requirements specified by Alberta Education. Students in these cases must be recommended by the Teacher Certification and Development Branch of Alberta Education.

Priority in admissions is given to applicants to degree programs.

Priority in course registrations is given to students who have been admitted to degree programs.

Visiting Students

Students from other postsecondary institutions are eligible to be considered for admission to the Faculty of Education as Visiting Students if

1. They are registered in an Education degree/transfer program at their home institution;
2. They have completed a minimum of 24 units of course weight at their home institution;
3. They present a minimum AGPA of 2.0;
4. Their academic record shows satisfactory standing;
5. Their home institution provides a letter of permission.

Notes

- 1.
2. Normally, Visiting Students are not permitted to register for Field Experience courses. To arrange for a school placement, students must ask their home institution to contact the Assistant Dean, Field Experiences, before they apply.
- 3.
4. A Visiting Student applicant who has had two or more unsuccessful attempts in any previous Field Experience course(s), at any institution(s), will not be allowed to register in EDFX courses.

Applicants Who Have Previously Been Required to Withdraw

Applicants who have been twice required to withdraw from any postsecondary program(s) or institution(s) will not *normally* be considered for admission or readmission to the Augustana Faculty.

<p>Applicants Who Have Previously Been Required to Withdraw</p> <p>Applicants who have been twice required to withdraw from any postsecondary program(s) or institution(s) will not <i>normally</i> be considered for admission or readmission to the Augustana Faculty.</p>	
<p>Bachelor of Education in Elementary Education (Augustana/Education)</p> <p>General Information Underlying Principles The following principles underlie all teacher preparation programs:</p> <ol style="list-style-type: none"> 1. The education of a teacher is a continuous, life-long process. In addition to emphasizing basic or fundamental preparation, the initial pre-service experience should aid the development of attitudes that encourage self-evaluation and improvement, and the acquisition of knowledge and skills that facilitate life-long learning. 2. All teacher preparation degree programs provide intending teachers with essential practical skills, a knowledge of theory and its relationship to practice, liberal studies, and subject-matter competence. 3. Augustana Faculty and the Faculty of Education are committed to providing quality teacher preparation programs; both faculties recognize the importance of continuously monitoring, evaluating and refining its offerings to adequately reflect changes in society and advances in knowledge. 4. The Bachelor of Education degree consists of a minimum of 120 units. <p>In addition, the Bachelor of Education in Elementary Education (Augustana/Education) program particularly seeks to support students graduating from high school in rural regions and to encourage students in the program to find placements in rural areas</p> <p>Program Planning</p>	<p>Bachelor of Education in Elementary Education (Augustana/Education)</p> <p>General Information Underlying Principles The following principles underlie all teacher preparation programs:</p> <ol style="list-style-type: none"> 1. The education of a teacher is a continuous, life-long process. In addition to emphasizing basic or fundamental preparation, the initial pre-service experience should aid the development of attitudes that encourage self-evaluation and improvement, and the acquisition of knowledge and skills that facilitate life-long learning. 2. All teacher preparation degree programs provide intending teachers with essential practical skills, a knowledge of theory and its relationship to practice, liberal studies, and subject-matter competence. 3. Augustana Faculty and the Faculty of Education are committed to providing quality teacher preparation programs; both faculties recognize the importance of continuously monitoring, evaluating and refining its offerings to adequately reflect changes in society and advances in knowledge. 4. The Bachelor of Education degree consists of a minimum of 120 units. <p>In addition, the Bachelor of Education in Elementary Education (Augustana/Education) program particularly seeks to support students graduating from high school in rural regions and to encourage students in the program to find placements in rural areas</p> <p>Program Planning</p>

The Faculties of Augustana and Education provide students with an official program outline when they are admitted. Using this, students are expected to be able to identify remaining course requirements for their particular degree program.

Students are responsible for being acquainted with all applicable regulations and meeting the requirements for the degree as outlined. Any exceptions to the requirements must be approved in writing by the Augustana Associate Dean (Academic) or the Associate Dean (Education Student Services), with one copy to be placed in the student's file and one to be given to the student.

Elementary Education

Elementary Education prepares teachers to teach all subjects and to facilitate the learning of all children at the elementary school level within our multicultural society. Teaching proficiency depends on knowledge of subject matter, pedagogy, critical thinking and problem-solving skills, professional ethics, sensitivity to and respect for children and the sociocultural contexts in which they live, and an understanding of schooling in their social/political/economic environment. Developing attributes, fostering a sense of community, and developing a strong professional commitment reflected in a personal philosophy of education are the intent of Elementary Education.

Components of the Program

All students in the Elementary Route are enrolled in a generalist program that prepares prospective teachers in the required elementary school subjects. This degree consists of 120 units. Students should consult the program sheet provided at the time of their admission and seek advice from the Augustana Student Academic Services Office or the Faculty of Education Student Services Office.

Note: No more than 6 units in junior English, or equivalent, may be taken for credit in a Bachelor of Education degree program.

Program Requirements (120 units)

Years 1 and 2 (Augustana Faculty)

Introductory Education Courses (6 units)

- AUEDC 210 - Introduction to Educational

The Faculties of Augustana and Education provide students with an official program outline when they are admitted. Using this, students are expected to be able to identify remaining course requirements for their particular degree program.

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Components of the Program

All students in the Elementary Route are enrolled in a generalist program that prepares prospective teachers in the required elementary school subjects. This degree consists of 120 units. Students should consult the program sheet provided at the time of their admission and seek advice from the Augustana Student Academic Services Office or the Faculty of Education Student Services Office.

Note: No more than 6 units in junior English, or equivalent, may be taken for credit in a Bachelor of Education degree program.

Program Requirements (120 units)

Years 1 and 2 (Augustana Faculty)

Introductory Education Courses (6 units)

- AUEDC 210 - Introduction to Educational

<ul style="list-style-type: none"> Technology ● AUEFX 200 - Introduction to the Profession of Teaching <p>Generalist Elements Courses (42 units)</p> <p>a. Aboriginal and Indigenous Histories and Culture (3 units) 3 units chosen from</p> <ul style="list-style-type: none"> ● AUIND 101 - Introduction to Indigenous Studies ● AUIND 300 - Selected Topics in Indigenous Studies ● AUSOC 101 - Introducing Sociology: Principles and Practice ● AUSOC 103 - Introducing Sociology: Institutions and Insight ● AUHIS 369 - History of Canada's Indigenous Peoples <p>b. Fine Arts (6 units) 6 units chosen from</p> <ul style="list-style-type: none"> ● Any AUART ● Any AUDRA ● Any AUMUS <p>c. Language/Literature (9 units) 3 units chosen from</p> <ul style="list-style-type: none"> ● AUENG 102 ● 6 units chosen from: <ul style="list-style-type: none"> ○ Any AUENG 200-level or higher ○ AULAN 101 - Introduction to Linguistic Analysis <p>d. Mathematics (6 units) 6 units chosen from</p> <ul style="list-style-type: none"> ● AUMAT 107 - Higher Arithmetic ● AUMAT 116 - Calculus Concepts and Modeling ● AUMAT 120 - Linear Algebra I ● AUSTA 153 - Introductory Applied Statistics or AUSTA 215 - Statistical Methods for the Natural Science ● Any AUMAT 200-level or higher <p>e. Natural Science (6 units) A minimum of 3 units chosen from</p> <ul style="list-style-type: none"> ● Any AUBIO ● Any AUCHE ● Any AUENV ● Any AUPHY 	<ul style="list-style-type: none"> Technology ● AUEFX 200 - Introduction to the Profession of Teaching <p>Generalist Elements Courses (42 units)</p> <p>a. Aboriginal and Indigenous Histories and Culture (3 units) 3 units chosen from</p> <ul style="list-style-type: none"> ● AUIND 101 - Introduction to Indigenous Studies ● AUIND 300 - Selected Topics in Indigenous Studies ● AUSOC 101 - Introducing Sociology: Principles and Practice ● AUSOC 103 - Introducing Sociology: Institutions and Insight ● AUHIS 369 - History of Canada's Indigenous Peoples <p>b. Fine Arts (6 units) 6 units chosen from</p> <ul style="list-style-type: none"> ● Any AUART ● Any AUDRA ● Any AUMUS <p>c. Language/Literature (9 units) 3 units chosen from</p> <ul style="list-style-type: none"> ● AUENG 102 ● 6 units chosen from: <ul style="list-style-type: none"> ○ Any AUENG 200-level or higher ○ AULAN 101 - Introduction to Linguistic Analysis <p>d. Mathematics (6 units) 6 units chosen from</p> <ul style="list-style-type: none"> ● AUMAT 107 - Higher Arithmetic ● AUMAT 116 - Calculus Concepts and Modeling ● AUMAT 120 - Linear Algebra I ● AUSTA 153 - Introductory Applied Statistics or AUSTA 215 - Statistical Methods for the Natural Science ● Any AUMAT 200-level or higher <p>e. Natural Science (6 units) A minimum of 3 units chosen from</p> <ul style="list-style-type: none"> ● Any AUBIO ● Any AUCHE ● Any AUENV ● Any AUPHY
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<ul style="list-style-type: none"> ● AUPED 112 - Structural Human Anatomy ● AUPED 215 - Introduction to Human Physiology I ● AUPED 216 - Introduction to Human Physiology II ● AUPED 344 - Introduction to Human Nutrition <p>3 units chosen from list e. above or from</p> <ul style="list-style-type: none"> ● AUPHI 350 - Philosophy of Science <p>f. Physical and Health Education (6 units)</p> <p>3 units chosen from</p> <ul style="list-style-type: none"> ● Any AUPAC ● Any AUPED (AUPED 222 - Introduction to Movement Activities of Youth [Ages 5-12] is recommended) <p>3 units chosen from</p> <ul style="list-style-type: none"> ● AUPED 241 - Lifetime Fitness and Wellness ● AUSOC 271 - The Family <p>g. Social Science (6 units)</p> <p>3 units in Canadian history chosen from:</p> <ul style="list-style-type: none"> ● AUHIS 260 - An Introduction to the Study of Canadian History to 1867 ● AUHIS 261 - An Introduction to the Study of Canadian History, 1867 to the Present ● AUHIS 271 The History of Women in Canadian Society ● AUHIS 375 - Introduction to Canadian Environmental History ● AUHIS 360/361 - Selected Topics in Canadian History <p>3 units chosen from:</p> <ul style="list-style-type: none"> ● AUCLA 100 - Greek Civilization ● AUCRI 200 - Young Offenders and the law ● AUCRI 353 - Law, Politics, and the Judicial System ● AUECO 101 - Introduction to Microeconomics ● AUECO 102 - Introduction to Macroeconomics ● AUENV 324 - Resource and Environmental Management ● Any AUHIS additional to the Canadian History requirement completed above ● AUIDS 230 - Introduction to Gender and Women's Studies ● AUIDS 302 - Exploring Body Issues ● AUIND 101 - Introduction to Indigenous Studies 	<ul style="list-style-type: none"> ● AUPED 112 - Structural Human Anatomy ● AUPED 215 - Introduction to Human Physiology I ● AUPED 216 - Introduction to Human Physiology II ● AUPED 344 - Introduction to Human Nutrition <p>3 units chosen from list e. above or from</p> <ul style="list-style-type: none"> ● AUPHI 350 - Philosophy of Science <p>f. Physical and Health Education (6 units)</p> <p>3 units chosen from</p> <ul style="list-style-type: none"> ● Any AUPAC ● Any AUPED (AUPED 222 - Introduction to Movement Activities of Youth [Ages 5-12] is recommended) <p>3 units chosen from</p> <ul style="list-style-type: none"> ● AUPED 241 - Lifetime Fitness and Wellness ● AUSOC 271 - The Family <p>g. Social Science (6 units)</p> <p>3 units in Canadian history chosen from:</p> <ul style="list-style-type: none"> ● AUHIS 260 - An Introduction to the Study of Canadian History to 1867 ● AUHIS 261 - An Introduction to the Study of Canadian History, 1867 to the Present ● AUHIS 271 The History of Women in Canadian Society ● AUHIS 375 - Introduction to Canadian Environmental History ● AUHIS 360/361 - Selected Topics in Canadian History <p>3 units chosen from:</p> <ul style="list-style-type: none"> ● AUCLA 100 - Greek Civilization ● AUCRI 200 - Young Offenders and the law ● AUCRI 353 - Law, Politics, and the Judicial System ● AUECO 101 - Introduction to Microeconomics ● AUECO 102 - Introduction to Macroeconomics ● AUENV 324 - Resource and Environmental Management ● Any AUHIS additional to the Canadian History requirement completed above ● AUIDS 230 - Introduction to Gender and Women's Studies ● AUIDS 302 - Exploring Body Issues ● AUIND 101 - Introduction to Indigenous Studies
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- AUIND 367 - The Fur Trade
- AUIND 370 - Oral History
- AUPHI 101 - Introduction to Western Philosophy I: Ancient and Medieval Philosophy
- AUPHI 102 - Introduction to Western Philosophy II: Modern Philosophy
- AUPHI 210 - Epistemology: Theories of Knowledge
- AUPHI 240 - Ancient Political Philosophy
- AUPHI 241 - Modern Political Philosophy
- AUPHI 340 - Contemporary Social and Political Philosophy
- AUPHI 355 - Philosophy and the Environment
- AUPHI 357 - Philosophy of Religion I
- AUPHI 358 - Philosophy of Religion II
- Any AUPOL
- AUREL 100 - Introduction to Religion
- AUREL 250 - Theories of Religion
- AUREL 263 - Spritiulization and Globalization
- AUSOC 101 - Introducing Sociology: Principles and Practice
- AUSOC 103 - Introducing Sociology: Institutions and Insight
- AUSOC 105 - Social Anthropology
- AUSOC 377 - Theoretical Approaches to Gender

Augustana Core Foundation Courses (6 units)

- AUIDS 101 - First Year Seminar
- AUIDS 201 - Collaborative Learning

Open Option or Education Elective (6 units)

Students may take the following two recommended courses to fulfill the Education Elective requirement and 3 units of options. Alternatively, students may complete 6 units of Open Options and complete the Education Elective requirement in Year 3 or 4.

- AUPSY 103 - Introduction to Psychology
- AUEPS 258 - Educational Psychology for Teaching (see note 1).

Notes:

1. AUEPS 258 is considered an equivalent to Education Elective EDPY 302.
2. Options may be taken in Years 1 to 4 and can be used to further develop generalist teaching interests and/or create areas of specialization.

Years 3 and 4 (Faculty of Education)

- AUIND 367 - The Fur Trade
- AUIND 370 - Oral History
- AUPHI 101 - Introduction to Western Philosophy I: Ancient and Medieval Philosophy
- AUPHI 102 - Introduction to Western Philosophy II: Modern Philosophy
- AUPHI 210 - Epistemology: Theories of Knowledge
- AUPHI 240 - Ancient Political Philosophy
- AUPHI 241 - Modern Political Philosophy
- AUPHI 340 - Contemporary Social and Political Philosophy
- AUPHI 355 - Philosophy and the Environment
- AUPHI 357 - Philosophy of Religion I
- AUPHI 358 - Philosophy of Religion II
- Any AUPOL
- AUREL 100 - Introduction to Religion
- AUREL 250 - Theories of Religion
- AUREL 263 - Spritiulization and Globalization
- AUSOC 101 - Introducing Sociology: Principles and Practice
- AUSOC 103 - Introducing Sociology: Institutions and Insight
- AUSOC 105 - Social Anthropology
- AUSOC 377 - Theoretical Approaches to Gender

Augustana Core Foundation Courses (6 units)

- AUIDS 101 - First Year Seminar
- AUIDS 201 - Collaborative Learning

Recommended Augustana Courses (6 units)

Students may take the following two recommended courses to fulfill a Senior Education Course requirement and 3 units of options. Alternatively, students may complete 6 units of Open Options and complete the EDPY 302 Senior Education Course requirement in Year 3 or 4.

- AUPSY 103 - Introduction to Psychology
- AUEPS 258 - Educational Psychology for Teaching (see note 1).

Notes:

1. AUEPS 258 is considered an equivalent to Senior Education Course EDPY 302.
2. Options may be taken in Years 1 to 4 and can be used to further develop generalist teaching interests and/or create areas of specialization.

Years 3 and 4 (Faculty of Education)

Students should see Note 1 below for information about proceeding into Year 3 of the degree program.

Introductory Education Courses (3 units)

- EDU 211 - Aboriginal Education and Context for Professional and Personal Engagement

Senior Education Courses (30 units)

- EDEL 305 - Language Arts in the Elementary School
- EDEL 316 - Communication Through Mathematics Education
- EDEL 330 - Curriculum and Pedagogy in Elementary School Science
- EDEL 335 - Curriculum and Pedagogy in Elementary School Social Studies
- EDPY 301 - Introduction to Inclusive Education: Adapting Classroom Instruction for Students with Special Needs
- EDPY 302 - Learning and Development in Childhood
- EDPY 303 - Educational Assessment
- EDPS 410 - Ethics and Law in Teaching

6 units chosen from

- EDEL 302 - Curriculum and Pedagogy in Elementary School Art
- EDEL 321 - Introduction to Curriculum and Pedagogy in Elementary School Physical Education
- EDEL 325 - Curriculum and Pedagogy in Elementary School Music
- EDEL 345 - Introduction to Curriculum and Pedagogy in Elementary School Health Education

Field Placements (15 units)

- EDFX 325 - Elementary Route: Introductory Field Experience
- EDFX 425 - Elementary Route: Advanced Field Experience

Options (12 units)

- 3 units in EDEL (400-Level) Option
- 0 - 3 units in Education Elective
- 6 - 9 units in Open Options

Notes

1. The requirement to proceed from Augustana to the Faculty of Education in Year 3 will be a 2.0 GPA. Augustana students who are part of

Students should see Note 1 below for information about proceeding into Year 3 of the degree program.

Introductory Education Courses (3 units)

- EDU 211 - Aboriginal Education and Context for Professional and Personal Engagement

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- EDEL 305 - Language Arts in the Elementary School
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6 units chosen from

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Field Placements (15 units)

- EDFX 325 - Elementary Route: Introductory Field Experience
- EDFX 425 - Elementary Route: Advanced Field Experience

Options (12 units)

- 3 units in EDEL (400-Level) Option
- 0 - 3 units in Education Elective
- 6 - 9 units in Open Options

Notes

1. The requirement to proceed from Augustana to the Faculty of Education in Year 3 will be a 2.0 GPA. Augustana students who are part of

<p>this program will not enter into the general competitive pool for Year 3 transfer students into the Faculty of Education.</p> <ol style="list-style-type: none"> 2. EDEL 305 and EDEL 316 must be taken in Year 3 as pre/co-requisites to EDFX 325. 3. The Introductory Professional Term is normally offered in Year 3 Winter Term only and consists of EDFX 325, 6 units EDEL courses, and EDPY 303. 4. The Advanced Professional Term is normally offered in Year 4 Fall Term only and consists of EDFX 425, 3 units EDEL, and EDPY 301. 5. Not all courses are offered each term or in a 13-week or condensed format. 6. Students should be aware of course prerequisites and refer to their individual program sheets for the proper sequencing of courses. 	<p>this program will not enter into the general competitive pool for Year 3 transfer students into the Faculty of Education.</p> <ol style="list-style-type: none"> 2. EDEL 305 and EDEL 316 must be taken in Year 3 as pre/co-requisites to EDFX 325. 3. The Introductory Professional Term is normally offered in Year 3 Winter Term only and consists of EDFX 325, 6 units EDEL courses, and EDPY 303. 4. The Advanced Professional Term is normally offered in Year 4 Fall Term only and consists of EDFX 425, 3 units EDEL, and EDPY 301. 5. Not all courses are offered each term or in a 13-week or condensed format. 6. Students should be aware of course prerequisites and refer to their individual program sheets for the proper sequencing of courses.
<p>Bachelor of Education in Elementary Education (Augustana/Education)</p> <p>The Faculty of Education and the Augustana Faculty offer a version of the Bachelor of Education in Elementary Education degree program that is designed to allow students to complete the degree by spending the first two years of their program in the Augustana Faculty and the final two years of their program in the Faculty of Education.</p> <p>The degree program is structured to identify 60 units of Augustana courses that satisfy the requirements of the first two years of a University of Alberta Bachelor of Education in Elementary Education, with students then proceeding to the Faculty of Education to complete the final 60 units.</p> <p>For more information, including program requirements, see [link to above Bachelor of Education in Elementary Education (Augustana/Education) information on the 'Augustana Faculty - Programs' page in the Calendar]</p>	<p>Bachelor of Education in Elementary Education (Augustana/Education)</p> <p>The Faculty of Education and the Augustana Faculty offer a version of the Bachelor of Education in Elementary Education degree program that is designed to allow students to complete the degree by spending the first two years of their program in the Augustana Faculty and the final two years of their program in the Faculty of Education.</p> <p>The degree program is structured to identify 60 units of Augustana courses that satisfy the requirements of the first two years of a University of Alberta Bachelor of Education in Elementary Education, with students then proceeding to the Faculty of Education to complete the final 60 units.</p> <p>For more information, including program requirements, see [link to above Bachelor of Education in Elementary Education (Augustana/Education) information on the 'Augustana Faculty - Programs' page in the Calendar]</p>

Reviewed/Approved by:

REQUIRED: Education Undergraduate Academic Affairs Council, Approved - October 19, 2023

OPTIONAL: Other internal faculty approving bodies, consultation groups, or departments, and approval dates.
Augustana approves of these revisions to update the Program as it was approved at the October 12, 2023 Programs
Committee Approved Motion

Faculty (& Department or Academic Unit):	Education (Education Psychology)
Contact Person:	Kent Lee
Level of change: (choose one only) [?]	<input type="checkbox"/> Undergraduate <input checked="" type="checkbox"/> Graduate
For which term will this change take effect?	Fall 2024

Rationale

Things to consider (maximum 500 words): Why is this being changed; How will it benefit students/department/unit; How is this comparable to similar programs (internal or external); Historical context; Impacts to administration or program structure; Consultation with stakeholders

This new course is being proposed as a graduate-level foundational knowledge enrichment course for students in the Teaching English as a Second Language (TESL) program. Historically, for MEd TESL students who wished to supplement their learning, we have encouraged them to enroll in 400-level courses. This new course on the topic of TESL methodology would allow us to tailor the course content and learning activities at a level appropriate for graduate students and eliminate the need for “course-extra-to-degree” forms from FGSR. Other graduate programs such as *Teaching English as an Additional Language* at the University of Calgary typically have similar foundational knowledge courses built into a prescribed program schedule. This proposed course would complement the current course offerings from faculty members in the TESL program and provide students additional flexibility in designing a program of study that best fit their learning needs and career aspirations. Regarding the addition of “Priority given to EDPY TESL Diploma, MEd, and PhD students. Students from other programs require consent of the TESL program”, there is a need to ensure that (a) the students in the TESL program have priority access to the class so they can meet their program requirements, and (b) students from other programs have adequate background preparation for the course content.

Course Template

Current: Removed language	Proposed: New language
Subject & Number	Subject & Number EDPY 568
Title	Title
Course Career	English Language Teaching Principles and Methodologies
Units	Course Career GRAD
Approved Hours	Units ★ 3
Fee index	Approved Hours (3-0-0)
Faculty	Fee index (fi 6)
Department	Faculty Education
Typically Offered	Department Educational Psychology
Description	Typically Offered Either
	Description
	Students will learn how to respond to adult ESL/EAL students' learning needs using current English language teaching principles and techniques, design lesson plans, evaluate resources, and assess learner progress. Priority

	given to EDPY TESL Diploma, MEd, and PhD students. Students from other programs require consent of the TESL program. Students cannot receive credit for both EDPY 418 and EDPY 568.
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Reviewed/Approved by:

REQUIRED: Faculty Council (or delegate) and approval date. October 2, 2023 by the Faculty of Education Graduate Academic Affairs Council (GAAC).
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OPTIONAL: Other internal faculty approving bodies, consultation groups, or departments, and approval dates.

Faculty (& Department or Academic Unit):	Education (Educational Psychology)
Contact Person:	Kent Lee
Level of change: (choose one only) [?]	<input type="checkbox"/> Undergraduate <input checked="" type="checkbox"/> Graduate
For which term will this change take effect?	Fall 2024

Rationale

Things to consider (maximum 500 words): Why is this being changed; How will it benefit students/department/unit; How is this comparable to similar programs (internal or external); Historical context; Impacts to administration or program structure; Consultation with stakeholders

This new course is being proposed as a graduate-level foundational knowledge enrichment course for students in the Teaching English as a Second Language (TESL) program. Historically, for MEd TESL students who wished to supplement their learning, we have encouraged them to enroll in 400-level courses. This new course on the topic of Foundations of English Language Teaching would allow us to tailor the course content and learning activities at a level appropriate for graduate students and eliminate the need for “course-extra-to-degree” forms from FGSR. Other graduate programs such as *Teaching English as an Additional Language* at the University of Calgary typically have similar foundational knowledge courses built into a prescribed program schedule. This proposed course would complement the current course offerings from faculty members in the TESL program and provide students additional flexibility in designing a program of study that best fit their learning needs and career aspirations. Regarding the addition of “Priority given to EDPY TESL Diploma, MEd, and PhD students. Students from other programs require consent of the TESL program”, there is a need to ensure that (a) the students in the TESL program have priority access to the class so they can meet their program requirements, and (b) students from other programs have adequate background preparation for the course content.

Course Template

Current: Removed language	Proposed: New language
Subject & Number	Subject & Number EDPY 516
Title	Title
Course Career	Foundations in English language teaching
Units	Course Career GRAD
Approved Hours	Units ★ 3
Fee index	Approved Hours (3-0-0)
Faculty	Fee index (fi 6)
Department	Faculty Education
Typically Offered	Department Educational Psychology
Description	Typically Offered Either
	Description
	This course includes a synopsis of theories and principles of second language learning, a historical overview of second language teaching, and an examination of cognitive and affective factors affecting learners'

	acquisition. Features of the learning context will also be discussed. Priority given to EDPY TESL Diploma, MEd, and PhD students. Students from other programs require consent of the TESL program. Students cannot receive credit for both EDPY 416 and EDPY 516.
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Reviewed/Approved by:

REQUIRED: Faculty Council (or delegate) and approval date. October 2, 2023 by the Faculty of Education Graduate Academic Affairs Council (GAAC).
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OPTIONAL: Other internal faculty approving bodies, consultation groups, or departments, and approval dates.

Faculty (& Department or Academic Unit):	Education
Contact Person:	Kent Lee
Level of change: (choose one only) [?]	<input type="checkbox"/> Undergraduate
	<input checked="" type="checkbox"/> Graduate
For which term will this change take effect?	As soon as possible

Rationale

Things to consider (maximum 500 words): Why is this being changed; How will it benefit students/department/unit; How is this comparable to similar programs (internal or external); Historical context; Impacts to administration or program structure; Consultation with stakeholders

This proposed change of language for EDPS 547 reflects the EDID commitments of the University of Alberta and the Faculty of Education as well as the communities that we serve. The change of language also reflects similar changes at many (if not most) institutions in Canada and beyond where this course may also be of interest. The course maintains its critical pedagogical approach to the work of educational leadership for social justice while connecting to issues of equity, diversity, inclusion, and decolonization.

Course Template

Current: Removed language	Proposed: New language
<p>Subject & Number EDPS 547</p> <p>Title Leadership for Social Justice</p> <p>Course Career Graduate Units 3 Approved Hours 3-0-0 Fee index 6 Faculty Education Department Education Typically Offered either term</p> <p>Description This course explores theoretical frameworks of social justice and practical experiences of social justice issues in schools, higher education institutions, and their communities. Students will critically examine concepts of social justice, exclusion, and inclusive education from the perspective of the educational leader as part of a wider educational community.</p>	<p>Subject & Number EDPS 547</p> <p>Title Education Leadership for Equity, Diversity, Inclusion, and Decolonization</p> <p>Course Career Graduate Units 3 Approved Hours 3-0-0 Fee index 6 Faculty Education Department Education Typically Offered either term</p> <p>Description This course takes a leadership and critical praxis approach to understanding how equity, diversity, inclusion, decolonization and social justice are experienced in schools, higher education institutions, and their communities. Students will engage with current research and case studies from the perspective of educational leaders working to create institutional</p>

	change.
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Reviewed/Approved by:

REQUIRED: Faculty Council (or delegate) and approval date. October 2, 2023 by the Faculty of Education Graduate Academic Affairs Council (GAAC).
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OPTIONAL: Other internal faculty approving bodies, consultation groups, or departments, and approval dates.



June 14, 2023

Faculty (& Department or Academic Unit):	Faculty of Engineering, Department of Mechanical Engineering
Contact Person:	David Nobes / Lindsey Westover
Level of change: (choose one only)	<ul style="list-style-type: none"> • <u>Undergraduate</u>
	<ul style="list-style-type: none"> • Graduate
Type of change request: (check all that apply)	<ul style="list-style-type: none"> • <u>Program</u>
	<ul style="list-style-type: none"> • Regulation
For which term is this intended to take effect?	Fall 2024
Does this proposal have corresponding course changes? (Should be submitted at the same time)	NO

Rationale

Things to consider (maximum 500 words): Why is this being changed; How will it benefit students/department/unit; How is this comparable to similar programs (internal or external); Historical context; Impacts to administration or program structure; Consultation with stakeholders

There are two changes being proposed. (1) Changing the requirement from “STAT 337” to “either STAT 337 or STAT 252”. (2) Changing the work experience course requirements. Change (1) is being requested because the Department of Mathematical and Statistical Sciences has indicated that STAT 337 will not be offered in the future. STAT 252 was identified as an alternative course. Change (2) is being requested to remove WKEXP 906 (clinical placement) as a strict requirement of the Plan III – Biomedical Option program. WKEXP 906 can still be used (and is strongly encouraged), however students will now be free to choose non-clinical placements if they wish. To provide background rationale for this change, a survey was conducted with current and former MECE BME students. 81 students responded, spanning 2nd year to 5th year students along with those who have already graduated. Of those surveyed, 79% indicated that they still would have chosen the BME program if there had not been a Clinical Placement requirement. Further, 40% of students who had already completed their clinical placement (20/50) indicated that it was challenging to find a position for WEXP 906. Based on these findings, we believe that removing WEXP 906 as a strict requirement, but still encouraging students to complete it, will not deter students from entering the BME option and will relieve some stress for those students who find it challenging to obtain an appropriate WEXP 906 position. Further, only 20% of students surveyed indicated that they would not choose the BME program again today, suggesting that a large majority of students do find value in the program. The Chair (Doucette), Associate Chair UG (Nobes), current Director of BME (Westover), former Director of BME (Vette), and Department Manager consulted on and approved this change.

Calendar Copy

URL in current Calendar (or "New page") https://calendar.ualberta.ca/preview_program.php?catoid=34&pooid=38721&returnto=10268	
Current Copy: Removed language	Proposed Copy: New language
Year 4 Fall Term 7 <ul style="list-style-type: none"> BME 321 – Human Anatomy and Physiology: Systems ENGG 404 – Engineering Safety and Risk Management – Leadership in Risk Management Complementary Studies Elective (3-0-0) MEC E 563 – Finite Element Method for Mechanical Engineering Program and Technical Elective (3-0-0) STAT 337 - Biostatistics	Year 4 Fall Term 7 <ul style="list-style-type: none"> BME 321 – Human Anatomy and Physiology: Systems ENGG 404 – Engineering Safety and Risk Management – Leadership in Risk Management Complementary Studies Elective (3-0-0) MEC E 563 – Finite Element Method for Mechanical Engineering Program and Technical Elective (3-0-0) Either STAT 337 – Biostatistics or STAT 252 - Introduction to Applied Statistics II
Year 4 Winter <ul style="list-style-type: none"> WKEXP 906 – Engineering Work Experience VI Summer WKEXP 904 – Engineering Work Experience IV	Year 4 Winter <ul style="list-style-type: none"> WKEXP 904 – Engineering Work Experience IV Summer <ul style="list-style-type: none"> WKEXP 905 – Engineering Work Experience V <p>* NOTE: Students in the Mechanical Engineering Biomedical Option can take WKEXP 906 – Engineering Work Experience VI in place of any one of WKEXP 902, 903, 904 or 905.</p>

Reviewed/Approved by:

REQUIRED: Faculty Council (or delegate) and approval date. Department Council approval: Jun 23, 2022 Faculty APC approval: Oct 12, 2022 Faculty ECC approval: Sep 26, 2023
OPTIONAL: Other internal faculty approving bodies, consultation groups, or departments, and approval dates.

Faculty (& Department or Academic Unit):	Faculty of Engineering
Contact Person:	Pierre Mertiny
Level of change: (choose one only)	<input checked="" type="checkbox"/> Undergraduate
	<input type="checkbox"/> Graduate
Type of change request: (check all that apply)	<input type="checkbox"/> Program
	<input checked="" type="checkbox"/> Regulation
For which term is this intended to take effect?	Fall 2024
Does this proposal have corresponding course changes? (Should be submitted at the same time)	No

Rationale

Things to consider (maximum 500 words): Why is this being changed; How will it benefit students/department/unit; How is this comparable to similar programs (internal or external); Historical context; Impacts to administration or program structure; Consultation with stakeholders

ENGG 404 is to be removed as a mandatory course that must be offered by all undergraduate engineering programs.

Each engineering discipline presents its own set of risk profiles and safety considerations. By removing the requirement for each program to include ENGG 404, we will empower individual programs to develop tailored content that addresses the distinct safety needs of their discipline. This will ensure engineering students attain an education that is not only comprehensive but also directly relevant to their fields of study.

Calendar Copy

URL in current Calendar (or "New page")	
Current Copy: Removed language	Proposed Copy: New language
<p>Faculty of Engineering General Information BSc Engineering All Engineering programs include ENGG 400, ENGG 404, MATH 201, MATH 209, one of ENG M 310 or ENG M 401, an ITS elective as described in Impact of Technology on Society (ITS) Elective, and a capstone design course.</p> <p>Engineering Safety and Risk Management Courses Safety, risk, and loss management principles applicable to all engineering activities are covered in ENGG 404 and ENGG 406. These courses provide a basic understanding of the integrated practices of reducing risks to people, environment, assets, and production. The key role of Engineering and Business graduates in this expanding field is explored, including emphasis on the proactive team approach. ENGG 404 is a mandatory course in every program, while ENGG 406 is an elective available in each</p>	<p>Faculty of Engineering General Information BSc Engineering All Engineering programs include ENGG 400, MATH 201, MATH 209, one of ENG M 310 or ENG M 401, an ITS elective as described in Impact of Technology on Society (ITS) Elective, and a capstone design course.</p> <p>Engineering Safety and Risk Management Courses Safety, risk, and loss management principles applicable to all engineering activities are covered in ENGG 404 and ENGG 406. These courses provide a basic understanding of the integrated practices of reducing risks to people, environment, assets, and production. The key role of Engineering and Business graduates in this expanding field is explored, including emphasis on the proactive team approach.</p>

program:	
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Reviewed/Approved by:

REQUIRED: Faculty Council (or delegate) and approval date.

APC Approved: August 23, 2023

EEC Approved: September 26, 2023

OPTIONAL: Other internal faculty approving bodies, consultation groups, or departments, and approval dates.

Faculty (& Department or Academic Unit):	Faculty of Engineering, Department of Mechanical Engineering
Contact Person:	David Nobes / John Doucette
Level of change: (choose one only) [?]	• <u>Undergraduate</u>
	• Graduate
For which term will this change take effect?	Fall 2024

Rationale

Things to consider (maximum 500 words): Why is this being changed; How will it benefit students/department/unit; How is this comparable to similar programs (internal or external); Historical context; Impacts to administration or program structure; Consultation with stakeholders

There are frequently opportunities within Mechanical Engineering to offer new program electives on an 'as available' basis. The ability for the department to offer new and timely program electives is hampered by the new course approval process, especially where academics are available for a limited time to instruct a course that may not be offered regularly in the future.

This course is a 'special topics in mechanical engineering' program elective intended to be available to senior undergraduate students, similar to the graduate special topics courses (MECE 788 or ENGM 670), and other undergraduate special topics courses found in CME 494, CHE 494 and MATE 466. This course would be offered at the discretion of the Chair.

Course Template

Current: Removed language	Proposed: New language
*** NEW COURSE ****	<p>Subject & Number - MECE 488</p> <p>Title - Special Topics in Mechanical Engineering</p> <p>Course Career: Undergraduate</p> <p>Units: 3.5 credits</p> <p>Approved Hours: 3-1-0</p> <p>Fee index: 8</p> <p>Faculty: Engineering</p> <p>Department: Mechanical Engineering</p> <p>Typically Offered: either term OR Spring/Summer</p> <p>Description – This course will be offered at the discretion of the Department of Mechanical Engineering. Topics may vary from year to year. Students should check with the Mechanical Engineering Department Office for details on a specific section topic.</p>

Reviewed/Approved by:

REQUIRED: Faculty Council (or delegate) and approval date.
 Faculty APC approved: October 12, 2022
 Faculty ECC approved: September 26, 2023

OPTIONAL: Other internal faculty approving bodies, consultation groups, or departments, and approval dates.

Faculty (& Department or Academic Unit):	Faculty of Engineering
Contact Person:	Pierre Mertiny
Level of change: (choose one only)	<input checked="" type="checkbox"/> Undergraduate
	<input type="checkbox"/> Graduate
Type of change request: (check all that apply)	<input checked="" type="checkbox"/> Program
	<input type="checkbox"/> Regulation
For which term is this intended to take effect?	Fall 2024
Does this proposal have corresponding course changes? (Should be submitted at the same time)	No

Rationale

Things to consider (maximum 500 words): Why is this being changed; How will it benefit students/department/unit; How is this comparable to similar programs (internal or external); Historical context; Impacts to administration or program structure; Consultation with stakeholders

Add Indigenous Peoples and Technoscience (NS 115) to the list of approved Impact of Technology on Society (ITS) Electives.

As part of the Mechatronics Indigenization Strategy, the Faculty has committed to weaving indigenous worldviews, histories, and perspectives into its undergraduate programs. Adding NS 115 as an ITS Elective will allow undergraduate engineering students to better understand the impact of technology on Indigenous communities and engage with the growing demand for Indigenous governance of the sciences and technologies that affect them.

Calendar Copy

URL in current Calendar (or "New page")	
Current Copy: Removed language	Proposed Copy: New language
<p>Impact of Technology on Society (ITS) Elective A specific requirement of the Canadian Engineering Accreditation Board is study of the impact of technology on society. To meet this requirement, students must take one of the following:</p> <p>ENG M 405 - Engineering, Business and Society HIST 115 - Technology and History HIST 391 - History of Technology HGEO 250 - Sustainable Development and Environmental Management PHIL 265 - Philosophy of Science PHIL 366 - Computers and Culture PHIL 375</p> <p>STS 200 - Introduction to Studies in Science, Technology</p>	<p>Impact of Technology on Society (ITS) Elective A specific requirement of the Canadian Engineering Accreditation Board is study of the impact of technology on society. To meet this requirement, students must take one of the following:</p> <p>ENG M 405 - Engineering, Business and Society HIST 115 - Technology and History HIST 391 - History of Technology HGEO 250 - Sustainable Development and Environmental Management NS 115 - Indigenous Peoples and Technoscience PHIL 265 - Philosophy of Science PHIL 366 - Computers and Culture PHIL 375</p> <p>STS 200 - Introduction to Studies in Science, Technology</p>

and Society SOC 363 - Sociology of Work and Industry SOC 366 - People in Industry SUST 201 - Introduction to Sustainability	and Society SOC 363 - Sociology of Work and Industry SOC 366 - People in Industry SUST 201 - Introduction to Sustainability
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Reviewed/Approved by:

REQUIRED: Faculty Council (or delegate) and approval date. APC Approved: August 23, 2023 EEC Approved: September 26, 2023

OPTIONAL: Other internal faculty approving bodies, consultation groups, or departments, and approval dates.

Faculty (& Department or Academic Unit):	Civil and Environmental Engineering
Contact Person:	Zaher Hashisho (hashisho@ualberta.ca) Carlos Cruz Noguez (cruznogu@ualberta.ca)
Level of change: (choose one only) [?]	•
	• Graduate
For which term will this change take effect?	Fall 2024

Rationale

Things to consider (maximum 500 words): Why is this being changed; How will it benefit students/department/unit; How is this comparable to similar programs (internal or external); Historical context; Impacts to administration or program structure; Consultation with stakeholders

I, Farook Hamzeh, have been teaching this class as a special topics course “CIVE 709- Lean Construction” for the past three years and had the following attendance: - 34 students in 21-22; 29 students in 20-21, and 23 students in 19-20. The CEM group met two years ago and stipulated that “Lean Construction” will be offered as a core course for all graduate students in construction engineering and management as of winter 2021. Which means that CEM students have been taking “Lean Construction” as a core course for the past two years. However, the course was still taught under the title “CIV E 709 -Advanced Topics in Construction Engineering and Management”. Accordingly, the course needs to have a permanent course number in the catalogue. It has been taught during the Winter semester to all masters and PhD students.

As we approached the CEE chair Dr. Samer Adeeb to resolve this issue, he recommended that the course number for the new Lean Construction course would be CivE 611 “Lean Construction”. I hope that the new course will be added to the graduate course listings for Winter 2024. Note that I have been teaching this class for the last three years as “CiveE 709B3” Lean Construction.

Course Template

Current: Removed language	Proposed: New language
New Course	Subject & Number: CIV E 611 Title– Lean Construction Course Career: Graduate Units: 3 Approved Hours: 3-0-0 Fee index: 6 Faculty: Engineering Department: Civil and Environmental Engineering Typically Offered: Either term Description: Lean thinking, Lean theory, production system design, the last planner system, value stream mapping, integrated project delivery, location-based management, target value design, process improvement, choosing by advantages, fundamental project management concepts and techniques to define, plan, and execute construction projects, actions that can be taken to meet and sometimes exceed expectations for project time, cost, and quality, importance of communication and risk management Prerequisite: Consent of instructor

Reviewed/Approved by:

REQUIRED: Faculty Council (or delegate) and approval date.

Approved by Faculty ECC on Sep. 26, 2023

OPTIONAL: Other internal faculty approving bodies, consultation groups, or departments, and approval dates.

Approved by CEE GPC on October 11, 2022

Approved by CEE APC on Jan. 23, 2023

Approved by Faculty GPC on Dec 7, 2022

Approved by Faculty APC on Dec 14, 2022

Faculty (& Department or Academic Unit):	Civil and Environmental Engineering
Contact Person:	Zaher Hashisho (hashisho@ualberta.ca) Carlos Cruz Noguez (cruznogu@ualberta.ca)
Level of change: (choose one only) [?]	
	Graduate
For which term will this change take effect?	Fall 2024

Rationale

Things to consider (maximum 500 words): Why is this being changed; How will it benefit students/department/unit; How is this comparable to similar programs (internal or external); Historical context; Impacts to administration or program structure; Consultation with stakeholders

I have been teaching this class as a special topics course “CIV E 709 B4” for the past three years. Currently the course enrollment is 29 students. The course is very important in construction engineering and management to prepare students to face the challenges imposed by new governmental policies in response to climate change. The course needs to have a permanent course number in the catalogue. It has been taught in Winter terms as an elective course.

Based on the suggestion from the CEE chair Dr. Samer Adeeb, I would like to request a course number change for “CIV E 709 B4” Sustainable Construction to become CIV E 610 “Sustainable Construction”.

Course Template

Current: Removed language	Proposed: New language
<p>***New Course***</p>	<p>Subject & Number: CIV E 610 Title: Sustainable Construction Course Career: Graduate Units: 3 Approved Hours: 3-0-0 Fee index: 6 Faculty: Engineering Department: Civil and Environmental Engineering Typically Offered: Either term Description: An introduction to concepts of Sustainability, Knowledge Management, Multiple Criteria Decision Making (MCDM) and Knowledge-Based Decision Support Systems (KBDSS). Application of KBDSS to achieve sustainability in design, procurement and construction. Prerequisite: Consent of instructor</p>



Reviewed/Approved by:

REQUIRED: Faculty Council (or delegate) and approval date.

Approved by Faculty ECC on Sep. 26, 2023

OPTIONAL: Other internal faculty approving bodies, consultation groups, or departments, and approval dates.

Approved by CEE GPC on October 11, 2022

Approved by CEE APC on Jan. 23, 2023

Approved by Faculty onGPC Dec 7, 2022

Approved by Faculty APC on Dec 14, 2022

Faculty (& Department or Academic Unit):	Civil and Environmental Engineering
Contact Person:	Dr. Tae J. Kwon tjkwon@ualberta.ca
Level of change:	<ul style="list-style-type: none"> • Undergraduate • Graduate
For which term will this change take effect?	Fall 2024

Rationale

Things to consider (maximum 500 words): Why is this being changed; How will it benefit students/department/unit; How is this comparable to similar programs (internal or external); Historical context; Impacts to administration or program structure; Consultation with stakeholders

Geographic information systems (GIS) for transportation has been continuously offered to graduate students in the CEE Department as a CIV E 719 (Advanced Topics in Transportation Engineering) since the winter term of 2018. The course has been well received and attended by graduate students in the CEE Department. Enrollments since its first offering are 21 (W2018), 16 (W2019), 12 (W2020), 9 (W2021), and 13 (W2022).

Although GIS has extensive applications in almost every civil engineering discipline, there are currently no GIS-related graduate courses being offered not only in the CEE Department but also in other engineering departments at the University of Alberta. The lack of introduction to GIS is certainly a missed opportunity for our students as it has become a compulsory tool for undertaking transportation engineering research and a growing number of engineering firms and government agencies employ it to facilitate their decision-making and problem-solving. Offering this course will eminently serve as a gateway to all GIS software and leave our students with lasting knowledge that will serve them well in their future careers as civil engineers and/or researchers.

Note that the Transportation Group recently had an internal discussion, and all were supportive of the course offering and the calendar change.

Course Template

Current: Removed language	Proposed: New language
New course	<p>Subject & Number: CIV E 619 Title: Geographic Information Systems for Transportation Course Career: Graduate Units: 3 Approved Hours: 3-0-0 Fee index: 6 Faculty: Engineering Department: Civil and Environmental Engineering Typically Offered: Either term</p> <p>Introduction to geographic information systems (GIS) and its applications in transportation engineering. Overview of coordinate systems, spatial data and mapping, vector and raster data analyses and models. Advanced spatial statistics and interpolation techniques. Facility location models, shortest path and network analyses.</p>

Reviewed/Approved by:

REQUIRED: Faculty Council (or delegate) and approval date.

Approved by Faculty ECC on Sep. 26, 2023

OPTIONAL: Other internal faculty approving bodies, consultation groups, or departments, and approval dates.

Approved by CEE GPC on February 10, 2023

Approved by CEE APC on Jan. 23, 2023

Approved by Faculty GPC on Dec 7, 2022

Approved by Faculty APC on Mar 8, 2023

Calendar Change Request Form for Course Changes

See the [Calendar Guide](#) for tips on how to complete this form.

Faculty (& Department or Academic Unit):	Engineering, Mechanical Engineering
Contact Person:	Wylie Stroberg
Level of change (choose one only) [?]	<ul style="list-style-type: none"> • Graduate
For which term will this change take effect?	Fall 2024

Rationale

Multiscale phenomena are ubiquitous in natural and engineered materials. Examples include nanocomposites, complex fluids, and biomaterials such as spider silk and cellulose. In each case, microscopic interactions dictate macroscopic behavior. For engineers studying such systems, understanding how macroscopic properties emerge from the microscale is essential for predicting how materials will behave. As a result, multiscale modeling has become a widely used and essential tool in engineering. Despite the importance of multiscale modeling to a broad range of engineering applications and research, no coherent introduction to these techniques exists at the University of Alberta.

While multiscale modeling in some form has been around for centuries (early examples include the Cauchy-Born rule and Prandtl's boundary layer theory), recent advances in computational methods have led to a rapid expansion of multiscale modeling techniques and their widespread usage. In particular, microscopic methods such as density function theory, molecular dynamics, and Monte Carlo simulation have become more accurate and computationally efficient, allowing for their incorporation into continuum models. Recently, machine learning and artificial intelligence have proven to be powerful tools in connecting models across scales.

As multiscale methods become more widespread and more accurate, students trained in their development and application will be highly competitive in both academic and industrial workplaces. Currently, many graduate students within the Mechanical Engineering department, as well as other departments across the university with interest in modeling complex phenomena, learn multiscale modeling in an ad hoc "as needed" manner. This leads to a lack of structured knowledge about multiscale modeling that limits the ability of students to assess the applicability of certain methods to particular problems, compare competing methods, and understand important algorithmic details of methods they employ. This course aims to provide this structure while giving hands-on experience developing models that incorporate information from different scales.

Similar courses have been incorporated in the graduate curriculum at a number of institutions internationally (Columbia University ENME E4363, Northwestern University ME 417, EPFL ME414, Purdue University AAE 69000, ETH Zurich 151-0520-00L), while, to my knowledge, no Canadian university has a course specifically focused on multiscale modeling although the topic appears to be touched upon in other contexts (e.g. U Waterloo Nanoscale Engineering 452, UBC MECH 588, U Toronto MSE 1038). Hence, this course will help differentiate the Mechanical Engineering department at the University of Alberta from others across Canada by offering graduates a unique set of desirable skills.

Course Template

<p>*** New Course ***</p>	<p>Proposed</p> <p>Subject & Number: MEC E 693</p> <p>Title: Multiscale Modeling of Materials</p> <p>Course Career Units: 3 Approved Hours: 3-0-0 Fee index: 6 Faculty: Engineering Department: Mechanical Engineering Typically Offered: either term</p> <p>Description: Methods for simulating materials across multiple scales. Computational and analytical treatment of multiscale problems. Constitutive modeling using atomistic simulation. Coarse-graining and homogenization. Concurrent and hierarchical multiscale modeling. Machine-learning based multiscale methods. Applications will be taken from fluid and solid mechanics.</p>
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Reviewed/Approved by:

<p>REQUIRED: Faculty Council (or delegate) and approval date. Approved by the Department Council on March 1, 2023. Reviewed by Department GPC, APC. Approved by the Faculty of Engineering GPC on May 3, 2023 Approved by the Faculty of Engineering APC on May 10, 2023 Approved by the Faculty of Engineering ECC on Sep 26, 2023</p>
<p>OPTIONAL: Other internal faculty approving bodies, consultation groups, or departments, and approval dates.</p>

Course description and justification

1. Calendar description (as above)

Methods for simulating materials across multiple scales. Computational and analytical treatment of multiscale problems. Constitutive modeling using atomistic simulation. Coarse-graining and homogenization. Concurrent and hierarchical multiscale modeling. Machine-learning based multiscale methods. Applications will be taken from fluid and solid mechanics.

2. Course justification

Multiscale phenomena are ubiquitous in natural and engineered materials. Examples include nanocomposites, complex fluids, and biomaterials such as spider silk. In each case, microscopic interactions are essential for understanding and manipulating macroscopic behavior. For engineers studying such systems, multiscale modeling has become a widely used and essential tool. Despite the importance of multiscale modeling to a broad range of engineering applications and research, no coherent introduction to these techniques exists at the University of Alberta.

While multiscale modeling in some form has been around for centuries (early examples include the Cauchy-Born rule and Prandtl's boundary layer theory), recent advances in computational methods have led to a rapid expansion of multiscale modeling techniques and their widespread usage. In particular, microscopic methods such as density function theory, molecular dynamics, and Monte Carlo simulation have become more accurate and computationally efficient, allowing for their incorporation into continuum models. More recently, machine learning and artificial intelligence have proven to be powerful tools in connecting models across scales.

As multiscale methods become more widespread and more accurate, students trained in their development and application will be highly competitive in both academic and industrial workplaces. Currently, many graduate students within the Mechanical Engineering department, as well as other departments across the university with interest in modeling complex phenomena, learn multiscale modeling in an ad hoc "as needed" manner. The resulting lack of structured knowledge about multiscale modeling limits the ability of students to critically assess the applicability of certain methods to particular problems, compare competing methods, and develop novel multiscale methods. This course aims to provide this structure while giving hands-on experience developing models that incorporate information from different scales.

Similar courses have been incorporated in the graduate curriculum at a number of institutions internationally (Columbia University ENME E4363, Northwestern University ME 417, EPFL ME414, Purdue University AAE 69000, ETH Zurich 151-0520-00L), while, to my knowledge, no Canadian university has a course specifically focused on multiscale modeling although the topic appears to be touched upon in other contexts (e.g. U Waterloo Nanoscale Engineering 452, UBC MECH 588, U Toronto MSE 1038). Hence, this course will help differentiate the Mechanical Engineering department at the University of Alberta from others across Canada by offering graduates a unique set of desirable skills.

Complementary courses within the university include:

MECE 663 – Theory and Applications of the Finite Element Method

MECE 663 provides an introduction to fundamentals of modelling materials at the continuum scale using the finite element method, including applications relevant to engineers.

Difference: The proposed course deals with connecting models between scales. Hence, the new course would well-complement MECE 663 by, for example, providing methods for using microscopic simulations to inform parameters in a finite element simulation.

MECE 669 – Multifunction Polymer-Based Composites

Multifunctional Polymer-based Composites (MFPC) manufacturing processes, micro- and nanoscale characterization; Modeling strategies for MFPC properties (continuum, atomistic, multiscale); Characteristics and synergistic effects of MFPC with hard and soft inclusions; Modeling, characterization and properties of MFPC with electrically conductive fillers, for enhanced thermal conductivity, with magnetic properties, for EMF shielding/reflection, with increased diffusion barrier properties.

Difference: MECE 669 touches on multiscale modelling of, specifically, polymer composites. The proposed course will provide a foundation of multiscale theory in general as well as detailed discussion and hands-on experience in simulating materials across different scales.

MECE 680 – Continuum Mechanics

Introduction to cartesian tensor algebra and calculus; analysis of finite deformation and kinematics of motion; transport theorems and balance laws; analysis of stress; continuum thermodynamics, constitutive equations and material symmetry with application to solids and fluids.

Difference: The proposed course will focus on methods of connecting atomic-scale models to continuum mechanics to inform, for example, constitutive laws. Hence, the proposed course will extend and compliment knowledge gained in MECE 680.

MECE 682 – Nanomechanics

MECE 662 focusses on physical modelling of nanoscale forces and systems. Surface forces, van der Waals forces, electrostatic forces, Poisson-Boltzmann equation, capillary forces, adhesion contact mechanics, surface energy, tip-surface interaction, adhesion of micro-cantilevers, microbeam arrays, carbon nanotubes, dissipation in MEMS/NEMS, fluid flow with slip, mechanical models for cells, biomembranes, cellular filaments, microtubules, molecular dynamics (MD) simulation.

Difference: The proposed course focuses on connecting nanoscale models to meso-scale and continuum scale models. The emphasis is on methods for translating models to different scales, and hence nicely compliments MECE 682 in that it will provide techniques for incorporating nanomechanics into larger-scale models.

MECE 683 – Statistical Mechanics with Applications

Review of classical mechanics and thermodynamics concepts; introduction to principles of statistical mechanics; concepts of ensembles and ensemble average; probability function and partition function in different ensembles; calculation of thermodynamic quantities from statistical mechanics; applications to polymer elasticity, cell mechanics, fracture mechanics and theories of electrolytic solutions; Monte-Carlo and Molecular Dynamics simulations in different ensembles.

Difference: MECE 683 provides a theoretical understanding of statistical mechanics, and discusses simulation methods for molecular-scale systems that are based on sampling of statistical ensembles. The proposed course will focus on using available molecular dynamics codes (LAMMPS) as a fine-scale model for multiscale modelling. The primary aim of the proposed course is to learn how molecular simulation results and output can be used to make more accurate simulations of complex materials at larger scales.

MECE 690 – Analytical Techniques for Engineering

Methods of applied mathematics with particular emphasis on the analysis of analytical models arising in engineering science. At least three topics will be covered from the following: well-posedness of mathematical models in engineering science; generalized functions with applications to the solution of initial and boundary value problems; complex variable analysis with applications to partial differential equations; asymptotic analysis; calculus of variations; integral equations with applications; introductory functional analysis with applications.

Difference: MECE 690 touches upon asymptotic analysis, which is fundamentally an analytical multiscale method. The proposed course focuses on simulation methods for multiscale modelling.

CIVE 665 – Introduction to the Finite Element Method

Fundamentals of the formulation and application of the finite element method to problems of continuum mechanics, with special reference to civil engineering, including problems in solid mechanics and soil mechanics.

Difference: The proposed course deals with connecting models between scales. Hence, the new course would well-complement CIVE 665 by, for example, providing methods for using microscopic simulations to inform parameters in a finite element simulation.

CHEM 593 – Computational Chemistry

The focus is on applications in this course which introduces the student to contemporary computational quantum chemistry (Hartree-Fock, post-Hartree-Fock, and density functional theory methods), using the state-of-the-art computer code GAMESS-US running on UNIX workstations and computer servers. Elementary introduction to the UNIX operating system is given. Subjects include: basis sets; optimization of molecular geometry; prediction of molecular properties; calculation of infra-red and Raman spectra; excited electronic states; solvent effects; computational thermochemistry; mechanisms of chemical reactions; visualization of results. Assignments in the course allow the student to acquire practical experience that relates to chemistry. Term projects focus on chemistry related to student's research area.

Difference: CHEM 593 focusses on quantum chemistry simulations, whereas the proposed course focuses on coupling atomistic simulations with higher scales.

CHEM 595 – Molecular Dynamics and its Applications

The fundamentals of statistical mechanics are covered to set up the theoretical framework for Molecular Dynamics (MD) simulation. The basic components of MD simulation are discussed in detail, followed by a brief foray into Monte Carlo simulation. A variety of applications are presented, including the study of structural properties of liquids, the calculation of diffusion coefficients for a solute in a solvent, and the calculation of reaction rate constants. A brief overview of methods for incorporating quantum effects into MD simulations is given. Computational exercises will be assigned to exemplify various topics encountered in the lectures.

Difference: The proposed course focuses on methods for incorporating atomistic simulations into larger-scale (meso-scopic and continuum) models. Particular emphasis is placed on using simulations to understand material behavior across multiple scales. These aspects are not covered in CHEM 595, which focus on MD simulations of fluids mixtures relevant too chemistry.

MATH 538 Techniques in Applied Mathematics

Asymptotic analysis of integrals: Laplace, stationary phase, and steepest descent methods. Regular and singular perturbations: trained coordinates, multiple scales, asymptotic matching, renormalization techniques, WKB theory, Hamiltonian perturbation theory, center manifolds and stability. Singularities in differential equations. Applications to algebraic, ordinary and partial differential equations.

Difference: MATH 538 covers several analytical methods for modelling systems in which there are disparate scales. In many cases a detailed mathematical treatment of these techniques is not needed for multiscale simulation of materials. The proposed course will incorporate some techniques from applied mathematics, such as perturbation theory, in the context of developing multiscale simulation methods for engineering materials.

3. Learning outcomes and graduate attributes

After having taken the proposed course, students should be able to:

- i. Determine relevant length and time scales of a problem of interest based on non-dimensional parameters
- ii. Determine appropriate boundary conditions for integrating models at different scales
- iii. Use open-source molecular dynamics codes to simulate materials at the nanoscale
- iv. Incorporate molecular dynamics simulations results into continuum-scale models using hierarchical and concurrent methods
- v. Develop coarse-grained molecular dynamics models based on atomistic simulations
- vi. Use molecular dynamics simulations as training data for machine-learning based multiscale modelling

4. Relation between learning outcomes and graduate attributes

Not applicable to 600-level courses.

5. Textbooks

There will be no required textbook for this course. Reading assignments for the course will come from a variety of sources including journal articles and open-source online resources. Additionally, the following texts will be used as recommended resources.

1. W.K. Liu, E. G. Karpov, H. S. Parks, Nanomechanics and Materials: Theory, Multiscale Methods, and Applications, Wiley, 2006.
2. E. Weinan, Principles of Multiscale Modelling, Cambridge University Press, 2011.
3. J. Fish, Practical Multiscale, Wiley, 2013.

6. Course outline and schedule

Date	Section	Topic	Deliverables
Week 1	Introduction to multiscale modelling	Scale separation, small parameters, concurrent vs. hierarchical modelling	
Week 2		Singular perturbations, homogenization	
Week 3	Molecular dynamics simulations of materials	Introduction to MD: thermo/barostats, force fields, boundary conditions	HW 1 due
Week 4		Introduction to MD: LAMMPS tutorial, postprocessing and visualization	Project proposal due
Week 5		Analysis of MD simulations for multiscale modelling, Green-Kubo	

		relationships, RVEs and SVEs	
Week 6	Coarse-graining of MD simulations	Introduction to CGMD, Top-down vs bottom-up, Structural vs force mapping, Maximum entropy and Boltzmann inversion	HW 2 due
Week 7	Phase Field Modeling at the Mesoscale	Introduction to phase field modeling, parameterizing phase-field models from atomistic simulations	Project Scale 1 due
Week 8	Data-driven multiscale modelling	Introduction to machine learning techniques in multiscale modelling, MD simulations as training data, surrogate models	HW 3 due
Week 9		Material symmetries and invariance properties in deep-learning based constitutive modelling	
Week 10		Learning mesh-free kernels from atomistic simulations using variational autoencoders	
Week 11	Special topics	Concurrent multiscale methods, boundary conditions for concurrent multiscale models	HW 4 due
Week 12		Atomistic-to-continuum coupling in 1-D	
Week 13	Project presentations		HW 5 due
Finals Week		Final Exam	Project report due

7. Expected and types of assessment and suggested grade weight

Assessment Type	Weight
Homework (5)	25%
Project – Scale 1	10%
Final Project Presentation	10%
Final Project Report	20%

Final Exam	35%
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Student performance will be evaluated through a combination of homework assignments and a two-stage course project.

Homework. Homework assignments will consist of questions related to the theoretical aspects of multiscale modelling along with coding problems based in MATLAB or Python. Computer codes will be developed by the students from scratch and based on skeleton code provided by the instructor. There will be five homework assignments in total, each of which will correspond to one Section of the course (see above table).

Course Project. In the course project, students will work in small teams (2-3 students) to develop a multiscale model of a system of their choosing with the requirement that the system has at least two relevant scales. The project will be subdivided into two stages. In the first stage, the students will develop and validate the fine-scale model of their system (e.g. atomistic simulation). For the second stage (Final Project) the students will incorporate their fine-scale model into a multiscale model of their system using the techniques learned in the course. Student teams will present their projects in oral presentations to the class and submit a written report. Individual assessment of contributions to the group project will be conducted in three ways: 1) Team members will submit a peer assessment survey evaluating the contributions of each group member, 2) The oral presentation will have a question-and-answer portion in which questions will be fielded by individual group members, and 3) The final report will contain a section describing the role and contributions of each group member to the project.

Final Exam. A cumulative final exam will test students understanding of theoretical and methodological material taught throughout the course.

8. Lab components

None.

9. Required resources

None.

Faculty (& Department or Academic Unit):	Engineering, Civil and Environmental Engineering
Contact Person:	Zaher Hashisho (hashisho@ualberta.ca) Carlos Cruz Noguez (cruznoqu@ualberta.ca)
Level of change: (choose one only) [?]	<ul style="list-style-type: none"> • • Graduate
For which term will this change take effect?	Fall 2024

Rationale

Things to consider (maximum 500 words): Why is this being changed; How will it benefit students/department/unit; How is this comparable to similar programs (internal or external); Historical context; Impacts to administration or program structure; Consultation with stakeholders

A course with similar content was offered to graduate students in the Department of Civil and Environmental Engineering in the winters of 2021 and 2022 under the name Advanced Topics in Soil Mechanics CIVE 799, offered by Dr. Lijun Deng. A similar course is offered regularly at UBC, UofT, Polytechnique Montreal and so on. There has been relatively a strong interest, as demonstrated by student enrollment: 13 (Winter 2021) and 8 (Winter 22). The numbers include auditors from the geotechnical consulting industry in Alberta. The course covers the fundamentals of soil dynamics and earthquake vibration and applied methods for the seismic design of earth structures including foundations, slopes and retaining walls. The content of this course is a must for geotechnical engineers who would later practice in earthquake-prone zones BC, Ontario and Quebec. Hence, I propose an ordinary course number under the name Geotechnical Earthquake Engineering.

Course Template

Current: Removed language	Proposed: New language
NEW COURSE	<p>Subject & Number: CIVE 685 Title: Geotechnical Earthquake Engineering Course Career: Graduate Units: 3 Approved Hours: 3-0-0 Fee index: 6 Faculty: Engineering Department: Civil and Environmental Engineering Typically Offered: Either term</p> <p>Description: Ground motions and earthquake spectra; 1-D ground response analysis; liquefaction during earthquake; liquefaction mitigation and ground improvement methods; dynamic soil-foundation interaction; seismic design aspects of foundations; seismic slope stability analysis methods and seismic slope displacement; seismic design of retaining structures</p> <p>Prerequisite: Consent of instructor</p>

Reviewed/Approved by:

REQUIRED: Faculty Council (or delegate) and approval date.

Approved by Faculty ECC on Sep. 26, 2023

OPTIONAL: Other internal faculty approving bodies, consultation groups, or departments, and approval dates.

Approved by CEE GPC on Oct. 11, 2022

Approved by CEE APC on Jan. 23, 2023

Approved by Faculty GPC on Dec 7, 2022

Approved by Faculty APC on Dec 14, 2022

Faculty (& Department or Academic Unit):	Civil and Environmental Engineering
Contact Person:	Zaher Hashisho (hashisho@ualberta.ca) Carlos Cruz Noguez (cruznoqu@ualberta.ca)
Level of change: (choose one only) [?]	<ul style="list-style-type: none"> • <input type="radio"/> Undergraduate • <input checked="" type="radio"/> Graduate
For which term will this change take effect?	Winter 2025

Rationale

Things to consider (maximum 500 words): Why is this being changed; How will it benefit students/department/unit; How is this comparable to similar programs (internal or external); Historical context; Impacts to administration or program structure; Consultation with stakeholders

This course is beneficial for both Construction and Transportation and Pavement Cross-Disciplinary programs since this is the only course that discusses pavement systems, design and construction. Considering the importance of flexible pavements in Canada and Alberta, this course is beneficial for graduate students, the pavement industry and stakeholders. I had very positive feedback from Alberta Transportation and consulting engineers such as Tetra Tech about the content of the course.

Course Template

Current: Removed language	Proposed: New language
NEW COURSE	<p>Subject & Number : CIVE 618</p> <p>Title: Advanced Pavement Material and Design</p> <p>Course Career: Graduate Units: 3 Units Approved Hours: 3-0-0 Fee index: 6 Faculty: Engineering Department: Civil and Environmental Engineering Typically Offered: Either term</p> <p>Description Main concepts of design and construction of asphalt pavement systems: Review of pavement structures, materials and testing. Superpave classification for asphalt binders. Advanced analysis/design of flexible pavement structures, including Empirical and Mechanistic-Empirical methods considering climate and environmental impacts. Identifying typical flexible pavement failures and maintenance methods. Application of non-destructive techniques to evaluate pavement load-bearing capacity and layers stiffness will be discussed.</p> <p>Prerequisite: Consent of the instructor</p>

Reviewed/Approved by:

REQUIRED: Faculty Council (or delegate) and approval date.

Approved by Faculty ECC on Sep. 26, 2023

OPTIONAL: Other internal faculty approving bodies, consultation groups, or departments, and approval dates.

Approved by CEE GPC on October 11, 2022

Approved by CEE APC on Jan. 23, 2023

Approved by Faculty GPC on Dec 7, 2022

Approved by Faculty APC on Dec 14, 2022

Faculty (& Department or Academic Unit):	Kinesiology, Sport, and Recreation
Contact Person:	Normand Boule, PhD, Professor & Associate Dean Graduate Jill Cameron, Manager, International & Community Education
Level of change: (choose one only)	<ul style="list-style-type: none"> • Graduate
Type of change request: (check all that apply)	<ul style="list-style-type: none"> • Program
For which term is this intended to take effect?	Fall 2024
Does this proposal have corresponding course changes? (Should be submitted at the same time)	No

Rationale

Things to consider (maximum 500 words): Why is this being changed; How will it benefit students/department/unit; How is this comparable to similar programs (internal or external); Historical context; Impacts to administration or program structure; Consultation with stakeholders

The ISRC has students register from all across Canada including the North and, for many, the in-class component can be a significant financial barrier. By removing this mandatory component, we are providing a more accessible program to students. Consultation was done with the instructors of the program, the Faculty of Native Studies, and our partners at Alberta Recreation and Parks Association (ARPA).

Language clean up for a few grammatical errors and changed the term baccalaureate to match the language throughout the calendar copy and to match our other graduate program calendar.

Calendar Copy

URL in current Calendar (or "New page")	
Current Copy: Removed language	Proposed Copy: New language
<p>Graduate Certificate in Indigenous Sport and Recreation:</p> <p>The Certificate in Indigenous Sport and Recreation is a Graduate Certificate offered in partnership between the Faculty of Native Studies and the Faculty of Kinesiology, Sport, and Recreation. The focus this certificate is the health and well-being of Indigenous people through sport and recreation. The intended purpose is to serve a demonstrated need in the realm of community based Indigenous sport and recreation, establish a deep understanding of the cultural context of Indigenous communities and populations and to enhance leadership in the growing field of Indigenous</p>	<p>Graduate Certificate in Indigenous Sport and Recreation:</p> <p>The Graduate Certificate in Indigenous Sport and Recreation is offered in partnership between the Faculty of Native Studies and the Faculty of Kinesiology, Sport, and Recreation. The focus of this certificate is the health and well-being of Indigenous people through sport and recreation. The intended purpose is to serve a demonstrated need in the realm of community based Indigenous sport and recreation, establish a deep understanding of the cultural context of Indigenous communities and populations, and to enhance leadership in the growing field of Indigenous</p>

sport and recreation. The program will be delivered in a blended format. Specifically, the curriculum will consist of three courses valued at four credits each (12 credits total), plus participation at a mandatory, one-week, in-class (i.e. face to face) experiential learning experience. This 10 month certificate is designed around a cohort model so students will work together in this innovative, blended program that can be completed with minimal travel and little disruption to their work and family lives. The online portion of the program will use both synchronous and asynchronous teaching modalities to create interactive, dynamic, and supportive communities of learning whose members will become integral participants in this specific program researching Indigenous Peoples and Recreation best practices.

Entrance Requirements:

The requirements for admission will include an undergraduate degree with an admission GPA of at least 3.0 on the 4- point scale from the University of Alberta, or an equivalent qualification and standing from a recognized institution. The admission GPA will be calculated on the last 60 units of graded coursework completed, or on the equivalent of the last two years of full-time graded coursework.

A minimum of two years of professional experience is also required.

Applicants who do not hold a baccalaureate degree but have considerable relevant professional experience may also be admissible. Individuals who feel that this situation applies to them are encouraged to contact admissions to discuss their status. There will be no other routes in which admission will be granted. There will be no opportunity for a residency.

Program Requirements:

The graduate certificate will be granted upon successful completion of the three required courses:

- KSR 763 - Indigeneity and Settler Colonialism [4 units]
- KSR 764 - Managing Recreation, Sport, and Physical Activity Programs in Indigenous Communities [4 units]
- KSR 765 - Indigenous Peoples' Physical Activity [4 units]

sport and recreation. The curriculum will consist of three courses valued at four credits each (12 credits total). This 10 month certificate is designed around a cohort model so students will work together in this innovative program that can be completed with little disruption to their work and personal lives. The online program will use both synchronous and asynchronous teaching modalities to create interactive, dynamic, and supportive communities of learning whose members will become integral participants in this specific program researching Indigenous Peoples and Recreation best practices.

Entrance Requirements:

The requirements for admission will include an undergraduate degree with an admission GPA of at least 3.0 on the 4- point scale from the University of Alberta, or an equivalent qualification and standing from a recognized institution. The admission GPA will be calculated on the last 60 units of graded coursework completed, or on the equivalent of the last two years of full-time graded coursework.

One year minimum of professional experience is also required.

Applicants who do not hold an undergraduate degree but have considerable relevant professional experience may also be admissible. Individuals who feel that this situation applies to them are encouraged to contact admissions to discuss their status. There will be no other routes in which admission will be granted. There will be no opportunity for a residency.

Program Requirements:

The graduate certificate will be granted upon successful completion of the three required courses:

- KSR 763 - Indigeneity and Settler Colonialism [4 units]
- KSR 764 - Managing Recreation, Sport, and Physical Activity Programs in Indigenous Communities [4 units]
- KSR 765 - Indigenous Peoples' Physical Activity [4 units]

Laddering:

Students who complete the certificate in good standing may be able to use the courses from the certificate to receive advanced standing in the

<p>● and attendance at the noncredit, mandatory intensive week</p> <p>Laddering: Students who complete the certificate in good standing may be able to use the courses from the certificate to receive advanced standing in the course-based Master of Arts in the Faculty of Kinesiology, Sport, and Recreation. Completion of the certificate does not guarantee admission to a master degree program. The certificate may be used for both the basis of admission and laddered into the course-based master degree. Details can be found in the Calendar under Regulations of the Faculty of Graduate Studies and Research.</p>	<p>course-based Master of Arts in the Faculty of Kinesiology, Sport, and Recreation. Completion of the certificate does not guarantee admission to a master degree program. The certificate may be used for both the basis of admission and laddering into the course-based master's degree. Details can be found in the Calendar under Regulations of the Faculty of Graduate Studies and Research.</p>
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Reviewed/Approved by:

<p>REQUIRED: Graduate Programs Committee: May 12, 2023 Faculty Council: May 31, 2023 Grad Program Support Team: September 25, 2023 FGSR Council: October 11, 2023</p>
<p>OPTIONAL: Other internal faculty approving bodies, consultation groups, or departments, and approval dates. N/A</p>

Faculty (& Department or Academic Unit):	Kinesiology, Sport, and Recreation
Contact Person:	Angela L. Bayduza, Associate Dean - Undergraduate Programs, Faculty of Kinesiology, Sport, and Recreation
Level of change: (choose one only) [?]	<ul style="list-style-type: none"> Undergraduate
For which term will this change take effect?	Fall 2024

Rationale

Things to consider (maximum 500 words): Why is this being changed; How will it benefit students/department/unit; How is this comparable to similar programs (internal or external); Historical context; Impacts to administration or program structure; Consultation with stakeholders

The following course deletions are a continuation of the BKin Sport Coaching major suspension that was approved to take effect as of July 1, 2021 (see [HERE](#) under Program Structure, point 3).

The teach out phase is now complete as all students who remained in the major area of specialization, will have completed these course requirements specific only to their program. As a result, these Sport Coaching major specific courses can now be deleted from the academic calendar as there are no remaining students enrolled in the BKin Sport Coaching major or across the broader Faculty of KSR undergraduate complement to complete these courses.

URL KIN 246

https://calendar.ualberta.ca/content.php?filter%5B27%5D=KIN&filter%5B29%5D=246&filter%5Bkeyword%5D=&filter%5B32%5D=1&filter%5Bcpage%5D=1&cur_cat_oid=39&expand=&navoid=12417&search_database=Filter&filter%5Bexact_match%5D=1#acalog_template_course_filter

URL KIN 346

https://calendar.ualberta.ca/content.php?filter%5B27%5D=KIN&filter%5B29%5D=346&filter%5Bkeyword%5D=&filter%5B32%5D=1&filter%5Bcpage%5D=1&cur_cat_oid=39&expand=&navoid=12417&search_database=Filter&filter%5Bexact_match%5D=1#acalog_template_course_filter

Background:

A review of the Faculty of KSR Bachelor of Kinesiology (BKin) majors in 2020, within the undergraduate program, identified considerably lower enrolment and student demand for the Sport Coaching major, in comparison to the other four majors. Consultations regarding the lower demand and enrollment in the BKin Sport Coaching major took place with students, faculty leads within the major, instructional staff, athletics, and graduate studies in KSR. This consultation revealed low satisfaction with core courses and the need for a large commitment for undergraduate students who might not necessarily be ready to make the commitment to the significant requirements of this major. Consultations also revealed a large majority of students seeking training in Coaching desired a more interdisciplinary and multicontextual approach to the content which could be received through enrolment in the Sports Performance major. As well, consultations revealed the Sport Coaching major was a highly resource-intensive major relative to the number of students it served, and presented areas of redundancy that were resulting in significant sustainability challenges for the capacity of the Faculty of Kinesiology, Sport, and Recreation (KSR) BKin undergraduate program to continue to deliver this underprescribed major.

The impact of the BKin Sport Coaching major suspension on students was also considered to be minimal as all students in the major area of specialization proposed for suspension were given the opportunity to either transfer out of the major to another remaining major or complete their program. As well, students continued to have significant opportunities through all BKin programming to complete training and content specific to the coaching specialization area.

Course Template

Current: Removed language	Proposed: New language
<p>KIN 246 – Coaching Practicum I</p> <hr/> <p>Course Career Undergraduate Units 3 Approved Hours VARIABLE Fee index 6 Faculty Kinesiology, Sport, & Rec Department Kinesiology, Sport, & Rec Typically Offered variable</p> <p>Description Students will be required to coach for a complete season in a program approved by the student’s Mentor Coach. The purpose of the practicum is to provide the student with a practical coaching experience under the guidance of a Program Coach. It is intended to introduce the student to the demands of the profession of coaching. Note: at least 100 hours of outside classroom time is required. Corequisite: KIN 245. Note: Credit will be granted for only one of KIN 246 or PEDS 246.</p> <p>KIN 346 – Coaching Practicum II</p> <hr/> <p>Course Career Undergraduate Units 3 Approved Hours VARIABLE Fee index 6 Faculty Kinesiology, Sport, & Rec Department Kinesiology, Sport, & Rec Typically Offered variable</p> <p>Description Students will be required to coach for a complete season, preferably with High Performance athletes, in a program approved by the student’s Mentor Coach. The student should expect to assume more responsibility than in KIN 246, either in program or athlete development. The guidance of a highly qualified Head Coach is essential. It is intended to introduce the student to the demands of coaching in a High Performance-oriented program. Note: At least 150 hours of outside classroom time is required. Prerequisite: KIN 246. Note: Credit will be granted for only one of KIN 346 or PEDS 346.</p>	<p style="text-align: center;">*****delete*****</p> <p style="text-align: center;">*****delete*****</p>

Reviewed/Approved by:

KSR Undergraduate Programs Committee: March 4, 2020 approval; September 13, 2023 approval
KSR Executive Committee: March 11, 2020 approval; September 27, 2023 approval
KSR Faculty Council: April 1, 2020 approval; October 4, 2023 approval
GFC ASC Subcommittee on Standards (for discussion): May 7, 2020
GFC Academic Standards Committee (for recommendation): May 21, 2020
Program Support Team (Undergraduate & Non-Credit): for omnibus consent agenda October 26, 2023

Faculty (& Department or Academic Unit):	Kinesiology, Sport, and Recreation
Contact Person:	Angela L. Bayduza, Associate Dean - Undergraduate Programs, Faculty of Kinesiology, Sport, and Recreation
Level of change: (choose one only) [?]	<ul style="list-style-type: none"> Undergraduate
For which term will this change take effect?	Fall 2024

Rationale

Things to consider (maximum 500 words): Why is this being changed; How will it benefit students/department/unit; How is this comparable to similar programs (internal or external); Historical context; Impacts to administration or program structure; Consultation with stakeholders

These are course deletions related to the previously GFC approved changes to the Activity Core requirements of the BKin and BKin/BEd undergraduate degree programs that took effect in the 2022-23 University Calendar.

This initiative was undertaken to re-envision, update, and modernize the objectives and outcomes for the “Activity Core” requirements with the Faculty of Kinesiology, Sport, and Recreation and associated degree programs (e.g., Bachelor of Kinesiology (BKin; see [HERE](#)); Bachelor of Kinesiology, Bachelor of Education (BKin/BEd Elementary; Secondary; see [HERE](#))) as well as all of the associated course offerings to fulfill program requirements.

These courses to be deleted have been replaced by a list of Faculty Approved Activity Core Course Electives referred to in calendar as the “Activity Core Electives List” (see [HERE](#)), in support of the re-envisioning of the Activity Core requirements within the BKin and BKin/Bed degree programs.

The rationale for this change was to ensure students have full and readily available access to the Faculty approved course options when deciding upon and choosing courses when building their program in fulfillment of the Activity Core requirement of the BKin and BKin/BEd degree programs.

This change was intended as well, to assist in realizing administrative efficiencies and reducing administrative demands on Student Service Office staff (e.g., reducing student emails, tracking of courses on the list, etc.) by having the Activity Core electives list included in calendar, similar to how PAC courses such as these had been previously listed and available to students within the calendar.

A key and primary intention of this change was also to align with Faculty EDI+I (equity, diversity, inclusivity plus Indigeneity) objectives, continual quality assurance of program delivery, and providing the highest quality service for undergraduate students.

URL PAC courses:

https://calendar.ualberta.ca/content.php?filter%5B27%5D=PAC&filter%5B29%5D=&filter%5Bkeyword%5D=&filter%5B32%5D=1&filter%5Bcpage%5D=1&cur_cat_oid=39&expand=&navoid=12417&search_database=Filter&filter%5Bexact_match%5D=1#acalog_template_course_filter

<p>Fee index 6 Faculty Kinesiology, Sport, & Rec Department Kinesiology, Sport, & Rec Typically Offered either term</p> <p>Description Acquisition of theoretical knowledge and personal skills used in the instruction of the basics of ice hockey. Prerequisite: Average to above average skating ability. Note: Students must provide their own skates, sticks, hockey gloves, helmets, elbow pads and shin pads.</p> <p>PAC 137 - Instruction of the Basics of Volleyball</p> <hr/> <p>Course Career Undergraduate</p> <p>Units 3 Approved Hours 0-3L-0 Fee index 6 Faculty Kinesiology, Sport, & Rec Department Kinesiology, Sport, & Rec Typically Offered either term</p> <p>Description Acquisition of theoretical knowledge and personal skills used in the instruction of the basics of volleyball.</p> <p>PAC 156 - Instruction of the Basics of Yoga</p> <hr/> <p>Course Career Undergraduate Units 3 Approved Hours 0-3L-0 Fee index 6 Faculty Kinesiology, Sport, & Rec Department Kinesiology, Sport, & Rec Typically Offered either term</p> <p>Description Acquisition of theoretical knowledge and personal skills used in the instruction of the basics of yoga.</p>	<p>*****delete*****</p> <p>*****delete*****</p>
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PAC 173 - Instruction of the Basics of Athletics (Track and Field)

Course Career Undergraduate

Units 3

Approved Hours 0-3L-0

Fee index 6

Faculty Kinesiology, Sport, & Rec

Department Kinesiology, Sport, & Rec

Typically Offered first term

Description

Acquisition of theoretical knowledge and personal skills used in the instruction of the basics of sprinting, hurdling, cross country running, high jumping, long jumping, discus throwing, javelin throwing, and relays.

PAC 314 - Coaching Ice Hockey

Course Career Undergraduate

Units 3

Approved Hours 0-3L-0

Fee index 6

Faculty Kinesiology, Sport, & Rec

Department Kinesiology, Sport, & Rec

Typically Offered either term

Description

Acquisition of theoretical knowledge and personal skills used in coaching the advanced skills and strategies of ice hockey. Students must provide their own equipment: skates, stick, helmet, hockey gloves, elbow pads and shin pads. Prerequisite: PAC 114.

PAC 337 - Coaching Volleyball

Course Career Undergraduate

Units 3

Approved Hours 0-3L-0

Fee index 6

*****delete*****

*****delete*****

*****delete*****

<p>Faculty Kinesiology, Sport, & Rec Department Kinesiology, Sport, & Rec Typically Offered either term</p> <p>Description Acquisition of theoretical knowledge and personal skills used in coaching the advanced skills and strategies of volleyball. Prerequisite: PAC 137.</p>	
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Reviewed/Approved by:

<p>Program Support Team (Undergraduate & Non-Credit): Apr 29, Aug 26, 2021 early consultation; for omnibus consent agenda October 26, 2023 KSR Undergraduate Programs Committee: September 8th, 2021 approval; September 13, 2023 approval KSR Faculty Executive: September 22nd, 2021 approval; September 27, 2023 approval KSR Faculty Council: September 29th, 2021 approval; October 4, 2023 approval</p>

Faculty (& Department or Academic Unit):	Kinesiology, Sport, and Recreation
Contact Person:	Angela L. Bayduza, Associate Dean - Undergraduate Programs, Faculty of Kinesiology, Sport, and Recreation
Level of change: (choose one only)	<ul style="list-style-type: none"> • Undergraduate
Type of change request: (check all that apply)	<ul style="list-style-type: none"> • Regulation
For which term is this intended to take effect?	Fall 2024
Does this proposal have corresponding course changes? (Should be submitted at the same time)	No

Rationale

Things to consider (maximum 500 words): Why is this being changed; How will it benefit students/department/unit; How is this comparable to similar programs (internal or external); Historical context; Impacts to administration or program structure; Consultation with stakeholders

The KSR Student Services Office conducted an internal review of their current registration requirements and academic standing process in June 2023. The following calendar changes are being recommended in an effort to provide clarity to KSR students in regards to the Faculty of KSR's registration requirements and academic standing process and to ensure the alignment of KSR administrative processes with calendar language. A scan and review of the 2023-2024 University of Alberta calendar, as well as across a number of Faculties, was completed to ensure the terminology, definitions and processes align with the University's general regulations.

The following motion consists of primarily editorial changes to ensure consistency in use of language across and between both Registration requirements and Academic Standing regulations. For example, removal of the use of "good" in Registration requirements and replacing it with the term "satisfactory" as outlined in the Academic Standing regulations and assessment. Reserving the use of the term "discontinue" for use only in Academic Standing designations (e.g., Marginal and Unsatisfactory Standing) and replacing this term in the Registration section with disruption and Leave of Absence.

As well, there is an editorial focus in the Academic Standing section to provide greater clarity as to each designation *process* in relation to regulations. For example, including information in each designation about how "course weight" is determined (e.g., "*Course weight attempted includes university courses completed with a final grade and excludes courses with grades of W (withdrew). Students may not abandon a course. Failure to properly withdraw from a course may result in the assignment of a final grade.*"). There is also an editorial focus on reorganization within the Academic Standing section so that processes such as Probation, Discontinue, Required to Withdraw, Fresh Start Program, Readmission, and Requalify are addressed specifically in each designation where and when they are used. The motion does not propose so much of a change to the calendar language descriptions of these processes but rather a proposed reorganization of where they are identified and employed tied more specifically again, to identified Academic Standing designations.

Two key substantive changes, in the Academic Standing Regulations section, that are being proposed in the motion are:

- 1) The Faculty of KSR is proposing the removal of "Dean's List" as a stand alone honorific and including it/aligning it within the "First Class Standing" designation. Following the lead of the majority of

Faculties across the campus community, KSR is removing this designation that lacks a determined and purposeful use. See page 5, section titled “1. *First-Class Standing*.”

- 2) The Faculty of KSR is also proposing to add to the “Marginal Standing - Academic Warning” designation a second option for students to choose from when receiving this assessment. Similar to students who receive an “Unsatisfactory Standing” assessment, the Faculty of KSR is proposing to permit students who are placed on Academic Warning the option to also “*Discontinue studies for a minimum period of one year and then apply for Fall readmission on Academic Warning.*” Current calendar language indicates the student placed on academic warning “Must achieve a GPA of 2.0 or greater on a minimum of 9 units of course weight during the ***next Fall/Winter.***” The student placed on Academic Warning must appeal the conditions of their Academic Standing decision in order to discontinue studies for the year, unlike the student assessed Unsatisfactory Standing who is permitted this option as a result of their academic standing decision. The Faculty of KSR is proposing to remove this inequity by adding this second option to the “Marginal Standing - Academic Warning” designation. See page 6, section titled “3. *Marginal Standing - Academic Warning.*”

Calendar Copy

Registration Requirements URL:

<https://calendar.ualberta.ca/content.php?catoid=36&navoid=11270#registration-requirements> URL in current Calendar

Academic Standing Regulations URL:

<https://calendar.ualberta.ca/content.php?catoid=36&navoid=11270#academic-standing>

Current Copy: ~~Removed language~~

Registration Requirements

1. **Continuous Registration:** Students must register in their program on a continuous basis to ensure a place in the program. Students who want to temporarily ~~discontinue~~ their program must obtain prior approval for a Leave of Absence by submitting a request to the Student Services Office. ~~Discontinuance~~ without permission requires the student to seek readmission and, in this case, readmission is not guaranteed.

~~Normally, a~~ Leave of Absence is granted only if all the following conditions are met:

- a. A minimum of 18 units of course weight must be completed within the degree program before the term in which the Leave of Absence begins
- b. The student is in ~~good~~ academic standing
- c. The Leave of Absence period does not exceed 12 months
- d. No transferable courses are being completed at another institution during the Leave of Absence period.

2. **Normal Course Load:** A normal full academic course load is 30 units of course weight taken during Fall/Winter.
 - a. Fall/Winter: A normal full course load in the Fall and Winter Terms is 15 units of course weight taken each term, for a total of 30 units.
 - b. Spring/Summer: A normal full course load in the Spring and Summer Terms is 6 units of course weight taken each term, for a total of 12 units.

Notes

1. Normally, permission to enrol in extra courses (beyond 15 units of course weight in Fall and Winter or 6 units of course weight in Spring and Summer) is not granted. Where a student wishes to enrol in more than the maximum

Proposed Copy: New language

Registration Requirements

1. **Continuous Registration:** Students must register in their program on a continuous basis to ensure a place in the program. Students who want to temporarily ~~interrupt~~ their program must obtain prior approval for a ~~formal~~ Leave of Absence by submitting a request to the Student Services Office. ~~Taking a Leave of Absence~~ without permission requires the student to seek readmission and, in this case, readmission is not guaranteed.

Leave of Absence is normally for a 12 month period and is granted only if all the following conditions are met:

- a. A minimum of 18 units of course weight must be completed within the degree program before the term in which the Leave of Absence begins
- b. The student is in ~~good~~ **satisfactory** academic standing
- c. The Leave of Absence period does not exceed 12 months ~~without permission~~
- d. No transferable courses are being completed at another institution during the Leave of Absence period.

2. **Normal Course Load:** A normal full academic course load is 30 units of course weight taken during Fall/Winter.
 - a. Fall/Winter: A normal full course load in the Fall and Winter Terms is 15 units of course weight taken each term, for a total of 30 units.
 - b. Spring/Summer: A normal full course load in the Spring and Summer Terms is 6 units of course weight taken each term, for a total of 12 units.

Notes

1. Normally, permission to enrol in extra courses (beyond 15 units of course weight in Fall and Winter or 6 units of course weight in Spring and Summer) is not granted. Where a student wishes to enrol in more than the maximum

allowed **credits** during any term, a request must be submitted to the Student Services Office. Such requests will be considered only if the student has obtained a minimum GPA of 3.3 on a minimum of 24 units of course weight during the previous Fall/Winter period.

2. **Directed Studies Courses:** Students are normally allowed a maximum of 6 units of course weight Directed Studies courses to count toward their degree program.

In order to be eligible to complete a Directed Studies course, students must have completed a minimum of 30 units of course weight and be in **good** academic standing. Students must complete an application form to enrol in a Directed Studies course, available at the Student Services Office.

allowed **units of course weight** during any term, a request must be submitted to the Student Services Office. Such requests will be considered only if the student has obtained a minimum GPA of 3.3 on a minimum of 24 units of course weight during the previous Fall/Winter period.

2. **Directed Studies and Research Project Courses:** Students are normally allowed a maximum of 6 units of course weight in Directed Studies **and Research Project** courses to count toward their degree program.

In order to be eligible to complete a Directed Studies **or Research Project** course, students must have completed a minimum of 30 units of course weight and be in **satisfactory** academic standing. Students must complete an application form to enrol in a Directed Studies **or Research Project** course, available at the **KSR** Student Services Office.

Academic Standing

Academic standing is assessed based on a student's GPA. **Rules for computing the GPA are listed in [Grade Point Average \(GPA\)](#).** Students are expected to maintain a 2.0 minimum GPA.

Initial assessment and subsequent reassessment **are conducted after Fall/Winter** if a minimum of 9 units of course weight **have been completed**. If, at the time of the review, students have **completed less** than 9 units of course weight **during Fall/Winter**, the review is deferred and the academic standing assigned at the last review remains in effect until the next review. **Any courses completed during Spring/Summer terms will not be considered as part of the academic standing decision.**

Academic Standing

Academic standing is **used to determine the eligibility of students to continue or graduate from their programs and is** assessed based on a student's GPA. **(Rules for computing the GPA are listed in [Evaluation Procedures and Grading System](#).)** Students are expected to maintain a 2.0 minimum GPA.

Initial assessment and subsequent reassessment **of academic standing is based on students' performance in a minimum of 9 units of course weight attempted at the University of Alberta in Fall/Winter terms.** Course weight attempted includes university courses completed with a final grade and excludes courses with grades of W (withdrew). Students may not abandon a course. Failure to properly withdraw from a course may result in the assignment of a final grade.

If, at the time of review, students have **attempted fewer than 9 units of course weight since the last assessment**, the review is deferred and the academic standing assigned at the last review remains in effect until the next review **(unless the student is on**

Note: Academic standing is assessed at the end of a student's program even if less than 9 units of course weight have been taken since the last review.

~~1. Dean's List: This designation is assigned to undergraduate students who achieve a GPA of at least 3.7. Students must take a minimum 24 units of course weight in Fall/Winter. A minimum 12 of the 24 units of course weight must be graded work. Students who attend in only one term of Fall/Winter are eligible if they complete at least 12 units of course weight of graded work with a minimum GPA of 3.7.~~

~~2. First-Class Standing: This designation is assigned to undergraduate students who achieve a GPA of at least 3.5. Students must take a minimum 24 units of course weight in Fall/Winter. A minimum 12 of the 24 units of course weight must be graded work. Students who attend in only one term of the Fall/Winter are eligible if they complete at least 12 units of course weight of graded work with a minimum GPA of 3.5.~~

~~3. Satisfactory Standing: This designation is assigned to a student who achieves a GPA of 2.0 or above and normally indicates that the student is eligible to continue in their program.~~

Probation or Academic Warning with specific conditions).

Students who take courses only in Fall or only in Winter Terms are subject to assessment. Courses taken in Spring/Summer Terms are excluded from the assessment.

Academic standing is assessed on students' performance at the end of each student's program even if less than 9 units of course weight have been attempted at the University of Alberta since the last review. Course weight attempted includes university courses completed with a final grade and excludes courses with grades of W (withdrew).

The GPA is printed on the University of Alberta transcript and final grades are available on Bear Tracks. Students are responsible for reviewing their GPA at the end of each term.

*** delete ***

NOTE

Students are encouraged to contact the KSR Student Services Office and consult with an Academic Advisor for assistance with Academic Standing and its calculation, designations, and the academic options available to students.

1. First-Class Standing: This designation, also referred to as the Dean's Honour Roll, is assigned to undergraduate students whose performance in a minimum 24 units of course weight attempted at the University of Alberta in Fall/Winter terms is a minimum GPA of 3.5. A minimum 12 of the 24 units of course weight attempted must be graded work. Students who attend in only one term of the Fall/Winter are assigned this designation if their performance in a minimum 12 units of graded course weight attempted at the University of Alberta in a Fall or Winter term is a minimum GPA of 3.5. Course weight attempted includes university courses completed with a final grade and excludes courses with grades of W (withdrew).

2. Satisfactory Standing: This designation is assigned to undergraduate students whose performance in a minimum 9 units of course weight attempted at the University of Alberta in Fall/Winter terms is a

4. Marginal Standing - Academic Warning: This designation is assigned to a student who achieves a GPA of 1.7 to 1.9. A student who is assigned marginal standing will be placed on academic warning and must meet the following conditions: Must achieve a GPA of 2.0 or greater on a minimum of 9 units of course weight during the next Fall/Winter. Students are strongly advised to meet with their Undergraduate Programs Advisor prior to Fall/Winter to discuss their course load and options available for academic support and/or counselling. Complete specific course requirements as dictated by the Faculty, such requirements to be communicated to the student in writing prior to registration. Students on academic warning as a result of acquiring marginal standing will clear their academic warning upon successful completion of these requirements.

minimum GPA of 2.0. Course weight attempted includes university courses completed with a final grade and excludes courses with grades of W (withdrew). Students in satisfactory standing may continue in, and when requirements are met graduate from their programs.

3. Marginal Standing - Academic Warning: This designation is assigned to undergraduate students whose performance in a minimum 9 units of course weight attempted at the University of Alberta in Fall/Winter terms is a GPA of 1.7 to 1.9 inclusive. Course weight attempted includes university courses completed with a final grade and excludes courses with grades of W (withdrew). Students meeting these criteria who do not have, in the Faculty of Kinesiology, Sport, and Recreation, a prior requirement to withdraw, a prior Academic Warning, a prior probation period or their equivalents, may be permitted to continue on Academic Warning in their current Kinesiology, Sport, and Recreation program.

Students who have been assessed Marginal Standing for the first time in the Faculty of Kinesiology, Sport, and Recreation and wish to continue studies in the Faculty of Kinesiology, Sport, and Recreation, must choose one of the following mutually exclusive options:

i). Attend the subsequent Fall and/or Winter and meet the following conditions to clear academic warning and return to Satisfactory Standing:

Achieve a minimum 2.0 GPA on a minimum 9 units of course weight attempted at the University of Alberta. Course weight attempted includes university courses completed with a final grade and excludes courses with grades of W (withdrew).

ii). Discontinue studies for normally a minimum period of 12 months and then apply for Fall readmission on Academic Warning. The discontinue of studies period can not exceed 12 months without permission. Upon return, the following conditions must be met to clear Academic Warning and return to Satisfactory Standing:

Achieve a minimum 2.0 GPA on a minimum 9 units of course weight attempted at the University of Alberta during the subsequent

<p>Notes</p> <p>Students who do not complete the conditions of their academic warning will be required to withdraw from the Faculty of Kinesiology, Sport, and Recreation. See Transfer from a Postsecondary Institutions. Students assigned marginal standing on two separate occasions (not necessarily consecutively) will be assigned unsatisfactory standing and will be required to withdraw from the Faculty of Kinesiology, Sport, and Recreation. See below.</p> <p>5. Unsatisfactory Standing - Required to Withdraw: This designation is assigned to a student who achieves a GPA of 1.6 or below, or to a student who does not successfully pass their practicum, or to a student who has been assigned marginal standing on two occasions (not necessarily consecutively) while registered in the Faculty. Students who are assigned unsatisfactory standing are required to withdraw from the Faculty of Kinesiology, Sport, and Recreation. Any registration in the Summer term and in the subsequent Fall/Winter will be cancelled.</p>	<p>Fall and/or Winter terms. Course weight attempted includes university courses completed with a final grade and excludes courses with grades of W (withdraw).</p> <p>NOTES:</p> <ol style="list-style-type: none"> 1. No coursework can be attempted during the discontinued study period. Should any coursework be attempted at any institution during this period, students will have waived the option to discontinue their studies for one year and will need to qualify for competitive Fall readmission. The discontinue of studies period does not exceed 12 months without Permission. 2. Students are encouraged to contact the KSR Student Services Office and consult with an Academic Advisor for assistance. <p>Students who fail the conditions of Academic Warning are required to withdraw.</p> <p>Academic Warning may be offered once only. To remain in Satisfactory Standing students must maintain a minimum 2.0 GPA in all subsequent Fall/Winter terms. Students with a GPA below 2.0 and who have, in the Faculty of Kinesiology, Sport, and Recreation, a prior requirement to withdraw, a prior Academic Warning, a prior probation period or their equivalents are required to withdraw.</p> <p>4. Unsatisfactory Standing - Required to Withdraw: This designation is assigned to undergraduate students whose performance in a minimum 9 units of course weight attempted at the University of Alberta in Fall/Winter terms is a GPA of 1.6 or below, or to a student who does not successfully pass their practicum. Course weight attempted includes university courses completed with a final grade and excludes courses with grades of W (withdraw). Unsatisfactory Standing is also assigned to students with a GPA below 2.0 who have in the Faculty of Kinesiology, Sport, and Recreation a prior requirement to withdraw, a prior Academic Warning, a prior probation period or their equivalents. Students with Unsatisfactory Standing are required to withdraw.</p> <p>Requirement to Withdraw and Readmission: Students who are required to withdraw cannot continue or register in subsequent terms beyond</p>
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Students who are required to withdraw for the first time in the Faculty may elect to discontinue studies for a minimum period of one year and then apply for Fall readmission on probation. No coursework can be attempted during this period. Alternatively, students who are required to withdraw for the first time in the Faculty may elect to requalify by successfully completing:

18 units of transferable course weight with a minimum GPA of 2.7, or
24 units of transferable course weight with a minimum GPA of 2.0.

Students who have failed probation or been twice required to withdraw (not necessarily consecutively), or equivalent by the Faculty of Kinesiology, Sport, and Recreation standards, may discontinue their studies for a period of five years from the date of last attendance and seek consideration for Fall readmission by writing a letter of petition to the Associate Dean (Undergraduate Programs). Readmission, if offered, will be on probation, subject to conditions specified by the Associate Dean (Undergraduate Programs).

Students who have been required to withdraw three times or equivalent are ineligible for readmission to the Faculty of Kinesiology, Sport, and Recreation.

6. Fresh Start Program

Note: Year 1 and 2 students who have achieved a GPA of between 1.3 and 1.6 may be eligible for admission to the Fresh Start program. Students must be recommended by the Faculty for participation in the Fresh Start program. Students who have been found to have committed an offence under the University of Alberta Code of Student Behavior will not normally be recommended for Fresh Start. Further, detailed information can be found in [Fresh Start Program, First- and Second-Year Students with GPAs of 1.3 to 1.6—Admission to Fresh Start Program and Academic Warning, Academic Probation, Required to Withdraw](#).

7. Readmitted Students

A student who has previously been required to withdraw from any postsecondary institution and is admitted or readmitted to the Faculty will be assigned probation. A student who subsequently fails to meet the conditions of probation will be required to

Spring. Students who are being required to withdraw for the first time in the Faculty of Kinesiology, Sport, and Recreation and wish to continue studies in the Faculty of Kinesiology, Sport, and Recreation, may choose one of the following mutually exclusive options:

i). Fresh Start Program: is available by recommendation of the Faculty to students whose GPA is between 1.3 and 1.6 inclusive and have taken less than 60 units of course weight of postsecondary work. Students who have been on probation or have more than one requirement to withdraw or their equivalents, are not eligible for the Fresh Start program. Further, detailed information can be found in [Fresh Start Program, First- and Second-Year Students with GPAs of 1.3 to 1.6—Admission to Fresh Start Program and Academic Regulations-Academic Standing](#).

ii). Discontinue Studies and Apply for Fall Readmission: Students in the Faculty of Kinesiology, Sport, and Recreation who are being required to withdraw for the first time in their academic record may elect to discontinue studies for normally a minimum period of 12 months and then apply for Fall readmission on Probation (see Probation below). The discontinue of studies period can not exceed 12 months without permission. No coursework can be attempted during this period. Should any coursework be attempted at any institution during this period, students will have waived the option to discontinue their studies for normally 12 months and will need to requalify for readmission (see Requalify below).

iii) Requalify: Students who are being required to withdraw for the first time in the Faculty of Kinesiology, Sport, and Recreation may elect to requalify by taking further postsecondary work. Subsequent to having been required to withdraw, such applicants must present 24 units of course weight transferable to the University of Alberta with a minimum AGPA of 2.0 or 18 units of course weight transferable to the University of Alberta with a minimum AGPA of 2.7 to be considered for readmission.

withdraw. Students who have failed probation or been twice required to withdraw (not necessarily consecutively), or equivalent by the Faculty of Kinesiology, Sport, and Recreation standards, may discontinue their studies for a period of five years from the date of last attendance and seek consideration for Fall readmission by writing a letter of petition to the Associate Dean (Undergraduate Programs). Readmission, if offered, will be on probation, subject to conditions specified by the Associate Dean (Undergraduate Programs).

8. Probation is granted to students who are required to withdraw and successfully appeal or to students who are readmitted after studies were discontinued for academic reasons. Students may also be admitted on probation if their previous academic record is either deficient in some respect or below the standard ordinarily required. When placed on probation, a student must fulfill specific conditions specified by the Associate Dean (Undergraduate Programs) at the time of readmission. To clear probation and return to satisfactory standing, students must normally successfully complete a minimum of 18 units of course weight during the Fall/Winter, obtain a minimum 2.0 GPA, and successfully fulfill all other conditions of the probation. Students who fail to satisfy any of the conditions fail probation, and are required to withdraw. Students who fail a second period on probation are ineligible for readmission to the Faculty of Kinesiology, Sport, and Recreation.

NOTE:

Students are encouraged to contact the KSR Student Services Office and consult with an Academic Advisor for assistance.

5. Probation: Probation is granted to Faculty of Kinesiology, Sport, and Recreation students who are required to withdraw and successfully appeal to the Faculty of Kinesiology, Sport, and Recreation or for students who are readmitted after studies were discontinued for academic reasons. Students may also be admitted on probation if their previous academic record is either deficient in some respect or below the standard ordinarily required. When placed on probation, a student must fulfill specific conditions specified by the Associate Dean Undergraduate at the time of readmission. To clear probation and return to Satisfactory Standing, students must normally successfully complete the following conditions:

- i) Attend the subsequent Fall and Winter terms and;
- ii) Achieve a minimum 2.0 GPA on a minimum 18 units of course weight attempted at the University of Alberta. Course weight attempted includes university courses completed with a final grade and excludes courses with grades of W (withdrew).
- iii) Fulfill any other conditions outlined by the Associate Dean Undergraduate.

Students in the Faculty of Kinesiology, Sport, and Recreation who have failed probation or been twice required to withdraw or equivalent by Faculty of Kinesiology, Sport, and Recreation standards must discontinue their studies for a period of five years from the date of last attendance. After the five year period, the student may seek consideration for Fall readmission by writing a letter of petition to the Associate Dean Undergraduate. Readmission, if offered, will be on Probation, subject to conditions specified by the Associate Dean Undergraduate.

Students who fail a second period on probation or who have been required to withdraw three times or

	equivalent by Faculty of Kinesiology, Sport, and Recreation standards are ineligible for readmission to the Faculty of Kinesiology, Sport, and Recreation.
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NOTE:

Students are encouraged to contact the KSR Student Services Office and consult with an Academic Advisor for assistance.

Reviewed/Approved by:

REQUIRED:

Program Support Team (Undergraduate & Non-credit) - August 31, 2023 early consultation; for omnibus consent agenda October 26, 2023

KSR Undergraduate Programs Committee - September 13, 2023 approval

KSR Faculty Executive - September 27, 2023 approval

KSR Faculty Council - October 4, 2023 approval

OPTIONAL:

KSR Student Service Office Team Lead and KSR Student Advisors, June to September, 2023

Faculty (& Department or Academic Unit):	FoMD – Dept of Medical Genetics
Contact Person:	Wang, Zhixiang
Level of change: (choose one only) [?]	• Undergraduate
	• Graduate
For which term will this change take effect?	Fall 2024

Rationale

Things to consider (maximum 500 words): Why is this being changed; How will it benefit students/department/unit; How is this comparable to similar programs (internal or external); Historical context; Impacts to administration or program structure; Consultation with stakeholders

MDGEN 601 – The undergraduate level course MDGEN 401 will be cross listed with the MDGEN 601 graduate course.

Course Template

Current: Removed language	Proposed: New language
<p>MDGEN 601</p> <p>Selected Topics in Medical Genetics</p> <p>Course Career Graduate Units 3 Approved Hours 0-3S-0 Fee index 6 Faculty Medicine and Dentistry Department Medical Genetics Typically Offered either term</p> <p>Description A directed reading and seminar course based on papers taken from the recent literature of medical genetics. The course consists of lectures on a specific topic in medical genetics and oral presentations of the current literature by students. Selected topics vary so that students may take the same course but examining a different topic for additional credit. Prerequisite: consent of the Department of Medical Genetics</p>	<p>MDGEN 601</p> <p>Selected Topics in Medical Genetics</p> <p>Course Career Graduate Units 3 Approved Hours 1-2S-0 Fee index 6 Faculty Medicine and Dentistry Department Medical Genetics Typically Offered either term</p> <p>Description A directed reading and seminar course based on papers taken from the recent literature of medical genetics. The course consists of lectures on a specific topic in medical genetics and oral presentations of the current literature by students. Selected topics vary so that students may take the same course but examining a different topic for additional credit. Prerequisite: consent of the Department of Medical Genetics. The undergraduate level course MDGEN 401 will be cross listed with the MDGEN 601 graduate course. Credit may only be obtained in one of MDGEN 401 or MDGEN 601.</p>

Reviewed/Approved by:

REQUIRED:

FoMD Faculty Learning Committee (Faculty Council-delegated Approver) – August 21 2023

OPTIONAL:

FoMD Graduate Programs Committee (GPC) – August 4, 2023

Faculty (& Department or Academic Unit):	FOMD – Medical Genetics
Contact Person:	Wang, Zhixiang
Level of change: (choose one only)	<ul style="list-style-type: none"> • Undergraduate • <u>Graduate</u>
Type of change request: (check all that apply)	<ul style="list-style-type: none"> • <u>Program</u> • Regulation
For which term is this intended to take effect?	Fall 2024
Does this proposal have corresponding course changes? (Should be submitted at the same time)	No

Rationale

Things to consider (maximum 500 words): Why is this being changed; How will it benefit students/department/unit; How is this comparable to similar programs (internal or external); Historical context; Impacts to administration or program structure; Consultation with stakeholders

Due to the changes in the Department, some modifications regarding the course requirements also need to be modified.

Calendar Copy

URL in current Calendar (or "New page")	
Current Copy: Removed language	Proposed Copy: New language
<p>The Degree of MSc in Medical Sciences - Medical Genetics [Graduate] Program Description The general description for the MSc program is as presented for all MSc programs in Medical Sciences (see The Degree of MSc).</p> <p>Students are required to complete a minimum of ★6 in graded graduate-level coursework, and a thesis.</p> <p>Required Courses</p>	<p>The Degree of MSc in Medical Sciences - Medical Genetics [Graduate] Program Description The general description for the MSc program is as presented for all MSc programs in Medical Sciences (see The Degree of MSc).</p> <p>Students are required to complete a minimum of ★6 in graded graduate-level coursework, and a thesis.</p> <p>Required courses Students should choose two courses from the following three courses:</p>

<p>MDGEN 601 - Selected Topics in Medical Genetics OR MDGEN 605 – Directed Reading in Medical Genetics</p> <p>MDGEN 602 – Special Topics in Medical Genetics</p> <p>For students in the (MatCH) specialized umbrella scholarship program, course substitutions will be allowed with permission of graduate coordinator. Students in the Maternal and Child Health (MatCH) scholarship program are also admitted to the Graduate Embedded Certificate in Maternal and Child Health Research. See Medical Sciences for the program requirements and the MatCH website for more information on the program.</p> <p>Thesis Registration in 900-level THES Seminar Students must present their research in progress at a seminar to the Department in the second year and fourth year (if applicable) of their graduate program.</p> <p>Residence Requirement The MSc program has a minimum residence requirement of one and a half academic years (where an academic year is defined as the eight month period from September through April) of full-time on-campus registration.</p> <p>Length of Program The maximum time to complete the thesis-based MSc program as set by the Faculty of Graduate Studies and Research is four years.</p>	<p>MDGEN 601 - Selected Topics in Medical Genetics</p> <p>MDGEN 602 - Special Topics in Medical Genetics taken three times.</p> <p>MDGEN 605 - Directed Reading in Medical Genetics</p> <p>For students in the (MatCH) specialized umbrella scholarship program, course substitutions will be allowed with permission of graduate coordinator. Students in the Maternal and Child Health (MatCH) scholarship program are also admitted to the Graduate Embedded Certificate in Maternal and Child Health Research. See Medical Sciences for the program requirements and the MatCH website for more information on the program.</p> <p>Thesis Registration in 900-level THES Seminar Students must present their research in progress at a seminar to the Department in the second year and fourth year (if applicable) of their graduate program.</p> <p>Length of Program The maximum time to complete the thesis-based MSc program as set by the Faculty of Graduate Studies and Research is four years.</p>
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Reviewed/Approved by:

<p>REQUIRED: FoMD Faculty Learning Committee (Faculty Council-delegated Approver) – August 21 2023</p>
<p>OPTIONAL: FoMD Graduate Programs Committee (GPC) – August 4, 2023</p>

Faculty (& Department or Academic Unit):	FOMD – Medical Genetics
Contact Person:	Wang, Zhixiang
Level of change: (choose one only)	<ul style="list-style-type: none"> • Undergraduate • Graduate
Type of change request: (check all that apply)	<ul style="list-style-type: none"> • Program • Regulation
For which term is this intended to take effect?	Fall 2024
Does this proposal have corresponding course changes? (Should be submitted at the same time)	No

Rationale

Things to consider (maximum 500 words): Why is this being changed; How will it benefit students/department/unit; How is this comparable to similar programs (internal or external); Historical context; Impacts to administration or program structure; Consultation with stakeholders

Due to the changes in the Department, some modifications regarding the course requirements also need to be modified.

Calendar Copy

URL in current Calendar (or "New page")	
Current Copy: Removed language	Proposed Copy: New language
<p>The Degree of PhD in Medical Sciences - Medical Genetics [Graduate] Program Description The general description for the PhD program is as presented for all PhD programs in Medical Sciences (see The Degree of MSc).</p> <p>Students are required to complete a minimum of ★6 in graded graduate-level coursework, and a thesis.</p> <p>Required courses</p>	<p>The Degree of PhD in Medical Sciences - Medical Genetics [Graduate] Program Description The general description for the PhD program is as presented for all PhD programs in Medical Sciences (see The Degree of MSc).</p> <p>Students are required to complete a minimum of ★6 in graded graduate-level coursework, and a thesis.</p> <p>Required courses Students should choose two courses from the following three courses:</p>

MDGEN 601 - Selected Topics in Medical Genetics
 OR
 MDGEN 605 - Directed Reading in Medical Genetics

MDGEN 602 - Special Topics in Medical Genetics
 taken three times.

For students in the MatCH specialized umbrella scholarship program, course substitutions will be allowed with permission of graduate coordinator. Students in the Maternal and Child Health (MatCH) scholarship program are also admitted to the Graduate Embedded Certificate in Maternal and Child Health Research. See Medical Sciences for the program requirements and the MatCH website for more information on the program.

Thesis

Registration in 900-level THES

Seminar

Students must present a research in progress seminar to the Department in the second year and fourth year of their graduate program.

PhD Proposal

All PhD students must submit a PhD Proposal to the Medical Sciences Graduate Program (MSGP) committee. The proposal must be approved prior to the candidacy exam.

Students who changed program category to the PhD from an MSc program must submit a PhD proposal by 24 months into their graduate program.

Students who entered the PhD program having already completed the MSc degree must submit a PhD Proposal within the first 18 months of their program.

Candidacy Exam

The candidacy exam includes a research proposal on a topic related to but not on their specific research topic as chosen by the supervisory committee from two student-proposed topic areas. The research proposal will consist of ten single spaced pages and one summary page.

Students who changed program category to the PhD from an MSc program are required to complete their candidacy exam within the first 36 months of their program.

MDGEN 601 - Selected Topics in Medical Genetics

MDGEN 602 - Special Topics in Medical Genetics
 taken three times.

MDGEN 605 - Directed Reading in Medical Genetics

For students in the MatCH specialized umbrella scholarship program, course substitutions will be allowed with permission of graduate coordinator. Students in the Maternal and Child Health (MatCH) scholarship program are also admitted to the Graduate Embedded Certificate in Maternal and Child Health Research. See Medical Sciences for the program requirements and the MatCH website for more information on the program.

Thesis

Registration in 900-level THES

Seminar

Students must present a research in progress seminar to the Department in the second year and fourth year of their graduate program.

PhD Proposal

All PhD students must submit a PhD Proposal to the Medical Sciences Graduate Program (MSGP) committee. The proposal must be approved prior to the candidacy exam.

Students who changed program category to the PhD from an MSc program must submit a PhD proposal by 24 months into their graduate program.

Students who entered the PhD program having already completed the MSc degree must submit a PhD Proposal within the first 18 months of their program.

Candidacy Exam

The candidacy exam includes a research proposal on a topic related to but not on their specific research topic as chosen by the supervisory committee from two student-proposed topic areas. The research proposal will consist of ten single spaced pages and one summary page.

Students who changed program category to the PhD from an MSc program are required to complete their candidacy exam within the first 36 months of their program.

<p>Students who entered the PhD program having already completed the MSc degree are required to complete their candidacy exam within the first 24 months of their program.</p> <p>Residence Requirement The PhD program follows the minimum residence requirement of the Faculty of Graduate Studies and Research, which is two academic years (where an academic year is defined as the eight-month period from September through April) of full-time on-campus registration.</p> <p>Length of Program The maximum time to complete the PhD program as set by the Faculty of Graduate Studies and Research is six years.</p>	<p>Students who entered the PhD program having already completed the MSc degree are required to complete their candidacy exam within the first 24 months of their program.</p> <p>Length of Program The maximum time to complete the PhD program as set by the Faculty of Graduate Studies and Research is six years.</p>
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Reviewed/Approved by:

<p>REQUIRED: FoMD Faculty Learning Committee (Faculty Council-delegated Approver) – August 21 2023</p>
<p>OPTIONAL: FoMD Graduate Programs Committee (GPC) – August 4, 2023</p>

Faculty (& Department or Academic Unit):	FOMD Laboratory Medicine and Pathology Medical Laboratory Science
Contact Person:	Roberta Martindale ram7@ualberta.ca Alt: Kim Thompson kathomps@ualberta.ca
Level of change: (choose one only)	<ul style="list-style-type: none"> • Undergraduate • Graduate
Type of change request: (check all that apply)	<ul style="list-style-type: none"> • Program • Regulation
For which term is this intended to take effect?	F2024
Does this proposal have corresponding course changes? (Should be submitted at the same time)	No

Rationale

The change from the word phase to year is in alignment with program changes that occurred several years ago. This passage was missed in the original calendar changes.
The change from 2.7 to 2.0 is more student centered, as 2.0 is considered a satisfactory GPA.

Calendar Copy

URL in current Calendar (or "New page") https://calendar.ualberta.ca/content.php?catoid=39&navoid=12264&hl=%22medical+laboratory+science%22&returnto=search	
Current Copy: Removed language	Proposed Copy: New language
Academic Standing and Promotion [...] Bachelor of Science in Medical Laboratory Science and Post-Professional Certification degree completion [...] 5. A student permitted to repeat a course or an entire phase must withdraw unless a minimum average grade of 2.7 is obtained on the repeated work.	Academic Standing and Promotion [...] Bachelor of Science in Medical Laboratory Science and Post-Professional Certification degree completion [...] 5. A student permitted to repeat a course or an entire year must withdraw unless a minimum average grade of 2.0 is obtained on the repeated work.

Reviewed/Approved by:

REQUIRED:

FoMD Faculty Learning Committee (Faculty Council-delegated Approver) – Aug 25 2023

FoMD Faculty Council (For Information) – Oct 5, 2023

OPTIONAL: Other internal faculty approving bodies, consultation groups, or departments, and approval dates.

Faculty (& Department or Academic Unit):	Faculty of Native Studies
Contact Person:	Dr. Adam Gaudry, Vice Dean
Level of change: (choose one only)	• Undergraduate
	• Graduate
Type of change request: (check all that apply)	• Program
	• Regulation
For which term is this intended to take effect?	Fall 2024
Does this proposal have corresponding course changes? (Should be submitted at the same time)	No

Rationale

Things to consider (maximum 500 words): Why is this being changed; How will it benefit students/department/unit; How is this comparable to similar programs (internal or external); Historical context; Impacts to administration or program structure; Consultation with stakeholders

In past years we were able to accept applications after the initial deadline (January 15th) to ensure that we admitted a full cohort of students. The number of graduate applications that FNS receives have increased significantly over the past few years so that post-January 15th admissions are not able to be admitted. This calendar change will align the calendar with FNS practice of admitting a full cohort of graduate students based on the January application deadline and avoid disappointing students who wish to apply for entry after all spots have been filled. By asking applicants to refer to the FNS website for the deadline, the Faculty can adjust the deadline when necessary so that it falls on a weekday to avoid any confusion on the final day for submission.

Calendar Copy

URL in current Calendar (or "New page") https://calendar.ualberta.ca/preview_program.php?catoid=39&poid=47793&returnto=12424	
Current Copy: Removed language	Proposed Copy: New language
Graduate Programs in Native Studies ... Entrance Requirements ... The application deadline is January 15 if you intend to apply for University of Alberta funding. Applications will be accepted until the program is full or until July 1.	Graduate Programs in Native Studies ... Entrance Requirements ... For details on the application deadline , application procedures and information on financial assistance see the Faculty of Native Studies website .

<p>For details on application procedures and information on financial assistance see the Faculty of Native Studies website.</p>	
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Reviewed/Approved by:

<p>REQUIRED: Faculty Council (or delegate) and approval date. GPST, September 25, 2023 Faculty of Native Studies Faculty Council, June 8, 2023.</p>

<p>OPTIONAL: Faculty of Native Studies Academic Affairs Committee, May 23, 2023.</p>
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Faculty (& Department or Academic Unit):	Nursing
Contact Person:	Kara Schick-Makaroff (Associate Dean, Graduate Studies)
Level of change:	<input type="checkbox"/> Undergraduate <input checked="" type="checkbox"/> Graduate
For which term will this change take effect?	Fall, 2024

Rationale

Things to consider (maximum 500 words): Why is this being changed; How will it benefit students/department/unit; How is this comparable to similar programs (internal or external); Historical context; Impacts to administration or program structure; Consultation with stakeholders

NURS 593 - Applied Inquiry I (593) and NURS 594 Applied Inquiry II

NURS 593 & 594 were originally conceptualized in the MN curriculum redesign as co or pre-requisites of Community of Inquiry courses (NURS 589, 590, 591). In curriculum enactment and development, they have not been designed or taught in this manner.

Course Template

Current: Removed language	Proposed: New language
<p>Subject & Number: NURS 593</p> <p>Title: Applied Inquiry I - Framing the Inquiry Focus</p> <p>Course Career: Graduate Units: 3 Approved Hours: 0-3S-0 Fee index: 6 Faculty: Nursing Department: Nursing Typically Offered: either term</p> <p>Description Engage in structured inquiry in relation to issues from health care and/or nursing practice. Emphasis is placed on exploring key elements of such issues, identifying knowledge gaps, and shaping current understanding in pursuit of questions and methods appropriate for systematic research and inquiry. Co or Prerequisite: NURS 589, NURS 595.</p>	<p>Subject & Number: NURS 593</p> <p>Title: Applied Inquiry I - Framing the Inquiry Focus</p> <p>Course Career: Graduate Units: 3 Approved Hours: 0-3S-0 Fee index: 6 Faculty: Nursing Department: Nursing Typically Offered: either term</p> <p>Description Engage in structured inquiry in relation to issues from health care and/or nursing practice. Emphasis is placed on exploring key elements of such issues, identifying knowledge gaps, and shaping current understanding in pursuit of questions and methods appropriate for systematic research and inquiry.</p>

<p>Subject & Number: NURS 594</p> <p>Title: Applied Inquiry II - Grand Challenge Questions</p> <p>Course Career: Graduate Units: 3 Approved Hours: 0-3S-0 Fee index: 6 Faculty: Nursing Department: Nursing Typically Offered: either term</p> <p>Description Participate in guided inquiry, applying research skills and inquiry approaches, designing solutions, and contributing to a knowledge-building community. Student teams investigate a current nursing issue from a range of perspectives informed by advanced leadership, education, clinical and research-based knowledge, theory and practice. Prerequisite: NURS 593.</p>	<p>Subject & Number: NURS 594</p> <p>Title: Applied Inquiry II - Grand Challenge Questions</p> <p>Course Career: Graduate Units: 3 Approved Hours: 0-3S-0 Fee index: 6 Faculty: Nursing Department: Nursing Typically Offered: either term</p> <p>Description Participate in guided inquiry, applying research skills and inquiry approaches, designing solutions, and contributing to a knowledge-building community. Student teams investigate a current nursing issue from a range of perspectives informed by advanced leadership, education, clinical and research-based knowledge, theory and practice.</p>
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Reviewed/Approved by:

<p>REQUIRED: Faculty Council (or delegate) and approval date.</p> <ul style="list-style-type: none"> ● GPST Graduate Program Support Team - Meets Oct 23, 2023 ● Faculty of Nursing Council - Meets Oct 24, 2023 ● Policy Review Committee - Not scheduled, last year was November ● FGSR Council - Meets Oct 11, Nov 8, Dec 6 ● Programs Committee - Jan 2024
<p>OPTIONAL: Other internal faculty approving bodies, consultation groups, or departments, and approval dates.</p> <ul style="list-style-type: none"> ● Faculty of Nursing Graduate Education Committee - Approved - Sep 18, 2023 ● Faculty of Nursing Caucus - Approved Sep 25, 2023

Faculty (& Department or Academic Unit):	Faculty of Science, Department of Mathematical and Statistical Sciences
Contact Person:	David McNeilly, dm15@ualberta.ca
Level of change: (choose one only)	<input checked="" type="checkbox"/> Undergraduate <input type="checkbox"/> Graduate
Type of change request: (check all that apply)	<input type="checkbox"/> Program <input checked="" type="checkbox"/> Regulation
For which term is this intended to take effect?	Fall 2024
Does this proposal have corresponding course changes? (Should be submitted at the same time)	No

Rationale

Things to consider (maximum 500 words): Why is this being changed; How will it benefit students/department/unit; How is this comparable to similar programs (internal or external); Historical context; Impacts to administration or program structure; Consultation with stakeholders

Reducing the transfer requirement for year 2 entry in English/Writing Studies from 6 units to 3 units will align the Mathematics and Finance programs with the Bachelor of Commerce. The degree condition of the Mathematics and Finance programs in regards to English/Writing Studies (6 units in ENGL, or 3 units in ENGL and 3 units in WRS) will not be affected by this proposed change.

Calendar Copy

URL in current Calendar: https://calendar.ualberta.ca/content.php?catoid=39&navoid=12312	
Current Copy: Removed language	Proposed Copy: New language
Faculty of Science Admission Requirements ... Bachelor of Science (Major and Honors) ... Postsecondary Transfer Applicants ...	Faculty of Science Admission Requirements ... Bachelor of Science (Major and Honors) ... Postsecondary Transfer Applicants ...

Minimum Grade Point Averages and Additional Criteria

...

Major - Mathematics and Finance subject area:

1. For Year 2 entry, a minimum 2.7 AGPA and a minimum 2.7 GPA on the following courses (or their equivalents):
 - [ECON 101](#)
 - [ECON 102](#)
 - [MATH 125](#)
 - [MATH 154](#)
 - [MATH 156](#)
 - [STAT 161](#)
 - **6 units** in ENGL or WRS

...

Honors - Mathematics and Finance subject area:

1. For Year 2 entry, a minimum 3.0 AGPA and a minimum 3.0 GPA on the following courses (or their equivalents):
 - [ECON 101](#)
 - [ECON 102](#)
 - [MATH 117](#)
 - [MATH 118](#)
 - [MATH 127](#)
 - [STAT 161](#)
 - **6 units** in ENGL or WRS

Minimum Grade Point Averages and Additional Criteria

...

Major - Mathematics and Finance subject area:

2. For Year 2 entry, a minimum 2.7 AGPA and a minimum 2.7 GPA on the following courses (or their equivalents):
 - [ECON 101](#)
 - [ECON 102](#)
 - [MATH 125](#)
 - [MATH 154](#)
 - [MATH 156](#)
 - [STAT 161](#)
 - **3 units** in ENGL or WRS

...

Honors - Mathematics and Finance subject area:

2. For Year 2 entry, a minimum 3.0 AGPA and a minimum 3.0 GPA on the following courses (or their equivalents):
 - [ECON 101](#)
 - [ECON 102](#)
 - [MATH 117](#)
 - [MATH 118](#)
 - [MATH 127](#)
 - [STAT 161](#)
 - **3 units** in ENGL or WRS

Reviewed/Approved by:

REQUIRED: Faculty Council (or delegate) and approval date.

Approved by Science Undergraduate Programs Committee on August 25, 2023

OPTIONAL: Other internal faculty approving bodies, consultation groups, or departments, and approval dates.

Faculty (& Department or Academic Unit):	Science (Physics)
Contact Person:	Erik Rosolowsky
Level of change: (choose one only)	<input checked="" type="checkbox"/> Undergraduate
	<input type="checkbox"/> Graduate
Type of change request: (check all that apply)	<input checked="" type="checkbox"/> Program
	<input type="checkbox"/> Regulation
For which term is this intended to take effect?	Fall 2024
Does this proposal have corresponding course changes? (Should be submitted at the same time)	No

Rationale

Things to consider (maximum 500 words): Why is this being changed; How will it benefit students/department/unit; How is this comparable to similar programs (internal or external); Historical context; Impacts to administration or program structure; Consultation with stakeholders

The two changes resolve nesting issues where students transferring between Honors and Majors version of the program do not have separate requirements.

Calendar Copy

https://calendar.ualberta.ca/preview_program.php?catoid=39&poiid=50443

Current Copy: Removed language	Proposed Copy: New language
<p>Honors in Mathematical Physics Requirements Foundation Courses</p> <p>PHYS 144 - Newtonian Mechanics and Relativity</p> <p>PHYS 146 – Fluids and Waves</p> <p>3 units from:</p> <ul style="list-style-type: none"> MATH 117 - Honors Calculus I MATH 144 - Calculus for the Mathematical and Physical Sciences I <p>3 units from:</p> <ul style="list-style-type: none"> MATH 118 - Honors Calculus II MATH 146 - Calculus for the Mathematical and Physical Sciences II <p>3 units from:</p> <ul style="list-style-type: none"> MATH 125 - Linear Algebra I MATH 127 - Honors Linear Algebra I <p>Senior Courses</p>	<p>Honors in Mathematical Physics Requirements Foundation Courses</p> <p>PHYS 144 - Newtonian Mechanics and Relativity</p> <p>PHYS 181 - Relativity, Electricity and Magnetism</p> <p>3 units from:</p> <ul style="list-style-type: none"> MATH 117 - Honors Calculus I MATH 144 - Calculus for the Mathematical and Physical Sciences I <p>3 units from:</p> <ul style="list-style-type: none"> MATH 118 - Honors Calculus II MATH 146 - Calculus for the Mathematical and Physical Sciences II <p>3 units from:</p> <ul style="list-style-type: none"> MATH 125 - Linear Algebra I MATH 127 - Honors Linear Algebra I <p>Senior Courses</p>

<p>MA PH 343 - Classical Mechanics II MA PH 364 - Group Theory in Physics (See Note 3) MA PH 451 - Mathematical Methods for Physics II MA PH 499 - Undergraduate Research Project MATH 216 - Introduction to Analysis (See Note 1) MATH 217 - Honors Calculus III MATH 317 - Honors Calculus IV MATH 337 - Introduction to Partial Differential Equations MATH 411 - Honors Complex Variables PHYS 234 - Introductory Computational Physics PHYS 244 - Classical Mechanics I PHYS 271 - Introduction to Modern Physics PHYS 295 - Experimental Physics I PHYS 310 - Thermodynamics and Kinetic Theory PHYS 311 - Statistical Physics PHYS 362 - Optics and Lasers PHYS 372 - Quantum Mechanics A PHYS 381 - Electromagnetic Theory I PHYS 458 - Special and General Relativity PHYS 472 - Quantum Mechanics B PHYS 481 - Electromagnetic Theory II</p> <p>3 units from: MATH 225 - Linear Algebra II MATH 227 - Honors Linear Algebra II</p> <p>3 units from: MA PH 251 - Differential Equations for Physics MATH 334 - Ordinary Differential Equations MATH 336 - Honors Ordinary Differential Equations</p> <p>3 units from: any 400-level course with the following course designators: ASTRO (See Note 2) PHYS</p> <p>3 units from:</p>	<p>MA PH 343 - Classical Mechanics II MA PH 364 - Group Theory in Physics (See Note 3) MA PH 451 - Mathematical Methods for Physics II MA PH 499 - Undergraduate Research Project MATH 216 - Introduction to Analysis (See Note 1) MATH 217 - Honors Calculus III</p> <p>MATH 337 - Introduction to Partial Differential Equations</p> <p>PHYS 234 - Introductory Computational Physics PHYS 244 - Classical Mechanics I PHYS 271 - Introduction to Modern Physics PHYS 295 - Experimental Physics I PHYS 310 - Thermodynamics and Kinetic Theory PHYS 311 - Statistical Physics PHYS 362 - Optics and Lasers PHYS 372 - Quantum Mechanics A PHYS 381 - Electromagnetic Theory I PHYS 458 - Special and General Relativity PHYS 472 - Quantum Mechanics B PHYS 481 - Electromagnetic Theory II</p> <p>3 units from: MATH 225 - Linear Algebra II MATH 227 - Honors Linear Algebra II</p> <p>3 units from: MA PH 251 - Differential Equations for Physics MATH 334 - Ordinary Differential Equations MATH 336 - Honors Ordinary Differential Equations</p> <p>3 units from: MATH 311 - Theory of Functions of a Complex Variable MATH 411 - Honors Complex Variables</p> <p>3 units from: MATH 317 - Honors Calculus IV</p>
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<p>any 400-level course with the following course designators: MATH PHYS</p>	<p>MA PH 351 - Mathematical Methods for Physics I</p> <p>3 units from: any 400-level course with the following course designators: ASTRO (See Note 2) PHYS</p> <p>3 units from: any 400-level course with the following course designators: MATH PHYS</p>
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Reviewed/Approved by:

REQUIRED: Faculty Council (or delegate) and approval date.	Approved by Science Undergraduate Program Committee on October 6, 2023
OPTIONAL: Other internal faculty approving bodies, consultation groups, or departments, and approval dates.	

Faculty (& Department or Academic Unit):	Science (Biochemistry BSc)
Contact Person:	Jonathan Parrish
Level of change: (choose one only)	<ul style="list-style-type: none"> ● Undergraduate
	<ul style="list-style-type: none"> ● Graduate
Type of change request: (check all that apply)	<ul style="list-style-type: none"> ● Program
	<ul style="list-style-type: none"> ● Regulation
For which term is this intended to take effect?	Fall 2024
Does this proposal have corresponding course changes? (Should be submitted at the same time)	No

Rationale

Things to consider (maximum 500 words): Why is this being changed; How will it benefit students/department/unit; How is this comparable to similar programs (internal or external); Historical context; Impacts to administration or program structure; Consultation with stakeholders

The list of courses associated with the requirement for 400-level BIOCH classes in the Honors in Biochemistry and Major in Biochemistry requirements did not properly list those courses that deal with core content of the Biochemistry program, so a specific list of courses that count towards this requirement is necessary.

Calendar Copy

https://calendar.ualberta.ca/preview_program.php?catoid=39&poid=50429	
Current Copy: Removed language	Proposed Copy: New language
15 units from: <hr/> <ul style="list-style-type: none"> ● any 400-level BIOCH course 	15 units from: <hr/> <ul style="list-style-type: none"> ● BIOCH 409 ● BIOCH 410 ● BIOCH 415 ● BIOCH 420 ● BIOCH 425 ● BIOCH 430 ● BIOCH 441 ● BIOCH 465 ● BIOCH 481 ● BIOCH 482

6 units from:

- any 400-level BIOCH course

6 units from:

- BIOCH 409
- BIOCH 410
- BIOCH 415
- BIOCH 420
- BIOCH 425
- BIOCH 430
- BIOCH 441
- BIOCH 465
- BIOCH 481
- BIOCH 482

Reviewed/Approved by:

REQUIRED: Faculty Council (or delegate) and approval date. Approved by Science Undergraduate Programs Committee on August 25, 2023

OPTIONAL: Other internal faculty approving bodies, consultation groups, or departments, and approval dates.

Faculty (& Department or Academic Unit):	Science; Dept. of Physics
Contact Person:	Erik Rosolowsky (rosolowsky@ualberta.ca)
Level of change: (choose one only) [?]	<input checked="" type="checkbox"/> Undergraduate <input type="checkbox"/> Graduate
For which term will this change take effect?	Fall 2023

Rationale

Things to consider (maximum 500 words): Why is this being changed; How will it benefit students/department/unit; How is this comparable to similar programs (internal or external); Historical context; Impacts to administration or program structure; Consultation with stakeholders

This amendment allows a student to take PHYS 499 and MA PH 499 to complete a single full-year research project. The students would be expected to complete a full set of evaluations for each term of the PHYS 499. The restriction to taking the course twice is intended to limit students taking 499 instead of expanding their breadth of Physics knowledge through other 400-level physics courses.

Course Template

Current: Removed language	Proposed: New language
Subject & Number: PHYS 499 Title: Undergraduate Research Project Course Career: Undergraduate Units: 3 Approved Hours: 0-0-6 Fee index: 6 Faculty: Science Department: Physics Typically Offered: Either term Description Undergraduate physics research project under the direction of a faculty member. Projects must involve a strong physics connection and involve some original research component. Prerequisites: A 300-level physics course and consent of department. Credit for this course may be obtained more than once provided it is for completely separate projects	Subject & Number: PHYS 499 Title: Undergraduate Research Project Course Career: Undergraduate Units: 3 Approved Hours: 0-0-6 Fee index: 6 Faculty: Science Department: Physics Typically Offered: Either term Description Undergraduate physics research project under the direction of a faculty member. Projects must involve a strong physics connection and involve some original research component. Prerequisites: A 300-level PHYS course and consent of the department. This course may be repeated but a student may obtain at most 6 units in PHYS 499 and MA PH 499.

<p>Subject & Number: MA PH 499</p> <p>Title: Undergraduate Research Project</p> <p>Course Career: Undergraduate Units: 3 Approved Hours: 0-0-6 Fee index: 6 Faculty: Science Department: Physics Typically Offered: Either term</p> <p>Description</p> <p>Undergraduate research project in mathematical or theoretical physics under the direction of a faculty member. Projects must involve both mathematical and physics components related to research. Prerequisites: A 300-level physics; a 300-level mathematics and consent of department. Credit for this course may be obtained more than once.</p>	<p>Subject & Number: MA PH 499</p> <p>Title: Undergraduate Research Project</p> <p>Course Career: Undergraduate Units: 3 Approved Hours: 0-0-6 Fee index: 6 Faculty: Science Department: Physics Typically Offered: Either term</p> <p>Description</p> <p>Undergraduate physics research project under the direction of a faculty member. Projects must involve a strong physics connection and involve some original research component. Prerequisites: A 300-level PHYS course and consent of the department. This course may be repeated but a student may obtain at most 6 units in PHYS 499 and MA PH 499.</p>
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Reviewed/Approved by:

<p>REQUIRED: Faculty Council (or delegate) and approval date.</p>	<p>Approved by Science Undergraduate Program Committee on October 6, 2023.</p>
<p>OPTIONAL: Physics Department</p>	

Faculty (& Department or Academic Unit):	Faculty of Science Faculty of Medicine and Dentistry (Neuroscience and Mental Health Institute)
Contact Person:	Gerda de Vries, Associate Dean Undergraduate Jocelyn Hall, Associate Dean Undergraduate
Level of change: (choose one only)	<input checked="" type="checkbox"/> Undergraduate
	<input type="checkbox"/> Graduate
Type of change request: (check all that apply)	<input checked="" type="checkbox"/> Program
	<input type="checkbox"/> Regulation
For which term is this intended to take effect?	Fall 2024
Does this proposal have corresponding course changes? (Should be submitted at the same time)	No

Rationale

Things to consider (maximum 500 words): Why is this being changed; How will it benefit students/department/unit; How is this comparable to similar programs (internal or external); Historical context; Impacts to administration or program structure; Consultation with stakeholders

Note 1 for the Honors Requirements: The last sentence in the note is inconsistent with the definition of the Subject Area Courses at the top of the page and needs to be deleted.

List B for the Major Requirements: The inclusion of PHYSL 404 in this list is a mistake; it should be PHYSL 405 (to match the Honors Requirements).

KIN 497: This is a topics course; this course can be used towards the Honors/Major only if the topic is Computational Neuroscience.

Calendar Copy

URL in current Calendar (or "New page") https://calendar.ualberta.ca/preview_program.php?catoid=39&poid=50448	
Current Copy: Removed language	Proposed Copy: New language
Bachelor of Science Neuroscience Subject Area	Bachelor of Science Neuroscience Subject Area

General Information

The subject area requirements listed on this page are part of the [Bachelor of Science](#) offered by the Faculty of Science. Students must ensure they are familiar with and follow all [University Regulations](#) and [Faculty of Science Regulations](#) in addition to the program requirements outlined below.

To find a description about this area of study, please visit [Our Degrees](#) of the Faculty of Science webpage.

Subject Area Courses

Neuroscience subject area courses include all courses at the 200-level or higher that satisfy specific requirements or options in the respective Honors or Major requirements, as listed below, and all courses at the 200-level or above with course designator NEURO.

Subject area courses are used in various subject area GPA calculations. Please see [Faculty of Science Admission Requirements](#), [Academic Standing](#), [Internal Changes to Program and/or Subject Area](#) and [Graduation](#) for more information.

Requirements

- [Honors in Neuroscience \(90 units\)](#)
- [Major in Neuroscience \(72 units\)](#)

Honors in Neuroscience Requirements

Foundation Courses

- BIOL 107 - Introduction to Cell Biology

General Information

The subject area requirements listed on this page are part of the [Bachelor of Science](#) offered by the Faculty of Science. Students must ensure they are familiar with and follow all [University Regulations](#) and [Faculty of Science Regulations](#) in addition to the program requirements outlined below.

To find a description about this area of study, please visit [Our Degrees](#) of the Faculty of Science webpage.

Subject Area Courses

Neuroscience subject area courses include all courses at the 200-level or higher that satisfy specific requirements or options in the respective Honors or Major requirements, as listed below, and all courses at the 200-level or above with course designator NEURO.

Subject area courses are used in various subject area GPA calculations. Please see [Faculty of Science Admission Requirements](#), [Academic Standing](#), [Internal Changes to Program and/or Subject Area](#) and [Graduation](#) for more information.

Requirements

- [Honors in Neuroscience \(90 units\)](#)
- [Major in Neuroscience \(72 units\)](#)

Honors in Neuroscience Requirements

Foundation Courses

- BIOL 107 - Introduction to Cell Biology

<ul style="list-style-type: none"> ● CHEM 101 - Introductory University Chemistry I ● MATH 134 - Calculus for the Life Sciences I ● PHYS 124 - Particles and Waves ● PHYS 126 - Fluids, Fields, and Radiation ● PSYCH 104 - Basic Psychological Processes <p>3 units from:</p> <hr/> <ul style="list-style-type: none"> ● MATH 136 - Calculus for the Life Sciences II ● STAT 151 - Introduction to Applied Statistics I <p>Senior Courses</p> <hr/> <ul style="list-style-type: none"> ● BIOCH 200 - Introductory Biochemistry ● BIOL 207 - Molecular Genetics and Heredity ● CHEM 261 - Organic Chemistry I ● CHEM 263 - Organic Chemistry II ● NEURO 210 - Introduction to Clinical Neuroscience ● NEURO 375 - Functional Neuroanatomy ● PHYSL 212 - Human Physiology I ● PHYSL 214 - Human Physiology II ● PHYSL 372 - Systems Neuroscience ● PSYCH 275 - Brain and Behavior <p>3 units from:</p> <hr/> <ul style="list-style-type: none"> ● BIOL 201 - Eukaryotic Cellular Biology ● CELL 201 - Introduction to Molecular Cell Biology <p>3 units from:</p> <hr/> <ul style="list-style-type: none"> ● PMCOL 371 - Cellular Neuroscience ● ZOOL 342 - Neurobiology <p>9 units from:</p> <hr/> <ul style="list-style-type: none"> ● GENET 270 - Foundations of Molecular Genetics ● GENET 390 - Gene Manipulation 	<ul style="list-style-type: none"> ● CHEM 101 - Introductory University Chemistry I ● MATH 134 - Calculus for the Life Sciences I ● PHYS 124 - Particles and Waves ● PHYS 126 - Fluids, Fields, and Radiation ● PSYCH 104 - Basic Psychological Processes <p>3 units from:</p> <hr/> <ul style="list-style-type: none"> ● MATH 136 - Calculus for the Life Sciences II ● STAT 151 - Introduction to Applied Statistics I <p>Senior Courses</p> <hr/> <ul style="list-style-type: none"> ● BIOCH 200 - Introductory Biochemistry ● BIOL 207 - Molecular Genetics and Heredity ● CHEM 261 - Organic Chemistry I ● CHEM 263 - Organic Chemistry II ● NEURO 210 - Introduction to Clinical Neuroscience ● NEURO 375 - Functional Neuroanatomy ● PHYSL 212 - Human Physiology I ● PHYSL 214 - Human Physiology II ● PHYSL 372 - Systems Neuroscience ● PSYCH 275 - Brain and Behavior <p>3 units from:</p> <hr/> <ul style="list-style-type: none"> ● BIOL 201 - Eukaryotic Cellular Biology ● CELL 201 - Introduction to Molecular Cell Biology <p>3 units from:</p> <hr/> <ul style="list-style-type: none"> ● PMCOL 371 - Cellular Neuroscience ● ZOOL 342 - Neurobiology <p>9 units from:</p> <hr/> <ul style="list-style-type: none"> ● GENET 270 - Foundations of Molecular Genetics ● GENET 390 - Gene Manipulation
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- PSYCH 371 - The Neurobiology of Learning and Memory
- PSYCH 375 - Introduction to Cognitive Neuroscience
- PSYCH 377 - Human Neuropsychology
- ZOOL 344 - Laboratory Exercises in Animal Physiology

6 units from List A (Cellular and Molecular Neuroscience):

-
- NEURO 410 - Cellular and Molecular Aspects of Normal Aging and Neurodegenerative Disorders
 - NEURO 411 - Clinical and Basic Science Aspects of Age-related Neurodegenerative Disorders
 - PHYSL 444 - Current Topics in Neuroscience
 - PMCOL 412 - Drugs and the Nervous System
 - PMCOL 475 - Signal Transduction Systems as Pharmacological Targets
 - PMCOL 512 - Pharmacology of the Synapse
 - PSYCH 478 - Behavior and Brain Chemistry

6 units from List B (Systems and Cognitive Neuroscience):

-
- KIN 497 - Selected Topics in Kinesiology and Sport
 - NEURO 443 - Neuroendocrine Concepts
 - NEURO 520 - Neuroplasticity
 - NEURO 525 - Neuroimaging in Neuroscience
 - PHYSL 403 - Neuroendoimmunomodulation
 - PHYSL 405 - Sensory Physiology
 - PSYCH 471 - Neurophysiology: Theory, Methods, and Analysis
 - PSYCI 511 - Biological Aspects of Psychiatry

12 units in either the

Thesis Stream (See Note 1):

-
- NEURO 498 - Honors Research Project in Neuroscience I

- PSYCH 371 - The Neurobiology of Learning and Memory
- PSYCH 375 - Introduction to Cognitive Neuroscience
- PSYCH 377 - Human Neuropsychology
- ZOOL 344 - Laboratory Exercises in Animal Physiology

6 units from List A (Cellular and Molecular Neuroscience):

-
- NEURO 410 - Cellular and Molecular Aspects of Normal Aging and Neurodegenerative Disorders
 - NEURO 411 - Clinical and Basic Science Aspects of Age-related Neurodegenerative Disorders
 - PHYSL 444 - Current Topics in Neuroscience
 - PMCOL 412 - Drugs and the Nervous System
 - PMCOL 475 - Signal Transduction Systems as Pharmacological Targets
 - PMCOL 512 - Pharmacology of the Synapse
 - PSYCH 478 - Behavior and Brain Chemistry

6 units from List B (Systems and Cognitive Neuroscience):

-
- KIN 497 - Selected Topics in Kinesiology and Sport (Computational Neuroscience)
 - NEURO 443 - Neuroendocrine Concepts
 - NEURO 520 - Neuroplasticity
 - NEURO 525 - Neuroimaging in Neuroscience
 - PHYSL 403 - Neuroendoimmunomodulation
 - PHYSL 405 - Sensory Physiology
 - PSYCH 471 - Neurophysiology: Theory, Methods, and Analysis
 - PSYCI 511 - Biological Aspects of Psychiatry

12 units in either the

Thesis Stream (See Note 1):

-
- NEURO 498 - Honors Research Project in Neuroscience I

- NEURO 499 - Honors Research Project in Neuroscience II

OR Non-Thesis Stream:

-
- NEURO 450 - Readings on Selected Topics in Neuroscience **AND**
 - NEURO 451 - Honors Research Project in Neuroscience **AND/OR**
 - NEURO 452 - Honors Research Project in Neuroscience
 - 3-6 units from List A or B (See Note 2)

Notes:

-
1. Students following the Thesis stream are allowed to take a maximum of 3 units from NEURO 451 and NEURO 452. These units may count toward either the List A or B requirement, if an appropriate topic is selected. ~~Otherwise, they will count toward the open options for the BSc Honors degree. Please consult with an Academic Advisor as needed.~~
 2. 3 units are required from List A or B if NEURO 450, NEURO 451 and NEURO 452 are taken OR 6 units are required from List A or B if NEURO 450 and one of NEURO 451 or NEURO 452 are taken.
 3. Some courses appear on more than one list. Students may not use the same course to satisfy more than one list requirement.

Major in Neuroscience Requirements

Foundation Courses

-
- BIOL 107 - Introduction to Cell Biology
 - CHEM 101 - Introductory University Chemistry I
 - MATH 134 - Calculus for the Life Sciences I

- NEURO 499 - Honors Research Project in Neuroscience II

OR Non-Thesis Stream:

-
- NEURO 450 - Readings on Selected Topics in Neuroscience **AND**
 - NEURO 451 - Honors Research Project in Neuroscience **AND/OR**
 - NEURO 452 - Honors Research Project in Neuroscience
 - 3-6 units from List A or B (See Note 2)

Notes:

-
1. Students following the Thesis stream are allowed to take a maximum of 3 units from NEURO 451 and NEURO 452. These units may count toward either the List A or B requirement, if an appropriate topic is selected.
 2. 3 units are required from List A or B if NEURO 450, NEURO 451 and NEURO 452 are taken OR 6 units are required from List A or B if NEURO 450 and one of NEURO 451 or NEURO 452 are taken.
 3. Some courses appear on more than one list. Students may not use the same course to satisfy more than one list requirement.

Major in Neuroscience Requirements

Foundation Courses

-
- BIOL 107 - Introduction to Cell Biology
 - CHEM 101 - Introductory University Chemistry I
 - MATH 134 - Calculus for the Life Sciences I

- PHYS 124 - Particles and Waves
- PHYS 126 - Fluids, Fields, and Radiation
- PSYCH 104 - Basic Psychological Processes

3 units from:

-
- MATH 136 - Calculus for the Life Sciences II
 - STAT 151 - Introduction to Applied Statistics I

Senior Courses

-
- BIOCH 200 - Introductory Biochemistry
 - BIOL 207 - Molecular Genetics and Heredity
 - CHEM 261 - Organic Chemistry I
 - CHEM 263 - Organic Chemistry II
 - NEURO 210 - Introduction to Clinical Neuroscience
 - NEURO 375 - Functional Neuroanatomy
 - PHYSL 210 - Human Physiology
 - PHYSL 372 - Systems Neuroscience
 - PSYCH 275 - Brain and Behavior

3 units from:

-
- PMCOL 371 - Cellular Neuroscience
 - ZOOL 342 - Neurobiology

6 units from:

-
- GENET 270 - Foundations of Molecular Genetics
 - GENET 390 - Gene Manipulation
 - PSYCH 371 - The Neurobiology of Learning and Memory
 - PSYCH 375 - Introduction to Cognitive Neuroscience
 - PSYCH 377 - Human Neuropsychology
 - ZOOL 344 - Laboratory Exercises in Animal Physiology

6 units from List A (Cellular and Molecular Neuroscience):

- PHYS 124 - Particles and Waves
- PHYS 126 - Fluids, Fields, and Radiation
- PSYCH 104 - Basic Psychological Processes

3 units from:

-
- MATH 136 - Calculus for the Life Sciences II
 - STAT 151 - Introduction to Applied Statistics I

Senior Courses

-
- BIOCH 200 - Introductory Biochemistry
 - BIOL 207 - Molecular Genetics and Heredity
 - CHEM 261 - Organic Chemistry I
 - CHEM 263 - Organic Chemistry II
 - NEURO 210 - Introduction to Clinical Neuroscience
 - NEURO 375 - Functional Neuroanatomy
 - PHYSL 210 - Human Physiology
 - PHYSL 372 - Systems Neuroscience
 - PSYCH 275 - Brain and Behavior

3 units from:

-
- PMCOL 371 - Cellular Neuroscience
 - ZOOL 342 - Neurobiology

6 units from:

-
- GENET 270 - Foundations of Molecular Genetics
 - GENET 390 - Gene Manipulation
 - PSYCH 371 - The Neurobiology of Learning and Memory
 - PSYCH 375 - Introduction to Cognitive Neuroscience
 - PSYCH 377 - Human Neuropsychology
 - ZOOL 344 - Laboratory Exercises in Animal Physiology

6 units from List A (Cellular and Molecular Neuroscience):

- NEURO 410 - Cellular and Molecular Aspects of Normal Aging and Neurodegenerative Disorders
- NEURO 411 - Clinical and Basic Science Aspects of Age-related Neurodegenerative Disorders
- NEURO 450 - Readings on Selected Topics in Neuroscience (if appropriate topic; see Note 1)
- NEURO 451 - Honors Research Project in Neuroscience (if appropriate topic; see Note 1)
- NEURO 452 - Honors Research Project in Neuroscience (if appropriate topic; see Note 1)
- PHYSL 444 - Current Topics in Neuroscience
- PMCOL 412 - Drugs and the Nervous System
- PMCOL 475 - Signal Transduction Systems as Pharmacological Targets
- PMCOL 512 - Pharmacology of the Synapse
- PSYCH 478 - Behavior and Brain Chemistry

6 units from List B (Systems and Cognitive Neuroscience):

-
- KIN 497 - Selected Topics in Kinesiology and Sport
 - NEURO 443 - Neuroendocrine Concepts
 - NEURO 450 - Readings on Selected Topics in Neuroscience (if appropriate topic; see Note 1)
 - NEURO 451 - Honors Research Project in Neuroscience (if appropriate topic; see Note 1)
 - NEURO 452 - Honors Research Project in Neuroscience (if appropriate topic; see Note 1)
 - NEURO 520 - Neuroplasticity
 - NEURO 525 - Neuroimaging in Neuroscience
 - PHYSL 403 - Neuroendimmunomodulation
 - ~~PHYSL 404 - Cardiovascular Physiology~~
 - PSYCH 471 - Neurophysiology: Theory, Methods, and Analysis
 - PSYCI 511 - Biological Aspects of Psychiatry

Notes:

- NEURO 410 - Cellular and Molecular Aspects of Normal Aging and Neurodegenerative Disorders
- NEURO 411 - Clinical and Basic Science Aspects of Age-related Neurodegenerative Disorders
- NEURO 450 - Readings on Selected Topics in Neuroscience (if appropriate topic; see Note 1)
- NEURO 451 - Honors Research Project in Neuroscience (if appropriate topic; see Note 1)
- NEURO 452 - Honors Research Project in Neuroscience (if appropriate topic; see Note 1)
- PHYSL 444 - Current Topics in Neuroscience
- PMCOL 412 - Drugs and the Nervous System
- PMCOL 475 - Signal Transduction Systems as Pharmacological Targets
- PMCOL 512 - Pharmacology of the Synapse
- PSYCH 478 - Behavior and Brain Chemistry

6 units from List B (Systems and Cognitive Neuroscience):

-
- KIN 497 - Selected Topics in Kinesiology and Sport (**Computational Neuroscience**)
 - NEURO 443 - Neuroendocrine Concepts
 - NEURO 450 - Readings on Selected Topics in Neuroscience (if appropriate topic; see Note 1)
 - NEURO 451 - Honors Research Project in Neuroscience (if appropriate topic; see Note 1)
 - NEURO 452 - Honors Research Project in Neuroscience (if appropriate topic; see Note 1)
 - NEURO 520 - Neuroplasticity
 - NEURO 525 - Neuroimaging in Neuroscience
 - PHYSL 403 - Neuroendimmunomodulation
 - **PHYSL 405 - Sensory Physiology**
 - PSYCH 471 - Neurophysiology: Theory, Methods, and Analysis
 - PSYCI 511 - Biological Aspects of Psychiatry

Notes:

<p>1. A maximum of 3 units is allowed from NEURO 450, NEURO 451 and NEURO 452.</p> <p>2. Some courses appear on more than one list. Students may not use the same course to satisfy more than one list requirement.</p>	<p>3. A maximum of 3 units is allowed from NEURO 450, NEURO 451 and NEURO 452.</p> <p>4. Some courses appear on more than one list. Students may not use the same course to satisfy more than one list requirement.</p>
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Reviewed/Approved by:

<p>REQUIRED: Faculty Council (or delegate) and approval date. Approved by Science Undergraduate Programs Committee on August 25, 2023</p>
<p>OPTIONAL: Other internal faculty approving bodies, consultation groups, or departments, and approval dates.</p> <p>Neuroscience and Mental Health Institute: Approved on August 21, 2023.</p>

Faculty (& Department or Academic Unit):	Faculty of Science Faculty of Medicine and Dentistry (Department of Physiology)
Contact Person:	Gerda de Vries, Associate Dean Undergraduate Jocelyn Hall, Associate Dean Undergraduate
Level of change: (choose one only)	<input checked="" type="checkbox"/> Undergraduate
	<input type="checkbox"/> Graduate
Type of change request: (check all that apply)	<input checked="" type="checkbox"/> Program
	<input type="checkbox"/> Regulation
For which term is this intended to take effect?	Fall 2024
Does this proposal have corresponding course changes? (Should be submitted at the same time)	No

Rationale

Things to consider (maximum 500 words): Why is this being changed; How will it benefit students/department/unit; How is this comparable to similar programs (internal or external); Historical context; Impacts to administration or program structure; Consultation with stakeholders

The reference to 500-level courses suggests that students have ready access to graduate-level courses and can take these courses without restrictions. However, students need to seek permission to take graduate-level courses, and few if any students in Physiology actually take graduate courses. Removing reference to 500-level courses also makes this page consistent with the pages for all other subject areas in Science. There are no 400-level BME courses, so references to those are removed too.

BIOL 330 is added as an option for Honors. This will facilitate smoother transfer between Honors and the Major.

Calendar Copy

URL in current Calendar (or "New page") https://calendar.ualberta.ca/preview_program.php?catoid=39&poid=50452	
Current Copy: Removed language	Proposed Copy: New language
Bachelor of Science Physiology Subject Area	Bachelor of Science Physiology Subject Area

General Information

The subject area requirements listed on this page are part of the [Bachelor of Science](#) offered by the Faculty of Science. Students must ensure they are familiar with and follow all [University Regulations](#) and [Faculty of Science Regulations](#) in addition to the program requirements outlined below.

To find a description about this area of study, please visit [Our Degrees](#) of the Faculty of Science webpage.

Subject Area Courses

Physiology subject area courses include all courses at the 200-level or higher that satisfy specific requirements or options in the respective Honors or Major requirements, as listed below, ~~and all courses at the 200-level or above with course designators ANAT (at the 400-level or higher), BME (at the 400-level or higher), GELL, NEURO (at the 400-level or higher), and PHYSL.~~

Subject area courses are used in various subject area GPA calculations. Please see [Faculty of Science Admission Requirements](#), [Academic Standing](#), [Internal Changes to Program and/or Subject Area](#) and [Graduation](#) for more information.

Requirements

- [Honors in Physiology \(90 units\)](#)
- [Major in Physiology \(72 units\)](#)

Honors in Physiology Requirements

Foundation Courses

General Information

The subject area requirements listed on this page are part of the [Bachelor of Science](#) offered by the Faculty of Science. Students must ensure they are familiar with and follow all [University Regulations](#) and [Faculty of Science Regulations](#) in addition to the program requirements outlined below.

To find a description about this area of study, please visit [Our Degrees](#) of the Faculty of Science webpage.

Subject Area Courses

Physiology subject area courses include all courses at the 200-level or higher that satisfy specific requirements or options in the respective Honors or Major requirements, as listed below, **all courses at 200-level or above with course designators CELL and PHYSL, and all courses at the 400-level with course designators ANAT and NEURO.**

Subject area courses are used in various subject area GPA calculations. Please see [Faculty of Science Admission Requirements](#), [Academic Standing](#), [Internal Changes to Program and/or Subject Area](#) and [Graduation](#) for more information.

Requirements

- [Honors in Physiology \(90 units\)](#)
- [Major in Physiology \(72 units\)](#)

Honors in Physiology Requirements

Foundation Courses

- BIOL 107 - Introduction to Cell Biology
- CHEM 101 - Introductory University Chemistry I
- CHEM 102 - Introductory University Chemistry II
- MATH 134 - Calculus for the Life Sciences I
- PHYS 124 - Particles and Waves
- STAT 151 - Introduction to Applied Statistics I

Senior Courses

- BIOCH 200 - Introductory Biochemistry
- BIOCH 320 - Structure and Catalysis
- BIOCH 330 - Nucleic Acids and Molecular Biology
- BIOL 207 - Molecular Genetics and Heredity
- CHEM 261 - Organic Chemistry I
- CHEM 263 - Organic Chemistry II
- PHYSL 212 - Human Physiology I
- PHYSL 214 - Human Physiology II
- PHYSL 372 - Systems Neuroscience
- PMCOL 200 - Drugs - An Introduction to Pharmacology

3 units from:

- BIOL 201 - Eukaryotic Cellular Biology
- CELL 201 - Introduction to Molecular Cell Biology

3 units from:

- ANAT 200 - Human Morphology
- PHYSL 310 - Experimental Techniques in Physiology

3 units from:

- PMCOL 371 - Cellular Neuroscience
- ZOOL 342 - Neurobiology

12 units in either the

- BIOL 107 - Introduction to Cell Biology
- CHEM 101 - Introductory University Chemistry I
- CHEM 102 - Introductory University Chemistry II
- MATH 134 - Calculus for the Life Sciences I
- PHYS 124 - Particles and Waves
- STAT 151 - Introduction to Applied Statistics I

Senior Courses

- BIOCH 200 - Introductory Biochemistry
- BIOCH 320 - Structure and Catalysis
- BIOCH 330 - Nucleic Acids and Molecular Biology
- BIOL 207 - Molecular Genetics and Heredity
- CHEM 261 - Organic Chemistry I
- CHEM 263 - Organic Chemistry II
- PHYSL 212 - Human Physiology I
- PHYSL 214 - Human Physiology II
- PHYSL 372 - Systems Neuroscience
- PMCOL 200 - Drugs - An Introduction to Pharmacology

3 units from:

- BIOL 201 - Eukaryotic Cellular Biology
- CELL 201 - Introduction to Molecular Cell Biology

3 units from:

- ANAT 200 - Human Morphology
- BIOL 330 - Introduction to Biological Data
- PHYSL 310 - Experimental Techniques in Physiology

3 units from:

- PMCOL 371 - Cellular Neuroscience
- ZOOL 342 - Neurobiology

12 units in either the

<p>Thesis Stream:</p> <hr/> <ul style="list-style-type: none"> ● PHYSL 468 - Undergraduate Research Thesis I ● PHYSL 469 - Undergraduate Research Thesis II <p>OR Non-Thesis Stream:</p> <hr/> <p>6 units from:</p> <hr/> <ul style="list-style-type: none"> ● PHYSL 467 - Undergraduate Research Project ● PHYSL 463 - Advanced Topics in Physiology Research I AND ● PHYSL 464 - Advanced Topics in Physiology Research II <p>6 units from:</p> <hr/> <ul style="list-style-type: none"> ● any 400-level PHYSL course <p>6 units from:</p> <hr/> <ul style="list-style-type: none"> ● any 400-level PHYSL course <p>15 units from:</p> <hr/> <ul style="list-style-type: none"> ● ANAT 305 - Cross-Sectional Anatomy ● any 400-level ANAT course ● BIOL 310 - Biology of Aging ● BIOL 330 - Introduction to Biological Data ● BIOL 380 - Genetic Analysis of Populations ● BIOL 430 - Statistical Design and Analysis in Biology ● BIOL 445 - Current Topics in Animal and Cell Physiology ● BME 320 - Human Anatomy and Physiology: Cells and Tissue ● BME 321 - Human Anatomy and Physiology: Systems ● any 400- and 500-level BME course 	<p>Thesis Stream:</p> <hr/> <ul style="list-style-type: none"> ● PHYSL 468 - Undergraduate Research Thesis I ● PHYSL 469 - Undergraduate Research Thesis II <p>OR Non-Thesis Stream:</p> <hr/> <p>6 units from:</p> <hr/> <ul style="list-style-type: none"> ● PHYSL 467 - Undergraduate Research Project ● PHYSL 463 - Advanced Topics in Physiology Research I AND ● PHYSL 464 - Advanced Topics in Physiology Research II <p>6 units from:</p> <hr/> <ul style="list-style-type: none"> ● any 400-level PHYSL course <p>6 units from:</p> <hr/> <ul style="list-style-type: none"> ● any 400-level PHYSL course <p>15 units from:</p> <hr/> <ul style="list-style-type: none"> ● ANAT 305 - Cross-Sectional Anatomy ● any 400-level ANAT course ● BIOL 310 - Biology of Aging ● BIOL 330 - Introduction to Biological Data ● BIOL 380 - Genetic Analysis of Populations ● BIOL 430 - Statistical Design and Analysis in Biology ● BIOL 445 - Current Topics in Animal and Cell Physiology ● BME 320 - Human Anatomy and Physiology: Cells and Tissue ● BME 321 - Human Anatomy and Physiology: Systems ● [remove bullet]
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- any 300 , 400 , and 500-level CELL course
- LABMP 400 - Introduction to Human Disease
- any 400 and 500-level NEURO course
- ONCOL 320 - Introduction to Oncology
- ONCOL 425 - Advanced Topics in Cancer Research
- any 400 and 500-level PHYSL course
- PMCOL 303 - Introduction to Toxicology
- PMCOL 305 - An Introduction to the Pharmacology of Drug Abuse
- PMCOL 412 - Drugs and the Nervous System
- PMCOL 415 - Cardiovascular Pharmacology
- PMCOL 416 - Current Topics in Endocrine Pharmacology
- PMCOL 475 - Signal Transduction Systems as Pharmacological Targets
- PSYCH 351 - Spatial Cognition
- PSYCH 354 - Foundations of Cognitive Science
- PSYCH 356 - Research Methods in Cognition
- PSYCH 367 - Perception
- PSYCH 372 - Behavior in Relation to Genetics
- PSYCH 375 - Introduction to Cognitive Neuroscience
- PSYCH 377 - Human Neuropsychology
- PSYCH 381 - Principles of Learning
- PSYCH 403 - Recent Advances in Experimental Psychology: Models and Theories
- PSYCH 413 - Design and Analysis of Experiments in Psychology
- PSYCH 471 - Neurophysiology: Theory, Methods, and Analysis
- PSYCH 473 - Advanced Topics in Neuroscience
- PSYCH 478 - Behavior and Brain Chemistry

Major in Physiology Requirements

Foundation Courses

- BIOL 107 - Introduction to Cell Biology

- any 300- and 400-level CELL course
- LABMP 400 - Introduction to Human Disease
- any 400-level NEURO course
- ONCOL 320 - Introduction to Oncology
- ONCOL 425 - Advanced Topics in Cancer Research
- any 400-level PHYSL course
- PMCOL 303 - Introduction to Toxicology
- PMCOL 305 - An Introduction to the Pharmacology of Drug Abuse
- PMCOL 412 - Drugs and the Nervous System
- PMCOL 415 - Cardiovascular Pharmacology
- PMCOL 416 - Current Topics in Endocrine Pharmacology
- PMCOL 475 - Signal Transduction Systems as Pharmacological Targets
- PSYCH 351 - Spatial Cognition
- PSYCH 354 - Foundations of Cognitive Science
- PSYCH 356 - Research Methods in Cognition
- PSYCH 367 - Perception
- PSYCH 372 - Behavior in Relation to Genetics
- PSYCH 375 - Introduction to Cognitive Neuroscience
- PSYCH 377 - Human Neuropsychology
- PSYCH 381 - Principles of Learning
- PSYCH 403 - Recent Advances in Experimental Psychology: Models and Theories
- PSYCH 413 - Design and Analysis of Experiments in Psychology
- PSYCH 471 - Neurophysiology: Theory, Methods, and Analysis
- PSYCH 473 - Advanced Topics in Neuroscience
- PSYCH 478 - Behavior and Brain Chemistry

Major in Physiology Requirements

Foundation Courses

- BIOL 107 - Introduction to Cell Biology

- CHEM 101 - Introductory University Chemistry I
- CHEM 102 - Introductory University Chemistry II
- MATH 134 - Calculus for the Life Sciences I
- PHYS 124 - Particles and Waves
- STAT 151 - Introduction to Applied Statistics I

Senior Courses

- BIOCH 200 - Introductory Biochemistry
- BIOCH 320 - Structure and Catalysis
- BIOCH 330 - Nucleic Acids and Molecular Biology
- BIOL 207 - Molecular Genetics and Heredity
- CHEM 261 - Organic Chemistry I
- CHEM 263 - Organic Chemistry II
- PHYSL 210 - Human Physiology
- PHYSL 372 - Systems Neuroscience
- PMCOL 200 - Drugs - An Introduction to Pharmacology

3 units from:

- BIOL 201 - Eukaryotic Cellular Biology
- CELL 201 - Introduction to Molecular Cell Biology

3 units from:

- ANAT 200 - Human Morphology
- BIOL 330 - Introduction to Biological Data

3 units from:

- PMCOL 371 - Cellular Neuroscience
- ZOOL 342 - Neurobiology

9 units from:

- any 400-level PHYSL course

6 units from:

- CHEM 101 - Introductory University Chemistry I
- CHEM 102 - Introductory University Chemistry II
- MATH 134 - Calculus for the Life Sciences I
- PHYS 124 - Particles and Waves
- STAT 151 - Introduction to Applied Statistics I

Senior Courses

- BIOCH 200 - Introductory Biochemistry
- BIOCH 320 - Structure and Catalysis
- BIOCH 330 - Nucleic Acids and Molecular Biology
- BIOL 207 - Molecular Genetics and Heredity
- CHEM 261 - Organic Chemistry I
- CHEM 263 - Organic Chemistry II
- PHYSL 210 - Human Physiology
- PHYSL 372 - Systems Neuroscience
- PMCOL 200 - Drugs - An Introduction to Pharmacology

3 units from:

- BIOL 201 - Eukaryotic Cellular Biology
- CELL 201 - Introduction to Molecular Cell Biology

3 units from:

- ANAT 200 - Human Morphology
- BIOL 330 - Introduction to Biological Data

3 units from:

- PMCOL 371 - Cellular Neuroscience
- ZOOL 342 - Neurobiology

9 units from:

- any 400-level PHYSL course

6 units from:

<ul style="list-style-type: none"> ● ANAT 305 - Cross-Sectional Anatomy ● any 400-level ANAT course ● BIOL 310 - Biology of Aging ● BIOL 330 - Introduction to Biological Data ● BIOL 380 - Genetic Analysis of Populations ● BIOL 430 - Statistical Design and Analysis in Biology ● BIOL 445 - Current Topics in Animal and Cell Physiology ● BME 320 - Human Anatomy and Physiology: Cells and Tissue ● BME 321 - Human Anatomy and Physiology: Systems ● any 400- and 500-level BME course ● any 300-, 400-, and 500-level CELL course ● LABMP 400 - Introduction to Human Disease ● any 400- and 500-level NEURO course ● ONCOL 320 - Introduction to Oncology ● ONCOL 425 - Advanced Topics in Cancer Research ● any 400- and 500-level PHYSL course ● PMCOL 303 - Introduction to Toxicology ● PMCOL 305 - An Introduction to the Pharmacology of Drug Abuse ● PMCOL 412 - Drugs and the Nervous System ● PMCOL 415 - Cardiovascular Pharmacology ● PMCOL 416 - Current Topics in Endocrine Pharmacology ● PMCOL 475 - Signal Transduction Systems as Pharmacological Targets ● PSYCH 351 - Spatial Cognition ● PSYCH 354 - Foundations of Cognitive Science ● PSYCH 356 - Research Methods in Cognition ● PSYCH 367 - Perception ● PSYCH 372 - Behavior in Relation to Genetics ● PSYCH 375 - Introduction to Cognitive Neuroscience ● PSYCH 377 - Human Neuropsychology ● PSYCH 381 - Principles of Learning ● PSYCH 403 - Recent Advances in Experimental Psychology: Models and Theories ● PSYCH 413 - Design and Analysis of Experiments in Psychology ● PSYCH 471 - Neurophysiology: Theory, Methods, and Analysis 	<ul style="list-style-type: none"> ● ANAT 305 - Cross-Sectional Anatomy ● any 400-level ANAT course ● BIOL 310 - Biology of Aging ● BIOL 330 - Introduction to Biological Data ● BIOL 380 - Genetic Analysis of Populations ● BIOL 430 - Statistical Design and Analysis in Biology ● BIOL 445 - Current Topics in Animal and Cell Physiology ● BME 320 - Human Anatomy and Physiology: Cells and Tissue ● BME 321 - Human Anatomy and Physiology: Systems ● [remove bullet] ● any 300- and 400-level CELL course ● LABMP 400 - Introduction to Human Disease ● any 400-level NEURO course ● ONCOL 320 - Introduction to Oncology ● ONCOL 425 - Advanced Topics in Cancer Research ● any 400-level PHYSL course ● PMCOL 303 - Introduction to Toxicology ● PMCOL 305 - An Introduction to the Pharmacology of Drug Abuse ● PMCOL 412 - Drugs and the Nervous System ● PMCOL 415 - Cardiovascular Pharmacology ● PMCOL 416 - Current Topics in Endocrine Pharmacology ● PMCOL 475 - Signal Transduction Systems as Pharmacological Targets ● PSYCH 351 - Spatial Cognition ● PSYCH 354 - Foundations of Cognitive Science ● PSYCH 356 - Research Methods in Cognition ● PSYCH 367 - Perception ● PSYCH 372 - Behavior in Relation to Genetics ● PSYCH 375 - Introduction to Cognitive Neuroscience ● PSYCH 377 - Human Neuropsychology ● PSYCH 381 - Principles of Learning ● PSYCH 403 - Recent Advances in Experimental Psychology: Models and Theories ● PSYCH 413 - Design and Analysis of Experiments in Psychology ● PSYCH 471 - Neurophysiology: Theory, Methods, and Analysis
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- PSYCH 473 - Advanced Topics in Neuroscience
- PSYCH 478 - Behavior and Brain Chemistry

- PSYCH 473 - Advanced Topics in Neuroscience
- PSYCH 478 - Behavior and Brain Chemistry

Reviewed/Approved by:

REQUIRED: Faculty Council (or delegate) and approval date. Approved by Science Undergraduate Programs Committee on August 25, 2023

OPTIONAL: Other internal faculty approving bodies, consultation groups, or departments, and approval dates.

Department of Physiology: August 22, 2023

Faculty (& Department or Academic Unit):	Science; Department of Physics
Contact Person:	Claire Currie (claire.currie@ualberta.ca)
Level of change: (choose one only) [?]	•
	• Graduate
For which term will this change take effect?	Fall 2024

Rationale

Things to consider (maximum 500 words): Why is this being changed; How will it benefit students/department/unit; How is this comparable to similar programs (internal or external); Historical context; Impacts to administration or program structure; Consultation with stakeholders

In order to be relevant to students working in many different sub-fields of physics, the current incarnation of PHYS 574 discusses a wide range of experimental techniques. However, the material is limited to surveying the basic contours of the methods, as there is insufficient time to go into depth on all topics. Moreover, it is not practical to give students hands-on experience applying the various experimental techniques, hence instruction is based on lectures. Surveying a wide range of methods does have some utility for students, exposing them to techniques that may not be common in their own field but potentially useful in future work, but most students are only interested in a subset of the methods discussed, limiting the value of enrolling in the class. The one portion of the class that is of use to students in all fields of Physics is the portion discussing how to design experiments and analyse data in order to obtain reliable results. These topics are typically not taught in undergraduate degrees, being covered only tangentially in lab courses, nor is there any graduate course covering them other than PHYS 574 (briefly, among many other topics). Given the importance of data analysis and experimental design to success in experimental Physics, it is therefore proposed to re-focus PHYS 574 on this area, as outlined below.

This proposed change is being made in concert with the introduction of a proposed graduate lab course (PHYS 597), which will provide a venue for students to gain hands-on experience with a wide selection of experimental tools.

Course Template

Current: Removed language	Proposed: New language
<p>PHYS 574 - Experimental Methods in Physics</p> <p>Course Career Graduate Units: 3 Approved Hours: 3-0-3/2 Fee index: 6 Faculty: Science Department: Physics Typically Offered: either term</p> <p>Description</p> <p>Statistics and data analysis; S/N considerations; interactions of photons, neutrons, and charged particles with matter; detectors; vacuum technology. Other topics</p>	<p>PHYS 574 – Data Analysis in Physics</p> <p>Course Career Graduate Units: 3 Approved Hours: 3-0-0 Fee index: 6 Faculty: Science Department: Physics Typically Offered: either term</p> <p>Description</p> <p>This course teaches the principles for designing physics experiments and analyzing data to obtain robust results. It explores the choice of experimental methods and</p>

<p>to be selected according to students' needs and instructor's preference.</p>	<p>conditions used for data collection and examines important techniques used for data analysis. Topics include: experimental and numerical noise/background sources, characteristics, and mitigation; sampling, replicates, and controls; probability distributions; parameter estimation; error estimation and confidence levels; model selection, model fitting, and hypothesis testing; non-parametric analyses; applications of frequentist and Bayesian statistics; modes of failure in measurements and analysis.</p>
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Reviewed/Approved by:

REQUIRED: Faculty Council (or delegate) and approval date.
Faculty of Science – June 12, 2023

OPTIONAL: Other internal faculty approving bodies, consultation groups, or departments, and approval dates.
Physics Department Council – May 18, 2023

Faculty (& Department or Academic Unit):	Science; Department of Physics
Contact Person:	Claire Currie (claire.currie@ualberta.ca)
Level of change: (choose one only) [?]	•
	• Graduate
For which term will this change take effect?	Fall 2024

Rationale

Things to consider (maximum 500 words): Why is this being changed; How will it benefit students/department/unit; How is this comparable to similar programs (internal or external); Historical context; Impacts to administration or program structure; Consultation with stakeholders

To address the disparity in readiness for experimental work in incoming experimental graduate students, we want to offer a graduate laboratory course. This course will be recommended by supervisors or supervisory committees to students in need of experimental expertise. The course outcomes will be the following:

- Students will focus on experiment design, component selection, control of systematic uncertainties and the effective presentation of results.
- The course will provide access to advanced equipment not accessible to students in most academic settings
- The course will instruct the students on advanced analysis methods
- Teach experimental methods at the graduate level that will enable graduate research
- Teach academic writing by instructing report writing styles, scientific language and scientific presentation style.
- Instruct the student on presenting their work to a diverse audience and answer questions in an oral exam setting.

This course will be taught in parallel with PHYS 397 by the same instructors so there will be no additional costs to the Department. PHYS 397 is a small-group project oriented course so the teaching faculty will be able to teach graduate student groups on similar setups but with substantially more advanced learning objectives.

Course Template

Current: Removed language	Proposed: New language
Subject & Number Title Course Career Units Approved Hours Fee index Faculty Department Typically Offered Description	PHYS 597 – Graduate Projects in Experimental Physics Course Career: Graduate Units: 3 Approved Hours: 0-0-6 Fee index: 6 Faculty: Science Department: Physics Typically Offered: either term Description Projects from core physics topics including classical and quantum optics, particle physics, solid state physics and surface science, chosen to support the students research capabilities. Students master the advanced skills for work

	<p>in research labs through design and execution of experimental projects. Prerequisite: Consent of department. Recommended corequisite: PHYS 574</p>
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Reviewed/Approved by:

<p>REQUIRED: Faculty Council (or delegate) and approval date. Faculty of Science – June 12, 2023</p>
--

<p>OPTIONAL: Other internal faculty approving bodies, consultation groups, or departments, and approval dates. Physics Department Council – May 18, 2023</p>
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Faculty (& Department or Academic Unit):	Computing Science MSc with a Specialization in Multimedia (MM)
Contact Person:	Sinan Wang (Multimedia Program Administrator)
Level of change: (choose one only)	• Undergraduate
	• <u>Graduate</u>
Type of change request: (check all that apply)	• Program
	• <u>Regulation</u>
For which term is this intended to take effect?	Fall 2024
Does this proposal have corresponding course changes? (Should be submitted at the same time)	No

Rationale

Things to consider (maximum 500 words): Why is this being changed; How will it benefit students/department/unit; How is this comparable to similar programs (internal or external); Historical context; Impacts to administration or program structure; Consultation with stakeholders

About 99% of the MM applicants are international students, e.g., from China and India. The study permit application normally takes at least 3-4 months. We request to change the application deadline to March 1 (in line with the MINT Program) in order to give sufficient time for admitted students to complete their visa process and arrive at the University of Alberta on time for the Fall Term.

Calendar Copy

URL in current Calendar (or "New page") https://calendar.ualberta.ca/preview_program.php?catoid=39&poid=47593&returnto=12424	
Current Copy: Removed language	Proposed Copy: <u>New language</u>
For the MSc (course-based) with a specialization in Multimedia the application deadline is <u>April 30</u> .	For the MSc (course-based) with a specialization in Multimedia the application deadline is <u>March 1</u> .

Reviewed/Approved by:

REQUIRED: Faculty Council (or delegate) and approval date.

Faculty of Science Approval - Oct. 3, 2023

OPTIONAL: Other internal faculty approving bodies, consultation groups, or departments, and approval dates.



Decision **Discussion** **Information**

ITEM OBJECTIVE:

1. To approve the creation of a new Option “Clean Energy and Sustainable Process Systems” in the Bachelor of Science in Chemical Engineering Program.

DATE	November 9, 2023
TO	General Faculties Council Programs Committee
RESPONSIBLE PORTFOLIO	Faculty of Engineering

MOTION:

THAT the GFC Program Committee, with delegated authority from General Faculties Council, approve the proposed second-level specialization, Clean Energy and Sustainable Process Systems, for the Bachelor of Science in Chemical Engineering for implementation by July 1, 2024.

EXECUTIVE SUMMARY:

Chemical engineers are uniquely positioned to develop core technologies and contribute to the fields of renewable energy, carbon capture and storage, electrochemical processes, hydrogen production, fuel cells and batteries, waste management, and many more. Contribution of the clean and renewable energy sector to GDP is on track to grow 3.4% per year by 2030. The provincial government has announced close to \$50 million funding for 23 clean technology projects in Alberta. Furthermore, the Emissions Reduction Alberta (ERA) program has committed another \$50 million in government funding support for the circular economy challenge to stimulate new advanced technologies that will offer innovative means for lowering emissions outputs in the Alberta economy. A number of companies, such as Shell, Amazon, Air Products, Suncor, are proposing clean energy and chemicals initiatives in Alberta with expertise in carbon capture and storage. Additionally, Alberta is looked upon as the future hydrogen hub of Canada. These developments in the Clean Energy sector indicate potential upcoming opportunities for research grants and funding to develop research laboratories in our department. A transition towards Clean and sustainable energy, one of the fastest-growing sectors in the world, will lead to an overall increase in energy sector jobs in various renewable industries.

The department has consulted with internal stakeholders including department council members, faculty of engineering, students, and industry stakeholders. Details are given in the Appendix A.

GOVERNANCE OUTLINE



Supporting Materials:

- Appendix A (List of Consultations)
- Appendix B (Program structure including core courses, electives, and credit units per year)
- Appendix C (Course Sequence in the Proposed Option)

Attachments:

1. Internal Program Proposal
2. Calendar Change Request Form – Traditional Sequence (New Page)
3. Calendar Change Request Form – Co-op Sequence (New Page)
4. Calendar Change Request Form – Course Creation - Analysis of Chemical and Energy Systems
5. Calendar Change Request Form – Course Creation - Electrochemical Energy Storage and Transformation
6. Calendar Change Request Form – Course Creation - Integrated solid waste management
7. Calendar Change Request Form – Course Creation - Conversion of Biomass to Fuels and Chemicals
8. Supporting Information - Clean Energy and Sustainable Chemical Processes: Curriculum Motion

***See Schedule A for additional items to include if needed.**

SCHEDULE A:

Engagement and Routing

Consultation and Stakeholder Participation / Approval Route (parties who have seen the proposal and in what capacity) <[Governance Resources Section Student Participation Protocol](#)>

Those who are actively participating:

- Dr. Pierre Mertiny, Associate Dean, Undergraduate programs, Faculty of Engineering
- James Bracken, Programs and Planning Officer, Faculty of Engineering - Undergrad Program
- Dr. Leijun Li, Chair, Department of Chemical and Materials Engineering
- Dr. Anthony Yeung, Associate Dean, Undergraduate Studies, Department of Chemical and Materials Engineering
- Dr. Vinay Prasad, Professor, Department of Chemical and Materials Engineering
- Dr. Arvind Rajendran, Professor, Department of Chemical and Materials Engineering
- Dr. Garima Chauhan, Undergraduate Curriculum Renewal Lead, Department of Chemical and Materials Engineering.



ITEM NO. 5

- Faculty members in the Department of Chemical and Materials Engineering, including Samir Mushrif, Zukui Li, Dominic Sauvageau, Natalia Semagina, Dave Sharp, and Phillip Choi.

Those who have been consulted:

- Chemical Engineering Students' Society, Department of Chemical and Materials Engineering.
- Industry Stakeholders (Total Energies)
- Provost Office (Carley Roth, Portfolio Initiatives Manager, Provost & Vice-President Academic - Admin)
- Faculty of Science (Prof. Stephen Johnston (Chair, Earth & Atmospheric Sciences) and Murray Gingras (Associate Chair, Earth & Atmospheric Sciences))
- Registrar's Office (Jesse Luyendyk, Assistant Registrar, Enrolment Services, Office of the Registrar - Exams & Timetabling)
- Registrar's Office (Rebecca Liaw, University Calendar Editor, Office of the Registrar - Policy Governance Calendar)
- College of Natural and Applied Sciences (Jesse Luyendyk, Assistant Registrar, Enrolment Services, Office of the Registrar - Exams & Timetabling, and Carrie Dube, Course Sched & TT Coord, College of Natural and Applied Sciences - Office of Education)
- Center for Teaching and Learning (Anita Parker, Lead Educational Developer, Online and Hybrid Instruction & Strategy)
- Indigenous Programming and Research (Florence Glanfield, Vice-Provost and Megan Tipler, Indigenous Strategies Manager)
- Equity, Diversity and Inclusion (Carrie Smith, Vice-Provost)

Please refer to Appendix A for consultation records.

Those who have been informed:

- All academic faculty members in the Faculty of Engineering
- Undergraduate students in the Faculty of Engineering
- Broader University of Alberta community (outside Engineering) informed through Program Support Team proposal review



Approval Route:

Reviewed and Approved by Department Council Members: **August 17, 2022**

Reviewed and Approved by Faculty Academic Planning Committee (F-APC): **October 12, 2023**

Approved by Engineering Coordinating Committee (ECC), Faculty of Engineering: **October 24, 2023**

Reviewed by Program Support Team (PST): **October 26, 2023**

GFC Programs Committee (GFC-PC): **(TBD)**

Appendix A: List of Consultations

Consultations	Date	Feedback
Students A meeting was held with the representatives from the Chemical Engineering Students' Society (ChESS) and Material Engineering Students' Society (MESS) in August 2021. An outreach survey was developed to gauge the level of interest amongst undergraduate students for different Options.	August 2021	The survey results indicate an inclination towards clean/sustainable energy among students, suggesting that students will be open to taking this Option in chemical engineering program. (Link)
Department Council The proposed program description and structure was presented during Chemical and Materials Engineering departmental council meetings to solicit feedback from colleagues and online voting was conducted.	August 2022	The members of the department council supported the proposed Option and provided constructive feedback. The suggestions were integrated into the curriculum development process for the proposed Option. (Link)
Faculty of Science (Course EAS 208) The possibility of accommodating Chemical and Materials Engineering students in the EAS 208 course, offered by the Faculty of Science, was consulted with Prof. Stephen Johnston (Chair, Earth & Atmospheric Sciences) and Murray Gingras (Associate Chair, Earth & Atmospheric Sciences).	April 12, 2023	Faculty of Science supported the proposed Option and kindly agreed to accommodate our students in EAS 208. A letter of support was received on June 22, 2023. (Link)
Associate Dean, Undergraduate Studies (Prof. Pierre Mertiny)	April 24, 2023	Prof. Pierre Mertiny, Associate Dean for Undergraduate Studies, Faculty of Engineering, reviewed the proposed Option and supported our initiative in this field. (Link)
Provost Office Carley Roth and Suzanne French	May 08, 2023	Consultation pathways were suggested that are required to complete the internal program proposal form. (Link)

ITEM NO. 5

Registrar's Office Fee index and course numbers were consulted with Jesse Luyendyk, Assistant Registrar, Enrolment Services, Office of the Registrar - Exams & Timetabling.	June 15, 2023	Received the suggestions regarding fee index and course numbers for new courses. (Link)
Registrar's Office Calendar change requirements were consulted with Rebecca Liaw, University Calendar Editor, Office of the Registrar - Policy Governance Calendar.	June 19, 2023 / June 29, 2023	A few changes related to formatting requirements were suggested in order to make the forms ready for calendar editing. All the suggestions were incorporated in the calendar change request forms. The revised documents were reviewed and approved by Registrar's office. (Link)
Course scheduling. Jesse Luyendyk, Assistant Registrar, Enrolment Services, Office of the Registrar - Exams & Timetabling. Carrie Dube, Course Sched & TT Coord, College of Natural and Applied Sciences - Office of Education	June 26, 2023	No scheduling issues were anticipated for second year students taking the new Option in September 2024 (assuming the new Option make the January 2024 calendar).
Centre for Teaching and Learning Anita Parker, Lead Educational Developer, Online and Hybrid Instruction & Strategy, Centre for Teaching and Learning	July 06, 2023	Consulted with CTL regarding learning outcomes for new courses. (Link)
Industry Support – Total Energies	July 06, 2023	Received a letter of support. (Link)
Indigenous Strategies Florence Glanfield, Vice-Provost and Megan Tipler, Indigenous Strategies Manager (Office of the Vice-Provost, Indigenous Programming and Research)	Oct 17, 2023	A few revisions related to Indigenous Strategies were suggested. All the suggestions have been incorporated in the proposal.
Equity, Diversity and Inclusion Strategies Carrie Smith, Vice-Provost (Equity, Diversity and Inclusion)	Oct 19, 2023	Reviewed proposal and approved it moving forward.

Appendix B: Program structure including core courses, electives, and credit units per year.
Table B.1: Program Structure - [Traditional Sequence](#)

Component	1 st year	Credits	2 nd year	Credits	3 rd Year	Credits	4 th year	Credits
Core courses ¹	12	40.6	11	36.1	9	33.5	10	33.8
Program & Technical electives	-	-	-	-	2	7	-	-
Complementary Studies elective	-	-	-	-	1	3	1	3
ITS (<i>Impact of Technology on Society</i>) elective	-	-	1	3	-	-	-	-
Total	12	40.6	12	39.1	12	43.5	11	36.8

¹ One of the core courses, CME 200 (Introduction to Chemical and Materials Engineering), is offered in a single day asynchronously. Thus, practically offered core courses with respect to students' workload are 21 in junior years.

Table B.2: Program Structure - Co-op Sequence

Component	1 st year	Credits	2 nd year	Credits	3 rd Year	Credits	4 th year	Credits	5 th Year	Credits
Core courses	12	40.6	12	37.6	10	37.3	4	13	5	17
Program & Technical electives	-	-	-	-	-	-	2	7	-	-
Complementary Studies elective	-	-	1	3	1	3	-	-	-	-
ITS (<i>Impact of Technology on Society</i>) elective	-	-	1	3	-	-	-	-	-	-
Work Integrated Learning	-	-	1	0.5	1	0.5	2	1	1	3
Total	12	40.6	15	44.1	12	40.8	8	21	6	20

Appendix C: Sequence of courses in the traditional Chemical Engineering program and the proposed changes in the Option “Clean Energy and Sustainable Process Systems”.
Table C.1: Sequence of courses in the traditional Chemical Engineering Program

Year 2		Year 3		Year 4	
Fall	Winter	Fall	Winter	Fall	Winter
CH E 243	CH E 312	CH E 314	CH E 316	CH E 445	CH E 454
CHEM 261	ECE 209	CH E 343	CH E 318	CH E 446	CH E 465
CME 200	MATH 201	CH E 351	CH E 345	CH E 464	ENGG 400
CME 265	MAT E 202	CH E 374	CH E 358	CME 481	P&T Elective
MATH 209	STAT 235	P&T Elective ²	ENG M 310/401	CS Electives	P&T Elective
CS Elective ³	ITS Elective ⁴		ENGG 404	P&T Elective	
CS Elective					

Table C.2: Sequence of courses in the proposed Option (: Course Rearrangement; : Course Addition; : Course Withdrawal)

Year 2		Year 3		Year 4	
Fall	Winter	Fall	Winter	Fall	Winter
CH E 243	CH E 312	CH E 314	CH E 316	CH E 445	CH E 454
CHEM 261	ECE 209	CH E 343	CH E 318	CH E 446	CH E 465
CME 200 ⁵	MATH 201	CH E 351	CH E 345	CH E 464	ENGG 400
CME 265	MAT E 202	CH E 374	CH E 358	CME 481	CH E 541
MATH 209	STAT 235	ENG M 310/401	P&T Elective	CS Electives	CH E 542
EAS 208	ITS Elective	CS Elective	P&T Elective	ENGG 404	P&T Elective
CS Elective		P&T Elective	ENG M 310/401	P&T Elective	P&T Elective
CS Elective			ENGG 404		

² The proposed Option adds three *Program and Technical (P&T) electives* in the list of P&T electives offered in the traditional CH E program.

³ List of *Complementary Studies (CS) electives* offered in the proposed option is the same as offered in the traditional CH E program.

⁴ List of *Impact of Technology on Society (ITS) Elective* in the proposed option is the same as offered in the traditional CH E program.

⁵ CME 200 (Introduction to Chemical and Materials Engineering) is offered in a single day asynchronously.

**Internal Program Proposal Template
- for-credit programs not requiring Ministry approval -**

This template is to be used for proposals to create or modify programs that do not require Ministry of Advanced Education approval.

Faculties and Departments must consult with the Portfolio Initiatives Manager in the Office of the Provost and Vice-President (Academic) (carley.roth@ualberta.ca) on the appropriate template and process. Graduate proposers must also consult with the Faculty of Graduate Studies and Research (fgsrgov@ualberta.ca). All program proponents must also consult with the Vice-Provost (Indigenous Programming & Research) during the early development stage.

PROPOSAL TYPE

This proposal is for a (select one):	
<input checked="" type="checkbox"/>	Creation of a new second-level specialization (e.g., minors of undergraduate programs and second-level specializations of graduate programs)
<input type="checkbox"/>	The addition of an Honors stream to an existing undergraduate program
<input type="checkbox"/>	Creation of a combined degree program where both contributing degrees have been approved by the Ministry of Advanced Education
<input type="checkbox"/>	Substantive program changes that do not require Ministry approval

1: Basics		
Program/Specialization/ Combined Degree Name	Clean Energy and Sustainable Process Systems	
Faculty/Department	Faculty of Engineering/ Chemical and Materials Engineering	
Contact information	Name and Title	Prof. Anthony Yeung, Associate Dean (Undergraduate)
	Phone	
	Email	tony.yeung@ualberta.ca
Proposed effective date	July 01, 2024	
Attachments		
<ul style="list-style-type: none"> ● Letter of Support from the Dean of the Faculty ● Proposed Calendar changes <ul style="list-style-type: none"> - Program structure (traditional and co-op sequence) - Change in Course sequence - Addition of new courses 		

2: Rationale, Implications, and Impacts

Rationale for the Proposal

Identify the purpose of the proposal with supporting rationale and evidence of demand.

- **Job Opportunities:** A transition towards clean and sustainable energy, one of the fastest-growing sectors in the world, will lead to an overall increase in energy sector jobs in various renewable industries. According to Clean Energy's 2021 report, the most impressive growth in the clean energy sector is currently being experienced in Alberta, with jobs set to increase by a huge 164% over the next decade¹.
- **Funding Opportunities in the Clean Energy Sector:** Contribution of the clean and renewable energy sector to GDP is on track to grow 3.4% per year by 2030. The provincial government has announced close to \$50 million funding for 23 clean technology projects in Alberta². Furthermore, the Emissions Reduction Alberta (ERA) program has committed another \$50 million in government funding support for the circular economy challenge³ to stimulate new advanced technologies that will offer innovative means for lowering emissions outputs in the Alberta economy. A number of companies, such as Shell, Amazon, Air Products, Suncor, are proposing clean energy and chemicals initiatives in Alberta with expertise in carbon capture and storage⁴. Additionally, Alberta is looked upon as the future hydrogen hub of Canada. These developments in the Clean Energy sector indicate potential upcoming opportunities for research grants and funding to develop research laboratories in our department.
- **Competitive Programs:** Canada's top ten universities (e.g. UBC, Toronto, Waterloo, Simon Fraser, Queen's, Ottawa, Calgary) offer several master's programs in the field of Clean/Sustainable Energy. Recently, one of our local competitors, University of Calgary, initiated an undergraduate program in Sustainable Systems Engineering⁵. Therefore, developing a program Option at the undergraduate level has become crucial for maintaining student intake in the relevant field.
- **Relevance to the traditional Chemical Engineering (CH E) Programs:** Chemical engineers are uniquely positioned to develop core technologies and contribute to the fields of renewable energy, carbon capture and

¹ [Clean Energy Canada 2021](#)

² [\\$50M funding for 23 clean technology projects](#)

³ [ERA Invests \\$50M for New Technology to Lower Emissions](#)

⁴ [CCS Facility in Alberta](#)

⁵ [Bachelor of Science in Sustainable System Engineering](#)

	storage, electrochemical processes, hydrogen production, fuel cells and batteries, waste management, and many more.																																								
Length of the Program Identify the length of the program in years and credit units per year.	<p>4 years (Traditional Sequence) : Total credit units 160*</p> <p>Credit units in Year 1 (40.6)</p> <p>Credit units in Year 2 (39.1)</p> <p>Credit units in Year 3 (43.5)</p> <p>Credit units in Year 4 (36.8)</p> <p>5 years (Co-Op Sequence): Total Credit Units 166*</p> <p>Credit units in Year 1: 40.6</p> <p>Credit units in Year 2: 44.1</p> <p>Credit units in Year 3: 40.8</p> <p>Credit units in Year 4: 21</p> <p>Credit units in Year 5: 20</p> <p>Length of the program with number of core courses, electives, and credit units per year, and term-by-term course distribution are given in Appendix A.</p> <p>*Credit units of the traditional and co-op sequences of the proposed Option are 0.5 unit higher than those of the Chemical Engineering Program (160 and 166.5, respectively).</p>																																								
Provide the anticipated enrolments by head count for the next 5 years (including Traditional and Co-op Sequences)																																									
<table border="1"> <thead> <tr> <th>Enrolment</th> <th>20XX</th> <th>20XX</th> <th>20XX</th> <th>20XX</th> <th>20XX</th> </tr> </thead> <tbody> <tr> <td>Total Headcount</td> <td>50</td> <td>100</td> <td>160</td> <td>240</td> <td>270</td> </tr> <tr> <td>• Year 1</td> <td>50</td> <td>50</td> <td>60</td> <td>80</td> <td>80</td> </tr> <tr> <td>• Year 2</td> <td>0</td> <td>50</td> <td>50</td> <td>60</td> <td>80</td> </tr> <tr> <td>• Year 3</td> <td>0</td> <td>0</td> <td>50</td> <td>50</td> <td>60</td> </tr> <tr> <td>• Year 4</td> <td>0</td> <td>0</td> <td>0</td> <td>50</td> <td>50</td> </tr> </tbody> </table>						Enrolment	20XX	20XX	20XX	20XX	20XX	Total Headcount	50	100	160	240	270	• Year 1	50	50	60	80	80	• Year 2	0	50	50	60	80	• Year 3	0	0	50	50	60	• Year 4	0	0	0	50	50
Enrolment	20XX	20XX	20XX	20XX	20XX																																				
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• Year 3	0	0	50	50	60																																				
• Year 4	0	0	0	50	50																																				
Work-Integrated Learning Describe how learners in this program will have access to	Work-integrated learning is a unique dimension offered in the Co-op sequence, which is not offered in the competitive programs running in similar programs at other universities. Experiential learning is delivered in each year of the program																																								

<p>Work-Integrated Learning (see CEWIL definitions).</p>	<p>through a series of design-focused courses wherein students will have the opportunity to both physically and virtually build their designs in response to open-ended design challenges.</p>
<p>Consultation Describe the consultation process that occurred with students and other relevant stakeholders, and the feedback received.</p>	<p>Please see Appendix B for consultation records.</p> <p>Based on the consultations, we believe this Option could be a valuable addition to our program, attracting more students who are interested in learning about clean energy and sustainable process systems in addition to traditional chemical engineering content.</p>
<p>Indigenous Perspectives Describe the outcomes of the consultation with the Vice Provost (Indigenous Programming and Research) regarding how the program will integrate/include indigenous perspectives and content, and any action items that may result.</p>	<p>Indigenous perspectives will be woven throughout the curriculum in a meaningful way and an Indigenization Strategy, consistent with the template being developed for the Faculty of Engineering, will be developed.</p> <p>A new component will be added to the content of CME 200 (Introduction to Chemical and Materials Engineering) to acknowledge the impact engineering has had and will continue to have on Indigenous people in the context of resource development and applications of engineering design. Guest speakers from Indigenous communities, who are chemical/biochemical engineers or have been impacted by the chemical engineering projects, in different ways, will be invited to share their experiences.</p> <p>Indigenization component will be introduced in CME 481 to weave a variety of Indigenous worldviews, histories, and perspectives into the program.</p> <p>Design projects and case studies that feature the connection to land, northern climates, and Indigenous communities will be incorporated. In addition, Indigenous-led businesses/communities will be engaged as partners in capstone design projects.</p> <p>Students in the co-op sequences will be asked to complete an online asynchronous course, <i>Indigenous Canada Massive Open Online Course (MOOC)</i>, offered by the Faculty of Native Studies, in order to receive credit for WKEXP 905. Students will be encouraged to complete the online course during their first 8-month work term (WKEXP 901/902). The <i>Faculty of Engineering</i> will work to ensure that students can take the course and provide evidence of completion at zero or only a marginal additional cost to the student. This course is an important resource to understand Indigenous ways of knowing, outline decolonization, and close the knowledge gap around racism, historical and contemporary Indigenous experiences and the foundational agreements.</p>

<p>Equity, Diversity and Inclusion Perspectives</p> <p>Describe the outcomes of the consultation with the Vice-Provost (Equity, Diversity and Inclusion) regarding how the program will integrate/include EDI perspectives and content, and any action items that may result.</p>	<p>The most current best practices in equity, diversity and inclusion are incorporated into the core part of the program and an EDI Strategy, consistent with the template for the Faculty of Engineering, will be developed.</p> <p>The EDI Strategy will include the provision of training in group dynamics and decision-making, including recognizing decision-making biases and implicit biases, incorporating design projects that include the engineering design for developing assistive tools/technologies for people with differing abilities, and engaging organizations and industries with leaders who are from traditionally underrepresented groups in engineering as partners in capstone design projects.</p> <p>Industry, Indigenous, and EDI perspectives will be incorporated in regular program reviews.</p>
<p>Resource Implications</p> <p>Identify financial impacts and internal resource requirements, particularly staff and classroom and lab space. Also identify any external resource requirements such as practicum or internship placements, etc.</p>	<p>Currently, three Options (Computer Process Control, Oil Sands Elective, and Biomedical), in addition to the core chemical engineering, appear in the University Calendar for the Undergraduate Chemical Engineering Program. All of these Options are offered in traditional and co-op sequences. Furthermore, the core chemical engineering program includes traditional, Co-op Plan I, and Co-op Plan II sequences. Thus, the department offers nine streams in the Chemical Engineering program. Out of these streams, the department is planning to suspend Oil Sands Elective Option, Biomedical Option, and Co-op Plan II sequence. Phasing out these Options and corresponding sequences will eliminate five streams out of nine that are currently offered. Thus, the department will have enough resources required to accommodate the proposed new Option in replacement of the eliminated sequences.</p> <p>The first year of the proposed program Option is a common first year for all students in the Faculty of Engineering and has well-developed support from the Faculties of Science and Arts. The implementation of this program does not introduce specialized teaching needs to any of the approved complementary studies electives or Impact of Technology on Society (ITS) electives.</p> <p>Chemical Engineering core courses are currently being taught by the tenure-track faculty and academic teaching staff members. One course, EAS 208 - Introduction to Global Change has been proposed in Term 3, which is currently being offered by the Faculty of Science at UofA. A few courses from other Faculties are offered as recommended electives. We have consulted with other Faculties (if needed) on the feasibility to accommodate additional students from this Option to their courses and labs.</p>

	<p>The department has sufficient resources to accommodate the classroom and laboratory requirements for the new proposed courses. In addition, the existing tenure-track and academic teaching staff members have the knowledge and skills to teach new proposed core and elective courses. Therefore, the department does not require any additional teaching resources to run the proposed program Option.</p>
<p>Approval Process Indicate the internal governance path, including meeting dates</p>	<p>Department Council Meeting and Approval: August 17, 2022 Faculty Academic Planning Committee (F-APC): June 21, 2023 Program Support Team (PST): (TBD) Engineering Coordinating Committee (ECC): (TBD) GFC Programs Committee (GFC-PC): (TBD)</p>

Appendix A.1: Sequence of courses in the traditional Chemical Engineering program and the proposed changes in the Option “Clean Energy and Sustainable Process Systems”.

Year 2		Year 3		Year 4	
Fall	Winter	Fall	Winter	Fall	Winter
CH E 243	CH E 312	CH E 314	CH E 316	CH E 445	CH E 454
CHEM 261	ECE 209	CH E 343	CH E 318	CH E 446	CH E 465
CME 200	MATH 201	CH E 351	CH E 345	CH E 464	ENGG 400
CME 265	MAT E 202	CH E 374	CH E 358	CME 481	P&T Elective
MATH 209	STAT 235	P&T Elective ⁶	ENG M 310/401	CS Electives	P&T Elective
CS Elective ⁷	ITS Elective ⁸		ENGG 404	P&T Elective	
CS Elective					

Figure 1: Sequence of courses in the traditional Chemical Engineering Program

Year 2		Year 3		Year 4	
Fall	Winter	Fall	Winter	Fall	Winter
CH E 243	CH E 312	CH E 314	CH E 316	CH E 445	CH E 454
CHEM 261	ECE 209	CH E 343	CH E 318	CH E 446	CH E 465
CME 200 ⁹	MATH 201	CH E 351	CH E 345	CH E 464	ENGG 400
CME 265	MAT E 202	CH E 374	CH E 358	CME 481	CH E 541
MATH 209	STAT 235	ENG M 310/401	P&T Elective	CS Electives	CH E 542
EAS 208	ITS Elective	CS Elective	P&T Elective	ENGG 404	P&T Elective
CS Elective		P&T Elective	ENG M 310/401	P&T Elective	P&T Elective
CS Elective			ENGG 404		

Figure 2: Sequence of courses in the proposed Option (: Course Rearrangement; : Course Addition; : Course Withdrawal)

⁶ The proposed Option adds three *Program and Technical (P&T) electives* in the list of P&T electives offered in the traditional CH E program.

⁷ List of *Complementary Studies (CS) electives* offered in the proposed Option is the same as offered in the traditional CH E program.

⁸ List of *Impact of Technology on Society (ITS) Elective* in the proposed Option is the same as offered in the traditional CH E program.

⁹ CME 200 (Introduction to Chemical and Materials Engineering) is offered in a single day asynchronously.



- I. The proposed Option offers inclusion of five new courses (**three core courses (CH E 541 Analysis of Chemical and Energy Systems, CH E 542 Electrochemical Energy Storage and Transformation, and EAS 208 Introduction to Global Change)** and **two new elective courses (CH E 543 Integrated Solid Waste Management and CH E 544 Conversion of Biomass to Fuels and Chemicals)**) to the traditional CH E program structure. The department is proposing to offer the Option to both the Traditional and Co-op sequences.
- II. The proposed Option does not eliminate any core Chemical Engineering course, which is currently offered in the regular CH E program, to include new courses in this program Option. Figures 1 and 2 provide the sequence of courses in the Traditional Chemical Engineering program and the proposed Option, respectively. All undergraduate students in the Faculty of Engineering have the same qualifying Year 1; therefore, the sequence of courses offered in Year 1 is not shown here. Notably, the Fall session in Year 2 includes CME 200, which is offered in a single day asynchronously.

Appendix A.2: Program structure including core courses, electives, and credit units per year.

Table B.1: Program Structure - Traditional Sequence

Component	(1 st year) (maximum)	Credits	(2 nd year) (maximum)	Credits	3 rd Year (minimum)	Credits	4 th year (minimum)	Credits
Core courses ¹⁰	12	40.6	11	36.1	9	33.5	10	33.8
Program & Technical electives	-	-	-	-	2	7	-	-
Complementary Studies elective	-	-	-	-	1	3	1	3
ITS (<i>Impact of Technology on Society</i>) elective	-	-	1	3	-	-	-	-
Total	12	40.6	12	39.1	12	43.5	11	36.8

¹⁰ One of the core courses, CME 200 (Introduction to Chemical and Materials Engineering), is offered in a single day asynchronously. Thus, practically offered core courses with respect to students' workload are 21 in junior years.

Table B.2: Program Structure - Co-op Sequence

Component	(1 st year) (maximum)	Credits	(2 nd year) (maximum)	Credits	3 rd Year (minimum)	Credits	4 th year (minimum)	Credits	5 th Year (minimum)	Credits
Core courses	12	40.6	12	37.6	10	37.3	4	13	5	17
Program & Technical electives	-	-	-	-	-	-	2	7	-	-
Complementary Studies elective	-	-	1	3	1	3	-	-	-	-
ITS (<i>Impact of Technology on Society</i>) elective	-	-	1	3	-	-	-	-	-	-
Work Integrated Learning	-	-	1	0.5	1	0.5	2	1	1	3
Total	12	40.6	15	44.1	12	40.8	8	21	6	20

Appendix-A.3: Term-by-term proposed course sequence

Traditional Sequence (course names, descriptions, credits and prerequisites)

Term -1

CHEM 103 Introductory University Chemistry I

4.3 (fi 6) (either term, 3-1s-3/2) Atoms and molecules, states of matter, chemistry of the elements. Prerequisite: Chemistry 30, or equivalent.

ENGG 100 Success in Engineering

1.1 (fi 3) (either term, 1.5-1.5-0/2) An introduction to the Faculty of Engineering, the engineering profession, the skills required for academic success, and the fundamentals of leadership: study and life skills; time management and goal setting; interpersonal skills; career planning; engineering and society including elements of ethics, equity, concepts of sustainable development, environmental stewardship, and public safety.

ENGG 130 Engineering Mechanics

4 (fi 8) (either term, 3-0-2) Equilibrium of planar systems. Analysis of statically determinate trusses and frames. Friction. Centroids and centres of gravity. Forces and moments in beams. Second moments of area. Note: Students in all sections of this course will write a common final examination. Corequisite: MATH 100.

ENGL 199 English for Engineering Students

3 (fi 6) (either term, 3-0-0) This course aims to develop the student's ability to provide effective written and oral information. It will focus on instruction in fundamental writing skills, including building effective sentences and paragraphs, and on learning to communicate clearly across a range of genres and media used in academic and professional contexts, including correspondence and presentations. Students will be introduced to the principles of information gathering, analysis, and citation.

MATH 100 Calculus I

3.5 (fi 6) (either term, 3-0-1) Review of numbers, inequalities, functions, analytic geometry; limits, continuity; derivatives and applications, Taylor polynomials; log, exp, and inverse trig functions. Integration, fundamental theorem of calculus substitution, trapezoidal and Simpson's rules. Prerequisites: Mathematics 30-1 and Mathematics 31.

PHYS 130 Wave Motion, Optics, and Sound

3.8 (fi 6) (either term, 3-0-3/2) Geometrical optics, optical instruments, oscillations, waves, sound, interference, diffraction. Prerequisites: Mathematics 30-1, Mathematics 31, Physics 30. Corequisite: MATH 100 or 113 or 114 or 117 or 134 or 144 or equivalent.

Term-2

CHEM 105 Introductory University Chemistry II

3.8 (fi 6) (either term, 3-0-3/2) Rates of reactions, thermodynamics and equilibrium, electrochemistry, modern applications of chemistry. Prerequisite: CHEM 103.

ENCOMP 100 Computer Programming for Engineers

3.8 (fi 8) (either term, 3-0-1.5) Fundamentals of computer programming with emphasis on solving engineering problems. Structure and syntax of computer programs, variables, data types, data structures, control structures, functions, input/output operations, debugging, software development process.

ENGG 160 Introduction to Engineering Design, Communication, and Profession

2 (fi 5) (either term or Spring/Summer, 1-0-2) Fundamental design process and theory in a multidisciplinary context. Importance, in engineering design, of communications; team work; the engineering disciplines, career fields; professional responsibilities of the engineer including elements of ethics, equity, concepts of sustainable development and environmental stewardship, public and worker safety and health considerations including the context of the Alberta Occupational Health and Safety Act. Corequisite ENGL 199.

EN PH 131 Mechanics

4.3 (fi 6) (either term, 3-1s-3/2) Kinematics and dynamics of particles; gravitation; work and energy; linear momentum; angular momentum; systems of particles; introduction to dynamics of rigid bodies. Prerequisites: MATH 100 or 117, and ENGG 130. Corequisite: MATH 101 or 118.

MATH 101 Calculus for Engineering II

3.5 (fi 6) (either term, 3-0-1) Area between curves, techniques of integration. Applications of integration to planar areas and lengths, volumes and masses. First order ordinary differential equations: separable, linear, direction fields, Euler's method, applications. Infinite series, power series, Taylor expansions with remainder terms. Polar coordinates. Rectangular, spherical and cylindrical coordinates in 3-dimensional space. Parametric curves in the plane and space: graphing, arc length, curvature; normal binormal, tangent plane in 3- dimensional space. Volumes and surface areas of rotation. Prerequisite: MATH 100.

MATH 102 Applied Linear Algebra

3.5 (fi 6) (either term, 3-0-1) Vectors and matrices, solution of linear equations, equations of lines and planes, determinants, matrix algebra, orthogonality and applications (Gram-Schmidt), eigenvalues and eigenvectors and applications, complex numbers. Prerequisite or corequisite: MATH 100.

Term-3**CH E 243 - Engineering Thermodynamics**

3.5 (fi 8) (either term or Spring/Summer, 3-1s-0) An introduction to the first and second laws of thermodynamics. Prerequisites: MATH 101.

CHEM 261 - Organic Chemistry I

3 (fi 6) (either term, 3-0-3) The correlation of structure and chemical bonding in carbon compounds with the physical properties and chemical reactivity of organic molecules. Discussion will be based on functional groups with emphasis on hydrocarbons and derivatives that contain halogens, oxygen, sulfur, and the hydroxy group. Introduction to stereochemistry, three dimensional structure, reaction mechanisms, especially addition to double bonds, nucleophilic substitution and elimination reactions. Prerequisite CHEM 101 or 103.

CME 200 - Introduction to Chemical and Materials Engineering

0.5 (fi 2) (first term, 1 day) Topics of interest to second year Chemical and Materials Engineering students, with special reference to industries in Alberta, including coverage of elements of ethics, [equity, diversity and inclusion \(EDI\)](#), [indigenization](#), concepts of sustainable development and environmental stewardship, public and worker safety and health considerations including the context of the Alberta Occupational Health and Safety Act. Offered in a single day during the first week of September.

CME 265 - Process Analysis

4.5 (fi 8) (either term, 3-0-3) Basic process principles; material and energy balances, transient processes, introduction to computer-aided balance calculations. Prerequisites: ENCOMP 100, MATH 102 and CHEM 105. Corequisites: CH E 243 and MATH 209 or equivalent.

MATH 209 - Calculus for Engineering III

3.5 (fi 6) (either term, 3-0-1) Partial differentiation, derivatives of integrals. Multiple integration using rectangular, cylindrical, and spherical coordinates. Vector Field Theory. Prerequisite: MATH 101. Prerequisite/Corequisite: MATH 102.

EAS 208 - Introduction to Global Change (Currently Offered by Faculty of Science)

3 (fi 6) (either term, 3-0-0) Natural and anthropogenic causes of global scale environmental change; the role of the atmosphere, oceans, biosphere and cryosphere in the processes of environmental change; relationships between levels of technology and development and the character of environmental change associated with human activity. Prerequisite: Any 100-level Science course.

Term-4**CH E 312 - Fluid Mechanics**

3.5 (fi 8) (either term or Spring/Summer, 3-1s-0) Newtonian and non-Newtonian fluid behavior; hydrostatics; buoyancy, application of Bernoulli and momentum equations; frictional losses through pipes, ducts, and fittings; pipe networks; pumps; drag on submerged bodies and flow through porous media. Prerequisites: CH E 243 EN PH 131 and MATH 209. Corequisite: MATH 201.

ECE 209 - Fundamentals of Electrical Engineering

3.8 (fi 8) (either term or Spring/Summer, 3-0-3/2) Physical concepts of passive circuit elements, Kirchhoff's laws and DC circuit equations. Energy concepts, time domain analysis of AC circuits. Impedance, complex numbers and phasor algebra. AC power concepts, resonance, three phase circuits, introduction to machines. Credit may be obtained in only one of ECE 209, E E 239, ECE 202, or E E 240, unless approved by the Department.

MATH 201 - Differential Equations

3.5 (fi 6) (either term or Spring/Summer, 3-0-1) First-order equations; second-order linear equations: reduction of order, variation of parameters; Laplace transform; linear systems; power series; solution by series; separation of variables for PDEs. Prerequisite or corequisite: MATH 209 or 214.

MAT E 202 - Materials Science II

3.5 (fi 8) (either term or Spring/Summer, 3- 1.5s/2-1/3) An introduction to the science of materials relating their mechanical, thermal, electronic, and chemical properties to atomic, molecular, and crystal structure. Ceramic and metallic crystals, glasses, polymers, and composite materials. Multi-phase materials, phase transformations, and strengthening processes. Laboratories and seminars include mechanical properties of materials, microstructure, heat treatment of steel, and hands on design experiments. Prerequisite: CHEM 105 or consent of Department.

STAT 235 - Introductory Statistics for Engineering

3.8 (fi 6) (either term or Spring/Summer, 3-0-1.5) Descriptive data analysis. Calculus of Probability. Binomial, multinomial, Poisson, normal, beta, exponential, gamma, hypergeometric, and Weibull distributions. Sampling distributions. Estimation, testing hypotheses, goodness-of-fit tests, and one-way analysis of variance. Linear correlation and regression. Sampling. Quality control. Use of a microcomputer software package for statistical analyses in engineering applications. Prerequisite: MATH 100. Corequisite: MATH 101.

ITS Elective (3-0-0)

Term 5

CH E 314 - Heat Transfer

3.5 (fi 8) (either term or Spring/Summer, 3-1s-0) Principles of conduction, convection and radiation heat transfer. Design and performance analysis of thermal systems based on these principles. Prerequisites: MATH 201, CH E 312. Corequisite CH E 374.

CH E 343 - Chemical Engineering Thermodynamics

3.5 (fi 8) (either term, 3-1s-0) Thermodynamics of non-ideal gases and liquids; vapour-liquid equilibrium, thermodynamics of chemical processes and multicomponent systems. Prerequisite: CH E 243. Corequisite: CME 265.

CH E 351 - Chemical Engineering Laboratory

3.5 (fi 8) (either term, 2-0-3) Technical report writing; thermodynamics, material, and energy balances, and calibration experiments. Prerequisites: ENGL 199 or equivalent, CME 265 and CH E 243. Corequisite: CH E 312.

CH E 374 - Computational Methods in Engineering

3.5 (fi 8) (either term, 3-1s-0) Formulation and solution of chemical and materials engineering problems; solution of systems of linear and nonlinear algebraic equations; numerical interpolation, differentiation and integration; numerical solution of ordinary and partial differential equations. Prerequisites: ENCMP 100 (or equivalent). MATH 102, 201 and 209.

ENG M 310 - Engineering Economy

3 (fi 8) (either term or Spring/Summer, 3-0-0) The application of the fundamentals of economics to engineering alternatives in planning, developing and managing industrial projects.

OR

ENG M 401 - Financial Management for Engineers

3 (fi 8) (either term, 3-0-0) Application of the fundamentals of engineering economics, financial analysis and market assessment to engineering alternatives in the planning, development and ongoing management of industrial enterprises. The course covers the use of engineering, economic, financial and market assessment information in investment and business operation decisions in technology oriented companies.

Complementary Studies Elective (3-0-0)

Term 6

CH E 316 - Equilibrium Stage Process

4 (fi 8) (either term or Spring/Summer, 3-0-2) Design of separation processes with emphasis on the equilibrium stage concept, distillation, absorption and extraction. Prerequisites: CH E 343, 314. Corequisite: CH E 318.

CH E 318 - Mass Transfer

4 (fi 8) (either term or Spring/Summer, 3-0-2) Molecular and turbulent diffusion; mass transfer coefficients; mass transfer equipment design including absorption and cooling towers, adsorption and ion exchange. Prerequisites: CME 265, CH E 312 and 343. Corequisite: CH E 314

CH E 345 - Chemical Reactor Analysis I

3.5 (fi 8) (either term or Spring/Summer, 3-1s-0) Kinetics of chemical reactions and design of ideal chemical reactors. Prerequisites: CME 265, CH E 343 and 374.

CH E 358 - Process Data Analysis

5 (fi 8) (either term or Spring/Summer, 3-0-4) Statistical analysis of process data from chemical process plants and course laboratory experiments. Topics covered include least squares regression, analysis of variance, propagation of error, and design of experiments. Prerequisites: CH E 351 and STAT 235. Corequisites: CH E 314 and 345.

Program and Technical Elective (3-1s-0)**Program and Technical Elective (3-1s-0)****Term 7****CH E 445 - Chemical Reactor Analysis II**

3.5 (fi 8) (either term, 3-1s-0) Analysis and design of non-ideal chemical reactors for industrial product synthesis. Prerequisites: CH E 314, 318 and 345.

CH E 446 - Process Dynamics and Control

4 (fi 8) (either term, 3-1s-3/3) Introduction to process modeling and transient response analysis; design and analysis of feedback systems; stability analysis; process control applications; process control using digital computers. Prerequisites: CME 265, MATH 201 and 209. Corequisite: CH E 312.

CH E 464 - Chemical Engineering Design I

4.5 (fi 8) (either term or Spring/Summer, 3-0-3) Engineering design concepts; cost estimation; project planning and scheduling; plant safety and hazards analysis; selected project design examples. Prerequisites: CH E 314, 345, 316 or 416, and ENG M 310 or 401. Corequisite: ENGG 404.

CME 481 - Colloquium I

1 (fi 3) (either term, 1-0-0) Communication and oral presentations. Graded on a pass/fail basis. Prerequisite: 85 units completed or consent of instructor.

ENGG 404 - Engineering Safety and Risk Management-Leadership in Risk Management

3.8 (fi 8) (either term or Spring/Summer, 3-3s/2-0) Basic concepts of risk and consequences of loss incidents; risk management principles and practices; incident investigation, causation, root cause analysis; process safety management; the roles of government agencies, professional bodies and industry associations; workplace safety; risk-based decision-making processes; leadership and the human-factors side of risk management. The course focuses on the principles and practices of leadership towards the effective application and implementation of risk management in major organizations across all engineering disciplines. Industry virtual tours, case studies, seminars and team projects specific to the student's engineering program will be used to develop competencies and proficiencies in applying leadership and organizational effectiveness for successful risk management.

Complementary Studies Elective (3-0-0)**Term 8****CH E 454 - Chemical Engineering Project Laboratory**

3 (fi 8) (second term, 1-0-4) Experiments in kinetics and mass transfer. Prerequisites: CH E 318, 345, 358, and 416.

CH E 465 - Chemical Engineering Design II

6 (fi 8) (second term, 4-0-4) Integration of chemical engineering practice, theory and economics into capital project proposal, sustainable design and evaluation. Course work requires team and project work. Prerequisites: CH E 446, 464, and ENGG 404.

ENGG 400 - The Practice of the Engineering Profession

1 (fi 3) (either term, 1-0-0) The technical and professional duties and responsibilities of the engineer; the ethics of the engineering profession; technical and professional organizations. The role of the engineer in the social environment including elements of equity, concepts of sustainable development and environmental stewardship, public and worker safety and health considerations including the context of the Alberta Occupational Health and Safety Act.

CH E 541- Analysis of Chemical and Energy Systems (New)

3.5 (fi 6) (either term or Spring/Summer, 3-1s-0) Introduction to energy conversion technologies, impact of energy sources on the planet/environment, exergy analysis, heat integration and energy efficiency, conventional and non-conventional renewable energy conversion technologies, CO₂ mitigation technologies, conversion of renewable carbon resources to produce bulk and fine chemicals. Life cycle and return on investment analysis for analyzing the effectiveness of different energy and chemical systems, sustainability metrics.

CH E 542-Electrochemical Energy Storage and Transformation (New)

3.5 (fi 6) (either term or Spring/Summer, 3-1s-0): Principles of electrochemistry including physical chemistry of electrolyte solutions, ion transport in solution, ionic conductivity, electrode equilibrium, reference electrodes, electrode kinetics, heat effects in electrochemical cells, electrochemical energy conversion, fuel cells, batteries, supercapacitors, and electrocatalytic systems, electrolytic production of hydrogen.

Program and Technical Electives:

The two single-term program electives must be selected from the following:

CH E 543 Integrated Solid Waste Management (New)

3.5 (fi 6) (either term or Spring/Summer, 3-1s-0): Introduction to legislative regulations and hierarchy of integrated solid waste management, waste handling and quantification, waste-disposal methods, circular economy in relation to waste management, characterization of solid waste, pre-treatment of solid waste, thermochemical conversion of solid waste to energy, case studies on resource recovery from solid waste.

CH E 544 Conversion of Biomass to Fuels and Chemicals (New)

3.5 (fi 6) (either term or Spring/Summer, 3-1s-0): First and second generation biomass, bioenergy production technologies, biofuels, transformation of lignocellulosic biomass, biochemical conversion routes, selective catalytic conversion routes and high temperature thermochemical conversion, including pyrolysis and gasification, reaction chemistry of model cellulosic and lignin compounds Computer-based process simulations for thermochemical transformation, reactor design problems related to biomass transformation.

MAT E 491 - Solid State Physics of Materials

3.5 (fi 8) (either term or Spring/Summer, 3-1s-0) Classical mechanics and its limitations; basic quantum mechanics; band theory; band diagrams for metals, insulators; Semiconductor and dielectric materials, piezoelectrics and thermoelectrics, and magnetic materials; Intrinsic and doped semiconductors; Optical properties of materials; Light-matter interactions, Prerequisite: PHYS 130, MAT E 202, or by consent of instructor.

Other courses may be taken with written permission from the Department prior to enrollment.

CME 458 or CME 459 may be taken with an appropriate project approved by the department and the program coordinator.

Appendix B: Consultation Records

Consultations	Date	Feedback
<p>Students</p> <p>A meeting was held with the representatives from the Chemical Engineering Students' Society (ChESS) and Material Engineering Students' Society (MESS) in August 2021. An outreach survey was developed to gauge the level of interest amongst undergraduate students for different Options.</p>	<p>August 2021</p>	<p>The survey results indicate an inclination towards clean/sustainable energy among students, suggesting that students will be open to taking this Option in chemical engineering program.</p> <p>(Link)</p>
<p>Department Council</p> <p>The proposed program description and structure was presented during Chemical and Materials Engineering departmental council meetings to solicit feedback from colleagues and online voting was conducted.</p>	<p>August 2022</p>	<p>The members of the department council supported the proposed Option and provided constructive feedback. The suggestions were integrated into the curriculum development process for the proposed Option.</p> <p>(Link)</p>
<p>Faculty of Science (Course EAS 208)</p> <p>The possibility of accommodating Chemical and Materials Engineering students in the EAS 208 course, offered by the Faculty of Science, was consulted with Prof. Stephen Johnston (Chair, Earth & Atmospheric Sciences) and Murray Gingras (Associate Chair, Earth & Atmospheric Sciences).</p>	<p>April 12, 2023</p>	<p>Faculty of Science supported the proposed Option and kindly agreed to accommodate our students in EAS 208. A letter of support was received on June 22, 2023.</p> <p>(Link)</p>
<p>Associate Dean, Undergraduate Studies</p>	<p>April 24, 2023</p>	<p>Prof. Pierre Mertiny, Associate Dean for Undergraduate Studies, Faculty of Engineering, reviewed the proposed Option and supported our initiative in this field.</p> <p>(Link)</p>

Provost Office (Carley Roth and Suzanne French)	May 08, 2023	Consultation pathways were suggested that are required to complete the internal program proposal form. (Link)
Registrar's Office Fee index and course numbers were consulted with Jesse Luyendyk, Assistant Registrar, Enrolment Services, Office of the Registrar - Exams & Timetabling.	June 15, 2023	Received the suggestions regarding fee index and course numbers for new courses. (Link)
Registrar's Office Calendar change requirements were consulted with Rebecca Liaw, University Calendar Editor, Office of the Registrar - Policy Governance Calendar.	June 19, 2023 / June 29, 2023	A few changes related to formatting requirements were suggested in order to make the forms ready for calendar editing. All the suggestions were incorporated in the calendar change request forms. The revised documents were reviewed and approved by Registrar's office. (Link)
Jesse Luyendyk and Carrie Dube, Consulted regarding course scheduling.	June 26, 2023	No scheduling issues were anticipated for second year students taking the new Option in September 2024 (assuming the new Option make the January 2024 calendar).
Anita Parker, Lead Educational Developer, Online and Hybrid Instruction & Strategy, Centre for Teaching and Learning	July 06, 2023	Consulted with CTL regarding learning outcomes for new courses. (Link)
Industry Support – Total Energies	July 06, 2023	Received a letter of support. (Link)

Internal Program Proposal Template
- for-credit programs not requiring Ministry approval -

This template is to be used for proposals to create or modify programs that do not require Ministry of Advanced Education approval.

Faculties and Departments must consult with the Portfolio Initiatives Manager in the Office of the Provost and Vice-President (Academic) (carley.roth@ualberta.ca) on the appropriate template and process. Graduate proposers must also consult with the Faculty of Graduate Studies and Research (fgsrgov@ualberta.ca). All program proponents must also consult with the Vice-Provost (Indigenous Programming & Research) during the early development stage.

PROPOSAL TYPE

This proposal is for a (select one):	
<input checked="" type="checkbox"/>	Creation of a new second-level specialization (e.g., minors of undergraduate programs and second-level specializations of graduate programs)
<input type="checkbox"/>	The addition of an Honors stream to an existing undergraduate program
<input type="checkbox"/>	Creation of a combined degree program where both contributing degrees have been approved by the Ministry of Advanced Education
<input type="checkbox"/>	Substantive program changes that do not require Ministry approval

1: Basics		
Program/Specialization/ Combined Degree Name	Clean Energy and Sustainable Process Systems	
Faculty/Department	Faculty of Engineering/ Chemical and Materials Engineering	
Contact information	Name and Title	Prof. Anthony Yeung, Associate Dean (Undergraduate)
	Phone	
	Email	tony.yeung@ualberta.ca
Proposed effective date	July 01, 2024	
Attachments		
<ul style="list-style-type: none"> • Letter of Support from the Dean of the Faculty • Proposed Calendar changes <ul style="list-style-type: none"> - Program structure (traditional and co-op sequence) - Change in Course sequence - Addition of new courses 		

2: Rationale, Implications, and Impacts

Rationale for the Proposal

Identify the purpose of the proposal with supporting rationale and evidence of demand.

- **Job Opportunities:** A transition towards clean and sustainable energy, one of the fastest-growing sectors in the world, will lead to an overall increase in energy sector jobs in various renewable industries. According to Clean Energy's 2021 report, the most impressive growth in the clean energy sector is currently being experienced in Alberta, with jobs set to increase by a huge 164% over the next decade¹.
- **Funding Opportunities in the Clean Energy Sector:** Contribution of the clean and renewable energy sector to GDP is on track to grow 3.4% per year by 2030. The provincial government has announced close to \$50 million funding for 23 clean technology projects in Alberta². Furthermore, the Emissions Reduction Alberta (ERA) program has committed another \$50 million in government funding support for the circular economy challenge³ to stimulate new advanced technologies that will offer innovative means for lowering emissions outputs in the Alberta economy. A number of companies, such as Shell, Amazon, Air Products, Suncor, are proposing clean energy and chemicals initiatives in Alberta with expertise in carbon capture and storage⁴. Additionally, Alberta is looked upon as the future hydrogen hub of Canada. These developments in the Clean Energy sector indicate potential upcoming opportunities for research grants and funding to develop research laboratories in our department.
- **Competitive Programs:** Canada's top ten universities (e.g. UBC, Toronto, Waterloo, Simon Fraser, Queen's, Ottawa, Calgary) offer several master's programs in the field of Clean/Sustainable Energy. Recently, one of our local competitors, University of Calgary, initiated an undergraduate program in Sustainable Systems Engineering⁵. Therefore, developing a program Option at the undergraduate level has become crucial for maintaining student intake in the relevant field.
- **Relevance to the traditional Chemical Engineering (CH E) Programs:** Chemical engineers are uniquely positioned to develop core technologies and contribute to the fields of renewable energy, carbon capture and storage, electrochemical processes, hydrogen production, fuel cells and batteries, waste management, and many more.

¹ [Clean Energy Canada 2021](#)

² [\\$50M funding for 23 clean technology projects](#)

³ [ERA Invests \\$50M for New Technology to Lower Emissions](#)

⁴ [CCS Facility in Alberta](#)

⁵ [Bachelor of Science in Sustainable System Engineering](#)

Length of the Program

Identify the length of the program in years and credit units per year.

4 years (Traditional Sequence) : Total credit units 160*

Credit units in Year 1 (40.6)

Credit units in Year 2 (39.1)

Credit units in Year 3 (43.5)

Credit units in Year 4 (36.8)

5 years (Co-Op Sequence): Total Credit Units 166*

Credit units in Year 1: 40.6

Credit units in Year 2: 44.1

Credit units in Year 3: 40.8

Credit units in Year 4: 21

Credit units in Year 5: 20

Length of the program with number of core courses, electives, and credit units per year, and term-by-term course distribution are given in Appendix A.

*Credit units of the traditional and co-op sequences of the proposed Option are 0.5 unit higher than those of the Chemical Engineering Program (160 and 166.5, respectively).

Provide the anticipated enrolments by head count for the next 5 years

(including Traditional and Co-op Sequences)

Enrolment	20XX	20XX	20XX	20XX	20XX
Total Headcount	50	100	160	240	270
• Year 1	50	50	60	80	80
• Year 2	0	50	50	60	80
• Year 3	0	0	50	50	60
• Year 4	0	0	0	50	50

Work-Integrated Learning

Describe how learners in this program will have access to Work-Integrated Learning (see [CEWIL definitions](#)).

Work-integrated learning is a unique dimension offered in the Co-op sequence, which is not offered in the competitive programs running in similar programs at other universities. Experiential learning is delivered in each year of the program through a series of design-focused courses wherein students will have the opportunity to both physically and virtually build their designs in response to open-ended design challenges.



<p>Consultation</p> <p>Describe the consultation process that occurred with students and other relevant stakeholders, and the feedback received.</p>	<p>Please see Appendix B for consultation records.</p> <p>Based on the consultations, we believe this Option could be a valuable addition to our program, attracting more students who are interested in learning about clean energy and sustainable process systems in addition to traditional chemical engineering content.</p>
<p>Indigenous Perspectives</p> <p>Describe the outcomes of the consultation with the Vice Provost (Indigenous Programming and Research) regarding how the program will integrate/include indigenous perspectives and content, and any action items that may result.</p>	<p>Our objectives for integrating Indigenous perspectives into the curriculum align with the goals and strategies detailed in the University of Alberta's Indigenous Strategic Plan "Braiding Past, Present, and Future". The Faculty of Engineering's strategy will undergo evaluation during regular program reviews, with the goal of weaving Indigenous knowledge systems, experiences, and perspectives into our undergraduate programs. This will be achieved through the introduction of new courses and enhanced quality assurance processes. Furthermore, we will strive to build institutional partnerships and relationships with Indigenous organizations and communities.</p> <p>A new component will be added to the content of CME 200 (Introduction to Chemical and Materials Engineering) to acknowledge the impact engineering has had and will continue to have on Indigenous people in the context of resource development and applications of engineering design. Guest speakers from Indigenous communities, either chemical or biochemical engineers or those impacted by chemical engineering projects, will be invited to share their insights on Ethics, Equity, and Environmental Stewardship. To honor their sharing of Traditional Knowledge and practices guest speakers will receive an honorarium in line with the University's Indigenous Honorarium Guideline.</p> <p>Additionally, the CME 200 course will feature examples illustrating the integration of traditional Indigenous technologies into modern engineering.</p> <p>CME 481 will introduce an indigenization component to incorporate a range of Indigenous worldviews, histories, and perspectives. Students will be encouraged to discuss and identify positive solutions for Indigenous communities seeking sustainable development opportunities within their lands and for resource management. The colloquium will include a critical assessment of the impact of engineering on society and the environment, with a focus on ethics, equity, and project management, all while considering Indigenous perspectives.</p> <p>Design projects and case studies that feature the connection to land, northern climates, and Indigenous communities will be incorporated. In addition,</p>



	<p>Indigenous-led businesses/communities will be engaged as partners in capstone design projects.</p> <p>Students in the co-op sequences will be asked to complete an online asynchronous course, <i>Indigenous Canada Massive Open Online Course (MOOC)</i>, offered by the Faculty of Native Studies, in order to receive credit for WKEXP 905. Students will be encouraged to complete the online course during their first 8-month work term (WKEXP 901/902). The <i>Faculty of Engineering</i> will work to ensure that students can take the course and provide evidence of completion at zero or only a marginal additional cost to the student. This course is an important resource to understand Indigenous ways of knowing, outline decolonization, and close the knowledge gap around racism, historical and contemporary Indigenous experiences and the foundational agreements.</p>
<p>Equity, Diversity and Inclusion Perspectives</p> <p>Describe the outcomes of the consultation with the Vice-Provost (Equity, Diversity and Inclusion) regarding how the program will integrate/include EDI perspectives and content, and any action items that may result.</p>	<p>The most current best practices in equity, diversity and inclusion are incorporated into the core part of the program and an EDI Strategy, consistent with the template for the Faculty of Engineering, will be developed.</p> <p>The EDI Strategy will include the provision of training in group dynamics and decision-making, including recognizing decision-making biases and implicit biases, incorporating design projects that include the engineering design for developing assistive tools/technologies for people with differing abilities, and engaging organizations and industries with leaders who are from traditionally underrepresented groups in engineering as partners in capstone design projects.</p> <p>Industry, Indigenous, and EDI perspectives will be incorporated in regular program reviews.</p>
<p>Resource Implications</p> <p>Identify financial impacts and internal resource requirements, particularly staff and classroom and lab space. Also identify any external resource requirements such as practicum or internship placements, etc.</p>	<p>Currently, three Options (Computer Process Control, Oil Sands Elective, and Biomedical), in addition to the core chemical engineering, appear in the University Calendar for the Undergraduate Chemical Engineering Program. All of these Options are offered in traditional and co-op sequences. Furthermore, the core chemical engineering program includes traditional, Co-op Plan I, and Co-op Plan II sequences. Thus, the department offers nine streams in the Chemical Engineering program. Out of these streams, the department is planning to suspend Oil Sands Elective Option, Biomedical Option, and Co-op Plan II sequence. Phasing out these Options and corresponding sequences will eliminate five streams out of nine that are currently offered. Thus, the department will have enough resources required to accommodate the proposed new Option in replacement of the eliminated sequences.</p>

	<p>The first year of the proposed program Option is a common first year for all students in the Faculty of Engineering and has well-developed support from the Faculties of Science and Arts. The implementation of this program does not introduce specialized teaching needs to any of the approved complementary studies electives or Impact of Technology on Society (ITS) electives.</p> <p>Chemical Engineering core courses are currently being taught by the tenure-track faculty and academic teaching staff members. One course, EAS 208 - Introduction to Global Change has been proposed in Term 3, which is currently being offered by the Faculty of Science at UofA. A few courses from other Faculties are offered as recommended electives. We have consulted with other Faculties (if needed) on the feasibility to accommodate additional students from this Option to their courses and labs.</p> <p>The department has sufficient resources to accommodate the classroom and laboratory requirements for the new proposed courses. In addition, the existing tenure-track and academic teaching staff members have the knowledge and skills to teach new proposed core and elective courses. Therefore, the department does not require any additional teaching resources to run the proposed program Option.</p>
<p>Approval Process Indicate the internal governance path, including meeting dates</p>	<p>Department Council Meeting and Approval: August 17, 2022 Faculty Academic Planning Committee (F-APC): October 12, 2023 Engineering Coordinating Committee (ECC): October 24, 2023 Program Support Team (PST): October 26, 2023</p> <p>GFC Programs Committee (GFC-PC): (TBD)</p>

Appendix A.1: Sequence of courses in the traditional Chemical Engineering program and the proposed changes in the Option “Clean Energy and Sustainable Process Systems”.

Year 2		Year 3		Year 4	
Fall	Winter	Fall	Winter	Fall	Winter
CH E 243	CH E 312	CH E 314	CH E 316	CH E 445	CH E 454
CHEM 261	ECE 209	CH E 343	CH E 318	CH E 446	CH E 465
CME 200	MATH 201	CH E 351	CH E 345	CH E 464	ENGG 400
CME 265	MAT E 202	CH E 374	CH E 358	CME 481	P&T Elective
MATH 209	STAT 235	P&T Elective ⁶	ENG M 310/401	CS Electives	P&T Elective
CS Elective ⁷	ITS Elective ⁸		ENGG 404	P&T Elective	
CS Elective					

Figure 1: Sequence of courses in the traditional Chemical Engineering Program

Year 2		Year 3		Year 4	
Fall	Winter	Fall	Winter	Fall	Winter
CH E 243	CH E 312	CH E 314	CH E 316	CH E 445	CH E 454
CHEM 261	ECE 209	CH E 343	CH E 318	CH E 446	CH E 465
CME 200 ⁹	MATH 201	CH E 351	CH E 345	CH E 464	ENGG 400
CME 265	MAT E 202	CH E 374	CH E 358	CME 481	CH E 541
MATH 209	STAT 235	ENG M 310/401	P&T Elective	CS Electives	CH E 542
EAS 208	ITS Elective	CS Elective	P&T Elective	ENGG 404	P&T Elective
CS Elective		P&T Elective	ENG M 310/401	P&T Elective	P&T Elective
CS Elective			ENGG 404		

Figure 2: Sequence of courses in the proposed Option (: Course Rearrangement; : Course Addition; : Course Withdrawal)

⁶ The proposed Option adds three *Program and Technical (P&T) electives* in the list of P&T electives offered in the traditional CH E program.

⁷ List of *Complementary Studies (CS) electives* offered in the proposed Option is the same as offered in the traditional CH E program.

⁸ List of *Impact of Technology on Society (ITS) Elective* in the proposed Option is the same as offered in the traditional CH E program.

⁹ CME 200 (Introduction to Chemical and Materials Engineering) is offered in a single day asynchronously.



- I. The proposed Option offers inclusion of five new courses (**three core courses (CH E 541 Analysis of Chemical and Energy Systems, CH E 542 Electrochemical Energy Storage and Transformation, and EAS 208 Introduction to Global Change)** and **two new elective courses (CH E 543 Integrated Solid Waste Management and CH E 544 Conversion of Biomass to Fuels and Chemicals)**) to the traditional CH E program structure. The department is proposing to offer the Option to both the Traditional and Co-op sequences.

- II. The proposed Option does not eliminate any core Chemical Engineering course, which is currently offered in the regular CH E program, to include new courses in this program Option. Figures 1 and 2 provide the sequence of courses in the Traditional Chemical Engineering program and the proposed Option, respectively. All undergraduate students in the Faculty of Engineering have the same qualifying Year 1; therefore, the sequence of courses offered in Year 1 is not shown here. Notably, the Fall session in Year 2 includes CME 200, which is offered in a single day synchronously.

Appendix A.2: Program structure including core courses, electives, and credit units per year.

Table B.1: Program Structure - Traditional Sequence

Component	(1 st year) (maximum)	Credits	(2 nd year) (maximum)	Credits	3 rd Year (minimum)	Credits	4 th year (minimum)	Credits
Core courses ¹⁰	12	40.6	11	36.1	9	33.5	10	33.8
Program & Technical electives	-	-	-	-	2	7	-	-
Complementary Studies elective	-	-	-	-	1	3	1	3
ITS (<i>Impact of Technology on Society</i>) elective	-	-	1	3	-	-	-	-
Total	12	40.6	12	39.1	12	43.5	11	36.8

¹⁰ One of the core courses, CME 200 (Introduction to Chemical and Materials Engineering), is offered in a single day asynchronously. Thus, practically offered core courses with respect to students' workload are 21 in junior years.

Table B.2: Program Structure - Co-op Sequence

Component	(1 st year) (maximum)	Credits	(2 nd year) (maximum)	Credits	3 rd Year (minimum)	Credits	4 th year (minimum)	Credits	5 th Year (minimum)	Credits
Core courses	12	40.6	12	37.6	10	37.3	4	13	5	17
Program & Technical electives	-	-	-	-	-	-	2	7	-	-
Complementary Studies elective	-	-	1	3	1	3	-	-	-	-
ITS (<i>Impact of Technology on Society</i>) elective	-	-	1	3	-	-	-	-	-	-
Work Integrated Learning	-	-	1	0.5	1	0.5	2	1	1	3
Total	12	40.6	15	44.1	12	40.8	8	21	6	20

Appendix-A.3: Term-by-term proposed course sequence

Traditional Sequence (course names, descriptions, credits and prerequisites)

Term -1

CHEM 103 Introductory University Chemistry I

4.3 (fi 6) (either term, 3-1s-3/2) Atoms and molecules, states of matter, chemistry of the elements. Prerequisite: Chemistry 30, or equivalent.

ENGG 100 Success in Engineering

1.1 (fi 3) (either term, 1.5-1.5-0/2) An introduction to the Faculty of Engineering, the engineering profession, the skills required for academic success, and the fundamentals of leadership: study and life skills; time management and goal setting; interpersonal skills; career planning; engineering and society including elements of ethics, equity, concepts of sustainable development, environmental stewardship, and public safety.

ENGG 130 Engineering Mechanics

4 (fi 8) (either term, 3-0-2) Equilibrium of planar systems. Analysis of statically determinate trusses and frames. Friction. Centroids and centres of gravity. Forces and moments in beams. Second moments of area. Note: Students in all sections of this course will write a common final examination. Corequisite: MATH 100.

ENGL 199 English for Engineering Students

3 (fi 6) (either term, 3-0-0) This course aims to develop the student's ability to provide effective written and oral information. It will focus on instruction in fundamental writing skills, including building effective sentences and paragraphs, and on learning to communicate clearly across a range of genres and media used in academic and professional contexts, including correspondence and presentations. Students will be introduced to the principles of information gathering, analysis, and citation.

MATH 100 Calculus I

3.5 (fi 6) (either term, 3-0-1) Review of numbers, inequalities, functions, analytic geometry; limits, continuity; derivatives and applications, Taylor polynomials; log, exp, and inverse trig functions. Integration, fundamental theorem of calculus substitution, trapezoidal and Simpson's rules. Prerequisites: Mathematics 30-1 and Mathematics 31.

PHYS 130 Wave Motion, Optics, and Sound

3.8 (fi 6) (either term, 3-0-3/2) Geometrical optics, optical instruments, oscillations, waves, sound, interference, diffraction. Prerequisites: Mathematics 30-1, Mathematics 31, Physics 30. Corequisite: MATH 100 or 113 or 114 or 117 or 134 or 144 or equivalent.

Term-2

CHEM 105 Introductory University Chemistry II

3.8 (fi 6) (either term, 3-0-3/2) Rates of reactions, thermodynamics and equilibrium, electrochemistry, modern applications of chemistry. Prerequisite: CHEM 103.

ENCOMP 100 Computer Programming for Engineers

3.8 (fi 8) (either term, 3-0-1.5) Fundamentals of computer programming with emphasis on solving engineering problems. Structure and syntax of computer programs, variables, data types, data structures, control structures, functions, input/output operations, debugging, software development process.

ENGG 160 Introduction to Engineering Design, Communication, and Profession

2 (fi 5) (either term or Spring/Summer, 1-0-2) Fundamental design process and theory in a multidisciplinary context. Importance, in engineering design, of communications; team work; the engineering disciplines, career fields; professional responsibilities of the engineer including elements of ethics, equity, concepts of sustainable development and environmental stewardship, public and worker safety and health considerations including the context of the Alberta Occupational Health and Safety Act. Corequisite ENGL 199.

EN PH 131 Mechanics

4.3 (fi 6) (either term, 3-1s-3/2) Kinematics and dynamics of particles; gravitation; work and energy; linear momentum; angular momentum; systems of particles; introduction to dynamics of rigid bodies. Prerequisites: MATH 100 or 117, and ENGG 130. Corequisite: MATH 101 or 118.

MATH 101 Calculus for Engineering II

3.5 (fi 6) (either term, 3-0-1) Area between curves, techniques of integration. Applications of integration to planar areas and lengths, volumes and masses. First order ordinary differential equations: separable, linear, direction fields, Euler's method, applications. Infinite series, power series, Taylor expansions with remainder terms. Polar coordinates. Rectangular, spherical and cylindrical coordinates in 3-dimensional space. Parametric curves in the plane and space: graphing, arc length, curvature; normal binormal, tangent plane in 3- dimensional space. Volumes and surface areas of rotation. Prerequisite: MATH 100.

MATH 102 Applied Linear Algebra

3.5 (fi 6) (either term, 3-0-1) Vectors and matrices, solution of linear equations, equations of lines and planes, determinants, matrix algebra, orthogonality and applications (Gram-Schmidt), eigenvalues and eigenvectors and applications, complex numbers. Prerequisite or corequisite: MATH 100.

Term-3**CH E 243 - Engineering Thermodynamics**

3.5 (fi 8) (either term or Spring/Summer, 3-1s-0) An introduction to the first and second laws of thermodynamics. Prerequisites: MATH 101.

CHEM 261 - Organic Chemistry I

3 (fi 6) (either term, 3-0-3) The correlation of structure and chemical bonding in carbon compounds with the physical properties and chemical reactivity of organic molecules. Discussion will be based on functional groups with emphasis on hydrocarbons and derivatives that contain halogens, oxygen, sulfur, and the hydroxy group. Introduction to stereochemistry, three dimensional structure, reaction mechanisms, especially addition to double bonds, nucleophilic substitution and elimination reactions. Prerequisite CHEM 101 or 103.

CME 200 - Introduction to Chemical and Materials Engineering

0.5 (fi 2) (first term, 1 day) Topics of interest to second year Chemical and Materials Engineering students, with special reference to industries in Alberta, including coverage of elements of ethics, [equity, diversity and inclusion \(EDI\)](#), [indigenization](#), concepts of sustainable development and environmental stewardship, public and worker safety and health considerations including the context of the Alberta Occupational Health and Safety Act. Offered in a single day during the first week of September.

CME 265 - Process Analysis

4.5 (fi 8) (either term, 3-0-3) Basic process principles; material and energy balances, transient processes, introduction to computer-aided balance calculations. Prerequisites: ENCOMP 100, MATH 102 and CHEM 105. Corequisites: CH E 243 and MATH 209 or equivalent.

MATH 209 - Calculus for Engineering III

3.5 (fi 6) (either term, 3-0-1) Partial differentiation, derivatives of integrals. Multiple integration using rectangular, cylindrical, and spherical coordinates. Vector Field Theory. Prerequisite: MATH 101. Prerequisite/Corequisite: MATH 102.

EAS 208 - Introduction to Global Change (Currently Offered by Faculty of Science)

3 (fi 6) (either term, 3-0-0) Natural and anthropogenic causes of global scale environmental change; the role of the atmosphere, oceans, biosphere and cryosphere in the processes of environmental change; relationships between levels of technology and development and the character of environmental change associated with human activity. Prerequisite: Any 100-level Science course.

Term-4**CH E 312 - Fluid Mechanics**

3.5 (fi 8) (either term or Spring/Summer, 3-1s-0) Newtonian and non-Newtonian fluid behavior; hydrostatics; buoyancy, application of Bernoulli and momentum equations; frictional losses through pipes, ducts, and fittings; pipe networks; pumps; drag on submerged bodies and flow through porous media. Prerequisites: CH E 243 EN PH 131 and MATH 209. Corequisite: MATH 201.

ECE 209 - Fundamentals of Electrical Engineering

3.8 (fi 8) (either term or Spring/Summer, 3-0-3/2) Physical concepts of passive circuit elements, Kirchhoff's laws and DC circuit equations. Energy concepts, time domain analysis of AC circuits. Impedance, complex numbers and phasor algebra. AC power concepts, resonance, three phase circuits, introduction to machines. Credit may be obtained in only one of ECE 209, E E 239, ECE 202, or E E 240, unless approved by the Department.

MATH 201 - Differential Equations

3.5 (fi 6) (either term or Spring/Summer, 3-0-1) First-order equations; second-order linear equations: reduction of order, variation of parameters; Laplace transform; linear systems; power series; solution by series; separation of variables for PDEs. Prerequisite or corequisite: MATH 209 or 214.

MAT E 202 - Materials Science II

3.5 (fi 8) (either term or Spring/Summer, 3- 1.5s/2-1/3) An introduction to the science of materials relating their mechanical, thermal, electronic, and chemical properties to atomic, molecular, and crystal structure. Ceramic and metallic crystals, glasses, polymers, and composite materials. Multi-phase materials, phase transformations, and strengthening processes. Laboratories and seminars include mechanical properties of materials, microstructure, heat treatment of steel, and hands on design experiments. Prerequisite: CHEM 105 or consent of Department.

STAT 235 - Introductory Statistics for Engineering

3.8 (fi 6) (either term or Spring/Summer, 3-0-1.5) Descriptive data analysis. Calculus of Probability. Binomial, multinomial, Poisson, normal, beta, exponential, gamma, hypergeometric, and Weibull distributions. Sampling distributions. Estimation, testing hypotheses, goodness-of-fit tests, and one-way analysis of variance. Linear correlation and regression. Sampling. Quality control. Use of a microcomputer software package for statistical analyses in engineering applications. Prerequisite: MATH 100. Corequisite: MATH 101.

ITS Elective (3-0-0)

Term 5

CH E 314 - Heat Transfer

3.5 (fi 8) (either term or Spring/Summer, 3-1s-0) Principles of conduction, convection and radiation heat transfer. Design and performance analysis of thermal systems based on these principles. Prerequisites: MATH 201, CH E 312. Corequisite CH E 374.

CH E 343 - Chemical Engineering Thermodynamics

3.5 (fi 8) (either term, 3-1s-0) Thermodynamics of non-ideal gases and liquids; vapour-liquid equilibrium, thermodynamics of chemical processes and multicomponent systems. Prerequisite: CH E 243. Corequisite: CME 265.

CH E 351 - Chemical Engineering Laboratory

3.5 (fi 8) (either term, 2-0-3) Technical report writing; thermodynamics, material, and energy balances, and calibration experiments. Prerequisites: ENGL 199 or equivalent, CME 265 and CH E 243. Corequisite: CH E 312.

CH E 374 - Computational Methods in Engineering

3.5 (fi 8) (either term, 3-1s-0) Formulation and solution of chemical and materials engineering problems; solution of systems of linear and nonlinear algebraic equations; numerical interpolation, differentiation and integration; numerical solution of ordinary and partial differential equations. Prerequisites: ENCOMP 100 (or equivalent). MATH 102, 201 and 209.

ENG M 310 - Engineering Economy

3 (fi 8) (either term or Spring/Summer, 3-0-0) The application of the fundamentals of economics to engineering alternatives in planning, developing and managing industrial projects.

OR

ENG M 401 - Financial Management for Engineers

3 (fi 8) (either term, 3-0-0) Application of the fundamentals of engineering economics, financial analysis and market assessment to engineering alternatives in the planning, development and ongoing management of industrial enterprises. The course covers the use of engineering, economic, financial and market assessment information in investment and business operation decisions in technology oriented companies.

Complementary Studies Elective (3-0-0)

Term 6

CH E 316 - Equilibrium Stage Process

4 (fi 8) (either term or Spring/Summer, 3-0-2) Design of separation processes with emphasis on the equilibrium stage concept, distillation, absorption and extraction. Prerequisites: CH E 343, 314. Corequisite: CH E 318.

CH E 318 - Mass Transfer

4 (fi 8) (either term or Spring/Summer, 3-0-2) Molecular and turbulent diffusion; mass transfer coefficients; mass transfer equipment design including absorption and cooling towers, adsorption and ion exchange. Prerequisites: CME 265, CH E 312 and 343. Corequisite: CH E 314

CH E 345 - Chemical Reactor Analysis I

3.5 (fi 8) (either term or Spring/Summer, 3-1s-0) Kinetics of chemical reactions and design of ideal chemical reactors. Prerequisites: CME 265, CH E 343 and 374.

CH E 358 - Process Data Analysis

5 (fi 8) (either term or Spring/Summer, 3-0-4) Statistical analysis of process data from chemical process plants and course laboratory experiments. Topics covered include least squares regression, analysis of variance, propagation of error, and design of experiments. Prerequisites: CH E 351 and STAT 235. Corequisites: CH E 314 and 345.

Program and Technical Elective (3-1s-0)**Program and Technical Elective (3-1s-0)****Term 7****CH E 445 - Chemical Reactor Analysis II**

3.5 (fi 8) (either term, 3-1s-0) Analysis and design of non-ideal chemical reactors for industrial product synthesis. Prerequisites: CH E 314, 318 and 345.

CH E 446 - Process Dynamics and Control

4 (fi 8) (either term, 3-1s-3/3) Introduction to process modeling and transient response analysis; design and analysis of feedback systems; stability analysis; process control applications; process control using digital computers. Prerequisites: CME 265, MATH 201 and 209. Corequisite: CH E 312.

CH E 464 - Chemical Engineering Design I

4.5 (fi 8) (either term or Spring/Summer, 3-0-3) Engineering design concepts; cost estimation; project planning and scheduling; plant safety and hazards analysis; selected project design examples. Prerequisites: CH E 314, 345, 316 or 416, and ENG M 310 or 401. Corequisite: ENGG 404.

CME 481 - Colloquium I

1 (fi 3) (either term, 1-0-0) Communication and oral presentations. Graded on a pass/fail basis. Prerequisite: 85 units completed or consent of instructor.

ENGG 404 - Engineering Safety and Risk Management-Leadership in Risk Management

3.8 (fi 8) (either term or Spring/Summer, 3-3s/2-0) Basic concepts of risk and consequences of loss incidents; risk management principles and practices; incident investigation, causation, root cause analysis; process safety management; the roles of government agencies, professional bodies and industry associations; workplace safety; risk-based decision-making processes; leadership and the human-factors side of risk management. The course focuses on the principles and practices of leadership towards the effective application and implementation of risk management in major organizations across all engineering disciplines. Industry virtual tours, case studies, seminars and team projects specific to the student's engineering program will be used to develop competencies and proficiencies in applying leadership and organizational effectiveness for successful risk management.

Complementary Studies Elective (3-0-0)**Term 8****CH E 454 - Chemical Engineering Project Laboratory**

3 (fi 8) (second term, 1-0-4) Experiments in kinetics and mass transfer. Prerequisites: CH E 318, 345, 358, and 416.

CH E 465 - Chemical Engineering Design II

6 (fi 8) (second term, 4-0-4) Integration of chemical engineering practice, theory and economics into capital project proposal, sustainable design and evaluation. Course work requires team and project work. Prerequisites: CH E 446, 464, and ENGG 404.

ENGG 400 - The Practice of the Engineering Profession

1 (fi 3) (either term, 1-0-0) The technical and professional duties and responsibilities of the engineer; the ethics of the engineering profession; technical and professional organizations. The role of the engineer in the social environment including elements of equity, concepts of sustainable development and environmental stewardship, public and worker safety and health considerations including the context of the Alberta Occupational Health and Safety Act.

CH E 541- Analysis of Chemical and Energy Systems (New)

3.5 (fi 6) (either term or Spring/Summer, 3-1s-0) Introduction to energy conversion technologies, impact of energy sources on the planet/environment, exergy analysis, heat integration and energy efficiency, conventional and non-conventional renewable energy conversion technologies, CO₂ mitigation technologies, conversion of renewable carbon resources to produce bulk and fine chemicals. Life cycle and return on investment analysis for analyzing the effectiveness of different energy and chemical systems, sustainability metrics.

CH E 542-Electrochemical Energy Storage and Transformation (New)

3.5 (fi 6) (either term or Spring/Summer, 3-1s-0): Principles of electrochemistry including physical chemistry of electrolyte solutions, ion transport in solution, ionic conductivity, electrode equilibrium, reference electrodes, electrode kinetics, heat effects in electrochemical cells, electrochemical energy conversion, fuel cells, batteries, supercapacitors, and electrocatalytic systems, electrolytic production of hydrogen.

Program and Technical Electives:

The two single-term program electives must be selected from the following:

CH E 543 Integrated Solid Waste Management (New)

3.5 (fi 6) (either term or Spring/Summer, 3-1s-0): Introduction to legislative regulations and hierarchy of integrated solid waste management, waste handling and quantification, waste-disposal methods, circular economy in relation to waste management, characterization of solid waste, pre-treatment of solid waste, thermochemical conversion of solid waste to energy, case studies on resource recovery from solid waste.

CH E 544 Conversion of Biomass to Fuels and Chemicals (New)

3.5 (fi 6) (either term or Spring/Summer, 3-1s-0): First and second generation biomass, bioenergy production technologies, biofuels, transformation of lignocellulosic biomass, biochemical conversion routes, selective catalytic conversion routes and high temperature thermochemical conversion, including pyrolysis and gasification, reaction chemistry of model cellulosic and lignin compounds Computer-based process simulations for thermochemical transformation, reactor design problems related to biomass transformation.

MAT E 491 - Solid State Physics of Materials

3.5 (fi 8) (either term or Spring/Summer, 3-1s-0) Classical mechanics and its limitations; basic quantum mechanics; band theory; band diagrams for metals, insulators; Semiconductor and dielectric materials, piezoelectrics and thermoelectrics, and magnetic materials; Intrinsic and doped semiconductors; Optical properties of materials; Light-matter interactions, Prerequisite: PHYS 130, MAT E 202, or by consent of instructor.

Other courses may be taken with written permission from the Department prior to enrollment.

CME 458 or CME 459 may be taken with an appropriate project approved by the department and the program coordinator.

Appendix B: Consultation Records

Consultations	Date	Feedback
<p>Students A meeting was held with the representatives from the Chemical Engineering Students' Society (ChESS) and Material Engineering Students' Society (MESS) in August 2021. An outreach survey was developed to gauge the level of interest amongst undergraduate students for different Options.</p>	August 2021	<p>The survey results indicate an inclination towards clean/sustainable energy among students, suggesting that students will be open to taking this Option in chemical engineering program.</p> <p>(Link)</p>
<p>Department Council The proposed program description and structure was presented during Chemical and Materials Engineering departmental council meetings to solicit feedback from colleagues and online voting was conducted.</p>	August 2022	<p>The members of the department council supported the proposed Option and provided constructive feedback. The suggestions were integrated into the curriculum development process for the proposed Option.</p> <p>(Link)</p>
<p>Faculty of Science (Course EAS 208) The possibility of accommodating Chemical and Materials Engineering students in the EAS 208 course, offered by the Faculty of Science, was consulted with Prof. Stephen Johnston (Chair, Earth & Atmospheric Sciences) and Murray Gingras (Associate Chair, Earth & Atmospheric Sciences).</p>	April 12, 2023	<p>Faculty of Science supported the proposed Option and kindly agreed to accommodate our students in EAS 208. A letter of support was received on June 22, 2023.</p> <p>(Link)</p>
<p>Associate Dean, Undergraduate Studies (Prof. Pierre Mertiny)</p>	April 24, 2023	<p>Prof. Pierre Mertiny, Associate Dean for Undergraduate Studies, Faculty of Engineering, reviewed the proposed Option and supported our initiative in this field.</p> <p>(Link)</p>
<p>Provost Office Carley Roth and Suzanne French</p>	May 08, 2023	<p>Consultation pathways were suggested that are required to complete the internal program proposal form.</p> <p>(Link)</p>



<p>Registrar’s Office Fee index and course numbers were consulted with Jesse Luyendyk, Assistant Registrar, Enrolment Services, Office of the Registrar - Exams & Timetabling.</p>	<p>June 15, 2023</p>	<p>Received the suggestions regarding fee index and course numbers for new courses. (Link)</p>
<p>Registrar’s Office Calendar change requirements were consulted with Rebecca Liaw, University Calendar Editor, Office of the Registrar - Policy Governance Calendar.</p>	<p>June 19, 2023 / June 29, 2023</p>	<p>A few changes related to formatting requirements were suggested in order to make the forms ready for calendar editing. All the suggestions were incorporated in the calendar change request forms. The revised documents were reviewed and approved by Registrar’s office. (Link)</p>
<p>Course scheduling. Jesse Luyendyk, Assistant Registrar, Enrolment Services, Office of the Registrar - Exams & Timetabling. Carrie Dube, Course Sched & TT Coord, College of Natural and Applied Sciences - Office of Education</p>	<p>June 26, 2023</p>	<p>No scheduling issues were anticipated for second year students taking the new Option in September 2024 (assuming the new Option make the January 2024 calendar).</p>
<p>Centre for Teaching and Learning Anita Parker, Lead Educational Developer, Online and Hybrid Instruction & Strategy, Centre for Teaching and Learning</p>	<p>July 06, 2023</p>	<p>Consulted with CTL regarding learning outcomes for new courses. (Link)</p>
<p>Industry Support – Total Energies</p>	<p>July 06, 2023</p>	<p>Received a letter of support. (Link)</p>
<p>Indigenous Strategies Florence Glanfield, Vice-Provost and Megan Tipler, Indigenous Strategies Manager (Office of the Vice-Provost, Indigenous Programming and Research)</p>	<p>Oct 17, 2023</p>	<p>A few revisions related to Indigenous Strategies were suggested. All the suggestions have been incorporated in the proposal.</p>
<p>Equity, Diversity and Inclusion Strategies Carrie Smith, Vice-Provost (Equity, Diversity and Inclusion)</p>	<p>Oct 19, 2023</p>	<p>Reviewed proposal and approved it moving forward.</p>

Faculty (& Department or Academic Unit):	Faculty of Engineering Chemical & Materials Engineering
Contact Person:	Prof. Anthony Yeung (tony.yeung@ualberta.ca) Associate Chair, Undergraduate Studies
Level of change: (choose one only)	• Undergraduate
	• Graduate
Type of change request: (check all that apply)	• Program (Second-Level Specialization)
	• Regulation
For which term is this intended to take effect?	Fall 2024 onwards
Does this proposal have corresponding course changes? (Should be submitted at the same time)	Yes (attached as separate forms)

Rationale

Things to consider (maximum 500 words): Why is this being changed; How will it benefit students/department/unit; How is this comparable to similar programs (internal or external); Historical context; Impacts to administration or program structure; Consultation with stakeholders

Chemical engineers are uniquely positioned to develop core technologies and contribute to the fields of renewable energy, carbon capture and storage, electrochemical processes, hydrogen production, fuel cells and batteries, waste management, and many more. Contribution of the clean and renewable energy sector to GDP is on track to grow 3.4% per year by 2030. The provincial government has announced close to \$50 million funding for 23 clean technology projects in Alberta. Furthermore, the Emissions Reduction Alberta (ERA) program has committed another \$50 million in government funding support for the circular economy challenge to stimulate new advanced technologies that will offer innovative means for lowering emissions outputs in the Alberta economy. A number of companies, such as Shell, Amazon, Air Products, Suncor, are proposing clean energy and chemicals initiatives in Alberta with expertise in carbon capture and storage. Additionally, Alberta is looked upon as the future hydrogen hub of Canada. These developments in the Clean Energy sector indicate potential upcoming opportunities for research grants and funding to develop research laboratories in our department. A transition towards Clean and sustainable energy, one of the fastest-growing sectors in the world, will lead to an overall increase in energy sector jobs in various renewable industries.

The department has consulted with internal stakeholders including department council members, faculty of engineering, students, and industry stakeholders. Details are given in the “**Internal Program Proposal**” document.

Calendar Copy

URL in current Calendar (or “New page”)

New Page

“Bachelor of Science in Chemical Engineering– Clean Energy and Sustainable Process Systems Option”

Section “Undergraduate- Chemical Engineering”

(<https://calendar.ualberta.ca/content.php?catoid=39&navoid=12425#faculty-of-engineering>)

<p>Current Copy: Removed language</p>	<p>Proposed Copy: New language</p>
	<p>Bachelor of Science in Chemical Engineering - Clean Energy and Sustainable Process Systems Option</p> <p>Engineering Disciplines To find descriptions of the various disciplines of Engineering, visit Explore our Programs on the Faculty of Engineering website.</p> <p>Admission Requirements General Undergraduate Admission Requirements Admission Requirements for Qualifying Year</p> <p>Academic Regulations University Regulations Faculty of Engineering Regulations</p> <p>Program Requirements</p> <p>Year 1 Requirements for Year 1 can be found in Bachelor of Science in Engineering - Qualifying Year. Information regarding admission to a specialized program from the Qualifying Year Program can be found in Faculty of Engineering Regulations.</p> <p>Year 2</p> <p>Term 3</p> <ul style="list-style-type: none"> CH E 243 - Engineering Thermodynamics CHEM 261 - Organic Chemistry I CME 200 - Introduction to Chemical and Materials Engineering CME 265 - Process Analysis MATH 209 – Calculus for Engineering III EAS 208 - Introduction to Global Change

Term 4

CH E 312 - Fluid Mechanics
 ECE 209 - Fundamentals of Electrical Engineering
 MATH 201 - Differential Equations
 MAT E 202 - Materials Science II
 STAT 235 - Introductory Statistics for Engineering
 ITS Elective (3-0-0)

Year 3

Term 5

CH E 314 - Heat Transfer
 CH E 343 - Chemical Engineering Thermodynamics
 CH E 351 - Chemical Engineering Laboratory
 CH E 374 - Computational Methods in Engineering

ENG M 310 - Engineering Economy

OR

ENG M 401 - Financial Management for Engineers

Complementary Studies Elective (3-0-0)

Term 6

CH E 316 - Equilibrium Stage Process
 CH E 318 - Mass Transfer
 CH E 345 - Chemical Reactor Analysis I
 CH E 358 - Process Data Analysis
 Program and Technical Elective (3-1s-0)*
 Program and Technical Elective (3-1s-0)*

***Note: The two single-term program electives must be selected from the following:**

- CH E 543 Integrated Solid Waste Management
 - CH E 544 Conversion of Biomass to Fuels and Chemicals
 - MAT E 491 - Solid State Physics of Materials
- CME 458 or CME 459 may be taken with an appropriate project approved by the department and the program coordinator.

Year 4

Term 7

CH E 445 - Chemical Reactor Analysis II
 CH E 446 - Process Dynamics and Control
 CH E 464 - Chemical Engineering Design I
 CME 481 - Colloquium I
 ENGG 404 - Engineering Safety and Risk Management-Leadership in Risk Management
 Complementary Studies Elective (3-0-0)

	<p>Term 8</p> <p>CH E 454 - Chemical Engineering Project Laboratory CH E 465 - Chemical Engineering Design II ENGG 400 - The Practice of the Engineering Profession CH E 541- Analysis of Chemical and Energy Systems CH E 542-Electrochemical Energy Storage and Transformation</p> <p>Complementary Studies and Impact of Technology on Society (ITS) Electives</p> <p>See Complementary Studies and Impact of Technology on Society (ITS) Electives for a list of approved electives.</p>
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Reviewed/Approved by:

<p>REQUIRED: Faculty Council (or delegate) and approval date.</p> <p>Department Council Meeting and Approval: August 17, 2022 Faculty Academic Planning Committee (F-APC): October 12, 2023 Engineering Coordinating Committee (ECC): October 24, 2023 Program Support Team (PST): October 26, 2023</p> <p>GFC Programs Committee (GFC-PC): (TBD)</p>
<p>OPTIONAL: Other internal faculty approving bodies, consultation groups, or departments, and approval dates.</p>

Faculty (& Department or Academic Unit):	Faculty of Engineering Chemical & Materials Engineering
Contact Person:	Prof. Anthony Yeung (tony.yeung@ualberta.ca) Associate Chair, Undergraduate Studies
Level of change: (choose one only)	<ul style="list-style-type: none"> • Undergraduate • Graduate
Type of change request: (check all that apply)	<ul style="list-style-type: none"> • Program (Second-Level Specialization, Co-op Sequence) • Regulation
For which term is this intended to take effect?	Fall 2024 onwards
Does this proposal have corresponding course changes? (Should be submitted at the same time)	Yes (attached as separate forms)

Rationale

Things to consider (maximum 500 words): Why is this being changed; How will it benefit students/department/unit; How is this comparable to similar programs (internal or external); Historical context; Impacts to administration or program structure; Consultation with stakeholders

Chemical engineers are uniquely positioned to develop core technologies and contribute to the fields of renewable energy, carbon capture and storage, electrochemical processes, hydrogen production, fuel cells and batteries, waste management, and many more. Contribution of the clean and renewable energy sector to GDP is on track to grow 3.4% per year by 2030. The provincial government has announced close to \$50 million funding for 23 clean technology projects in Alberta . Furthermore, the Emissions Reduction Alberta (ERA) program has committed another \$50 million in government funding support for the circular economy challenge to stimulate new advanced technologies that will offer innovative means for lowering emissions outputs in the Alberta economy. A number of companies, such as Shell, Amazon, Air Products, Suncor, are proposing clean energy and chemicals initiatives in Alberta with expertise in carbon capture and storage . Additionally, Alberta is looked upon as the future hydrogen hub of Canada. These developments in the Clean Energy sector indicate potential upcoming opportunities for research grants and funding to develop research laboratories in our department. A transition towards Clean and sustainable energy, one of the fastest-growing sectors in the world, will lead to an overall increase in energy sector jobs in various renewable industries.

Work-integrated learning is a unique dimension offered in the Co-op sequence of the proposed Option, which is not offered in competitive programs running in other universities.

The department has consulted with internal stakeholders including department council members, faculty of engineering, students, and industry stakeholders. Details are given in the template for "**Internal Program Proposal**".

Calendar Copy

URL in current Calendar (or "New page")

New Page "**Bachelor of Science in Chemical Engineering Co-op - Clean Energy and Sustainable Process Systems Option**"

Section "Undergraduate- Chemical Engineering" (https://calendar.ualberta.ca/content.php?catoid=39&navoid=12425#faculty-of-engineering)	
Current Copy: Removed language	Proposed Copy: New language
	<p>Bachelor of Science in Chemical Engineering Co-op - Clean Energy and Sustainable Process Systems Option</p> <p>Engineering Disciplines To find descriptions of the various disciplines of Engineering, visit Explore our Programs on the Faculty of Engineering website.</p> <p>Admission Requirements General Undergraduate Admission Requirements Admission Requirements for Qualifying Year</p> <p>Academic Regulations University Regulations Faculty of Engineering Regulations</p> <p>Program Requirements</p> <p>Year 1 Requirements for Year 1 can be found in Bachelor of Science in Engineering - Qualifying Year.</p> <p>Information regarding admission to a specialized program from the Qualifying Year Program can be found in Faculty of Engineering Regulations.</p> <p>Year 2</p> <p>Fall Term 3</p> <ul style="list-style-type: none"> CH E 243 - Engineering Thermodynamics CME 200 - Introduction to Chemical and Materials Engineering CHEM 261 - Organic Chemistry I ENGG 299 - Orientation to Cooperative Education MAT E 202 - Material Science II MATH 209 - Calculus for Engineering III EAS 208 - Introduction to Global Change Complementary Studies Elective (3-0-0)

Winter Term 4

CME 265 – Process Analysis
CH E 312 - Fluid Mechanics
ECE 209 - Fundamentals of Electrical Engineering
MATH 201 - Differential Equations
ITS Elective (3-0-0)
STAT 235 - Introductory Statistics for Engineering

Summer

WEXP 901- Engineering Work Experience I

Year 3

Fall

WEXP 902- Engineering Work Experience II

Winter Term 5

CH E 314 - Heat Transfer
CH E 343 - Chemical Engineering Thermodynamics
CH E 351 - Chemical Engineering Laboratory
CH E 374 - Computational Methods in Engineering
Complementary Studies Elective (3-0-0)

Summer Term 6

CH E 316 - Equilibrium Stage Process
CH E 318 - Mass Transfer
CH E 345 - Chemical Reactor Analysis I
CH E 358 - Process Data Analysis

ENG M 310 - Engineering Economy

OR

ENG M 401 - Financial Management for Engineers

ENGG 404 - Engineering Safety and Risk
Management-Leadership in Risk Management

Year 4

Fall

WKEXP 903 - Engineering Work Experience III

Winter Term 7

CH E 445 - Chemical Reactor Analysis II
CH E 446 - Process Dynamics and Control
CH E 464 - Chemical Engineering Design I
CME 481 - Colloquium I
Program and Technical Elective (3-1s-0)
Program and Technical Elective (3-1s-0)

***Note: The two single-term program electives must be selected from the following:**

- CH E 543 Integrated Solid Waste Management
 - CH E 544 Conversion of Biomass to Fuels and Chemicals
 - MAT E 491 - Solid State Physics of Materials
- CME 458 or CME 459 may be taken with an appropriate project approved by the department and the program coordinator.

Summer

WKEXP 904 - Engineering Work Experience IV

Year 5

Fall

WKEXP 905 - Engineering Work Experience V

Winter Term 8

CH E 454 - Chemical Engineering Project Laboratory
 CH E 465 - Chemical Engineering Design II
 ENGG 400 - The Practice of the Engineering Profession
 CH E 541- Analysis of Chemical and Energy Systems
 CH E 542- Electrochemical Energy Storage and Transformation

Complementary Studies and Impact of Technology on Society (ITS) Electives

See [Complementary Studies and Impact of Technology on Society \(ITS\) Electives](#) for a list of approved electives.

Reviewed/Approved by:

REQUIRED: Faculty Council (or delegate) and approval date.

Department Council Meeting and Approval: **August 17, 2022**

Faculty Academic Planning Committee (F-APC): **October 12, 2023**

Engineering Coordinating Committee (ECC): **October 24, 2023**

Program Support Team (PST): **October 26, 2023**

GFC Programs Committee (GFC-PC): (TBD)

OPTIONAL: Other internal faculty approving bodies, consultation groups, or departments, and approval dates.

Faculty (& Department or Academic Unit):	Faculty of Engineering Chemical & Materials Engineering
Contact Person:	Prof. Anthony Yeung (tony.yeung@ualberta.ca) Associate Dean (Undergraduate Studies)
Level of change: (choose one only) [?]	<ul style="list-style-type: none"> • Undergraduate • Graduate
For which term will this change take effect?	Fall 2024 onwards

Rationale

Things to consider (maximum 500 words): Why is this being changed; How will it benefit students/department/unit; How is this comparable to similar programs (internal or external); Historical context; Impacts to administration or program structure; Consultation with stakeholders

This course is proposed as a core course in the final year (Term 8) of the traditional and co-op sequences of proposed Option “*Bachelor of Science in Chemical Engineering– Clean Energy and Sustainable Process Systems*”. This course is designed to provide a knowledge base for various traditional and advanced energy conversion technologies, life cycle analyses and investment calculations.

Course Template

Current:	Proposed:
	<p> Subject & Number: CH E 541 Title: Analysis of Chemical and Energy Systems Course Career: Undergraduate Units: 3.5 Approved Hours 3-1s-0 Fee index: 6 Faculty: Engineering Department: Chemical & Materials Engineering Typically Offered: either term or Spring/Summer </p> <p> Description Introduction to energy conversion technologies, impact of energy sources on the planet/environment, energy analysis, heat integration and energy efficiency, conventional and non-conventional renewable energy conversion technologies, CO₂ mitigation technologies, conversion of renewable carbon resources to produce bulk and fine chemicals. Life cycle and return on investment analysis for analyzing the effectiveness of different energy and chemical systems, sustainability metrics. Prerequisite: CH E 343, CH E 314 </p>

Reviewed/Approved by:

REQUIRED: Faculty Council (or delegate) and approval date.

Department Council Meeting and Approval: **August 17, 2022**

Faculty Academic Planning Committee (F-APC): **October 12, 2023**

Engineering Coordinating Committee (ECC): **October 24, 2023**

Program Support Team (PST): **October 26, 2023**

GFC Programs Committee (GFC-PC): (TBD)

OPTIONAL: Other internal faculty approving bodies, consultation groups, or departments, and approval dates.

Supporting Information

Learning Outcomes

1. Describe current energy sources and energy conversion technologies, and their impact on environment.
2. Perform Exergy analysis of the energy/chemical conversion/distribution processes.
3. Perform heat integration of entire process to improve energy efficiency including carbon capture.
4. Describe conventional and non-conventional energy conversion technologies.
5. Describe conventional and non-conventional/ CO₂ mitigation technologies (capture, storage and utilization).
6. Describe state-of-the-art technologies to convert renewable carbon resources to bulk and fine chemicals.
7. Describe operating principles of non-conventional energy conversion technologies, including solar, wind, fuel cell and battery technologies.
8. Analyze the resource requirements (capital and operating) of renewable energy technologies.
9. Perform techno-economic analysis to evaluate the economic viability of the process.
10. Perform Life cycle analysis of energy and chemical conversion technologies to evaluate the environmental impact.
11. Describe and evaluate key sustainability metrics for any novel energy/chemical conversion technology.

Relationship of Learning Outcomes and Graduate Attributes

Learning Outcome	Graduate Attribute	Instructional Level
1	Knowledge Base in Engineering Impact of Engineering on Society and Environment	Developed
2	Problem Analysis Investigation Design Use of Engg Tools	Applied
3	Problem Analysis Design Use of Engg Tools	Applied
4	Knowledge Base in Engineering	Developed
5	Knowledge Base in Engineering	Developed
6	Knowledge Base in Engineering	Developed
7	Knowledge Base in Engineering	Developed
8	Problem Analysis Investigation Economics	Applied

9	Problem Analysis Investigation Design Economics Use of Engg Tools Teamwork	Applied
10	Problem Analysis Investigation Economics Use of Engg Tools Teamwork Impact of Engineering on Society and Environment	Applied
11	Knowledge Base in Engineering Problem Analysis Investigation Use of Engg Tools Teamwork Impact of Engineering on Society and Environment	Applied

Assessments of Learning Outcomes

Learning Outcome	Assessments/Activities
1, 2, 3, 4, 5, 6,7	Assignments, Quizzes, Midterm Exam, and Final Exam
8,9,10,11	Design Project

Accreditation Units

AU Category	Linked to which learning outcome	Percentage of course content (see calculation below)
Math		
Natural Sciences		
Engineering Science	1-7	70.2%
Engineering Design (requires PEng)	8-11	29.7%
Complementary studies		
Other		

Final Course AUs

Total	Math	NS	ES	ED	CS	Other
44.1	-	-	30.975	13.125	-	-

Accreditation unit (AU) calculation –

1. Total Lecture hours = course lecture hours as per calendar description x 12.6 weeks = X
2. Total Seminar hours = course seminar hours as per calendar description x 12.6 weeks = Y
3. Total Lab hours = course lab hours as per calendar description x 12.6 weeks = Z

Total course hours = X+Y+Z = TCH

Total AUs in a course $AU_{total} = 12.6 \times (X + \frac{1}{2} Y + \frac{1}{2} Z)$

Number of hours (lecture, seminar, lab) spent on teaching and doing examples of accreditation category "i", is H_i where subscript, i, is for the number total hours spent in course for either Math (M), Engineering Design (ED), Natural Sciences (NS), Engineering Science (ES), Complementary studies (CS), or Other (O)¹

Percentage course content in AU category i, is: $\%_i = H_i/TCH$

Accreditation unit for category i, is: $A_i = AU_{total} \times \%_i$

Proposed Grading criteria (subject to change pending Instructor course modification)

The breakdown of the assessments included in this course is found in the table below.

Component	Percentage
Assignments (Max. 5)	10%
Midterm Exam	25%
Design Project	25%
Final Exam (Written)	40%
Total	100%

Unexcused absence from Midterm Examination will result in 0 out of 25%. With legitimate excuse, the Midterm weight will be carried over to the Final (i.e. Final Exam will be worth 65% of the overall grade).

Recommended Textbooks:

1. Energy Saving and Carbon Reduction: Approaches for Energy and Chemical Industries, Tony A. Chen., Springer (2022), pp. 682.
2. Exergy: Energy, Environment and Sustainable Development, I. Dincer and M.A. Rosen, ScienceDirect (2013), pp. 552
3. Sustainable Energy Systems and Applications, İ. Dinçer, C. Zamfirescu, Springer New York (2012), pp. 816.

¹ do not use other unless work experience, experiential learning etc – consult Associate Chair or Associate Dean

Faculty (& Department or Academic Unit):	Faculty of Engineering Chemical & Materials Engineering
Contact Person:	Prof. Anthony Yeung (tony.yeung@ualberta.ca) Associate Dean (Undergraduate Studies)
Level of change: (choose one only) [?]	<ul style="list-style-type: none"> • Undergraduate • Graduate
For which term will this change take effect?	Fall 2024 onwards

Rationale

Things to consider (maximum 500 words): Why is this being changed; How will it benefit students/department/unit; How is this comparable to similar programs (internal or external); Historical context; Impacts to administration or program structure; Consultation with stakeholders

This course is proposed as a core course in the final year (Term 8) of traditional and co-op sequences of the proposed option “*Bachelor of Science in Chemical Engineering– Clean Energy and Sustainable Process Systems*”. This course covers the fundamentals of electrochemistry and its significance in sustainable practices. The content of this course further builds on that knowledge to cover the applications of electrochemistry in energy conversion.

Course Template

Current:	Proposed:
	<p> Subject & Number: CH E 542 Title: Electrochemical Energy Storage and Transformation Course Career: Undergraduate Units: 3.5 Approved Hours 3-1s-0 Fee index: 6 Faculty: Engineering Department: Chemical & Materials Engineering Typically Offered: either term or Spring/Summer </p> <p> Description Principles of electrochemistry including physical chemistry of electrolyte solutions, ion transport in solution, ionic conductivity, electrode equilibrium, reference electrodes, electrode kinetics, heat effects in electrochemical cells, electrochemical energy conversion, fuel cells, batteries, supercapacitors, and electrocatalytic systems, electrolytic production of hydrogen. </p>

Reviewed/Approved by:

REQUIRED: Faculty Council (or delegate) and approval date.

Department Council Meeting and Approval: **August 17, 2022**

Faculty Academic Planning Committee (F-APC): **October 12, 2023**

Engineering Coordinating Committee (ECC): **October 24, 2023**

Program Support Team (PST): **October 26, 2023**

GFC Programs Committee (GFC-PC): (TBD)

OPTIONAL: Other internal faculty approving bodies, consultation groups, or departments, and approval dates.

Supporting Information

Learning Outcomes

1. Identify and describe different types of electrochemical cells, such as galvanic and electrolytic cells.
2. Identify and describe key components of electrochemical cells, such as anode, cathode, membrane, gas diffusion electrodes, and diaphragms.
3. Define and relate basic physical and thermodynamic concepts related to standard reduction potentials, electromotive force, cell potentials, equilibrium constants, and Gibbs free energy.
4. Define and apply Faradays law and Nernst equation to different electrochemical systems.
5. Describe how electrochemically active materials function during electrochemical energy conversion and storage reactions.
6. Define the term overpotential, explain its origin and the relationship between current and potential for electrochemical cells.
7. Describe working principal of common electrochemical cells used for electrochemical energy conversion and storage such as batteries, fuel cells and electrolyzers.
8. Describe and apply electroanalytical techniques for understanding the behavior of cells used for electrochemical energy conversion and storage.
9. Demonstrate fundamental knowledge of major industrial electrochemical processes, electrochemical process design including economic and environmental considerations.

Relationship of Learning Outcomes and Graduate Attributes

Learning Outcome	Graduate Attribute	Instructional Level
1	Knowledge Base in Engineering	Developed
2	Knowledge Base in Engineering	Developed
3	Knowledge Base in Engineering Problem Analysis Investigation	Applied
4	Knowledge Base in Engineering Problem Analysis Investigation	Developed
5	Knowledge Base in Engineering	Developed
6	Knowledge Base in Engineering	Developed
7	Knowledge Base in Engineering	Developed
8	Knowledge Base in Engineering Problem Analysis	Applied

	Investigation	
9	Investigation Economics Design Use of Engg Tools Teamwork Impact of Engineering on Society and Environment	Applied

Assessments of Learning Outcomes

Learning Outcome	Assessments/Activities
1, 2, 3, 4, 5, 6,7, 8	Assignments, Quizzes, Midterm Exam, and Final Exam
9	Design Project

Accreditation Units

AU Category	Linked to which learning outcome	Percentage of course content ¹
Math		
Natural Sciences		
Engineering Science	1-8	76.2%
Engineering Design (requires PEng)	9	23.8%
Complementary studies		

¹ Accreditation unit (AU) calculation –

- Total Lecture hours = course lecture hours as per calendar description x 12.6 weeks = X
- Total Seminar hours = course seminar hours as per calendar description x 12.6 weeks = Y
- Total Lab hours = course lab hours as per calendar description x 12.6 weeks = Z

Total course hours = X+Y+Z = TCH

Total AUs in a course $AU_{total} = 12.6 \times (X + \frac{1}{2} Y + \frac{1}{2} Z)$

Number of hours (lecture, seminar, lab) spent on teaching and doing examples of accreditation category “i”, is H_i where subscript, i, is for the number total hours spent in course for either Math (M), Engineering Design (ED), Natural Sciences (NS), Engineering Science (ES), Complementary studies (CS), or Other (O)¹

Percentage course content in AU category i, is: $\%_i = H_i/TCH$

Accreditation unit for category i, is: $A_i = AU_{total} \times \%_i$

Other		
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Final Course AUs

Total	Math	NS	ES	ED	CS	Other
44.1	-	-	33.6	10.5	-	-

Proposed Grading criteria (subject to change pending Instructor course modification)

The breakdown of the assessments included in this course is found in the table below.

Component	Percentage
Assignments/Quiz (Max. 5)	10%
Midterm Exam	25 %
Design Project	25%
Final Exam (Written)	40%
Total	100%

Unexcused absence from Midterm Examination will result in 0 out of 25%. With legitimate excuse, the Midterm weight will be carried over to the Final (i.e. Final Exam will be worth 65% of the overall grade).

Recommended Textbooks:

1. Electrochemical Energy Storage (2022) S. Petrovic, P. Kurzweil, J. Garche, 1st Edition, McGraw Hill.
2. Fundamentals of Electrochemistry (2006) V. S. Bagotsky, John Wiley & Sons, Inc.

Faculty (& Department or Academic Unit):	Faculty of Engineering Chemical & Materials Engineering
Contact Person:	Prof. Anthony Yeung (tony.yeung@ualberta.ca) Associate Chair, Undergraduate Studies
Level of change: (choose one only) [?]	<ul style="list-style-type: none"> • Undergraduate <hr/> <ul style="list-style-type: none"> • Graduate
For which term will this change take effect?	Fall 2024 onwards

Rationale

Things to consider (maximum 500 words): Why is this being changed; How will it benefit students/department/unit; How is this comparable to similar programs (internal or external); Historical context; Impacts to administration or program structure; Consultation with stakeholders

This course is proposed as an elective course in the final year (Term 8) of the proposed option “[Bachelor of Science in Chemical Engineering– Clean Energy and Sustainable Process Systems](#)”. This course examines current and leading edge methods and systems for waste management and for diversion of used resources from disposal with the objective of contributing to a circular economy. The primary focus is on recycling of municipal waste and resource recovery. Case-studies are included to illustrate current industrial practices in the field of waste valorization.

Course Template

Current:	Proposed:
	<p>Subject & Number: CH E 543</p> <p>Title: Integrated solid waste management</p> <p>Course Career: Undergraduate</p> <p>Units: 3.5</p> <p>Approved Hours 3-1s-0</p> <p>Fee index: 6</p> <p>Faculty: Engineering</p> <p>Department: Chemical & Materials Engineering</p> <p>Typically Offered: either term or Spring/Summer</p> <p>Description</p> <p>Introduction to legislative regulations and hierarchy of integrated solid waste management, policy instruments on waste management, Waste handling and quantification, waste-disposal methods, circular economy in relation to waste management, characterization of solid waste, pre-treatment of solid waste, thermochemical conversion of solid waste to energy, case studies on resource recovery from solid waste.</p>

Reviewed/Approved by:

REQUIRED: Faculty Council (or delegate) and approval date.

Department Council Meeting and Approval: **August 17, 2022**

Faculty Academic Planning Committee (F-APC): **October 12, 2023**

Engineering Coordinating Committee (ECC): **October 24, 2023**

Program Support Team (PST): **October 26, 2023**

GFC Programs Committee (GFC-PC): (TBD)

OPTIONAL: Other internal faculty approving bodies, consultation groups, or departments, and approval dates.

Supporting Information

Learning Outcomes

1. Describe the regulatory framework for the integrated solid waste management.
2. Explain the 7R's principle and the concept of circular economy in relation to municipal waste management.
3. Critically evaluate the advantages and disadvantages associated with landfilling and incineration methods.
4. Describe various approaches used for the quantification of MSW.
5. Discuss various policy instruments and explain the significance of extended producer responsibility in present context.
6. Classify various pre-treatment methods based on the physicochemical properties of MSW.
7. Describe various ways to convert MSW into liquid fuel and suggest an economically feasible chemical pathway.
8. Prepare a case study on resource recovery from MSW.

Relationship of Learning Outcomes and Graduate Attributes

Learning Outcome	Graduate Attribute	Instructional Level
1	Knowledge Base in Engineering	Developed
2	Knowledge Base in Engineering	Developed
3	Knowledge Base in Engineering Investigation Impact of Engineering on Society and Environment	Applied
4	Knowledge Base in Engineering	Developed
5	Knowledge Base in Engineering Investigation Impact of Engineering on Society and Environment	Applied
6	Knowledge Base in Engineering Problem Analysis Investigation	Developed
7	Knowledge Base in Engineering Problem Analysis Investigation Economics	Applied
8	Problem Analysis Investigation Teamwork Impact of Engineering on Society and Environment	Applied

	Economics	
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Assessments of Learning Outcomes

Learning Outcome	Assessments/Activities
1, 2, 3, 4, 5, 6,	Assignments, Quizzes, Midterm Exam, and Final Exam
7,8	Project (Case-Study) Submission

Accreditation Units

AU Category	Linked to which learning outcome	Percentage of course content ¹
Math		
Natural Sciences		
Engineering Science	1–8	80%
Engineering Design (requires PEng)	7, 8	20%
Complementary studies		
Other		

Final Course AUs

Total	Math	NS	ES	ED	CS	Other
44.1	-	-	35.28	8.82	-	-

¹ Accreditation unit (AU) calculation –

- Total Lecture hours = course lecture hours as per calendar description x 12.6 weeks = X
- Total Seminar hours = course seminar hours as per calendar description x 12.6 weeks = Y
- Total Lab hours = course lab hours as per calendar description x 12.6 weeks = Z

Total course hours = X+Y+Z = TCH

Total AUs in a course $AU_{total} = 12.6 \times (X + \frac{1}{2} Y + \frac{1}{2} Z)$

Number of hours (lecture, seminar, lab) spent on teaching and doing examples of accreditation category "i", is H_i where subscript, i, is for the number total hours spent in course for either Math (M), Engineering Design (ED), Natural Sciences (NS), Engineering Science (ES), Complementary studies (CS), or Other (O)

Percentage course content in AU category i, is: $\%_i = H_i/TCH$

Accreditation unit for category i, is: $A_i = AU_{total} \times \%_i$

Proposed Grading criteria (subject to change pending Instructor course modification)

The breakdown of the assessments included in this course is found in the table below.

Component	Percentage
Assignments/Quiz (Max. 5)	15%
Midterm Exam	25%
Project	20%
Final Exam (Written)	40%
Total	100%

Unexcused absence from Midterm Examination will result in 0 out of 25%. With legitimate excuse, the Midterm weight will be carried over to the Final (i.e., Final Exam will be worth 65% of the overall grade).

Course Outline:**Module 1: Waste Basics**

Learning objectives

- Understand the concept of waste and circular economy.
- Describe the elements of a waste management system.
- Understand the role of each stakeholder involved in waste management and describe the different tools/instruments to prevent waste.

Content

1. Introduction to waste and circular economy.
2. Sources of waste generation and Waste Categorization.
3. Regulatory aspects and hierarchy of integrated solid waste management.
4. Waste prevention and 7Rs principles.

Module 2 - Municipal solid waste collection systems and disposal

Learning objectives

- Identify the waste collection service infrastructure and its functioning.
- Understand waste management planning and the importance of waste quantification.
- Explain the challenges associated with the conventional methods for waste disposal.

Content

1. Introduction to collection services and infrastructures.
2. Examples of collection service and infrastructure (Case Study).
3. Quantification of total generated MSW (including plastic waste, electronic waste, etc.).
4. Quantification of collection rate.
5. Methods for solid-waste disposal.

Module 3 - Policy instruments on waste management

Learning objectives

- Identify and describe the different policy instruments used on waste management and the role of industry and citizens in waste management.
- Identify waste management financing mechanisms, including EPR.
- Describe policy interventions that can stimulate investment in waste management.

Content

1. Regulatory instruments and enforcement matters.
2. Economic instruments.
3. Extended producer responsibility (EPR).
4. Communicative instruments.
5. Monitoring and reporting.

Module 4 - Circular economy

Learning objectives

- Define circular economy in relation to waste management.
- Explain the social and economic benefits in relation to the application of the circular economy approach.

Content

1. The Circular Economy System and definitions.
2. Materials Flow.
3. Environmental and economic benefits.
4. Circular Economy and social benefits.
5. Circular Economy case studies.

Module 5- Characterization and Pre-treatment of Solid Waste

Learning Objectives:

- Determine physicochemical properties of solid waste using various characterization methods.
- Select adequate unit operations for the pre-treatment of solid waste based on the characterization data.

Content

1. Characterization methods (e.g., elemental analysis, moisture content, heating value, particle size).
2. Manual segregation and disassembly of the Waste.
3. Mechanical processing.

4. Material and Fraction Separation.
5. Chemical Pre-treatment.

Module 6- Waste Recycling and Resource Recovery (Case Studies) and their Techno-economic Analysis

Learning Objectives:

- Understand the industrial practices/recent developments in the field of Waste Valorization.
- Prepare a case-study on waste recycling or resource recovery and perform techno-economic analysis.

Content

1. Case studies to illustrate various practices used for resource recovery (thermocatalytic conversion, hydrotreatment, biochemical conversion, physicochemical conversion).
2. Techno-economic analysis.

Project Description:

The project must be more than library and web research. Look for original documents from government agencies, environmental groups, waste handling companies etc. You may consider following areas for case-study/project work:

- Identify a project that can be of practical benefit to society/institution/organization;
- Critique a proposal for a waste policy currently under review or out for public comment;
- Develop a waste management program in your residence or at work;
- Propose ways to address a waste management issue that seems intractable.

Projects may be carried out individually or co-operatively with other class members. If you do a co-operative project, the report size requirements may need to be adjusted. This should be worked out with the instructor as your project proposal is being developed.

Faculty (& Department or Academic Unit):	Faculty of Engineering Chemical & Materials Engineering
Contact Person:	Prof. Anthony Yeung (tony.yeung@ualberta.ca) Associate Chair (Undergraduate Studies)
Level of change: (choose one only) [?]	<ul style="list-style-type: none"> • Undergraduate • Graduate
For which term will this change take effect?	Fall 2024 onwards

Rationale

Things to consider (maximum 500 words): Why is this being changed; How will it benefit students/department/unit; How is this comparable to similar programs (internal or external); Historical context; Impacts to administration or program structure; Consultation with stakeholders

This course is proposed as a Program & Technical Elective course in the proposed option "[Bachelor of Science in Chemical Engineering– Clean Energy and Sustainable Process Systems](#)". This course focuses on various chemical pathways for the conversion of biomass/waste to value-added products. In addition, computer-based process simulations have been included as a primary component to illustrate engineering design strategies used for the biomass conversion.

Course Template

Current:	Proposed:
	<p> Subject & Number: CH E 544 Title: Conversion of Biomass to Fuels and Chemicals Course Career: Undergraduate Units: 3.5 Approved Hours 3-1s-0 Fee index: 6 Faculty: Engineering Department: Chemical & Materials Engineering Typically Offered: either term or Spring/Summer </p> <p> Description First and second generation biomass, bioenergy production technologies, biofuels, transformation of lignocellulosic biomass, biochemical conversion routes, selective catalytic conversion routes and high temperature thermochemical conversion, including pyrolysis and gasification, reaction chemistry of model cellulosic and lignin compounds. Computer-based process simulations for thermochemical transformation, reactor design problems related to biomass transformation. </p>

Reviewed/Approved by:

REQUIRED: Faculty Council (or delegate) and approval date.

Department Council Meeting and Approval: **August 17, 2022**

Faculty Academic Planning Committee (F-APC): **October 12, 2023**

Engineering Coordinating Committee (ECC): **October 24, 2023**

Program Support Team (PST): **October 26, 2023**

GFC Programs Committee (GFC-PC): (TBD)

OPTIONAL: Other internal faculty approving bodies, consultation groups, or departments, and approval dates.

Supporting Information

Learning Outcomes

1. Define the first-generation biomass, second generation biomass, biofuel and bioenergy.
2. Describe carbon cycle in biomass utilization and compare it with that of fossil resources.
3. Describe physical and chemical properties of biomass based on their origin, composition, and structure.
4. Apply different correlations to calculate heating values of biomass.
5. Discuss different technologies to transform biomass to bioenergy and biofuel (pyrolysis, gasification, liquefaction), the corresponding products, and advantages and disadvantages of each technology.
6. Discuss different reactor configurations used for thermochemical transformation of biomass and perform the basic design calculations.
7. Describe the chemistry and catalytic reactions of transformation of cellulose-, hemicellulose-, and lignin-derived model compounds to bulk chemicals and biofuels.
8. Develop kinetic models for the transformation of model biomass compounds.
9. Perform Computer-based process simulations and design calculations for the catalytic and thermochemical transformation of biomass derived molecules to target chemicals.

Relationship of Learning Outcomes and Graduate Attributes

Learning Outcome	Graduate Attribute	Instructional Level
1	Knowledge Base in Engineering	Developed
2	Knowledge Base in Engineering	Developed
3	Knowledge Base in Engineering	Developed
4	Knowledge Base in Engineering Problem Analysis Investigation	Applied
5	Knowledge Base in Engineering Investigation Economics Impact of Engineering on Society and Environment	Applied
6	Knowledge Base in Engineering Problem Analysis Design	Applied
7	Knowledge Base in Engineering Problem Analysis Investigation Teamwork	Applied

8	Investigation Use of Engg Tools Teamwork	Applied
9	Problem Analysis Investigation Design Use of Engg Tools Teamwork	Applied

Assessments of Learning Outcomes

Learning Outcome	Assessments/Activities
1, 2, 3, 4, 5, 6,7,	Assignments, Quizzes, Midterm Exam, and Final Exam
7, 8, 9	Project Submission

Accreditation Units

AU Category	Linked to which learning outcome	Percentage of course content ¹
Math		
Natural Sciences		
Engineering Science	1-7	80.2%

¹ Accreditation unit (AU) calculation –

- Total Lecture hours = course lecture hours as per calendar description x 12.6 weeks = X
- Total Seminar hours = course seminar hours as per calendar description x 12.6 weeks = Y
- Total Lab hours = course lab hours as per calendar description x 12.6 weeks = Z

Total course hours = X+Y+Z = TCH

Total AUs in a course $AU_{total} = 12.6 \times (X + \frac{1}{2} Y + \frac{1}{2} Z)$

Number of hours (lecture, seminar, lab) spent on teaching and doing examples of accreditation category "i", is H_i where subscript, i, is for the number total hours spent in course for either Math (M), Engineering Design (ED), Natural Sciences (NS), Engineering Science (ES), Complementary studies (CS), or Other (O)

Percentage course content in AU category i, is: $\%_i = H_i/TCH$

Accreditation unit for category i, is: $A_i = AU_{total} \times \%_i$

Engineering Design (requires PEng)	7–9	19.8%
Complementary studies		
Other		

Final Course AUs

Total	Math	NS	ES	ED	CS	Other
44.1	-	-	35.35	8.75	-	-

Proposed Grading criteria (subject to change pending Instructor course modification)

The breakdown of the assessments included in this course is found in the table below.

Component	Percentage
Assignments/Quiz (Max. 5)	15%
Midterm Exam	25%
Project	20%
Final Exam (Written)	40%
Total	100%

Unexcused absence from Midterm Examination will result in 0 out of 25%. With legitimate excuse, the Midterm weight will be carried over to the Final (i.e., Final Exam will be worth 65% of the overall grade).

Recommended Textbooks:

1. Introduction to Biomass Energy Conversions (2013) S. Capareda, CRC Press.

CURRICULUM MOTION

Program: **Chemical Engineering**

Option: **Clean Energy and Sustainable Chemical Processes**

Proposed By:

**Department of Chemical and Materials Engineering
Faculty of Engineering
University of Alberta**

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Curriculum Motion

Program: **Chemical Engineering**

Option¹: **Clean Energy and Sustainable Chemical Processes**

Motivation

- **Job Opportunities:** A transition towards Clean and sustainable energy, one of the fastest-growing sectors in the world, will lead to an overall increase in energy sector jobs in various renewable industries. According to Clean Energy's 2021 report, the most impressive growth in the clean energy sector is currently being experienced in Alberta, with jobs set to increase by a huge 164% over the next decade².
- **Funding Opportunities in the Clean Energy Sector:** Contribution of the clean and renewable energy sector to GDP is on track to grow 3.4% per year by 2030. The provincial government has announced close to \$50 million funding for 23 clean technology projects in Alberta³. Furthermore, the Emissions Reduction Alberta (ERA) program has committed another \$50 million in government funding support for the circular economy challenge⁴ to stimulate new advanced technologies that will offer innovative means for lowering emissions outputs in the Alberta economy. A number of companies, such as Shell, Amazon, Air Products, Suncor, are proposing clean energy and chemicals initiatives in Alberta with expertise in carbon capture and storage⁵. Additionally, Alberta is looked upon as the future hydrogen hub of Canada. These developments in the Clean Energy sector indicate potential upcoming opportunities for research grants and funding to develop research laboratories in our department.
- **Competitive Programs:** Canada's top ten universities (e.g. UBC, Toronto, Waterloo, Simon Fraser, Queen's, Ottawa, Calgary) offer several master's programs in the field of Clean/Sustainable Energy. Recently, one of our local competitors, University of Calgary, initiated an undergraduate program in Sustainable Systems Engineering⁶. Therefore, developing a program option at the undergraduate level has become crucial for maintaining student intake in the relevant field.
- **Relevance to the traditional Chemical Engineering (CH E) Programs:** Chemical engineers are uniquely positioned to develop core technologies and contribute to the fields of renewable energy, carbon capture and storage, electrochemical processes, hydrogen production, fuel cells and batteries, waste management, and many more.

¹ The term "Program" and "Option" refer to primary and secondary specializations, respectively, in Engineering.

² [Clean Energy Canada 2021](#)

³ [\\$50M funding for 23 clean technology projects](#)

⁴ [ERA Invests \\$50M for New Technology to Lower Emissions](#)

⁵ [CCS Facility in Alberta](#)

⁶ [Bachelor of Science in Sustainable System Engineering](#)

Option Description

Program Structure

- I. The proposed option offers inclusion of five new courses (**three core courses (CH E 541 Analysis of Chemical and Energy Systems, CH E 542 Electrochemical Energy Storage and Transformation, and EAS 208 Introduction to Global Change)** and **two new elective courses (CH E 543 Integrated Solid Waste Management and CH E 544 Conversion of Biomass to Fuels and Chemicals)** to the traditional CH E program structure. The department is proposing to offer the option to both the Traditional and Co-op sequences.

Year 2		Year 3		Year 4	
Fall	Winter	Fall	Winter	Fall	Winter
CH E 243	CH E 312	CH E 314	CH E 316	CH E 445	CH E 454
CHEM 261	ECE 209	CH E 343	CH E 318	CH E 446	CH E 465
CME 200	MATH 201	CH E 351	CH E 345	CH E 464	ENGG 400
CME 265	MAT E 202	CH E 374	CH E 358	CME 481	P&T Elective
MATH 209	STAT 235	P&T Elective ⁷	ENG M 310/401	CS Electives	P&T Elective
CS Elective ⁸	ITS Elective ⁹		ENGG 404	P&T Elective	

Figure 1: Sequence of courses in the traditional Chemical Engineering Program

Year 2		Year 3		Year 4	
Fall	Winter	Fall	Winter	Fall	Winter
CH E 243	CH E 312	CH E 314	CH E 316	CH E 445	CH E 454
CHEM 261	ECE 209	CH E 343	CH E 318	CH E 446	CH E 465
CME 200 ¹⁰	MATH 201	CH E 351	CH E 345	CH E 464	ENGG 400
CME 265	MAT E 202	CH E 374	CH E 358	CME 481	CH E 541
MATH 209	STAT 235	ENG M 310/401	P&T Elective	CS Electives	CH E 542
EAS 208	ITS Elective	CS Elective	P&T Elective	ENGG 404	P&T Elective
CS Elective		P&T Elective	ENG M 310/401	P&T Elective	P&T Elective
			ENGG 404		

Figure 2: Sequence of courses in the proposed option (■: Course Rearrangement; ■: Course Addition; ■: Course Withdrawal)

- II. The proposed option does not eliminate any core Chemical Engineering course, which is currently offered in the regular CH E program, to include new courses in this program option. Figures 1 and

⁷ The proposed option adds three Program and Technical (P&T) electives in the list of P&T electives offered in the traditional CH E program.

⁸ List of Complementary Studies (CS) electives offered in the proposed option is the same as offered in the traditional CH E program.

⁹ List of Impact of Technology on Society (ITS) Elective in the proposed option is the same as offered in the traditional CH E program.

¹⁰ CME 200 (Introduction to Chemical and Materials Engineering) is offered in a single day asynchronously.

2 provide the sequence of courses in the Traditional Chemical Engineering program and the proposed option, respectively. All undergraduate students in the Faculty of Engineering have the same qualifying Year 1; therefore, the sequence of courses offered in Year 1 is not shown here. Notably, the Fall session in Year 2 includes CME 200 which is offered in a single day asynchronously.

- III. **EAS 208 (Introduction to Global Change)** is currently offered in the Faculty of Science. We have consulted with the Faculty of Science to accommodate Chemical and Material Engineering students. The Faculty of Science kindly agreed to offer this course to our students.
- IV. Estimated increase in the course load for the department is **four courses per year**.

Table 1: Program Structure - Traditional Sequence

Component	Junior courses (1 st and 2 nd year) (maximum)	Credits	Senior courses (3 rd and 4 th year) (minimum)	Credits
Core courses ¹¹	23	76.7	19	67.3
Program technical electives	0	-	2	7
Complementary studies elective	0	-	2	6
ITS (<i>Impact of Technology on Society</i>) elective	1	3	0	0
Total	24	79.7	23	80.3

Table 2: Program Structure - Co-op Sequence

Component	Junior courses (1 st and 2 nd year) (minimum)	Credits	Senior courses (3 rd and 4 th year) (minimum)	Credits
Core courses	24	78.2	19	67.3
Program technical electives	0	-	2	7
Complementary studies elective	1	3	1	3
ITS (<i>Impact of Technology on Society</i>) elective	1	3	0	0
Work-Integrated Learning	1	0.5	4	4.5
Total	27	84.7	26	81.8

See [Appendix A](#) for a list of the calendar entries for all required courses and specified electives, including the calendar designation for credits and numbers of lecture, lab seminar, and tutorial hours. A tentative calendar entry has been provided for the new courses under development. Curriculum Mapping of the program option is provided in Table A.1. in Appendix A.

¹¹ One of the core courses, CME 200 (Introduction to Chemical and Materials Engineering), is offered in a single day asynchronously. Thus, practically offered core courses with respect to students' workload are 22 in junior years.

- V. This option is proposed to be offered in Traditional as well as Co-op sequences. Work-integrated learning is a unique dimension offered in Co-op sequence, which is not offered in competitive programs running in other universities. Students are not restricted to have a Co-op necessarily in the field of sustainable energy, clean energy or renewable fuels. Tables 1 and 2 present the structure and total credits for traditional and co-op sequences, respectively, of the proposed option.
- VI. Experiential learning is included in the program structure through a series of designed-focuses courses wherein students will be working on the open-ended design problems.
- VII. Indigenous perspectives are woven throughout the curriculum in a meaningful way. The most current best practices in equity, diversity and inclusion are incorporated into the core part of the program. Industry, Indigenous, and EDI perspectives will be incorporated in regular program reviews.

Key-Learning Outcomes

- I. Integrate the concepts of chemical engineering in developing sustainable processes and technologies.
- II. Develop a better understanding of the limitations, challenges, and opportunities that contemporary energy systems face, considering both the established and emerging technologies and their points of intersection.
- III. Demonstrate fundamental technical knowledge of novel technologies associated that are not taught in regular CH E curriculum.
- IV. Perform preliminary design calculations; formulate energy return on investment and life-cycle assessment.
- V. Evaluate and compare the technical and economic feasibility of different energy systems.

Resource Requirements

Estimated increase in the course load for the department: ≈ 4 courses per year

Currently, three options (Computer Process Control, Oil Sands Elective, and Biomedical), in addition to the core chemical engineering, appear in the University Calendar for the Undergraduate Chemical Engineering Program. All of these options are offered in traditional and co-op sequences. Furthermore, the core chemical engineering program includes traditional, Co-op Plan I, and Co-op Plan II sequences. Thus, the department offers nine streams in the Chemical Engineering program. Out of these streams, the department is planning to withdraw Oil Sands Elective option, Biomedical option, and Co-op Plan II sequence. Phasing out these options and corresponding sequences will eliminate five streams out of nine that are currently offered. Thus, the department will have enough resources required to accommodate the proposed new option in replacement of the eliminated sequences.

The first year of the proposed program option is a common first year for all students in the Faculty of Engineering and has well-developed support from the Faculties of Science and Arts. The implementation of this program does not introduce specialized teaching needs to any of the approved complementary studies electives or Impact of Technology on Society (ITS) electives.

Chemical Engineering core courses are currently being taught by the tenure-track faculty and academic teaching staff members. One course **EAS 208 - Introduction to Global Change** has been proposed in term 3, which is currently being offered by the Faculty of Sciences at UofA. A few courses from other faculties can be offered as recommended electives. We will explore with other Faculties (if needed) on the feasibility to add our students to their courses and labs.

The department has sufficient resources to accommodate the classroom and laboratory requirements for the new proposed courses. In addition, the existing tenure-track and academic teaching staff members have the knowledge and skills to teach new proposed core and elective courses. Therefore, the department does not require any additional teaching resources to run the proposed program option.

Stakeholder Consultations

Internal Stakeholders

The proposed program description and structure was presented during Chemical and Materials Engineering departmental council meetings to solicit feedback from colleagues. The suggestions were integrated into the curriculum development process for the proposed option. In addition, Prof. Pierre Mertiny, Associate Dean for Undergraduate Studies, Faculty of Engineering, reviewed the proposed option and supported our initiative in this field.

(See [Appendix B](#) for the feedback received from the department colleagues.)

Our next step is to share information about the proposed option *Clean Energy and Sustainable Chemical Processes* with other departments in the Faculty of Engineering and invite their feedback to ensure that the proposed option meets institutional strategic goals.

Students/Learners

In addition, a meeting was held with the representatives from the Chemical Engineering Students' Society (ChESS) and Material Engineering Students' Society (MESS) in August 2021. An outreach survey was developed to gauge the level of interest amongst undergraduate students for different options. The survey results indicate an inclination towards clean/sustainable energy among students, suggesting that students will be open to taking this option in chemical engineering program.

(See [Appendix C](#) for the student survey document and feedback received from students.)

Industry Stakeholders

Increasing interest of industries in clean energy and sustainable processes has been a key motivation to offer this option in the chemical engineering program. Meaningful engagement with industry stakeholders will be critical in understanding the needs of industry and ensure the relevance of the program from industrial perspectives. Therefore, we are in the process of meeting and sharing information regarding this proposed option with our industrial stakeholders and inviting their feedback to ensure that the proposed option offers the knowledge and skills relevant for industrial practices.

Indigenization Strategies

Indigenous perspectives will be woven throughout the curriculum in a meaningful way and an Indigenization Strategy, consistent with the template being developed for the Faculty of Engineering, is being developed .

For example, a new component is being added to the content of CME 200 (**Introduction to Chemical and Materials Engineering**) to acknowledge the impact engineering has had and will continue to have on Indigenous people in the context of resource development and applications of engineering design. Guest speakers from Indigenous communities, who are chemical/biochemical engineers or have been impacted by the chemical engineering projects, in different ways, will be invited to share their experiences.

Equity, Diversity, and Inclusion (EDI) Strategies

The most current best practices in equity, diversity and inclusion are incorporated into the core part of the program and an EDI Strategy, consistent with the template for the Faculty of Engineering, will be developed.

The EDI Strategy will include the provision of training in group dynamics and decision-making, including recognizing decision-making biases and implicit biases, incorporating design projects that include the engineering design for developing assistive tools/technologies for people with differing abilities, and engaging organizations and industries with leaders who are from traditionally underrepresented groups in engineering as partners in capstone design projects.

Industry, Indigenous, and EDI perspectives will be incorporated in regular program reviews.

Appendix-A :Term-by-term proposed program of study

Traditional Sequence (course names, descriptions, credits and prerequisites)

Term -1

CHEM 103 Introductory University Chemistry I

3 (fi 6) (either term, 3-1s-3/2) Atoms and molecules, states of matter, chemistry of the elements. Prerequisite: Chemistry 30, or equivalent.

ENGG 100 Success in Engineering

1.1 (fi 3) (either term, 1.5-1.5-0/2) An introduction to the Faculty of Engineering, the engineering profession, the skills required for academic success, and the fundamentals of leadership: study and life skills; time management and goal setting; interpersonal skills; career planning; engineering and society including elements of ethics, equity, concepts of sustainable development, environmental stewardship, and public safety.

ENGG 130 Engineering Mechanics

4 (fi 8) (either term, 3-0-2) Equilibrium of planar systems. Analysis of statically determinate trusses and frames. Friction. Centroids and centres of gravity. Forces and moments in beams. Second moments of area. Note: Students in all sections of this course will write a common final examination. Corequisite: MATH 100.

ENGL 199 English for Engineering Students

3 (fi 6) (either term, 3-0-0) This course aims to develop the student's ability to provide effective written and oral information. It will focus on instruction in fundamental writing skills, including building effective sentences and paragraphs, and on learning to communicate clearly across a range of genres and media used in academic and professional contexts, including correspondence and presentations. Students will be introduced to the principles of information gathering, analysis, and citation.

MATH 100 Calculus I

3.5 (fi 6) (either term, 3-0-1) Review of numbers, inequalities, functions, analytic geometry; limits, continuity; derivatives and applications, Taylor polynomials; log, exp, and inverse trig functions. Integration, fundamental theorem of calculus substitution, trapezoidal and Simpson's rules. Prerequisites: Mathematics 30-1 and Mathematics 31.

PHYS 130 Wave Motion, Optics, and Sound

3.8 (fi 6) (either term, 3-0-3/2) Geometrical optics, optical instruments, oscillations, waves, sound, interference, diffraction. Prerequisites: Mathematics 30-1, Mathematics 31, Physics 30. Corequisite: MATH 100 or 113 or 114 or 117 or 134 or 144 or equivalent.

Term-2

CHEM 105 Introductory University Chemistry II

3.8 (fi 6) (either term, 3-0-3/2) Rates of reactions, thermodynamics and equilibrium, electrochemistry, modern applications of chemistry. Prerequisite: CHEM 103.

ENCMP 100 Computer Programming for Engineers

3.8 (fi 8) (either term, 3-0-1.5) Fundamentals of computer programming with emphasis on solving engineering problems. Structure and syntax of computer programs, variables, data types, data structures, control structures, functions, input/output operations, debugging, software development process.

ENGG 160 Introduction to Engineering Design, Communication, and Profession

2 (fi 5) (either term or Spring/Summer, 1-0-2) Fundamental design process and theory in a multidisciplinary context. Importance, in engineering design, of communications; team work; the engineering disciplines, career fields; professional responsibilities of the engineer including elements of ethics, equity, concepts of sustainable development and environmental stewardship, public and worker safety and health considerations including the context of the Alberta Occupational Health and Safety Act. Corequisite ENGL 199.

EN PH 131 Mechanics

4.3 (fi 6) (either term, 3-1s-3/2) Kinematics and dynamics of particles; gravitation; work and energy; linear momentum; angular momentum; systems of particles; introduction to dynamics of rigid bodies. Prerequisites: MATH 100 or 117, and ENGG 130. Corequisite: MATH 101 or 118.

MATH 101 Calculus for Engineering II

3.5 (fi 6) (either term, 3-0-1) Area between curves, techniques of integration. Applications of integration to planar areas and lengths, volumes and masses. First order ordinary differential equations: separable, linear, direction fields, Euler's method, applications. Infinite series, power series, Taylor expansions with remainder terms. Polar coordinates. Rectangular, spherical and cylindrical coordinates in 3-dimensional space. Parametric curves in the plane and space: graphing, arc length, curvature; normal binormal, tangent plane in 3- dimensional space. Volumes and surface areas of rotation. Prerequisite: MATH 100.

MATH 102 Applied Linear Algebra

3.5 (fi 6) (either term, 3-0-1) Vectors and matrices, solution of linear equations, equations of lines and planes, determinants, matrix algebra, orthogonality and applications (Gram-Schmidt), eigenvalues and eigenvectors and applications, complex numbers. Prerequisite or corequisite: MATH 100.

Term-3

CH E 243 - Engineering Thermodynamics

3.5 (fi 8) (either term or Spring/Summer, 3-1s-0) An introduction to the first and second laws of thermodynamics. Prerequisites: MATH 101.

CHEM 261 - Organic Chemistry I

3 (fi 6) (either term, 3-0-3) The correlation of structure and chemical bonding in carbon compounds with the physical properties and chemical reactivity of organic molecules. Discussion will be based on functional groups with emphasis on hydrocarbons and derivatives that contain halogens, oxygen, sulfur, and the hydroxy group. Introduction to stereochemistry, three dimensional structure, reaction mechanisms, especially addition to double bonds, nucleophilic substitution and elimination reactions. Prerequisite CHEM 101 or 103.

CME 200 - Introduction to Chemical and Materials Engineering

0.5 (fi 2) (first term, 1 day) Topics of interest to second year Chemical and Materials Engineering students, with special reference to industries in Alberta, including coverage of elements of ethics, [equity, diversity](#)

[and inclusion \(EDI\), indigenization](#), concepts of sustainable development and environmental stewardship, public and worker safety and health considerations including the context of the Alberta Occupational Health and Safety Act. Offered in a single day during the first week of September.

CME 265 - Process Analysis

4.5 (fi 8) (either term, 3-0-3) Basic process principles; material and energy balances, transient processes, introduction to computer-aided balance calculations. Prerequisites: ENCMP 100, MATH 102 and CHEM 105. Corequisites: CH E 243 and MATH 209 or equivalent.

MATH 209 - Calculus for Engineering III

3.5 (fi 6) (either term, 3-0-1) Partial differentiation, derivatives of integrals. Multiple integration using rectangular, cylindrical, and spherical coordinates. Vector Field Theory. Prerequisite: MATH 101. Prerequisite/Corequisite: MATH 102.

EAS 208 - Introduction to Global Change (Currently Offered by Faculty of Science)

3 (fi 6) (either term, 3-0-0) Natural and anthropogenic causes of global scale environmental change; the role of the atmosphere, oceans, biosphere and cryosphere in the processes of environmental change; relationships between levels of technology and development and the character of environmental change associated with human activity. Prerequisite: Any 100-level Science course.

Term-4

CH E 312 - Fluid Mechanics

3.5 (fi 8) (either term or Spring/Summer, 3-1s-0) Newtonian and non-Newtonian fluid behavior; hydrostatics; buoyancy, application of Bernoulli and momentum equations; frictional losses through pipes, ducts, and fittings; pipe networks; pumps; drag on submerged bodies and flow through porous media. Prerequisites: CH E 243 EN PH 131 and MATH 209. Corequisite: MATH 201.

ECE 209 - Fundamentals of Electrical Engineering

3.8 (fi 8) (either term or Spring/Summer, 3-0-3/2) Physical concepts of passive circuit elements, Kirchhoff's laws and DC circuit equations. Energy concepts, time domain analysis of AC circuits. Impedance, complex numbers and phasor algebra. AC power concepts, resonance, three phase circuits, introduction to machines. Credit may be obtained in only one of ECE 209, E E 239, ECE 202, or E E 240, unless approved by the Department.

MATH 201 - Differential Equations

3.5 (fi 6) (either term or Spring/Summer, 3-0-1) First-order equations; second-order linear equations: reduction of order, variation of parameters; Laplace transform; linear systems; power series; solution by series; separation of variables for PDEs. Prerequisite or corequisite: MATH 209 or 214.

MAT E 202 - Materials Science II

3.5 (fi 8) (either term or Spring/Summer, 3- 1.5s/2-1/3) An introduction to the science of materials relating their mechanical, thermal, electronic, and chemical properties to atomic, molecular, and crystal structure. Ceramic and metallic crystals, glasses, polymers, and composite materials. Multi-phase materials, phase transformations, and strengthening processes. Laboratories and seminars include mechanical properties of materials, microstructure, heat treatment of steel, and hands on design experiments. Prerequisite: CHEM 105 or consent of Department.

STAT 235 - Introductory Statistics for Engineering

3.8 (fi 6) (either term or Spring/Summer, 3-0-1.5) Descriptive data analysis. Calculus of Probability. Binomial, multinomial, Poisson, normal, beta, exponential, gamma, hypergeometric, and Weibull distributions. Sampling distributions. Estimation, testing hypotheses, goodness-of-fit tests, and one-way analysis of variance. Linear correlation and regression. Sampling. Quality control. Use of a microcomputer software package for statistical analyses in engineering applications. Prerequisite: MATH 100. Corequisite: MATH 101.

ITS Elective (3-0-0)

Term 5

CH E 314 - Heat Transfer

3.5 (fi 8) (either term or Spring/Summer, 3-1s-0) Principles of conduction, convection and radiation heat transfer. Design and performance analysis of thermal systems based on these principles. Prerequisites: MATH 201, CH E 312. Corequisite CH E 374.

CH E 343 - Chemical Engineering Thermodynamics

3.5 (fi 8) (either term, 3-1s-0) Thermodynamics of non-ideal gases and liquids; vapour-liquid equilibrium, thermodynamics of chemical processes and multicomponent systems. Prerequisite: CH E 243. Corequisite: CME 265.

CH E 351 - Chemical Engineering Laboratory

3.5 (fi 8) (either term, 2-0-3) Technical report writing; thermodynamics, material, and energy balances, and calibration experiments. Prerequisites: ENGL 199 or equivalent, CME 265 and CH E 243. Corequisite: CH E 312.

CH E 374 - Computational Methods in Engineering

3.5 (fi 8) (either term, 3-1s-0) Formulation and solution of chemical and materials engineering problems; solution of systems of linear and nonlinear algebraic equations; numerical interpolation, differentiation and integration; numerical solution of ordinary and partial differential equations. Prerequisites: ENCMP 100 (or equivalent). MATH 102, 201 and 209.

ENG M 310 - Engineering Economy

3 (fi 8) (either term or Spring/Summer, 3-0-0) The application of the fundamentals of economics to engineering alternatives in planning, developing and managing industrial projects.

OR

ENG M 401 - Financial Management for Engineers

3 (fi 8) (either term, 3-0-0) Application of the fundamentals of engineering economics, financial analysis and market assessment to engineering alternatives in the planning, development and ongoing management of industrial enterprises. The course covers the use of engineering, economic, financial and market assessment information in investment and business operation decisions in technology oriented companies.

Complementary Studies Elective (3-0-0)

Term 6

CH E 316 - Equilibrium Stage Process

4 (fi 8) (either term or Spring/Summer, 3-0-2) Design of separation processes with emphasis on the equilibrium stage concept, distillation, absorption and extraction. Prerequisites: CH E 343, 314. Corequisite: CH E 318.

CH E 318 - Mass Transfer

4 (fi 8) (either term or Spring/Summer, 3-0-2) Molecular and turbulent diffusion; mass transfer coefficients; mass transfer equipment design including absorption and cooling towers, adsorption and ion exchange. Prerequisites: CME 265, CH E 312 and 343. Corequisite: CH E 314

CH E 345 - Chemical Reactor Analysis I

3.5 (fi 8) (either term or Spring/Summer, 3-1s-0) Kinetics of chemical reactions and design of ideal chemical reactors. Prerequisites: CME 265, CH E 343 and 374.

CH E 358 - Process Data Analysis

5 (fi 8) (either term or Spring/Summer, 3-0-4) Statistical analysis of process data from chemical process plants and course laboratory experiments. Topics covered include least squares regression, analysis of variance, propagation of error, and design of experiments. Prerequisites: CH E 351 and STAT 235. Corequisites: CH E 314 and 345.

Program and Technical Elective (3-1s-0)

Program and Technical Elective (3-1s-0)

Term 7

CH E 445 - Chemical Reactor Analysis II

3.5 (fi 8) (either term, 3-1s-0) Analysis and design of non-ideal chemical reactors for industrial product synthesis. Prerequisites: CH E 314, 318 and 345.

CH E 446 - Process Dynamics and Control

4 (fi 8) (either term, 3-1s-3/3) Introduction to process modeling and transient response analysis; design and analysis of feedback systems; stability analysis; process control applications; process control using digital computers. Prerequisites: CME 265, MATH 201 and 209. Corequisite: CH E 312.

CH E 464 - Chemical Engineering Design I

4.5 (fi 8) (either term or Spring/Summer, 3-0-3) Engineering design concepts; cost estimation; project planning and scheduling; plant safety and hazards analysis; selected project design examples. Prerequisites: CH E 314, 345, 316 or 416, and ENG M 310 or 401. Corequisite: ENGG 404.

CME 481 - Colloquium I

1 (fi 3) (either term, 1-0-0) Communication and oral presentations. Graded on a pass/fail basis. Prerequisite: 85 units completed or consent of instructor.

ENGG 404 - Engineering Safety and Risk Management-Leadership in Risk Management

3.8 (fi 8) (either term or Spring/Summer, 3-3s/2-0) Basic concepts of risk and consequences of loss incidents; risk management principles and practices; incident investigation, causation, root cause analysis; process safety management; the roles of government agencies, professional bodies and industry associations; workplace safety; risk-based decision-making processes; leadership and the human-factors

side of risk management. The course focuses on the principles and practices of leadership towards the effective application and implementation of risk management in major organizations across all engineering disciplines. Industry virtual tours, case studies, seminars and team projects specific to the student's engineering program will be used to develop competencies and proficiencies in applying leadership and organizational effectiveness for successful risk management.

Complementary Studies Elective (3-0-0)

Term 8

CH E 454 - Chemical Engineering Project Laboratory

3 (fi 8) (second term, 1-0-4) Experiments in kinetics and mass transfer. Prerequisites: CH E 318, 345, 358, and 416.

CH E 465 - Chemical Engineering Design II

6 (fi 8) (second term, 4-0-4) Integration of chemical engineering practice, theory and economics into capital project proposal, sustainable design and evaluation. Course work requires team and project work. Prerequisites: CH E 446, 464, and ENGG 404.

ENGG 400 - The Practice of the Engineering Profession

1 (fi 3) (either term, 1-0-0) The technical and professional duties and responsibilities of the engineer; the ethics of the engineering profession; technical and professional organizations. The role of the engineer in the social environment including elements of equity, concepts of sustainable development and environmental stewardship, public and worker safety and health considerations including the context of the Alberta Occupational Health and Safety Act.

CH E 541- Analysis of Chemical and Energy Systems (New)

3.5 (fi 6) (either term or Spring/Summer, 3-1s-0) Introduction to energy conversion technologies, impact of energy sources on the planet/environment, exergy analysis, heat integration and energy efficiency, conventional and non-conventional renewable energy conversion technologies, CO₂ mitigation technologies, conversion of renewable carbon resources to produce bulk and fine chemicals. Life cycle and return on investment analysis for analyzing the effectiveness of different energy and chemical systems, sustainability metrics.

CH E 542-Electrochemical Energy Storage and Transformation (New)

3.5 (fi 6) either term or Spring/Summer, 3-1s-0): Principles of electrochemistry including physical chemistry of electrolyte solutions, ion transport in solution, ionic conductivity, electrode equilibrium, reference electrodes, electrode kinetics, heat effects in electrochemical cells, electrochemical energy conversion, fuel cells, batteries, supercapacitors, and electrocatalytic systems, electrolytic production of hydrogen.

Program and Technical Electives:

The two single-term program electives must be selected from the following:

CH E 543 Integrated Solid Waste Management (New)

3.5 (fi 6) (either term or Spring/Summer, 3-1s-0): Introduction to legislative regulations and hierarchy of integrated solid waste management, waste handling and quantification, waste-disposal methods, circular

economy in relation to waste management, characterization of solid waste, pre-treatment of solid waste, thermochemical conversion of solid waste to energy, case studies on resource recovery from solid waste.

CH E 544 Conversion of Biomass to Fuels and Chemicals (New)

3.5 (fi 6) (either term or Spring/Summer, 3-1s-0): First and second generation biomass, bioenergy production technologies, biofuels, transformation of lignocellulosic biomass, biochemical conversion routes, selective catalytic conversion routes and high temperature thermochemical conversion, including pyrolysis and gasification, reaction chemistry of model cellulosic and lignin compounds Computer-based process simulations for thermochemical transformation, reactor design problems related to biomass transformation.

MAT E 491 - Solid State Physics of Materials

★3.5 (fi 8) (either term or Spring/Summer, 3-1s-0) Classical mechanics and its limitations; basic quantum mechanics; band theory; band diagrams for metals, insulators; Semiconductor and dielectric materials, piezoelectrics and thermoelectrics, and magnetic materials; Intrinsic and doped semiconductors; Optical properties of materials; Light-matter interactions, Prerequisite: PHYS 130, MAT E 202, or by consent of instructor.

Other courses may be taken with written permission from the Department prior to enrollment.

CME 458 or CME 459 may be taken with an appropriate project approved by the department and the program coordinator.

Table A.1: Curriculum Mapping for the Proposed Program Option

	KB	PA	Inv.	Design	Tools	Team	Comm.	Prof.	Impact	Ethics	Econ.	LL
CHEM 103	I		I									
ENGG 100				I			D	I	I	I		I
ENGG 130	A											
ENGL 199							D					
MATH 100	I	I										
PHYS 130	I		I									
CHEM 105	D		D									
ENCMP 100	I	I	I	I	D	I	I	I	I			I
ENGG 160	I	I		I	I	I	I					I
EN PH 131	D	I		I								
MATH 101	D	I										
MATH 102	D											
CH E 243	I	I	I									
CHEM 261	A		D									
CME 200							I	I	I	I		
CME 265	D	D	D	I	I						I	
MATH 209	D		D									
EAS 208 ¹												
CH E 312	D	D	D		D							
ECE 209	D											
MATH 201	D	D										
MAT E 202	D	D	I	I	I			I	I			
STAT 235	D	D			I							
CH E 314	D	D	D	I	D							
CH E 343	D	D	D	I	D							
CH E 351		D	D		D							
CH E 374	D	D	D	I	D							
ENG M 310/401				I	I				I		A	
CH E 316	D	D	D	D	D							

CH E 318	D	D	I	I	I							
CH E 345	D	D	D	I	D							
CH E 358	D	D	D	I	D							
CH E 445	A	D	D	D	D							
CH E 446	A	A	A	D	A							
CH E 464	D	A	A	D	A	A	A	D	D	D	D	D
CME 481							D	D				D
ENGG 404		D	D			D		D	D	D		
CH E 454		A	A	D	A	A	A	A				D
CH E 465		A	A	A	A	A	A	A	A	A	D	D
ENGG 400							D		D			D
CH E 541* ²	A	A	D	D	D				D		I	
CH E 542* ³	A	D	D	D					D			
PT Electives												
CH E 543* ⁴	D	D	D	D	D				D		I	
CME 458	A	A	A		D		D					
CME 459	A	A	A		D		D					
MAT E 491												

Abbreviations: I: Introductory; D: Developing; A: Advanced; KB: Knowledge Base; PA: Problem Analysis; Inv.: Investigation; Tools: Use of Engineering Tools; Team: Individual and Team Work; Comm.: Communication Skills; Prof.: Professionalism; Impact: Impact of Engineering on Society and the Environment; Ethics: Ethics and Equity; Econ.: Economics and Project Management; LL: Life-long Learning

*New courses introduced in the program option "Clean Energy and Sustainable Chemical Processes".

¹Course is currently being offered in the Faculty of Science. This course has been introduced in this option as a replacement of a complementary science elective.

²CH E 541: Analysis of Chemical and Energy Systems

³CH E 542: Electrochemical Energy Storage and Transformation

⁴CH E 543: Conversion of Biomass to Fuels and Chemicals

Appendix B: Approval from Internal Stakeholders

CH E Curriculum Program Options: Vote

The respondent's email (null) was recorded on submission of this form.

* Required

1. Email *
2. Please provide your vote for each item *

Mark only one oval per row.

	Support	Oppose	Abstain
1. The department approves the creation of a Chemical Engineering option in Clean energy and sustainable chemical processes to be offered for both Traditional and Co-op (Plan 1) sequences	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. The department approves the proposed program structure for the option in Clean energy and sustainable chemical processes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. a.i. New course CH E 5xx: Analysis of chemical and energy systems	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7.a.ii. New course: CH E 5xx: Electrochemical Energy Storage and Transformation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Voting Results:

Total number of votes: 33

Votes [Support/Oppose/Abstain]

Creation of Clean Energy and Sustainable Chemical Processes [33/0/0]

Program Structure of Clean Energy and Sustainable Chemical Processes [33/0/0]

New Course CH E 541: Analysis of chemical and energy systems [33/0/0]

New Course CH E 542: Electrochemical Energy Storage and Transformation [33/0/0]

Appendix C: Students' Interest in the Proposed Option

Please select the specializations you're interested in

32 responses

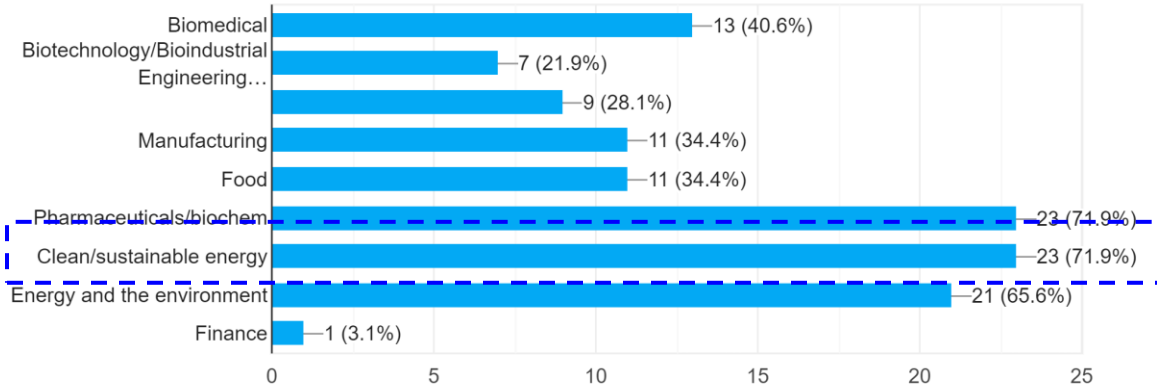


Figure A.1: Students' Interest in the Proposed Option (August 2021)

FINAL ITEM NO. 6**Decision** **Discussion** **Information** **ITEM OBJECTIVE:** To approve a new 2nd-level specialization, the MSc in Lab Medicine and Pathology, with a specialization in Transfusion Science

DATE	November 9, 2023
TO	Programs Committee
RESPONSIBLE PORTFOLIO	Faculty of Medicine and Dentistry Faculty of Graduate & Postdoctoral Studies

MOTION:

THAT the GFC Program Committee, with delegated authority from General Faculties Council, approve the proposed second-level specialization of Transfusion Science for the Master of Science in Laboratory Medicine and Pathology, for implementation in the next calendar and first cohort in Fall 2024.

EXECUTIVE SUMMARY:

The Department of Laboratory Medicine and Pathology (LMP) is proposing to expand the specialized graduate program catalogue in response to the critical need for transfusion science (TS) laboratory specialists, as supported by Alberta Precision Laboratories (APL), Canadian Blood Services (CBS), and the Canadian Society for Transfusion Medicine (CSTM).

A 2020 jointly led CBS / CSTM committee performed an employer needs assessment, seeking input from transfusion medicine service leads at hospitals and blood suppliers across Canada. The survey results confirmed the needs for highly trained laboratory technologists to address the increasing complexity of transfusion clinical care and related laboratory testing in Canada. Canadian Blood Services and Alberta Health Services will benefit directly by hiring graduates of this program in their blood manufacturing and testing sites. Indirectly, the formalized specialization will also assist intra-provincial clinical partners in delivering essential transfusion laboratory services more effectively. Internal and external stakeholders consulted during the proposal process have been supportive of the development of this program. Please refer to full program proposal for further information and letters of support.

This educational program is designed to mirror the structure of our current course-based MSc in Laboratory Medicine and Pathology with Specialization in Pathologists' Assistant Program, consisting of didactic courses followed by a clinical practicum and a scholarly research component in a clinical laboratory setting. The program structure is 2 years in length, with 36 credits total (18 credits per year). The first year consists of required 6 advanced focus courses aligned with core transfusion science competencies. The second year covers a required 6 credits capping project, 6 credits clinical rotation, and 6 credits optional. Enrolment is limited to 4 students per year because of current limitations on access to clinical rotations at Alberta Precision Labs (APL) and other blood manufacturing and clinical sites.

GOVERNANCE OUTLINE



ITEM NO. 6

The learner's experience directly aligns with the Co-operative Education and Work-Integrated Learning Canada Definition of "mandatory professional practicum/clinical placement", involving work experience under the supervision of an experienced registered or licensed professional preceptor, which has been identified as a challenge in the current healthcare worker shortages. To mitigate that challenge, the program has limited enrollment to two graduate students a year for the first three academic years. Additional students can be considered if clinical access increases. The clinical practicum component of the program is competency-based with students expected to successfully complete all essential competencies in the portfolio established by the Canadian Society for Transfusion Medicine subject matter expert committee. One identified risk is the continuous reflection of the LMP MSc program curriculum with the expected updates of the CSTM competency portfolio, which is mitigated by CSMT education committee membership by both LMP Graduate Program Director as well as LMP MD faculty with hematology content expertise.

Financial impacts and internal resource implications have been addressed in the attached proposal. Briefly, integrated student academic learning with experiential practicum within a clinical placement setting through the Alberta Precision Laboratories (APL), a wholly-owned subsidiary of Alberta Health Services (AHS), providing support of this program through in-kind access to experiential placements, in-kind contributions of preceptor time, workplace teaching and learning opportunities and learner supervision of research projects. The new provincial clinical laboratory services model has resulted in creation of the Transfusion Medicine Laboratory Section, with dedicated two new 1.0 FTE clinical positions, that will also have academic appointments in the Department of LMP and FoMD, with expectations of educational service to our learners both through transfusion medicine course support and experiential learning in clinical placements. Curriculum delivery and didactic elements of learning will be leveraged through existing expertise in the Medical Laboratory Science teaching faculty, LMP transfusion medicine clinical faculty and Canadian Blood Services subject matter experts currently virtually providing national educational programs to transfusion science MD learners.

Next steps in this program is aligning the proposed admission criteria of the FoMD graduate program harmonization currently going through the governance approval process, completion of curriculum development for year one of the MSc program and engaging with focus groups throughout the CSMT, CBS and AHS stakeholder network to evaluate and provide feedback on the details of the course curriculum. This hybrid and experiential competency based MSc educational model in laboratory medicine will also better position the Department of LMP to offer future continuing professional laboratory based MSc education, including certificate-based programs, with current plans for MSc in Molecular Diagnostic Technology under consideration.

Supporting Materials:

1. LMP Program Template 10-02 For FGSR Council Oct 11

***See Schedule A for additional items to include if needed.**



SCHEDULE A:

Engagement and Routing

Consultation and Stakeholder Participation / Approval Route (parties who have seen the proposal and in what capacity) <[Governance Resources Section Student Participation Protocol](#)>

Those who are actively participating:

- Department of Laboratory Medicine and Pathology
- Alberta Precision Laboratories (AHS)
- Canadian Blood Services (CBS)

Those who have been consulted:

- Internal student stakeholder groups: Medical Laboratory Science Undergraduate Student Association, LMP Graduate Students Group
- Internal committees and groups: LMP Education Committee, LMP Graduate Studies Committee, Office of the Provost, Faculty of Graduate Studies and Research, Vice Provost (Indigenous Programming and Research), Vice-Provost (Equity, Diversity and Inclusion)
- External partners and networks: Alberta Precision Labs (Alberta Health Services), Canadian Blood Services, Canadian Society for Transfusion Medicine, potential Canadian employers in hospital and transfusion laboratory services

Those who have been informed:

- Presentations at: CSMLS LABCON 2023, CSTM Annual Conference 2022 and 2023
- Publications: IMMUNOHEMATOLOGY, Volume 39, Number 3, 2023

Approval Route:

Department of Laboratory Medicine and Pathology committees (2022, multiple committee approvals, see LMP Proposal for details)

FoMD Graduate Programs Committee (May 17, 2023)

FoMD Faculty Learning Committee (June 28 2023)

GPST - September 25, 2023

FGSR Council - October 11, 2023

Programs Committee - November 9, 2023

Internal Program Proposal Template
- for-credit programs not requiring Ministry approval -

This template is to be used for proposals to create or modify programs that do not require Ministry of Advanced Education approval.

Faculties and Departments must consult with the Portfolio Initiatives Manager in the Office of the Provost and Vice-President (Academic) (carley.roth@ualberta.ca) on the appropriate template and process. Graduate proposers must also consult with the Faculty of Graduate Studies and Research (fsgov@ualberta.ca). All program proponents must also consult with the Vice-Provost (Indigenous Programming & Research) during the early development stage.

PROPOSAL TYPE

This proposal is for a (select one):	
<input checked="" type="checkbox"/>	Creation of a new second-level specialization (e.g., minors of undergraduate programs and second-level specializations of graduate programs)
<input type="checkbox"/>	The addition of an Honors stream to an existing undergraduate program
<input type="checkbox"/>	Creation of a combined degree program where both contributing degrees have been approved by the Ministry of Advanced Education
<input type="checkbox"/>	Embedded Certificate
<input type="checkbox"/>	Substantive program changes that do not require Ministry approval

1: Basics		
Program/Specialization /Embedded Certificate/Combined Degree Name	Master of Science in Laboratory Medicine and Pathology with specialization in Transfusion Science	
Faculty/Department	Faculty of Medicine and Dentistry / Department of Laboratory Medicine and Pathology (LMP)	
Contact information	Name and Title	Dr. Jelena Holovati, Laboratory Medicine and Pathology Graduate Program Director
	Phone	780-492-6604
	Email	jelena.holovati@ualberta.ca

Proposed effective date	First intake proposed for Fall 2024
Attachments	
<ul style="list-style-type: none"> ● Appendix A. Letters of Support <ul style="list-style-type: none"> ● Laboratory Medicine and Pathology Chair and FoMD Dean ● Alberta Precision Laboratories ● Canadian Society for Transfusion Medicine ● Canadian Blood Services ● LMP Graduate Students Group ● Medical Laboratory Student Association (MLSA) Student Group ● Appendix B. University Calendar - approved new transfusion science graduate courses ● Appendix C. Proposed Calendar Changes - Program Changes ● Appendix D. Proposed Calendar Changes - Course Changes 	

2: Rationale, Implications, and Impacts	
<p>Rationale for the Proposal</p> <p>Identify the purpose of the proposal with supporting rationale and evidence of demand.</p>	<p>Transfusion Science (TS) is that domain of laboratory and clinical medicine concerned with all aspects of the collection, testing, preparation, storage, transportation, pre-transfusion testing, post-transfusion follow up, indications for transfusion, infusion, and safety of human blood components and products (such as platelets, plasma, stem cells) and alternative blood products manufactured by recombinant DNA technology. These laboratory and clinical activities are undertaken in such a way that the rights of blood donors, patients, and families are respected, and scarce resources are appropriately allocated.</p> <p>The Department of Laboratory Medicine and Pathology (LMP) is proposing to expand the specialized graduate program catalogue in response to the critical need for transfusion science (TS) laboratory specialists, as supported by Alberta Precision Laboratories (APL), Canadian Blood Services (CBS), and the Canadian Society for Transfusion Medicine (CSTM) (Appendix A). The new specialised MSc clinical training in TS fits the department mission of leading the</p>



development of clinical scientists for meeting the laboratory medicine challenges of tomorrow.

Six new advanced transfusion science courses (Appendix B) have already been developed and approved by the FoMD and University of Alberta governance (LABMP 501, 502, 503, 504, 505, and 506) to support our newly designed course- and practicum-based graduate program leading to a MSc in Laboratory Medicine and Pathology with Specialization in Transfusion Science (STS). This educational program is designed to mirror the structure of our current course-based MSc in Laboratory Medicine and Pathology with Specialization in Pathologists' Assistant, consisting of two terms of didactic courses followed by a clinical practicum and a scholarly research component in a clinical laboratory setting (Appendices C and D). Key topics in advanced transfusion science laboratory training will be covered, such as theory and practice of immunohematology, blood donation, supply and distribution, blood product inventory management in support of specific hematological disorders, and quality management and regulatory systems in a blood bank context.

Demand for this program primarily comes from employers in the transfusion medicine field and Canadian Society for Medical Laboratory Science (CSMLS) certified Medical Laboratory Technologists (MLTs) with a BSc who wish to gain advanced specialist certification in transfusion with an opportunity for an MSc in Laboratory Medicine and Pathology (24 months). A 2020 jointly led Canadian Blood Services / Canadian Society for Transfusion Medicine STS committee performed employer needs assessment seeking input from transfusion medicine service leads at hospitals and blood suppliers across Canada. The survey results confirmed the needs for such a program (96% of respondents believed a Canadian advanced training program would be extremely or generally valuable to the Canadian transfusion system). Indeed, highly trained technologists are critically important across Canada to address the increasing complexity of transfusion clinical care and related laboratory testing. As confirmed in their support letters (Appendix A), Canadian Blood Services and Alberta Health Services will benefit directly by hiring graduates of this program in their blood manufacturing and testing sites. Indirectly, the formalized specialization will also assist intra-provincial clinical partners in delivering essential transfusion laboratory services more effectively. Concomitantly with the needs assessment, the STS committee undertook a review of similar programs around the world. The content of the Specialist in Blood Banking program from the United States was reviewed along with



	<p>advanced training courses from the United Kingdom and Australia. While content and ideas from other programs were helpful, it was clear that a made in Canada approach to training was needed when the results of the needs assessment were compared with the available international programs.</p> <p>A graduate program with second-level specialization in Transfusion Science will allow significant advantages for recruiting students with focused career interests in the specialized training opportunities that exist in our graduate program. The formalized specialization would provide graduating students with a designation that will enhance the marketability of their expertise and assist our clinical partners to deliver essential laboratory services more efficiently. The competencies underpinning this advanced training program have been developed by subject matter experts who comprise the Specialist in Transfusion Science Subcommittee of the CSTM.</p> <p>Finally, the Specialist in Transfusion Science program may serve as a model for other areas of subspecialization in medical laboratory science including specialization in molecular pathology, bioinformatics and others. As the fields within laboratory medicine continue to grow in complexity, medical technologists and employers will benefit from the availability of training for laboratory professionals which can establish credentials in subspecialty areas of practice.</p>
<p>Length of the Program Identify the length of the program in years and credit units per year.</p>	<p>2 year program, 36 credits total (18 credits per year) Year 1 - required 6 advanced focus courses aligned with core transfusion science competencies, as identified by the Canadian Society for Transfusion Medicine (CSTM).</p> <p style="padding-left: 40px;">Semester 1: 3 courses (9 credits) Semester 2: 3 courses (9 credits)</p> <p style="padding-left: 40px;">LABMP 501 Advanced Immunohematology LABMP 502 Immunohematology Techniques LABMP 503 Blood Supply and Distribution 1 LABMP 504 Blood Supply and Distribution 2 LABMP 505 Advanced Transfusion Support LABMP 506 Clinical Laboratory Operations and Quality Management</p>

	<p>Year 2 - required 6 credits capping project (LABMP 900) - 6 credits clinical rotation (LABMP 600 and 601) - 6 credits optional Semester 1: 3 courses (9 credits) Semester 2: 3 courses (9 credits)</p> <p>LABMP specific options already available: LABMP 500 - Introduction to Human Disease LABMP 510 - Cryobiology I LABMP 530 - Experimental Design and Scientific Communication LABMP 540 - LMP Directed Reading LABMP 550 - Analytical and Environmental Toxicology LABMP 551 - Laboratory Research Methods LABMP 552 - Toxicology and Regulation LABMP 553 - Advanced Environmental Toxicology LABMP 570 - Diagnostic Microbiology LABMP 581 - Techniques in Molecular Biology LABMP 593 - Systemic Pathology LABMP 594 - Anatomic Pathology Techniques LABMP 595 - Laboratory Management</p>
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Provide the anticipated enrolments by head count for the next 5 years

Enrolment	2024	2025	2026	2027	2028
Total Headcount	2	4	4	4	4
• Year 1	2	2	2	2	2
• Year 2	0	2	2	2	2

Enrolment is limited to 4 students per year because of limitations on access to clinical rotations at APL and clinical sites. Additional students can be considered if clinical access increases.

Work-Integrated Learning

Describe how learners in this program will have

Similar to LMP's other clinical course-based MSc specialization program (Pathologists' Assistant), the proposed specialization in Transfusion Science will formally integrate student academic learning with experiential practicum within a clinical placement setting. The main



<p>access to Work-Integrated Learning (see CEWIL definitions).</p>	<p>clinical sites for the practicum are all part of the Alberta provincial health system, Alberta Precision Laboratories (Alberta Health Services) or have student placement/affiliation agreements with Alberta Health Services: University Hospital/Stollery Children’s Hospital, Misericordia Community Hospital Laboratory Medicine & Pathology, Royal Alexandra Hospital Laboratory Medicine, Grey Nuns Community Hospital, Dynalife Medical Labs Base Laboratory, and Canadian Blood Services Edmonton Centre. The learner’s experience directly aligns with the Co-operative Education and Work-Integrated Learning Canada Definition of “mandatory professional practicum/clinical placement”, involving work experience under the supervision of an experienced registered or licensed professional (e.g. MLT or MD preceptor). As with other laboratory practicums, the observatorships are unpaid and, as the work is done in a supervised setting, typically students do not have their own workload/caseload. The clinical practicum component of the program will be competency-based with students expected to successfully complete all essential competencies in the portfolio established by the Canadian Society for Transfusion Medicine subject matter expert committee.</p> <p>In addition to clinical rotations, the 6 credits research capping project in the second year of specialized training will focus on quality improvements or research projects responsive to the needs of Alberta Precision Laboratories, Canadian Blood Services or other transfusion medicine clinical partners.</p>
<p>Consultation Describe the consultation process that occurred with students and other relevant stakeholders, and the feedback received.</p>	<p>The Canadian Blood Services / Canadian Society for Transfusion Medicine STS Committee conducted a survey to assess the current needs and obtain feedback from professionals who may be hiring STS Medical Laboratory Technologists in their laboratories. A needs assessment survey was created to provide a better understanding of employers’ requirements/needs in relation to Medical Laboratory Technologists specialized in transfusion medicine which informed the key objectives of our proposed specialization program. In particular:</p> <ul style="list-style-type: none"> ● How many Medical Laboratory Technologists specialized in transfusion medicine are required in Canada? Is the need currently met? Anticipated future need? ● How are Medical Laboratory Technologists specialized in Transfusion Medicine currently being trained? What are the facilitators and barriers to their training? ● Would they be supportive of a specialized course? ● What skills are important for Medical Laboratory Technologists specialized in Transfusion Medicine (above and beyond skills demonstrated by Medical Laboratory Technologists)?



- What could the respondent’s organization contribute towards the training of the specialists?

This survey was sent to contacts in each province and territory who would be potential employers including:

- Canadian Blood Services;
- Héma-Québec; and
- Hospital and laboratory transfusion services.

A total of 92 individuals from 10 provinces and 2 territories were surveyed with a response rate of 63%. Data analysis showed support for a Canadian training program providing for advanced knowledge in this field. Broad support for on site training opportunities was also evident from survey responses. When considering workforce planning the majority of respondents (58%) indicated that they will be hiring a new candidate for a transfusion science leadership position in the next 0-4 years (including 15% anticipating hiring immediately). Respondents agreed the key challenge when recruiting was lack of training opportunities in Canada, as well as not enough qualified candidates in Canada. Many (62%) respondents indicated that their laboratory was able to train/mentor TS laboratory professionals towards leadership positions with the majority training/mentoring one (34%) or more (49%) staff currently interested in the development of the STS program.

A survey was performed to assess the level of support among undergraduate students in the Medical Laboratory Science program. 100% of respondents were in support of the proposal with the following noted comments:

“I would love if the department created this program, as it is exactly where I can see my career going. I have developed a deep passion for transfusion medicine while in the MLS program and an MSc in TS would be a great next step that could equip me for a career in the areas of immunohematology and transfusion therapies.”

“I think this would be really great for MLS students who love transfusion. They could develop their skills more and become a more attractive candidate for CBS or UAH blood bank. They could progress to a lab scientist position in this field, perhaps manage small blood banks in more rural areas.”

Internal and external stakeholder consultation was also performed, including the LMP Education Committee, LMP Graduate Studies Committee, Office of the Provost, Faculty of Graduate Studies and Research, Vice Provost (Indigenous Programming and Research), Alberta Precision Labs (Alberta Health Services), Canadian Blood

	<p>Services, Canadian Society for Transfusion Medicine, Medical Laboratory Science Undergraduate Student Association, and LMP Graduate Students Group.</p> <p>Additionally, we consulted with Dr. Carrie Smith, Vice-Provost (Equity, Diversity and Inclusion) on May 11, 2023. Dr. Smith recommended ways to identify gaps in the field to target equity-denied groups for possible recruitment. Dr. Smith also encouraged working with the professional community to align practices as a means of retention within the program and field.</p>
<p>Indigenous Perspectives Describe the outcomes of the consultation with the Vice Provost (Indigenous Programming and Research) regarding how the program will integrate/include indigenous perspectives and content, and any action items that may result.</p>	<p>The LMP Graduate program, as well as the Faculty of Medicine and Dentistry, are committed to the recruitment, retention and graduation of Indigenous students. All Indigenous applicants who meet the academic eligibility requirements, as outlined in Appendix C proposed admission criteria in the new MSc TS program, will be considered for admission as per established FGSR/LMP admission processes. Indigenous applicants must be aware that providing documentation of Indigeneity does not guarantee admission to any program. Indigenous student applicants who are not successful, as well as prospective Indigenous students, should contact the Administrator, Wâpanachakos, Indigenous Health Initiatives Program, Faculty of Medicine and Dentistry for individual counseling and career planning.</p> <p>The Department of Laboratory Medicine and Pathology will provide admission to the MSc TS program to all qualified Indigenous applicants not to exceed the current overall total intake of two students per year. For the definition of an Indigenous applicant, please see Definition of Indigenous People for the Purpose of Admission in the University Calendar.</p> <p>Indigenous applicants who wish to be considered for admissions, awards, and financial support reserved for Indigenous students will be required to provide documentation of Canadian Indigeneity. A list of the formal documentation of Indigeneity that students / applicants will need to present is prepared annually by the Committee on the Documentation of Indigeneity (CDI). Students who have questions regarding these documents are encouraged to contact their Faculty or the Office of the Registrar.</p> <p>To include Indigenous content and perspectives in MSc TS Training, the LMP graduate program will require incoming students, after admission</p>

	<p>but before the first term, to complete the Massive Open Online Course (MOOC) Indigenous Canada created by the Faculty of Native Studies or another course approved by the LMP graduate program.</p> <p>LMP is currently supporting new discussions at the FoMD Graduate Programs Committee to incorporate elements of Braiding Past, Present and Future: University of Alberta Indigenous Strategic Plan into FoMD graduate students training. Dr. Gregory Funk, FoMD Associate Dean of Research (Graduate Studies), is in conversations with Dr. Wayne Clarke, Executive Director, Wâpanachakos, Indigenous Health Initiatives Program, FoMD to create new opportunities for integration of Indigenous perspectives and new learning opportunities for our graduate students.</p> <p>Consultation with Dr. Florence Glanfield, Vice Provost (Indigenous Programming and Research) occurred April 27, 2023. Dr. Glanfield expressed strong support of the proposal, and provided feedback and additional resources for the support of Indigenous students including the Indigenous Primary Health Care & Policy Research Network in Alberta.</p> <p>A meeting with representatives from the Faculty of Native Studies took place on May 8, 2023. Dr. Adam Gaudry, Vice Dean and Associate Professor, provided recommendations for FNS courses for our students to build knowledge. This consultation also highlighted the importance of aligning faculty training with student learning and of promoting expectations for the program environment that may draw Indigenous applicants.</p>
<p>Resource Implications Identify financial impacts and internal resource requirements, particularly staff and classroom and lab space. Also identify any external resource requirements such as practicum or internship placements, etc.</p>	<p>The Department of Laboratory Medicine and Pathology, together with the Faculty of Medicine and Dentistry, are committed to provide the necessary resources in partnership with our clinical counterparts Alberta Precision Laboratories, Canadian Blood Services, and the Canadian Society for Transfusion Medicine to implement, to successfully operate, to achieve external accreditation, and to sustain the proposed professional MSc specialization program in Transfusion Sciences. Similar to LMP’s other clinical course-based MSc specialization program (Pathologists’ Assistant), the proposed specialization in Transfusion Science will formally integrate student academic learning with experiential practicum within a clinical placement setting through the Alberta Precision Laboratories (APL), a wholly-owned subsidiary of Alberta Health Services (AHS), providing</p>



support of this program through in-kind access to experiential placements, in-kind contributions of preceptor time, workplace teaching and learning opportunities and learner supervision of research projects. The new provincial clinical laboratory services model has resulted in creation of the Transfusion Medicine Laboratory Section, with dedicated two new 1.0 FTE clinical positions, that will also have academic appointments in the Department of LMP and FoMD, with expectations of educational service to our learners both through transfusion medicine course support and experiential learning in clinical placements.

With regards to internal resource requirements, the Department of LMP has already secured and recruited 0.2 FTE Transfusion Science Program Lead, to lead the organization, curriculum planning, development, and continuous quality improvement of the new Transfusion Science specialization training program. Dr. Gwen Clarke, a hematopathologist, clinical researcher, Past President of the Canadian Society for Transfusion Medicine and LMP/FoMD alumnus, has already been instrumental in developing new course curriculum for LABMP 501, 502, 503, 504, 505, and 506 in alignment with the national society competency based outcomes. Curriculum delivery and didactic elements of learning will be leveraged through existing expertise in the Medical Laboratory Science teaching faculty, LMP transfusion medicine clinical faculty and Canadian Blood Services subject matter experts currently virtually providing educational program to transfusion medicine MD specialization learners. In collaboration with the Transfusion Science Program Lead, the current LMP Director of Graduate Studies (0.3 FTE) will provide administrative and academic oversight of the new specialization, including admission, monitoring of student supervision and ensuring that the regulations and requirements of the FGSR, FoMD, and the Department of LMP have been met, which is alignment with the current specialization structure of the LMP graduate program. In anticipation of the new transfusion specialization program, core administrative support for the LMP graduate program has been recently increased from 0.6 FTE to 1.0 FTE Graduate Program Administrator position. Maintaining current specializations and courses will result in a modest amount of administrative work required to continue to track these students through to completion and to

provide administrative support to candidates, learners and educators in the new program.

Learner workspace and university lab space is not a significant resource factor because of the virtual and experiential learning model and the student enrollment quota of two per year; however, non-allocated touchdown spaces will be available upon demand in the Clinical Sciences Building to be shared with the Pathologists' Assistant MSc specialization program students. There are bookable individual and group study spaces available in the FoMD faculty, as well as library touchdown locations. Similarly, there will be minimal implications for library and IST resources. The library's current subscription to print and electronic journals and books as well as inter-library loan program would adequately support the needs of the transfusion specialization program.

Tuition per graduate student for the MSc Transfusion Science specialization program, based on 36 credits and the Fall 2020/Winter 2021 rates as currently posted to the FGSR website (not including non-instructional fees or the projected annual increases)

Domestic Students: \$714.48 per 3 credit course

Program Cost: \$ 10,717.12

International Students: \$1,864.30 per 3 credit course within the period of time covered by the guarantee

Program Cost = \$ 22,371.60

As the anticipated program expenditures are limited to a 0.4 FTE increase in the Graduate Program Administrator position that has already been absorbed by the Department of LMP, from a budgetary perspective, this is a net revenue generating opportunity with limited anticipated expenditures.

As the first and only MSc specialization in Transfusion Science in Canada, this program is likely to be attractive to prospective undergraduate students in MLT programs across Canada. The virtual and experiential competency based MSc educational model in

	<p>laboratory medicine will also better position the Department of LMP to offer future continuing professional laboratory based certificate-based education outside of MSc degree programs, with additional potential for revenue generation.</p>
<p>Approval Process Indicate the internal governance path, including meeting dates</p>	<p>Laboratory Medicine and Pathology Chair (March 2022) Laboratory Medicine and Pathology Graduate Studies Committee (June 2022) Laboratory Medicine and Pathology Education Committee (June 2022) Laboratory Medicine and Pathology Department Committee (September 2022) FoMD Graduate Programs Committee (May 17, 2023) FGSR Graduate Program Support Team (September 25, 2023) FGSR Council (October 11, 2023) FoMD Faculty Learning Committee (June 28, 2023) GFC Academic Programs Committee (Future Date)</p>



April 10, 2023

JELENA L. HOLOVATI, PhD
Associate Professor and Director, Graduate Studies
Department of Laboratory Medicine and Pathology
Laboratory Director, Stem Cell Manufacturing, Canadian Blood Services

Dear Jelena

Re: Creation of a new second-level specialization (MSc in Laboratory Medicine and Pathology with specialization in Transfusion Science)

With this letter we are expressing the endorsement and support of the Faculty of Medicine & Dentistry and the Department of Laboratory Medicine & Pathology for the proposal to establish a new professional specialization in transfusion science under the current MSc degree in Laboratory Medicine and Pathology.

Transfusion science is that domain of laboratory and clinical medicine concerned with all aspects of the collection, testing, preparation, storage, transportation, pre-transfusion testing, post-transfusion follow up, indications for, infusion, and safety of human blood components and products, nonhuman alternatives, and alternative blood products. These laboratory and clinical activities are undertaken in such a way that the rights of blood donors, patients, and families are respected, and scarce resources are appropriately allocated. To address the increasing complexity in this field of laboratory and clinical care, the Department of Laboratory Medicine & Pathology (LMP) is proposing to expand the specialized graduate program catalogue in response to the critical need for transfusion medicine laboratory specialists. This expansion is supported by the clinical employers of the anticipated graduates, Alberta Precision Laboratories, Canadian Blood Services, and the Canadian Association of Transfusion Medicine.

The new specialised MSc clinical training fits the department mission of leading the development of new innovative training programs generating clinical scientists meeting the clinical laboratory medicine challenges of tomorrow. This educational program is designed to mirror the structure of our already existing course-based MSc in LMP with Specialization in Pathologists' Assistant Program, consisting of didactic courses, experiential learning through clinical practicums and a scholarly research component in a clinical laboratory setting. Six new advanced transfusion medicine courses have been already been developed and approved by the FoMD and University of Alberta governance (LABMP 501,502, 503, 504, 505, and 506) to support our newly proposed MSc specialization in Transfusion Medicine. A graduate program with second-level specialization in Transfusion Science will allow significant advantages for recruiting students with



focused career interests to the specialized training opportunities that exist in our graduate program. The formalized specialization would provide graduating students with a designation that will enhance the marketability of their expertise and assist our clinical partners to deliver essential laboratory services more efficiently.

The Department of Laboratory Medicine & Pathology, together with the Faculty of Medicine and Dentistry are committed to provide the necessary resources in partnership with our clinical counterparts Alberta Precision Laboratories, Canadian Blood Services, and the Canadian Association of Transfusion Medicine, to implement, successfully operate, to achieve external accreditation, and sustain the proposed professional MSc degree program in Transfusion Sciences.

Sincerely,

A handwritten signature in black ink, appearing to read "B. Hemmelgarn".

Brenda Hemmelgarn, MD, PhD
Dean
Faculty of Medicine & Dentistry
University of Alberta

A handwritten signature in black ink, appearing to read "M. Mengel".

Michael Mengel, MD
Professor and Chair
Department of Laboratory Medicine & Pathology
University of Alberta
North Sector Medical Director
Alberta Precision Laboratories



**ALBERTA PRECISION
LABORATORIES**

Leaders in Laboratory Medicine

April 12, 2023

Jelena L. Holovati, PhD
Associate Professor and Director, Graduate Studies
Department of Laboratory Medicine and Pathology
Laboratory Director, Stem Cell Manufacturing, Canadian Blood Services

Dear Jelena

Re: Creation of a new second-level specialization (MSc in Laboratory Medicine and Pathology with specialization in Transfusion Science) clinical training program

On behalf of Alberta Precision Laboratories (APL) I am expressing the endorsement and support for the proposal to establish a new professional specialization in transfusion science under the current MSc degree in Laboratory Medicine and Pathology at the University of Alberta.

Transfusion Medicine is a provincial program in APL covering all aspects of the collection, testing, preparation, storage, transportation, pre-transfusion testing, post-transfusion follow-up, indications for, infusion, and safety of human blood components and products, nonhuman alternatives, and alternative blood products. In APL we are facing a significant shortage in qualified workforce suited to address the increasing complexity in this field. To deliver quality clinical care, the proposal to expand the specialized graduate program with second-level specialization in Transfusion Science is most welcome and critical for addressing an unmet need in our current and future workforce.

APL has a long-standing effective and productive relationship with the training programs in the Department of Laboratory Medicine & Pathology, and is fully committed to continue to provide the necessary in kind resources need to implement, successfully operate, to achieve external accreditation, and sustain the proposed professional MSc degree program in Transfusion Sciences.

Sincerely,

Ms. Tammy Hofer, MBA
Chief Operating Officer
Alberta Precision Laboratories (APL)



April 18, 2023

Jelena L. Holovati, PhD
Associate Professor and Director, Graduate Studies
Department of Laboratory Medicine and Pathology
Laboratory Director, Stem Cell Manufacturing, Canadian Blood Services

Dear Jelena

I am writing this letter of support for the development of the Specialization in Transfusion Science program at the University of Alberta. There is an identified need for advanced transfusion medicine education for technologists in today's fast paced and complex laboratory world.

Transfusion Medicine is that domain of laboratory and clinical medicine concerned with all aspects of the blood donor collection, testing, preparation, storage, transportation, pre-transfusion testing, post-transfusion follow up for effectiveness and adverse reaction monitoring, indications for, infusion, and safety of human blood components and products, nonhuman alternatives, and alternative blood products. These laboratory and clinical activities are undertaken in such a way that the rights of blood donors, patients, and families are respected, and scarce resources are appropriately allocated. The Department of Laboratory Medicine and Pathology (LMP) is proposing to expand the specialized graduate program catalogue in response to the critical need for transfusion medicine laboratory specialists, as supported by Alberta Precision Laboratories, Canadian Blood Services, and the Canadian Society for Transfusion Medicine. The new specialized MSc clinical training fits the department mission of leading the development of clinical scientists for meeting the lab medicine challenges of tomorrow. Six new advanced transfusion medicine courses have already been developed and approved by the FoMD and University of Alberta governance (LABMP 501, 502, 503, 504, 505, and 506) to support our newly designed course- and practicum-based graduate program leading to a MSc in Laboratory Medicine and Pathology with Specialization in Transfusion Medicine.

This educational program is designed to mirror the structure of the current course-based MSc in LMP with Specialization in Pathologists' Assistant, consisting of two terms of didactic courses followed by a clinical practicum and a scholarly research component in a clinical laboratory setting. Key topics in advanced transfusion medicine laboratory



training will be covered, such as theory and practice of immunohematology, blood donation, supply and distribution, blood product inventory management in support of

specific hematological disorders, and quality management and regulatory systems in a blood bank context. A graduate program with second-level specialization in Transfusion Science will allow significant advantages for recruiting students with focused career interests to the specialized training opportunities that exist in the graduate program. The formalized specialization would provide graduating students with a designation that will enhance the marketability of their expertise and assist clinical partners to deliver essential laboratory services more efficiently.

In conclusion, the CSTM board strongly supports the effort of the University of Alberta in the development and implementation of this education program.

Sincerely,

Joanna McCarthy
Canadian Society for Transfusion Medicine President

April 24, 2023

Jelena Holovati, PhD
Associate Professor and Director, Graduate Studies
Department of Laboratory Medicine and Pathology
University of Alberta
Edmonton, AB T6G 1C9
T 780.492.6604
jelena.holovati@ualberta.ca

Dear Dr. Holovati:

RE: New professional specialization in transfusion science.

On behalf of Canadian Blood Services, it is my pleasure to endorse and support your proposal to establish a new professional specialization in transfusion science under the current MSc degree in Laboratory Medicine and Pathology at the University of Alberta. This initiative aligns with Canadian Blood Services' health care professional education agenda to build capacity in support of a safe blood system in Canada.

Canadian Blood Services currently supports the training and educational needs of multiple stakeholders within the Canadian transfusion medicine community. For example, Canadian Blood Services supports the training of transfusion medicine physicians through its participation in the Royal College of Physicians and Surgeons of Canada Area of Focused Competence diploma program in transfusion medicine. Canadian Blood Services also supports the training of fellows and nurses who prescribe blood products through its contribution to the Transfusion Camp program. Furthermore, Canadian Blood Services' [Professional Education website](#) provides access to a multitude of high-quality educational resources for the transfusion community, as well as a monthly Learn Transfusion webinar series. Finally, Canadian Blood Services in partnership with other organizations delivers regional symposiums and a national conference to promote best transfusion practices.

The proposed new and unique post-graduate program will provide advanced certification for medical laboratory technologists in the field of transfusion science in Canada. A 2020 assessment confirmed the needs for such program (96% of respondents believed a Canadian STS MLT certification would be extremely or generally valuable to the Canadian transfusion system). Indeed, highly trained technologists are critically important across Canada to address the increasing complexity of transfusion clinical care and related laboratory testing. Canadian Blood Services will benefit directly by hiring graduates of this program in its manufacturing and testing sites. Indirectly, the formalized specialization will also assist our clinical partners in delivering essential transfusion laboratory services more effectively.

If your proposal is successful, Canadian Blood Services is committed to engage in discussions to identify areas of collaboration. Canadian Blood Services may provide in-kind contributions to facilitate and support the delivery of the course curriculum. For example, by providing trainees of this program experiential learning opportunities in our manufacturing and testing laboratories, via interactions with staff with subject matter expertise related to the curriculum (e.g. quality and regulatory expertise, blood donor recruitment expertise, transfusion medicine expertise) and by providing access to learning resources.

I wish you luck with your proposal submission and look forward to working with you on this exciting new initiative.

Sincerely,



Sophie Chargé, PhD
Associate Director - Knowledge Mobilization & Strategic Alliances
Innovation and portfolio Management
Canadian Blood Services
sophie.charge@blood.ca

April 14, 2023

Dr. Jelena Holovati
Director of Graduate Studies
Department of Laboratory Medicine and Pathology
University of Alberta

Dear Dr. Holovati,

With this letter the Laboratory Medicine and Pathology Students' Group (LMPSG) expresses endorsement and support of the Department of Laboratory Medicine and Pathology's proposal to establish a new professional specialization in transfusion science under the current MSc degree in Laboratory Medicine and Pathology. The new specialized MSc clinical training fits the department mission of leading the development of new innovative training programs generating clinical scientists meeting the lab medicine challenges of tomorrow.

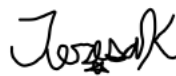
The formalized specialization would provide graduating students with a designation that will enhance the marketability of their expertise and assist our clinical partners to deliver essential laboratory services more efficiently. This is important now more than ever to ensure the maintenance and sustainability of our healthcare systems. We also believe that this new specialization will create more career opportunities for the graduate students in our department and that these opportunities will help retain individuals in Canada for long-term success.

To conclude, we would again like to reiterate our endorsement and support of the Department of Laboratory Medicine and Pathology's proposal to establish a new professional specialization in transfusion science under the current MSc degree in Laboratory Medicine and Pathology. We strongly believe this specialized program will offer students a timely and unique degree that will continue to benefit the department, university, healthcare supports, and our economy as a whole.

Sincerely,



Alexa Thompson
President,
LMPSG



Teresa Kumblathan
Vice-President,
LMPSG



**UNIVERSITY
OF ALBERTA**

LABORATORY MEDICINE & PATHOLOGY

FACULTY OF MEDICINE & DENTISTRY

5-411 Edmonton Clinic Health Academy
Edmonton, Alberta, Canada T6G 1C9

May 1, 2023

Dr. Jelena Holovati
Director of Graduate Studies
Department of Laboratory Medicine and Pathology
University of Alberta

Dr. Holovati,

The undergraduate Medical Laboratory Student Association (MLSA) would like to express endorsement and support of the Department of Laboratory Medicine and Pathology's proposal to establish a new professional specialization in transfusion science under the current MSc degree in Laboratory Medicine and Pathology.

Undoubtedly, transfusion science plays a critical role in our healthcare system. We believe that graduates would make valuable advancements to transfusion science in areas of research, quality assurance, and safety. The formalized specialization would provide graduating students with a designation that will enhance the marketability of their expertise and assist our clinical partners to deliver essential laboratory services more efficiently.

We look forward to seeing the success of the new MSc specialization in transfusion science.

Sincerely,

Handwritten signature of Emily Willette in black ink.

Emily Willette
President
MLSA

Handwritten signature of Jessica Mah in black ink.

Jessica Mah
Vice-President
MLSA

The following Motions and Documents were considered by the GFC Programs Committee at its Thursday, December 08, 2022 meeting:

Agenda Title: **Course, Minor Program, and Minor Regulation Changes**

- Agricultural, Life and Environmental Sciences
- Arts
- Business
- Education
- Engineering
- Kinesiology, Sport, and Recreation
- Medicine and Dentistry
- Pharmacy and Pharmaceutical Sciences
- Rehabilitation Medicine
- Science

CARRIED MOTION:

THAT the GFC Programs Committee approve, with delegated authority from General Faculties Council, the attached course, minor program, and minor regulation change submissions from the Faculties of Agricultural, Life and Environmental Sciences, Arts, Business, Education, Engineering, Kinesiology, Sport, and Recreation, Medicine and Dentistry, Pharmacy and Pharmaceutical Sciences, Rehabilitation Medicine, and Science.

FINAL Item 4

Agenda Title: **Proposed Suspension of the Graduate Certificate in Stroke Rehabilitation, Rehabilitation Medicine and FGSR**

CARRIED MOTION:

THAT the GFC Programs Committee recommend that the General Faculties Council approve the Suspension of the Rehabilitation Medicine Graduate Certificate in Stroke Rehabilitation, to take effect July 1, 2023.

FINAL Item 5

Agenda Title: **Proposed Suspension of the Graduate Certificate in Bridging to Canadian Physical Therapy Practice, Rehabilitation Medicine and FGSR**

CARRIED MOTION:

THAT the GFC Programs Committee recommend that the General Faculties Council approve the suspension of the Rehabilitation Medicine Graduate Certificate in Bridging to Canadian Physical Therapy Practice, to take effect July 21, 2023.

FINAL Item 6

Calendar Change Request Form for Course Changes

See the [Calendar Guide](#) for tips on how to complete this form.

Faculty (& Department or Academic Unit):	FoMD – Department of Laboratory Medicine & Pathology (LMP)
Contact Person:	Jelena Holovati – jelena.holovati@ualberta.ca
Level of change (choose one only) [?]	<input type="checkbox"/> Undergraduate <input checked="" type="checkbox"/> Graduate
For which term will this change take effect?	Fall 2023

Rationale

The Department of Laboratory Medicine and Pathology (LMP) is proposing six new graduate level courses, LABMP 501, 502, 503, 504, 505, and 506 to support our newly designed course- and practicum-based graduate program leading to a MSc in Laboratory Medicine and Pathology with Specialization in Transfusion Medicine. This program is designed to mirror the structure of our current course-based MSc in LMP with Specialization in Pathologists' Assistant, consisting of two terms of didactic courses followed by a clinical practicum and a scholarly research component in a clinical laboratory setting. The proposed training responds to the critical need for transfusion medicine laboratory specialists, as supported by Alberta Precision Laboratories, Canadian Blood Services, and the Canadian Association of Transfusion Medicine and fits the department mission of leading the development of clinical scientists for meeting the lab medicine challenges of tomorrow. Each course covers the key topics in advanced transfusion medicine laboratory training, such as theory and practice of immunohematology, blood donation, supply and distribution, blood product inventory management in support of specific hematological disorders, and quality management and regulatory systems in a blood bank context.

Also, in responding to the evolution of the laboratory medicine field, low student enrolment, and change in faculty structure, the Department of LMP is proposing removing two graduate level courses from the calendar: LABMP 511 (Cryobiology II) and LABMP 535 (Practical Tools for Scientific Research). The relevant portion of each course's contents has been absorbed by the currently offered LABMP 510 (Cryobiology I) and LABMP 530 (Experimental Design and Scientific Communication).

Course Template

Current	Proposed
	<p>LABMP 501 Advanced Immunohematology</p> <p>Course Career Graduate</p> <p>Units 3</p> <p>Approved Hours 3-0-0</p> <p>Fee index 6</p> <p>Faculty Medicine and Dentistry</p> <p>Department Laboratory Medicine and Pathology</p> <p>Typically Offered either term</p> <p>Description</p> <p>This course presents advanced level theory and practice in immunohematology as it relates to transfusion medicine. Topics covered include blood group genetics, and classification, immune hemolysis, factors influencing</p>

clinical significance of blood antigen-antibody interactions, as well as investigations and management of perinatal and alloantibodies. Course content will be delivered through lectures, seminars and workshops as well as directed reading, and will include a clinical practicum at an approved clinical transfusion service laboratory and/or a portfolio of work experiences. This course is designed primarily for students enrolled in the Specialization in Transfusion Science program, or by permission from the Department.

LABMP 502 Immunohematology Techniques

Course Career Graduate

Units 3

Approved Hours 3-0-0

Fee index 6

Faculty Medicine and Dentistry

Department Laboratory Medicine and Pathology

Typically Offered either term

Description

This course presents advanced level immunohematology methods as they relate to transfusion medicine. Topics covered include blood cell genotyping methods, the development of monoclonal reagents and solid-phase and microcolumn platforms for performing the pre-transfusion tests, cellular, serology and microarray and other techniques for *in vitro* measurements of the antigen-antibody reactions. Course content will be delivered through lectures, seminars and workshops as well as directed reading, and will include a clinical practicum at an approved clinical transfusion service laboratory and/or a portfolio of work experiences. This course is designed primarily for students enrolled in the Specialization in Transfusion Science program, or by permission from the Department. Implementation: 2023/2024

LABMP 503 Blood Supply and Distribution I

Course Career Graduate

Units 3

Approved Hours 3-0-0

Fee index 6

Faculty Medicine and Dentistry
Department Laboratory Medicine and Pathology
Typically Offered either term

Description

This course covers topics from blood donation to transfusion, including the management of collection, production, testing, storage, and distribution of components and products for routine transfusion. Course content will be delivered through lectures, seminars and workshops as well as directed reading, and will include a clinical practicum at an approved clinical transfusion service laboratory and/or a portfolio of work experiences. This course is designed primarily for students enrolled in the Specialization in Transfusion Science program, or by permission from the Department.

LABMP 504 Blood Supply and Distribution II

Course Career Graduate

Units 3

Approved Hours 3-0-0

Fee index 6

Faculty Medicine and Dentistry

Department Laboratory Medicine and Pathology

Typically Offered either term

Description

This course covers topics from blood donation to transfusion, including the management of collection, production, testing, storage, and distribution of blood components and products for transfusion in special clinical indications, including stem cell and solid organ transplant. Course content will be delivered through lectures, seminars and workshops as well as directed reading, and will include a clinical practicum at an approved clinical transfusion service laboratory and/or a portfolio of work experiences. This course is designed primarily for students enrolled in the Specialization in Transfusion Science program, or by permission from the Department. Prerequisites: LABMP 503.

LABMP 505 Advanced Transfusion Support

Course Career Graduate

Units 3

Approved Hours 3-0-0

Fee index 6

Faculty Medicine and Dentistry

Department Laboratory Medicine and Pathology

Typically Offered either term

Description

This course covers theory of specific clinical disorders requiring advanced transfusion knowledge. Topics include the management of hematological disorders, transplantation, perinatal and massive transfusion support. Course content will be delivered through lectures, seminars and workshops as well as directed reading, and will include a clinical practicum at an approved clinical transfusion service laboratory and/or a portfolio of work experiences. This course is designed primarily for students enrolled in the Specialization in Transfusion Science program, or by permission from the Department. Prerequisites: LABMP 501 and LABMP 502.

LABMP 506 Clinical Laboratory Operations and Quality Management Systems

Course Career Graduate

Units 3

Approved Hours 3-0-0

Fee index 6

Faculty Medicine and Dentistry

Department Laboratory Medicine and Pathology

Typically Offered either term

Description

This course covers topics related to the Quality Systems Essentials as they apply to the management of a transfusion service and blood supplier. In addition, topics in laboratory management including personnel, laboratory information systems and equipment as well as method validation and proficiency testing will be reviewed. Course content will be delivered through lectures, seminars and workshops as well as directed reading, and will include a clinical practicum at an approved clinical transfusion service laboratory and/or a portfolio of work experiences. This course is designed primarily for students enrolled in the Specialization in Transfusion Science program, or by permission from the Department.

LABMP 511 - Cryobiology II

Course Career Graduate

Units 3

Approved Hours 2-1S-0

Fee index 6

Faculty Medicine and Dentistry

Department Lab Medicine and Pathology

Typically Offered second term

Description

Freeze-thaw responses of enzyme systems, individual cells and organized tissues. Preservation of spermatozoa, blood and bone marrow cells, embryos and various tissues. Approaches to the cryopreservation of organs and whole organisms. Applications in medicine and agriculture. Prerequisite: consent of Department. This course may not be taken for credit if credit has already been received in PATH 511.

...

LABMP 535 - Practical Tools for Scientific Research

Course Career Graduate

Units 3

Approved Hours 0-3S-0

Fee index 6

Faculty Medicine and Dentistry

Department Lab Medicine and Pathology

Typically Offered second term

Description

This course utilizes a workshop format designed to develop the skills of graduate students and clinical residents in scientific writing (i.e. literature reviews, manuscripts, grant applications), research budget planning, developing effective collaborations, intellectual property and technology transfer. An overview of the safety requirements (WHIMIS, radiation safety, and biological hazards) in order to conduct scientific research. Students will learn how to prepare an ethics application for the use of animals and humans in research. Guest speakers from academia, government and industry are featured. Open to graduate students and clinical residents in the Faculty of Medicine and Dentistry. Students from other faculties may register with consent of

the instructors.	
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Reviewed/Approved by:

FoMD Faculty Learning Committee (Faculty Council-delegated Approver) – August 31, 2022
FoMD Faculty Council (for information/suggestions/challenges) – September 16, 2022

Other consultation groups, departments, or internal faculty approving bodies and approval dates.
LMP Curriculum and Competency Committee April 12, 2022
LMP Graduate Studies Committee August 5, 2022
FoMD Graduate Programs Committee (GPC) – October 25, 2022

Calendar Change Request Form for Program and Regulation Changes

See the [Calendar Guide](#) for tips on how to complete this form.

Faculty (& Department or Academic Unit):	FoMD – Department of Laboratory Medicine & Pathology (LMP)
Contact Person:	Jelena Holovati – jelena.holovati@ualberta.ca
Level of change (choose one only) [?]	<input type="checkbox"/> Undergraduate <input checked="" type="checkbox"/> Graduate
Type of change request (check all that apply) [?]	<input checked="" type="checkbox"/> Program <input type="checkbox"/> Regulation
For which term is this intended to take effect?	Fall 2024
Does this proposal have corresponding course changes? (Should be submitted at the same time)	Yes

Rationale

The Department of Laboratory Medicine and Pathology is proposing to expand the existing specialized graduate programs in response to the critical need for transfusion medicine laboratory specialists, as supported by Alberta Precision Laboratories, Canadian Blood Services, and the Canadian Association of Transfusion Medicine. The new specialized MSc clinical training fits the department mission of leading the development of clinical scientists for meeting the laboratory medicine challenges of tomorrow.

The new course- and practicum-based program will lead to a MSc in Laboratory Medicine and Pathology with Specialization in Transfusion Science. This program is designed to mirror the structure of our current course-based MSc in Laboratory Medicine and Pathology with Specialization in Pathologists' Assistant, consisting of two terms of didactic courses followed by a clinical practicum and a scholarly research component in a clinical laboratory setting. Key topics in advanced transfusion medicine laboratory training will be covered, such as theory and practice of immunohematology, blood donation, supply and distribution, blood product inventory management in support of specific hematological disorders, and quality management and regulatory systems in a blood bank context.

Six new advanced transfusion medicine courses (LABMP 501, 502, 503, 504, 505, and 506) have already been developed and approved by the FoMD and University of Alberta governance to support the new program.

A graduate program with second-level specialization in Transfusion Science will allow significant advantages for recruiting students with focused career interests to the specialized training opportunities that exist in our graduate program. The formalized specialization will provide graduating students with a designation that will enhance the marketability of their expertise and assist our clinical partners to deliver essential laboratory services more efficiently.

Demand for this program primarily comes from Canadian Society for Medical Laboratory Science (CSMLS) certified Medical Laboratory Technologists with a BSc who wish to gain advanced specialist certification in transfusion with an opportunity for an MSc in Laboratory Medicine and Pathology (24 months).

The program would enable the Canadian Society for Transfusion Medicine to establish and maintain a program that would provide advanced certification for Medical Laboratory Technologists in the field of transfusion medicine in Canada.

Calendar Copy

URL in current Calendar (or leave blank if it is a new page):

Current

General Information

The Department of Laboratory Medicine and Pathology provides a program leading to the degree of Master of Science (MSc) or Doctor of Philosophy (PhD) in Laboratory Medicine and Pathology.

~~All programs are full time only.~~

For thesis based MSc and PhD degrees, research activities may be carried out in the General Program, or in one of three second-level specializations: Molecular Pathology, Analytical and Environmental Toxicology, and Biopreservation. A course and practicum-based MSc with specialization in Pathologists' Assistant is also offered.

Inquiries should be directed to the Graduate Program Advisor of the Department of Laboratory Medicine and Pathology.

Entrance Requirements

~~For all programs EXCEPT MSc (course-based) with specialization in Pathologists' Assistant~~

The Department's minimum admission requirements are a baccalaureate degree with an admission GPA of at least 3.0 on the 4-point scale from the University of Alberta, or an equivalent qualification and standing from a recognized institution. The admission GPA will be calculated on the last 60 units of graded coursework completed, or on the equivalent of the last two years of full-time graded coursework.

Where applicable, applicants must provide proof of

Proposed

General Information

The Department of Laboratory Medicine and Pathology provides a program leading to the degree of Master of Science (MSc) or Doctor of Philosophy (PhD) in Laboratory Medicine and Pathology.

For thesis based MSc and PhD degrees, research activities may be carried out in the General Program, or in one of three second-level specializations: Molecular Pathology, Analytical and Environmental Toxicology, and Biopreservation. Course and practicum-based MSc programs are also offered.

Inquiries should be directed to the Graduate Program Advisor of the Department of Laboratory Medicine and Pathology.

Entrance Requirements

For all MSc programs and PhD programs

Indigenous Applicants

The Department of Laboratory Medicine and Pathology will provide admission to all MSc and PhD programs to all qualified Indigenous applicants not to exceed the current overall intake, if any, for Year One students. For the definition of an Indigenous applicant, please see [Definition of Indigenous People for the Purpose of Admission of the University Calendar](#).

For thesis based MSc programs and PhD program

The Department's minimum admission requirements are a baccalaureate degree with an admission GPA of at least 3.0 on the 4-point scale from the University of Alberta, or an equivalent qualification and standing from a recognized institution. The admission GPA will be calculated on the last 60 units of graded coursework completed, or on the equivalent of the last two years of full-time graded coursework.

Where applicable, applicants must provide proof of

English Language Proficiency (refer to [English Language Requirement](#)). Any one of the following is acceptable:

- internet-based TOEFL score of 95 with at least 21 per section; or
- IELTS (Academic) score of 7.0 with at least **6** on each band; or
- PTE (Academic) score of 65 with a minimum band score of 60; or
- CAEL score of 70 with at least 70 on each subtest.

Applicants to thesis-based master's programs and doctoral programs must have a qualified faculty member agree to supervise them prior to admission.

Applicants are also required to submit the following

- Curriculum Vitae or Resume
- Completed [Research Interests form](#)
- Three references submitted via the online application system.

For Canadian citizens and permanent residents, the application deadlines are

- August 1 for Fall admission
- November 15 for Winter admission
- April 1 for Spring admission
- June 1 for Summer admission

For International applicants, the application deadlines are

- May 15 for Fall admission
- September 15 for Winter admission
- January 15 for Spring (May) admission
- March 15 for Summer (July) admission

English Language Proficiency (refer to [English Language Requirement](#)). Any one of the following is acceptable:

- internet-based TOEFL score of 95 with at least 21 per section; or
- IELTS (Academic) score of 7.0 with at least **6.5** on each band; or
- PTE (Academic) score of 65 with a minimum band score of 60; or
- CAEL score of 70 with at least 70 on each subtest.

Applicants to thesis-based master's programs and doctoral programs must have a qualified faculty member agree to supervise them prior to admission.

Applicants are also required to submit the following:

- Curriculum Vitae or Resume
- Completed [Research Interests form](#)
- Three references submitted via the online application system.

For Canadian citizens and permanent residents, the application deadlines are:

- August 1 for Fall admission
- November 15 for Winter admission
- April 1 for Spring admission
- June 1 for Summer admission

For International applicants, the application deadlines are:

- May 15 for Fall admission
- September 15 for Winter admission
- January 15 for Spring (May) admission
- March 15 for Summer (July) admission

All students admitted to this program are required to complete a course focused on the histories, experiences, and/or perspective of Indigenous peoples in Canada. This is a program prerequisite. For students who have not met the requirement at the time of admission, a condition of their admission would be to complete the course by the start of the first term of registration. This requirement may be fulfilled by completing:

- the certificate version of the University of Alberta Indigenous Canada MOOC within the 5 years preceding the first term of registration; or
- if the above course was completed more than 5 years preceding the first term of registration or is not offered, another course approved by the Department of Laboratory Medicine and Pathology graduate program. Incoming students must submit a record of completion for the course to the Graduate Program Advisor of the

Inquiries regarding these requirements should be directed to the Graduate Program Advisor of the Department of Laboratory Medicine and Pathology.

For MSc (course based) with specialization in Pathologists' Assistant

The Department's minimum admission requirements are a baccalaureate degree with an admission GPA of at least 3.0 on the 4-point scale from the University of Alberta, or an equivalent qualification and standing from a recognized institution. The admission GPA will be calculated on the last 60 units of graded coursework completed, or on the equivalent of the last two years of full-time graded coursework.

Due to competitive selection process, limited uptake capabilities in the competency-based practicum rotation through the clinical sites and high Canadian health-care system needs, admission preference will be given to Canadian citizens or Permanent Residents of Canada.

Where applicable, applicants must provide proof of English Language Proficiency (refer to [English Language Requirement](#)). Any one of the following is acceptable:

- internet-based TOEFL score of 95 with at least 21 per section; or
- IELTS (Academic) score of 7.0 with at least 6 on each band; or
- PTE (Academic) score of 65 with a minimum band score of 60; or
- CAEL score of 70 with at least 70 on each subtest.

Applicants must have the following prerequisites: **Microbiology (3 units)**, Biology (6 units), Physiology (3 units), Biochemistry (6 units), Human Anatomy (3 units), Mathematics (3 units), **English (6 units)** at the postsecondary level and a course in Medical Terminology. It is to the applicant's advantage to have completed all prerequisite courses within the last 10 years.

Applicants are required to submit the following

- Curriculum Vitae or Resume

Department of Laboratory Medicine and Pathology,
Impgrad@ualberta.ca.

Inquiries regarding these requirements should be directed to the Graduate Program Advisor of the Department of Laboratory Medicine and Pathology,
Impgrad@ualberta.ca.

For MSc (course based) with Specialization in Pathologists' Assistant

The current intake for Year One students is 2.

The Department's minimum admission requirements are a baccalaureate degree with an admission GPA of at least 3.0 on the 4-point scale from the University of Alberta, or an equivalent qualification and standing from a recognized institution. The admission GPA will be calculated on the last 60 units of graded coursework completed, or on the equivalent of the last two years of full-time graded coursework.

Due to **the** competitive selection process, limited uptake capabilities in the competency-based practicum rotation through the clinical sites and high Canadian health-care system needs, admission preference will be given to Canadian citizens or Permanent Residents of Canada.

Where applicable, applicants must provide proof of English Language Proficiency (refer to [English Language Requirement](#)). Any one of the following is acceptable:

- internet-based TOEFL score of 95 with at least 21 per section; or
- IELTS (Academic) score of 7.0 with at least 6.5 on each band; or
- PTE (Academic) score of 65 with a minimum band score of 60; or
- CAEL score of 70 with at least 70 on each subtest.

Applicants must have the following prerequisites: Biology (6 units), Physiology (3 units), **Chemistry or Biochemistry (3 units)**, Human Anatomy (3 units), **and Mathematics (3 units)** at the postsecondary level and a course in Medical Terminology. It is to the applicant's advantage to have completed all prerequisite courses within the last 10 years.

Applicants are required to submit the following:

- Curriculum Vitae or Resume
- Letter of intent

- Letter of intent
- **Three** references **submitted** via the online application system

The application deadline is April 1 for Fall admission.

Inquiries regarding these requirements should be directed to the Graduate Program Advisor of the Department of Laboratory Medicine and Pathology.

- **Two** references via the online application system.

The application deadline is April 1 for Fall admission.

All students admitted to this program are required to complete a course focused on the histories, experiences, and/or perspective of Indigenous peoples in Canada. This is a program prerequisite. For students who have not met the requirement at the time of admission, a condition of their admission would be to complete the course by the start of the first term of registration. This requirement may be fulfilled by completing:

- the certificate version of the University of Alberta Indigenous Canada MOOC within the 5 years preceding the first term of registration; or
- if the above course was completed more than 5 years preceding the first term of registration or is not offered, another course approved by the Department of Laboratory Medicine and Pathology graduate program. Incoming students must submit a record of completion for the course to the Graduate Program Advisor of the Department of Laboratory Medicine and Pathology, Impgrad@ualberta.ca.

Inquiries regarding these requirements should be directed to the Graduate Program Advisor of the Department of Laboratory Medicine and Pathology, Impgrad@ualberta.ca.

For MSc (course based) with Specialization in Transfusion Science

The current intake for Year One students is 2.

The Department's minimum admission requirements are a baccalaureate degree with an admission GPA of at least 3.0 on the 4-point scale from the University of Alberta, or an equivalent qualification and standing from a recognized institution. The admission GPA will be calculated on the last 60 units of graded coursework completed, or on the equivalent of the last two years of full-time graded coursework.

Due to the competitive selection process, limited uptake capabilities in the competency-based practicum rotation through the clinical sites and high Canadian health-care system needs, admission preference will be given to Canadian citizens or Permanent Residents of Canada.

Admission preference will be given to applicants holding

general certification from the Canadian Society for Medical Laboratory Science (CSMLS) and with a minimum 3 years of work experience in medical laboratory science.

Where applicable, applicants must provide proof of English Language Proficiency (refer to [English Language Requirement](#)). Any one of the following is acceptable:

- internet-based TOEFL score of 95 with at least 21 per section; or
- IELTS (Academic) score of 7.0 with at least 6.5 on each band; or
- PTE (Academic) score of 65 with a minimum band score of 60; or
- CAEL score of 70 with at least 70 on each subtest.

Applicants are required to submit the following:

- Curriculum Vitae or Resume
 - Letter of intent
 - Two references
- via the online application system.

The application deadline is April 1 for Fall admission.

All students admitted to this program are required to complete a course focused on the histories, experiences, and/or perspective of Indigenous peoples in Canada. This is a program prerequisite. For students who have not met the requirement at the time of admission, a condition of their admission would be to complete the course by the start of the first term of registration. This requirement may be fulfilled by completing:

- the certificate version of the University of Alberta Indigenous Canada MOOC within the 5 years preceding the first term of registration; or
 - if the above course was completed more than 5 years preceding the first term of registration or is not offered, another course approved by the Department of Laboratory Medicine and Pathology graduate program.
- Incoming students must submit a record of completion for the course to the Graduate Program Advisor of the Department of Laboratory Medicine and Pathology, Impgrad@ualberta.ca.

Inquiries regarding these requirements should be directed to the Graduate Program Advisor of the Department of Laboratory Medicine and Pathology, Impgrad@ualberta.ca.

<p><u>Academic Standing Requirement</u> Students are required to maintain a minimum cumulative grade point average of 3.0 throughout the course of the program. . . .</p>	<p><u>Academic Standing Requirement</u> Students are required to maintain a minimum cumulative grade point average of 3.0 throughout the course of the program.</p>
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Reviewed/Approved by:

<p>REQUIRED: Faculty Council (or delegate) and approval date, including any partner faculties for combined programs. Laboratory Medicine and Pathology Graduate Studies Committee (Date) FoMD Graduate Programs Committee - May 17, 2023. FoMD Faculty Learning Committee - June 27, 2023 FGSR Graduate Program Support Team (Date) FGSR Policy Review Committee (Date) FGSR Council (Date) GFC Academic Programs Committee (Date)</p>
<p>Other consultation groups, departments, or internal faculty approving bodies and approval dates. Dr. Florence Glanfield, Vice Provost (Indigenous Programming and Research). April 27, 2023. Dr. Adam Gaudry, Vice Dean and Associate Professor, Faculty of Native Studies. May 8, 2023. Dr. Carrie Smith, Vice-Provost (Equity, Diversity and Inclusion). May 11, 2023. Carley Roth, Portfolio Initiatives Manager, Office of the Provost & Vice-President Academic. August 23, 2023.</p>

Calendar Change Request Form for Course Changes

See the [Calendar Guide](#) for tips on how to complete this form.

Faculty (& Department or Academic Unit):	FoMD – Department of Laboratory Medicine & Pathology (LMP)
Contact Person:	Jelena Holovati – jelena.holovati@ualberta.ca
Level of change (choose one only) [?]	<input type="checkbox"/> Undergraduate <input checked="" type="checkbox"/> Graduate
For which term will this change take effect?	Fall 2024

Rationale

The Department of Laboratory Medicine and Pathology (LMP) is proposing two new graduate level courses, LABMP 600 and 601, to support our newly designed course- and practicum-based graduate program leading to a MSc in Laboratory Medicine and Pathology with Specialization in Transfusion Medicine. This program is designed to mirror the structure of our current course-based MSc in LMP with Specialization in Pathologists' Assistant, consisting of two terms of didactic courses followed by a clinical practicum and a scholarly research component in a clinical laboratory setting.

The clinical practicum will be addressed through two new courses, LABMP 600 and 601.

The research component will be addressed through LABMP 900. The current calendar description for LABMP 900 – Research Project written specifically for the course-based MSc with specialization in Pathologists' Assistant program is being changed to be generic for all course-based MSc programs. This will ensure that the same research project requirements apply to all course-based MSc programs.

Course Template

Current	Proposed
	<p>LABMP 600 - Clinical Practicum I Course Career Graduate Units 3 Approved Hours CLN ROT Fee index 6 Faculty Medicine and Dentistry Department Lab Medicine and Pathology Typically Offered variable</p> <p>Description As a part of clinical laboratory practicum education for the Transfusion Science specialization, this course will provide rotations in blood banks, hospitals and cell therapy laboratories. The student will be expected to cover specific competencies and objectives and keep a record of cases encountered. A designated preceptor in</p>

each rotation will guide student learning and continuously assess student progress. Prerequisites: LABMP 501 and 502 and permission of the department. (restricted to MSc Transfusion Science specialization)

LABMP 601 - Clinical Practicum II

Course Career Graduate

Units 3

Approved Hours CLN ROT

Fee index 6

Faculty Medicine and Dentistry

Department Lab Medicine and Pathology

Typically Offered variable

Description

As a part of clinical laboratory practicum education for the Transfusion Science specialization, this course will provide rotations in blood banks, hospitals and cell therapy laboratories. The student will be expected to cover specific competencies and objectives and keep a record of cases encountered. A designated preceptor in each rotation will guide student learning and continuously assess student progress. Prerequisites: LABMP 501 and 502 and permission of the department. (restricted to MSc Transfusion Science specialization)

LABMP 900 - Research Project

Course Career Graduate

Units 6

Approved Hours 0-3S-6

Fee index 12

Faculty Medicine and Dentistry

Department Lab Medicine and Pathology

Typically Offered two term

Description

The course is an independent research project. Seminar sessions cover topics relevant to conducting independent research studies. The student will be expected to write a research proposal, keep an accurate notebook, and conduct adequate investigative research. The project will be written as a research paper and presented at departmental rounds. This course is designed primarily for students enrolled in the Pathologists' Assistant specialization.

LABMP 900 - Research Project

Course Career Graduate

Units 6

Approved Hours 0-3S-6

Fee index 12

Faculty Medicine and Dentistry

Department Lab Medicine and Pathology

Typically Offered two term

Description

The course is an independent research project. Seminar sessions cover topics relevant to conducting independent research studies. The student will be expected to write a research proposal, keep an accurate notebook, and conduct adequate investigative research. The project will be written as a research paper and presented at departmental rounds. This course is for students enrolled in course-based MSc programs offered by the Department of Laboratory Medicine and Pathology.

Reviewed/Approved by:

REQUIRED: Faculty Council (or delegate) and approval date, including any partner faculties for combined programs.
Laboratory Medicine and Pathology Graduate Studies Committee (Date)
FoMD Graduate Programs Committee. May 17, 2023.

Other consultation groups, departments, or internal faculty approving bodies and approval dates.

FINAL ITEM NO.7Decision Discussion Information

ITEM OBJECTIVE: To approve five RENR Second-Level Specializations for the Course-based Master of Forestry and Master of Agriculture:

- MF in Renewable Resources with Specialization in Sustainable Forest Management
- MF in Renewable Resources with Specialization in International Forestry
- MF in Renewable Resources with Specialization in Environmental and Wildlife Conservation
- MF in Renewable Resources with Specialization in Ecology and Ecosystem Restoration
- MAg in Ren. Resources with Specialization in Conservation and Restoration of Land and Water

DATE	November 9, 2023
TO	Programs Committee
RESPONSIBLE PORTFOLIO	Faculty of ALES Faculty of Graduate & Postdoctoral Studies

MOTION:

THAT the GFC Program Committee, with delegated authority from General Faculties Council, approve the proposed five new second-level specializations for the course-based Master of Forestry and Master of Agriculture: (1) Accredited professional Master of Forestry with Specialization in Sustainable Forest Management; (2) Master of Forestry with a Specialization in International Forestry; (3) Master of Forestry with Specialization in Environmental and Wildlife Conservation; (4) Master of Forestry with Specialization in Ecology and Ecosystem Restoration; (5) Master of Agriculture with Specialization in Conservation and Restoration of Land and Water, for implementation upon final approval.

EXECUTIVE SUMMARY:Background

The Department of Renewable Resources has historically focused on thesis-based graduate programs (MSc and PhD), but we also have two course-based Master programs, a Master of Agriculture (MAg) and a Master of Forestry (MF). Enrollment prior to 2015 was zero or negligible, but there has been some growth over the last few years to approximately 10 students per year. We see the opportunity and capacity to increase annual new enrollments to 40-50 students without significant additional investments.

Analysis / Discussion

A key problem is that the calendar entries of our course-based [Master of Forestry \(MF\)](#) and [Master of Agriculture \(MAg\)](#) programs are undefined to a degree that makes them unattractive (even misleading) to prospective students. For example, we do not actually offer any courses in classical

GOVERNANCE OUTLINE



ITEM NO.7

agriculture in our department, and Master of Forestry graduates are not allowed to work in this regulated profession in Canada without a costly and difficult assessment process because the degree cannot be accredited without specified and approved course requirements.

For clarity of what can actually be studied under the MF and MAg programs in our department, we have sorted our [44 currently active graduate-level courses](#) into non-overlapping blocks that represent our teaching specializations and that also approximately correspond to the [research specializations](#) in our department. These blocks are the basis for coherent sets of required and elective courses for the following proposed second level specializations:

- (1) Master of Forestry with Specialization in Sustainable Forest Management (MF-SFM)
- (2) Master of Forestry with Specialization in International Forestry
- (3) Master of Forestry with Specialization in Environmental and Wildlife Conservation
- (4) Master of Forestry with Specialization in Ecology and Ecosystem Restoration
- (5) Master of Agriculture with Specialization in Conservation and Restoration of Land and Water

The proposed specializations would significantly increase the visibility, clarity, and competitiveness of our program offerings and attract high-quality applicants both nationally and internationally. The specialization names also clearly convey the expertise of our graduates to potential employers, giving our graduates a competitive edge. Earlier this year, the Canadian Forestry Accreditation Board [has accredited the MF-SFM](#), signaling that graduates of this specialization will meet academic requirements to become a Registered Professional Forester.

Risk Discussion / Mitigation of the Risk

We minimize risks by planning to grow our course-based MF and MAg programs gradually. At present, the specializations can be grown initially without significant investments in faculty or teaching staff. Because we lowered the course requirements for our thesis-based MSc program some years ago, we have course capacity that we intend to fill by growing our course-based programs.

Where applicable, list the legislation that is being relied upon

Not applicable.

Next Steps

- Implementation of calendar changes for 2024/2025.
- We are keen to receive approval for advertising the new degree specializations.
- Update to the GSMS to allow students to apply for the new degree specializations
- Registrar to indicate specialization on degree parchments (required by CFAB)

Supporting Materials:



ITEM NO.7

1. RENR Second-Level Specializations for the Course-based Master of Forestry and Master of Agriculture (Contains 13 documents, including concise overall strategy, an Indigenous strategy, detailed proposals for each specialization, and calendar change forms.

***See Schedule A for additional items to include if needed.**

SCHEDULE A:

Engagement and Routing

Consultation and Stakeholder Participation / Approval Route (parties who have seen the proposal and in what capacity) <[Governance Resources Section Student Participation Protocol](#)>

Those who are actively participating:

- Proposed by Nadir Erbilgin (RENR Department Chair) and Andreas Hamann (Director, Academic & Communications) - Jul 2022
- Discussed, revised, and reviewed at RENR Dept. Councils - Sep 26 & Oct 28, 2022
- Reviewed and endorsed by Dean of ALES - Nov 16, 2022

Those who have been consulted:

- Canadian Forestry Accreditation Board (CFAB) consulted - July, 2022
- Students, Alumni, and employers consulted during CFAB site visit - Sep 26-28, 2022
- Master of Forestry, Specialization SFM, accredited by CFAB - March 17, 2023
- Reviewed and endorsed by Vice-Provost (Programs) - July 19, 2022 to Jan 27, 2023
- Reviewed by FGSR Graduate Program Support Team (GPST) - March 27, 2023
- Endorsed by Vice-Provost (Indigenous Programming & Research) - Sep 25, 2023

Those who have been informed:

- Alberta Association of Forest Management Professionals - Jul 2022 to Sep 2023

Approval Route:

- RENR Dept Council - March 25, 2023
- ALES Faculty Council - Sep 25, 2023
- GPST - Sep 25, 2023
- FGSR Council - Oct 11, 2023
- Programs Committee - Nov 9, 2023

Proposal for second-level specializations of course-based Masters programs: Overall strategy

Department of Renewable Resources (RENR), Faculty of Agricultural, Life and Environmental Sciences (ALES), College of Natural and Applied Sciences

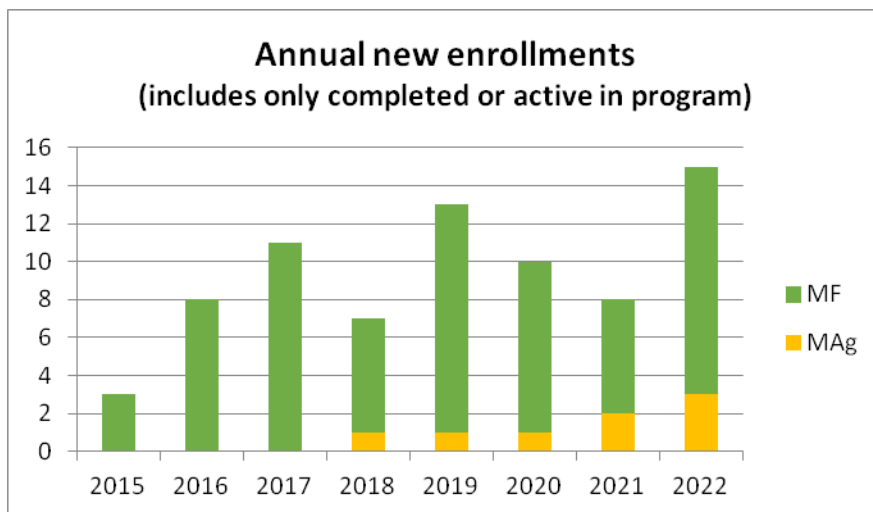
Proposed/Reviewed/Endorsed/Approved: Proposed by Nadir Erbilgin (RENR Department Chair) and Andreas Hamann (Director, Academic & Communications); guidance provided by Vice-Provost (Programs) and Associate Dean FGSR (July 19, 2022); reviewed and approved by RENR Dept Council (Sep 26, 2022, Oct 28, 2022, March 25, 2023); endorsed by Dean of ALES (Nov 16, 2022); reviewed and MF-SFM approved as accredited program by the Canadian Forestry Accreditation Board (Sep 26, 2022, March 17, 2023), reviewed and endorsed by Vice-Provost (Programs) (Jan 12, 2023, Jan 27, 2023); reviewed by FGSR Graduate Program Support Team (GPST) (March 27, 2023); approved ALES Faculty Council (Sep 25, 2023); endorsed by Vice-Provost (Indigenous Programming & Research) (Sep 25, 2023). **Remaining approvals:**, FGSR Council, GFC Programs Committee.

Background

Our department has historically focused on thesis-based graduate programs (MSc and PhD), but we also offer two course-based Master programs, namely a [Master of Agriculture \(MAg\)](#) and a [Master of Forestry \(MF\)](#) program.

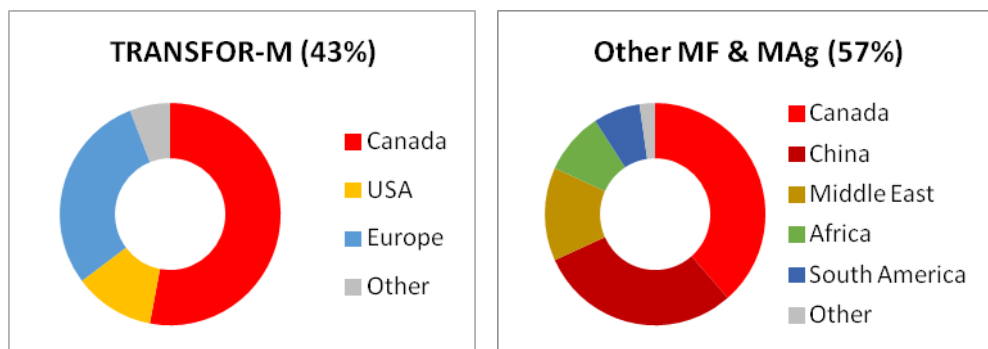
Enrolment prior to 2015 was zero or negligible, but there has been some growth over the last years (see Figure below). We see the opportunity and capacity to increase annual new enrollments to 40-50 students over the next years (without additional large investments).

The following specialization proposals are part of the Faculty of ALES and the Department of Renewable Resources' long-term strategy to increase student enrollment in our less densely populated programs.



At present our student population in course-based programs consists of:

- (1) Participants of our [TRANSFOR-M dual degree program](#), representing 43% of all course-based program participants. This stream attracts students from Canada, the U.S.A. and Europe with strong academic backgrounds (See Figure below on left);
- (2) Graduates of the ALES BSc in [Environmental and Conservation Sciences](#), who use the MF degree in a “4+1” supplement to become Registered Professional Foresters (RPFs), comprising half of the other course-based students, or approximately 30%.
- (3) Other participants who are primarily visa students, making up the remaining ~30% of course-based students for a total of 57% outside the TRANSFOR-M stream (Figure below on right represents group 2 & 3).



Limitations to program growth

Both, the TRANSFOR-M and the RPF streams are highly customized programs that require complex [individual study plans](#) to satisfy professional requirements according to each student's background, or the development of individualized dual-degree programs that satisfy FGSR's shared credential requirements, and those of the international partner institutions.

Due to funding cuts, we have lost the faculty service officer responsible for developing these study plans. Without this administrative support, we can no longer maintain individualized RPF accreditation services or effectively support participants of the TRANSFOR-M program.

While we receive excellent applicants for the RPF and TRANSFOR-M streams, we lack qualified applicants beyond these two program streams. Virtually all graduate courses at the 500 and 600 levels and many graduate/undergraduate slash courses at the 700 level have extra capacity that we would like to fill with qualified course-based graduate students.

The rationale for program specializations

A key problem is that the calendar entries of our course-based [Master of Forestry \(MF\)](#) and [Master of Agriculture \(MAg\)](#) programs are undefined to a degree that makes them unattractive (even misleading) to prospective students. For example, we do not actually offer any courses in classical agriculture. That would be the MAg degree offered by the Department of AFNS.

Instead, our focus is on the conservation and restoration of land and water in agricultural systems. This is neither visible to prospective applicants nor to potential employers of our graduates.

For clarity of what can actually be studied under the MF and MAg programs in the department, we have sorted our [44 currently active graduate-level courses](#) into non-overlapping blocks that represent our teaching specializations and that also approximately correspond to the [research specializations](#) in our department.

We propose the following second-level specializations: **(1)** an accredited professional Master of Forestry with Specialization in Sustainable Forest Management; **(2)** a Master of Forestry with Specialization in International Forestry of our TRANSFOR-M program participants; and three additional specializations based on sets of non-overlapping graduate courses that we offer: **(3)** Master of Forestry with Specialization in Environmental and Wildlife Conservation, **(4)** Master of Forestry with Specialization in Ecology and Ecosystem Restoration and **(5)** Master of Agriculture with Specialization in Conservation and Restoration of Land and Water.

With calendar entries that specify program requirements, we can also end the current practice of creating individual study plans that need to be approved at the time of admission, reviewed and re-approved in case changes are required and validated by the Department, the Faculty of ALES graduate office, and FGSR at the time of graduation. This reduction of administrative requirements will be key to growing our programs.

We believe that these changes would (1) significantly increase the visibility and clarity of our program offerings; (2) improve the competitiveness of our programs (with respect to the other U15 universities) by offering compelling and timely degree specializations to professionals and recent BSc graduates; (3) attract higher quality student applicants both nationally and internationally; (4) provide better guidance and cohort experience for students; and (5) communicate the skills of our graduates to prospective employers, providing a competitive advantage in the job market.

Proposal for second-level specializations of course-based Masters programs: Strategy to cover Indigenous perspectives

Department of Renewable Resources (RENR), Faculty of Agricultural, Life and Environmental Sciences (ALES), College of Natural and Applied Sciences

Background

Indigenous engagement in forest science and management is a longstanding aspect of the forestry sector in Alberta and Canada. The Canadian Council of Forest Ministers established an influential definition of sustainable forestry in the mid-1990s that included Aboriginal and Treaty Rights that were adopted by provincial governments, and forest certification initiatives. In Alberta, initiatives at the Foothills Model Forest since the 2000s involved the engagement of forestry companies with Indigenous communities to avoid potential land-use conflicts, and these relationships have continued to evolve over the last 20 years to survey and document cultural and traditional knowledge and to incorporate Indigenous perspectives into forestry plans in many regions of the province. Further, the Government of Alberta established a series of sector-specific Aboriginal Consultation Guidelines, outlining the Duty to Consult as required by law. This case law is further strengthened by international developments including the United Nations Declaration on the Rights of Indigenous Peoples. These principles of Indigenous consultation are increasingly embedded in national laws and regulations for environmental conservation and natural resource management, including forestry activities.

Objectives

Providing outstanding education for the University of Alberta's students related to Indigenous peoples and Indigenous knowledge related to forestry, conservation, and reclamation of land and water is therefore a key objective to ensure the success of our five proposed second-level course-based Masters program specializations: **(1)** Master of Forestry with Specialization in Sustainable Forest Management, **(2)** a Master of Forestry with Specialization in International Forestry, **(3)** Master of Forestry with Specialization in Environmental and Wildlife Conservation, **(4)** Master of Forestry with Specialization in Ecology and Ecosystem Restoration, and **(5)** Master of Agriculture with Specialization in Conservation and Restoration of Land and Water.

Our general educational mandate for the proposed specializations further aligns with the requirements of the provincial ([AAFMP](#)) and federal ([CFAB](#)) professional accreditation agencies on Indigenous competencies of "Standard 7 – Planning and Administration", "Competency Element 7.2.4 – Indigenous Peoples' Treaty and other rights, claims, traditions and interests" (see Table below). This specifically applies to the [already accredited](#) proposed Master of Forestry with Specialization in Sustainable Forest Management, but the required competencies reflect educational objectives that apply to all of our proposed course-based Master's specializations. Specifically, all graduates of our proposed course-based Master's specializations should appreciate the importance of relationships in Indigenous consultation and engagement, and obtain foundational knowledge to:

- Understand the impacts of colonial histories on Indigenous people in Canada and their relationship with the land;
- Recognize, and apply legislation that protects Indigenous and treaty rights in forestry in Alberta and Canada;
- Understand Indigenous worldviews and values;
- Critically evaluate the Truth and Reconciliation Commission's Calls to Action related to forestry, and identify actionable steps that can be taken to implement them;
- Engage with Indigenous communities and stakeholders in the forestry sector, including partnership, collaboration, and co-management;
- Incorporate Indigenous traditional knowledge into the development of new forestry practices in a respectful and collaborative manner;
- Recognize and address power imbalances in Indigenous relationships and work towards more equitable and mutually beneficial outcomes;
- Commit to ongoing learning and engagement, working towards reconciliation and decolonization in the forestry sector; and
- Support provincial and federal governments' consultation efforts with Indigenous communities

Current course offerings

Current course offerings or submitted 2024/2025 calendar proposals for courses that cover Indigenous Peoples' Treaty and other rights, claims, traditions and interests, and thereby cover CFAB competency requirements include the following shown in the table below:

STANDARD 7 - PLANNING AND ADMINISTRATION

Demonstrable Competency 7.2: Identify societal factors, governance and regulation in your work.

Course No./Name	Input to Element ¹		Level of Instruction ²			Instruction Methods ³					Principal tests of competency employed ⁴ (* means student work available to view on visit)	
	Full	Part	Basic	Interm.	Adv.	Lect.	Lab.	Field	Sem.	Ext.		Other
Competency Element 7.2-4:						Descriptors:						
Indigenous Peoples' Treaty and other rights, claims, traditions and interests						a) As stated for Competency Element – processes to determine and address						
						b) Consultation and information sharing requirements						
						c) Roles of provincial and federal governments						
FOREC 673/Forest Policy		✓	✓			✓	✓					Assignments, classroom discussions, independent studies, group projects*(REN R 299, REN R 728)
REN R 550/Perspectives on Traditional Knowledge		✓			✓		✓					
REN R 551/Engagement and Public Policy		✓		✓		✓			✓			
REN R 101 / Intro. Forest Field School		✓	✓					✓				
REN R 702/Forestry and Environmental Sciences Field Skills		✓		✓				✓				
REN R 703/Forestry Field School for Professionals		✓		✓				✓				
REN R 728/Integrated For Managementb		✓			✓	✓	✓		✓			
At completion of the program, graduates have demonstrated an ability to meet this Competency Element:						Fully ___/___ Partly _____ Not at all _____						

Syllabi for the courses that cover “Standard 7 – Planning and Administration”, “Competency Element 7.2.4 – Indigenous Peoples’ Treaty and other rights, claims, traditions and interests” start on the following [pages of this PDF document](#):

[Page 4](#) – FOREC 473/673 Forest Policy

[Page 10](#) – R SOC 460/560 Perspectives on Traditional Knowledge

[Page 14](#) – R SOC 375/675 Public Participation and Conflict Resolution (replacing R SOC 551)

[Page 18](#) – REN R 101/701 Forestry Field School for Professionals (replacing REN R 703)

[Page 19](#) – REN R 295/702 Forestry and Environmental Sciences Field Skills

[Page 23](#) – REN R 728 Integrated Forest Management

Future program development

To further build our teaching and research capacity in the field, we further pursue the establishment of an ***Endowed Chair in Indigenous Forest Science and Management***. Briefly, the objectives of this initiative are to build a research program on Indigenous perspectives, knowledge and issues related to forest science and management with the aim of creating and sharing knowledge that will support the sustainable management of forests, help create productive relationships between Indigenous communities and the forest industry, and facilitate long-term and meaningful reconciliation.

For further details, see the draft proposal document enclosed below:

[Page 26](#) – Indigenous Forest Science and Management Initiative

[Page 35](#) – Alberta Innovates Support (\$500,000)

FOREC 473 FOREST POLICY:

COURSE OUTLINE AND READING LIST -- FALL, 2021

Instructor Marty Luckert, marty.luckert@ualberta.ca, 492-5002 (voice message), GSB 557c. Please email me to make an appointment (via Zoom).

Course Web Page logon at eClass

Lectures Tues., Thurs. 11:00 - 12:20. Lectures will be largely in person unless Covid conditions dictate otherwise.

Course Objective and Learning Outcomes

The general objective of this course is to provide you with the ability to analyze a broad range of forest policies within a socioeconomic context. The approach will include using logic and techniques of economic analysis, as well as associated limitations. The learning outcomes of this objective include improving your understanding of:

- Concepts of forest policy and different approaches and tools that can be used for analysis;
- How current forest policies have evolved from historical events;
- How concepts of property rights can be used to identify strengths and weakness of current, and potential future, forest policies, as embodied in forest tenures in Canada;
- Global forest policy phenomena such as deforestation, forest certification and climate change.

Pre-Requisites

You are required to have taken an introductory course in Forestry, Natural Resource, or Environmental Economics (U of A FOREC 345, AREC 365, or equivalents).

Course Structure

Several avenues of approach will be used as a basis for developing skills in policy analysis:

Lectures

Lectures will describe current policy issues and introduce concepts and tools for analysis. Most lectures will be presented in-person during scheduled class. A few lectures will be pre-recorded and asynchronous.

You will be expected to actively participate in lectures in several ways:

- Lectures will often pose questions for individual responses and class discussion.

- At the beginning of every lecture given by the instructors, you will have the opportunity to ask questions about previous material covered.
- You are encouraged to ask questions during the lectures.

Readings

Readings will reinforce concepts introduced in lectures, and supplement subject areas for which there is not sufficient lecture time. There is no required text for this course, however readings from a number of sources will be available through links on the course webpage. No readings are required, but all are recommended.

Individual Library Assignment

There will be an individual assignment on library use that help prepare you for the group case study assignments. This assignment will be supported with materials posted on eclass.

Group Case Study Assignments

There will be two group case study assignments. Each assignment will consist of a paper. The second assignment will involve presentations to the class. Handouts will specify groups and guidelines for each assignment.

Consultation

Help for individuals and groups is available from the instructor and from other resource people which will be brought into the class. Please make appointments for Zoom consultations via email.

Grading

Individual Library Assignment	10% (Due Sept 14)
Group Case Study #1	15% (Due Oct 7)
Group Case Study #2	30% (Presentation Due Nov 23, Paper Due Nov 30)
Quizzes (5% each, count 4 of 5)	20% (TBD)
End-of-Term Exam	25% (Dec 7 during class)

Assignments and case studies will be turned in on-line through eclass. If a submission is late, please send it to me via email. In fairness to those who turn in their assignments on time, late work will be penalized 10% (of the possible points for the assignment) per late day (including weekends).

A handout specifying guidelines for grading group case studies papers will be provided. Marks for group assignments may be distributed evenly or unevenly among members of the group. A handout will provide the details for group grading.

There will also be quizzes and an end-of-term exam that contribute to grading. Quizzes will occur during 5 classes. Quizzes will not be announced prior to the class and will occur during the final 20 minutes of lecture periods. You may choose 4 of the 5 quizzes taken to make up this portion of your grade. If one quiz is missed, the remainder of the 4 quizzes will count. If more than one quiz is missed due to excused extenuating circumstances, then the weight of the missed quiz will be transferred to the end-of-term exam. All quizzes and the exam will be taken in person, circumstances permitting. All in-person quizzes and the end-of-term exam may be taken with an electronic device through eclass or with hand-written hardcopy. If we switch to a Zoom format, quizzes and the end-of term exam will be taken through eclass.

A grading system of “natural breaks” will be used that will be explained in class.

Course Outline and Readings¹

1. Basic Concepts of Forest Policy

Definitions; Individuals and Institutions; Institutions and Policy; Public and Social Choice; Ends, Means, Results and Processes; Anthropocentric vs. Ecocentric Policy.

Readings: Clawson, 1974 (chapter 2); Duerr *et al.*, 1979 (chapter 3); Sen, 1995 (pgs. 1-3, 11-12, 18-19).

2. History of Forest Policy Formation

Where have we come from to get where we are today?

Readings: Apsey *et al.*, 2000.

3. Analysis of Forest Policy Results

Welfare Analysis Criteria; Market Failures; Regulating Markets; Forest Tenures as Property Rights; Forest Tenures as Tools of Regulation; Second Best Problems; Government Failures; Optimal Policies?

Readings: Luckert *et al.*, 2011 (Introduction, chapters 2, 3, 6)², Luckert, 2014; Boyd and Hyde, 1989 (chapter 1); Wolf, 1986 (chapter 1).

4. Processes of Forest Policy Formation (time permitting)

Theory on Policy Formation; Public Involvement in Policy Formation; Institutions for Provincial and Federal Policy.

Readings: Schlager and Blomquist, 1996; Howlett and Rayner, 1995; Lindquist and Wellstead, 2001.

¹ Additional readings may be assigned as the term progresses.

² Readings from this book may be obtained at the following places:

- Introduction: <http://www.ubcpres.ca/asset/9074/1/9780774820660.pdf>
- Excerpts of Chapters 2 and 3, eclass website
- Chapter 6 Cameron Reserve

5. International Forest Policy Issues

5.1 Deforestation. How serious is *tropical* deforestation? Causes and effects of deforestation. policy options for reducing deforestation.

5.2 Carbon Sequestration. The role of forests in sequestering carbon. Forestry options for reducing carbon emissions. Regulatory and voluntary carbon markets.

5.3 Forest products certification. Why certification? Certification agencies/programmes. The certification process, The pros and cons of certification.

5.4 Developing Country Subsistence and Forests. Role of forests in developing countries. Forest policies influencing local livelihoods. Ongoing research into local livelihoods and forest policy.

Readings: Pearce and Brown, 1994 (Chapter 1); Haener and Luckert, 1998; van Kooten and Hauer, 2001; Mayers and Bass, 1999 (chapter 6); Alberta Environment, 2011a, 2011b; Peters-Stanley et al. 2013.

Case Studies in Forest Policy

1. Paradigms for Forest Management

Forestry is said to be evolving from Sustained Yield towards Sustainable Forest Management. How are these two paradigms defined in terms of means and ends?

2. Public Conflicts in Forestry in Canada

What are the causes of public conflicts in forest management in Canada? What role do differing interest groups and academia play in seeking solutions to public conflicts?

References:

Alberta Environment. 2011a. Draft Version 2.0: Quantification protocol for afforestation projects. Alberta Environment, Edmonton, Alberta, Canada. Available from <http://c-3.ca/wp-content/uploads/2013/10/DRAFT-for-Technical-Review-Revised-Afforestation-Protocol.pdf>.

Alberta Environment. 2011b. Technical guidance for offset protocol developers. Version 1.0. Alberta Environment, Edmonton, Alberta, Canada. Available from <http://environment.gov.ab.ca/info/library/8331.pdf>.

Apsey M., Laishley, D., Nordin, V., and G. Paillé. 2000. The Perpetual Forest: Using Lessons from the Past to Sustain Canada's Forests in the Future. Private publisher. (English and French).

Boyd, R.G. and W.F. Hyde. 1989. Forest Sector Intervention: The Impacts of Regulation on Social Welfare. Ames: Iowa State University Press.

Clawson, M. 1975. Forests For Whom and For What. Baltimore: Johns Hopkins.

Duerr, W.A., Teeguarden, D.E., Christiansen, N.B., and S. Guttenburg. 1979. Forest Resource Management: Decision Making Principles and Cases. Philadelphia: Saunders.

- Haener, M. K. and M. K. Luckert. 1998. "Forest Certification: economic issues and welfare implications". *Canadian Public Policy*. Vol XXIV, supplement 2, pp. S83-S94.
- Howlett, M. and J Rayner. 1995. "Do ideas matter? Policy network configurations and resistance to policy change in the Canadian forest Sector". *Canadian Public Administration*. 38(3): 382-410.
- Lindquist E. and A. Wellstead. 2001. Making sense of complexity: Advances and Gaps in Comprehending the Canadian Forest Policy Process. pp. 419-446. In Canadian Forest Policy: Adapting To Change. M. Howlett, Editor. University of Toronto: Toronto.
- Luckert, M. K. 2014. "Economic Implications of Forest Tenures" Chapter 25, pp. 389-402 In Handbook of Forest Resource Economics, J. Alavalapati and S. Kant, editors. Earthscan from Routledge: London and New York.
- Luckert, M.K., D. Haley, and G. Hoberg. 2011. Policies for the Sustainably Managing Canada's Forests: Tenure, Stumpage Fees and Forest Practices. UBC Press: Vancouver. 228p.³
- Mayers, J. and S. Bass. 1999. Policy that Works for Forests and People. International Institute for Environment and Development. United Kingdom.
- Pearce, D. and K. Brown (eds.) 1994. The Causes of Tropical Deforestation. UCL press, London.
- Peters-Stanley, M., G. Gonzalez, and D. Yin. 2013. Covering New Ground: State of the Forest Carbon Markets 2013. A Report by Forest Trends' Ecosystem Marketplace. Available from <http://www.forest-trends.org/documents/files/SOFCM-full-report.pdf>
- Schlager, E. and W. Blomquist. 1996. "A Comparison of three Emerging Theories of the Policy Process". *Political Research Quarterly*. 49(3): 651-672.
- Sen, A. 1995. "Rationality and Social Choice". *American Economic Review*, 85(1): 1-24.
- van Kooten, G. Cornelis and Grant Hauer. 2001. Global Climate Change: Canadian Policy and the Role of Terrestrial Ecosystems. *Canadian Public Policy*. 27(3): 267-278.
- Wolf, C., Jr. 1986. Markets or Governments: Choosing Between Imperfect Alternatives. A Rand Note N-2505-SF. The Rand Corporation. <http://www.rand.org/content/dam/rand/pubs/notes/2006/N2505.pdf>.

³ May be purchased online for 35\$ (pbk.) <http://www.ubcpres.ca/policies-for-sustainably-managing-canadas-forests>.

University Policies

“Policy about course outlines can be found in Course Requirements, Evaluation Procedures and Grading of the University Calendar.”

Recordings

“Audio or video recording, digital or otherwise, of lectures, labs, seminars or any other teaching environment by students is allowed only with the prior written consent of the instructor or as a part of an approved accommodation plan. Student or instructor content, digital or otherwise, created and/or used within the context of the course is to be used solely for personal study, and is not to be used or distributed for any other purpose without prior written consent from the content author(s).”

Copyright Statement

“All original course materials prepared by the instructor are considered to be the intellectual property of the instructor (unless otherwise noted), and are protected by law under Canada’s Copyright Act. “Course materials” include slides, presentations, handouts, lecture notes, recorded lectures, and any other materials distributed or made available to students by the course instructor. Permission is given for individual students to use these materials for their own study purposes in this course. Students must not publish, post on a public Internet site, sell, rent, or otherwise distribute any course materials without the instructor’s express permission.”

Academic Integrity

“The University of Alberta is committed to the highest standards of academic integrity and honesty. Students are expected to be familiar with these standards regarding academic honesty and to uphold the policies of the University in this respect. Students are particularly urged to familiarize themselves with the provisions of the Code of Student Behaviour (online at www.governance.ualberta.ca) and avoid any behaviour which could potentially result in suspicions of cheating, plagiarism, misrepresentation of facts and/or participation in an offence. Academic dishonesty is a serious offence and can result in suspension or expulsion from the University.”

Code of Student Behaviour

“All students at the University of Alberta are subject to the Code of Student Behaviour, as outlined at: [University Governance > Code of Student Behaviour](#). Please familiarize yourself with it and ensure that you do not participate in any inappropriate behavior as defined by the Code. Key components of the code include the following statements.

30.3.2(1) No Student shall submit the words, ideas, images or data of another person as the Student’s own in any academic writing, essay, thesis, project, assignment, presentation or poster in a course or program of study.

30.3.2(2)c. No Student shall represent another’s substantial editorial or compositional assistance on an assignment as the Student’s own work.”

Course Outline

1. **Title and number:** Perspectives on Traditional Knowledge. RSOC 460

2. **Course prerequisites:** *60

3. **Instructor:** Brenda Parlee

4. **Teaching Assistant(s):** N/A

5. **Course description:**

Traditional Knowledge is recognized as integral to environmental sustainability and the social and cultural well-being of indigenous peoples. The course focuses on the development of Traditional Knowledge as a field of inquiry and policy debate in Canadian society. Critical attention to the history, politics and theory behind its definition, classification and use will provide students with perspectives on its importance in addressing emergent issues of environmental change. Normally offered in alternate years.

6. **Course objectives:**

(1) Identify, describe and discuss the main theories and concepts related to traditional knowledge, in both oral discussions and in written examinations; (2) conduct research and write an essay on a topic related to the role of traditional knowledge in resource management; (3) observe the world around them and relate their observations and experiences to theories and concepts from environmental sociology.

7. **Course Duration**

Total number of hours scheduled: 39 hours

Scheduled lecture hours: 3 hours per week

Scheduled laboratory hours:

Scheduled field work hours: N/A

Other scheduled hours: N/A

8. **Course Content:**

The course is designed to introduce students to the academic literature on traditional knowledge including theory, issues and critiques. The readings are intended to provide students with insight into the academic and disciplinary roots of traditional knowledge research and the potential for using traditional knowledge in resource management at local and global scales. The Canadian constitution recognizes 3 groups of Aboriginal peoples termed Indian, Métis and Inuit. Today "First Nation(s)" is preferred to "Indian" in Canada. "Aboriginal", "Indigenous", and "Native" may also be used interchangeably. There are additional usages that reflect the complexities surrounding appropriate terminologies past and present and the diverse contexts in which these terms applied.

9. **Course Structure and Schedule:**

Sept 13: Academic Definitions and Debates on Traditional Knowledge

- Battiste, M. (2005). Indigenous knowledge: Foundations for first nations. World Indigenous Nations Higher Education Consortium-WINHEC Journal.
- Mauro, F., and Hardison, P. D. (2000). Traditional Knowledge of Indigenous and Local Communities: International Debate and Policy Initiatives. Ecological

applications, 10(5), 1263-1269.

- Agrawal, A. (1995). Dismantling the divide between indigenous and scientific knowledge. *Development and change*, 26(3), 413-439.

Sept 20: Knowledge and Power

- Nygren, A. (1999). Local knowledge in the environment–development discourse: From dichotomies to situated knowledges. *Critique of anthropology*, 19(3), 267-288.
- McIsaac, E. (2000). Oral narratives as a site of resistance: Indigenous knowledge, colonialism, and western discourse. *Indigenous knowledges in global contexts*. 89-101.
- Battiste, M. (2010). Nourishing the Learning Spirit: Living Our Way to New Thinking. *Education Canada* 50(1): 14-18.

Sept 27: Local & Traditional Knowledge and the Politics & Practice of Conservation

- Howitt, Richard (2001) “World Turned Upside Down” Rethinking Resource Management: Justice, Sustainability and Indigenous Peoples. pp. 3-70
- Dove, M. (2006). Indigenous Peoples and Environmental Politics. *Annual Review of Anthropology*. 35:191-208.
- Berkes, F., Colding, J., & Folke, C. (2000). Rediscovery of traditional ecological knowledge as adaptive management. *Ecological applications*, 10(5), 1251-1262.
- Littlechild, D. B., Finegan, C., & McGregor, D. (2021). “Reconciliation” in undergraduate education in Canada: the application of Indigenous knowledge in conservation. *FACETS*, 6(1), 665-685.

Oct 4: Knowledge Protection and Intellectual Property Rights

- Garvais, D. J. (2003). Spiritual But Not Intellectual-The Protection of Sacred Intangible Traditional Knowledge. *Cardozo Journal of International and Comparative Law*. 11: 467.
- Arewa, O. (2006). TRIPS and Traditional Knowledge: Local Communities, Local Knowledge, and Global Intellectual Property Frameworks (TRIPs Symposium). *Marquette Intellectual Property Law Review*. 10:156.
- Ngulube, P. (2002). Managing and preserving indigenous knowledge in the knowledge management era: challenges and opportunities for information professionals. *Information development*. 18(2): 95-102.
- Walter, M., & Carroll, S. R. (2020). 1 Indigenous Data Sovereignty, governance and the link to Indigenous policy. In *Indigenous Data Sovereignty and Policy* (pp. 1-20). Routledge.
<https://library.oapen.org/bitstream/handle/20.500.12657/42782/9781000214208.pdf?sequence=1#page=34>

Oct 18: Indigenous Knowledge and Climate Change – Polar Bear Debate

- Riedlinger, D., & Berkes, F. (2001). Contributions of traditional knowledge to understanding climate change in the Canadian Arctic. *Polar Record*, 37(203), 315-328.
- Dowsley, M., & Wenzel, G. (2008). " The Time of the Most Polar Bears": A Comanagement Conflict in Nunavut. *Arctic*, 177-189.
- Parlee, B. The Politics of a Polar Bear Crash. In *Arctic Crashes: People and Animals in the Changing North*; Krupnik, I., Crowell, A., Eds.; Smithsonian Scholarly Press: Washington, DC, USA, 2020; ISBN 978-1-944466-34-3.
- Additional: Inuvialuit and Nanuq – A Polar Bear Traditional Knowledge Study

<https://wmacns.ca/resources/inuvialuit-and-nanuk-polar-bear-traditional-knowledgestudy/>

Oct 25: Indigenous Knowledge of Forest Resources

- Turner, N. C. and Bell, M. A. (1971). The ethnobotany of the coast Salish Indians of Vancouver Island. *Economic Botany*. 25(1): 63-99.
- Parlee, B., Berkes, F. and the Teetl'it Gwich'in Renewable Resource Council. (2006). Indigenous knowledge of Novecological variability and commons management: a case study on berry harvesting from northern Canada. *Human Ecology*. 34(4): 515-528.
- Dokis-Jansen, K., Lutsel K'e Dene First Nation, Parlee, B., Hik, D., Gendreau-Berthiaume, B. and Stinn, C. (2021) These trees have stories to tell': Linking Denes̄oliné oral history of caribou movements with trample scar frequency on black spruce roots at ʔeda cho kué (Artillery Lake, NWT, Canada. *Arctic*.

Nov 1: Local and Traditional Knowledge in Environmental Assessment

- Zoe, J. B. (2012). Ekwò and Tł̓ ch̓ Nàowo/Caribou and Tł̓ ch̓ language, culture and way of life: An evolving relationship and shared history. *Rangifer*, 69-74.
- Parlee, B. L., Sandlos, J., & Natcher, D. C. (2018). Undermining subsistence: Barrenground caribou in a "tragedy of open access". *Science Advances*, 4(2), e1701611.
- Ellis, S. C. (2005). Meaningful consideration? A review of traditional knowledge in environmental decision making. *Arctic* 58(1): 66-77.
- Collard, R. C., Dempsey, J., & Holmberg, M. (2020). Extirpation despite regulation? Environmental assessment and caribou. *Conservation Science and Practice*, 2(4), e166.

Nov 15: Community-Based Resource Management and Monitoring

- Bonney, R., Cooper, C. B., Dickinson, J., Kelling, S., Phillips, T., Rosenberg, K. V., & Shirk, J. (2009). Citizen science: a developing tool for expanding science knowledge and scientific literacy. *BioScience*, 59(11), 977-984.
- Conrad, C. C., & Hilchey, K. G. (2011). A review of citizen science and community based environmental monitoring: issues and opportunities. *Environmental monitoring and assessment*, 176(1), 273-291.
- Moller, H., F. Berkes, P. O. Lyver, and M. Kislalioglu. (2004). Combining science and traditional ecological knowledge: monitoring populations for co-management. *Ecology and Society* 9(3): 2. <http://www.ecologyandsociety.org/vol9/iss3/art2/>
- Reed, G., Brunet, N. D., Longboat, S., & Natcher, D. C. (2021). Indigenous guardians as an emerging approach to indigenous environmental governance. *Conservation Biology*, 35(1), 179-189

Nov 22: Fishers' Knowledge – The Case of West Coast Salmon

- Johannes, R. E., Freeman, M. M., & Hamilton, R. J. (2000). Ignore fishers' knowledge and miss the boat. *Fish and Fisheries*. 1(3), 257-271.
- Menzies, C. R., & Butler, C. F. (2007). Returning to Selective Fishing through Indigenous Fisheries Knowledge: The Example of K'moda, Gitxaala Territory. *American Indian Quarterly*, 31(3), 441-464.
- Heaslip, R. (2008). Monitoring salmon aquaculture waste: The contribution of First Nations' rights, knowledge, and practices in British Columbia, Canada.

Marine Policy, 32(6), 988-996.

- Atlas, W. I., Ban, N. C., Moore, J. W., Tuohy, A. M., Greening, S., Reid, A. J., ... & Connors, K. (2021). Indigenous systems of management for culturally and ecologically resilient Pacific salmon (*Oncorhynchus* spp.) fisheries. *BioScience*, 71(2), 186-204.

Nov 29: Co-Management - Linking of Traditional Knowledge to Governance

- Berkes, F. (2009). Evolution of co-management: Role of knowledge generation, bridging organizations and social learning. *Journal of environmental management*. 90(5): 1692-1702.
- Nadasdy, P. (1999). The politics of TEK: Power and the "integration" of knowledge. *Arctic Anthropology* 36(1/2): 1-18.
- Armitage, D., Berkes, F., Dale, A., Kocho-Schellenberg, E., and Patton, E. (2011). Comanagement and the co-production of knowledge: Learning to adapt in Canada's Arctic. *Global Environmental Change*, 21(3), 995-1004

Dec 6: Final Exam

10. Course Readings

Required: Weekly readings (listed above)

Supplemental: Berkes, F. (2017). *Sacred ecology: Traditional Ecological Knowledge and Resource Management*. Taylor & Francis.

11. Office Hours and Consultation: By appointment

12. Student assessment: Upon completion of this course, students will be able to:

- Identify, describe and discuss the main theories and concepts related to traditional knowledge, in both oral discussions and in written examinations.
- Conduct research and write an essay on a topic related to the role of traditional knowledge in resource management;
- Observe the world around them and relate their observations and experiences to theories and concepts from environmental sociology.

13. Grading:

- One term paper (30% of total grade)
- Two Examination: One midterm (30%) and one final (30%) (total 60%)
- Class participation (10%)

Course Outline

1. **Title and number:** Public Participation and Conflict Resolution. RSOC 375/675

2. **Course prerequisites:** *54 or consent of instructor

3. **Instructor:** Kevin Jones

4. **Teaching Assistant(s):** Available/variable

5. **Course description:**

The anatomy of environmental and resource management conflict is examined through a lens of critical sociological theory and deliberative democracy. Focusing on contemporary case studies of conflict in energy production, forestry, conservation and protected areas management, social practices and strategies for conflict resolution are explored.

6. **Course objectives:**

Students, through this course, will:

- Gain an understanding of the social and cultural dynamics of environmental conflicts;
- Build an awareness of how environments and environmental conflicts are socially constituted;
- Develop a critical understanding of conflicts over knowledge and values in relation to environmental issues, including those of science;
- Generate an in-depth understanding of environmental conflicts with insight into the future of environmental conflict in Canada and internationally;
- Be familiar for issues and strategies related to responding to conflicts, or managing them;
- Learn specifically about the application of public engagement to the resolution of environmental conflicts.

7. **Course Duration**

Total number of hours scheduled: 39 hours

Scheduled lecture hours: 3 hours per week

Scheduled laboratory hours: N/A

Scheduled field work hours: N/A

Other scheduled hours: N/A

8. **Course Content:**

This course involves a close examination of environmental conflicts, and explores the social, cultural and political dimensions of these disputes. It brings together key perspectives in the social sciences, including the sociology of science, with a series of recent and contemporary case studies. Key Canadian cases covered include conflicts over old growth forests in British Columbia, community opposition to renewable energy infrastructure, and pipeline politics. In addition, global debates over nuclear power, genetically modified agriculture, environmental impact assessment, climate change, as well as others, will be addressed. This case study approach permit students the

opportunity to apply conceptual and theoretical learning to make sense of, and respond to, environmental conflicts. The course concludes by reviewing strategies for addressing conflict through citizen engagement and engaged governance. Students, through in course activities and assessments, will be encouraged to be proactive in developing informed responses to managing conflict.

9. Course Structure and Schedule:

Generally, each week will involve the following three elements. eClass will be your primary source of information about the format and content of weekly sessions. (1) A lecture, on occasion supplemented by podcast, or video content; (2) A facilitated discussion session, for exploring readings, podcasts, and other course content in further detail, and; (3) Student working groups and group assessments. Concepts of participation, engagement and communication are central to the content of the course, and are supported through practice-based learning. Students are therefore expected to routinely attend course content, be involved in group work, and collegially engage in shared learning activities.

Schedule

Week 1 (Jan 10): Introductions: No readings

Week 2 (Jan 17): Environment and Resource Conflicts

LeBillon, P. (2015). Environmental Conflict, pp. 598-608 in Perreault, T., Bridge, G., & McCarthy, J. (Eds.) *The Routledge handbook of political ecology*. Routledge.

Week 3 (Jan 24): Contesting Nature and the Environment

Cronon, W. (1996). The trouble with wilderness: or, getting back to the wrong nature. *Environmental History*, 1(1): 7-28.

Greider, T., & Garkovich, L. (1994). Landscapes: The social construction of nature and the environment. *Rural Sociology*, 59(1), 1-24.

Week 4 (Jan 31): Case Study – The War in the Woods

Braun, B. (2002). *Intemperate Rainforest: Nature, Culture, and Power on Canada's West Coast*. University of Minnesota Press. Chapter Three.

CBC The Fifth Estate (2017, Aug. 4) Clayoquot Sound: The Last Battlefield (1993) [video]. Youtube. <https://www.youtube.com/watch?v=pVp5qrImzKk>

Course Podcast – Elements of the conflict at Faery Creek

Week 5 (Feb 7): Science, Expertise and Conflict Resolution

Irwin, A. (2001). Constructing the scientific citizen: science and democracy in the biosciences. *Public Understanding of Science*, 10(1), 1-18.

Sarewitz, D. (2004). How science makes environmental controversies worse. *Environmental Science & Policy*, 7(5), 385-403.

Week 6 (Feb 14): Case Study – Renewable Energy Development in Alberta

CBC Ideas (2017) Decoding the resistance to climate change: Are we doomed? [audio] <http://www.cbc.ca/radio/ideas/decoding-the-resistance-to-climate-change-are-we-doomed-1.4288483>

Fast, S., Mabee, W., Baxter, J., Christidis, T., Driver, L., Hill, S., ... & Tomkow, M.

(2016). Lessons learned from Ontario wind energy disputes. *Nature Energy*, 1(2), 15028.

Course Podcast – Examining conflicts over green energy technologies in Canada

Week 7 (Feb 21): READING WEEK – no class

Week 8 (Feb 28): Conflict through the lens of Indigenous, Social and Environmental Justice

NICHE. (2020, July). Nature's Past Episode 69: Environmental Racism and Canadian History. [audio podcast]. <https://niche-canada.org/2020/07/29/natures-past-episode-69-environmental-racism-and-canadian-history/>

Reid, A. J., Eckert, L. E., Lane, J. F., Young, N., Hinch, S. G., Darimont, C. T., ... & Marshall, A. (2021). "Two-Eyed Seeing": An Indigenous framework to transform fisheries research and management. *Fish and Fisheries*, 22(2), 243-261.

Course Podcast – Indigenous Communities and Co-Management of Resources.

Week 9 (March 7): Case Study: Climate Adaptation and Community Resilience in Edmonton

Phadke, R., Manning, C., & Burlager, S. (2015). Making it personal: Diversity and deliberation in climate adaptation planning. *Climate Risk Management*, 9, 62-76.

Roszko, A., K.E. Jones and Beckie, M. Understanding Community Resilience: A Case Study of Municipal and Community Perspectives on Climate Change Resilience and Adaptation in Edmonton, Alberta. Working Paper.

Course Podcast: Climate Adaptation and Vulnerable Communities in Edmonton

Week 10 (March 14): Case Study: Evolving Environmental Impact Assessment in Canada

Noble, B. F. (2009). Promise and dismay: The state of strategic environmental assessment systems and practices in Canada. *Environmental Impact Assessment Review*, 29(1), 66-75.

Course Podcast – Evolving Environmental Impact Assessment in Canada.

Week 11 (March 21): Public Engagement and Environmental Citizenship (Diving Deeper)

Blue, G., & Medlock, J. (2014). Public engagement with climate change as scientific citizenship: a case study of world wide views on global warming. *Science as Culture*, 23(4), 560-579.

Parkins, J. R., & Mitchell, R. E. (2005). Public participation as public debate: a deliberative turn in natural resource management. *Society and Natural Resources*, 18(6), 529-540.

Week 12 (March 28): Case Study: Engaging Climate and Energy Futures in Alberta

Adkin, L.E., Hanson, L.L., Kahane, D., Parkins, J.R. and Patten, S. (2017). Can public engagement democratize environmental policymaking in a resource-dependent state? Comparative case studies from Alberta, Canada. *Environmental Politics*, 26(2), pp.301-321

Masuda, J. R., & Garvin, T. (2008). Whose heartland?: The politics of place in a rural-urban interface. *Journal of Rural Studies*, 24(1), 112-123.

Week 13 (April 4): Conclusions

10. Course Readings

Required: Details of required readings, including links for accessing materials, are provided on eClass for each week of the course. Selected readings are also provided in PDF format on eClass. A complete bibliography and course outline can also be found on the eClass 'Course Homepage'. The schedule of reading assignments may be adjusted during the course. Other readings may be assigned, or selections from the assigned readings omitted at the discretion of the instructor. Students will be notified of changes in class, or through eClass.

Supplemental: N/A

10. Office Hours and Consultation:

Wednesdays 11am-1pm and Thursday 11am-12pm. The teaching assistant for the course will be holding an open drop-in session over Zoom on Thursdays from 11am-12pm. The TA can support research and assessment development, academic referencing in the social sciences, as well as help clarify readings and lecture material. A link is provided on eClass.

12. Student assessment:

Students will prepare an 8-page position paper (double-spaced, Calibri 11 point font with standard margins) plus extra pages for references as needed. A minimum of 6 academic source documents is expected (books, articles, etc.). The position paper will require deeper engagement with key issues in the published literature on a particular environmental conflict.

Throughout the course students will work in assigned groups to complete a series of five assessments covering ten weeks of the course. These will be facilitated exercises which directly relate to reading and lecture content for the weeks in which they are held. It is intended that groups will complete the assessment in zoom breakout sessions organized during class time. Dr. Jones and a TA will visit and work with groups during this time. Examples of workshop exercises include the production of reading summaries, conflict assessments and drafting plans to support conflict resolution. Details of workshop assignments will be presented in class, with any further instructions made available on eClass prior to the class.

13. Grading:

Mid-term examination -- This will be an in class examination consisting of a series of Assessment Percentage of overall course mark.

- Mid-term examination 25%
- Workshop assignments (in class online, group) 10%
- 3a. Position paper, or podcast. 35%
- 3b. Position paper (or podcast) outline and
- Research plan. Peer review participation. 5%
- Final examination 25%

Ren R 101/701 – Introductory Forestry Field School 2002 Daily Schedule

Wednesday August 24 → Introduction and mill tour

0800 Meet at Earth Sciences Building for introduction, travel to AlPac
Afternoon Pulp mill tour, basic forest ecology and measurements
Overnight Motel in Lac La Biche

Thursday August 25 → Forest operations and technology

All day Field day with AlPac including harvesting and operations, mixedwood management, technology (drones, lidar etc)
Overnight Motel in Lac La Biche

Friday August 26 → Indigenous forestry

Morning Travel to Wabasca
Afternoon Cultural and forestry program with Bigstone Cree Nation
Overnight Motel in Slave Lake

Saturday August 27 → Wildlife and private land forestry

Morning Lesser Slave Lake Bird Observatory
Afternoon Private land forestry near Slave Lake with Vanderwell Contractors
Overnight Motel in Whitecourt

Sunday August 28 → Silviculture!

All day Silviculture field day including tree planting, regeneration surveys, thinning trials, and timber cruising
Overnight Motel in Whitecourt

Monday August 29 → Sawmill tour and wrap-up

Morning Sawmill tour, Canfor Whitecourt
Afternoon Field school wrap-up and return to UofA

September to November, weekly classes (Mondays at 1:00 pm)

We will not be able to experience all aspects of forestry during the field trip so we will be meeting with other forestry professionals during class meetings September – November (Mondays at 1:00 pm). Attendance and participation in these classes is required to receive credit. Details will follow but topics may include:

- Undergraduate Forest Society
- Forestry careers and profession
- Equity, diversity and inclusion in forestry
- International forestry
- Insects, diseases and forest health

REN R 295 – Field skills and their application in Forestry

Dr. Charles A. Nock - Academic lead
Dr. Robert E. Froese RPF - Academic lead
Dr. Barb Thomas - Guest lecturer
Dr. Nadir Erbilgin - Guest lecturer

Course description

Field course emphasizing technical skills, their application, and integration in the forest sciences through hands-on, experiential learning that complements theory and knowledge acquired in the classroom. Topics will include ecosystem-based forest management (EBM), forest growth and yield (FG&Y), forest health and tree improvement. Built around the collection of field data in small groups, course goals include fostering an understanding of the diverse forest ecosystems of Alberta, in the context of historical influences of Indigenous Peoples and European settlers, as well as current forestry practices, and current issues in managing forests for diverse benefits. Through group work, students will also develop skills in leadership and collaboration.

Pre- or co-requisites

REN R 299. Refer to the Calendar for the scheduling of different sections. May require payment of additional student instructional support fees. Refer to the Fees Payment Guide in the University Regulations and Information for Students section of the Calendar.

Lectures

Although this course does not have traditional lectures (no classroom activities this year), there are lecture materials and background information made available online through eClass. Instruction in the field will instead be a combination of discussion and handouts available for the day.

Requirements and Required Equipment

You will be required to review materials before each field day and be prepared for every day. This includes having all equipment readily available, both personal protective equipment (PPE) and otherwise (rain gear, etc.). Please refer to eClass for the list of required equipment. No books are required for this course. Some paper handouts with condensed material may be available in the field.

Evaluation

Marks for individual assignments will be given in percent (rounded to 2 decimal points). Overall grade will be assigned on a 4 (letter grade) point scale. Assignments are submitted by group or individually as per the exercise. Participants will be evaluated on field exercises and field notes. Participation, engagement, and professionalism play an important role in evaluation.

NOTE: Based on field conditions, the weighting of individual components may vary in the final grade assignment.

Elements	Weight
Field notes: data sheets, reflection questions, data summaries	50%
Teamwork, engagement and professionalism	50%
Total	100%

Teamwork, engagement and professionalism will be assessed individually by staff and instructors at the end of each day using the following rubric:

Section	Description (Excellent)	Weight
Teamwork	the student takes on an equal share of group work, contributes to data collection and decision making	34%
Engagement	the student pays attention to instructors (guest speakers) and contributes to discussions	33%
Professionalism	the students treats instructors, staff, hosts, and peers with respect. Data sheets are completed in an orderly and professional manner. The student is prepared for departure at designated times and prepared for activities and maintains a positive attitude.	33%

Course Schedule and topics

The course generally runs the last week of August. In 2022, this is August 28-31 (3 full days). Note that in order to take advantage of a full day on August 29th, we will travel to Hinton to our lodging on the afternoon of the 28th.

Lodging location in 2022: Black Cat Guest Ranch (<http://www.blackcatguestranch.ca/>)

Date	Activity	~time	Instructor	Topics
Sun, Aug 28th	Departure from U of A	late afternoon	¹ Dr. Charles Nock / ¹ Dr. Robert Froese	NA

Mon, Aug 29th	Excercise - Day 1	8:30 a.m. - 5:00 p.m.	¹ Dr. Charles Nock / ¹ Dr. Robert Froese	EBM and FG&Y
Tues, Aug 30th	Excercise - Day 2	8:30 a.m. - 5:00 p.m.	¹ Dr. Charles Nock / ¹ Dr. Robert Froese	EBM and FG&Y
Weds, Aug 31th	Excercise - Day 3		Dr. Nadir Erbilgin	Forest health
Weds, Aug 31th	Excercise - Day 3 afternoon		Dr. Barb Thomas	Tree Improvement
Weds, Aug 31th	Return to U of A	early evening		

¹Responsible for course organization

Health and Safety

The University of Alberta and the Department of Renewable Resources are committed to the protection and preservation of health, safety and the natural environment.

While at Field School, safety and appropriate conduct are serious issues. In the field, we will be in inherently hazardous environments and the potential for injury exists. You will be informed of these risks and will be able to take appropriate precautions. The course Field Activity Plan is available for reference upon request.

As per provincial laws, any participant retains the right to refuse to participate in any activity that he/she feels is unsafe. Participants are also required to inform appropriate personnel regarding any safety concerns. Similarly, under provincial statute, participants have the obligation to participate in a safe manner and follow all safety protocols. We expect safe field practices to be followed by all participants and that safety will be foremost in people's minds.

PPE MUST BE WORN FOR ALL OUTDOOR EXERCISES - NO EXCEPTIONS UNLESS PERMITTED FOR CERTAIN EXERCISES INDICATED BY YOUR INSTRUCTOR.

It is important that all participants remain well hydrated. Students will be asked to bring appropriate amounts of water into the field.

Please inform your teammates and the Field School staff of any personal conditions that may put you or others at risk (see also COVID below), as well as any special procedures that may be required (i.e. food or other allergies, health concerns, etc.).

At no time will students be permitted to work alone in the field.

Emergency communication and evacuation procedures are in place. The University of Alberta and associated partners are all aware of our work and general locations in the field. All vehicles,

including buses, are equipped with comprehensive emergency kits and wildfire fighting equipment. The Field School support vehicles also have supplemental field safety equipment.

Violation of or disregard for safety rules and protocol is cause for dismissal from the Field School.

Missed Field Days or Assignments

The weight of one missed field day or assignment **with a valid approved excuse (i.e. bereavement, illness)** will be shifted to all other assignments or an assignment in lieu of the missed day must be completed. This will be determined on which module the missed field day/assignment has occurred in. We reserve the right to ask for documentation to verify your valid excuse. All absences must be approved by an academic lead and lab coordinator beforehand. More than two missed field days will result in a failing grade, as this course is very short in duration. Students who do not achieve a mark $\geq 50\%$ in their weighted assignments, participation, and exam will likewise fail the course.

Plagiarism and Cheating

All students at the University of Alberta are subject to the [Code of Student Behaviour](#), as outlined in the 2019/20 Calendar. Please familiarize yourself with it and ensure that you do not participate in any inappropriate behaviour as defined by the Code.

Key components of the code include:

30.3.2(1) No Student shall submit the words, ideas, images or data of another person as the Student's own in any academic writing, essay, thesis, project, assignment, presentation or poster in a course or program of study

30.3.2(2) a No Student shall in the course of an examination or other similar activity, obtain or attempt to obtain information from another Student or other unauthorized source, give or attempt to give information to another Student, or use, attempt to use or possess for the purposes of use any unauthorized material.

30.3.2(2) b No Student shall represent or attempt to represent themselves as another nor shall a Student attempt to have themselves represented by another in the taking of an examination, preparation of a paper or other similar activity. See also misrepresentation in 30.3.6 (4).

30.3.2(2) c No student shall represent another's substantial editorial or compositional assistance on an assignment as the Student's own work.

Speak with the instructor or staff if you have questions or concerns about the code, particularly as it pertains to assignments, internet and library research, use of previous class notes, and interviews or discussions with others. Writing help is available through the [Academic Support Centre](#).

Additional Notes

We have and continue to make every effort to ensure that field school runs as smoothly as possible. However, we will undoubtedly run into some snags as field school proceeds. Your patience, assistance and constructive suggestions are appreciated.

Please give the instructors your respect. These instructors are volunteering their time to come during a busy time of the year. Attention while in the field, and asking pertinent questions is appreciated.

Course Outline

1. Title and number: Integrated Forest Management - REN R 431/728

2. Course prerequisites:

- REN R 299 (or FOR 302, 303, 304) and (REN R 323 or FOR 323) and REN R 430

3. Instructor: Glen Armstrong

4. Teaching Assistant(s): None

5. Course description:

Problem solving, decision making and planning in relation to the management of forest resources. Application of models and related tools. Public involvement and issues management will be addressed.

6. Course objectives:

The main objectives of RENR 431/728 are to provide you with an opportunity to apply your knowledge and develop additional skills and experience in the development of a forest management plan. Planning as a process is usually described as a number of steps: identifying issues and terms of reference, setting of objectives and goals, collection and analysis of data, public communication/participation, preparation of management and operating plans, monitoring and evaluation, and revisions.

Approaches to planning can be highly variable, as they are very much a function of the size and nature of organizations involved and of the size, nature and complexity of the planning problem. This course provides an opportunity for students to work in a project format, to integrate information from a broad range of topics (including biophysical factors, social and recreational issues, policy issues and management concerns) in the development of a management plan for a particular forested area. Students will work in individually to develop major components of a forest management plan that considers a broad range of issues and concerns relating to the sustainable management of a forest land base.

7. Course Duration

Total number of hours scheduled: Lecture – 39 hours, Laboratory 26 hours

Scheduled lecture hours: 3 lecture hours/week

Scheduled laboratory hours: 2 hours/week

Scheduled field work hours: N/A

Other scheduled hours: N/A

8. Course Content:

- Introduction
- Sustainability and SFM Certification
- Landscape Assessment
- Landbase determination process
- Development of timber harvesting landbase, VOITS, yield curves and base Woodstock model
- Scenario development and comparison
- Development of spatial harvest sequence

9. Course Structure:

The course reviews and illustrates procedures and steps currently followed in forest management planning. The course is structured around a series of lectures and assignments to develop some of the key components of a sustainable forest management plan.

The assignments will provide examples and problems involved in data manipulation and analysis of forest resources. Resource data for the assignments will be from FMU G14, which is nearly equidistant from Grande Prairie, High Prairie and Fox Creek. Much of the GIS data students will need for the course has already been collected for students and has been shared through Google Drive.

Students will develop resource management scenarios for FMU G14. During the first part of term students will develop a landscape assessment for FMU G14, and use the information students compiled to develop a net land base for the timber supply analysis.

Students will develop 3 management scenarios which will be compared using criteria students develop (VOITs). The scenarios may include alternative silvicultural strategies and objective functions.

Students will implement these scenarios using the Remsoft Spatial Optimization Studio. Students will evaluate and compare the results of the 3 scenarios using the VOITs that Students developed. The scenarios shall consider multiple forest resources in accordance with the objectives of a hypothetical forest management organization.

Students will select one of these scenarios as the preferred scenario and use it to develop a spatial harvest sequence.

10. Course Readings

Required: There is no required textbook for the course. Suggested readings may be assigned by the instructors. Notes, where available and other materials will be posted on eClass.

Supplemental: N/A

11. Office Hours and Consultation:

There are no scheduled office hours. Google Chat is the primary way of communicating with instructor. I find the back and forth allowed by Chat to be a far more efficient method of communication than email for class work. However, I will read and respond to emails.

12. Student assessment:

Based on 3 written assignments.

13. Grading:

REN R 431 and 728 will be graded using the following grading schemes. REN R 728 has the additional grade component of an oral examination.

REN R 431 Grading scheme

Component	Weight
Landscape assessment and land base determination	1/3
Development of VOITs and yield curves	1/3
Scenario development and comparison, spatial harvest sequence	1/3

REN R 728 Grading scheme

Component	Weight
Landscape assessment and land base determination	30%
Development of VOITs and yield curves	30%
Scenario development and comparison, spatial harvest sequence	30%
Oral Examination	10 %

All course components will be graded using a four-point scale. The final letter grades will be based on this.

Indigenous Forest Science and Management Initiative

1. Proposal Overview

Project Title: Indigenous Forest Science and Management Initiative
Geographic Area: Forest region of Alberta
Type of Project: Program of Research, Student Recruitment, and Education initiatives designed to address the following objectives:

- Increase enrollment and graduation of Indigenous students in B.Sc., Masters, and Ph.D. programs in forestry at the University of Alberta (UofA)
- Provide outstanding education for UofA students, and for practicing forestry professionals, related to Indigenous peoples and Indigenous knowledge related to forests and their management for a diversity of economic, ecological, and social values
- Build a research program on Indigenous perspectives, knowledge and issues related to forest science and management with the aim of creating and sharing knowledge that will: support sustainable management of forests; help create productive relationships between Indigenous communities and the forest industry; and facilitate long-term and meaningful reconciliation

Proposed Activities:

This proposal involves a program of initiatives that would not be possible under the current UofA budget, including:

- An initial phase of deep engagement with Indigenous communities to define the best approaches to achieve our goal of recruiting and mentoring Indigenous students in forestry program.
- Targeted activities, as determined during the initial engagement phase, to engage with Indigenous youth with the aim of recruiting them into post-secondary forestry programs (BSc, Forestry, BSc Forest Business Management).
- Targeted initiatives, as determined during the initial engagement phase, to support and mentor Indigenous students in forestry programs with the aim of ensuring their successful graduation and subsequent pursuit of further post-graduate education (Master of Forestry, MSc, PhD).
- Establishment of an Endowed Chair in Indigenous Forest Science and Management. The Chair holder will work with partners to define and deliver an applied research program, provide scientific leadership in Indigenous forestry, train undergraduate and graduate students, provide continuing professional development courses, and collaborate with forestry associations and Indigenous communities and organizations in Alberta (<https://www.ualberta.ca/indigenous/index.html>) and across Western Canada to assist with deeper integration of Indigenous knowledge, values and institutions in its program delivery.

2. Proposal Objectives

Background: Indigenous engagement in forest management is a longstanding aspect of the sector within Canada. Since the early 1990s, federal and provincial governments have placed a priority on defining sustainable forest management in terms that include Aboriginal people. For example, the Canadian

Council of Forest Ministers established an influential definition of sustainable forestry in the mid-1990s that included several elements related to Aboriginal and Treaty Rights as well as traditional land use and forest-based ecological knowledge (Box 1). This document represented a step forward in formalizing Indigenous elements of sustainability that were adopted by provincial governments, and forest certification initiatives (i.e., CSA). Forest companies also utilized these concepts in the development of detailed forest management policies and plans.

2005 CCFM and Aboriginal forestry (Element 6.1 and 6.2) Aboriginal and Treaty Rights / Aboriginal Traditional Land Use and Forest-based Ecological Knowledge

- *Extent of consultation with Aboriginals in forest management planning and in the development of policies and legislation related to forest management*
- *Area of forest land owned by Aboriginal peoples*
- *Area of crown forest land with traditional land use studies*

Box 1. 2005 Canadian Council of Forest Ministers (CCFM) Criteria and Indicators of Sustainable Forest Management involving Aboriginal elements.

At the same time, other agencies, such as the National Aboriginal Forestry Association and Aboriginal forest employment initiatives at the Canadian Forest Service, were oriented toward deeper integration of Indigenous people and communities into the forest sector, often focused on employment. During the early 2000s, initiatives at the Foothills Model Forest involved engagement with forest communities on the landscape, highlighting traditional land-use mapping and consultation with industry groups to avoid or address potential land-use conflicts.

These relationship between Indigenous communities and forestry companies have continued to evolve over the last 20 years in many regions of the province. For example, Weyerhaeuser is working with Horse Lake First Nation and the Aseniwuche Winewak Nation to survey and document cultural and traditional knowledge in the region¹. Other companies, such as West Fraser, employ a community liaison worker who maintains a direct relationship with Indigenous trappers, Knowledge Keepers, and Elders. These efforts involve site visits with trappers, identification of site-specific concerns related to camps, trails, wildlife and cultural sites, and then working with the woodlands office to incorporate Indigenous perspectives into forestry plans². Other companies have similar initiatives. There is also increased engagement with Indigenous communities in the development of strategies included in Forest Management Plans. At a provincial level, Indigenous-held tenures comprise approximately 3% of the forest land base with eight First Nations and one Métis group holding fourteen timber quotas. Kee Tas Kee Now Sawmill Ltd received an additional 65,000 m³ of quota in recent years³. In May 2021, Bigstone Cree Nation was awarded a 21,000 m³ coniferous quota north of Wabasca⁴.

In addition to company and provincial-level initiatives in forest management, the Canadian judicial system continues to clarify and advance our understanding of Aboriginal and Treaty Rights in Canada. These rights extent to the responsibilities of governments and project proponents in the development of natural resources. In particular, the courts have set in place a legal requirement for consultation that includes elements of accommodation and/or compensation. Accordingly, the Government of Alberta

¹ <https://www.weyerhaeuser.com/timberlands/forestry/canada/#indigenous-communities>

² <https://www.westfraser.com/company/blog/alberta-engaging-indigenous-trappers>

³ <http://www.nafaforestry.org/>

⁴ <https://www.alberta.ca/release.cfm?xID=781079881B3C0-DFE0-60FC-E9F8FFF9DB1158B8>

established a series of sector-specific Aboriginal Consultation Guidelines, outlining the Duty to Consult as required by law. This case law is further strengthened by international developments including the United Nations Declaration on the Rights of Indigenous Peoples along with global commitments to the principles of Free, Prior and Informed Consent. These principles of Indigenous consultation are increasingly embedded in national laws and regulations for industrial development, including environmental assessment.

Although progress is evident in ongoing collaborations with forest companies and the strengthening of Indigenous legal standing, we also observe many ongoing challenges. These challenges have fomented national and international movements that seek to support the rights of Indigenous people to determine the nature and extent of industrial development on their treaty and traditional territory. The Wet'suwet'en conflict is a case in point, with the associated national movement represented by social media hashtags such as #NoConsentNoPipeline and #LandBack.

These conflicts are derived partly by broad-based national and international movements, much of which is well beyond the forest sector, but with emerging expectations for how forestry is practiced in Canada. There is also significant uncertainty about the key elements of meaningful consultation and how it should be conducted. Although we do know more what makes consultation meaningful within non-Indigenous settings, we need more insight on this topic from an Indigenous perspective⁵.

2.1 ACTIVITY

Responding to the challenges described above is an important task, and one that precipitates this Indigenous Forest Science and Management Initiative. Building on the many positive examples of Indigenous collaboration in the forest sector, we identify three areas of motivation and collaboration that form the foundation of this initiative.

Indigenous knowledge systems: First, there is growing recognition of the value and validity of traditional knowledge systems and Indigenous institutions in understanding and relating to the world around us. This understanding extends to historical, yet evolving approaches to managing resources for shared human and non-human use. For example, recent research at the UofA illustrates compatible understandings of caribou herd growth and decline in the Northwest Territories through the use of western methods of dendrochronology and Indigenous methods of oral history⁶. We also observe growing attention to Indigenous forms of forest management, particularly fire management regimes that are utilized to manage for multiple values on the landscape (including food provisioning). Internationally, there is emerging evidence that Indigenous-managed lands in countries like Brazil, Australia and Canada have as much or more biodiversity than lands set aside for conservation by state and local governments⁷.

Indigenous institutions and approaches: Indigenous forestry can extend to Indigenous institutions,

⁵ Stewart, J. M., & Sinclair, A. J. (2007). Meaningful public participation in environmental assessment: Perspectives from Canadian participants, proponents, and government. *Journal of Environmental Assessment Policy and Management*, 9(02), 161-183.

⁶ "These Trees Have Stories to Tell" Linking Denés'liné Knowledge and Dendroecology in the Monitoring of Barren-ground Caribou Movements in the Northwest Territories, Canada <https://era.library.ualberta.ca/items/18e86af2-e1be-4c72-9dad-379ad64fac64>

⁷ <https://www.nytimes.com/2021/03/11/climate/nature-conservation-30-percent.html>

Schuster, R., Germain, R. R., Bennett, J. R., Reo, N. J., & Arcese, P. (2019). Vertebrate biodiversity on Indigenous-managed lands in Australia, Brazil, and Canada equals that in protected areas. *Environmental Science & Policy*, 101, 1-6.

values and distinct approaches to managing forest landscapes. Indigenous engagement and participation falls on a continuum from community consent for project proponents to extract resources on traditional or treaty territory to full ownership and control of forestry activities. Although Indigenous tenures in Alberta are not common, there are emerging opportunities for collaborative projects and equity partnership. Opportunities in Alberta may look very different from Indigenous tenures in British Columbia or Ontario⁸, but the development of Indigenous forestry may also involve academic contributions to the design and implementation of Indigenous institutions for forest management.

Reconciliation: This initiative represents an important contribution to Canada's response and ongoing commitment to reconciliation. Our most recent national efforts to recognize and respond to our history of Indigenous colonialization, dispossession and marginalization, was realized in the Truth and Reconciliation Commission, from 2008 to 2015. This commission was focused on the legacy of residential schools but it stimulated a broader dialogue on reconciliation that seeks to bring understanding and a sense of justice to this dark legacy of structural and systemic racism. The University of Alberta is committed to a process of equity, diversity, and inclusion, with efforts to decolonize and bring Indigenous values and perspectives into the core of our mission⁹. This Indigenous Forest Science and Management Initiative is an important step in this work.

The Indigenous Forest Science and Management Initiative would address these opportunities through:

- Increased participation of Indigenous peoples in forestry educational programs and forest management;
- Improved education of forestry students and practicing forestry professionals on Indigenous knowledge systems and approaches to forest science and management;
- Improved capacity for Indigenous communities for meaningful participation in development of forest science and management;
- Research that will help bridge and better integrate Indigenous knowledge systems and values with western systems of knowledge creation and forest management and identify approaches that can meet the objectives of industry, indigenous communities, and other stakeholders.

Components of the Initiative

Community engagement: We propose to begin with a phase of deep engagement with Indigenous communities in Alberta to develop a shared understanding of objectives for this initiative and to define the activities that will best address those. In particular, this engagement phase will lead to development of a detailed plan for recruitment of Indigenous peoples into post-secondary forestry programs, and design of supports to ensure their successful graduation and pursuit of further, post-graduate, education. Further, this phase will engage Indigenous communities in further defining the scope for the Endowed Chair and facilitate their involvement in the process of recruiting and selecting an individual to fill that role. We will hire a dedicated staff to lead this phase; they will be supported by a **Steering Committee** including representatives of Indigenous communities (ideally including an Elder), the forest industry, and the provincial government.

Student recruitment and support: The details of this component of the initiative will be clarified during the community engagement phase. However, we envision a comprehensive program to recruit more

⁸ <https://www.whitefeatherforest.ca/>

⁹ <https://www.ualberta.ca/centre-for-teaching-and-learning/teaching-support/indigenization/index.html>

Indigenous students into UofA forestry programs. Over the past few years we have had, on average, 4% self-identified Indigenous students in our BSc Forestry programs. This is on par with other major Canadian forestry schools, but we aspire for higher numbers. This will require a dedicated recruitment officer and targeted approaches. The approach will be informed by our emerging understanding of the most effective strategies and will build on existing, complementary initiatives at the UofA, as articulated in the recently-released UofA [Indigenous Strategic Plan](#). For example, we will work with the UofA Indigenous recruitment team and the Faculty of Education program for targeted recruitment of Indigenous students. We imagine the following could emerge as important components of the recruitment program: a strong focus on traveling to Indigenous communities for in-person engagement; collaboration with existing programs to engage youth in developing an understanding of forestry; opportunities for Indigenous youth to visit the UofA campus to meet other students, learn about our programs and experience campus life; collaboration with regional colleges (e.g., Yellowhead Tribal College, Portage College).

The other key aspect of this component of the initiative is to put in place supports to help ensure the success of Indigenous students enrolled in our programs. Through First Peoples' House the UofA has existing initiatives towards this same purpose including: scholarships and bursaries; priority for on-campus housing; a fund to help offset monthly housing costs (\$500/month); health and wellness supports; learning supports; and access to Elders. The UofA also offers the Transition Year Program during which Indigenous students can improve their grade point average, be supported by other Indigenous students, transition to city and campus life, and develop the skills for academic success. Our intention is to develop complementary supports that will be specific to forestry students. In addition to supporting students through their undergrad program we aspire to mentor them towards pursuit of further, post-graduate education. This could be achieved, for example, by facilitating their participation in the iSTEAM program (<https://isteam-pathways.ualberta.ca/>), which provides summer research internships for Indigenous students, or targeted mentorship to smooth the pathway towards further education.

Research and education: The foundation of the research and education components of this initiative is the establishment of an Endowed Chair in Indigenous Forestry. Endowed chairs are the most prestigious academic positions offered by the University of Alberta. These positions ensure the UofA will continue to attract exceptional educators and researchers who are leaders in their respective fields. Academic leaders holding such positions focus on particular areas of study and have the opportunity to fully explore complex research areas. Establishment of an Endowed Chair in Indigenous Forestry will secure a tenured position in this disciplinary area in perpetuity.

The Chairholder will play a key role in educating forestry students in Indigenous perspectives, knowledge, and approaches relevant to forestry management. Importantly, they will engage with Indigenous communities and the forest industry to develop a program of applied research and graduate student training focused on Indigenous perspectives on land management, managing for distinctive values, and focusing on relationships, but also pragmatic interests in shared ideas, such as: use of fire on the landscape, wildlife management, maintenance and harvest of countries foods and medicines, and other values that reflect ongoing relations with the land and with each other. They will also play a key role in providing educational opportunities for practicing foresters through continuing professional education courses. These will be designed to be complementary to existing offerings such as the "Indigenous Canada" on-line course, the certificate in Indigenous Community – Industry Relations (offered by UofA Faculty of Extension and Yellowhead Tribal College), and the certificate in Indigenous Governance offered by the UofA Faculty of Native Studies.

The Chairholder may have one or more academic and applied interests including physical sciences, such as fire behaviour, ecology or silviculture. The appointment may also involve a focus on the social sciences, such as public policy, political ecology, environmental sociology or economics¹⁰. It may also be possible to identify a candidate who can transcend these fields of study, and offer interdisciplinary approaches to incorporate Indigenous values and relations into forest management planning. Regardless of the disciplinary focus, a key goal of the Chair is to build linkages (through research, teaching, and service) between the forest industry and Indigenous communities in Alberta. In some cases, the focus may be on timber and ecological questions that require efforts to bring Indigenous and western ways of knowing into conversation with each other. In other cases, initiatives may be focused on how to make forestry activities more aligned with local livelihoods, such as employment or business opportunities and efforts to live on the land and harvest country foods. These opportunities will involve different skill sets and different disciplinary approaches that can be associated with this Chair in Indigenous forestry. This work may also include the development of communication and knowledge exchange material that can be utilized by operational foresters to help facilitate relationship building and understanding with Indigenous communities.

Through the community engagement phase, we will work with Indigenous communities and industry partners to further refine the scope for this position and then advertise, interview, and select an individual to fill the position of Endowed Chair (Assistant/Associate Professor) in Indigenous forestry. With this position, we will be able to attract a candidate with an exceptionally strong background in research/teaching, applied collaborations, and outreach activities. Ideally this candidate would have Indigenous ethnicity, although a non-Indigenous candidate with extensive background and relationships in Indigenous forestry may also qualify for the position. The purpose of the Chair program is to build capacity in Indigenous forestry research and education to support the forestry sector. The Chair holder will be responsible for raising funding to support their research program, which may involve research applications to NSERC or SSHRC, depending on the disciplinary background of the successful candidate.

With the possibility of the Chairholder having a physical science or social science background, a broader recruitment strategy will offer the potential to attract more qualified candidates. Also, depending on the background of the successful candidate, they may be located in one of two departments within ALES: the Department of Renewable Resources or the Department of Resource Economics and Environmental Sociology. It is also possible to negotiate a joint appointment.

Once the Chairholder is recruited, an **Advisory Committee** will be established, including industry officials, Indigenous leaders in Alberta, and government officials. The Advisory Committee will support the Chair through the process of further engagement with Indigenous communities and will advise on key components of the Chair's research program, which may include:

- Establishing areas of common understanding, common goals and values, between the forest industry and Indigenous communities, and developing a research program to assist in expanding and enhancing these areas.
- Building on common western and Indigenous approaches to data collection and knowledge acquisition (such as open-mindedness, honesty, empirical observation) to shape a program of forestry research that encompasses diverse philosophical underpinnings and methodologies.

¹⁰ Many academic disciplines are developing areas of Indigenous focus: For example, the Association for Economic Research of Indigenous Peoples, <https://www.aeripecon.org/>

- Use information gathered through research and training to test approaches, apply knowledge, and build trust between key organizations and communities in the forest sector.
- Recognize and understand colonial legacies from the Indian Act (such as the reservation system), identify opportunities, strategies, and policies to address these legacies through shared social and economic opportunities within the forest sector.

In addition to key research activities, the Chair will also serve other roles at the university as expected by professors through our collective agreement, including: teaching (usually 2 courses per year, can include professional development courses) and service to the university and to the broader community. Service roles can include voluntary membership and appointments to boards, committees and organizations that can assist in fulfilling the responsibilities of the position.

2.2 IMPROVEMENTS

ARTICULATE THE VALUE OF THE INITIATIVE

A traditional model of forest management recognizes multiple stakeholders and multiple values on forest landscapes and attempts to integrate these perspectives into planning and implementation. This approach has worked well for the last 20 years but is increasingly under strain from evolving and expanding demands on the forest landscape, including an evolving dialogue with Indigenous Canadians. Understanding the history of colonialism and colonial institutions (such as residential schools and the reservation system) and a sharper understanding of Aboriginal and Treaty Rights under Canadian law, a key improvement in forest management will require moving well beyond conventional approaches to First Nations consultation toward more shared understanding, the discovery of common ground, and at times, the deepening of partnership and equity stakes in forest resource utilization.

Through this initiative we will recruit more Indigenous students into forestry programs, support them towards graduation and pursuit of further studies and provide education for all forestry students, and for practicing foresters, through courses designed to help create common understanding and bridge knowledge gaps between western styles of forest management and Indigenous forestry. Our forestry graduates will then find their way into leadership positions in the public and private sector, equipped with the knowledge and attitudes to improve approaches towards forest management and move towards meaningful reconciliation with Indigenous peoples. Moreover, through development of the Chair's research program, and associated graduate student training, capacity for research and scholarship in this area will be enhanced, and will add to growing capacity for Indigenous forestry that already exists in places like Université Laval and University of British Columbia.

Within the academic community, there is strong and growing recognition of traditional knowledge systems that are distinct and offer unique insights into pressing and complex challenges such as forest management. Scholars are also innovating on Indigenous research methodologies and deeper engagement with Indigenous communities through citizen science initiatives that can give meaning to engagement and participation in forest management at the local level. This initiative will support meaningful engagement of Indigenous peoples in forest management, bring this philosophical and scientific expertise to forestry students and practicing professionals through educational programs, and into the forest sector and on to the forest landscape of Alberta through research and knowledge exchange.

2.3 OBJECTIVES

The overall objective of the project is to further our understanding of forestry, forest science and forest management institutions from an Indigenous perspective. This program is an important step towards enhancing Indigenous and non-Indigenous relations in forest science and management and building capacity for Indigenous approaches to forest management that will be instrumental in conducting resource industry activities on Treaty and traditional territories of Alberta's First Nation, Metis, and Inuit peoples. This program will build upon our strong history of interdisciplinary and applied research in forest science and management at the UofA. The program of targeted recruitment and student supports will increase participation of Indigenous peoples in forest management. Establishment of an Endowed Chair will commit the UofA to hire a new Assistant/Associate Professor dedicated to Indigenous forestry, and maintain these commitments in perpetuity. The new Assistant/Associate Professor will fill a critical gap ensuring the establishment of a strong program of research and education focused on Indigenous understandings of forest ecosystems born out of close collaboration with industry, government, Indigenous partners, and other academics at the UofA and other institutions. The outcome will be improved forest landscapes, and decision making that reflects and respects the diversity of values and interests of Canada's Indigenous peoples.

Budget and Timeline

Phase 1: Community Engagement. Sept. 2022 – Dec. 2023. One full-time staff to lead the community engagement process plus expenses for travel, hosting, ceremony, and communications. To be funded by a FRIP proposal from WestFraser / Weyerhaeuser.

Phase 2: Endowed Chair. Recruitment phase: Fall 2022 – April 2023; Chairholder in place: July 2023.
Endowment: \$6 million: This will generate ~ \$215,000 annually, which will cover salary and benefits for this position in perpetuity and provide modest seed funding for the research program during the early career phases of the faculty appointment:
Initial research support: \$1,000,000 over 5 years: This will cover stipends for two graduate students per year plus the cost of a research assistant (salary, benefits, travel, communications) to help with community engagement and initial development of the research program. From our discussions with similar programs at other Canadian universities we understand that such support is critical for an academic position focused on these topics and that will rely so heavily on community engagement for success. After the initial five-year period the research program should be well-enough established that it can be supported through externally-attracted grant funding.

Phase 3: Student recruitment and support program. Sept. 2023 – 2033.
\$5 million over 10 years. The details of the recruitment and student support program are to be worked out through community engagement during Phase 1. This amount would cover one full-time-equivalent staff for student recruitment and support; travel and communication; participation in youth engagement programs; student visits to campus; tuition support for four to six Indigenous undergraduate or graduate students; research internships for four to six students.

Total: \$12 million

Phase	Partner Involvement	Outcome	Timeline
<i>Phase I:</i> Community engagement	Steering Committee	<ul style="list-style-type: none"> ● Plan for student recruitment activities and student supports ● Refine scope for Endowed Chair and recruiting Chairholder 	Sept. 2022 – Dec. 2023 Fall 2022 – Spring 2023
<i>Phase II:</i> Endowed Chair	Advisory Committee	<ul style="list-style-type: none"> ● Development and delivery of research program ● Teaching in UofA programs ● Extension and public education 	July 2023 onwards
<i>Phase III:</i> Student recruitment and supports	Advisory Committee	<ul style="list-style-type: none"> ● Implementation of recruitment plan leading to increases in Indigenous student enrollment in forestry programs ● Support provided to Indigenous students, ensuring successful graduation ● Increased number of Indigenous students pursuing post-graduate education 	Sept. 2023 - 2033



January 31, 2023

Dr. Nadir Erbilgin
Chair, Department of Renewable Resources
University of Alberta
751 General Services Building
Edmonton, AB T6G 2H1
Email: erbilgin@ualberta.ca

I write to extend Alberta Innovates' enthusiastic support for the Department of Renewable Resources (RENr) and University of Alberta School of Forest Science & Management led Indigenous Forest Science and Management Initiative at the University of Alberta.

Indigenous communities' longstanding relationship with forest management within Canada has experienced much growth and change in the past 30 years. Positive changes include recognition of Aboriginal perspectives in definitions of sustainable forest management, and establishment of Aboriginal forestry organizations, employment initiatives, and model forests - all intended to support deeper integration of Indigenous people and communities into the forest sector. On the ground, forest management practices have changed, sometimes supported by implementation of decision support tools developed with Aboriginal partners intended to better protect culturally important sites and resources within forest management planning and operations. These activities have offered opportunities to minimize land-use conflicts and support traditional land use. However, the intersection of resource management and the rights of Indigenous people to determine the nature and extent of development within treaty and traditional territory remains a complex challenge.

The University of Alberta, Department of Renewable Resources, and School of Forest Science & Management are well positioned to look for solutions to these challenges by developing the Indigenous Forest Science and Management Initiative. The Initiatives focus on research, student recruitment, and education has potential to support sustainable management of Canada's forests, create productive relationships between Indigenous communities and the forest sector, and facilitate long-term and meaningful reconciliation.

The foundation of the research and education components of this initiative will be the establishment of an Endowed Chair in Indigenous Forestry. The Chair will be key to educating forestry students and professionals in Indigenous perspectives while establishing an applied research program focused on Indigenous land management perspectives. Alberta Innovates has been investing in post-secondary institutions in Alberta and beyond for decades. Alberta Innovates Clean Resources business unit anticipates it could commit up to \$500,000 to the Endowed Chair in Indigenous Forestry to support the first 5 years of research, subject to review and approval of a detailed proposal from the Chair holder following recruitment.

In addition, Alberta Innovates can provide in-kind service to the Indigenous Forest Science and Management Initiative. This includes connecting with industries, municipalities, and local communities for demonstration projects, participation in project selection and advisory, etc. Alberta Innovates' subsidiaries InnoTech and C-FER have unique facilities that can be accessed on cost-recovery basis.

Alberta Innovates' goals in sustainable forestry, environmental stewardship, resilient and healthy communities, and reconciliation align with the University of Alberta and the Indigenous Forest Science and Management Initiative. The Initiative's community and location-based solutions will have real impacts for Alberta.

We sincerely look forward to the opportunity to partner on this exciting initiative, and make meaningful contributions to reconciliation, sustainable forestry, and community resilience.

Sincerely,

A handwritten signature in black ink, appearing to read "John Zhou".

John Zhou, Ph.D., P.Geol., ICD.D.
Chief Cleantech Officer and Vice President, Clean Resources
Alberta Innovates

Internal Program Proposal
- for-credit programs not requiring Ministry approval -

This template is to be used for proposals to create or modify programs that do not require Ministry of Advanced Education approval.

Faculties and Departments must consult with the Portfolio Initiatives Manager in the Office of the Provost and Vice-President (Academic) (carley.roth@ualberta.ca) on the appropriate template and process. Graduate proposers must also consult with the Faculty of Graduate Studies and Research (fgsrgov@ualberta.ca). All program proponents must also consult with the Vice-Provost (Indigenous Programming & Research) during the early development stage.

PROPOSAL TYPE

This proposal is for a (select one):	
<input checked="" type="checkbox"/>	Creation of a new second-level specialization (e.g., minors of undergraduate programs and second-level specializations of graduate programs)
<input type="checkbox"/>	The addition of an Honors stream to an existing undergraduate program
<input type="checkbox"/>	Creation of a combined degree program where both contributing degrees have been approved by the Ministry of Advanced Education
<input type="checkbox"/>	Embedded Certificate
<input type="checkbox"/>	Substantive program changes that do not require Ministry approval

1: Basics		
Program/Specialization	Master of Forestry in Renewable Resources with Specialization in Sustainable Forest Management	
Faculty/Department	Faculty of Agricultural, Life & Environmental Sciences (ALES) Department of Renewable Resources (RENR)	
Contact information	Name and Title	Andreas Hamann
	Phone	(780) 492-6429
	Email	andreas.hamann@ualberta.ca
Proposed effective date	July 1, 2024	
Attachments		



- Strategy for specializations of course-based programs (1_RENR_Specialization_Strategy.docx)
- Proposed Calendar changes (2b_MF-SFM_Calendar_Change.docx)
- Letter of Support from the Dean of the Faculty (7_ALES Support Letter.pdf)

2: Rationale, Implications, and Impacts

The rationale for the proposal

Identify the purpose of the proposal with supporting rationale and evidence of demand.

The proposed Master of Forestry in Renewable Resources with a **Specialization in Sustainable Forest Management (MF-SFM)** provides an advanced degree in forest management. The program allows graduates to apply to become Registered Professional Foresters (RPF), working in government or industrial organizations or as consultants.

In parallel with this internal program proposal, we have applied for professional program accreditation of this specialization by the Canadian Forestry Accreditation Board ([CFAB](#)). The CFAB conducted a site visit from Sep 26-28, 2022, and we received favourable decision on March 25, 2023. The proposed MF-SFM is now an accredited professional degree until the renewal date June 30, 2029 (see: [accredited Canadian forestry programs](#)).

We anticipate this specialization to become our most attractive course-based program stream. RPFs have been in high demand in Alberta and Canada by forestry companies, consultancies, as well as provincial and federal government agencies (e.g., see [AAFMP Careers](#) or [Forestry Jobs in Canada](#)). The Alberta Association of Forest Management Professionals has been offering scholarships to encourage our students in the Master of Forestry program to pursue RPF designation. All graduates who meet RPF criteria in our MF program receive multiple job offers, often before completing their program.

However, the previous RPF accreditation process involved a labour-intensive development of [individual study plans](#) depending on the student’s background. Due to funding cuts, we have lost the Faculty Service Officer responsible for this laborious task. As a result, we can no longer deliver effective and timely accreditation services even for just a handful of students.

We now need a Calendar entry that specifies our CFAB-approved program requirements for RPF competencies, making the accreditation automatic upon graduation. Because not all students that enroll in our [existing course-based MF program](#) can or want to pursue an RPF, we are proposing this separate, accredited program specialization.

Length of the Program

Identify the length of the program in years and credit

The length of this program depends on the background of the undergraduate admitted to the program, and it will take students 9-20 months to complete at least 30 credit units. We expect 50% of students to complete within two terms (plus a prior initial field school). For students with missing prerequisites, the

units per year.	time to completion will require one or two additional terms. This is reflected in 50% of students in the enrollment table below graduating within one year, with the other half carrying over into the second year.
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Provide the anticipated enrolments by headcount for the next 5 years

Enrolment	2024	2025	2026	2027	2028
Total Headcount	20	30	30	40	45
● Year 1	20	20	20	30	30
● Year 2	0	10	10	10	15
● Year 3	0	0	0	0	0
● Year 4	0	0	0	0	0

Work-Integrated Learning

Describe how learners in this program will have access to Work-Integrated Learning (see [CEWIL definitions](#)).

Registered professional foresters receive an “apprenticeship”-type work-integrated learning experience post-graduation. Upon registering with a provincial professional association, graduates are assigned a mentor and work as Forester-In-Training for a period of 24 months. As such, work-integrated learning is a formalized process outside the university program. That said, field courses and regular courses are highly applied with strong experiential learning components. This is, in fact, a CFAB requirement and the program accreditation process requires us to demonstrate strong experiential and applied learning components.

Consultation

Describe the consultation process that occurred with students and other relevant stakeholders, and the feedback received.

As part of the CFAB accreditation process that took place from Sep 26-28, 2022, current students, alumni, and employers were invited to provide feedback on the quality of the academic program, the success of our graduate students at the workplace, and the satisfaction of employer representatives. The feedback was unanimously favourable, with a strong message that it would be very much appreciated if we could produce significantly more than just a handful of qualifying graduates each year. The CFAB also expects that a clearer pathway to RPF and a [formal listing](#) of the proposed Master of Forestry specialization as the accredited program would be certain to increase our enrolment.

During the developmental stage, the consultation process also included:

- Initial consultation with the Vice-Provost (Programs) and the Associate Dean (FGSR) on specialization proposals (July 19, 2022)
- Departmental Council discussions and request for support in principle (Sep 26, 2022, Oct 28, 2022)



	<ul style="list-style-type: none"> • Faculty of ALES consultation and endorsement by the Dean of ALES (Nov 16, 2022) • Second consultation with the Vice-Provost (Programs), and review and revisions of proposal documents (Jan 12, 2023, and Jan 27, 2023) • Endorsed by Vice-Provost (Indigenous Programming & Research) (Sep 26, 2023)
<p>Indigenous Perspectives Describe the outcomes of the consultation with the Vice Provost (Indigenous Programming and Research) regarding how the program will integrate/include Indigenous perspectives and content and any action items that may result.</p>	<p>Accreditation by the CFAB requires a significant Indigenous programming component, as well as a public engagement component that includes Indigenous perspectives. This is implemented in the proposed MF-RPF specialization through course requirements that cover these RPF competencies. Indigenous competencies are primarily addressed in the courses R SOC 675 - Public Participation and Conflict Resolution, which has a dedicated module "Conflict through the lens of Indigenous, Social and Environmental Justice", and R SOC 560 Perspectives on Traditional Knowledge. Additional required courses that cover Indigenous peoples' treaty and other rights, claims, traditions and interests include: FOREC 673 Forest Policy, REN R 701 Forestry and Environmental Sciences Field Skills, REN R 702 Forestry Field School for Professionals, REN R 728 Integrated Forest Management. See the separate document "1b_RENR_Indigenous_Strategy.pdf" for more information on course syllabi and a matrix of how Indigenous competencies are fulfilled to qualify for professional accreditation.</p>
<p>Resource Implications Identify financial impacts and internal resource requirements, particularly staff and classroom and lab space. Also identify any external resource requirements such as a practicum or internship placements, etc.</p>	<p>The proposed enrollment numbers for the first three years (2024, 2025, and 2026) reflect the extra capacity that we have with current instructors and courses that are already being offered. Once formally listed by CFAB, we expect that applications exceed the enrollment capacity of 20 students per year. We would consider growing the program in the future, but this may require additional instructors and course offerings.</p>
<p>Approval Process Indicate the internal governance path, including meeting dates</p>	<ul style="list-style-type: none"> • RENR Departmental Council (March 25, 2023) • FGSR Graduate Program Support Team (March 27, 2023) • ALES Faculty Council (Sep 25, 2023) • FGSR Committees and FGSR Council • GFC Programs Committee

Faculty: ALES
Submitted by: Nadir Erbilgin (Chair, Dept. of Renewable Resources) and Andreas Hamann (Director, Academic & Communications)
Type of change request: <input type="checkbox"/> Editorial <input type="checkbox"/> Minor Program <input checked="" type="checkbox"/> Major Program <input type="checkbox"/> Regulation
For which term will this change take effect? Fall 2024
Which Calendar will this change be published in? 2024-2025

Calendar Copy

URL in current Calendar (or leave blank if it is a new page):

https://calendar.ualberta.ca/preview_program.php?catoid=34&poid=38269&returnto=10333

To indicate requested changes, please use track changes

Renewable Resources [Graduate]

...

Graduate Program Requirements

...

The Degree of MF with Specialization in Sustainable Forest Management (Renewable Resources) [Graduate]

This program provides an advanced degree in sustainable forest management. The program is accredited by the Canadian Forestry Association Board and allows graduates to apply to join the regulated profession as Registered Professional Foresters in any Canadian province, working in government or industrial organizations or as consultants.

Entrance Requirements

Applicants hold a non-accredited undergraduate forestry degree or a degree from an allied discipline such as environmental sciences. Admission prerequisites include foundational undergraduate courses in (1) biodiversity or conservation, (2) plant physiology or structure and function, (3) soil science, (4) geomatics or GIS, (5) economics, and (6) statistics. Missing prerequisites can be covered during the first term under a conditional admission.

Program Requirements

Students are required to complete a minimum of 30 units in coursework including two field school courses in August prior to the start of the first term. If students enter the program with prior credits for a very close equivalent of a required course, alternative courses can be chosen with departmental approval to meet the minimum credit requirements, including a directed study or research project.

Course Requirements (30 units)

- REN R 701 - Forestry and Environmental Sciences Field Skills
- REN R 702 - Forestry Field School for Professionals
- REN R 721 - Forest Ecosystems
- REN R 722 - Silviculture
- REN R 727 - Forest Resources Management
- FOREC 645 - Economics of Forestry
- FOREC 673 - Forest Policy
- REN R 548 - Forest Growth & Yield
- REN R 728 - Integrated Forest Management

3 units selected from

- R SOC 560 - Perspectives on Traditional Knowledge
- R SOC 675 - Public Participation and Conflict Resolution

3 units selected from

- REN R 747 - Forest Health
- REN R 740 - Wildland Fire Science and Management

Professional Development and Ethics Requirements

Students are required to fulfill the [FGSR Professional Development Requirement](#) and the [FGSR Academic Integrity and Ethics Training Requirement](#).

Length of Program

The program is designed to be completed in 9 to 20 months, depending on the undergraduate student's background. The program may also be completed on a part-time basis. The maximum time to complete the program as set by the Faculty of Graduate Studies and Research is six years.

Rationale

See the separate document: "2a_MF-SFM_Proposal.docx".

Detailed Rationale, for internal ALES use

See the separate document: "1_RENR_Specialization_Strategy.docx".

Proposed by and Reviewed/Endorsed/Approved by:

- Proposed by Nadir Erbilgin (RENR Department Chair) and Andreas Hamann (Director, Academic & Communications).
- Consultation with Vice-Provost (Programs) and Associate Dean (FGSR) on specialization proposals (first meeting July 19, 2022)
- Departmental Council support in principle (Sep 26, 2022, Oct 28, 2022)
- Faculty of ALES consultation and written endorsement from Dean of ALES (Nov 16, 2022)
- Second consultation with Vice-Provost (Programs) and revisions reviewed (Jan 12, 2023 and Jan 27, 2023)
- Approved by RENR Departmental Council (March 17, 2023)
- Reviewed by FGSR Graduate Program Support Team (GPST) (March 27, 2023)
- Approved by ALES Faculty Council (Sep 25, 2023)
- Endorsed by Vice-Provost (Indigenous Programming & Research) (Sep 26, 2023)
- FGSR Committees and FGSR Council
- GFC Programs Committee

Notes:

1. This should be the Program Chair.
2. This is the rationale that goes forward with the proposed change to GFC for approval. It should be brief but still provide sufficient information to justify the change being proposed to an external audience.
3. The information here is for internal (ALES) use only. This should provide more detail concerning the rationale for the course or program change that would be relevant to an internal audience. For new course proposals, this will include the intended role of the course. Where appropriate, information will be provided regarding consistency with recommendations from program reviews, task force reports, strategic planning, accreditation/unit reviews, etc.
4. The information here is for internal (ALES) use only. The section should include:
 - a. Individual(s) proposing the proposed Calendar change.
 - b. Record of required approvals, **including dates**. (Program Committees in the case of program proposals).
 - c. indication of any relevant/required consultation undertaken in support of the proposal (e.g., consulting with affected departments/divisions in the case of program change proposals).

Internal Program Proposal
- for-credit programs not requiring Ministry approval -

This template is to be used for proposals to create or modify programs that do not require Ministry of Advanced Education approval.

Faculties and Departments must consult with the Portfolio Initiatives Manager in the Office of the Provost and Vice-President (Academic) (carley.roth@ualberta.ca) on the appropriate template and process. Graduate proposers must also consult with the Faculty of Graduate Studies and Research (fgsgov@ualberta.ca). All program proponents must also consult with the Vice-Provost (Indigenous Programming & Research) during the early development stage.

PROPOSAL TYPE

This proposal is for a (select one):	
<input checked="" type="checkbox"/>	Creation of a new second-level specialization (e.g., minors of undergraduate programs and second-level specializations of graduate programs)
<input type="checkbox"/>	The addition of an Honors stream to an existing undergraduate program
<input type="checkbox"/>	Creation of a combined degree program where both contributing degrees have been approved by the Ministry of Advanced Education
<input type="checkbox"/>	Embedded Certificate
<input type="checkbox"/>	Substantive program changes that do not require Ministry approval

1: Basics		
Program/Specialization	Master of Forestry in Renewable Resources with Specialization in International Forestry	
Faculty/Department	Faculty of Agricultural, Life & Environmental Sciences (ALES) Department of Renewable Resources (RENR)	
Contact information	Name and Title	Andreas Hamann
	Phone	(780) 492-6429
	Email	andreas.hamann@ualberta.ca
Proposed effective date	July 1, 2024	
Attachments		

- Strategy for specializations of course-based programs (1_RENR_Specialization_Strategy.docx)
- Proposed Calendar changes (3b_MF-IF_Calendar_Change.docx)
- Letter of Support from the Dean of the Faculty (7_ALES_Support_Letter.pdf)

2: Rationale, Implications, and Impacts

The rationale for the Proposal

Identify the purpose of the proposal with supporting rationale and evidence of demand.

The proposed Master of Forestry in Renewable Resources with a **Specialization in International Forestry (MF-IF)** formalizes our [TRANSFOR-M dual degree program](#), which has, since 2011, produced graduates that regularly went on to significant careers at the global stage. Over the last decade, the dual degree program has received international recognition and awards, and its graduates have received notable awards and honours for their career contributions.

All Canadian institutions (the University of Alberta, University of British Columbia, University of New Brunswick, with Lakehead University currently applying to join) and European partners (University of Eastern Finland, Bangor University, UK; University of Padua, Italy; University of Vienna, Austria; Albert-Ludwigs-University Freiburg, Germany; with the Swedish University of Agricultural Sciences currently applying to join) are committed to this program in the long term.

From the perspective of participating institutions, the TRANSFOR-M program is relatively small, as the consortium only allocates a handful of students to each exchange partner. This is because the program has been approved at all universities as a balanced exchange, where outgoing exchange students pay tuition at their home institution, and tuition fees for incoming exchange students are waived.

However, with the loss of departmental administrative capacity, even the management of a relatively small dual-degree program has become increasingly difficult. We, therefore, want to streamline and formalize this program through a Calendar entry, as has been done by most partner universities.

We propose to end the current practice of creating individual study plans that need to be approved at the time of admission, reviewed and re-approved in case changes are required, and validated by the Department, the Faculty of ALES graduate office and FGSR at the time of graduation. Instead, program requirements will be formalized through a Calendar entry of the proposed specialization.

This will increase the visibility and clarity of program requirements to prospective and current students as well as to advisors. The proposed change will further reduce the administrative burden for the Department and FGSR.

	Having a Calendar entry will also allow us to conform fully to FGSR’s standard administrative procedures for shared credential programs.																																				
Length of the Program Identify the length of the program in years and credit units per year.	24 months to complete 36 credit units, with at least 18 credit units at a European TRANSFOR-M partner institution.																																				
Provide the anticipated enrolments by headcount for the next 5 years																																					
<table border="1"> <thead> <tr> <th>Enrolment</th> <th>2024</th> <th>2025</th> <th>2026</th> <th>2027</th> <th>2028</th> </tr> </thead> <tbody> <tr> <td>Total Headcount</td> <td>5</td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> </tr> <tr> <td>● Year 1</td> <td>5</td> <td>5</td> <td>5</td> <td>5</td> <td>5</td> </tr> <tr> <td>● Year 2</td> <td>0</td> <td>5</td> <td>5</td> <td>5</td> <td>5</td> </tr> <tr> <td>● Year 3</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>● Year 4</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> </tr> </tbody> </table>		Enrolment	2024	2025	2026	2027	2028	Total Headcount	5	10	10	10	10	● Year 1	5	5	5	5	5	● Year 2	0	5	5	5	5	● Year 3	0	0	0	0	0	● Year 4	0	0	0	0	0
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Work-Integrated Learning Describe how learners in this program will have access to Work-Integrated Learning (see CEWIL definitions).	We have variable requirements, depending on the partner institution. Some partners require the equivalent of 3 credit units of an “apprenticeship”-type work-integrated learning experience to qualify for graduation, which students have almost always chosen to fulfill while abroad (Canadian students in Europe, European students in Canada). Further, most of the courses we offer through our MF program are highly applied with strong experiential learning components.																																				
Consultation Describe the consultation process that occurred with students and other relevant stakeholders, and the feedback received.	<p>None with students. The TRANSFOR-M program has been run for over a decade and is not a new program idea that would require consultation. Rather, the proposal reflects the need to formalize a decade-old program through a formal Calendar entry. The goal is to reduce administrative workload and to improve the visibility and clarity of program requirements.</p> <p>During the developmental stage, the consultation process also included:</p> <ul style="list-style-type: none"> • Initial consultation with the Vice-Provost (Programs) and the Associate Dean (FGSR) on specialization proposals (July 19, 2022) • Departmental Council discussions and request for support in principle (Sep 26, 2022, Oct 28, 2022) 																																				



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<p>Indigenous Perspectives Describe the outcomes of the consultation with the Vice Provost (Indigenous Programming and Research) regarding how the program will integrate/include Indigenous perspectives and content and any action items that may result.</p>	<p>Historically, research and teaching on Indigenous perspectives has been a key subject area that made the TRANSFOR-M program attractive to European participants. We previously had a cross-appointed faculty member (Dr. Debra Davidson) who supervised TRANSFOR-M students on projects that addressed Indigenous research topics, but she is now with the Department of REES and cannot formally serve as advisor for RENR programs. We hope to soon fill this gap with the establishment of an Endowed Chair in Indigenous Forest Science and Management (see the document “1b_RENR_Indigenous_Strategy.pdf” for more information). At present, all forestry courses that cover Indigenous perspectives are also available to TRANSFOR-M students, including: R SOC 675 - Public Participation and Conflict Resolution, which has a dedicated module “Conflict through the lens of Indigenous, Social and Environmental Justice”, and R SOC 560 Perspectives on Traditional Knowledge. Additional courses that cover Indigenous peoples’ treaty and other rights, claims, traditions and interests include: FOREC 673 Forest Policy, REN R 701 Forestry and Environmental Sciences Field Skills, REN R 702 Forestry Field School for Professionals, REN R 728 Integrated Forest Management. Course syllabi and more details on how Indigenous perspectives are covered are included in the separate document: “1b_RENR_Indigenous_Strategy.pdf”.</p>
<p>Resource Implications Identify financial impacts and internal resource requirements, particularly staff and classroom and lab space. Also identify any external resource requirements such as a practicum or internship placements, etc.</p>	<p>The proposed specialization will have no impact on the current enrollment numbers of the TRANSFOR-M program. The purpose of the proposal is to reduce the administrative burden for the Department, the Faculty of ALES graduate office, and FGSR.</p>
<p>Approval Process Indicate the internal governance path, including meeting dates</p>	<ul style="list-style-type: none"> • RENR Departmental Council (March 25, 2023) • FGSR Graduate Program Support Team (March 27, 2023) • ALES Faculty Council (Sep 25, 2023) • FGSR Committees and FGSR Council • GFC Programs Committee

Faculty: ALES
Submitted by: Nadir Erbilgin (Chair, Dept. of Renewable Resources) and Andreas Hamann (Director, Academic & Communications)
Type of change request: <input type="checkbox"/> Editorial <input type="checkbox"/> Minor Program <input checked="" type="checkbox"/> Major Program <input type="checkbox"/> Regulation
For which term will this change take effect? Fall 2024
Which Calendar will this change be published in? 2024-2025

Calendar Copy

URL in current Calendar (or leave blank if it is a new page): https://calendar.ualberta.ca/preview_program.php?catoid=34&poid=38269&returnto=10333
To indicate requested changes, please use track changes
Renewable Resources [Graduate] ... Graduate Program Requirements ... The Degree of MF with Specialization in International Forestry (Renewable Resources) [Graduate] Participants are educated in modern sustainable forest and environmental management approaches that are sensitive to cultural and situational differences. Participants acquire an enhanced global view that accommodates multicultural and Indigenous perspectives on forest conservation and management. Graduates receive two separate degrees, an MF with a Specialization in International Forestry from the University of Alberta, and a second degree from an approved list of degrees offered by European partner institutions. Depending on the undergraduate background, this program can contribute to the academic requirements to become a Registered Professional Forester. Entrance Requirements Applicants hold an undergraduate degree in forestry or an allied discipline, such as environmental or biological sciences. Program Requirements (36 units) For the University of Alberta degree, students are required to complete a minimum of 36 units, which must include at least 18 graduate units from REN R, FOREC or R SOC at the University of Alberta and 18 graduate units from an approved European Partner program. A minimum of 10 units must be research or thesis credits. The conversion factor for the European Credit Transfer System is 1 unit = 3 ECTS). Professional Development and Ethics Requirements Students are required to fulfill the FGSR Professional Development Requirement and the FGSR Academic Integrity and Ethics Training Requirement . Length of Program The program is designed to be completed in 24 months of full-time study. Residence Requirement The minimum period of residence is two, four-month terms of full-time attendance at the University of Alberta and two, four-month terms of full-time attendance at an approved European partner institution.

Rationale

See the separate document: "3a_MF-IF_Proposal.docx".

Detailed Rationale, for internal ALES use

See the separate document: "1_RENR_Specialization_Strategy.docx".

Proposed by and Reviewed/Endorsed/Approved by:

- Proposed by Nadir Erbilgin (RENR Department Chair) and Andreas Hamann (Director, Academic & Communications).
- Consultation with Vice-Provost (Programs) and Associate Dean (FGSR) on specialization proposals (first meeting July 19, 2022)
- Departmental Council support in principle (Sep 26, 2022, Oct 28, 2022)
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- Approved by RENR Departmental Council (March 17, 2023)
- Reviewed by FGSR Graduate Program Support Team (GPST) (March 27, 2023)
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- Endorsed by Vice-Provost (Indigenous Programming & Research) (Sep 26, 2023)
- FGSR Committees and FGSR Council
- GFC Programs Committee

Notes:

1. This should be the Program Chair.
2. This is the rationale that goes forward with the proposed change to GFC for approval. It should be brief but still provide sufficient information to justify the change being proposed to an external audience.
3. The information here is for internal (ALES) use only. This should provide more detail concerning the rationale for the course or program change that would be relevant to an internal audience. For new course proposals, this will include the intended role of the course. Where appropriate, information will be provided regarding consistency with recommendations from program reviews, task force reports, strategic planning, accreditation/unit reviews, etc.
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 - a. Individual(s) proposing the proposed Calendar change.
 - b. Record of required approvals, **including dates**. (Program Committees in the case of program proposals).
 - c. indication of any relevant/required consultation undertaken in support of the proposal (e.g., consulting with affected departments/divisions in the case of program change proposals).

Internal Program Proposal
- for-credit programs not requiring Ministry approval -

This template is to be used for proposals to create or modify programs that do not require Ministry of Advanced Education approval.

Faculties and Departments must consult with the Portfolio Initiatives Manager in the Office of the Provost and Vice-President (Academic) (carley.roth@ualberta.ca) on the appropriate template and process. Graduate proposers must also consult with the Faculty of Graduate Studies and Research (fgsrgov@ualberta.ca). All program proponents must also consult with the Vice-Provost (Indigenous Programming & Research) during the early development stage.

PROPOSAL TYPE

This proposal is for a (select one):	
<input checked="" type="checkbox"/>	Creation of a new second-level specialization (e.g., minors of undergraduate programs and second-level specializations of graduate programs)
<input type="checkbox"/>	The addition of an Honors stream to an existing undergraduate program
<input type="checkbox"/>	Creation of a combined degree program where both contributing degrees have been approved by the Ministry of Advanced Education
<input type="checkbox"/>	Embedded Certificate
<input type="checkbox"/>	Substantive program changes that do not require Ministry approval

1: Basics							
Program/Specialization	Master of Forestry in Renewable Resources with Specialization in Environmental and Wildlife Conservation						
Faculty/Department	Faculty of Agricultural, Life & Environmental Sciences (ALES) Department of Renewable Resources (RENR)						
Contact information	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%; padding: 5px;">Name and Title</td> <td style="padding: 5px;">Andreas Hamann</td> </tr> <tr> <td style="padding: 5px;">Phone</td> <td style="padding: 5px;">(780) 492-6429</td> </tr> <tr> <td style="padding: 5px;">Email</td> <td style="padding: 5px;">andreas.hamann@ualberta.ca</td> </tr> </table>	Name and Title	Andreas Hamann	Phone	(780) 492-6429	Email	andreas.hamann@ualberta.ca
Name and Title	Andreas Hamann						
Phone	(780) 492-6429						
Email	andreas.hamann@ualberta.ca						
Proposed effective date	July 1, 2024						
Attachments							



- Strategy for specializations of course-based programs (1_RENR_Specialization_Strategy.docx)
- Proposed Calendar changes (4b_MF-EWC_Calendar_Change.docx)
- Letter of Support from the Dean of the Faculty (7_ALES_Support_Letter.pdf)

2: Rationale, Implications, and Impacts

The rationale for the Proposal

Identify the purpose of the proposal with supporting rationale and evidence of demand.

Master of Forestry in Renewable Resources with a **Specialization in Environmental and Wildlife Conservation** is one of three similar proposals that complement two forestry-focused specializations, the latter targeting students interested in becoming registered professional foresters (RPF) or participating in a dual-degree international forestry program (TRANSFOR-M).

While we receive excellent applicants for the RPF and TRANSFOR-M streams, we lack qualified applicants beyond these two program streams. Virtually all graduate courses at the 500 and 600 levels and many graduate/undergraduate slash courses at the 700 level have extra capacity that we would like to fill with qualified course-based graduate students.

A key problem is that the calendar entries of our course-based [Master of Forestry \(MF\)](#) and [Master of Agriculture \(MAg\)](#) programs are undefined to a degree that makes them unattractive (even misleading) to prospective students. For example, we do not offer any courses in classical agriculture. That would be the MAg offered by the Department of AFNS. Instead, our focus is on the conservation and restoration of land and water in agricultural systems. This is neither visible to prospective applicants nor potential employers of our graduates.

For clarity of what can be studied under these programs, we have sorted all of our [44 currently active graduate-level courses](#) into four non-overlapping blocks (briefly: sustainable forest management, environmental and wildlife conservation, forest ecology and ecosystem restoration, and conservation and restoration of land and water). This represents our teaching specializations, and that also approximately corresponds to [research specializations](#) in our department.

We believe that adding those specializations, with corresponding topical program requirements, would (1) significantly increase the visibility and clarity of our program offerings, (2) attract higher quality applicants both nationally and internationally, (3) provide better guidance and cohort experience for students, (4) effectively utilize our existing course capacity, and (5) improve the competitiveness of our graduates in the job market by highlighting timely and relevant skills in program names.

Length of the Program

Identify the length of the program in years and credit

10-20 months to complete 30 credits.

units per year.

Provide the anticipated enrolments by headcount for the next 5 years

Combined numbers for the three specializations outside the forestry-focused RPF and TRANSFOR-M streams:

Enrolment	2024	2025	2026	2027	2028
Total Headcount	20	30	30	30	30
● Year 1	20	20	20	20	20
● Year 2	0	10	10	10	10
● Year 3	0	0	0	0	0
● Year 4	0	0	0	0	0

Work-Integrated Learning

Describe how learners in this program will have access to Work-Integrated Learning (see [CEWIL definitions](#)).

Students typically acquire work-related experience through summer jobs and internships in the forest industry, with oil sands reclamation projects, in government, and with consultancies. Although not a formal requirement of the program, summer job opportunities are plentiful and virtually all students take advantage of these opportunities. In part, this is also motivated by our course-based programs being self-funded. In addition, all of our courses have a strong emphasis on applications, including field trips and experiential learning components.

Consultation

Describe the consultation process that occurred with students and other relevant stakeholders, and the feedback received.

The proposal is in part a response to a formal complaint that was conveyed to the Department leadership by the departmental section of the Graduate Student Association in 2021. Especially those students that focus on Reclamation and Restoration of Land and Water ([a key strength of our department](#)) felt that their skills were not adequately represented in program names or specializations, leading to a disadvantage for those graduates in the job market.

During the developmental stage, the consultation process also included:

- Initial consultation with the Vice-Provost (Programs) and the Associate Dean (FGSR) on specialization proposals (July 19, 2022)
- Departmental Council discussions and request for support in principle (Sep 26, 2022, Oct 28, 2022)
- Faculty of ALES consultation and endorsement by the Dean of ALES (Nov 16, 2022)
- Second consultation with the Vice-Provost (Programs), and review and

	<p>revisions of proposal documents (Jan 12, 2023, and Jan 27, 2023)</p> <ul style="list-style-type: none"> • Endorsed by Vice-Provost (Indigenous Programming & Research) (Sep 26, 2023)
<p>Indigenous Perspectives Describe the outcomes of the consultation with the Vice Provost (Indigenous Programming and Research) regarding how the program will integrate/include Indigenous perspectives and content and any action items that may result.</p>	<p>Two courses that cover Indigenous perspectives are available to students in this proposed specialization as a core topical elective: RSOC 675 Public Participation and Conflict Resolution, which has a dedicated module “Conflict through the lens of Indigenous, Social and Environmental Justice” and R SOC 560 Perspectives on Traditional Knowledge. Additionally, we offer free electives that cover Indigenous peoples’ treaties and other rights, claims, traditions and interests. This includes FOREC 673 Forest Policy, REN R 701 Forestry and Environmental Sciences Field Skills, REN R 702 Forestry Field School for Professionals, and REN R 728 Integrated Forest Management. Course syllabi and more details on how Indigenous perspectives are covered are included in a separate document: “1b_RENR_Indigenous_Strategy.pdf”. We further plan to strengthen our course offerings and research opportunities for RENR 906 and RENR 912 Capping Research Projects for students in this proposed specialization with the establishment of an Endowed Chair in Indigenous Forest Science and Management. More details on the Endowed Chair application can also be found in the document 1b_RENR_Indigenous_Strategy.pdf</p>
<p>Resource Implications Identify financial impacts and internal resource requirements, particularly staff and classroom and lab space. Also identify any external resource requirements such as a practicum or internship placements, etc.</p>	<p>The proposed enrollment numbers reflect the extra capacity that we have with current instructors and courses that are already being offered.</p>
<p>Approval Process Indicate the internal governance path, including meeting dates</p>	<ul style="list-style-type: none"> • RENR Departmental Council (March 25, 2023) • FGSR Graduate Program Support Team (March 27, 2023) • ALES Faculty Council (Sep 25, 2023) • FGSR Committees and FGSR Council • GFC Programs Committee

Faculty: ALES
Submitted by: Nadir Erbilgin (Chair, Dept. of Renewable Resources) and Andreas Hamann (Director, Academic & Communications)
Type of change request: <input type="checkbox"/> Editorial <input type="checkbox"/> Minor Program <input checked="" type="checkbox"/> Major Program <input type="checkbox"/> Regulation
For which term will this change take effect? Fall 2024
Which Calendar will this change be published in? 2024-2025

Calendar Copy

URL in current Calendar (or leave blank if it is a new page):

https://calendar.ualberta.ca/preview_program.php?catoid=34&poid=38269&returnto=10333

To indicate requested changes, please use track changes

Renewable Resources [Graduate]

...

Graduate Program Requirements

...

The Degree of MF with Specialization in Environmental and Wildlife Conservation (Renewable Resources) [Graduate]

This program offers a degree in forest ecosystem management with a focus on conservation planning, environmental assessments, wildlife management and utilization. Students are educated in fundamental conservation principles and management practices of national and provincial parks, nature interpretation and science communication. Depending on the undergraduate background, this program can contribute to the academic requirements to become a Registered Professional Biologist or a Registered Professional Forester.

Entrance Requirements

Applicants hold an undergraduate forestry degree or a degree from an allied discipline such as environmental or biological sciences.

Program Requirements

Students are required to complete a minimum of 30 units, including 15 units of topical electives, and either 9 units of free electives combined with a 6-unit capping research project, or 3 units of free electives combined with a 12-unit capping research project. A 12-unit capping research project requires departmental approval.

Course Requirements (30 units)

15 units of topical electives from:

- REN R 596 - Conservation Planning
- REN R 566 - Parks, Ecology, and Society
- REN R 567 - Environmental Interpretation and Science Communication
- REN R 569 - Biodiversity Analysis
- REN R 770 - Utilization of Wildlife Resources
- REN R 564 - Advanced Topics in Wildlife Ecology and Conservation
- REN R 771 - Fisheries and Wildlife Management
- REN R 576 - Advanced Fisheries and Wildlife Management
- REN R 767 - The Mosses of Alberta: Conservation and Identification
- REN R 524 - Lichenology
- REN R 765 - Principles of Managing Natural Diversity
- REN R 762 - Environmental Footprint Assessment
- REN R 763 - Management and Conservation of Genetic Resources
- R SOC 551 - Engagement and Public Policy
- R SOC 560 - Perspectives on Traditional Knowledge

- R SOC 675 - Public Participation and Conflict Resolution

3 or 9 units of free electives selected from

- REN R at the 500-700 level
- FOREC at the 500-700 level
- R SOC at the 500-700 level

6 or 12 units selected from

- REN R 906 - Capping Research Project
- REN R 912 - Capping Research Project
- REN R 906A/B - Capping Research Project
- REN R 912A/B - Capping Research Project

Professional Development and Ethics Requirements

Students are required to fulfill the [FGSR Professional Development Requirement](#) and the [FGSR Academic Integrity and Ethics Training Requirement](#).

Length of Program

The program is designed to be completed in 16 to 20 months. However, with a heavier than normal course load, the program can be completed in 10 to 12 months, or it may be completed on a part-time basis. The maximum time to complete the program as set by the Faculty of Graduate Studies and Research is six years.

Rationale

See the separate document: "4b_MF-EWC_Proposal.docx".

Detailed Rationale, for internal ALES use

See the separate document: "1_RENR_Specialization_Strategy.docx".

Proposed by and Reviewed/Endorsed/Approved by:

- Proposed by Nadir Erbilgin (RENR Department Chair) and Andreas Hamann (Director, Academic & Communications).
- Consultation with Vice-Provost (Programs) and Associate Dean (FGSR) on specialization proposals (first meeting July 19, 2022)
- Departmental Council support in principle (Sep 26, 2022, Oct 28, 2022)
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Notes:

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3. The information here is for internal (ALES) use only. This should provide more detail concerning the rationale for the course or program change that would be relevant to an internal audience. For new course proposals, this will include the intended role for the course. Where



Calendar Change Request Form for Program or Regulation Changes

appropriate, information will be provided regarding consistency with recommendations from program reviews, task force reports, strategic planning, accreditation/unit reviews, etc.

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Internal Program Proposal
- for-credit programs not requiring Ministry approval -

This template is to be used for proposals to create or modify programs that do not require Ministry of Advanced Education approval.

Faculties and Departments must consult with the Portfolio Initiatives Manager in the Office of the Provost and Vice-President (Academic) (carley.roth@ualberta.ca) on the appropriate template and process. Graduate proposers must also consult with the Faculty of Graduate Studies and Research (fgsrgov@ualberta.ca). All program proponents must also consult with the Vice-Provost (Indigenous Programming & Research) during the early development stage.

PROPOSAL TYPE

This proposal is for a (select one):	
<input checked="" type="checkbox"/>	Creation of a new second-level specialization (e.g., minors of undergraduate programs and second-level specializations of graduate programs)
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1: Basics		
Program/Specialization	Master of Forestry in Renewable Resources with Specialization in Ecology and Ecosystem Restoration	
Faculty/Department	Faculty of Agricultural, Life & Environmental Sciences (ALES) Department of Renewable Resources (RENR)	
Contact information	Name and Title	Andreas Hamann
	Phone	(780) 492-6429
	Email	andreas.hamann@ualberta.ca
Proposed effective date	July 1, 2024	
Attachments		



- Strategy for specializations of course-based programs (1_RENR_Specialization_Strategy.docx)
- Proposed Calendar changes (5b_MF-EER_Calendar_Change.docx)
- Letter of Support from the Dean of the Faculty (7_ALES_Support_Letter.pdf)

2: Rationale, Implications, and Impacts

The rationale for the Proposal

Identify the purpose of the proposal with supporting rationale and evidence of demand.

Master of Forestry in Renewable Resources with a **Specialization in Ecology and Ecosystem Restoration** is one of three similar proposals that complement two forestry-focused specializations, the latter targeting students interested in becoming a registered professional forester (RPF) or participating in a dual-degree international forestry program (TRANSFOR-M).

While we receive excellent applicants for the RPF and TRANSFOR-M streams, we lack qualified applicants beyond these two program streams. Virtually all graduate courses at the 500 and 600 levels and many graduate/undergraduate slash courses at the 700 level have extra capacity that we would like to fill with qualified course-based graduate students.

A key problem is that the calendar entries of our course-based [Master of Forestry \(MF\)](#) and [Master of Agriculture \(MAg\)](#) programs are undefined to a degree that makes them unattractive (even misleading) to prospective students. For example, we do not actually offer any courses in classical agriculture. That would be the MAg offered by the Department of AFNS. Instead, our focus is on the conservation and restoration of land and water in agricultural systems. This is neither visible to prospective applicants nor to potential employers of our graduates.

For clarity of what can actually be studied under these programs, we have sorted all of our [44 currently active graduate-level courses](#) into four non-overlapping blocks (briefly: sustainable forest management, environmental and wildlife conservation, forest ecology and ecosystem restoration, and conservation and restoration of land and water). This represents our teaching specializations, and that also approximately corresponds to [research specializations](#) in our department.

We believe that adding those specializations, with corresponding topical program requirements, would (1) significantly increase the visibility and clarity of our program offerings, (2) attract higher quality applicants both nationally and internationally, (3) provide better guidance and cohort experience for students, (4) effectively utilize our existing course capacity, and (5) improve the competitiveness of our graduates in the job market by highlighting timely and relevant skills in program names.

Length of the Program

Identify the length of the program in years and credit

10-20 months to complete 30 credits.

units per year.

Provide the anticipated enrolments by head count for the next 5 years

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Describe how learners in this program will have access to Work-Integrated Learning (see [CEWIL definitions](#)).

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Consultation

Describe the consultation process that occurred with students and other relevant stakeholders, and the feedback received.

The proposal is in part a response to a formal complaint that was conveyed to the Department leadership by the departmental section of the Graduate Student Association in 2021. Especially those students that focus on Reclamation and Restoration of Land and Water ([a key strength of our department](#)) felt that their skills were not adequately represented in program names or specializations, leading to a disadvantage of those graduates in the job market.

During the developmental stage, the consultation process also included:

- Initial consultation with the Vice-Provost (Programs) and the Associate Dean (FGSR) on specialization proposals (July 19, 2022)
- Departmental Council discussions and request for support in principle (Sep 26, 2022, Oct 28, 2022)
- Faculty of ALES consultation and endorsement by the Dean of ALES (Nov 16, 2022)
- Second consultation with the Vice-Provost (Programs), and review and

	<p>revisions of proposal documents (Jan 12, 2023, and Jan 27, 2023)</p> <ul style="list-style-type: none"> • Endorsed by Vice-Provost (Indigenous Programming & Research) (Sep 26, 2023)
<p>Indigenous Perspectives Describe the outcomes of the consultation with the Vice Provost (Indigenous Programming and Research) regarding how the program will integrate/include Indigenous perspectives and content, and any action items that may result.</p>	<p>Two courses that cover Indigenous perspectives are available to students in this proposed specialization as a core topical elective: RSOC 675 Public Participation and Conflict Resolution, which has a dedicated module “Conflict through the lens of Indigenous, Social and Environmental Justice” and R SOC 560 Perspectives on Traditional Knowledge. Additionally, we offer free electives that cover Indigenous peoples’ treaties and other rights, claims, traditions and interests. This includes FOREC 673 Forest Policy, REN R 701 Forestry and Environmental Sciences Field Skills, REN R 702 Forestry Field School for Professionals, and REN R 728 Integrated Forest Management. Course syllabi and more details on how Indigenous perspectives are covered are included in a separate document: “1b_RENR_Indigenous_Strategy.pdf”. We further plan to strengthen our course offerings and research opportunities for RENR 906 and RENR 912 Capping Research Projects for students in this proposed specialization with the establishment of an Endowed Chair in Indigenous Forest Science and Management. More details on the Endowed Chair application can also be found in the document 1b_RENR_Indigenous_Strategy.pdf</p>
<p>Resource Implications Identify financial impacts and internal resource requirements, particularly staff and classroom and lab space. Also identify any external resource requirements such as practicum or internship placements, etc.</p>	<p>The proposed enrollment numbers reflect extra capacity that we have with current instructors and courses that are already being offered.</p>
<p>Approval Process Indicate the internal governance path, including meeting dates</p>	<ul style="list-style-type: none"> • RENR Departmental Council (March 25, 2023) • FGSR Graduate Program Support Team (March 27, 2023) • ALES Faculty Council (Sep 25, 2023) • FGSR Committees and FGSR Council • GFC Programs Committee

Faculty: ALES
Submitted by: Nadir Erbilgin (Chair, Dept. of Renewable Resources) and Andreas Hamann (Director, Academic & Communications)
Type of change request: <input type="checkbox"/> Editorial <input type="checkbox"/> Minor Program <input checked="" type="checkbox"/> Major Program <input type="checkbox"/> Regulation
For which term will this change take effect? Fall 2024
Which Calendar will this change be published in? 2024-2025

Calendar Copy

URL in current Calendar (or leave blank if it is a new page):

https://calendar.ualberta.ca/preview_program.php?catoid=34&poid=38269&returnto=10333

To indicate requested changes, please use track changes

Renewable Resources [Graduate]

...

Graduate Program Requirements

...

The Degree of MF with Specialization in Ecology and Ecosystem Restoration (Renewable Resources) [Graduate]

Participants are educated in the conceptual foundations and practical techniques for reclaiming forest ecosystems impacted by anthropogenic activities, including agriculture, forestry, and industrial development. Graduates are trained in modern approaches to contaminant remediation, reclamation and ecological restoration. Depending on the undergraduate background, this program can contribute to the academic requirements to become a Registered Professional Biologist or a Registered Professional Forester.

Entrance Requirements

Applicants hold an undergraduate forestry degree or a degree from an allied discipline such as environmental or biological sciences.

Program Requirements

Students are required to complete a minimum of 30 units, including 15 units of topical electives, and either 9 units of free electives combined with a 6 unit capping research project, or 3 units of free electives combined with a 12 unit capping research project. A 12 unit capping research project requires departmental approval.

Course Requirements (30 units)

15 units of topical electives from:

- REN R 721 - Forest Ecosystems
- REN R 746 - Climates and Ecosystems
- REN R 532 - Disturbance Ecology Fundamentals
- REN R 720 - Tree Physiology
- REN R 521 - Advanced Tree Physiology
- REN R 730 - Physical Hydrology
- REN R 731 - Forest Watershed Management
- REN R 749 - Forest Soils
- REN R 541 - Advanced Soil Formation, Classification and Landscape Processes
- REN R 761 - Restoration Ecology
- REN R 782 - Soil Remediation
- REN R 750 - Soil and Water Conservation
- REN R 595 - Advanced Land Reclamation
- R SOC 551 - Engagement and Public Policy
- R SOC 560 - Perspectives on Traditional Knowledge
- R SOC 675 - Public Participation and Conflict Resolution

3 or 9 units of free electives selected from

- REN R at the 500-700 level
- FOREC at the 500-700 level
- R SOC at the 500-700 level

6 or 12 units selected from

- REN R 906 - Capping Research Project
- REN R 912 - Capping Research Project
- REN R 906A/B - Capping Research Project
- REN R 912A/B - Capping Research Project

Professional Development and Ethics Requirements

Students are required to fulfill the [FGSR Professional Development Requirement](#) and the [FGSR Academic Integrity and Ethics Training Requirement](#).

Length of Program

The program is designed to be completed in 16 to 20 months. However, with a heavier than normal course load, the program can be completed in 10 to 12 months, or it may be completed on a part-time basis. The maximum time to complete the program as set by the Faculty of Graduate Studies and Research is six years.

Rationale

See separate document: "5b_MF-ERR_Proposal.docx".

Detailed Rationale, for internal ALES use

See separate document: "1_RENR_Specialization_Strategy.docx".

Proposed by and Reviewed/Endorsed/Approved by:

- Proposed by Nadir Erbilgin (RENR Department Chair) and Andreas Hamann (Director, Academic & Communications).
- Consultation with Vice-Provost (Programs) and Associate Dean (FGSR) on specialization proposals (first meeting July 19, 2022)
- Departmental Council support in principle (Sep 26, 2022, Oct 28, 2022)
- Faculty of ALES consultation and written endorsement from Dean of ALES (Nov 16, 2022)
- Second consultation with Vice-Provost (Programs) and revisions reviewed (Jan 12, 2023 and Jan 27, 2023)
- Approved by RENR Departmental Council (March 17, 2023)
- Reviewed by FGSR Graduate Program Support Team (GPST) (March 27, 2023)
- Approved by ALES Faculty Council (Sep 25, 2023)
- Endorsed by Vice-Provost (Indigenous Programming & Research) (Sep 26, 2023)
- FGSR Committees and FGSR Council
- GFC Programs Committee

Notes:

1. This should be the Program Chair.
2. This is the rationale that goes forward with the proposed change to GFC for approval. It should be brief but still provide sufficient information to justify the change being proposed to an external audience.
3. The information here is for internal (ALES) use only. This should provide more detail concerning the rationale for the course or program change that would be relevant to an internal audience. For new course proposals, this will include the intended role for the course. Where appropriate, information will be provided regarding consistency with recommendations from program reviews, task force reports, strategic planning, accreditation/unit reviews, etc.



4. The information here is for internal (ALES) use only. The section should include:
 - a. Individual(s) proposing the proposed Calendar change.
 - b. Record of required approvals, **including dates**. (Program Committees in the case of program proposals).
 - c. indication of any relevant/required consultation undertaken in support of the proposal (e.g., consulting with affected departments/divisions in the case of program change proposals).

Internal Program Proposal
- for-credit programs not requiring Ministry approval -

This template is to be used for proposals to create or modify programs that do not require Ministry of Advanced Education approval.

Faculties and Departments must consult with the Portfolio Initiatives Manager in the Office of the Provost and Vice-President (Academic) (carley.roth@ualberta.ca) on the appropriate template and process. Graduate proposers must also consult with the Faculty of Graduate Studies and Research (fgsrgov@ualberta.ca). All program proponents must also consult with the Vice-Provost (Indigenous Programming & Research) during the early development stage.

PROPOSAL TYPE

This proposal is for a (select one):	
<input checked="" type="checkbox"/>	Creation of a new second-level specialization (e.g., minors of undergraduate programs and second-level specializations of graduate programs)
<input type="checkbox"/>	The addition of an Honors stream to an existing undergraduate program
<input type="checkbox"/>	Creation of a combined degree program where both contributing degrees have been approved by the Ministry of Advanced Education
<input type="checkbox"/>	Embedded Certificate
<input type="checkbox"/>	Substantive program changes that do not require Ministry approval

1: Basics		
Program/Specialization	Master of Agriculture in Renewable Resources with Specialization in Conservation and Restoration of Land and Water.	
Faculty/Department	Faculty of Agricultural, Life & Environmental Sciences (ALES) Department of Renewable Resources (RENR)	
Contact information	Name and Title	Andreas Hamann
	Phone	(780) 492-6429
	Email	andreas.hamann@ualberta.ca
Proposed effective date	July 1, 2024	
Attachments		

- Strategy for specializations of course-based programs (1_RENR_Specialization_Strategy.docx)
- Proposed Calendar changes (6b_MAg-CRLW_Calendar_Change.docx)
- Letter of Support from the Dean of the Faculty (7_ALES Support Letter.pdf)

2: Rationale, Implications, and Impacts

Rationale for the Proposal

Identify the purpose of the proposal with supporting rationale and evidence of demand.

Master of Agriculture in Renewable Resources with **Specialization in Conservation and Restoration of Land and Water** is one of three similar proposals that complement two forestry-focused specializations, the latter targeting students interested in becoming a registered professional forester (RPF) or participating in a dual-degree international forestry program (TRANSFOR-M).

While we receive excellent applicants for the RPF and TRANSFOR-M streams, we lack qualified applicants beyond these two program streams. Virtually all graduate courses at the 500 and 600 level, and many graduate/undergraduate slash courses at the 700 level have extra capacity that we would like to fill with qualified course-based graduate students.

A key problem is that the calendar entries of our course-based [Master of Forestry \(MF\)](#) and [Master of Agriculture \(MAg\)](#) programs are undefined to a degree that make them unattractive (even misleading) to prospective students. For example, we do not actually offer any courses in classical agriculture. That would be the MAg offered by the Department of AFNS. Instead, our focus is on conservation and restoration of land and water in agricultural systems. This is neither visible to prospective applicants nor to potential employers of our graduates.

For clarity of what can actually be studied under these programs, we have sorted all of our [44 currently active graduate-level courses](#) into four non-overlapping blocks (briefly: sustainable forest management, environmental and wildlife conservation, forest ecology and ecosystem restoration, and conservation and restoration of land and water). This represents our teaching specializations, and that also approximately corresponds to [research specializations](#) in our department.

We believe that adding those specializations, with corresponding topical program requirements, would (1) significantly increase the visibility and clarity of our program offerings, (2) attract higher quality applicants both nationally and internationally, (3) provide better guidance and cohort experience for students, (4) effectively utilize our existing course capacity, and (5) improve the competitiveness of our graduates in the job market by highlighting timely and relevant skills in program names.



<p>Length of the Program Identify the length of the program in years and credit units per year.</p>	<p>10-20 months to complete 30 credits.</p>				
<p>Provide the anticipated enrolments by head count for the next 5 years</p>					
<p>Combined numbers for the three specializations outside the forestry-focused RPF and TRANSFOR-M streams:</p>					
<p>Enrolment</p>	<p>2024</p>	<p>2025</p>	<p>2026</p>	<p>2027</p>	<p>2028</p>
<p>Total Headcount</p>	<p>20</p>	<p>30</p>	<p>30</p>	<p>30</p>	<p>30</p>
<p>● Year 1</p>	<p>20</p>	<p>20</p>	<p>20</p>	<p>20</p>	<p>20</p>
<p>● Year 2</p>	<p>0</p>	<p>10</p>	<p>10</p>	<p>10</p>	<p>10</p>
<p>● Year 3</p>	<p>0</p>	<p>0</p>	<p>0</p>	<p>0</p>	<p>0</p>
<p>● Year 4</p>	<p>0</p>	<p>0</p>	<p>0</p>	<p>0</p>	<p>0</p>
<p>Work-Integrated Learning Describe how learners in this program will have access to Work-Integrated Learning (see CEWIL definitions).</p>	<p>Students typically acquire work-related experience through summer jobs and internships in the forest industry, with oil sands reclamation projects, in government, and with consultancies. Although not a formal requirement of the program, summer job opportunities are plentiful and virtually all students take advantage of these opportunities. In part, this is also motivated by our course-based programs being self-funded. In addition, all of our courses have a strong emphasis on applications, including field trips and experiential learning components.</p>				
<p>Consultation Describe the consultation process that occurred with students and other relevant stakeholders, and the feedback received.</p>	<p>The proposal is in part a response to a formal complaint that was conveyed to the Department leadership by the departmental section of the Graduate Student Association in 2021. Especially those students that focus on Reclamation and Restoration of Land and Water (a key strength of our department) felt that their skills were not adequately represented in program names or specializations, leading to a disadvantage of those graduates in the job market.</p> <p>During the developmental stage, the consultation process also included:</p> <ul style="list-style-type: none"> • Initial consultation with the Vice-Provost (Programs) and the Associate Dean (FGSR) on specialization proposals (July 19, 2022) • Departmental Council discussions and request for support in principle (Sep 26, 2022, Oct 28, 2022) • Faculty of ALES consultation and endorsement by the Dean of ALES (Nov 				



	<p>16, 2022)</p> <ul style="list-style-type: none"> • Second consultation with the Vice-Provost (Programs), and review and revisions of proposal documents (Jan 12, 2023, and Jan 27, 2023) • Endorsed by Vice-Provost (Indigenous Programming & Research) (Sep 26, 2023)
<p>Indigenous Perspectives Describe the outcomes of the consultation with the Vice Provost (Indigenous Programming and Research) regarding how the program will integrate/include Indigenous perspectives and content, and any action items that may result.</p>	<p>Two courses that cover Indigenous perspectives are available to students in this proposed specialization as a core topical elective: RSOC 675 Public Participation and Conflict Resolution, which has a dedicated module “Conflict through the lens of Indigenous, Social and Environmental Justice” and R SOC 560 Perspectives on Traditional Knowledge. Additionally, we offer free electives that cover Indigenous peoples’ treaties and other rights, claims, traditions and interests. This includes FOREC 673 Forest Policy, REN R 701 Forestry and Environmental Sciences Field Skills, REN R 702 Forestry Field School for Professionals, and REN R 728 Integrated Forest Management. Course syllabi and more details on how Indigenous perspectives are covered are included in a separate document: “1b_RENR_Indigenous_Strategy.pdf”. We further plan to strengthen our course offerings and research opportunities for RENR 906 and RENR 912 Capping Research Projects for students in this proposed specialization with the establishment of an Endowed Chair in Indigenous Forest Science and Management. More details on the Endowed Chair application can also be found in the document 1b_RENR_Indigenous_Strategy.pdf</p>
<p>Resource Implications Identify financial impacts and internal resource requirements, particularly staff and classroom and lab space. Also identify any external resource requirements such as practicum or internship placements, etc.</p>	<p>The proposed enrollment numbers reflect extra capacity that we have with current instructors and courses that are already being offered.</p>
<p>Approval Process Indicate the internal governance path, including meeting dates</p>	<ul style="list-style-type: none"> • RENR Departmental Council (March 25, 2023) • FGSR Graduate Program Support Team (March 27, 2023) • ALES Faculty Council (Sep 25, 2023) • FGSR Committees and FGSR Council • GFC Programs Committee

Faculty: ALES
Submitted by: Nadir Erbilgin (Chair, Dept. of Renewable Resources) and Andreas Hamann (Director, Academic & Communications)
Type of change request: <input type="checkbox"/> Editorial <input type="checkbox"/> Minor Program <input checked="" type="checkbox"/> Major Program <input type="checkbox"/> Regulation
For which term will this change take effect? Fall 2024
Which Calendar will this change be published in? 2024-2025

Calendar Copy

URL in current Calendar (or leave blank if it is a new page):

https://calendar.ualberta.ca/preview_program.php?catoid=34&poid=38269&returnto=10333

To indicate requested changes, please use track changes

Renewable Resources [Graduate]

...

Graduate Program Requirements

...

The Degree of MAg with Specialization in Conservation and Restoration of Land and Water (Renewable Resources) [Graduate]

This program provides an advanced degree in environmental agriculture with a focus on the conservation and restoration of soils and water resources. Participants are trained in the evaluation and management of greenhouse gases from agricultural sources, minimizing environmental impacts from agricultural practices, and restoring agroecosystems. Courses taken in this program can contribute towards the requirements to become a Registered Professional Agrologist.

Entrance Requirements

Applicants hold an undergraduate agriculture degree or a degree from an allied discipline such as environmental or biological sciences.

Program Requirements

Students are required to complete a minimum of 30 units, including 15 units of topical electives, and either 9 units of free electives combined with a 6 unit capping research project, or 3 units of free electives combined with a 12 unit capping research project. A 12 unit capping research project requires departmental approval.

Course Requirements (30 units)

15 units of topical electives from:

- REN R 552 - Environmentally Sustainable Agriculture
- REN R 750 - Soil and Water Conservation
- REN R 782 - Soil Remediation
- REN R 595 - Advanced Land Reclamation
- REN R 542 - Soil Biogeochemistry
- REN R 744 - Environmental Soil Chemistry
- REN R 745 - Soil Fertility
- REN R 550 - Advanced Soil Chemistry
- REN R 743 - Soil Physics
- REN R 540 - Advanced Soil Physics
- REN R 541 - Advanced Soil Formation, Classification and Landscape Processes
- R SOC 551 - Engagement and Public Policy
- R SOC 560 - Perspectives on Traditional Knowledge
- R SOC 675 - Public Participation and Conflict Resolution

3 or 9 units of free electives selected from

- REN R at the 500-700 level
- FOREC at the 500-700 level
- R SOC at the 500-700 level

6 or 12 units selected from

- REN R 906 - Capping Research Project
- REN R 912 - Capping Research Project
- REN R 906A/B - Capping Research Project
- REN R 912A/B - Capping Research Project

Professional Development and Ethics Requirements

Students are required to fulfill the [FGSR Professional Development Requirement](#) and the [FGSR Academic Integrity and Ethics Training Requirement](#).

Length of Program

The program is designed to be completed in 16 to 20 months. However, with a heavier than normal course load, the program can be completed in 10 to 12 months, or it may be completed on a part-time basis. The maximum time to complete the program as set by the Faculty of Graduate Studies and Research is six years.

Rationale

See separate document: "6b_ MAg-CRLW_Proposal.docx".

Detailed Rationale, for internal ALES use

See separate document: "1_RENR_Specialization_Strategy.docx".

Proposed by and Reviewed/Endorsed/Approved by:

- Proposed by Nadir Erbilgin (RENR Department Chair) and Andreas Hamann (Director, Academic & Communications).
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4. The information here is for internal (ALES) use only. The section should include:
 - a. Individual(s) proposing the proposed Calendar change.



Calendar Change Request Form for Program or Regulation Changes

- b. Record of required approvals, **including dates**. (Program Committees in the case of program proposals).
- c. indication of any relevant/required consultation undertaken in support of the proposal (e.g., consulting with affected departments/divisions in the case of program change proposals).



November 17, 2022

Carley Roth
Portfolio Initiatives Manager
Office of the Provost and Vice-President (Academic)

Re: Internal Program Proposal - Development of New Second-Level Specializations under Existing Masters Programs

Dear Ms. Roth,

I am writing to support the specialization proposals, developed by the Department of Renewable Resources, for five new course-based Masters specializations under the existing Master of Forestry and Master of Agriculture programs:

- (1) Master of Forestry with Specialization in Sustainable Forest Management
- (2) Master of Forestry with Specialization in International Forestry
- (3) Master of Forestry with Specialization in Environmental and Wildlife Conservation
- (4) Master of Forestry with Specialization in Ecology and Ecosystem Restoration
- (5) Master of Agriculture with Specialization in Conservation and Restoration of Land and Water

The above specializations closely reflect current graduate course offerings and opportunities for capping research projects in the Department of Renewable Resources.

The specialization proposals are part of the Faculty of Agricultural, Life and Environmental Sciences and the Department of Renewable Resources' long-term strategy to increase student enrollment in our less densely populated programs.

I fully support the rationale outlined in the proposals, and I believe that the proposed specializations would significantly increase the visibility, clarity and competitiveness of our program offerings, attract high-quality applicants both nationally and internationally, and reduce the administrative workload for delivering our course-based programs.

If you have further questions, please feel free to contact me at blade@ualberta.ca

Sincerely,

A handwritten signature in blue ink, appearing to read "S. Blade".

Stanford F. Blade, PhD, P.Ag,
Dean

Dean's Office

College of Natural + Applied Sciences
Faculty of Agricultural, Life & Environmental Sciences (ALES)
2-06 Agriculture/Forestry Centre, Edmonton AB Canada T6G 2P5

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