The following Motions and Documents were considered by the GFC Academic Planning Committee at its Wednesday, November 07, 2018 meeting:

Agenda Title: **Proposed Revisions to the Animal Ethics Policy and Procedures**

CARRIED MOTION:
THAT the GFC Academic Planning Committee recommend to General Faculties Council the proposed revisions to the Animal Ethics Policy and Procedures.

Final Item: 4

Agenda Title: **Proposed Changes to the Doctor of Dental Surgery (DDS), Faculty of Medicine and Dentistry**

CARRIED MOTION:
THAT the GFC Academic Planning Committee approve, with delegated authority from General Faculties Council, the proposed changes to the Doctor of Dental Surgery (DDS) program, as proposed by the Faculty of Medicine and Dentistry, as set forth in Attachments 1-2, as amended, to take effect in Fall 2019.

Final Item: 5

Agenda Title: **Proposal from the Faculty of Graduate Studies and Research for Program Changes to the MA and PhD programs in Economics.**

CARRIED MOTION:
THAT the GFC Academic Planning Committee approve, with delegated authority from General Faculties Council, the proposed changes to existing MA and PhD degree programs in Economics, as submitted by the Faculty of Graduate Studies and Research and the Faculty of Arts, and as set forth in Attachment 1, as amended, to take effect upon approval and to be published in the 2019-2020 Calendar.

Final Item: 6

Agenda Title: **Increase to Required English Language Proficiency (ELP) Scores for Undergraduate Admissions - Alignment Across Tests**

CARRIED MOTION:
THAT the GFC Academic Planning Committee approve, with delegated authority from General Faculties Council and as recommended by the GFC Academic Standards Committee, changes to Undergraduate Admissions, Language Proficiency Requirements, as proposed by the Office of the Registrar, and as set forth in Attachment 1, to take effect upon approval.

Final Item: 7

FINAL Item No. 4

Governance Executive Summary
Action Item

Agenda Title **Proposed Revisions to the Animal Ethics Policy and Procedures**

Motion
THAT the GFC Academic Planning Committee recommend to General Faculties Council the proposed revisions to the Animal Ethics Policy and Procedures.

Item

Action Requested	☐ Approval ☒ Recommendation
Proposed by	Vice-President (Research)
Presenter(s)	Susan Babcock, Director, Research Ethics Office Walter Dixon, Associate Vice-President (Research)

Details

Responsibility	Vice-President (Research)
The Purpose of the Proposal is (*please be specific*)	To recommend revisions to the Animal Ethics Policy and Procedures
Executive Summary (*outline the specific item – and remember your audience*)	In general, the proposed revisions do not change the scope or intent of the Animal Ethics Policy Suite. The proposed revisions are intended primarily to address the Canadian Council on Animal Care (CCAC) 2017 assessment of the University Animal Care and Use Program. Specifically, the CCAC recommended that the University develop and implement a harmonized process for defining and handling incidents of non-compliance with animal use protocols and revise the *Animal Care and Use Committee Structure, Application and Review Procedure* to conform to CCAC requirements. The University is obligated to comply with CCAC recommendations as it must maintain CCAC certification as a condition of receiving CIHR and NSERC funds. The other revisions were identified by members of the University Animal Care and Use Program in the course of their work with the Policy and Procedures since its approval in 2015. The proposed revisions are strategically and financial significant because they improve our institutional compliance with CCAC requirements and ability to maintain CCAC certification without which research funding would be jeopardized.
Supplementary Notes and context	

Engagement and Routing (Include meeting dates)

Consultation and Stakeholder Participation (parties who have seen the proposal and in what capacity) <For information on the protocol see the Governance Resources section Student	*Those who are actively **participating**:* • The University Animal Policy & Welfare Committee has reviewed and endorsed these changes. Its membership includes the Chairs of the four individual Animal Care and Use Committees, the Chair of the Cross Cancer Institute Animal Care Committee, the Associate Deans (Research) of ALES, FOMD and Science, the Directors of the animal services units, a representative from Environment, Health & Safety, two faculty members (who use animals in research), the Associate Vice-President (Research),

Participation Protocol>	and the following staff from the Research Ethics Office: the Animal Care and Use Consultant, the University Veterinarian and the Director.
	*Those who have been **consulted**:* • The Office of the Vice-President Research and the Research Ethics Office have consulted with the Canadian Council on Animal Care to determine if the proposed Animal Care and Use Non-Compliance Procedure meets its requirements.
	*Those who have been **informed**:* •
Approval Route (Governance) (including meeting dates)	GFC Academic Planning Committee - November 7, 2018 GFC Executive Committee (for information) – December 10, 2018 General Faculties Council - January 28, 2019 Board Learning & Discovery Committee - February 15, 2019 Board of Governors - March 15, 2019

Strategic Alignment

Alignment with *For the Public Good*	EXCEL as individuals, and together, sustain a culture that fosters and champions distinction and distinctiveness in teaching, learning, research, and service.	
Alignment with Institutional Risk Indicator	Please note below the specific institutional risk(s) this proposal is addressing.	
	☐ Enrolment Management ☐ Faculty and Staff ☒ Funding and Resource Management ☐ IT Services, Software and Hardware ☐ Leadership and Change ☐ Physical Infrastructure	☐ Relationship with Stakeholders ☒ Reputation ☒ Research Enterprise ☐ Safety ☐ Student Success
Legislative Compliance and jurisdiction	Post-Secondary Learning Act GFC Academic Planning Committee Terms of Reference Board Learning and Discovery Committee Terms of Reference Canadian Council on Animal Care and Use policies and guidelines	

Attachments

1. Proposed Revisions to the Animal Ethics Policy (pp 1 - 2)
2. Proposed Revisions to the Animal Care and Use Committee Structure, Application and Review Procedure (pp 1 - 7)
3. Proposed Revisions to the Standard Operating Procedures Definition, Creation and Approval Procedure (p1)
4. Proposed Revisions to the Animal Care and Use Post-Approval Monitoring Procedure (p1)
5. Proposed Revisions to the Animal Care and Use Appeal Procedure (p1)
6. Proposed Revisions to the Animal Care and Use Roles and Responsibilities Procedure (pp1-2)
7. Proposed NEW Animal Care and Use Non-compliance Procedure (pp1-6)
8. Proposed Revisions to the Special Requests for Alternate Animal Housing Procedure (pp1-3)
9. Proposed Revisions to the Institutional Animal User Training Program Procedure (pp 1-5)

Prepared by: Susan Babcock, Director – Research Ethics Office, sbabcock@ualberta.ca

Original Approval Date: June 2, 2005

Most Recent Approval Date: October 16, 2015

Animal Ethics Policy

Office of Accountability:	Vice-President (Research)
Office of Administrative Responsibility:	Research Ethics Office (REO)
Approver:	Board of Governors
Scope:	Compliance with this university policy extends to all academic, support and excluded staff, postdoctoral fellows, and academic colleagues as outlined and defined in the Recruitment Policy (Appendix A and Appendix B: Definitions and Categories); undergraduate and graduate students; emeriti; visitors to campus, including visiting scholars; third party contractors; and volunteers~~Academic Staff and Colleagues and Support Staff as outlined and defined in Recruitment Policy (Appendix A and Appendix B) in addition to third party contractors, visiting speakers, professors emeriti, undergraduate and graduate students, post-doctoral fellows, volunteers and to all persons~~ who use **animals** for research, teaching or testing.

Overview

The University of Alberta holds that scholarly integrity and trust are vital to the responsible conduct of research. It is committed to ensuring the ethical and humane use and responsible care of animals in research, teaching and testing. The University of Alberta regards the use of animals in research, teaching and testing as a privilege, not a right. Animals are used only for valid scientific studies with a reasonable expectation of obtaining knowledge for the potential benefit of people and/or animals. The University of Alberta is committed to ensuring the highest possible standards in the care, well-being, quality of life and use of its animals in accordance with applicable laws, the **Canadian Council on Animal Care (CCAC)** guidelines and policy statements, and the Tri-Agency *Agreement on the Administration of Agency Grants and Awards by Research Institutions*.

Purpose

– To promote the highest standards of practice in research, teaching and testing involving animals.

– To establish the nature of these standards and address instances when these standards have not been met.

POLICY

1. GUIDING ETHICAL PRINCIPLES OF ANIMAL CARE AND USE

    a. Animals used in research, teaching and testing by University of Alberta staff and trainees must be cared for and maintained in accordance with applicable laws, CCAC guidelines and policy statements, and the requirements of the Tri-Council *Agreement on the Administration of Agency Grants and Awards by Research Institutions*.

    b. The Russell-Burch Three Rs Replacement, Reduction and Refinement principles will be upheld in the design and review of animal use protocols.

2. ANIMAL CARE AND USE COMMITTEES

a. The Vice-President (Research) shall establish an institutional Animal Policy and Welfare Committee [University Animal Policy and Welfare Committee (UAPWC)] to concern itself with the ethical and responsible use and care of animals in research, teaching and testing.

b. UAPWC has the authority, on behalf of the Vice-President (Research) to:

   i. stop any procedure if it considers that unnecessary and/or unanticipated pain or distress is being experienced by the animal;

   ii. stop immediately any use of animals that is not described within an approved protocol or that deviates from the approved protocol;

   iii. direct that any animal be humanely euthanised if it is experiencing unnecessary and/or unanticipated pain or distress that cannot be alleviated; and

   iv. order the closure of facilities that do not meet CCAC standards and/or endanger the well-being of animals contained therein.

c. UAPWC shall establish such specialized Animal Care and Use Committees (ACUCs) as necessary to review and manage animal use applications. All **Principal Investigators (PIs)** using animals must apply to and be accountable to at least one of the specialized ACUCs.

d. UAPWC will serve as the appeal body concerning a negative decision of an ACUC. A PI who disputes an ACUC decision, following reconsideration by ACUC, may appeal that decision to UAPWC. Refer to the *Animal Care and Use Committee Appeal Procedure*.

   i. Because ethics review and the observance of research ethics at the University is premised on collegial relations between ACUCs and researchers, a request for appeal must be a last resort. An appeal may only be made on the grounds that there has been a miscarriage of justice, such as an error in process, procedural irregularity, lack of due process, and exceptions to the precepts of natural justice such as bias.

   ii. If an appeal is upheld, UAPWC will immediately review the animal use protocol in question. Decisions by UAPWC on appeals are final.

3. ETHICS REVIEW OF ANIMAL USE

a. The University's animal care and use program is premised on collegial relations among its members.

b. University of Alberta staff and trainees shall not use an animal for research, teaching, or testing without written approval from one of the University's ACUCs.

c. Each ACUC shall have a defined area of expertise and shall be capable of considering a range of research methods and animal models within that area. ACUCs are mandated to approve, reject, propose modifications to or terminate the approval of any proposed or ongoing animal use that is subject to review under this Policy. PIs should apply to ACUC best equipped to review the proposed animal use for which approval is requested.

d. ACUC has the authority to:

   i. stop any procedure if it considers that unnecessary and/or unanticipated pain or distress is being experienced by the animal;

   ii. stop immediately any use of animals that is not described in an approved protocol or that deviates from an approval protocol; and

   iii. direct that any animal be humanely euthanized if it is experiencing unnecessary and/or unanticipated pain or distress that cannot be alleviated.

e. If a PI is collaborating with researchers at other institutions to conduct animal research, the *Policy Statement for Animal-Based Projects Involving Two or More Institutions* will apply.

4. ACCOUNTABILITY

a. The University of Alberta aspires to the highest standards of animal care and use and is regularly assessed by CCAC in accordance with its standards of GAP – Good Animal Practice.

5. PROCUREMENT, USE, HOUSING AND MAINTENANCE OF ANIMALS

   a. Typically, animals must be ~~-~~obtained through one of the University of Alberta **animal services units**, except animals used in the field.

   b. All approved animal use must receive veterinarian oversight from one of the animal services units.

   c. Whenever possible, animal procedures should be conducted in facilities managed by one of the animal services units.

   d. Animal procedures may be conducted in other locations, provided they are suitable and both the location and procedures, including the transfer of the animals, has been approved by ACUC and the University's Office of Environmental Health and Safety (EHS).

   e. Animals will normally be housed in facilities managed and maintained by one of the animal services units.

   f. In certain circumstances, a PI may apply for special permission to house animals in an alternate site. Refer to the *Special Requests for Alternate Animal Housing Procedure*.

6. ACCESS TO ANIMALS AND FACILITIES

   a. All animals maintained at the University of Alberta and the facilities in which they are used or housed are subject to post-approval monitoring and periodic inspection by the University Veterinarian, UAPWC, ACUCs, Directors and staff of the animal services units, EHS and REO staff. These people must have access at all times to all areas where animals are housed or used.

7. ANIMAL USER TRAINING

   To promote the highest standards of animal care and use, all University of Alberta staff and trainees engaged in the care and use of animals must, at a minimum, be trained in the principles and ethics of animal care and use. University of Alberta staff and trainees:

   a. associated with an animal use protocol must successfully complete Part 1 Institutional Animal User Training and provide REO with proof of completion.

   b. engaged in animal care and use must also complete relevant Part 2 Institutional Animal User Training appropriate to the species of animal and the procedure(s) to be performed. No person shall handle animals or perform any procedures with animals until they have completed appropriate Part 2 training.

8. EUTHANASIA

   a. Any veterinarian licensed by the Province of Alberta called upon to attend an animal used in an University ACUC approved protocol is delegated authority to stop any unapproved procedure or any procedure causing unnecessary and/or unanticipated pain or distress to the animal, and to humanely euthanize any animal believed to be in unnecessary and/or unanticipated pain or distress that cannot be alleviated. The veterinarian will consult with the PI and ACUC Chair, if possible, and will salvage research data, if possible. The veterinarian will send a written report to the PI, the ACUC Chair and the veterinarian who reviewed the protocol following any such event.

   b. University veterinarian staff may delegate authority to humanely euthanize animals to senior animal services unit staff.

   c. PIs are responsible for ~~ensuring approved protocol endpoints are met. Every effort must be made to identify and humanely euthanize morbid animals prior to reaching a moribund state (a state of dying).~~ working with the ACUC to establish appropriate humane endpoints and to ensure that approved humane endpoints are followed. Every effort must be made to expose animals to the minimum distress or pain necessary for the scientific objectives of the research, for as short a period as possible, and to monitor them carefully to identify and euthanize animals reaching their humane endpoints.

9. NON-COMPLIANCE

   a. Any ~~Animal~~animal use that has not been ~~reviewed and~~ approved by an ACUC and/or animal use that is not conducted in the manner in which it was described in an animal use protocol and approved by an ACUC will constitute non-compliance.

b. ~~Animal~~ Any animal ~~use that contravenes this Policy~~care that does not meet CCAC guidelines or is not described in an approved animal use protocol constitutes non-compliance.

c. Non-compliance ~~may represent research misconduct. See the *Research and Scholarship Integrity Policy*~~will be addressed according to the *Animal Care and Use Non-compliance Procedure*.

DEFINITIONS

Any definitions listed in the following table apply to this document only with no implied or intended institution-wide use. **[▲Top]**

Animal	Any living non-human vertebrate and any living invertebrate of the class of cephalopoda, including free-living and reproducing larval forms, used for research, teaching, or testing purposes by University of Alberta staff or trainees.
Canadian Council on Animal Care (CCAC)	The national organization responsible for setting and maintaining standards for the ethical use and care of animals used in science (research, teaching and testing) in Canada.
Principal Investigator (PI)	A member of the academic staff who is responsible for the design, conduct, supervision and oversight of the care and use of animals in research, teaching or testing as described in an approved animal use protocol.
Animal Services Units	Animal facilities established and operated by the University of Alberta as ongoing administrative units to provide veterinary and animal care staff, infrastructure, training, oversight and other resources to support the use of animals in research, teaching and testing by University staff and trainees. They currently are: Agricultural Food and Nutritional Sciences Animal Services (AFNSAS), Health Sciences Laboratory Animal Services (HSLAS) and Science Animal Support Services (SASS).

RELATED LINKS

Should a link fail, please contact uappol@ualberta.ca. **[▲Top]**

Agreement on the Administration of Agency Grants and Awards by Research Institutions (Government of Canada)

Animal-Based Projects Involving Two or More Institutions (CCAC)

Animal Protection Act (Government of Alberta)

Animal Protection Regulation (Government of Alberta)

Canadian Council on Animal Care Guidelines (CCAC)

Recruitment Policy (Appendix A) Definition and Categories of Academic Staff and Colleagues (UAPPOL)

Recruitment Policy (Appendix B) Definition and Categories of Support Staff (UAPPOL)

Research and Scholarship Integrity Policy (UAPPOL)

University Animal Policy and Welfare Committee (University of Alberta)

PUBLISHED PROCEDURES OF THIS POLICY

Animal Care and Use Committee Appeal Procedure

Animal Care and Use Committee Structure, Application and Review Procedure

Animal Care and Use Post-Approval Monitoring Procedure

Animal Care and Use Roles and Responsibilities Procedure

Animal Care and Use Standard Operating Procedures: Definition, Creation, Approval and Management Procedure

Institutional Animal User Training Program Procedure

Special Requests for Alternate Animal Housing Procedure

Animal Care and Use Non-compliance Procedure

Approval Date: November 1, 2015

Parent Policy: Animal Ethics Policy

Animal Care and Use Committee Structure, Application and Review Procedure

Office of Administrative Responsibility:	Research Ethics Office (REO)
Approver:	Vice-President (Research)
Scope:	Compliance with this university procedure extends to all academic, support and excluded staff, postdoctoral fellows, and academic colleagues as outlined and defined in the Recruitment Policy (Appendix A and Appendix B: Definitions and Categories); undergraduate and graduate students; emeriti; visitors to campus, including visiting scholars; third party contractors; and volunteers~~Academic Staff and Colleagues and Support Staff as outlined and defined in Recruitment Policy (Appendix A and Appendix B) in addition to third party contractors, visiting speakers, professors emeriti, undergraduate and graduate students, post-doctoral fellows, volunteers and to all persons~~ who use **animals** for research, teaching or testing.

Overview

Ethics approval must be obtained before any use of animals for research, teaching or testing is undertaken and maintained for the duration of the animal use.

Purpose

– Define the structure of Animal Care and Use Committees (ACUCs) at the University of Alberta.

– Define the decision making and review requirements for ethics review of animal use.

– Describe the basic procedures for application for and ethics review of animal use.

PROCEDURE

1. STRUCTURE OF ANIMAL CARE AND USE COMMITTEES AND GENERAL CONSIDERATIONS

   a. The University of Alberta, through the Vice-President (Research) and the University Animal Policy and Welfare Committee (UAPWC), shall establish such number of ACUCs as determined appropriate. ACUCs will be organized around models of animal use and their composition will conform with the requirements outlined in the **Canadian Council for Animal Care** (CCAC) *Policy Statement: Terms of Reference for Animal Care Committees.*

   b. It is the shared responsibility of the **Principal Investigator (PI),** the **animal services unit** providing housing and/or veterinarian oversight and ACUC to ensure the ethical conduct of animal care and use and to promote animal welfare consistent with CCAC requirements. Whether a PI personally works with animals or not, s/he is responsible for the animal care and use performed by his/her staff and trainees.

c. ACUCs shall apply the principles adopted in the *Animal Ethics Policy* in review of an animal use application. ACUCs should be aware of, and be willing to consider and suggest, a range of approaches to promote the ethical conduct of animal use. No animal use application will require approval from more than one ACUC. ACUC may request additional veterinarian and facility input if necessary. Each ACUC will accept, and rely on, the reviews of the other ACUCs.

d. ACUCs shall function impartially, provide a fair and constructive review with respect to an application and provide reasoned and appropriately documented opinions and decisions. ACUCs should make their decisions on the ethical acceptability of animal use in an efficient and timely manner, and shall communicate all decisions in writing, in print or by electronic means. The deliberations of ACUCs are confidential.

e. Ethics review will be based on fully detailed animal use applications submitted for review through the ~~Research and Ethics Management Online (REMO)~~online research ethics system. The animal use applications will include the information defined in the *CCAC Guidelines on: Animal ~~Utilization~~ Use Protocol Review* and the *CCAC Policy Statement: Terms of Reference for Animal Care Committees.*

f. REO will provide administrative support for ACUCs.

2. DECISION MAKING AND REVIEW REQUIREMENTS

a. ACUC must ensure that each animal use application has been found to have scientific or pedagogical merit through independent peer review before approving the application.

i. In the case of research funded through a competitive peer review process, confirmation of funding or a score in the fundable range will typically be accepted as evidence of peer review. Such merit review will be acceptable for five years from the date of review or such other time as ACUC may decide.

ii. For teaching applications, evidence of *a priori* consultation with, or involvement of, the relevant animal services unit in the development and approval of the course content and methods must accompany evidence of pedagogical review by the academic unit. ACUC may request additional review.

~~iii.~~ For animal use applications that ~~have not received peer review~~are not linked to peer reviewed funding, a REO administrator will select reviewers from a bank maintained in the office and will consult with the PI's Department Chair and/or Associate/Vice Dean (Research) to select reviewers as required. On these animal use protocols, the PI will be asked to suggest the names of a minimum of two subject matter experts to ~~review animal use protocols~~add to the bank of reviewers. ~~REO will maintain a bank of reviewers and will consult with the PI's Department Chair and/or Associate/Vice Dean (Research) to select reviewers as required.~~

~~iv.~~iii. REO will coordinate an impartial peer review process, following which the anonymized reviewers' comments will be provided to the PI. If the reviews do not warrant any changes to the animal use application, ACUC will complete its review. If changes are recommended, the application will be returned to the PI for appropriate action and the PI's Department Chair and/or Associate/Vice Dean will be asked to verify that the PI has addressed any concerns before ACUC completes its review.

b. All new animal use protocols and fourth year renewals of ongoing protocols will be reviewed by full ACUC.

c. Annual review of ongoing protocols may be done by a subcommittee of ACUC consisting of the ACUC Chair or designate (a scientific member of ACUC), a veterinarian and one community member for up to three annual reviews. At any time a subcommittee member can stipulate that the protocol go to full ACUC review.

d. While the disposition of any individual review rests solely and exclusively with either ACUC, or in the event of an appeal, with UAPWC, ACUCs are accountable to UAPWC for ensuring their processes are consistent with University of Alberta policy and procedures. In the event of a disagreement about the interpretation or application of policy, procedures or guidelines, the ~~Chair of UAPWC~~Vice-President (Research) shall have final authority.

e. To change approved animal use, except where necessary to eliminate any unanticipated harmful effects to the animals, the PI must submit, and receive ACUC approval for, an amendment to his/her animal use application.

f. The ACUC Chair may, in exceptional circumstances, convene a subcommittee consisting of at least him/herself, a veterinarian and a community representative to review and approve interim animal use on the understanding that a fully detailed animal use application will be reviewed by full ACUC at its next meeting.

3. NEW AND ONGOING ANIMAL USE PROTOCOL REVIEW

a. All applications for animal ethics review at the University of Alberta will be managed through the ~~Research and Ethics Management Online (REMO)~~online research ethics system. A PI should choose the ACUC best qualified to review his/her application. The receiving ACUC may redirect an application that would be more suitably reviewed by another ACUC and shall notify the PI as necessary. An animal use application will be checked for operational implications by the animal services unit(s) that will provide veterinarian oversight for the proposed animal use. The animal use application will then be received by an ACUC ~~Coordinator~~Specialist and, following an administrative review and in consultation with the ACUC Chair, be assigned for review by ACUC.

b. Applications for animal ethics review will be distributed to all members of ACUC. They may be reviewed by the committee as a whole and/or by specific assigned reviewers, as well as the ACUC Chair or Associate Chair, the veterinarian and the community member(s), and are discussed by all members present at the ACUC meeting.

c. If the ACUC Chair, the veterinarian or one of the primary reviewers determines additional expertise is necessary for appropriate review, *ad hoc* reviewers will be asked to review the animal use application.

d. At the discretion of the ACUC Chair, the PI will be invited to attend the ACUC meeting at which his/her new or fourth year renewal application is being considered, in order to clarify details of the proposed animal use.

e. If ACUC determines that changes are required, those requirements will be communicated in writing to the PI by the ACUC ~~Coordinator~~Specialist. Once the PI has made changes, the ACUC Chair will issue the approval if s/he is satisfied the requirements have been met, or will refer the application to full ACUC or members of the ACUC if not satisfied. ACUC will make decisions by consensus wherever possible. See *Animal Care and Use Roles and Responsibilities Procedure* for additional details.

f. Ethics approval for animal use is issued for twelve (12) months at a time or for such shorter period of time specified in the approval.

i. Where animal use requires ongoing ACUC approval, it is the responsibility of the PI to ensure that an annual report and application for renewal is made in sufficient time before the expiry date of the approval to permit review and incorporation of any changes required by ACUC before ~~and~~ approval. Annual reports are reviewed by specific assigned reviewers and are distributed to all ACUC members and discussed at full meetings of ACUC.

ii. A complete renewal, including a fully updated animal use application, must be submitted after three consecutive renewals or when otherwise deemed necessary by ACUC.

iii. If the PI does not provide an annual report by the approval expiry date, the protocol will normally be closed and no further animal work will be allowed. ACUC, the animal services unit and REO will work with the PI to find an appropriate resolution to any affected animal care and use.

iv. To facilitate animal ordering and financial administration, the Research Services Office and the animal services unit(s) will be notified by REO when an application is approved and when approval is renewed or expires or the application is closed.

4. AMENDMENTS TO AN APPROVED ANIMAL USE PROTOCOL

From time to time, approved animal use protocols may need to be amended to incorporate new procedures or design, new animal numbers or strains, changes in personnel and other changes to the animal use. Amendments to an approved animal use protocol must be completed using ~~REMO~~ online research ethics system and must be approved by the same ACUC that provided the original approval before amendments can be implemented. ~~Depending on~~Regardless of the scope of the amendment(s) and the implications for animal care and use, the PI ~~may~~ must submit an amendment or ~~may be required~~the ACUC may require the PI to submit a new animal use protocol. Multiple changes and/or changes which are more likely to cause a change in animal welfare will be subject to a higher level of scrutiny.

a. Administrative amendments, including ~~reduction in number of animals used, change in strain of animal(s),~~ funding changes and personnel/contact information changes can be submitted at any time and will be received by the ACUC ~~Coordinator~~Specialist on behalf of ACUC. If the ACUC Specialist believes an amendment is not administrative, it may be referred to the University Veterinarian to determine if it requires ACUC Chair or subcommittee review. Administrative amendments are documented in the online research ethics system.

b. Minor ~~Amendments~~ amendments that have little or no impact on the approved animal use may be approved by the ACUC Chair. These include reduction in number of animals used, changes which reduce the invasiveness or stress on the animal, changes in animal procedures or drugs used ~~(~~where the effects on the animal are equivalent~~)~~, ~~moderate~~ small increases in animal numbers ~~(≤25% of the number previously approved)~~, addition of or changes animal ~~species/~~strains that are not known to have specific housing/care requirements and changes in anesthetic or analgesic made on the recommendation of a veterinarian to improve the welfare of an animal, particularly as documented in the Post Approval Monitoring Log. ~~changes in the use of hazardous agents, subject to Environmental Health and Safety review.~~ At any time, the ACUC Chair can send the amendment to full ACUC, or a subcommittee thereof, for review. ~~Minor changes in anesthetic or analgesic made on the recommendation of a veterinarian to improve the welfare of an animal can be made without review but must be reported as a refinement in the next annual report.~~ Minor amendments are reported and documented in the minutes of the following ACUC meeting.

~~c. Amendments that have more than minor impact on animal use will be reviewed by a sub-committee of ACUC, including the Chair, the veterinarian and a community member and, at their discretion, approved or referred to full ACUC for review. These include changes in species, sex, breed, strain (with health implications), age and genetic manipulation that will alter the animal procedures, introduce earlier endpoints, or trigger specific housing/care requirements, increase in animal numbers by more than 25%, change in anesthetic agent or use of analgesic agents, changes in method of euthanasia, new procedure or manipulation, particularly ones judged to result in increased potential for pain and distress and change in duration, frequency or number of procedures performed. At any time, either the ACUC Chair or the ACUC veterinarian can send the amendment to full ACUC review.~~

~~Major changes to the approved animal use protocol will normally require submission of a new animal use application which must be reviewed by full ACUC. Examples of major changes include a change in the main objective of the study or direction of research, a change from non-survival to survival surgery, an increase in the category of invasiveness, addition of category D procedures to a category D protocol and withholding or reducing substantially the use of analgesics or other drugs or procedures which provide comfort or safety for an animal handler.~~

c. Major changes to the approved animal use protocol must be reviewed by the ACUC and may require submission of a new animal use protocol application. All major amendments of animal use protocols will be reviewed by at least a sub-committee of ACUC, including the Chair, the veterinarian and a community member. At the discretion of the subcommittee or any member thereof, the amendment may be referred for review and discussion at a meeting of the full ACUC.
    i. Changes which may be reviewed by a sub-committee include: changes in species, strain (with health implications), age and genetic manipulation that will alter the animal procedures, introduce different endpoints, or trigger specific housing/care requirements; large increase in animal numbers; change in housing or procedure location; change in anesthetic agent or use of analgesic agents; changes in method of euthanasia from a non-physical to a physical method or from an approved to a conditionally approved method; a new procedure or manipulation, particularly ones judged to result in increased potential for pain and distress and change in duration, frequency or number of procedures performed.
    ii. Major changes to an existing animal use protocol that require review of the protocol at a full meeting of the ACUC include any protocol in which multiple changes are made; the addition of category D procedures to a category D protocol; addition of new Category E procedures to any protocol; a considerable increase of the number of animals required vs. the number in the original protocol; a change of species; use of more invasive or more frequent procedures and use of entirely new procedures.
    iii. Major changes that will normally require submission of a new animal use protocol include a change in the main objective of the study or direction of research; a change from non-survival to survival surgery; an increase in the category of invasiveness; a major change in experimental procedures and withholding or reducing substantially the use of analgesics or other drugs or procedures which provide comfort or safety for an animal.

~~d.~~

DEFINITIONS

Any definitions listed in the following table apply to this document only with no implied or intended institution-wide use. [▲Top]

Animal	Any living non-human vertebrate and any living invertebrate of the class of cephalopoda, including free-living and reproducing larval forms, used for research, teaching or testing by University staff or trainees.
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Principal Investigator (PI)	A member of the academic staff who is responsible for the design, conduct, supervision and oversight of the care and use of animals in research, teaching or testing as describe in an approved animal use protocol.
Animal Services Units	Animal facilities established and operated by the University of Alberta as ongoing administrative units to provide veterinary and animal care staff, infrastructure, training, oversight and other resources to support use of animals in research, teaching and testing by University staff and trainees. They currently are: Agricultural Food and Nutritional Sciences Animal Services (AFNSAS), Health Sciences Laboratory Animal Services (HSLAS) and Science Animal Support Services (SASS).

FORMS

No Forms for this Procedure.

RELATED LINKS

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Agreement on the Administration of Agency Grants and Awards by Research Institutions (Government of Canada)

Animal Protection Act (Government of Alberta)

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Canadian Council on Animal Care Guidelines (CCAC)

Recruitment Policy (Appendix A) Definition and Categories of Academic Staff and Colleagues (UAPPOL)

Recruitment Policy (Appendix B) Definition and Categories of Support Staff (UAPPOL)

Research and Scholarship Integrity Policy (UAPPOL)

Online Research Ethics System

University Animal Policy and Welfare Committee (University of Alberta)

Approval Date: November 1, 2015

Parent Policy: Animal Ethics Policy

Animal Care and Use Standard Operating Procedures: Definition, Creation, Approval and Management Procedure

Office of Administrative Responsibility:	Research Ethics Office (REO)
Approver:	Vice-President (Research)
Scope:	Compliance with this university procedure extends to all academic, support and excluded staff, postdoctoral fellows, and academic colleagues as outlined and defined in the Recruitment Policy (Appendix A and Appendix B: Definitions and Categories); undergraduate and graduate students; emeriti; visitors to campus, including visiting scholars; third party contractors; and volunteers ~~Academic Staff and Colleagues and Support Staff as outlined and defined in Recruitment Policy (Appendix A and Appendix B) in addition to third party contractors, visiting speakers, professors emeriti, undergraduate and graduate students, post-doctoral fellows, volunteers and to all persons~~ who use **animals** for research, teaching or testing.

Overview

The **Canadian Council on Animal Care (CCAC)** and the University of Alberta encourage the use of formal, written standard operating procedures (SOPs) for commonly used animal procedures wherever possible. In addition to promoting consistent and verifiable processes across the Animal Care and Use Program, SOPs offer **Principal Investigators (PIs)** an alternative to writing detailed procedures each time they prepare a protocol. Similarly, the use of SOPs reduces the review burden for the Animal Care and Use Committees (ACUCs) and simplifies the work of the **animal services units**.

Note: This Procedure addresses only SOPs involving live animals.

Purpose

– Define different types of animal care and use SOPs.

– Define the processes by which SOPs are created, approved and managed.

PROCEDURE

1. STANDARD OPERATING PROCEDURE REQUIREMENTS

   SOPs are sets of fixed instructions or steps to be followed in carrying out a given operation or in a given situation. SOPs may be developed by various members of the animal care and use program for a range of activities, including record keeping, equipment maintenance, use of equipment, emergency management and animal care and use.

   a. Any SOP involving live animals must be reviewed and approved by an ACUC before it can be used. Changes to SOPs must also be approved before they are implemented.

   b. SOPs should follow a standard template and provide sufficient detail so that trained personnel new to the animal care and use program should be able to carry out the procedure.

c. Animal services units and ACUCs should, as much as possible, encourage PIs and their research personnel to follow common, consistent SOPs for animal care and use procedures.

2. INSTITUTIONAL SOPs

Institutional SOPs should be established for procedures involving animals that are common across research areas and/or animal services units and to promote best practices for the University's animal care and use program.

a. Institutional SOPs should, wherever possible, make use of existing approved unit level or PI SOPs. Institutional SOPs may incorporate material from SOPs in use at other CCAC accredited institutions.

b. Institutional SOPs will be reviewed and approved by the University Animal Policy and Welfare Committee (UAPWC), which includes Directors of the animal services units and Chairs of ACUCs, or by a sub-committee of UAPWC, created for that purpose. Institutional SOPs will be accepted by all University ACUCs and animal services units.

c. SOPs relevant to the services provided by two or more of the animal services units must be endorsed by all units before they are presented to UAPWC for approval as institutional SOPs.

d. Whether or not institutional SOPs are regularly reviewed by ACUCs in connection with specific animal use protocols, they should be reviewed by UAPWC at least every ~~four~~ three years.

e. Any member of the University animal care and use program may recommend development of an institutional SOP to UAPWC. However, UAPWC will give priority to development of SOPs for commonly used procedures.

f. The institutional animal user training program and ACUCs will reinforce the use of SOPs, in particular institutional SOPs or SOPs maintained by the animal services units.

g. Approved institutional SOPs will be maintained in the ~~Research and Ethics Management Online (REMO)~~online research ethics system by REO and will be accessible online to ~~REMO~~ animal module users.

3. ANIMAL SERVICES UNIT SOPs

Directors of the Animal Services Units must establish and maintain SOPs for services or activities performed by their staff or in their facilities.

a. Unit level operational SOPs address various functions of an animal services unit in addition to those that involve animal care and use, for instance equipment maintenance, cleaning and record keeping. Operational SOPs that do not involve animals do not require ACUC approval.

b. Unit level animal care and use SOPs involving live animals may or may not be associated with a specific animal use protocol. Unit level SOPs connected to animal use protocols maintained by the Director, for instance, training or breeding protocols should be reviewed in conjunction with the animal use protocol or when these SOPs are amended. Stand-alone SOPs, for rarely used procedures, should be reviewed by ACUC at least every ~~four~~ three years.

c. Animal services units should provide species and procedure or technique training consistent with approved institutional and unit level SOPs.

d. The Director must ensure current approved versions of his/her unit's SOPs are available to staff and researchers as needed.

4. INVESTIGATOR SOPs

PIs may create standard operating procedures for specialized activities that they or their research personnel perform regularly.

a. PI level SOPs for protocol-specific procedures involving live animals will typically be approved by an ACUC, in connection with the PI's animal use protocol, and reviewed in detail with full protocol renewal every four years or in the event of changes. The animal use protocol identifies the animal users and their training, as well as the context in which protocol-specific SOPs will be employed. The more invasive the SOP, the more important it is to verify that the personnel following the SOP have commensurate training.

b. The PI must ensure that current approved versions of his/her SOPs are available to all members of his/her research group on an as needed basis.

c. A PI may also include institutional or unit level SOPs in his/her animal use protocol and make minor modifications to the SOPs, provided those modifications are approved by ACUC.

DEFINITIONS

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Animal	Any living non-human vertebrate and any living invertebrate of the class of cephalopoda, including free-living and reproducing larval forms, used for research, teaching or testing by University staff or trainees.
Canadian Council on Animal Care (CCAC)	The national organization responsible for setting and maintaining standards for the ethical use and care of animals used in science (research, teaching and testing) in Canada.
Principal Investigator (PI)	A member of the academic staff who is responsible for the design, conduct, supervision and oversight of the care and use of animals in research, teaching or testing as describe in an approved animal use protocol.
Animal Services Units	Animal facilities established and operated by the University of Alberta as ongoing administrative units to provide veterinary and animal care staff, infrastructure, training, oversight and other resources to support use of animals in research, teaching and testing by University staff and trainees. They currently are: Agricultural, Food and Nutritional Sciences Animal Services (AFNSAS), Health Sciences Laboratory Animal Services (HSLAS) and Science Animal Support Services (SASS).

FORMS

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SOP Template

RELATED LINKS

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Research and Scholarship Integrity Policy (UAPPOL)

On-line Research Ethics System

Approval Date: November 1, 2015

Parent Policy: Animal Ethics Policy

Animal Care and Use Post-Approval Monitoring Procedure

Office of Administrative Responsibility:	Research Ethics Office (REO)
Approver:	Vice-President (Research)
Scope:	Compliance with this university procedure extends to all academic, support and excluded staff, postdoctoral fellows, and academic colleagues as outlined and defined in the Recruitment Policy (Appendix A and Appendix B: Definitions and Categories); undergraduate and graduate students; emeriti; visitors to campus, including visiting scholars; third party contractors; and volunteers~~Academic Staff and Colleagues and Support Staff as outlined and defined in Recruitment Policy (Appendix A and Appendix B) in addition to third party contractors, visiting speakers, professors emeriti, undergraduate and graduate students, post-doctoral fellows, volunteers and to all persons~~ who use **animals** for research, teaching or testing.

Overview

Post-approval monitoring enables **Principal Investigators** (**PIs),** animal care and use committees (ACUCs), **animal services units** and the University to assess animal care and use in practice and to close any gaps between those practices and approved animal use applications. Post-approval monitoring involves a wide range of activities, from PI self-assessments and regular animal health monitoring by the veterinarian and animal care staff to lab visits and formal observation of techniques. An effective post-approval monitoring program is based on collaborative and collegial processes relying on information from many sources, including animal use applications, animal health programs, ACUC site visits, veterinary rounds, incident reports, self-assessments, laboratory visits by staff engaged in the University Animal Policy and Welfare Program and other reports.

The **Canadian Council on Animal Care (CCAC)** requires that the University establish and define a post-approval monitoring program to audit approved animal use applications and to provide continuing education to ensure consistency of practices with approved animal use applications and University policy and procedures. Recognizing that University research is built on scholarly integrity and trust, the starting point for post-approval monitoring is that researchers typically adhere to the activities described in their animal use applications. Consequently, post-approval monitoring will most often involve information exchange about procedures that work well, continuing education about areas that are problematic and assessments of novel issues so that best practices inform all animal care and use.

Purpose

– Describe the objectives of the post-approval monitoring program.

– Describe the components of the post-approval monitoring program and its relationship to the overall animal care and use program.

PROCEDURE

1. POST-APPROVAL MONITORING OBJECTIVES

a. PIs**,** ACUCs, the animal services units, and senior administration share responsibility for ensuring that animal care and use performed by University staff and trainees is consistent with ACUC decisions and institutional and CCAC standards.

b. Neither University Animal Policy and Welfare Committee (UAPWC) nor ACUC representatives are present when animal use protocols are conducted so they must work with PIs and members of the veterinary and animal care staff to ensure compliance with ACUC decisions and with the conditions set out in the approved animal use application.

c. The most important partner in post-approval monitoring is the PI**.** S/he agrees to undertake his/her animal care and use in practice as approved in principle by ACUC when s/he signs the final version of the animal use application, and s/he is responsible for the conduct of his/her staff and trainees.

d. The veterinarians and animal care staff are also essential partners in post-approval monitoring as they deliver applied animal user training and provide day-to-day assistance and information with respect to animal care and use and will often be the first to learn of an animal welfare issue.

e. All University staff and students working with animals must work together in a collegial manner and attempt to correct deficiencies collaboratively.

f. Deficiencies may arise for a number of reasons, including knowledge gaps, protocol drift, poor record keeping, communication problems and human error. Deficiencies can be corrected through protocol updates or amendments, improved practice, better training and more rigorous attention to detail.

g. In the rare event there are persistent and/or deliberate breaches of compliance that threaten the health, welfare and/or safety of ~~personnel or~~ animals or personnel, these issues must be reported to the Chair of ACUC that approved the protocol ~~and the Chair of UAPWC~~. Breaches of compliance or non-compliance with approved animal use protocols will be handled according~~with University policy and procedures may constitute research misconduct and will be handled according to the *Research and Scholarship Integrity Policy*~~ to the *Animal Care and Use Non-Compliance Procedure*. Serious incidents or chronic cases of non-compliance will be reporting according to the *Research and Scholarship Integrity Policy.*

2. POST-APPROVAL MONITORING ACTIVITIES

a. Post-approval monitoring procedures should not be unduly cumbersome or intrusive. They may be a natural extension of many animal care and use activities that are already in place and should leverage existing information and processes wherever possible. These include, for example, day-to-day observation of animal health and application of endpoints, assistance provided by ACUC personnel to animal users with their animal use applications, including processes for amending applications, site visits and discussions of animal use protocols by ACUC members and veterinary assistance and follow-up for new procedures and/or procedures more likely to result in animal pain and distress.

b. The following are examples of how post-approval monitoring activities will be incorporated with existing practices:

   i. Self-Assessment – Following approval of a new animal use application, including major amendments and fourth year renewals, REO will provide the PI with a self-assessment form which s/he may complete and append to the animal use application.

   ii. Veterinarian reports – A simple form, created in consultation with the animal services units, will be filled out by veterinarians after visiting a lab or attending a procedure. Each report will be appended to the relevant animal use application.

   iii. ACUC facility tours – ACUC's observations related to animal procedure and housing space made during its annual visits will be appended to individual animal use applications wherever possible.

   iv. Animal care reports – These could take many forms, ranging from copies of records maintained by staff in the animal services units to incident reports and post-mortems and will be appended to the animal use applications.

   v. Facility Reports – The animal services units can append information on routine or non-routine events, for example, power outages, disease outbreaks, treatment and resolution, and the like.

c. The Post-Approval Monitoring Program will also involve lab visits, which may be random and unannounced or for cause. For instance, studies involving a higher category of invasiveness, complex or novel

procedures, alternate animal housing or identified by ACUC as requiring additional follow-up are more likely to receive for cause visits.

3. POST-APPROVAL MONITORING RESOURCES

a. The ~~Post-Approval Monitoring Coordinator~~Animal Care and Use Consultant ~~will be housed~~ in REO ~~and~~ will support the ~~Post-Approval Monitoring Reviewers~~Post-Approval Monitoring Program, including the reviewers. The Post-Approval Monitoring Reviewers, between 3 and 6 knowledgeable and experienced animal users, will be recruited by the ~~Post-Approval Monitoring Coordinator~~Animal Care and Use Consultant in consultation with ACUC Chairs and Chair of UAPWC.

b. The ~~Post-Approval Monitoring Coordinator~~Animal Care and Use Consultant will be an ex officio member of all ACUCs and will attend all ACUC meetings. In addition, the Post-Approval Monitoring Committee members will be ACUC members and will be encouraged to attend meetings, although they will not be required to review protocols.

c. Post-approval monitoring activities and information will be captured at a protocol level in the ~~Research Ethics and Management Online (REMO)~~online research ethics system as much as possible.

d. REO will provide administrative support for the Post-Approval Monitoring Program.

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Animal	Any living non-human vertebrate and any living invertebrate of the class of cephalopoda, including free-living and reproducing larval forms, used for research, teaching or testing by University staff or trainees.
Principal Investigator (PI)	A member of the academic staff who is responsible for the design, conduct, supervision and oversight of the care and use of animals in research, teaching or testing as describe in an approved animal use protocol.
Animal Services Units	Animal facilities established and operated by the University of Alberta as ongoing administrative units to provide veterinary and animal care staff, infrastructure, training, oversight and other resources to support use of animals in research, teaching and testing by University staff and trainees. They currently are: Agricultural, Food and Nutritional Sciences Animal Services (AFNSAS), Health Sciences Laboratory Animal Services (HSLAS) and Science Animal Support Services (SASS).
Canadian Council on Animal Care (CCAC)	The national organization responsible for setting and maintaining standards for the ethical use and care of animals used in science (research, teaching and testing) in Canada.

FORMS

No Forms for this Procedure.

RELATED LINKS

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Research and Scholarship Integrity Policy (UAPPOL)

Online Research Ethics System

Original Approval Date: January 11, 2010

Most Recent Approval Date: November 1, 2015

Parent Policy: Animal Ethics Policy

Animal Care and Use Committee Appeal Procedure

Office of Administrative Responsibility:	Research Ethics Office (REO)
Approver:	Vice-President (Research)
Scope:	Compliance with this university procedure extends to all academic, support and excluded staff, postdoctoral fellows, and academic colleagues as outlined and defined in the Recruitment Policy (Appendix A and Appendix B: Definitions and Categories); undergraduate and graduate students; emeriti; visitors to campus, including visiting scholars; third party contractors; and volunteers ~~Academic Staff and Colleagues and Support Staff as outlined and defined in Recruitment Policy (Appendix A and Appendix B) in addition to third party contractors, visiting speakers, professors emeriti, undergraduate and graduate students, post-doctoral fellows, volunteers and to all persons~~ who use **animals** for research, teaching or testing.

Overview

A **Principal Investigator** (PI) has the right to request, and the Animal Care and use Committee (ACUC) has an obligation to provide reconsideration of a negative decision by ACUC. If the PI and ACUC cannot achieve agreement through reconsideration, the PI may appeal the disputed decision of ACUC to the University Animal Policy and Welfare Committee (UAPWC) in accordance with this Procedure.

Purpose

To specify the grounds for an appeal of a decision by an ACUC and to detail the procedures to be followed in the event of an appeal.

PROCEDURE

1. If a PI, after exhausting all reasonable attempts to resolve disagreements cooperatively, disputes an ACUC decision, the PI (appellant) may appeal that decision to UAPWC.
2. Only UAPWC may hear an appeal of a decision of an ACUC of the University of Alberta. An appeal may only be made on the grounds that there has been a miscarriage of justice, such as an error in process, procedural irregularity, lack of due process, and exceptions to precepts of natural justice such as bias.
3. The decisions of UAPWC are final and binding.
4. UAPWC shall hear an appeal from the same appellant against the same decision only once.
5. A written appeal of an ACUC decision, outlining the grounds for the appeal and accompanied by supporting documentation, must be submitted by the PI to the ~~Administrative~~ Director of REO within thirty (30) working days of receipt of the written ACUC decision.
6. UAPWC members will be asked in advance of a hearing to declare any possible bias and, if bias is declared,will not be called upon to hear the appeal. No UAPWC member will hear an appeal if s/he participated in the ACUC decision being appealed. The appellant may request that any UAPWC member not be part of the appeal process on the grounds that the member's presence would bias and prevent a fair hearing. If the UAPWC Chair is, for

any reason, unable to chair the appeal hearing, the ~~Administrative~~ Director of REO will identify another member of UAPWC to serve as chair for the appeal hearing. Quorum for an appeal hearing shall be a minimum of five members, including a veterinarian, a community member and at least two scientists who may also be ACUC Chairs.

7. The ~~Administrative~~ Director of REO will acknowledge receipt of the appeal in writing to the appellant, and will forward the appeal and current procedures for appeal to the Chair of UAPWC, and the Chair of ACUC concerned.
8. The Chair of ACUC (respondent) must provide a written response to the appeal within ten (10) working days. This written response will include the following information:
   a. All documents available at the ACUC meeting(s) related to the appeal;
   b. All minutes of the ACUC meeting(s) related to the appeal;
   c. A response to the PI's grounds for appeal; and
   d. Any comments on the alleged miscarriage of justice and on the relief requested.
9. For the purposes of an appeal hearing, the Chair of UAPWC may augment UAPWC's membership by adding faculty members who serve on University of Alberta ACUCs. These special members will be asked in advance of a hearing to declare any possible bias; if any such bias is present the member will not be called upon to hear the appeal. Both the appellant and the respondent will have the right to challenge these additional members.
10. REO will convene a meeting of UAPWC, with provisions for presentations by the appellant and the respondent, within thirty (30) working days of receipt of the appeal. The appellant will present the grounds for the appeal and speak to the issues. The respondent will present the reasons for the decision of ACUC and speak to the issues. Both sides may call witnesses and question the other parties. Both sides may have an advisor present during the hearing; however, the advisors may not be called as witnesses or participate in the presentations and questions.
11. UAPWC, having heard the oral presentations of both parties and having reviewed the written and supporting documentation, shall be the sole judge of the facts and shall, by majority vote, reach a decision before adjourning the appeal hearing. The Chair of UAPWC will, within ten (10) days of the appeal hearing, provide a written decision to REO. REO will transmit the decision to the appellant, the respondent and to such other parties as deemed appropriate.
12. If the appeal is upheld, UAPWC will immediately review the animal use application in question.

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Principal Investigator (PI)	A member of the academic staff who is responsible for the design, conduct, supervision and oversight of the care and use of animals in research, teaching or testing as describe in an approved animal use protocol.

FORMS

No forms for this Procedure. [▲Top]

RELATED LINKS

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University Animal Policy and Welfare Committee (University of Alberta)

Original Approval Date: June 2, 2005

Most Recent Approval Date: November 1, 2015

Parent Policy: Animal Ethics Policy

Animal Care and Use Roles and Responsibilities Procedure

Office of Administrative Responsibility:	Research Ethics Office (REO)
Approver:	Vice-President (Research)
Scope:	Compliance with this university procedure extends to all academic, support and excluded staff, postdoctoral fellows, and academic colleagues as outlined and defined in the Recruitment Policy (Appendix A and Appendix B: Definitions and Categories); undergraduate and graduate students; emeriti; visitors to campus, including visiting scholars; third party contractors; and volunteers~~Academic Staff and Colleagues and Support Staff as outlined and defined in Recruitment Policy (Appendix A and Appendix B) in addition to third party contractors, visiting speakers, professors emeriti, undergraduate and graduate students, post-doctoral fellows, volunteers and to all persons~~ who use **animals** for research, teaching or testing.

Purpose

– Describe the membership, roles and responsibilities of the University Animal Policy and Welfare Committee (UAPWC) and its sub-committees.

– Describe the membership, roles and responsibilities of the Animal Care and Use Committees (ACUCs).

– Describe the roles and responsibilities of the **animal services units**.

PROCEDURE

1. UNIVERSITY ANIMAL POLICY AND WELFARE COMMITTEE (UAPWC)

   a. UAPWC is a standing committee of the Vice-President (Research) and is the institutional animal care and use committee for the University of Alberta. UAPWC oversees all animal care and use performed under the jurisdiction of the University to ensure humane and ethical treatment of animals in compliance with University and **Canadian Council on Animal Care (CCAC)** policies, guidelines, standards and procedures. As the institutional animal care and use committee, UAPWC:

      i. recommends to the Vice-President (Research) on policies, procedures and standards for animal care and use at the University;

      ii. oversees and monitors the work of ACUCs to which it has delegated responsibility for reviewing and managing animal use applications and ensures that ACUCs meet or exceed CCAC guidelines on animal care use;

      iii. ensures all animal users are aware of their responsibility to remain in compliance with University standards for animal care and use;

      iv. supports and promotes education and training opportunities for University staff and trainees on the ethics of animal care and use in research, teaching and testing;

      v. advises the Vice-President (Research) about significant events in animal care and use and provides an annual report to the Vice-President (Research) on the status of the University's animal care and use program;

      vi. directs and promotes the post-approval monitoring program for animal care and use;

vii. recommends to the Vice-President (Research) on the construction, maintenance, or closure of University animal facilities;

viii. supports and promotes communication among and between the animal services units, **Principal Investigators (PIs)** and ACUCs to facilitate integrated and collaborative delivery of a comprehensive University-wide institutional animal care and use program;

ix. reviews regularly (at least every three years) the ~~terms of reference of ACUCs~~ *Animal Ethics Policy and Procedures*;

x. hears appeals by PIs of negative decisions by an ACUC (see *Animal Care and Use Committee Appeal Procedure*), and

xi. supports a coordinated crisis management program for the animal services units in conjunction with the University's Integrated Emergency Master Plan.

b. The Vice-President (Research) will appoint the following members, typically for three-year terms: the UAPWC Chair, two graduate student representatives, a representative of faculty animal users, a faculty member who does not engage in animal care and use, and two community members.

The following are *ex officio* members of UAPWC: the Vice-President (Research) or designate, the University Veterinarian, the ~~Executive~~ Director of REO, the Associate/Vice Deans (Research) of the Faculty of Science, the Faculty of Agricultural, Life and Environmental Sciences and the Faculty of Medicine and Dentistry, the Chairs of ACUCs, the Directors of the animal services units, ~~the Biosafety Officer~~a representative of Environment Health and Safety, the ~~Post-Approval Monitoring Coordinator~~Animal Care and Use Consultant and the Chair of the Cross Cancer Institute Animal Care Committee.

c. UAPWC will meet at least twice per year and as often as necessary to fulfil its responsibilities. Quorum will constitute 50% of the membership plus one, including at least one veterinarian, once ACUC Chair and one community member. REO will serve as the secretariat for UAPWC.

2. COMMITTEE FOR ANIMAL RESOURCES (CAR)

a. CAR is a standing committee of UAPWC. CAR concerns itself with evaluation of and planning for University animal facility use and development. It is comprised of the University Veterinarian, the ~~Executive~~ Director of REO, the Directors of the animal services units, ~~the Biosafety Officer~~a representative from Environment Health & Safety, a representative from Facilities and Operations, the Associate/Vice Deans (Research) of the Faculties in which animal research is undertaken and the Chair of UAPWC.

b. CAR's specific responsibilities include:

i. evaluating and making recommendations regarding upgrades to existing animal facilities, development of new facilities, and closure of facilities that do not meet CCAC guidelines;

ii. reviewing and approving all plans for new structures or renovations to existing facilities designed for animals, to ensure that CCAC guidelines for facilities are met or, when possible, exceeded;

iii. touring all University of Alberta animal facilities, at least every three years, to evaluate operations, maintenance and repair requirements;

iv. setting priorities/recommendations for any Facility Alteration Request (FAR) submitted by UAPWC;

v. providing a consultation service to faculty recruitment processes when animal use is anticipated;

vi. developing an integrated communication plan to address the needs of the research community and animal users, in particular to assist Facilities and Operations to provide timely and effective support for animal services units and PIs, in particular those operating alternate animal housing sites in the event of emergency, including power or HVAC failure, fire, flood, intrusion or criminal activities;

vii. identifying research trends involving animal use to facilitate long-term planning for facilities and infrastructure requirements.

c. CAR shall meet at least quarterly, at the call of the Chair and as often as necessary to fulfil its responsibilities. Quorum will constitute 50% of the membership plus one. REO will serve as the secretariat for CAR.

3. ANIMAL CARE AND USE COMMITTEES (ACUCs)

Responsibility

a. Animal Care and Use Committees are established by and report to UAPWC. ACUCs are: ACUC – Biosciences, ACUC – Livestock, ACUC – Health Sciences 1 and ACUC – Health Sciences 2.

b. Each ACUC is mandated to approve, reject, propose modifications to or terminate the approval of any proposed or ongoing animal use that is subject to review under this Policy. ~~ACUCs provides quarterly reports to UAPWC on its activities.~~The Chairs of the ACUCs bring forward to UWPAC issues arising from the reviews they oversee. Detailed information on the scope of each ACUC and its membership is ~~contained in the ACUCs' Terms of Reference~~ described below and in the *Animal Care and Use Committee Structure, Application and Review Procedure* and ~~UAPWC~~ in records maintained by REO.

c. ACUCs will review and assess animal use protocols, according to the *Animal Care and Use Committee Structure, Application and Review Procedure*, the *CCAC policy statement on: ethics of animal investigation* and CCAC guidelines on animal use protocol review as well as any other relevant CCAC guidelines and policy statements.

d. ACUCs will work with the staff of the animal services units to ensure compliance with its decisions and with the conditions set out in approved animal use protocols.

e. ACUCs will conduct annual on-site reviews of all the animal care facilities and areas in which animals are used associated with the animal use protocols it reviews. ACUCs will develop alternatives to on-site reviews for research conducted in the field.

f. ACUCs will receive and follow-up unanticipated adverse event reports as required.

g. ACUCs will implement strategies and recommendations arising from post-approval monitoring activities as required.

h. ACUCs will contribute to and participate in CCAC site visits and assessments and other such assessments as required.

Membership

A dynamic and collaborative peer review process is vital to the animal care and use program. Senior administrators at all levels of the institution should acknowledge, support and, wherever possible, recognize the work of current ACUC members and assist with identification and recruitment of new members. Facility veterinarians and staff who serve on ACUCs, like researchers who are also reviewers, must be able to provide support and advocacy for both scientific excellence and ethical and humane use of animals according to CCAC guidelines. ACUCs, the animal services units and the PIs share responsibility for the effectiveness of the university animal care and use program.

i. The ACUC Chair will typically be selected from among the current scientific/faculty membership of ACUC and will be appointed by the Vice-President (Research).

j. Normally, ACUC members will be appointed by REO for terms of no less than two years and no more than four years, renewable to a maximum of eight consecutive years of service. The voting membership will include:

   i. faculty/scientific members experienced in animal care and use and representative of the animal use commonly reviewed by ACUC;

   ii. a veterinarian experienced in experimental animal care and use;

   iii. the Director of the animal services unit, who may also be a veterinarian, most closely aligned with the majority of the animal use reviewed by the ACUC;

   iv. an institutional member whose normal activities, past or present, do not depend on or involve animal use for research, teaching or testing;

   v. at least one and preferably two or more person(s) representing community interests and concerns, who has (have) had no affiliation with the institution, who has (have) not been significantly involved in animal use for research, teaching or testing;

   vi. technical staff representation (either an animal facility or an animal research technician);

   vii. graduate student representation;

viii. the Chair of UAPWC or designate, and

ix. the ~~Post-Approval Monitoring Coordinator~~Animal Care and Use Consultant.

The ACUC Coordinator, although not a voting member of ACUC, will provide advice and recommendations to ACUC on animal use protocols, CCAC requirements and ACUC processes.

Meetings

k. ACUCs will typically meet once a month in person or as required at the call of the Chair.

l. Decisions will, to the extent possible, be made by consensus. If consensus cannot be achieved, decisions must be supported by a simple majority of eligible voting members.

m. Quorum will constitute the Chair, one veterinarian, one community member and at least two additional scientific members, one of whom must be a faculty member.

n. ACUC members shall disclose any potential conflict of interest and recuse themselves from meetings or discussions about animal use protocols on which they are named.

o. ACUC meetings and decisions will be documented in meeting minutes, correspondence and the ~~Research and Ethics Management Online~~online research ethics system. ACUC records and discussions are confidential unless otherwise indicated.

p. REO will serve as the secretariat for ACUCs and will compile the annual animal use data form for CCAC.

4. ANIMAL SERVICES UNITS

In order for investigators and teachers to have animals that are healthy subjects for research, teaching or testing and for the University to meet its obligations to protect the health and welfare of the animals, there must be competent veterinary and animal care service providers whose numbers and expertise match the nature and scope of the institutional program.

a. The animal services units provide animal care and services in support of approved animal use at the University of Alberta.

b. The animal services units are responsible for ensuring that animal care is in compliance with CCAC guidelines.

c. All University operated facilities or locations where animals are used or housed must be overseen by and accountable to one of the animal services units.

d. The animal services units and their Directors and/or Directors of Animal Care report to the Deans of their respective Faculties for administrative matters and are accountable to the University Veterinarian as the designate of the Vice-President (Research) ~~or designate~~ for their compliance with CCAC guidelines.

DEFINITIONS

Any definitions listed in the following table apply to this document only with no implied or intended institution-wide use.

Animal	Any living non-human vertebrate and any living invertebrate of the class of cephalopoda, including free-living and reproducing larval forms, used for research, teaching, or testing purposes by University staff or trainees.
Animal Services Units	Animal facilities established and operated by the University of Alberta as ongoing administrative units to provide veterinary and animal care staff, infrastructure, training, oversight and other resources to support the use of animals in research, teaching and testing by University staff and trainees. They currently are: Agricultural Food and Nutritional Sciences Animal Services (AFNSAS), Health Sciences Laboratory Animal Services (HSLAS) and Science Animal Support Services (SASS).
Canadian Council on Animal Care (CCAC)	The national organization responsible for setting and maintaining standards for the ethical use and care of animals used in science (research, teaching and testing) in Canada.
Principal Investigator (PI)	A member of the academic staff who is responsible for the design,

	conduct, supervision and oversight of the care and use of animals in research, teaching or testing as describe in an approved animal use protocol.

FORMS

No forms for this Procedure. **[▲Top]**

RELATED LINKS

Should a link fail, please contact uappol@ualberta.ca. [▲Top]

Agreement on the Administration of Agency Grants and Awards by Research Institutions (Government of Canada)

Animal Protection Act (Government of Alberta)

Animal Protection Regulation (Government of Alberta)

Canadian Council on Animal Care Guidelines (CCAC)

Recruitment Policy (Appendix A) Definition and Categories of Academic Staff and Colleagues (UAPPOL)

Recruitment Policy (Appendix B) Definition and Categories of Support Staff (UAPPOL)

University Animal Policy and Welfare Committee (University of Alberta)

Original Approval Date: **(Effective Date:)**

Parent Policy: Animal Ethics Policy

Animal Care and Use Non-compliance Procedure

Office of Administrative Responsibility:	Research Ethics Office (REO)
Approver:	Vice-President (Research)
Scope:	Compliance with this university procedure extends to all academic, support and excluded staff, postdoctoral fellows, and academic colleagues as outlined and defined in the Recruitment Policy (Appendix A and Appendix B: Definitions and Categories); undergraduate and graduate students; emeriti; visitors to campus, including visiting scholars; third party contractors; and volunteers who use **animals** for research, teaching or testing.

Purpose

- Provide guidance on how to maintain compliance with approved animal use protocols
- Identify levels of non-compliance, remedial action and consequences

PROCEDURE

1. GUIDANCE PRINCIPLES FOR MAINTAINING COMPLIANCE

   a. A **principal investigator** is responsible for ensuring that his/her animal use protocol (AUP) is complete and detailed so that his/her research team, the Animal Care and Use Committee (ACUC) and the **animal support services unit** all understand all the elements of the proposed animal care and use – what will be done, when and why, who will do the work and how.

   b. All research team members must have animal use training appropriate for the procedures and techniques they will perform and they must have access to all relevant AUP materials and standard operating procedures (SOPs) (see *Institutional Animal User Training Program Procedure*).

   c. SOPS must be kept up-to-date (see *Animal Care and Use Standard Operating Procedures Definition, Creation, Approval and Management Procedure)*.

   d. Animal use protocols and amendments must be submitted for ACUC approval well before the research is expected to start or before changes are implemented.

   e. ACUC approvals are valid for one year. Protocol renewals must be resubmitted for review on an annual basis, and generally must be submitted at least two months before the expiry date for a regular renewal and at least three months in advance for 4th year full renewals, to allow time for ACUC review and revisions.

f. A PI must submit an amendment to ACUC if s/he wants to make changes to an existing animal use protocol. Multiple changes and/or changes which are more likely to cause a change in animal welfare are more likely to be referred to the full ACUC. Any changes to an approved protocol must be reviewed and approved by ACUC before being implemented.

g. The research team must perform only those procedures described in the approved animal use protocol. All members of the research team must have access to the approved animal use protocol and all related procedures. Procedures must only be performed as many times as approved for the experimental design described in the animal use protocol.

h. All procedures performed on an animal must be recorded on a document (e.g. cage card) that is accessible by the veterinarian and animal support services staff.

i. The PI is responsible for ensuring that post-procedure animals are monitored according to the schedule outlined in the approved protocol. The PI should consult with the veterinarian to determine if the monitoring schedule can be modified before submitting an amendment.

j. The PI is responsible for developing and following a reliable humane endpoint monitoring system as described in the approved animal use protocol and for ensuring that staff and trainees working with animals can recognize signs of animal distress and/or compromised health that necessitate intervention or euthanasia.

k. The PI is responsible for timely communication with the veterinarian regarding the health status of post-procedural animals. If an animal develops any complications following a procedure, the research team must promptly communicate those complications to the veterinary staff.

l. The PI must ensure that only research staff listed on the approved animal use protocol perform procedures on animals and s/he is responsible for updating the personnel listed on his/her animal use protocol.

2. PROTOCOL NON-COMPLIANCE

a. Research processes are dynamic and animal use in research poses particular challenges. Concerns may arise for a number of reasons, including knowledge gaps, protocol drift, inadequate record-keeping, equipment failures, communication problems and human error and may be identified by a PI, research team member, veterinary or animal care staff, ACUC members and others. Many of these concerns can be resolved quickly and effectively through collaborative work by the animal support services unit staff, veterinarians, and the research team and then reported to ACUC via the Post-Approval Monitoring log.

b. Protocol non-compliance occurs when the animal use protocol approved by ACUC is not followed. Examples of non-compliance that might be termed protocol drift include accounting errors that result in the use of more animals than approved in the AUP, performing unapproved procedures, using unapproved anesthetics, making unapproved changes to approved animal procedures, failure to provide analgesics as approved, administering unauthorized agents, or unauthorized or untrained persons participating in a research project. Failure to submit an annual renewal of an AUP or failure to make changes or to address concerns as required by ACUC may also constitute non-compliance.

c. The University Animal Policy and Welfare Committee (UAPWC) is the body responsible for determining and working to correct breaches of compliance with approved animal use protocols and SOPs. Because ethics review processes are premised on collegial relations, when faced with protocol non-compliance, the first response should be to find a way to bring the protocol into compliance. Consequently, UAPWC has delegated responsibility to ACUCs to make the initial assessment of non-compliance and to find ways to correct the issue.

d. If concerns about protocol non-compliance are verified, ACUC can require corrections and impose specific conditions for continued animal use, as needed, per University policy and **Canadian Council on Animal Care (CCAC)** requirements. A clearly minor and unintentional misinterpretation of an institutional requirement that has not created a welfare problem for an

animal is an example of where verified protocol non-compliance might lead to an explanation and correction of the situation and no other action will be required.

3. CHRONIC PROTOCOL NON-COMPLIANCE OR CONTRAVENTION OF ANIMAL CARE AND USE STANDARDS

   a. Chronic problems of recurring or continued non-compliance may be reported through Post-Approval Monitoring site visits, ACUC site visits or veterinary reports, and can be reported by anyone.

   b. The details of the chronic issue(s) will be discussed by ACUC at the next meeting. ACUC will notify the PI in writing of the reported non-compliance. An initial meeting of a subcommittee of ACUC with the PI will be arranged as soon as possible to resolve the problem. If there is a subsequent recurrence of problems either associated with one particular animal care protocol or with several animal care protocols involving the same PI, a letter will be sent to the PI outlining the concerns and ACUC will arrange to meet the investigator at the earliest possible time to conduct a fact finding meeting. In the event that a member of ACUC is the PI named in the incident, ACUC will meet with the investigator at the earliest possible time to conduct a fact finding meeting. However, any subsequent discussion of the issue and the course of action to be taken will be conducted confidentially by ACUC in the absence of that member.

   c. ACUC may recommend one or more courses of action in dealing with the resolution of chronic non-compliance issues (see Section 6 below). Measures must be taken by ACUC to ensure that humane treatment and animal welfare problems are effectively dealt with and will not reoccur.

4. SERIOUS NON-COMPLIANCE WITH AN APPROVED PROTOCOL

   a. Serious non-compliance includes any situation where

      i. animals suffer pain, or distress that is not consistent with the approved AUP, or

      ii. the health and welfare of the animals is seriously compromised by inadequate housing, maintenance or monitoring of the animals in question.

   b. In these cases, if the non-compliance endangers additional animals, or if the risk of repeated non-compliance is considered to be high, the initial course of action may include temporary suspension of the animal use protocol. This means that the investigator cannot conduct any new research work associated with the suspended protocol until the incident is reviewed by the full ACUC. The University Veterinarian in consultation with the Chair of the ACUC, will provide written notice to the PI and his/her delegates, the relevant Director and/or animal facility manager and ACUC as soon as possible (typically within 1 working day). The University Veterinarian will then communicate to the PI within 72 hours whether ACUC will extend the suspension beyond this initial period. ACUC has a duty to act as expeditiously as possible.

   c. The University Veterinarian, the Director of the appropriate animal services unit and the Chair and other members of the relevant ACUC will arrange to meet the investigator at the earliest possible time to conduct a fact finding meeting and to determine an initial course of action to deal with the situation, including its causes, consequences and how to manage any remaining animals on the animal use protocol. The initial course of action will be developed at the first meeting, and may be elaborated at subsequent meetings or as additional facts concerning the incident emerge. A quorum of ACUC will make the final determination concerning the seriousness of the incident and of subsequent courses of action.

5. UNAPPROVED ANIMAL USE

a. Failure to obtain ACUC approval for animal use in research, teaching and testing constitutes non-compliance and is a serious contravention of the Animal Ethics Policy and CCAC requirements.

b. This non-compliance may be detected by animal services facility staff or veterinarians, the Post-Approval Monitoring program, ACUC and/or Environment Health & Safety (EHS) site visits and can be reported by anyone.

c. The University Veterinarian, the Director of the appropriate animal services unit and the Chair and other members of the relevant ACUC will arrange to meet the investigator at the earliest possible time to conduct a fact finding meeting and to determine an initial course of action to deal with the situation, including its causes and consequences, and how to manage the animals involved. The initial course of action will be developed at the first meeting, and may be elaborated at subsequent meetings or as additional facts concerning the incident emerge.

6. ACTIONS AVAILABLE TO UAPWC AND THE ACUC TO ADDRESS NON-COMPLIANCE

a. ACUC or UAPWC, in the event of an appeal of an ACUC decision, may follow one or more courses of action to address non-compliance and to ensure that humane treatment and animal welfare problems are effectively dealt with and will not reoccur. These may include, but are not limited to:

i. Implementing measures to correct the problem and prevent recurrence;

ii. Counseling, such as meeting with the PI and research team;

iii. Issuing warning letters;

iv. Mandating specific animal user training aimed at preventing future incidents;

v. Monitoring by the ACUC or its delegates (Animal Care and Use Consultant, Veterinarian) of research, testing, or training that involves animals;

vi. Revoking an Alternate Animal Housing permit;

vii. Revoking a PI's privileges to provide animal care or to conduct research, testing, or training procedures that involve animals, pending compliance with specific, ACUC-mandated conditions;

viii. Temporary or permanent suspension of one or all of a PI's animal use protocols

ix. Notifying the Department Chair and the Vice/Associate Dean (Research) of its actions;

x. Notifying Research Services Office (RSO) that ACUC approval is not in place;

xi. Recommending that REO and/or the Vice/Associate Dean (Research) initiate a complaint under the *Research and Scholarship Integrity Policy*;

xii. Notifying funding or regulatory agencies, as required.

b. Depending on the nature of the non-compliance incident(s), suspension of a protocol (temporary or permanent) means that the investigator is either prohibited from conducting any *further* research work under the suspended protocol or any *new* research work under the suspended protocol (one of these two options will be spelled out in the meeting with, or letter to, the PI).

i. In all cases where a protocol is suspended, a quorum of the ACUC will outline the steps that must be taken to have the protocol reinstated. Requirements for reactivation of a suspended protocol will vary depending on the nature of the incident(s).

ii. Reactivation can occur once the ACUC receives written communication indicating that the PI has implemented the recommendations the ACUC or otherwise met the conditions to the satisfaction of the ACUC. The ACUC may also require follow-up visits and reports on the

conduct of the reinstated research protocol by the veterinary staff, the PAM Coordinator, or a subcommittee of the ACUC. The PI may also be asked to verify ongoing compliance by providing further information in the form of follow up report(s) or through site visits.

iii. In some cases, reactivation may not be advised. If a permanent suspension of animal use is imposed, a PI may only be permitted to transfer grants and activities to another lab or to engage the services of one of the animal services units, which may conduct his/her research without direct involvement by the PI or his/her personnel**.**

c. PIs are expected to cooperate fully and expeditiously in the review process. In the event of non-cooperation by the investigator with the ACUC Chair, the ACUC, the University Veterinarian and/or his/her delegates approved by the ACUC, the ACUC may withdraw approval for all protocols belonging to a PI until the cooperation is received.

d. If the problems are determined to be largely due to actions of animal support services staff not supervised by the PI, the ACUC will document the problem to the University Veterinarian and the Director of the relevant facility, and the Director will take appropriate action to correct, re-train or remove the staff member(s) responsible.

e. Verified details of the circumstances of serious incidents of noncompliance or chronic noncompliance will be retained on file in the online research ethics system and with the Research Ethics Office, and the Principal Investigator in question will receive a copy.

f. A formal letter containing the details of the ACUC recommendations will be sent to the PI with copies to the Chair, Head or Dean of the investigator's academic unit. If the ACUC permanently suspends an investigator's research protocols, copies will also be sent to the VP Academic/Provost, and this could lead to a formal complaint under the *Research and Scholarship Integrity Policy.*

7. Non-compliance that cannot be corrected by ACUC working with the concerned animal users and veterinary/animal care staff will be referred to the Office of the Provost and Vice-President (Academic) according to the *Research and Scholarship Integrity Policy*.

DEFINITIONS

Definitions should be listed in the sequence they occur in the document (i.e. not alphabetical).

Any definitions listed in the following table apply to this document only with no implied or intended institution-wide use. [▲Top]

Animal	Any living non-human vertebrate and any living invertebrate of the class of cephalopoda, including free-living and reproducing larval forms, used for research, teaching or testing by University staff or trainees.
Principal Investigator	A member of the academic staff named in the animal use protocol responsible for the animal use or an external investigator conducting animal use under the auspices of the University.
Animal Support Services Units	Agricultural Food and Nutritional Sciences Animal Services (AFNSAS), Health Sciences Laboratory Animal Services (HSLAS) and Science Animal Support Services (SASS)
Canadian Council on Animal Care (CCAC)	The CCAC is the national organization responsible for setting and maintaining standards for the ethical use and care of animals used in science (research, teaching and testing) in Canada.

FORMS

No forms for this Procedure. [▲Top]

RELATED LINKS

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Agreement on the Administration of Agency Grants and Awards by Research Institutions (Tri-Council)
Animal-Based Projects Involving Two or More Institutions (CCAC)
Canadian Council on Animal Care Guidelines (CCAC)

On-line Research Ethics System

Research Ethics Office

Original Approval Date: June 2, 2005

Most Recent Approval Date: November 1, 2015

Parent Policy: Animal Ethics Policy

~~Special Requests for~~Animal Care and Use Alternate Animal Housing Procedure

Office of Administrative Responsibility:	Research Ethics Office (REO)
Approver:	Vice-President (Research)
Scope:	Compliance with this university procedure extends to all academic, support and excluded staff, postdoctoral fellows, and academic colleagues as outlined and defined in the Recruitment Policy (Appendix A and Appendix B: Definitions and Categories); undergraduate and graduate students; emeriti; visitors to campus, including visiting scholars; third party contractors; and volunteers~~Academic Staff and Colleagues and Support Staff as outlined and defined in Recruitment Policy (Appendix A and Appendix B) in addition to third party contractors, visiting speakers, professors emeriti, undergraduate and graduate students, post-doctoral fellows, volunteers and to all persons~~ who use **animals** for research, teaching or testing.

Overview

Animal facilities are expensive and complex to plan, design, build and maintain. Existing and planned facilities must meet **Canadian Council on Animal Care (CCAC)** guidelines. In addition, animal care is best carried out or overseen by animal health professionals whose primary goal is animal health and welfare in the service of high quality science. In cases where a **Principal Investigator (PI)** has a compelling justification to hold animals for more than 24 hours in an area that is not managed by one of the **animal services units**, the design and use of the alternate animal housing and the care of the animals housed, therefore, must follow CCAC guidelines and will require active collaboration between the PI, the animal services unit and the relevant Animal Care and Use Committee (ACUC).

Purpose

Identify the process for application, approval and supervision of alternate animal housing.

PROCEDURE

Animals obtained by the University of Alberta should be housed in facilities operated by one of the animal services units whenever possible. A PI may apply to house animals in alternate animal housing, provided:

a. The PI has a compelling justification to establish and maintain alternate animal housing.

b. The alternate animal housing is appropriately constructed or renovated for animal care and use.

c. The Committee for Animal Resources (CAR), a subcommittee of the University Animal Policy and Welfare Committee (UAPWC), approves the alternate animal housing design and its proposed use.

d. The alternate animal housing is linked to an active, approved animal use application.

e. An ACUC approves the animal use in the alternate animal housing.

f. The PI and/or his/her research personnel have the training necessary to provide animal care on par with care provided by the animal services units.

g. One of the animal services units provides appropriate veterinarian oversight and services for animal care and use in the alternate animal housing.

1. APPROVAL OF THE ALTERNATE ANIMAL HOUSING

The PI must apply to CAR for approval of construction of a new space to house animals or renovation of any existing space in order to house animals in that space.

a. As part of its deliberations, CAR will determine if the research needs can be met in existing facilities and will consult with the Chair of the relevant ACUC concerning approval of the animal use. Once CAR has approved the project and the construction or renovation is underway, the PI should provide updates to CAR and confirm when the work is complete.

b. CAR will then conduct a site visit, and pending completion of any deficiencies, provide written approval of the alternate animal housing.

2. APPROVAL TO HOUSE ANIMALS IN ALTERNATE ANIMAL HOUSING

a. Once CAR has approved the alternate animal housing, the PI must apply to ACUC for approval to house animals in that location as part of the regular animal use application process. The application should include the PI's justification for the alternate animal housing and CAR's final approval of the housing, as well as an operations manual for animal care in that location and the contract services agreement with the relevant animal services unit.

b. Once ACUC has approved the request to house animals in the alternate animal housing, animals may be housed there. The alternate animal housing will then be subject to annual site assessments by ACUC, as well as any other conditions ACUC may impose.

c. Animals on other animal use protocols may not be housed in that alternate animal housing unless ACUC has approved a specific application for such an arrangement and the housing will accommodate the additional animals.

3. OPERATION OF ALTERNATE ANIMAL HOUSING

a. Ongoing approval for alternate animal housing is contingent on ongoing requirement for the housing as well as continuing approval for the animal use protocol and maintenance of a contract services agreement with the animal services unit.

b. The PI must inform ACUC, the animal services unit and the University's Environmental Health and Safety Office when alternate animal housing is no longer required.

c. The PI must inform the animal services unit and the University Biosafety Officer within twenty-four (24) hours of learning that an animal is missing from alternate animal housing, or if evidence of insect or rodent pests is found in the alternate animal housing location.

DEFINITIONS

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Animal	Any living non-human vertebrate and any living invertebrate of the class of cephalopoda, including free-living and reproducing larval forms, used for research, teaching, or testing purposes by University of Alberta staff and trainees.
Canadian Council on Animal	The national organization responsible for setting and maintaining

Care (CCAC)	standards for the ethical use and care of animals used in science (research, teaching and testing) in Canada.
Principal Investigator (PI)	A member of the academic staff who is responsible for the design, conduct, supervision and oversight of the care and use of animals in research, teaching or testing as described in an approved animal use protocol.
Animal Services Units	Animal facilities established and operated by the University of Alberta as ongoing administrative units to provide veterinary and animal care staff, infrastructure, training, oversight and other resources to support use of animals in research, teaching and testing by University staff and trainees. They currently are: Agricultural, Food and Nutritional Sciences Animal Services (AFNSAS), Health Sciences Laboratory Animal Services (HSLAS) and Science Animal Support Services (SASS).

FORMS

No Forms for this Procedure. [▲Top]

RELATED LINKS

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Recruitment Policy (Appendix A) Definition and Categories of Academic Staff and Colleagues (UAPPOL)

Recruitment Policy (Appendix B) Definition and Categories of Support Staff (UAPPOL)

Research and Scholarship Integrity Policy (UAPPOL)

University Animal Policy and Welfare Committee (University of Alberta)

Original Approval Date: June 2, 2005

Most Recent Approval Date: November 1, 2015

Parent Policy: Animal Ethics Policy

Institutional Animal User Training Program Procedure

Office of Administrative Responsibility:	Research Ethics Office (REO)
Approver:	Vice-President (Research)
Scope:	Compliance with this university procedure extends to all academic, support and excluded staff, postdoctoral fellows, and academic colleagues as outlined and defined in the Recruitment Policy (Appendix A and Appendix B: Definitions and Categories); undergraduate and graduate students; emeriti; visitors to campus, including visiting scholars; third party contractors; and volunteers~~Academic Staff and Colleagues and Support Staff as outlined and defined in Recruitment Policy (Appendix A and Appendix B) in addition to third party contractors, visiting speakers, professors emeriti, undergraduate and graduate students, post-doctoral fellows, volunteers and to all~~ persons who use **animals** for research, teaching or testing.

Overview

Consistent with its commitment to the highest possible standards in animal care and use in research, teaching and testing, the University has established and maintains an institutional animal user training program that meets or exceeds the requirements of the **Canadian Council on Animal Care (CCAC)** and is consistent with CCAC guidelines and standards.

Purpose

- Define the responsibilities of different members of the animal care and use program with respect to animal user training.
- Define the components of the animal user training program.
- Define the training required for animal users.
- Define how animal user training records will be validated and maintained.

PROCEDURE

1. GENERAL REQUIREMENTS AND RESPONSIBILITIES

   All staff and trainees involved in the care and use of animals for research, teaching and testing must possess: an appreciation of the ethical issues surrounding the use of animals for scientific or pedagogical purposes in Canada and adequate knowledge and technical skills to humanely carry out approved procedures and to promote quality science based on the appropriate use of animals by skilled individuals.

   a. **Principal Investigators (PIs)** are responsible for ensuring that all personnel working with animals under their supervision are named on an approved animal use protocol and are adequately trained to appropriately and humanely carry out procedures on the animals in their care.

   b. Animal Care and Use Committees (ACUCs) are responsible for verifying that University personnel have the training necessary to carry out animal care and use procedures.

c. Directors of the **animal services units** are responsible for ensuring delivery of species and technique specific training consistent with CCAC standards, institutional training requirements and approved standard operating procedures and for ensuring staff and trainees are trained for the animal care and use they conduct.

d. The University Animal Policy and Welfare Committee (UAPWC) is responsible for oversight of the institutional animal user training program.

e. REO is responsible for maintaining secure, consolidated, online records of animal user training.

f. The Post-Approval Monitoring program will include assessments of animal users' competence and may include recommendations for additional training.

g. All members of the animal care and use program, including the staff of the animal services units, are responsible for ensuring that research personnel working with animals are humanely carrying out the approved procedures assigned to them.

2. ANIMAL USER TRAINING PROGRAM

The Institutional Animal User Program has two major components: theoretical and practical.

a. Ethics of Animal Use Training

All University staff and trainees involved in the use of animals for research, teaching and testing must complete Ethics of Animal Use training, commonly known as Part 1 training.

i. Part 1 training includes the following core topics: regulations and animal welfare, moral, legal and ethical issues and the concept of the Three Rs (Reduction, Refinement and Replacement).

ii. Part 1 training is based on material developed by CCAC and other CCAC accredited institutions, including the University of Alberta. UAPWC will review the Part 1 training, at minimum every three years. REO will, on behalf of UAPWC, manage and maintain the course content.

iii. Part 1 training is normally delivered online. REO manages access to the online course and maintains secure online records of all users who have successfully completed ethics of animal use training for reference by members of the animal care and use program.

b. Species, Technique and Other Training in Animal Use

All staff and trainees who handle or care for animals used in research, teaching or testing must be knowledgeable about the animals in their care and trained in the appropriate technical skills for the work they will perform.

i. Part 2 training is organized by species. The five core components of Part 2 species training are: basic biology, husbandry, handling and restraint, euthanasia, zoonoses and human safety.

ii. Directors of the animal services units are responsible for ensuring delivery and oversight of Part 2 training for animals regularly used in University research, teaching and testing, consistent with the animal work commonly supported by each unit.

iii. Directors of the animal services units are also responsible for ensuring delivery and oversight of techniques or procedures training relevant to the research, teaching and testing they support, either in conjunction with the Part 2 training or separately.

iv. Training provided by the animal services units will incorporate both approved unit level Standard Operating Procedures (SOPs) for animal care and use and approved institutional SOPs.

v. If two or more animal services units provide Part 2 training in the same species or the same procedures/techniques, the training should be consistent.

vi. Directors of the animal services units may delegate species and procedure/technique training duties to their staff commensurate with their qualifications. Competent trainers and supervisors are essential to maintaining high standards for animal care and use and trainer designations should be assigned appropriately.

vii. Directors of the animal services units will ensure that all training is supported by relevant, up-to-date resource materials and that the training content is documented.

viii. Directors of the animal services units will maintain teaching/training animal use protocols so that ACUCs review the training programs offered by the animal services units, at minimum every four years.

ix. Directors of the animal services units will ensure appropriate records of the training provided by their staff are maintained. Successful user training results will be transmitted to REO using forms developed by REO for that purpose. REO will maintain these training records in a secure online system for access by members of the animal care and use program in the course of their work.

x. Directors of the animal services units should also ensure research personnel receive orientations to their facilities, equipment and processes, including unit-level operational SOPs.

3. TRAINING REQUIREMENTS AND EXCEPTIONS

a. All University staff and trainees who are involved in the use of animals or who work in facilities where animals are housed or used must complete Part 1 Animal User training provided by the University.

i. Although CCAC does not require community members serving on ACUCs to complete ethics of animal use training, they may take Part 1 training if they wish.

b. University staff and trainees must complete appropriate species training plus frequently used technique or procedure training before they will be allowed to work with animals.

i. PIs who do not handle animals are encouraged to complete Part 2 training and relevant techniques and procedures training.

ii. PIs who do not complete Part 2 training must employ research personnel with the required training and authorize them to enforce appropriate standards and practices in animal care and use. Whether or not they work with or handle animals, PIs are responsible for the care and use of animals performed by their staff and trainees.

iii. Notwithstanding the foregoing, PIs who wish to house animals in their research areas must complete Part 2 species training and the animal services unit may require additional training for the research personnel providing animal care.

iv. Personnel who do not participate in hands on experimental procedures or work in areas in which animals are used or housed are not required to complete Part 2 training.

v. Directors of the animal services units may provide or authorize abbreviated species and procedures or techniques training for staff and trainees who will normally work under the supervision of trained animal users. This will be accepted as protocol specific training only and will not constitute Part 2 training.

c. New University staff and trainees who have been trained in animal care and use at other institutions may present REO with evidence of comparable training.

i. The Chair of UAPWC may accept external Part 1 training in the ethics of animal use in lieu of the University administered training. REO will maintain records of the external training if it is accepted.

ii. Directors of the animal services units may accept external species and technique or procedure training in lieu of such training provided by the University. If the external training is accepted, Directors will provide to REO both details of the user's training and confirmation that the user's training meets the University's standards.

d. If an animal services unit does not have the expertise to provide species or specialized procedure or technique training, the Director and the PI are responsible for identifying other sources of expertise and training.

i. Directors of the animal services units may designate alternate trainers who may be PIs, other University personnel or other individuals not associated with the University. Designation of alternate trainers should include details of their qualifications and expertise as well as how the alternate training will be provided.

ii. Directors of the animal services units will maintain records of alternate trainers and the animal user training they provide. Successful user training results will be transmitted by the animal services unit to REO following a standard template. REO will maintain these training records online for secure access by members of the animal care and use program in the course of their work.

4. SUPPLEMENTAL TRAINING

   a. By providing continuing education opportunities for animal users, the University can promote best practices and an institutional response to new procedures, the three Rs and societal views.

   b. As an animal user's responsibilities and activities change, s/he will be required to complete additional species and/or technique or procedure training.

   c. Post- Approval Monitoring personnel, veterinarians and animal care staff will meet with PIs and research staff to discuss and observe procedures and make recommendations, as necessary, about ways of addressing possible deficiencies.

   d. In cases of sub-optimal or unsuitable animal handling procedures, ACUCs, Directors of the animal services units and the Post-Approval Monitoring Coordinator are all authorized to require additional training.

DEFINITIONS

Any definitions listed in the following table apply to this document only with no implied or intended institution-wide use. [▲Top]

Animal	Any living non-human vertebrate and any living invertebrate of the class of cephalopoda, including free-living and reproducing larval forms, used for research, teaching or testing purposes by University staff or trainees.
Canadian Council on Animal Care (CCAC)	The national organization responsible for setting and maintaining standards for the ethical use and care of animals used in science (research, teaching and testing) in Canada.
Principal Investigator (PI)	A member of the academic staff who is responsible for the design, conduct, supervision and oversight of the care and use of animals in research, teaching or testing as describe in an approved animal use protocol.
Animal Services Units	Animal facilities established and operated by the University of Alberta as ongoing administrative units to provide veterinary and animal care staff, infrastructure, training, oversight and other resources to support use of animals in research, teaching and testing by University staff and trainees. They currently are: Agricultural, Food and Nutritional Sciences Animal Services (AFNSAS), Health Sciences Laboratory Animal Services (HSLAS) and Science Animal Support Services (SASS).

FORMS

No Forms for this procedure. [▲Top]

RELATED LINKS

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Agreement on the Administration of Agency Grants and Awards by Research Institutions (Government of Canada)

Animal Protection Act (Government of Alberta)

Animal Protection Regulation (Government of Alberta)

Canadian Council on Animal Care Guidelines (CCAC)

University Animal Policy and Welfare Committee (University of Alberta)

Recruitment Policy (Appendix A) Definition and Categories of Academic Staff and Colleagues (UAPPOL)

Recruitment Policy (Appendix B) Definition and Categories of Support Staff (UAPPOL)

Research and Scholarship Integrity Policy (UAPPOL)

FINAL Item No. 5

Governance Executive Summary
Action Item

Agenda Title: **Proposed Changes to the Doctor of Dental Surgery (DDS), Faculty of Medicine and Dentistry**

Motion: THAT the GFC Academic Planning Committee approve, with delegated authority from General Faculties Council, the proposed changes to the Doctor of Dental Surgery (DDS) program, as proposed by the Faculty of Medicine and Dentistry, as set forth in Attachments 1-2, as amended, to take effect in Fall 2019.

Item

Action Requested	☒Approval ☐Recommendation
Proposed by	Dennis Kunimoto, Acting Dean, Faculty of Medicine and Dentistry (FoMD)
Presenter(s)	Shirley Schipper, Vice-Dean Education, FoMD Steven Patterson, Associate Chair, Academic, School of Dentistry

Details

Responsibility	Provost and Vice-President (Academic)
The Purpose of the Proposal is (*please be specific*)	This proposal is before the committee to obtain approval for the structural changes to the DDS program curriculum.
Executive Summary (*outline the specific item– and remember your audience*)	The DDS program curriculum changes address long-standing challenges to student learning primarily due to sequencing constraints that exist in the current curriculum which has courses both in Medicine and Dentistry. This has included realigning curriculum content in a way that supports improved learning outcomes and a more humanistic learning environment for students. Focus was put on the learning pathway (sequence), student experience, content (integration between medicine and dentistry content), delivery, and assessment. The newly designed curriculum model supports these outcomes and the guiding principles established through extensive needs assessment and evaluation of the existing curriculum. In alignment with *For the Greater Good*, this change works to sustain our students, addressing Objective 19 regarding the health and wellness of our students, faculty, and staff. These program changes also have improved the curriculum's ability to provide for needed learning experiences to achieve expected learning outcomes as described in the new 2016 Association of Canadian Faculties of Dentistry Educational Framework for the Development of Competencies in Dental Education and was aligned with the Alberta Dental Association's competency documents. The guiding principles of the curriculum review and redesign was with intention to address student and faculty concerns. Solutions for such concerns were achieved in the program design through the following examples: increased clinic time, earlier simulation and clinic learning, enhanced interaction with dental hygiene and other professional students, vertical scaffolding of foundational sciences integrated with clinical learning and provision of patient care, more humanistic learning sequence with increased unscheduled time for student learning, closer temporal alignment of didactic learning and hands-on implementation of

	those learning outcomes, enhanced integration and relevance of medical foundational material. In accordance with Objective 7 of *For the Public Good*, these changes address an increase in participation in experiential learning opportunities within a clinical environment, integrated with DDS program goals. All of these improvements to the dental program were founded upon evidence-informed educational and curriculum design. The Department of Dentistry has engaged the services of curriculum development experts from the Faculty of Education who have been instrumental in the curriculum renewal process initiated in 2015. A needs assessment phase was first completed, followed by program design and now course design. Faculty, students and alumni have been involved in the process throughout, as a collaborative model of curriculum design was followed. In the current curriculum students were responsible to successfully complete 78 course or course components to complete the program. In a new multidisciplinary block course plan, that allows for achieving the above mentioned outcomes, the total courses needing to be completed successfully is 14: 5 in year 1, 5 in year 2, 2 in year 3, and 2 in year 4. All courses will be taken sequentially with only one block course being taken at a time. The overall content of the curriculum is predominantly the same, mostly having been re-sequenced and integrated, and the overall credit values, curricular time, and tuition have not changed. There are no financial implications for the proposed academic regulation changes. This curriculum redesign is based on the use of existing classroom, laboratory and clinical facilities and can be delivered with the current faculty and staffing complement.
Supplementary Notes and context	

Engagement and Routing (Include meeting dates)

Consultation and Stakeholder Participation (parties who have seen the proposal and in what capacity) <For information on the protocol see the Governance Toolkit section Student Participation Protocol>	*Those who are actively **participating**:* · Department of Dentistry faculty members · Faculty of Education consultants
	*Those who have been **consulted**:* · FoMD Faculty Learning Committee – approval – July 4, 2018 · Student Consultation via the Dentistry Student Association (DSA) – July 10, 2018 · FoMD Faculty Council Committee – review/consultation – July 19, 2018 · Office of the Registrar, Calendar Production – consulted/informed · During initial needs assessment 2015- students, faculty, alumni · Office of the Provost and Vice-President (Academic)
	*Those who have been **informed**:* · Associate Dean, Undergraduate Medical Education · FoMD faculty members via UME retreat · Department of Dentistry staff

	· Alberta Dental Association & College via their representatives on Curriculum and Department Councils · GFC Committee on the Learning Environment (for discussion) – December 5, 2018
Approval Route (Governance) (including meeting dates)	GFC Academic Standards Committee: Approval of admission/transfer and academic standing: October 18, 2018 GFC Academic Planning Committee: Approval of the program changes – November 7, 2018

Strategic Alignment

Alignment with *For the Public Good*	The proposed changes to the DDS align with the *For the Public Good* addressing key strategic goals and objectives. Students will *experience* rewarding learning opportunities addressing *Objective 7* through enhanced student participation in experiential learning through earlier clinical experiences and an increase the external rotations provided in areas of need, including the Boyle McCauley area in Edmonton The DDS program will *excel* in a culture that fosters and champions distinction and distinctiveness in teaching and learning. Addressing *Objective 14* we will work to inspire, model and support excellence in teaching and learning through enhanced support for faculty, increasing active learning, and increasing our utilization of technology in the classroom, where appropriate. Faculty development and support is key to the delivery of high quality DDS curriculum. The DDS program will *sustain* our students, faculty and staff addressing *Objective 19* by prioritizing an integrated health and wellness strategy, through the enhancement of a humanistic approach to dental education. *Objective 21* encourages continuous improvement through enabling our students to work toward the shared goals. The curriculum renewal process has utilized a communication plan to engage student, faculty, staff, and external stakeholders as we developed the new DDS program. A communication plan is also key moving forward. The DDS Curriculum Renewal utilized the Institutional Strategic Plan as we developed the renewed program, ensuring a humanistic approach to dental education.
Alignment with Institutional Risk Indicator	Risk: Student Success Risk statement: If its students do not have the opportunity to develop to their full academic and personal potential, the university will fail to achieve its mission and academic goals.
Legislative Compliance and jurisdiction	PSLA UAPPOL Academic Standing Policy GFC Academic Standards Committee Terms of Reference GFC Academic Planning Committee Terms of Reference GFC Committee on the Learning Environment Terms of Reference

Attachments

1. DDS Calendar Change Briefing Note (page(s) 1 - 4)

2. DDS Program Changes (page(s) 1 - 3)
3. ACFD Educational Framework for the Development of Competencies (page(s) 1 - 22)
4. Needs Assessment Findings Report (page(s) 1 - 108)
5. Guiding Principles document (page(s) 1 - 2)
6. Program Design Model graphic (page(s) 1 - 1)
7. Course Overview graphic (page(s) 1 - 1)
8. Letter of support Indigenous Health (page(s) 1-2)
9. Library Impact Statement (page(s) 1-2)

Prepared by: Jocelyn Plemel, Executive Assistant to the Vice-Dean, Education, jplemel@ualberta.ca

Doctor of Dental Surgery (DDS) 2019/20 Calendar Change Briefing Note

Rationale:

These proposed calendar changes for a new dental undergraduate program structure and courses and the accompanying academic regulations better suited to these program changes, are a result of a curriculum renewal process undertaken by the School of Dentistry (SoD) initiated in spring of 2015 with intent to begin implementation in the fall of 2019 for the 2019-2020 academic year.

Background:

The School of Dentistry dental program (DDS), completed an accreditation review with the Canadian Dental Accreditation Commission (CDAC) in 2014. This review was a great success and there were zero recommendations required of the School related to the accreditation standards. Even with this significant result, faculty, students and alumni still noted that the curriculum and particularly the learning experience of students could still be better. Through activities such as town hall meetings, dialogue with faculty and staff, internal surveys, course and program feedback from students, alumni surveys, and the accreditation self-survey, a growing support for taking on a full review and renewal of the DDS curriculum was noted. Additionally, the broader University's focus on "the public good" and the Faculty of Medicine & Dentistry's (FoMD) strategic plans spoke for social accountability, leadership and scholarship in our programs.

In response to this direction and ongoing input from students, faculty and alumni with respect to the current DDS program, and under the direction of the SoD Executive Committee, a curriculum renewal process was initiated and budget support was set aside to complete this task. A curriculum renewal committee (CRC) was established, curriculum development experts from the Faculty of Education were engaged to assist in this work and a four-phase, six-year plan was designed. The vision of the curriculum renewal has been "Transforming the Future." The mission statement of the CRC is "to lead the design and implementation of a leading-edge curriculum in an engaged and collaborative manner, that is responsive to the needs of students, the profession, and society."

Over this time period, the ten Canadian dental schools, (Association of Canadian Faculties of Dentistry- ACFD) completed a national educational framework competency document (see attached document) outlining the expectations of all dental programs. This document also was a contributor to the need for curriculum change as it newly outlined all competency areas expected in beginning dental practitioners graduating from accredited dental programs.

Impetus for Change:

Phase 1 of the curriculum design involved a needs assessment (see attached document) regarding the current, fully accredited curriculum, which was carried out during the latter part of 2015 with student, faculty, alumni surveys and focus groups, literature reviews and interviews with representatives from the other dental schools in Canada. This scholarly work clearly delineated the issues in need of consideration for change.

Key findings identified challenges to student learning due to a primarily siloed curriculum with little integration between medical foundational content, dental clinical content and even between dental disciplines. Additionally, the requirements of having "service" courses provided by Undergraduate Medical Education (UME) placed significant stressors on students due to sequencing challenges resulting in highly compressed clinical and dental courses in the final 2 years of the program and students reporting difficulty identifying as dental students. Little to no self-directed time and no elective experiences were other challenges faced in the current curriculum. All of the information gathered in this phase supported the need to enhance student learning through curricular change.

Key to the curriculum renewal was the establishment of guiding principles (see attached document) in five areas; learning pathway (sequence), student experience, content, delivery, assessment. These guiding principles were developed from the needs assessment and faculty/staff/student/alumni engagement to address the key challenges to learning that existed in the current curriculum. These guiding principles have served to keep the curriculum renewal on track and focused on change designed to improve students' learning and create a more humanistic experience in the program.

Phase 2 was a significant body of work that occurred over the year 2016 and involved creating and validating all the program learning objectives as outlined in the national competency document and additionally supported and validated by the Alberta Dental Association and College's (ADA&C) competency document describing the competencies of a practicing dentist in Alberta. This phase also saw initial sequencing of content, significant literature reviews, working groups and completion of white papers on instructional strategies, integration of medical content, and assessment modalities. The result of Phase 2 was the program design model (see attached graphic) depicting a spiral structure comprised of three vertical streams, which would be integrated over each of the four years of the program. This model is the foundation of each course that is proposed in the new curriculum. Phase three has been ongoing since spring of 2017 and focuses on course design. This has involved year-to-year planning in unique discipline areas, term planning, and course structure design. Over the 2018 year, specific course design has been occurring to plan the detailed sequencing, lesson planning, resource development of each course.

Proposed Changes:

In the current curriculum students were responsible to successfully complete 78 course or course components to complete the program. In a new multidisciplinary block course plan, that allows for achieving the above mentioned competency outcomes, the total courses needing to be completed successfully in the program is 14: five in the first year, five in the second year, two in the third year, and two in the fourth year. All courses will be taken sequentially with only one block course being taken at a time (see attached course overview graphic).

Solutions for concerns noted in the needs assessment were achieved in the program design through the following examples: increased clinic time, earlier simulation and clinic learning, enhanced interaction with dental hygiene and other professional students, vertical scaffolding of foundational sciences integrated with clinical learning and provision of patient care, more humanistic learning sequence with increased unscheduled time for student learning, closer temporal alignment of didactic learning and hands-on implementation of those learning outcomes, and enhanced integration and relevance of medical foundational material.

As opposed to the previous curriculum where students were simultaneously enrolled in DMED courses which has created a significant disconnect of learning foundational material, dentistry students will now only be enrolled in the newly proposed dental courses, with the medical content that was previously taught, now interwoven and linked to the dental content of each course. The content previously delivered in separate, siloed, discipline-based dental courses in a given year has been amalgamated and will now be addressed in an integrated, coordinated fashion within the sequential courses through the first two years, and the year-long clinical and integration courses of year three and four of the program. In the fourth year, we have also added an electives course to address previously indicated needs for students to direct some of their learning as based on student and faculty feedback. Inclusion of time to be involved with other programs within FoMD in participating in the Indigenous Health curricular elements has also been planned. The proposed course changes will provide enhanced sequencing, earlier clinical experiences, and flow of the overall learning process within the DDS program, through a more integrated, coordinated, and multidisciplinary approach. This new course structure will also allow for a more comprehensive, timely, and appropriate assessment of

student achievement of the expected learning outcomes and national competencies required of the graduate as a beginning dental practitioner in Canada.

The proposed curriculum is designed to enhance student learning. A greater emphasis on active learning, use of technology to support learning, and integration of content has been utilized. Another way enhanced learning is accomplished is to address sequencing of material. The proposed curriculum is designed to improve the interconnections and integration of material across the four years of the DDS program. Another important feature of the redesigned curriculum is the inclusion of reassessment and remediation time in each course, unscheduled time for student self-directed learning, and purposeful linkages through integration and relevance sessions. As a professional program, the curriculum structure builds on knowledge, skills and attitudes. These proposed changes will enable students to benefit from interconnected and aligned learning materials, earlier clinical experiences, more clinical time, and better integration and sequence of content.

The dental student body has been involved, since the outset, in determining the needs for these changes, giving input throughout development of the guiding principles, and giving direction to these changes. Students have been, and continue to be consulted and included in the development of the proposed curriculum. The students are supportive of the changes to provide enhanced sequencing and overall flow of the learning process.

What is not changing:

Students accepted into the DDS program in 2019-2020 academic year will be admitted into the new curricular structure. The proposed new curriculum is comprised of the same credits, same duration (number of weeks per year, number of semesters), no change to existing published tuition costs, no major changes to curricular content across each of the four years. Primarily the curricular material is rearranged to better align the didactic learning with clinical scenarios, to resequence and integrate the foundational and clinical material across the four years of the program and provide for enhanced learning experiences.

Students who are currently in the DDS program and will be in years two, three, and four of the current program of study at the beginning of the 2019-2020 academic year will complete their existing program as outlined at the time of their admission. They will still be able to receive benefit from many of the curricular changes that impact upon their practicum/clinical experiences as protocols and procedures for clinic operations will be improving during the time they complete the program.

This curriculum redesign is based on the use of existing classroom, laboratory and clinical facilities and can be delivered with the current faculty and staffing complement.

Academic Regulations:

This review process also gave opportunity to address many long-standing academic regulations and consider how these could be improved and ensure that they support the changes to the curriculum. A full review of academic regulations included consideration of academic regulations from other similar U of A health professional programs, creating clearer and more responsive academic expectations and policies that support students' progression throughout the program.

The proposed changes to **academic regulations** will allow timely review of academic process and the inclusion of clear guidelines and expectations of reexamination and reassessment processes. These now align closely to other health professional programs and are designed to better favour the students' progression through the program. These academic regulation changes will move in the following directions:

- Allowing reassessment of failed components that are currently not eligible for re-examination (e.g. laboratory components, didactic components that do not fit U of A criteria for re-examination)

- Maintaining opportunity for re-examination and/or reassessment in up to two failed courses per year, even though the total number of courses/course components to be passed has dropped significantly
- Allowing opportunity for conditional standing and probationary repeat years for a failed year, whereas the current regulations require students to withdraw
- Allowing for a continuation of the final year for a period of time for students who have not quite completed all clinical experiences

FoMD Approval:

Faculty Learning Committee – July 4, 2018
Faculty Council Committee (for review only) – July 19, 2018

Supporting Documentation:

1) DDS Admission and Academic Regulations Change Document
2) DDS Program Change Document
3) ACFD Educational Framework for the Development of Competencies
4) Needs Assessment Findings Report
5) Guiding Principles document
6) Program Design Model graphic
7) Course Overview graphic

DDS Degree

General Information

Curriculum

The Department of Dentistry offers a four-year (11-term) program leading to the degree of Doctor of Dental Surgery (DDS), following satisfactory completion (after senior matriculation) of at least two preprofessional years of university education. The preprofessional years provide the necessary background in inorganic chemistry, organic chemistry, biology, physics, biochemistry, statistics, the humanities, and socialsciences.

~~The first and second years of the dental program are combined with the MD program. The curriculum is taught in blocks and covers areas as Infection, Immunity and Inflammation, Endocrine System, Cardiovascular, Pulmonary and Renal Systems, Gastroenterology and Nutrition, Musculoskeletal System, Neurosciences, Oncology. These subjects are augmented by dental courses offered by the respective divisions. The lectures, laboratories, seminars, and clinics offered by the Department of Dentistry relate and integrate these fundamental disciplines with the knowledge, skills, judgement, and performance required of dental practitioners.~~

~~Senior students are assigned to the Dental Clinic and the Department of Dentistry at the University of Alberta Hospital. An experience in the Satellite Dental Clinic and the external hospitals is required in the final year of the program. Thus students are able to relate their field of health service to the science and art of preventing, treating, and alleviating disease.~~

~~See Graduate Programs for information on programs of graduate study offered by the Department.~~

Technical Standards

The School of Dentistry Technical Standards Policy defines the necessary knowledge, skills, professional behaviors, and attitudes expected of students. ~~Please see the School of Dentistry website for further information.~~

Library

The Medical Sciences reading room of the John W Scott Health Sciences Library contains a comprehensive selection of reference materials and textbooks on dentistry and related subjects. In addition, it contains most current dental journals in English and other languages, and the Index to Dental Periodical Literature, an index to all dental periodicals since 1839.

DDS Degree

General Information

Curriculum

The Department of Dentistry offers a four-year (11-term) program leading to the degree of Doctor of Dental Surgery (DDS), following satisfactory completion (after senior matriculation) of at least two preprofessional years of university education. The preprofessional years provide the necessary background in inorganic chemistry, organic chemistry, biology, physics, biochemistry, statistics, the humanities, and socialsciences.

Technical Standards

All students considering application to the DDS Degree program should review the School of Dentistry Technical Standards Policy. This policy defines the necessary knowledge, skills, professional behaviors, and attitudes expected of students to demonstrate competency and to demonstrate successful completion of the program.

Library

The Medical Sciences reading room of the John W Scott Health Sciences Library contains a comprehensive selection of reference materials and textbooks on dentistry and related subjects. In addition, it contains most current dental journals in English and other languages, and the Index to Dental Periodical Literature, an index to all dental periodicals since 1839.

Orientation

~~It is mandatory that each student, after acceptance into the program, attend Orientation. This is scheduled immediately before the beginning of the first term of each year.~~

Course Requirements

Year 1

- DDS 509 – Pre-Clinical Practice of Dentistry I
- DDS 510 – Patient Centred Care
- DDS 514 Anatomy (Dental)

Orientation

In a health professional educational program such as this, it is mandatory that each student, after acceptance into the program, attend all identified orientation sessions indicated in the student schedule. For DDS professional students, these sessions are considered part of the curriculum and attendance at such is a component of demonstrating competency in professionalism. These are scheduled at the beginning of the first term of each year.

Course Requirements (for students beginning in 2019 or later)

Year 1

DDS 511 – Foundations of Dentistry

DDS 512 – Dental Disease and Risk Management

DDS 513 – Patient Assessment I

DDS 515 – Patient Assessment II

DDS 516 – Diagnose and Manage Early Disease

Year 2

DDS 521 – Oral Health and Nutrition

DDS 522 – Diagnosing and Managing Oral Disease

DDS 524 – Diagnosing and Managing Advanced Conditions I

DDS 525 - Diagnosing and Managing Advanced Conditions II

DDS 526 – Clinical Practice I

Year 3

DDS 530 – Clinical Practice II

DDS 531 – Clinical Treatment Skills

Year 4

DDS 540 – Clinical Practice III

DDS 542 – Advanced Elective Experiences

Course Requirements (for students beginning in 2018 or earlier)

Year 1

- DDS 509 – Pre-Clinical Practice of Dentistry I
- DDS 510 – Patient Centred Care
- DDS 514 Anatomy (Dental)
- DDS 518 – Oral Biology I

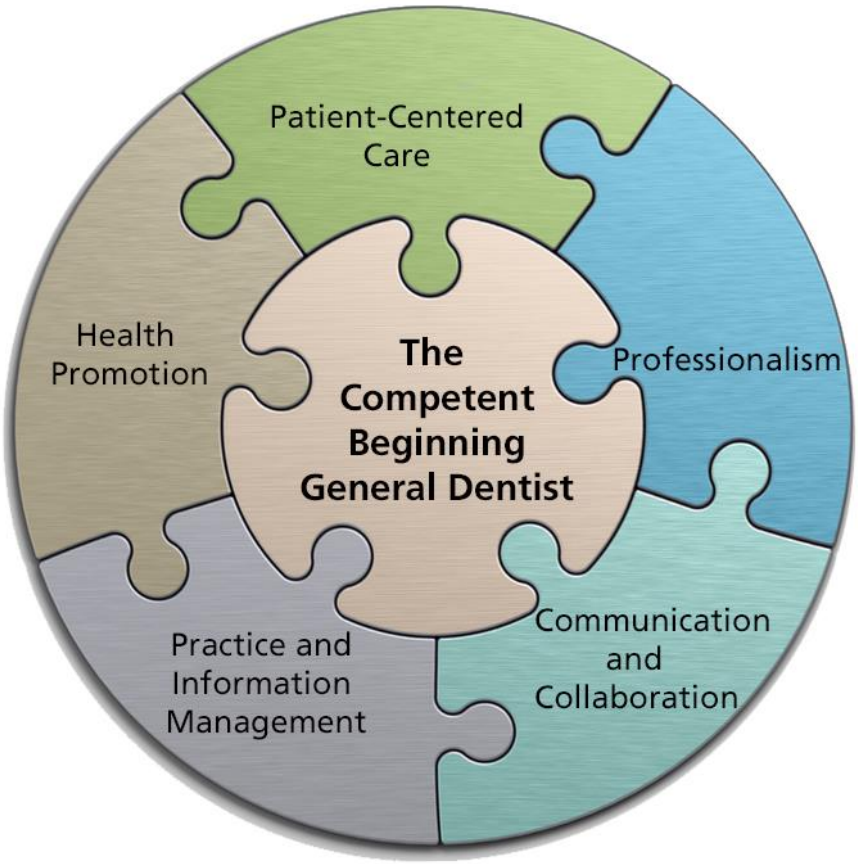
• DDS 518 – Oral Biology I • DMED 511 – Foundations of Medicine and Dentistry • DMED 513 – Endocrine System • DMED 515 Cardiovascular System • DMED 516 – Pulmonary System • DMED 517 – Renal System	• DMED 511 – Foundations of Medicine and Dentistry • DMED 513 – Endocrine System • DMED 515 Cardiovascular System • DMED 516 – Pulmonary System • DMED 517 – Renal System
Year 2 • DDS 506 – Gastroenterology and Nutrition • DDS 507 – Neurosciences and Organs of Special Senses • DDS 508 – Oncology • DDS 517 – Psychiatry • DDS 520 – Patient Centred Care • DDS 523 – Musculoskeletal System • DDS 529 – Pre-Clinical Practice of Dentistry II • DDS 532 – Oral Biology II • DDS 533 – Oral Pathology	Year 2 • DDS 506 – Gastroenterology and Nutrition • DDS 507 – Neurosciences and Organs of Special Senses • DDS 508 – Oncology • DDS 517 – Psychiatry • DDS 520 – Patient Centred Care • DDS 523 – Musculoskeletal System • DDS 529 – Pre-Clinical Practice of Dentistry II • DDS 532 – Oral Biology II • DDS 533 – Oral Pathology
Year 3 • DDS 541 – Dental Pharmacology • DDS 545 – Clinical Practice I • DDS 547 – Geriatrics • DDS 555 – Practice Management	Year 3 • DDS 541 – Dental Pharmacology • DDS 545 – Clinical Practice I • DDS 547 – Geriatrics • DDS 555 – Practice Management
Year 4 • DDS 565 – Clinical Practice II	Year 4 • DDS 565 – Clinical Practice II

FoMD Approval:

Faculty Learning Committee – July 4, 2018
Faculty Council Committee (for review only) – July 19, 2018

ASSOCIATION of CANADIAN FACULTIES of DENTISTRY | L'ASSOCIATION des FACULTÉS DENTAIRES du CANADA

ACFD educational framework for the development of competency in dental programs



The size of pieces corresponding to competencies does not represent the time spent in the curriculum for their development

Submitted by the ACFD Academic Affairs Committee Task Force – Adopted by the ACFD Academic Affairs Committee – 2013 October 15th
Updated to reflect draft KSAs document from NDEB and CanMEDs 2015 (Draft Series III) – Adopted by the ACFD Academic Affairs Committee – 2015 February 12th
Adopted by the ACFD – 2015 June 15th

ISBN 978-0-9952789-0-5

Citation: *ACFD Educational Framework for the Development of Competency in Dental Programs. Association of Canadian Faculties of Dentistry. 2016*

This document utilizes the following definitions and acronyms:

Competency: A global statement of the complex knowledge, skills and attitudes required of a beginning general dentist.
Component: Aspects of a Competency that help elaborate and illustrate its meaning.
Indicator: Specific knowledge, skills and behaviours that can be measured as steps towards developing competence. Rather than an exhaustive list of Indicators, this document provides examples for illustration. It is anticipated that each dental program will add to these examples to develop their own Indicators.

KSA: National Dental Examining Board's Knowledge, Skills and Abilities document of 2014
CBDP: Competencies for a Beginning Dental Practitioner (2005)
CMF: CanMEDS 2005 or 2015 (Draft Series III) Framework of the Royal College of Physicians and Surgeons of Canada
AAC: ACFD Academic Affairs Committee

Acknowledgments

The definitions, descriptions, and components of this document borrow heavily from the CanMEDS 2015 (Draft Series III) Framework of the Royal College of Physicians and Surgeons of Canada, the CanMEDS 2005 Framework[1], and the American Dental Education Association. (ADEA) "Competencies for the New General Dentist". It likewise includes the essential learning identified by the National Dental Examining Board's Knowledge, Skills and Abilities document of 2014. ACFD gratefully acknowledges the guidance provided by these essential reference documents.

The original Task Force was comprised of*:

Dr. Anne Charbonneau	Université de Montréal
Dr. Marie Dagenais	McGill University
Dr. Sylvie Morin	Université Laval
Dr. Joanne Walton	University of British Columbia

The ACFD Academic Affairs Committee was comprised of:

(President)	Dr. Anne Charbonneau	Université de Montréal
	Dr. Leandra Best	University of British Columbia
	Dr. Shahrokh Esfandiari	McGill University
(Vice-president)	Dr. Steve Patterson	University of Alberta
	Dr. Cathia Bergeron	Université Laval
	Dr. Richard Bohay	Western University
	Dr. Ronald Bannerman	Dalhousie University
	Dr. Jim Lai	University of Toronto
	Dr. Douglas Brothwell	University of Manitoba
	Dr. Ken Sutherland	University of Saskatchewan

*By alphabetical order

[1] © Royal College of Physicians and Surgeons of Canada, 2009. http://collegeroyal.ca/canmeds. Reproduction authorized.

Submitted by the ACFD Academic Affairs Committee Task Force – Adopted by the ACFD Academic Affairs Committee – 2013 October 15th
Updated to reflect draft KSAs document from NDEB and CanMEDs 2015 (Draft Series III & IV) – Adopted by the ACFD Academic Affairs Committee – 2015 February 12th Adopted by the ACFD – 2015 June 15th

Introduction

A competent beginning general dentist in Canada must be able to independently provide oral health care for the benefit of individual patients and communities in a culturally sensitive manner (adapted from CBDP).

The ACFD educational framework is a conceptual tool for use in Canadian undergraduate dental curricula. The framework identifies five areas of competence to best ensure that Canadian dental school graduates are prepared to enter general dental practice.

This framework interprets competency as “A global statement of the complex knowledge, skills and attitudes required of a beginning general dentist.” This interpretation builds on a number of previous definitions as proposed by others.

Chambers (1993) defined competence as "the behaviour expected of the beginning practitioner. This behaviour incorporates understanding, skill, and values in an integrated response to the full range of requirements presented in practice".

Lachiver and Tardif (2002) expanded on the definition of competence as follows: “A competence could be defined as a complex ability to act based on effectively mobilizing and using a set of resources. This ability highlights that each competence is active in nature, allowing an individual to implement a set of reflections, process, strategies, and actions in performing a given task. It helps distinguish competence from a simple procedure, preventing competence from becoming misconstrued as a synonym of know-how. It therefore endows competence with comprehensive role and character.”

Tardif (2006) adds that competence involves knowing “how to act” based on calling-up and combining various internal and external resources within a group of situations.

Epstein and Hundert (2002) defined competence in Medicine as “the habitual and judicious use of communication, knowledge, technical skills, clinical reasoning, emotions, values, and reflection in daily practice for the benefit of the individuals and communities being served.”

The current American Dental Education Association (ADEA) “Competencies for the New General Dentist” document (2011), used for dental education and accreditation in the U.S., defines competency as “a complex behaviour or ability essential for the general dentist to begin independent, unsupervised practice”.

The 5 competencies

A competent beginning general dentist in Canada must successfully integrate the understanding, skills, and values inherent in each of the following five competencies:

COMPETENCY 1 – PATIENT-CENTERED CARE

COMPETENCY 2 – PROFESSIONALISM

COMPETENCY 3 – COMMUNICATION and COLLABORATION

COMPETENCY 4 – PRACTICE AND INFORMATION MANAGEMENT

COMPETENCY 5 – HEALTH PROMOTION

Each of these competencies is considered essential although the curricular time devoted to each will vary. This framework is adapted from the CanMEDs (Draft Series III and IV) 2015 framework and the ADEA “Competencies for the New General Dentist.” It also links the 2014 NDEB KSA statements and the 2005 “Competencies for a Beginning Dental Practitioner in Canada” to each competency.

Submitted by the ACFD Academic Affairs Committee Task Force – Adopted by the ACFD Academic Affairs Committee – 2013 October 15th
Updated to reflect draft KSAs document from NDEB and CanMEDs 2015 (Draft Series III & IV) – Adopted by the ACFD Academic Affairs Committee – 2015 February 12th Adopted by the ACFD – 2015 June 15th

COMPETENCY 1 – PATIENT-CENTERED CARE: The application of professional knowledge, skills and values in the provision of patient-centered care. (CMF2005)

Components of Competency 1 Patient-Centered Care	EXAMPLES of Indicators observed during dental education	Knowledge, Skills and Abilities (KSA) for the beginning general dentist
1.1 Apply knowledge of the clinical, socio-behavioural, and fundamental biomedical sciences relevant to Dentistry. (CMF2005)	a. Evaluate the scientific literature and justify management recommendations based on the level of evidence available. (CBDP 3) (KSA 12.1) b. Interpret the findings from the patient's chief complaint, medical, psychosocial, and dental histories, along with the clinical and radiographic examinations, and diagnostic tests. (CBDP 13) (KSA 1.2.2) c. Develop treatment options based on the evaluation of all relevant data. (i.e., obtained from the patient's chief complaint, medical, psychosocial, and dental histories, along with the clinical and radiographic examinations, and diagnostic tests). (CBDP 19) (KSA 1.3.3) d. Recognize the relationship between general health and oral health. (CBDP 2) (see also 5.2)	• Evaluate the scientific literature and justify management recommendations based on the level of evidence available. (CBDP 3) (KSA 12.1) • Interpret the findings from the patient's chief complaint, medical, psychosocial, and dental histories, along with the clinical and radiographic examinations, and diagnostic tests. (CBDP 13) (KSA 1.2.2) • Develop treatment options based on the evaluation of all relevant data. (i.e., obtained from the patient's chief complaint, medical, psychosocial, and dental histories, along with the clinical and radiographic examinations, and diagnostic tests). (CBDP 19) (KSA 1.3.3)
1.2 Perform a complete and appropriate assessment of patients. (CMF2005)	a. Obtain the patient's chief complaint, medical, psychosocial and dental histories. (CBDP 5, 6) (KSA 1.1.1) b. Interpret the findings from the patient's chief complaint, medical, psychosocial, and dental histories, along with the clinical and radiographic examinations, and diagnostic tests. (CBDP 6, 13) (KSA 1.2.2) c. Perform a clinical examination. (CBDP 9) (KSA 1.1.2) d. Differentiate between normal and abnormal hard and soft tissues of the maxillofacial complex. (CBDP 10) (KSA 1.2.1) e. Prescribe, make and interpret radiographs. (CBDP 12) (KSA 4.1) f. Assess patient-specific risk factors for oral disease or injury. (CBDP 16, 33a) (KSA 1.1.3) g. Prescribe and obtain the required diagnostic tests, considering their risks and benefits. (CBDP 11)	• Obtain the patient's chief complaint, medical, psychosocial and dental histories. (CBDP 5, 6) (KSA 1.1.1) • Interpret the findings from the patient's chief complaint, medical, psychosocial, and dental histories, along with the clinical and radiographic examinations, and diagnostic tests. (CBDP 6, 13) (KSA 1.2.2) • Perform a clinical examination. (CBDP 9) (KSA 1.1.2) • Differentiate between normal and abnormal hard and soft tissues of the maxillofacial complex. (CBDP 10) (KSA 1.2.1) • Prescribe, make and interpret radiographs. (CBDP 12) (KSA 4.1) • Assess patient-specific risk factors for oral disease or injury. (CBDP 16, 33a) (KSA 1.1.3)
1.3 Demonstrate appropriate diagnostic and treatment planning skills. (CMF2005)	a. Develop a problem list and establish diagnoses. (CBDP 17) (KSA 1.2.3) b. Develop treatment options based on the evaluation of all relevant data. (i.e., obtained from the patient's chief complaint, medical, psychosocial, and dental histories, along with the clinical and radiographic examinations, and diagnostic tests). (CBDP 19) (KSA 1.3.3) c. Develop an appropriate comprehensive, prioritized and sequenced treatment plan. (CBDP 21) (KSA 1.3.5)	• Develop a problem list and establish diagnoses. (CBDP 17) (KSA 1.2.3) • Develop treatment options based on the evaluation of all relevant data. (i.e., obtained from the patient's chief complaint, medical, psychosocial, and dental histories, along with the clinical and radiographic examinations, and diagnostic tests). (CBDP 19) (KSA 1.3.3) • Develop an appropriate comprehensive, prioritized and sequenced treatment plan. (CBDP 21) (KSA 1.3.5)

Components of Competency 1 Patient-Centered Care	EXAMPLES of Indicators observed during dental education	Knowledge, Skills and Abilities (KSA) for the beginning general dentist
	d. Modify the treatment plan as required during the course of treatment. (CBDP 24) e. Recommend appropriate non-surgical and surgical therapy for caries management. (CBDP 33b)	
1.4 Demonstrate appropriate preventive skills. (CMF2005)	a. Provide therapies for the prevention of oral disease and injury. (CBDP 26) (KSA 2.1.2) b. Promote measures to prevent oral disease/injury in response to identified risk. (CBDP 25) (KSA 2.1.1)	• Provide therapies for the prevention of oral disease and injury. (CBDP 26) (KSA 2.1.2) • Promote measures to prevent oral disease/injury in response to identified risk. (CBDP 25) (KSA 2.1.1)
1.5 Demonstrate appropriate therapeutic skills. (CMF2005)	a. Manage the anxious or fearful dental patient. (CBDP 14) (KSA 2.2.1) b. Achieve local anesthesia for dental procedures. (CBDP 28) (KSA 11.1) c. Prescribe and administer pharmacotherapeutic agents used in dentistry. (CBDP 29) (KSA 2.2.6) d. Manage conditions and diseases of the periodontium. (CBDP 32) (KSA 5.1) e. Restore carious lesions and manage other defects in teeth. (CBDP 34b) (KSA 9.1) f. Manage diseases and injury of the pulp. (CBDP 38) (KSA 6.1) g. Manage abnormalities of orofacial growth and development. (CBDP 39a) (KSA 8.1) h. Manage partially and completely edentulous patients. (CBDP 42) (KSA 7.1) i. Manage occlusal function. (CBDP 40) (KSA 2.2.5) j. Manage oral mucosal and osseous diseases. (KSA 3.1) k. Manage surgical procedures related to oral soft and hard tissues. (CBDP 36) (KSA 10.1) l. Manage odontogenic pain. (KSA 11.2) m. Manage non-odontogenic pain. (CBDP 35) (KSA 11.3) n. Manage dental emergencies. (CBDP 30) (KSA 2.2.2) o. Manage medical emergencies that occur in dental practice. (CBDP 31) (KSA 2.2.3) p. Manage trauma to the orofacial complex. (CBDP 37) (KSA 2.2.4) q. Manage complications, outcomes and continuity of care. (KSA 2.2.7) r. When restoration is warranted, use techniques that conserve tooth structure and preserve pulp vitality to restore form and function. (CBDP 34b)	• Manage the anxious or fearful dental patient. (CBDP 14) (KSA 2.2.1) • Achieve local anesthesia for dental procedures. (CBDP 28) (KSA 11.1) • Prescribe and administer pharmacotherapeutic agents used in dentistry. (CBDP 29) (KSA 2.2.6) • Manage conditions and diseases of the periodontium. (CBDP 32) (KSA 5.1) • Restore carious lesions and manage other defects in teeth. (CBDP 34b) (KSA 9.1) • Manage diseases and injury of the pulp. (CBDP 38) (KSA 6.1) • Manage abnormalities of orofacial growth and development. (CBDP 39a) (KSA 8.1) • Manage partially and completely edentulous patients. (CBDP 42) (KSA 7.1) • Manage occlusal function. (CBDP 40) (KSA 2.2.5) • Manage oral mucosal and osseous diseases. (KSA 3.1) • Manage surgical procedures related to oral soft and hard tissues. (CBDP 36) (KSA 10.1) • Manage odontogenic pain. (KSA 11.2) • Manage non-odontogenic pain. (CBDP 35) (KSA 11.3) • Manage dental emergencies. (CBDP 30) (KSA 2.2.2) • Manage medical emergencies that occur in dental practice. (CBDP 31) (KSA 2.2.3) • Manage trauma to the orofacial complex. (CBDP 37) (KSA 2.2.4) • Manage complications, outcomes and continuity of care. (KSA 2.2.7)

Components of Competency 1 Patient-Centered Care	EXAMPLES of Indicators observed during dental education	Knowledge, Skills and Abilities (KSA) for the beginning general dentist
	s. Provide non-surgical management for caries. (CBDP 33, 34a) t. Select and, where indicated, prescribe appropriate biomaterials for patient treatment. (CBDP 41) u. Make records required for use in the laboratory fabrication of dental prostheses and appliances. (CBDP 43) v. Design a dental prosthesis or appliance, write a laboratory prescription and evaluate laboratory products. (CBDP 44)	
1.6 Recognize own limits and seek appropriate consultation from other health professionals where appropriate. (CMF2005)	a. Determine when consultation, referral, and/or further diagnostic testing are indicated. (CBDP 11, 18a) (KSA 1.3.1)	• Determine when consultation, referral, and/or further diagnostic testing are indicated. (CBDP 11, 18a) (KSA 1.3.1)

COMPETENCY 2 - PROFESSIONALISM: The commitment to the oral health and well-being of individuals and society through ethical practice, reflective learning, self-regulation and high personal standards of behaviour. (CMF2005)

Components of Competency 2 Professionalism	EXAMPLES of Indicators observed during dental education	Knowledge, Skills and Abilities (KSA) for the beginning general dentist
2.1. Demonstrate a commitment to patients and the profession by applying best practices and adhering to high ethical standards. (CMF2015)	a. Know ethical and legal obligations. (e.g., confidentiality requirements, task delegation, commitment to continued professional development, patient-centered care). (CBDP 45) (KSA 14.1) b. Implement measures to prevent the transmission of infectious diseases. (CBDP 8) (KSA 2.1.4) c. Recognize the principles and limits of patient confidentiality as defined by professional practice standards and the law. (CMF2005) d. Exhibit appropriate professional behaviours in practice, including honesty, integrity, commitment, compassion, respect and altruism. (CMF2005-2015) e. Recognize and appropriately respond to ethical issues encountered in practice. (CMF2005-20015) f. Appropriately manage conflicts of interest. (CMF2005) g. Contribute to the enhancement of quality care and patient safety in practice. (CMF2005) h. Integrate the available best evidence and best practices. (CMF2005) i. Exhibit professional behaviour that supercedes self-interest. (AAC from CBDP 47)	• Know ethical and legal obligations. (e.g., confidentiality requirements, task delegation, commitment to continued professional development, patient-centered care). (CBDP 45) (KSA 14.1) • Implement measures to prevent the transmission of infectious diseases. (CBDP 8) (KSA 2.1.4)
2.2. Demonstrate a commitment to society by recognizing and responding to the social contract in dental health care. (CMF2015)	a. Take appropriate action when signs of abuse and/or neglect are identified. (CBDP 15) (KSA 14.4) b. Implement measures to prevent medical emergencies from occurring in dental practice. (KSA 2.1.3) c. Demonstrate a commitment to delivering the highest quality care and maintenance of competence. (CMF2005) d. Maintain appropriate relationships with patients. (CMF2005) e. Facilitate the learning of patients, families, students, other health professionals, the public, and others, as appropriate. (CMF2005)	• Take appropriate action when signs of abuse and/or neglect are identified. (CBDP 15) (KSA 14.4) • Implement measures to prevent medical emergencies from occurring in dental practice. (KSA 2.1.3)

Components of Competency 2 Professionalism	EXAMPLES of Indicators observed during dental education	Knowledge, Skills and Abilities (KSA) for the beginning general dentist
2.3. Demonstrate a commitment to personal health and well-being to foster optimal patient care. (CMF2015)	a. Manage occupational hazards related to the practice of dentistry. (CBDP 27) (KSA 14.3) b. Balance personal and professional priorities to ensure personal health and a sustainable practice. (CMF2005) c. Demonstrate appropriate self-monitoring and self-reflection. (AAC) d. Recognize other professionals in need and respond appropriately. (CMF2005)	• Manage occupational hazards related to the practice of dentistry. (CBDP 27) (KSA 14.3)
2.4. Demonstrate a commitment to the profession by adhering to standards and participating in profession-led regulation. (CMF2015)	a. Know ethical and legal obligations. (e.g., confidentiality requirements, task delegation, commitment to continued professional development, patient-centered care). (CBDP 45) (KSA 14.1) b. Demonstrate responsibility by attending classes and clinics as assigned. (AAC)[2] c. Demonstrate responsibility by following up on activities related to patient care. (AAC) d. Demonstrate capacity for self-improvement by accepting and acting on constructive criticism. (AAC) e. Demonstrate initiative by following through on commitments. f. Demonstrate cooperation with students, staff and faculty. (AAC) g. Demonstrate professional appearance and behaviour in all aspects of life. (AAC) h. Use social media responsibly. (AAC) i. Recognize and respond to others' unprofessional behaviours in practice. (CMF2005) j. Participate in peer review. (CMF2005) k. Adhere to the professional, legal and ethical codes of practice. (CMF2015) l. Demonstrate accountability to professional regulatory bodies. (CMF2005)	• Know ethical and legal obligations. (e.g., confidentiality requirements, task delegation, commitment to continued professional development, patient-centered care). (CBDP 45) (KSA 14.1)

[2] Examples 2.4 b-f are derived from papers by Papadakis et al. (2005) and Teherani et al. (2005), which categorize and illustrate unprofessional behaviour by medical students, showing a relationship between professionalism issues in medical school and disciplinary action by medical boards after graduation.

COMPETENCY 3 – COMMUNICATION and COLLABORATION: The effective facilitation, both individually and as part of a healthcare team, of the dentist-patient relationship and the dynamic exchanges that occur before, during and after a patient interaction. (CMF2005)

Components of Competency 3 Communication and Collaboration	EXAMPLES of Indicators observed during dental education	Knowledge, Skills and Abilities (KSA) for the beginning general dentist
3.1 Establish professional therapeutic relationships with patients and their families. (CMF2015)	a. Communicate effectively with patients, parents, guardians, staff, peers, other health professionals and the public. (CBDP 4) (KSA 13.1) b. Communicate using a patient-centred approach that encourages patient trust and autonomy and is characterized by empathy, respect and compassion. (CMF2015) c. Manage emotionally charged conversations and conflicts. (CMF2015) d. Adapt to the unique needs and preferences of each patient and to his or her clinical condition and circumstances. (CMF2015)	• Communicate effectively with patients, parents, guardians, staff, peers, other health professionals and the public. (CBDP 4) (KSA 13.1)
3.2 Elicit and synthesize accurate and relevant information along with the perspectives of patients and their families. (CMF2015)	a. Communicate effectively with patients, parents, guardians, staff, peers, other health professionals and the public. (CBDP 4) (KSA 13.1) b. Obtain the patient's chief complaint, medical, psychosocial and dental histories. (CBDP 5, 6) (KSA 1.1.1) c. Listen effectively. (CMF2005) d. Respond appropriately to patients' non-verbal communication and utilize appropriate non-verbal behaviours to enhance communication with patients. (CMF2015) e. Use patient-centred interviewing skills to effectively identify and gather relevant biomedical information. (CMF2015) f. Seek out and synthesize relevant information from other sources, such as a patient's family, caregivers and other professionals. (CMF2005) g. Inquire about and explore the patient's beliefs, values, preferences, context, expectations, and dental health care goals. (CMF2015)	• Communicate effectively with patients, parents, guardians, staff, peers, other health professionals and the public. (CBDP 4) (KSA 13.1) • Obtain the patient's chief complaint, medical, psychosocial and dental histories. (CBDP 5, 6) (KSA 1.1.1)
3.3 Engage patients and others in developing plans that reflect the patient's dental health care needs and goals. (CMF2015)	a. Engage the patient in the discussion of the findings, diagnoses, etiology, risks, benefits, time requirements, costs, responsibilities, and prognoses of the treatment options. (CBDP 20,22) (KSA 1.3.4) b. Obtain and record informed consent. (CBDP 23) (KSA 1.3.6) c. Provide explanations that are clear, accurate, and adapted to the patient's level of understanding and need. (AAC) d. Share information that is timely, accurate, and transparent in regard to the patient's health status, care, and outcome. (AAC)	• Engage the patient in the discussion of the findings, diagnoses, etiology, risks, benefits, time requirements, costs, responsibilities, and prognoses of the treatment options. (CBDP 20,22) (KSA 1.3.4) • Obtain and record informed consent. (CBDP 23) (KSA 1.3.6)

Components of Competency 3 Communication and Collaboration	EXAMPLES of Indicators observed during dental education	Knowledge, Skills and Abilities (KSA) for the beginning general dentist
	e. Engage patients in a way that recognizes diversity, is respectful, non-judgmental, and ensures cultural safety. (CMF2015) f. Assist patients and others to identify and make use of information and communication technologies to support their care and manage their dental health. (CMF2015) g. Use counselling skills and decision aids to help patients make informed choices regarding their dental health care. (CMF2015) h. Disclose adverse events to patients and/or their families accurately and appropriately. (CMF2015)	
3.4 Document and share written and electronic information about the dental encounter to optimize clinical decision-making, patient safety, confidentiality, and privacy. (CMF2015)	a. Maintain accurate and complete patient records. (CBDP 7) (KSA 14.2) b. Document clinical encounters in an accurate, complete, timely, and accessible manner, in compliance with legal and regulatory requirements. (CMF2015) c. Communicate effectively using an electronic dental health record or other digital technology. (CMF2015) d. Share information with patients and appropriate others in a manner that respects patient privacy and confidentiality and in compliance with legal and regulatory requirements. (CMF2015)	• Maintain accurate and complete patient records. (CBDP 7) (KSA 14.2)
3.5 Work effectively with other dentists and other health care professionals. (CMF2015)	a. Communicate relevant patient information for consultation/referral with health care professionals. (CBDP 18b) (KSA 1.3.2) b. Establish and maintain healthy inter- and intraprofessional working relationships for collaborative care. (CMF2015) c. Negotiate overlapping and shared responsibilities with inter- and intraprofessional health care providers for episodic or ongoing care of patients. (CMF2015) d. Engage in effective and respectful shared decision-making with other care providers. (CMF2015)	• Communicate relevant patient information for consultation/referral with health care professionals. (CBDP 18b) (KSA 1.3.2)
3.6 Work with dentists and other colleagues in the health care professions to promote understanding, manage differences, and resolve conflicts. (CMF2015)	a. Communicate relevant patient information for consultation/referral with health care professionals. (CBDP 18b) (KSA 1.3.2) b. Communicate effectively with patients, parents, guardians, staff, peers, other health professionals and the public. (CBDP 4) (KSA 13.1) c. Show respect toward collaborators. (CMF2015) d. Implement strategies to promote understanding, manage differences, and resolve conflicts in a manner that supports a collaborative culture. (CMF2015)	• Communicate relevant patient information for consultation/referral with health care professionals. (CBDP 18b) (KSA 1.3.2) • Communicate effectively with patients, parents, guardians, staff, peers, other health professionals and the public. (CBDP 4) (KSA 13.1)
3.7 Hand over the care of a patient to another health care professional to facilitate continuity of safe patient	a. Communicate relevant patient information for consultation/referral with health care professionals. (CBDP 18b) (KSA 1.3.2)	• Communicate relevant patient information for consultation/referral with health care professionals. (CBDP 18b) (KSA 1.3.2)

Components of Competency 3 Communication and Collaboration	EXAMPLES of Indicators observed during dental education	Knowledge, Skills and Abilities (KSA) for the beginning general dentist
care. (CMF2015)	b. Determine when care should be transferred to another dentist or health care professional. (CMF2015) c. Demonstrate safe handover of care, using both verbal and written communication, during a patient transition to a different health care professional, setting, or stage of care. (CMF2015)	

COMPETENCY 4 – PRACTICE AND INFORMATION MANAGEMENT: The assessment of information and the management of a general dental practice to facilitate patient-centered care. (CMF2005)

Components of Competency 4 Practice and Information Management	EXAMPLES of Indicators observed during dental education	Knowledge, Skills and Abilities (KSA) for the beginning general dentist
4.1 Implement processes to improve professional practice. (CMF2005)	a. Implement measures to prevent medical emergencies from occurring in dental practice. (KSA 2.1.3) b. Manage occupational hazards related to the practice of dentistry. (CBDP 27) (KSA 14.3) c. Know principles of practice administration, financial and personnel management. (CBDP 46) (KSA 14.5) d. Evaluate practice possibilities (e.g. associateship, partnership, and proprietorship agreements). (AAC) e. Describe effective business, financial management, and human resource skills. (ADEA 5.4)	• Implement measures to prevent medical emergencies from occurring in dental practice. (KSA 2.1.3) • Manage occupational hazards related to the practice of dentistry. (CBDP 27) (KSA 14.3) • Know principles of practice administration, financial and personnel management. (CBDP 46) (KSA 14.5)
4.2 Employ information technology appropriately for patient care. (CMF2005)	a. Maintain accurate and complete patient records. (CBDP 7) (KSA 14.2) b. Evaluate the scientific literature and justify management recommendations based on the level of evidence available. (CBDP 3) (KSA 12.1)	• Maintain accurate and complete patient records. (CBDP 7) (KSA 14.2) • Evaluate the scientific literature and justify management recommendations based on the level of evidence available. (CBDP 3) (KSA 12.1)
4.3 Apply the principles of evidence-based decision making into practice. (AAC)	a. Evaluate the scientific literature and justify management recommendations based on the level of evidence available. (CBDP 3) (KSA 12.1) b. Utilize critical thinking and problem-solving skills. (ADEA) c. Describe the principles of critical appraisal. (CMF2005) d. Critically appraise retrieved evidence in order to address a clinical question. (CMF2005) e. Integrate critical appraisal conclusions into patient care. (CMF2005)	• Evaluate the scientific literature and justify management recommendations based on the level of evidence available. (CBDP 3) (KSA 12.1)

COMPETENCY 5 – HEALTH PROMOTION: The responsible use of professional expertise and influence to advance the health and well-being of individual patients, communities and populations. (CMF2005)

Components of Competency 5 Health Promotion	EXAMPLES of Indicators observed during dental education	Knowledge, Skills and Abilities (KSA) for the beginning general dentist
5.1 Work with patients to address social determinants of health that affect them. (CMF2015)	a. Recognize the determinants (influencing factors) of oral health. (CBDP 1) (KSA 15.1) b. Justify recommendations based on the level of evidence available. (CBDP 3b) c. Describe the ethical and professional issues inherent in health advocacy, including altruism, social justice, autonomy, integrity and idealism. (CMF2005) d. Describe the role of the dental profession in advocating collectively for health and patient safety. (CMF2005)	• Recognize the determinants (influencing factors) of oral health. (CBDP 1) (KSA 15.1)
5.2 Work with patients and their families to increase opportunities to improve or maintain their health. (CMF2015)	a. Promote measures to prevent oral disease/injury in response to identified risk. (CBDP 25) (KSA 2.1.1) b. Recognize the relationship between general health and oral health. (CBDP 2) c. Advocate, promote health and prevent disease for individual patients. (CMF2005) d. Identify the social determinants of health affecting an individual and their family. (CMF2005)	• Promote measures to prevent oral disease/injury in response to identified risk. (CBDP 25) (KSA 2.1.1)
5.3 Respond to the oral health promotion needs of a community or population. (CMF2015)	a. Promote oral health within communities. (KSA 15.2) b. Recognize the relationship between general health and oral health. (CBDP 2) c. Identify the social determinants of health for a given population, including barriers to access to care and resources. (CMF2005) d. Identify vulnerable or marginalized populations within those served and respond appropriately. (CMF2005) e. Identify points of influence in the healthcare system and its structure that impact on oral health care. (CMF2005) f. Advocate, promote health and prevent disease within the community. (CMF2005) g. Describe an approach to affecting change in the various determinants of health affecting a population served. (CMF2005) h. Describe how public policy impacts on the health of the populations served. (CMF2005)	• Promote oral health within communities. (KSA 15.2)

Appendix

- Quick view of the ACFD educational framework for the development of competency in dental programs
- NDEB KSAs and corresponding ACFD Competencies
- Competencies for the Beginning Dental Practitioner and corresponding NDEB KSAs and ACFD Competencies
- REFERENCES

COMPETENCY 1 – PATIENT-CENTERED CARE:

The application of professional knowledge, skills and values in the provision of patient-centered care. (CMF2005)

Components of Competency 1 - Patient-Centered Care	
1.1	Apply knowledge of the clinical, socio-behavioural, and fundamental biomedical sciences relevant to Dentistry. (CMF2005)
1.2	Perform a complete and appropriate assessment of patients. (CMF2005)
1.3	Demonstrate appropriate diagnostic and treatment planning skills. (CMF2005)
1.4	Demonstrate appropriate preventive skills. (CMF2005)
1.5	Demonstrate appropriate therapeutic skills. (CMF2005)
1.6	Recognize own limits and seek appropriate consultation from other health professionals where appropriate. (CMF2005)

COMPETENCY 2 – PROFESSIONALISM:

The commitment to the oral health and well-being of individuals and society through ethical practice, reflective learning, self-regulation and high personal standards of behaviour. (CMF2005)

Components of Competency 2 - Professionalism	
2.1.	Demonstrate a commitment to patients and the profession by applying best practices and adhering to high ethical standards. (CMF2015)
2.2.	Demonstrate a commitment to society by recognizing and responding to the social contract in dental health care. (CMF2015)
2.3.	Demonstrate a commitment to personal health and well-being to foster optimal patient care. (CMF2015)
2.4.	Demonstrate a commitment to the profession by adhering to standards and participating in profession-led regulation. (CMF2015)

COMPETENCY 3 – COMMUNICATION and COLLABORATION:

The effective facilitation, both individually and as part of a healthcare team, of the dentist-patient relationship and the dynamic exchanges that occur before, during and after a patient interaction. (CMF2005)

Components of Competency 3 - Communication and Collaboration	
3.1	Establish professional therapeutic relationships with patients and their families. (CMF2015)
3.2	Elicit and synthesize accurate and relevant information along with the perspectives of patients and their families. (CMF2015)
3.3	Engage patients and others in developing plans that reflect the patient's dental health care needs and goals. (CMF2015)
3.4	Document and share written and electronic information about the dental encounter to optimize clinical decision-making, patient safety, confidentiality, and privacy. (CMF2015)
3.5	Work effectively with other dentists and other health care professionals. (CMF2015)
3.6	Work with dentists and other colleagues in the health care professions to promote understanding, manage differences, and resolve conflicts. (CMF2015)
3.7	Hand over the care of a patient to another health care professional to facilitate continuity of safe patient care. (CMF2015)

COMPETENCY 4 – PRACTICE AND INFORMATION MANAGEMENT:

The assessment of information and the management of a general dental practice to facilitate patient-centered care. (CMF2005)

Components of Competency 4 - Practice and Information Management	
4.1	Implement processes to improve professional practice. (CMF2005)
4.2	Employ information technology appropriately for patient care. (CMF2005)
4.3	Apply the principles of evidence-based decision making into practice. (AAC)

COMPETENCY 5 – HEALTH PROMOTION:

The responsible use of professional expertise and influence to advance the health and well-being of individual patients, communities and populations. (CMF2005)

Components of Competency 5 - Health Promotion	
5.1	Work with patients to address social determinants of health that affect them. (CMF2015)
5.2	Work with patients and their families to increase opportunities to improve or maintain their health. (CMF2015)

5.3 Respond to the oral health promotion needs of a community or population. (CMF2015)

NDEB KSAs and Corresponding ACFD Competencies

	GROUP A: Multi-Discipline KSAs	ACFD Competencies
1	PATIENT ASSESSMENT AND TREATMENT PLAN	
1.1	Exam	
1.1.1	Obtain the patient's chief complaint, medical, psychosocial, and dental histories.	Patient-Centered Care/ Communication and Collaboration
1.1.2	Perform a clinical examination.	Patient-Centered Care
1.1.3	Assess patient-specific risk factors for oral disease or injury.	Patient-Centered Care
1.2	Diagnosis	
1.2.1	Differentiate between normal and abnormal hard and soft tissues of the maxillofacial complex.	Patient-Centered Care
1.2.2	Interpret the findings from the patient's chief complaint, medical, psychosocial, and dental histories, along with the clinical and radiographic examinations, and diagnostic tests.	Patient-Centered Care
1.2.3	Develop a problem list and establish diagnoses.	Patient-Centered Care
1.3	Treatment Plan	
1.3.1	Determine when consultation, referral, and/or further diagnostic testing are indicated.	Patient-Centered Care
1.3.2	Communicate relevant patient information for consultation/referral with health care professionals.	Communication and Collaboration
1.3.3	Develop treatment options based on the evaluation of all relevant data. (i.e., obtained from the patient's chief complaint, medical, psychosocial, and dental histories, along with the clinical and radiographic examinations, and diagnostic tests)	Patient-Centered Care
1.3.4	Engage the patient in the discussion of the findings, diagnoses, etiology, risks, benefits, time requirements, costs, responsibilities, and prognoses of the treatment options.	Communication and Collaboration
1.3.5	Develop a comprehensive, prioritized and sequenced treatment plan.	Patient-Centered Care
1.3.6	Obtain and record informed consent.	Communication and Collaboration
2	MANAGEMENT	
2.1	Prevention	
2.1.1	Promote measures to prevent oral disease/injury in response to identified risk.	Patient-Centered Care/ Health Promotion
2.1.2	Provide therapies for the prevention of oral disease/injury.	Patient-Centered Care
2.1.3	Implement measures to prevent medical emergencies from occurring in dental practice.	Professionalism/ Practice and Information Management
2.1.4	Implement measures to prevent the transmission of infectious diseases.	Professionalism
2.2	Treatment	
2.2.1	Manage the anxious or fearful patient.	Patient-Centered Care
2.2.2	Manage dental emergencies.	Patient-Centered Care
2.2.3	Manage medical emergencies that occur in dental practice.	Patient-Centered Care
2.2.4	Manage trauma to the orofacial complex.	Patient-Centered Care
2.2.5	Manage occlusal function	Patient-Centered Care
2.2.6	Prescribe and administer pharmacotherapeutic agents used in dentistry.	Patient-Centered Care
2.2.7	Manage complications, outcomes and continuity of care.	Patient-Centered Care

GROUP B: Discipline-Specific KSAs		ACFD Competencies (2015)
3	ORAL MEDICINE AND PATHOLOGY	
3.1	Manage oral mucosal and osseous diseases.	Patient-Centered Care
4	RADIOLOGY	
4.1	Prescribe, make and interpret radiographs.	Patient-Centered Care
5	PERIODONTICS	
5.1	Manage conditions and diseases of the periodontium.	Patient-Centered Care
6	ENDODONTICS	
6.1	Manage diseases and injury of the pulp.	Patient-Centered Care
7	PROSTHODONTICS	
7.1	Manage partially and completely edentulous patients.	Patient-Centered Care
8	ORTHODONTICS	
8.1	Manage abnormalities of orofacial growth and development.	Patient-Centered Care
9	OPERATIVE	
9.1	Restore carious lesions and manage other defects in teeth.	Patient-Centered Care
10	ORAL SURGERY	
10.1	Manage surgical procedures related to oral soft and hard tissues.	Patient-Centered Care
11	PAIN	
11.1	Achieve local anesthesia for dental procedures.	Patient-Centered Care
11.2	Manage odontogenic pain.	Patient-Centered Care
11.3	Manage non-odontogenic pain.	Patient-Centered Care

GROUP C: General KSAs		ACFD Competencies (2015)
12	SCIENTIFIC LITERATURE	
12.1	Evaluate the scientific literature and justify management recommendations based on the level of evidence available.	Patient-Centered Care/ Practice and Information Management
13	COMMUNICATION	
13.1	Communicate effectively with patients, parents, guardians, staff, peers, other health professionals and the public.	Communication and Collaboration
14	PROFESSIONALISM AND PRACTICE	
14.1	Know ethical and legal obligations. (e.g., confidentiality requirements, task delegation, commitment to continued professional development, patient-centred care)	Professionalism
14.2	Maintain accurate and complete patient records.	Communication and Collaboration/ Practice and Information Management
14.3	Manage occupational hazards related to the practice of dentistry.	Professionalism/ Practice and Information Management
14.4	Take appropriate action when signs of abuse and/or neglect are identified.	Professionalism
14.5	Know principles of practice administration, financial and personnel management.	Practice and Information Management
15	HEALTH PROMOTION	
15.1	Recognize the determinants (influencing factors) of oral health.	Health Promotion
15.2	Promote oral health within communities.	Health Promotion

CBDP	Competencies for the Beginning Dental Practitioner (2005)	KSAs (2014)	ACFD Competencies (2015)
1	recognize the determinants of oral health in individuals and populations and the role of dentists in health promotion, including the disadvantaged.	15.1	Health Promotion
2	recognize the relationship between general health and oral health.	-	Patient-Centered Care / Health Promotion
3a	evaluate the scientific literature, and	12.1	Practice and Information Management
3b	justify management recommendations based on the level of evidence available.	12.1	Patient-Centered Care/ Practice and Information Management/ Health Promotion
4	communicate effectively with patients, parents or guardians, staff, peers, other health professionals and the public	13.1	Communication and Collaboration
5	identify the patient's chief complaint/concern and obtain the associated history.	1.1.1	Patient-Centered Care/ Communication and Collaboration
6	obtain and interpret a medical, dental and psychosocial history, including a review of systems as necessary, and evaluate physical or psychosocial conditions that may affect dental management.	1.1.1	Patient-Centered Care/ Communication and Collaboration
7	maintain accurate and complete patient records in a confidential manner.	14.2	Communication and Collaboration/ Practice and Information Management
8	prevent the transmission of infectious diseases by following current infection control guidelines.	2.1.4	Professionalism
9	perform a clinical examination.	1.1.2	Patient-Centered Care
10	differentiate between normal and abnormal hard and soft tissues of the maxillofacial complex.	1.2.1	Patient-Centered Care
11	prescribe and obtain the required diagnostic tests, considering their risks and benefits.	1.3.1	Patient-Centered Care
12	perform a radiographic examination.	4.1	Patient-Centered Care
13	interpret the findings from a patient's history, clinical examination, radiographic examination and from other diagnostic tests and procedures.	1.2.2	Patient-Centered Care
14	recognize and manage the anxious or fearful dental patient.	2.2.1	Patient-Centered Care
15	recognize signs of abuse and/or neglect and make appropriate reports.	14.4	Professionalism
16	assess patient risk (including, but not limited to, diet and tobacco use) for oral disease or injuries.	1.1.3	Patient-Centered Care
17	develop a problem list and establish diagnoses.	1.2.3	Patient-Centered Care
18a	determine the level of expertise required for treatment, and	1.3.1	Patient-Centered Care
18b	formulate a written request for consultation and/or referral when appropriate.	1.3.2	Communication and Collaboration
19	develop treatment options based on the evaluation of all relevant data.	1.3.3	Patient-Centered Care
20	discuss the findings, diagnoses, etiology, risks, benefits and prognoses of the treatment options, with a view to patient participation in oral health management.	1.3.4	Communication and Collaboration
21	develop an appropriate comprehensive, prioritized and sequenced treatment plan.	1.3.5	Patient-Centered Care
22	present and discuss the sequence of treatment, estimated fees, payment arrangements, time requirements and the patient's responsibilities for treatment.	1.3.4	Communication and Collaboration

23	obtain informed consent including the patient's written acceptance of the treatment plan and any modifications.	1.3.6	Communication and Collaboration
24	modify the treatment plan as required during the course of treatment.	-	Patient-Centered Care
25	provide education regarding the risks and prevention of oral disease and injury to encourage the adoption of healthy behaviours.	2.1.1	Patient-Centered Care / Health Promotion
26	provide therapies for the prevention of oral disease and injury.	2.1.2	Patient-Centered Care
27	recognize and institute procedures to minimize occupational hazards related to the practice of dentistry.	14.3	Professionalism / Practice and Information Management
28	achieve local anesthesia for dental procedures and manage related complications.	2.2.6 2.2.7 11.1	Patient-Centered Care
29a	determine the indications and contraindications for the use of drugs used in dental practice, their dosages and routes of administration, and	2.2.6	Patient-Centered Care
29b	write prescriptions for drugs used in dentistry.	2.2.6	Patient-Centered Care
30	manage dental emergencies.	2.2.2	Patient-Centered Care
31	recognize and manage systemic emergencies which may occur in dental practice.	2.2.3	Patient-Centered Care
32a	manage conditions and diseases of the periodontium,	5.1	Patient-Centered Care
32b	provide periodontal treatment when indicated and monitor treatment outcomes.	5.1	Patient-Centered Care
33a	assess the risk, extent and activity of caries, and	1.1.3	Patient-Centered Care
33b	recommend appropriate non-surgical and surgical therapy	-	Patient-Centered Care
34a	manage dental caries, tooth defects and esthetic problems, and	9.1	Patient-Centered Care
34b	when restoration is warranted, use techniques that conserve tooth structure and preserve pulp vitality to restore form and function.	9.1	Patient-Centered Care
35	manage patients with orofacial pain and/or dysfunction.	11.3	Patient-Centered Care
36	manage surgical procedures related to oral soft and hard tissues and their complications	10.1	Patient-Centered Care
37	manage trauma to the orofacial complex.	2.2.4	Patient-Centered Care
38a	manage conditions and pathology of the pulp, and	6.1	Patient-Centered Care
38b	provide endodontic treatment when indicated	6.1	Patient-Centered Care
39a	manage abnormalities of orofacial growth and development, and	8.1	Patient-Centered Care
39b	treat minor orthodontic problems.	8.1	Patient-Centered Care
40	recognize and manage functional and non-functional occlusion.	2.2.5	Patient-Centered Care
41	select and, where indicated, prescribe appropriate biomaterials for patient treatment.	-	Patient-Centered Care
42a	manage partially and completely edentulous patients with prosthodontic needs	7.1	Patient-Centered Care
42b	including the provision of fixed, removable and implant prostheses.	7.1	Patient-Centered Care
43	make records required for use in the laboratory fabrication of dental prostheses and appliances.	-	Patient-Centered Care
44	design a dental prosthesis or appliance, write a laboratory prescription and evaluate laboratory products.	-	Patient-Centered Care

45	apply accepted principles of ethics and jurisprudence to maintain standards and advance knowledge and skills.	14.1	Professionalism
46	apply basic principles of practice administration, financial and personnel management to a dental practice.	14.5	Practice and Information Management
47	demonstrate professional behaviour that is ethical, supersedes self-interest, strives for excellence, is committed to continued professional development and is accountable to individual patients, society and the profession.	-	Professionalism

* KSAs 2.1.3, 3.1, 11,2, 15.2 do not have corresponding CBDP competency statement.
KSAs 2.26, 2.27 are related to CBDP 28.

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FINDINGS REPORT

DENTISTRY CURRICULUM RENEWAL

PHASE 1

Date:	November 2015
Prepared for:	Faculty of Medicine & Dentistry
	School of Dentistry
Prepared by:	Technologies in Education: Support and Solutions
	Faculty of Education
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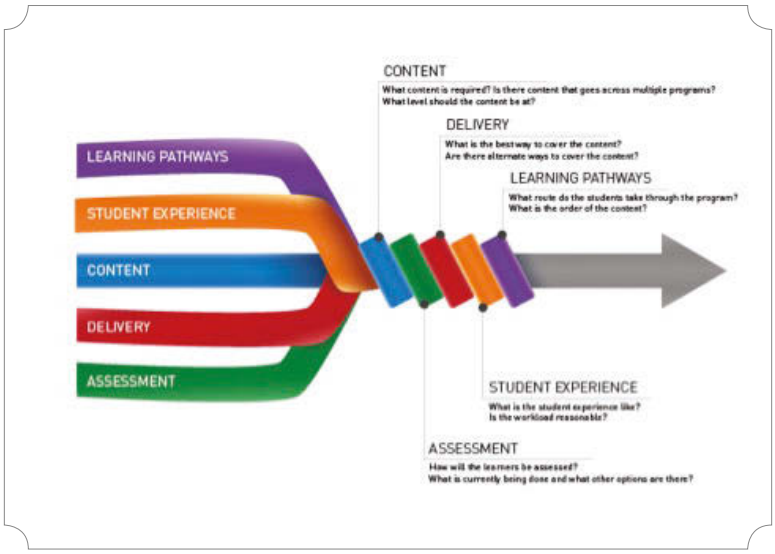
FINDINGS REPORT

DENTISTRY CURRICULUM RENEWAL [PHASE 1]

TABLE OF CONTENTS

INTRODUCTION

Data was collected through focus groups and surveys from Faculty, Students and Administration to align with the five major themes of inquiry of the Program Design Framework:



Findings are represented within key statements, framed within these five pillars, above. Opportunities that repeat across pillars are indicated in bold.

LEARNING PATHWAYS

Challenges:

- Development of clinical/ motor skills.
- Integration of theory in support of clinical learning.
- Work overload and resultant stressors for students.

Opportunities:

- **Improve sequencing and timing.**
- **Increase time and sequence simulation and clinical experiences earlier.**
- **Increase alignment between theoretical concepts and clinical experiences.**

	Challenges:	Opportunities:
STUDENT EXPERIENCE	• Work levels and stress. • Volume, content, and timing of requirements. • Difficulty integrating learning experiences. • Lessened value of experience due to stress.	• **Improve sequencing and timing.** • **Continue to strengthen communication between faculty and students.** • **Increase alignment between theoretical concepts and clinical experiences.** • **Improve understanding of the overall program amongst faculty members.**
CONTENT	• Perceived misalignment of medicine-block courses and dental student needs. • Lack confidence by students in orthodontics, endodontics and implant surgery. • Relevance of learning is not translated well to students.	• **Increase time and sequence simulation and clinical experiences earlier.** • Evaluate medicine-block courses and dental student needs. • Streamline courses to more closely align with competency development. • Continually communicate relevancy of learning to clinical practice.
DELIVERY	• Lecture time perceived as too much. • Desire by students for earlier experience of clinic and practical application of skills. • Openness expressed by students to active learning experiences.	• Increase interest of faculty in meeting student-learning needs. • Increase delivery flexibility through technology enhanced learning and delivered online. • **Increase time and sequence simulation and clinical experiences earlier.**
ASSESSMENT	• Weak connection between learning objectives and assessment. • Laboratory and clinical assessments are perceived by students as subjective and inconsistently administered. • Too many assessments within short time periods. • Quality of feedback received by students is weak.	• **Increase time and sequence simulation and clinical experiences earlier to decrease pressure around skill building.** • Increase explanation of the assessment methods for laboratory and clinical assessments to alleviate the perception of subjective assessments. • Create stronger formative assessment including constructive criticism. • Develop students' capacity for self-assessment by the end of their clinical experiences.

METHODOLOGY

This needs assessment was conducted from May through to September 30th, 2015 as a component of a larger Curriculum Revitalization Project within the School of Dentistry.

This needs assessment represents a mixed methods approach. Both numerical data and comments were collected from students, faculty and alumni within the Dentistry (DDS) and Dental Hygiene (DH) programs. Numerical data was used as a comparison point for student and faculty comments. Comments were assembled to represent the varying perspectives that existed with no statistical analysis completed on the survey data.

Initiative Goals

The major goals of the initiative were to:

- document the guiding principles that will ground the project throughout the life-cycle.
- collect, examine, analyze, and document data related to the DDS and DH programs to create a robust and research-based set of goals for the programmatic level curriculum redesign.

Process framework

An initial series of interviews were conducted with 5 key stakeholders, the Department Chair, the Director of Dental Hygiene, Associate Chair Academic, the Curriculum Coordinator and the Communications Officer to determine the requirements for change. These interviews were transcribed and commentary was reviewed to ascertain major concerns and interests. The following 11 Areas of Focus emerged:

1. Possible integration of curriculum between DDS and DH: The examination of the possibility of creating joint offerings for shared curricular activities past the current radiology course.
2. Examination of the use of medical courses for the DDS curriculum: An evaluation of the alignment between the learning objectives and outcomes of the medical courses and the identified objectives and outcomes of the DDS curriculum.
3. Consideration of student workload issues with a focus on the quality of the learning experience within the programs.
4. Examination of the movement from a diploma to a degree only for DH as well as the possibility of matching the trimester system currently utilized by DDS.
5. Evaluation of the level of learning reached by the students through their program. The ability to reflect and evaluate their own learning, skills and professional practice are seen as key areas of students' experiences.
6. Movement of clinical practice earlier in the DDS program.
7. Analysis of clinic use and transition of patients from DH to DDS clinic practice if and when appropriate.
8. Integration of technology, as appropriate, into the curriculum in a standardized manner that best supports proven practice in the area of technology enhanced learning.

9. Evolution from lecture-based delivery to a more interactive philosophy to encourage deeper learning, problem solving, as well as provide student access to faculty expertise beyond the lecture environment.
10. Examination of assessment practices to reflect proven practice and support of the overall learning experience of the student.
11. Potential of engaging graduate students to support undergraduate programs.

Through a series of discussions with the Curriculum Review Committee, the above interests were amalgamated into the following 5 major themes of inquiry:

- Learning Pathways
- Student Experience
- Content
- Delivery
- Assessment

These themes of inquiry were further validated with faculty members of the DDS and DH programs through a follow-up input session. Faculty members were invited to attend a general 1-hour session to provide input into the process. The 5 themes were presented to faculty and groups worked together to outline the major concerns and interests along each of the themes. Faculty were also provided an opportunity to suggest additional themes for consideration.

Survey and focus group questioning was informed by the initial Areas of Focus as well as the concerns and interests that emerged from this session.

Data collection

Surveys

- Customized surveys were developed to solicit Faculty and Student feedback within the context of the 5 themes.
- Student and faculty surveys were directly distributed to all parties via email contact. Surveys were administered online through SurveyMonkey.
- DDS student participation was encouraged through group completion with a hosted lunch followed by an explanation of the survey's purpose and significance. Thirty-one first-year participants (70% of the class), 29 second-year participants (80% percent of the class), and 20 third-year participants (50% of the class) completed the survey.
- Due to the timing requirements, the DH student survey was administered while students were off-campus. The survey notice was distributed directly to each student via email, and students completed an online version of the survey via SurveyMonkey. Student participation was encouraged through a prize draw. Twenty-one of 42 DH students (50%) completed the survey.
- A standard exit survey was administered to DDS completers in Year 4 and DH completers in Year 2 (diploma graduates) and Year 3 (degree graduates).
- The faculty survey was sent directly to 135 full and part-time faculty members via email. 39% completed the survey.

- A previously distributed DDS alumni survey was also used to inform the needs assessment. The alumni survey was distributed in 2014 and sent to 131 program participants from 2010 to 2013. The survey was completed by 54 respondents (41%).

Focus groups

- In addition to the survey data collection, focus group sessions were also held. These focus groups represented an essential component of the needs assessment because they allowed for more detailed information to be gathered directly from constituency groups.
- Invitations for participation in focus groups was distributed in the following ways:
  - » Students: The participation opportunities were announced in student classrooms.
  - » Faculty: The participation opportunities were shared at the division head meetings and notices were sent to all faculty members through email. Follow-up announcements were made in meetings and general assemblies.
  - » Alumni: The participation opportunity was communicated through the alumni newsletter and directly to program graduates through email.

Six focus group sessions:

- 35 participants with 3 repeaters (division heads participated twice)
  - » 9 DDS Students
  - » 11 Division Heads (Faculty)
  - » 6 DH Instructors (Faculty)
  - » 4 Class Instructors (Faculty)
  - » 5 Clinical Instructors (Faculty)
  - » 9 Administrators from DDS and DH
- As shown above, a total of six focus groups were conducted. A focus group for DH students was planned, but was cancelled due to low participation. A focus group for alumni was also planned, but cancelled due to low response.
- The duration of each focus group was approximately one hour. All focus groups were held in the Edmonton Health Clinic Academy. The goal of these focus groups was to help the research team understand the current perceived challenges in both the DDS and DH programs and gain insight into how these challenges might be overcome.
- The style of the focus groups was an open forum. Participants were asked to sign a consent form (allowing the research team to use their comments for the curriculum renewal process) and profile page, which included some questions about the professional roles of the focus group members. Each participant was given an identification number to preserve anonymity during the discussion. A moderator led the focus group watching time and posing questions to the group. A technician was present to audio record the session, and two facilitators took notes during each session. Once the session was complete, the audio file was given to the transcription service *Transcribe Me* for transcription.

Analysis

- The focus group transcription data were identified by participant and organized into a spreadsheet. Comments were then organized by assigning one of the five themes to all unique statements. All data collected within the focus group were applicable to one of the themes.
- Within each theme, focus group comments were either included as they were stated or combined with similar statements into a summary to reflect the perspective they represented.
- Once the data were organized into themes, relevant faculty and student comments from the focus groups were included into the final needs assessment report. These comments represent the unique perspectives that were voiced across groups and provide context for the numerical data retrieved from the surveys.

Summary

The following sections of the report represents the data collected from both surveys and focus groups related to the DDS and DH programs to inform the goals for the programmatic level curriculum redesign.

The data is demonstrated within the five pillars, Learning Pathways, Student Experience, Content, Delivery and Assessment, consistently delivering critical points such as questions for consideration, faculty and student perspectives and clear differentiation between DDS and DH programs.

STUDENT EXPERIENCE

Overview

This section outlines aspects of the student's experiences within the program that are known to have a direct link to achievement and resilience.

- Sense of respect
- Sense of competence
- Engagement
- Stressors and pressure

Dentistry and Dental Hygiene students reported high levels of frustration within the program due to high workloads. Dentistry students stated this is exacerbated by the challenge of determining the relevance of some aspects of their required learning which leads to difficulties prioritizing time. Students also expressed fear of negative judgments and feelings of isolation from the available support. The table below summarizes the key findings related to the student experience in both Dentistry and Dental Hygiene.

Doctor of Dental Surgery (DDS):

There is an alignment of perceptions between faculty and students around program strengths and challenges.

Students claimed high levels of confidence in their clinical abilities by Year 4.

Students stated an overload of work has led to stress and a lack of confidence in their ability to meet program requirements. Students reporting putting in over 20 hours of work on average outside of class.

The quantity of course material was the biggest challenge to student success.

Students felt most stressed during Years 2 to Year 4.

Students claimed a high level of program engagement but varying levels of engagement/interest in specific courses.

Overall, clinical experiences were considered most valuable by students.

Dental Hygiene (DH):

Students indicated a very high sense of feeling respected across all years of the program.

The majority of students reported that they were able to accomplish their program goals.

Students discussed a sense of work overload due to the number of courses being taken at any given time and high program expectations - particularly during Fall and Winter terms of their first and final years.

Students worked an average of 20 hours outside of class.

The sheer amount of content and the program's pace were the biggest stated challenges for students

Fall and Winter terms of junior years were labeled as having the highest workload

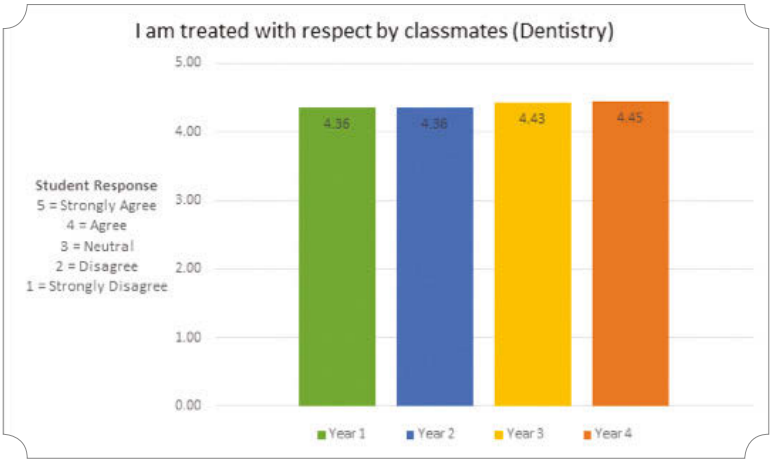
Students indicated high interest in their studies in the first year of their program

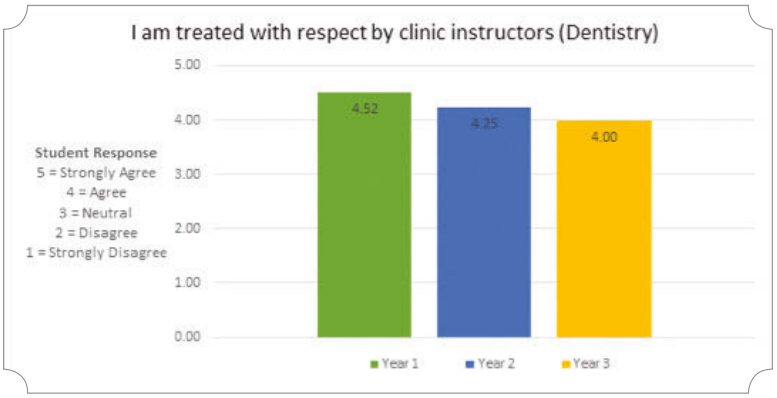
The majority of students stated receiving sufficient support.

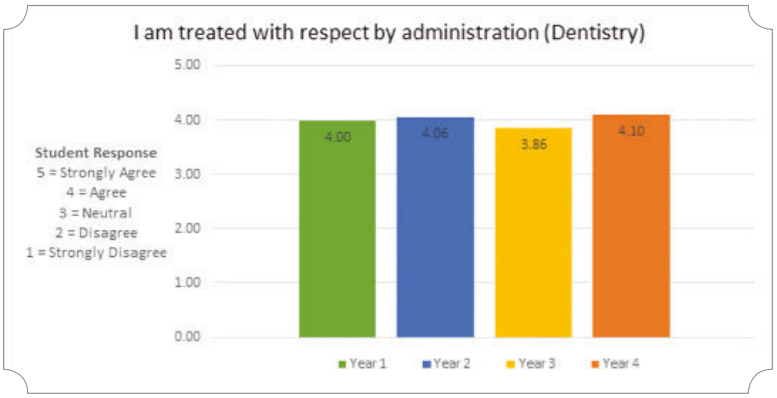
Sense of Respect

A sense of being 'respected' contributes to a student's sense of affiliation and support within a school community. A strong sense of affiliation contributes to motivation and resilience.

Across the dentistry program students indicated agreement (responses 4 and 5) around feeling respected. With the exception of students in Year 3 who reported a lower sense of being respected (responses less than 4) by clinical support staff and administrators. It is worth noting that, in general, a student's sense of being respected by program representatives declined through Years 1 to 3, but returned to a high level in Year 4. A student's sense of being respected by classmates stayed the same.

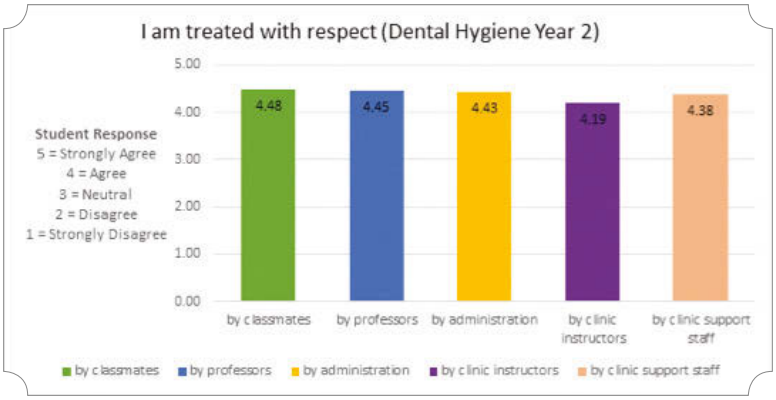


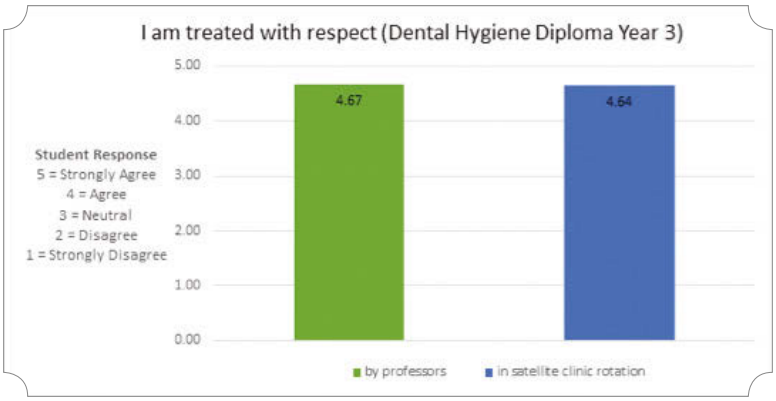

I am treated with respect by clinic instructors (Dentistry)
Student Response
5 = Strongly Agree
4 = Agree
3 = Neutral
2 = Disagree
1 = Strongly Disagree
5.00
4.00
3.00
2.00
1.00
0.00
4.52
4.25
4.00
Year 1
Year 2
Year 3

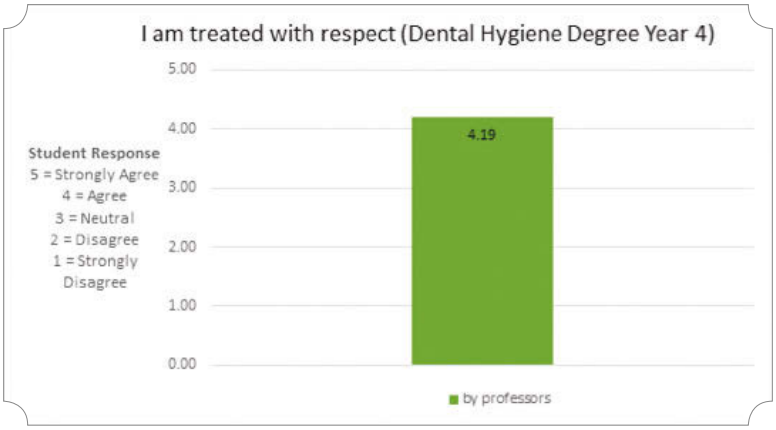

I am treated with respect by administration (Dentistry)
Student Response
5 = Strongly Agree
4 = Agree
3 = Neutral
2 = Disagree
1 = Strongly Disagree
5.00
4.00
3.00
2.00
1.00
0.00
4.00
4.06
3.86
4.10
Year 1
Year 2
Year 3
Year 4


I am treated with respect by clinic support staff (Dentistry)
Student Response
5 = Strongly Agree
4 = Agree
3 = Neutral
2 = Disagree
1 = Strongly Disagree
5.00
4.00
3.00
2.00
1.00
0.00
4.33
4.25
3.57
Year 1
Year 2
Year 3

These graphs represent data collected from student surveys of students in Year 1 and at exit from the diploma and degree program. Students reported a sense of feeling respected (responses 4 and 5) across all years of the dental hygiene program.







Sense of Competence

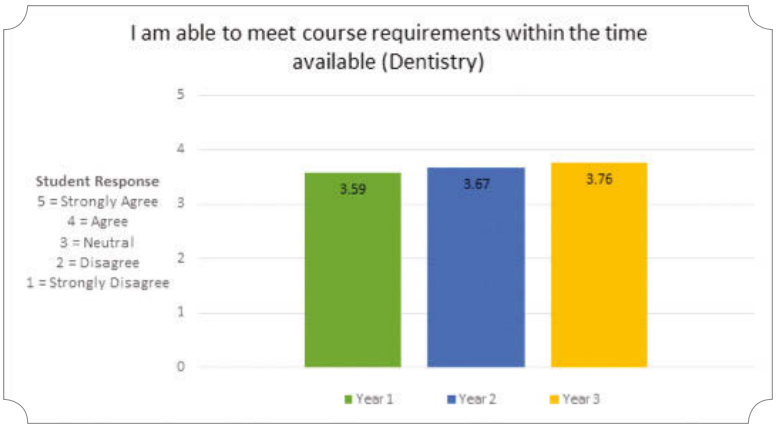
Connell & Wellborn's self system model of motivational development highlighted the motivational factors that support student engagement. School contexts influence engagement by supporting (or

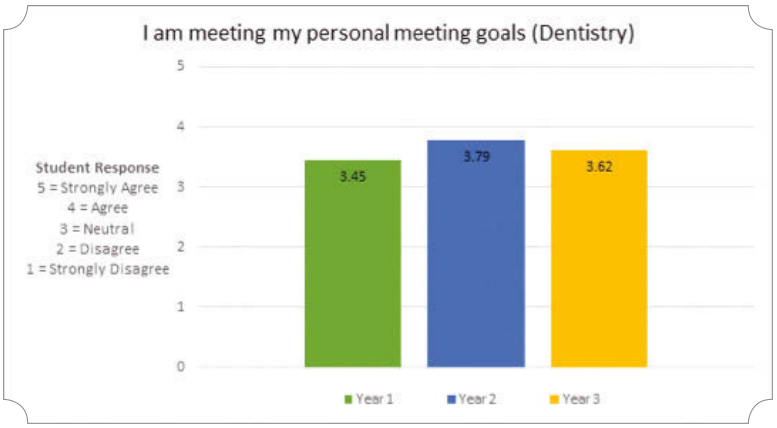
undermining) students' experiences of themselves as connected within a school community, competent to succeed, and autonomous or self-determined learners. From these experiences, students cumulatively construct views of themselves. These beliefs are not fleeting self-perceptions; they are durable convictions that shape apparent reality and guide action.1

Research conducted through a variety of contexts (Bandura, Dweck, Harter, Skinner, Skinner, Zimmer-Gembeck, & Connell, Stipek, Weiner, Wigfield et al.) identifies that a student's perception of their academic competence is a predictor of student engagement and eventual learning, academic performance, and achievement.2 (as cited from Skinner & Plitzer, 2012).

Students in Years 1 to 3 were asked to share their perceptions of their ability to meet program requirements and their own learning goals.

A 4.0 rating indicates agreement. A rated average of responses fell between 3.45 and 3.8. Overall, 71% of responses to 'I am able to meet course requirements' were positive. 69% of responses to 'I am meeting my personal goals' were positive.



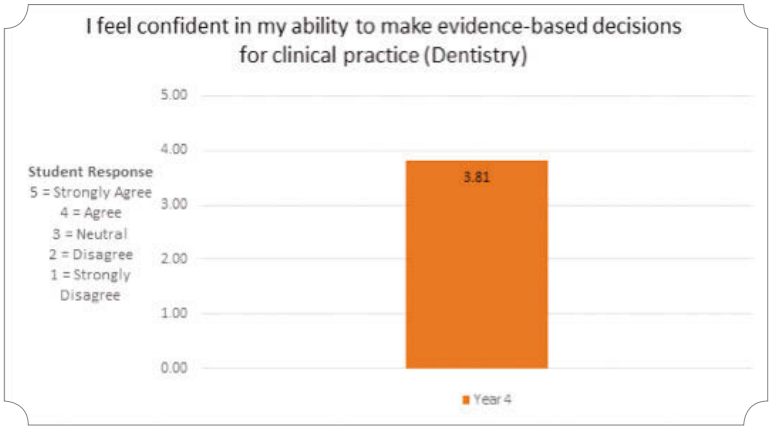


1 As cited from Skinner, & Pitzer. (2012). Developmental Dynamics of Student Engagement, Coping and Everyday Resilience. In *Handbook of Research on Student Engagement.* New York: Springer.

2 As cited from Skinner, & Pitzer. (2012). Developmental Dynamics of Student Engagement, Coping and Everyday Resilience. In *Handbook of Research on Student Engagement.* New York: Springer.

Year 4 students were asked to rate their sense of confidence and competence in relation to the requirements for clinical practice.

The rated average is 3.97 and 70% of respondents agree with this statement. 6% of ratings fall below 3.0 (Neutral), with the remainder (24%) neutral. While the number of negative responders is not high, a neutral rating could also be indicative of insecurity.



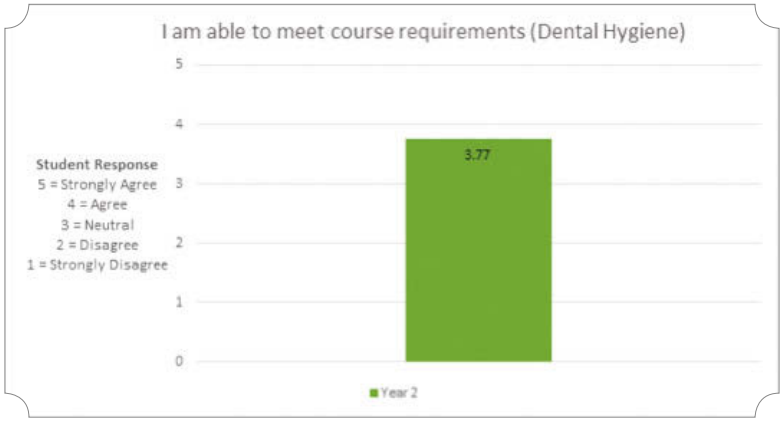
Questions for Consideration

Some important questions that will provide further information in this area:

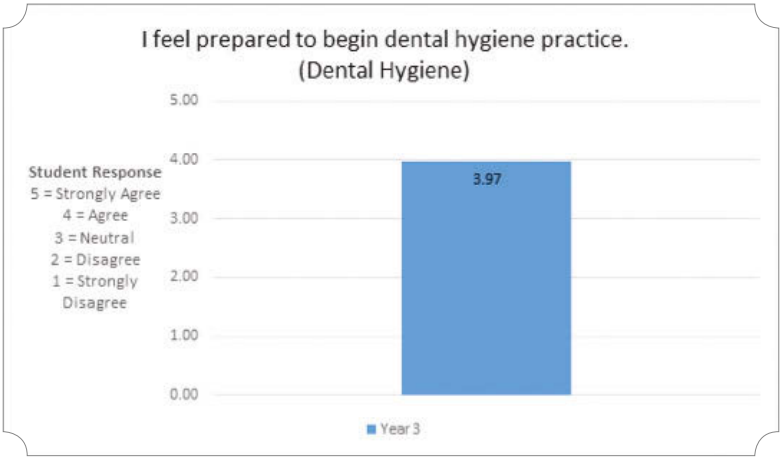
Do students receive enough feedback that they are able to assess their personal competence?

Are there factors at play within the program that lead students to inconsistently perform?

Students in Year 1 of the Dental Hygiene Program were asked to share their perceptions of their ability to meet the program requirements and their own learning goals. 86% agreed that they were able to meet program requirements and 77% agreed that they were meeting their own learning goals.



Year 2 students (diploma graduates) were asked to indicate if they felt prepared to begin dental hygiene practice, 81% agreed.

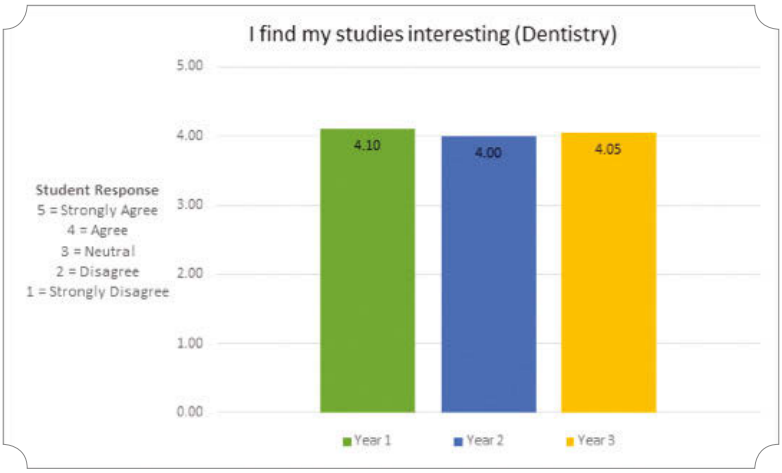


Engagement

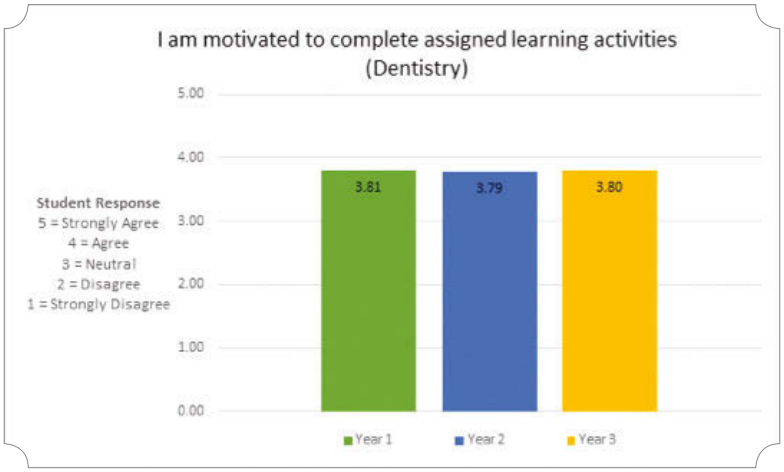
A student's level of engagement can be identified by their reported interest in their studies and the commitment they demonstrate towards meeting program requirements (Chapman, 2003). High student engagement is an indicator for successful program completion.

Supplementary survey commentary from Year 1 students identified concerns regarding relevancy of the material they study (as detailed in the next section). 86% of Year 1 students indicated that they found their studies interesting.

Most students in Years 2 and 3 reported they find their studies interesting and that they are motivated to complete assignments.

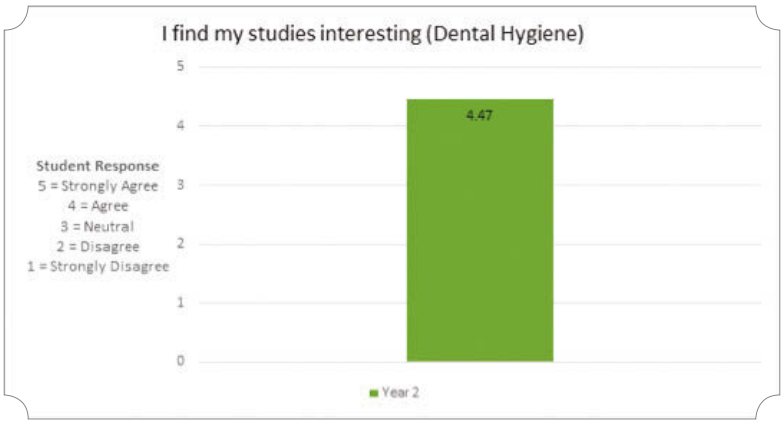


18 year 1 students, approximately 82% indicated a positive response to the statement, 'I find my studies interesting'. 25 year 2 students, approximately 76% and 80% of year 3 students.

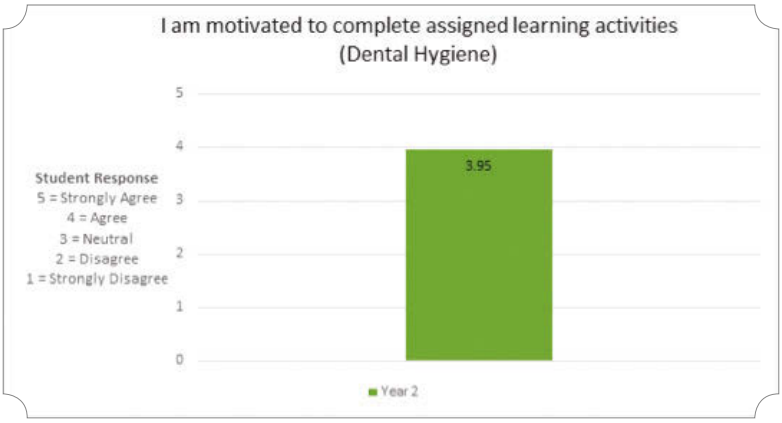


83% of dental hygiene students in Year 1 of the program indicated they found their studies interesting.

Year 2 and 3 students were not asked this question as it did not form part of the program exit survey.

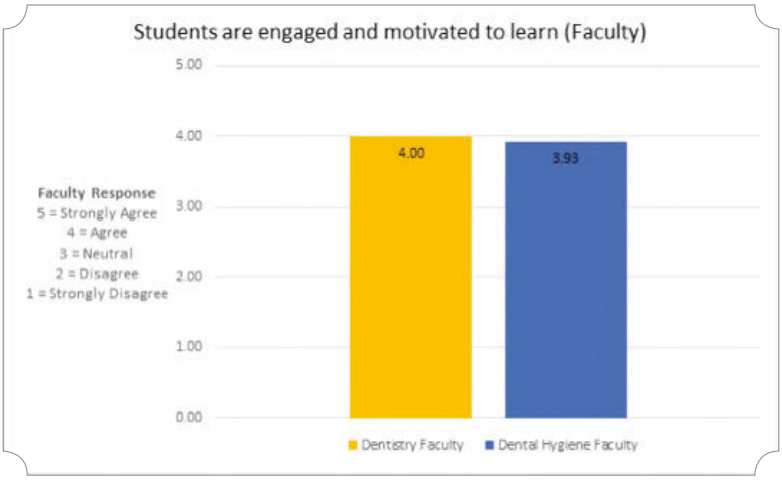


77% indicated they were motivated to complete learning assignments.



Experiences Faculty Identify as Engaging to Students

When asked to share their perceptions regarding student engagement levels, most faculty respondents (81% of Dental Hygiene respondents, 89% of Dentistry respondents) indicated that they believed students were engaged and motivated to learn.



The summarized comments below, collected from open-ended survey questions and focus group feedback, provides insight into the types of course experiences that are identified as **most engaging** by faculty and students.

	Faculty Perspectives:	Student Perspectives:
INSTRUCTIONAL SUPPORT	**Adequate preparation:** (DDS) Let students know what to expect and help them to feel prepared. **Provide individualized, positive attention:** (DDS) Be available to students. Encourage one-on-one interaction. Treat students respectfully. Make the learning environment safe, friendly and where possible, fun.	**High levels of instruction and support:** (DDS) Students enjoyed high levels of access to instructional support. They refer to lectures that are 'well-taught' and instructors that take an interest in them, support them and challenge them. One student (Year 4) refers to chances to be autonomous in his approach to his work as a factor that supports his engagement. Another student identifies a sense that things were 'well-organized' as engaging. (DH) Instructional feedback and guidance where my technique is observed and I am provided pointers.
CONTEXT FOR LEARNING	**Build relevance:** (DDS) Link course content to real-life clinical scenarios. Increase discussion of why things need to be done. Provide context for learning. Share personal stories. Start clinical exposure earlier so students can relate to the lectures. Give students opportunities to read lectures ahead so that more time can be spent on interaction. (DH) Content with clinical relevance and historical perspective increases interest. When clinical relevance of content is explicitly stated, real-life examples and multimedia presentations are used, engagement improves.	**Relevance:** (DDS) A number of students (Year 1) expressed appreciation for courses that felt relevant to their future role as dentists.
FEEDBACK	**Provide positive and timely feedback:** (DDS) Create a positive environment during clinical work. Give thorough feedback on performance with follow-up to help students develop strengths. Use frequent quizzes to provide students with immediate feedback. Build the practice of student self-evaluation. (DH) Assessment and evaluation of progress keeps students engaged in lab and pre-clinic.	**Goal-focus:** (DDS) Students identified opportunities to reflect on their work and compare it to the instructor evaluation as engaging. They enjoyed seeing their own progress.

INSTRUCTIONAL DELIVERY

Provide flexible and varied learning:

(DDS) Always update lecture material to ensure currency and relevancy. Make time with the students valuable to them. Vary activities and create opportunities for discussion, interactions, questions and sharing. Have more hands-on interactions. Require students to present and collaborate.

(DH) Incorporate experiential learning when possible. Case analysis and discussion works well in the classroom. Interactive learning including small groups, simulations, role-plays and video presentations brings value. Build in active learning.

Careful design of learning:

(DDS) Lectures should be approachable and clear, models, pictures and summary slides help break down complex concepts. Provide new experiences that challenge knowledge and skill. Build in active learning.

(DH) Slides need to be more than words. Models and summary slides should bring the entire lecture into focus. Lectures should be interactive and include questions for students to consider. Theoretical instruction should be followed with a hands-on component.

Use supportive technology: Use of 3D anatomy, surgical video training and online quizzes can make learning more accessible.

Hands-on or direct involvement:

(DDS) Students refered to many practical experiences like 'picking up a drill,' working on a tooth, or watching their first implant or oral surgery as highly engaging experiences.

(DH) Labs and clinics made everything else seem more relevant. Clinic was intimidating, a great learning experience and very rewarding. It was great to work with patients.

Practice:

(DDS) Many students expressed appreciation for immersion experiences like the 'Shine' clinic and describe their Northern placements as engaging. They reported enjoying working with patients, developing long-term treatment relationships with patients and following through with difficult cases.

Enjoyment and Collaboration:

(DDS) Students reported enjoyment around experiences of providing services to their classmates, and chances to build relationships with the faculty and their classmates.

Engaging Courses

The list of courses below were identified as 'most engaging' by approximately 50% of the respondents. Students provided additional commentary, summarized below, to outline the aspects of these courses

that met their interests. Each course is listed with an indication of the percentage of students that identified a high level of engagement.

Most Engaging Courses

Doctor of Dental Surgery (DDS):

YEAR 1		YEAR 2		YEAR 3	
DDS 509-3: Operative	91%	DDS 529-7: Local Anesthesia	82%	DDS 545-6: Endodontics	81%
DMED 514: Cardiovascular/ Pulmonary/Renal	91%	DDS 529-5: Fixed Prosthodontics	73%	DDS 545-4: Dental Implants	76%
DDS 509-5 Radiology	73%	DDS 529-8: Operative	64%	DDS 545-9: Fixed Prosthodontics	57%
DDS 509-2: Occlusion	67%	DDS 529-1: Complete Denture Prosthodontics	58%	DDS 545-1: Advanced Oral Surgery	48%
DMED 512: Infection, Immunity, and Inflammation	67%	DDS-529-3 Endodontics	55%	DDS 545-12: Oral Surgery	48%
DDS 514: Dental Anatomy	59%	DDS 529-13: Removable Partial Dentures	43%		
Total Responses: 22		Total Responses: 33		Total Responses: 21	

Dental Hygiene (DH):

YEAR 1	
D HYG 212: Preclinical Dental Hygiene	77%
D HYG 202: Head and Neck Anatomy	64%
D HYG 209: Dental Hygiene Theory III	55%
D HYG 201: Human Anatomy	55%
Total Responses: 22	

Doctor of Dental Surgery (DDS):

YEAR 1	YEAR 2	YEAR 3
Focus group comments specific to courses in Year 1: - There is a lot of instructional support in Operative, and instructors are encouraging. - My time in Operative was the first time I felt like I was actually in dental school.- The professor in Infection, Immunity and Inflammation is very dynamic.	**Focus group comments specific to courses in Year 2:** Learning something in a lecture and then directly applying it in a lab or clinical experience is engaging.	**Focus group comments specific to courses in Year 3**: Endo was very well organized. The course was sequenced in a logical way that made it easy to understand. We had a lot of quizzes and while people don't really like quizzes, they forced us to keep up and to go to class.

As part of the survey, the Faculty was asked to share their perceptions of the types of course experiences that students identify as satisfying and dissatisfying. Faculty responses provide insight into the context for the engagement efforts they undertake with students.

	Faculty Perspectives: Experiences that satisfy:	Faculty Perspectives: Experiences that dissatisfy:
INSTRUCTIONAL PRESENCE	**Instruction:** (DDS) Students appreciate knowledgeable and approachable instructors. Accessibility is important to them. They want instructors to be respectful and model a 'sense of caring' for students and patients. (DH) Students enjoy experiential, one-on-one learning. **Relationships:** (DH) Students value relationships with their peers, the faculty and through their clinical experiences.	**Interactions within school:** (DDS) Instructors with unreasonable expectations. Disrespect from instructors and staff. (DH) Feedback communicated in a negative way.

CLASSROOM EXPERIENCE	**Learning experience:** (DDS) Students are goal-oriented. They want clear instruction that simplifies their learning and that clearly spells out requirements. They are driven to get good results and are motivated by grades. This may make them focus their learning too narrowly and advocate for easier, less robust, learning experiences. (DH) Students enjoy understanding tough concepts and doing well on exams. **Digital experiences:** (DDS) Students appreciate the interactive learning potential that digital tools (media, testing, etc.) can provide.	**Experience of content:** (DDS) Content that does not seem relevant to clinical practice. Theoretical material presented with no context for its application to practice. Lack of clarity around key material within courses, assessments that seem unfair. Changes in course plans. Feeling overloaded and being forced to prioritize what they should learn. Too many 'after hours' requirements. (DH) Too much of a focus on medicine.
PRACTICAL EXPERIENCE	**Clinical experiences:** (DDS) Students appreciate clinic time and patient experiences. They enjoy rotations and satellite programs. They like being able to perform procedures with close supervision when they are using new techniques. They like feedback and one-on-one interactions as they learn. (DH) Students like completing tasks successfully. Students enjoy satellite experiences.	**Clinical experiences:** (DDS) Working with patients before they have clear understandings of steps on the clinic floor. AXIUM software isviewed as overly cumbersome. Obstacles that prevent treatment progression. Inequity of patient experiences. Lack of freedom in diagnosis and treatment planning. Limited access to guidance or support. Getting poor marks as their dexterity develops. Limited clinic time. (DH) Lack of calibration between clinical instructors. Availability of instructors on the clinic floor.
PROGRAM PACE		**Workload:** (DH) Students find the workload overwhelming and they experience stress and pressure around timely completion. Too many assignments and not enough time to reflect and think.[1]

Experiences Students Find Challenging

The courses below were identified as 'least engaging' by approximately 50% of the respondents. A review of this list provides some insight into the types of courses that students find least engaging, and this insight is further confirmed by the commentary that follows. The courses below are less clearly

relevant to their program of study, some provide a more theoretical perspective and others inform students of knowledge that extends beyond the central focus of the programs.

Least Engaging Courses (DDS | DH)

Doctor of Dental Surgery (DDS):

YEAR 1		YEAR 2		YEAR 3	
DMED 511: Introduction to the Professions	73%	IntD 410: Interprofessional Health Team Development	79%	DDS 545-8: Evidence-based Dentistry	15
DDS 509-1: Community Health Issues	59%	DDS 506: Gastroenterology and Nutrition	50%		
DDS 509-4: Preventive Dentistry	59%				
DDS 509-6: Professionalism	55%				
Total Responses: 22		Total Responses: 33		Total Responses: 21	

Dental Hygiene (DH):

YEAR 1	
BIOCH 200: Introduction to Biochemistry	73%
D HYG 207: Dental Hygiene Theory I	64%
OBIOL 202: Oral Biology II	64%
D HYG 221: Concepts and Communications for Health Behavior Change	59%
PHYSL 210: Human Physiology	59%
Total Responses: 22	

Focus group comments specific to DDS courses in Year 1:

- Preventative had a research focus. There was no opportunity to apply the learning and the focus was theoretical. It was confusing.
- Community Health Issues didn't come at a good time. I couldn't figure out what they were talking about, I was looking up terms because I had such a limited sense of dentistry.

Focus group comments specific to DDS courses in Year 2:

- The timing of Interprofessional Health Team Development, and the time it took up was difficult. We had so many other priorities and the course activities felt trivial. It was also difficult to feel it was relevant because it didn't represent how things would be in private practice. We had one afternoon with Dental Hygiene. We worked through a scenario where we had to provide feedback to a worker. It was good.
- Perio in Year 2 was challenging because it was presented with a research focus.

Focus group comments specific to DDS courses in Year 3:

- When the courses are very small courses and we only invest an hour a week for a couple months, it is hard to be engaged.
- Some courses include content that is needed, but is just harder to engage in unless it is an interest point for you.
- I remember these courses as being delivered in the middle of 10 other courses, so it was hard to make them a priority as the other courses had more demanding evaluation requirements.

Focus group comments specific to DH courses in Year 1:

- Biochemistry was a difficult course.

The student commentary outlined below provides an overview of the types of challenges that were concerning to students. Please note that the extent of the concern (number of students affected) is not represented.

Situations that are Challenging (DDS | DH)

Meeting Course Requirements:

YEAR 1

(DDS) Many Year 1 students were challenged by the CPR course and final. Other challenges mentioned by Year 1 students included: replicating the details of teeth in dental anatomy and getting used to new techniques in dental labs like using a mirror for indirect vision.

YEAR 2

(DDS) In Year 2, many students were challenged by the complete dentures requirement, with some requests for more practice.Other students mentioned wanting more time for practice in fixed prosthodontics, operative dentistry and periodontics.

(DDS) From Years 2 to 4, a majority of comments reflected challenges developing the required physical skills within the constraints of their experiences.

YEAR 3

(DDS) Year 3 students identified being challenged with removable prosthodontics and clinical experiences and techniques.

YEAR 4

Workload and Juggling Priorities:

YEAR 1

(DDS) Year 1 students found conflicting priorities between dental and medicine courses to be challenging.

(DDS) Year 1 comments referred to laboratory demands within Operative as overwhelming.

(DH) Year 1 comments referred to difficulty balancing demands, finding course load high and some courses very demanding.

YEAR 2

(DDS) Year 2 students indicated that they struggled to complete their denture requirements, and found the pace to be difficult.

YEAR 3

(DDS) Year 3 students commented on the need to juggle their time between assignments and exams.

YEAR 4

(DDS) Year 4 students were challenged to coordinate between course and clinical demands.

Assessment Practices:

YEAR 1	YEAR 2	YEAR 3	YEAR 4
(DDS) Year 1 students mentioned assessments that were based on a curve as challenging.	(DDS) Year 2 and Year 3 students were challenged by the exam schedule.		
		(DDS) Year 3 students also mentioned concerns with inconsistent grading in the clinic.	(DDS) Year 4 students were concerned about time periods with high numbers of exams.

Relevance:

(DDS) Year 1 to 4 - Perceptions of workload and relevance were intertwined. Many students indicated they were challenged to invest effort in courses in which they could not identify the immediate relevance. That created frustration because they felt stretched. Many students were concerned that the Inter D course did not seem relevant.

Meeting Patient Needs:

YEAR 1	YEAR 2	YEAR 3	YEAR 4
(DH) Year 1 comments indicated concerns that their work pace is too slow for patient-care requirements.			(DDS) Year 4 students were challenged to meet patient needs including trying to schedule their patients in for time with specialists, find time within their own schedules and managing unique patient experiences.

Navigating Clinic Requirements: Working within the Care Team:

YEAR 1

(DDS) Year 1 students commented that their first clinical experiences were overwhelming and they would have liked more comprehensive orientation experiences. One student shared challenges with dental equipment and supplies.

(DH) Year 1 students' comments indicated difficulty balancing expectations of various instructors.

YEAR 2

YEAR 3

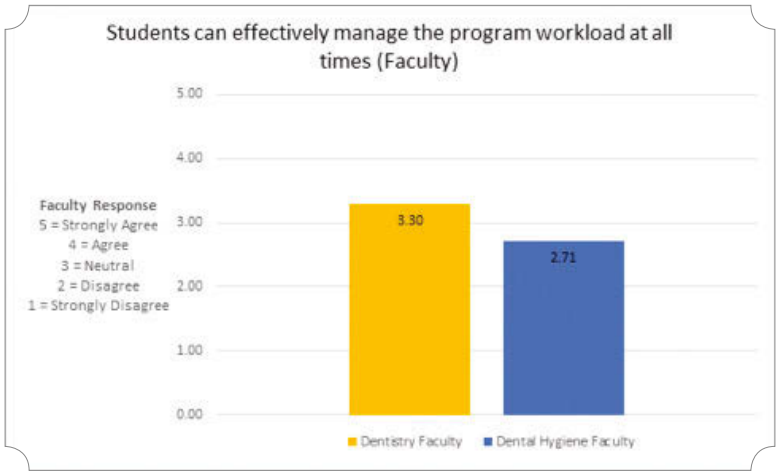
(DDS) Year 3 students found the first week of their Comprehensive Care Delivery course to be overwhelming.

YEAR 4

(DDS) Year 4 students were challenged with availability of Endo instructors and differences in the guidance provided by instructors within the clinic.

Workload (DDS | DH)

46% of Dentistry Faculty and 21% of Dental Hygiene Faculty agreed that 'Students can effectively manage the program workload at all times,' this low level of agreement is an indicator that Faculty representatives assess the workload to be high.



Faculty survey respondents were asked to identify the negative effects that were apparent with work overloads. Their responses aligned with the themes represented below.

Quality of Work Suffers:

DDS
Students are not able to strive for excellence; they become focused on getting work in on time. They take shortcuts with their learning and by finding the quickest, easiest ways to complete assignments they miss some of the learning value. They choose what to study and what to ignore. They minimize the clinical work they do.

DH
Less students attend lectures during stressful times. Students prioritize their time between class requirements, minimizing course experiences they feel are less relevant. Students are not able to demonstrate their true understanding, and they do not adequately synthesize course material.

Students suffer from stress and become highly emotional:

DDS
Even hard working students with well-paced approaches suffer from burnout. Students exhibit anxiety and a lack of confidence. Students cope by resorting to medication or self-medication.

DH
Students under stress exhibit signs of depression, irritability, inability to care for themselves, and defensive attitudes.

Students act out towards program representatives or withdraw from program experiences:

DDS
Attendance in lectures decreases; sick leave, absence requests and assignment deferrals increase. Incidents of conflict with the support staff are higher and communication breaks down. Students become highly critical and disenchanted.

Students have limited focus and planning for their future:

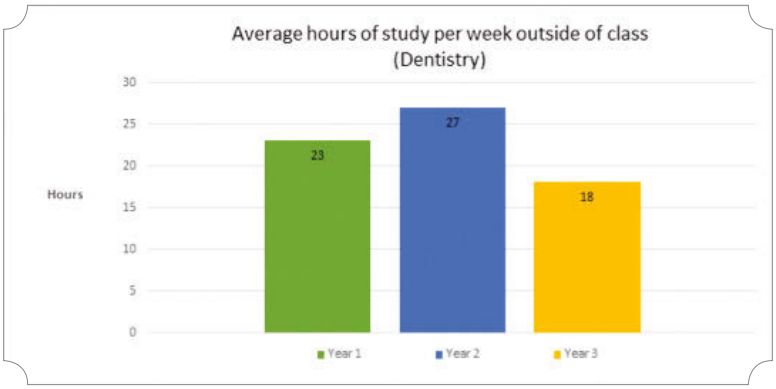
DDS
Students become fully focused on current program demands and do not explore their career options.

Students feel disconnected from the School:

DDS
They become focused on completion and do not develop a sense of affiliation.

Hours of Study

Beyond the time spent within formal class, clinic and laboratory requirements, dentistry students reported spending an average of 22 hours/week on their studies in Year 1, 27 hours of study per week in Year 2 and 18 hours per week of study in Year 3.



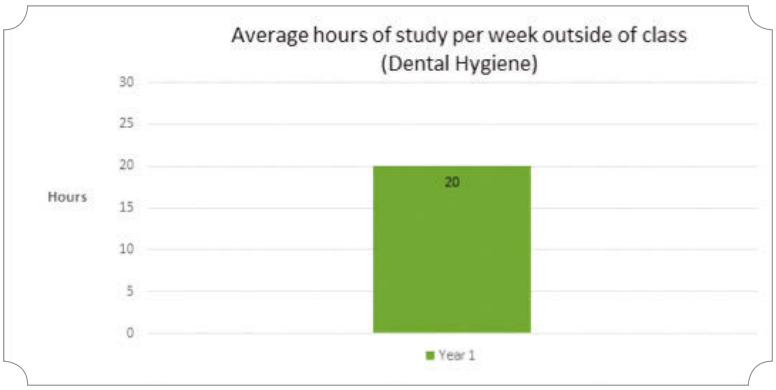
Faculty survey respondents were asked to indicate the times in the program where they believed that students had the heaviest workload. Their responses are summarized below.

Dentistry Student Workload: A majority of faculty respondents indicated that workload was highest from Year 2 through to Year 4. The periods of time that were mentioned most included exam periods, intercessions and the transition into clinic.

There was mixed feedback around the workload in Year 1 with some identifying the medical requirement as quite heavy and others indicating this as a period of lighter workload.

Year 4 was identified as a time where focus was on completion and final Board assessment. Comments suggested that this period could be heavy for students who were trying to fulfill requirements.

Dental hygiene students report studying an average of 20 hours/week beyond the classroom requirements.



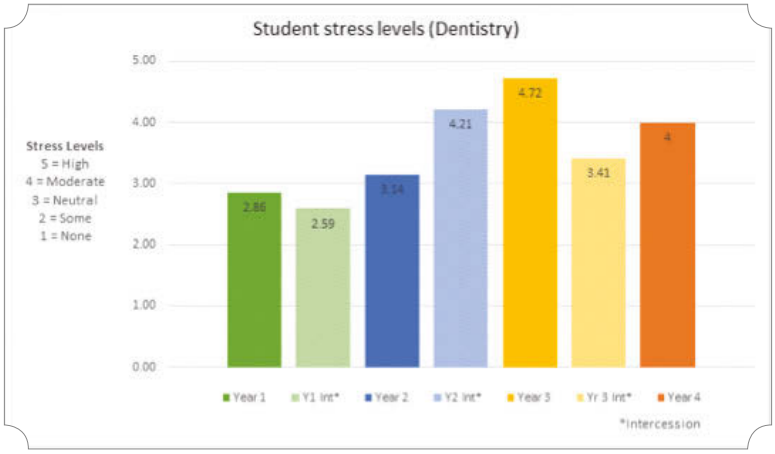
Faculty survey respondents were asked to indicate the times in the program when they believed students had the heaviest workload. Their responses are summarized below.

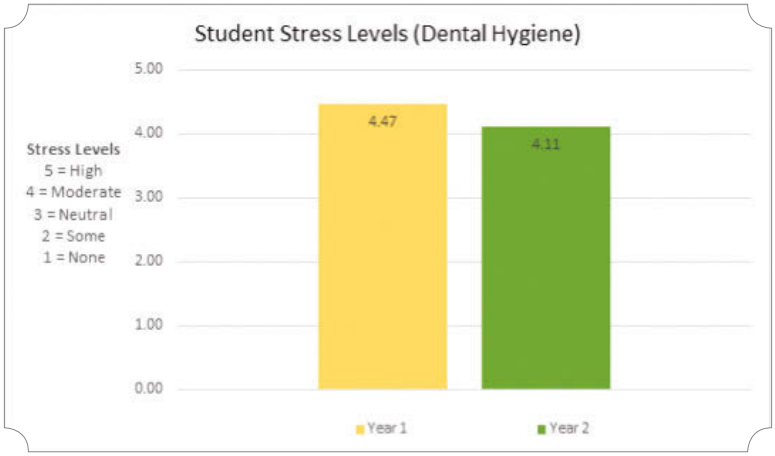
Dental Hygiene Student Workload: Respondents identified Fall and Winter terms in junior year and Fall term in senior year as having the highest workloads. Workload peaks during exam periods.

Dentistry Student Workload: As detailed earlier, Faculty indicated that workload was highest from Year 2, through to Year 4. Faculty reports of workload show alignment with reports provided by dentistry students exiting the program on the levels of stress they felt at points throughout the program.

Stress Levels

The graphs below represent the weighted average of responses. The points in the dentistry program where students reported stress levels above neutral (3.00) begin in Year 2. Stress levels peak in the 'high' range in Year 2 intercession, Year 3 and Year 4. For dental hygiene, stress levels range between high and moderate throughout the program.





Obstacles that Limit Success

A number of commonly identified challenges were presented to students and faculty, and they were asked to rank the challenge with negative impact on their performance. The table below identifies the percentage of votes.

Doctor of Dental Surgery (DDS):

	RESPONDENTS			
CHALLENGE WITH A NEGATIVE IMPACT	YEAR 1	YEAR 2	YEAR 3	FACULTY ASSESSMENT
QUANTITY OF COURSE MATERIAL	73%	61%	81%	79%
PERSONAL DISTRACTIONS	64%	42%	38%	67%
CHALLENGES WITH PSYCHOMOTOR LEARNING	45%	55%	10%	59%
AVAILABILITY OF CLINICAL EXPERIENCES	27%	55%	24%	54%
QUALITY AND CONSISTENCY OF ASSESSMENT	45%	36%	62%	
PACE OF THE PROGRAM	50%	45%	48%	67%

There is full agreement that the quantity of course material within the program is an obstacle to success. Students in Year 2 report that challenges with psychomotor learning introduce negative challenges. Students in Year 3 report that the availability of clinical experiences and the quality and consistency of assessment introduces negative challenges. The pace of the program is identified as a negative challenge for 50% and 48% of students in Years 1 and 3, respectively.

Dental Hygiene (DH):

OBSTACLES	YEAR 1	FACULTY ASSESSMENT
Quantity of course material	86%	93%
Pace of the program	81%	93%
Personal distractions	52%	46%
Difficulty of course material	52%	78%
Quality and consistency of assessment	52%	

The quantity of course material and the pace of the program are the greatest challenges that students cite. Faculty members also believe the difficulty of course material is a challenge.

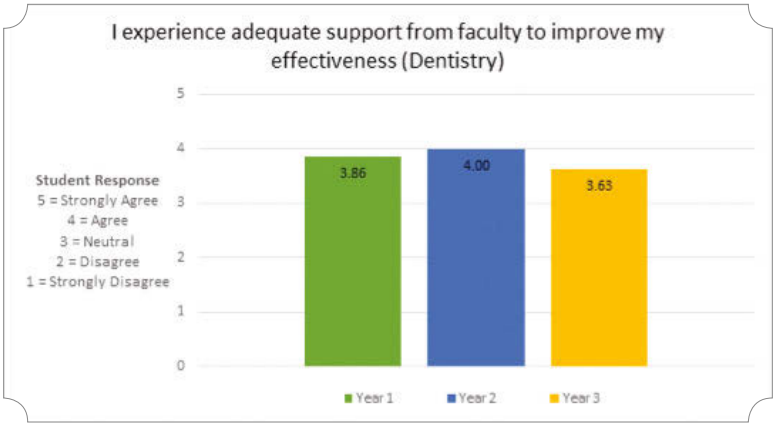
Sense of Support

Dentistry students in Years 1 to 3 and Dental Hygiene students in Year 1 responded to a statement about faculty support.

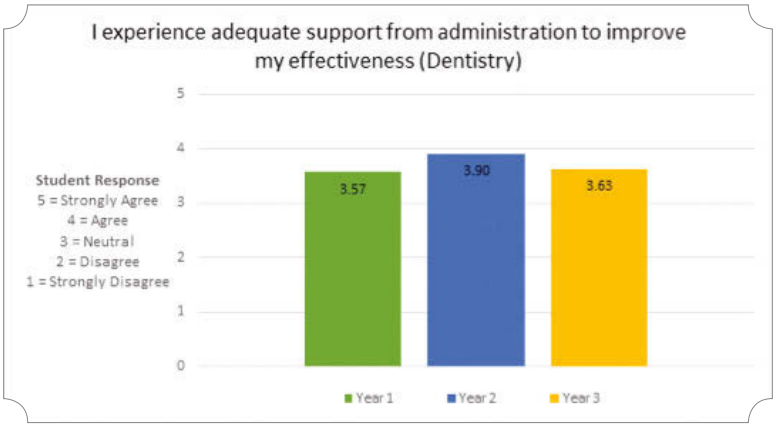
For all 3 Dentistry student groups, there was a relatively high level of agreement with this statement.

It is important to note that there was less agreement to these statements amongst students in Year 1. This could indicate a sense of disenfranchisement due to the time that Year 1 students spend within medical courses.

62% of year 1 students, 86% of year 2 students and 68% of year 3 students agreed with the statement 'I experience adequate support from faculty to improve my effectiveness'.

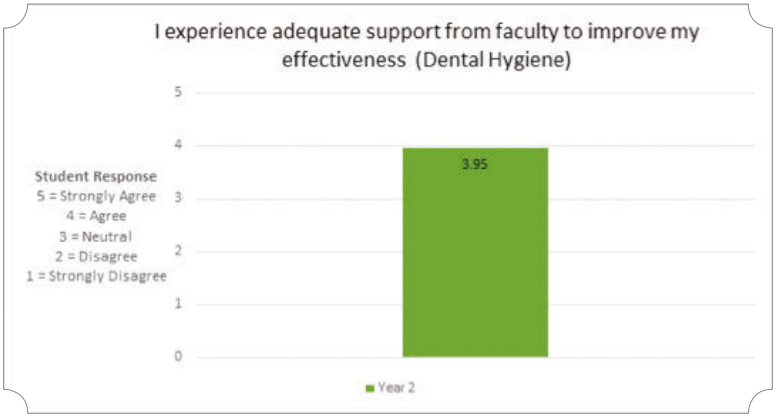


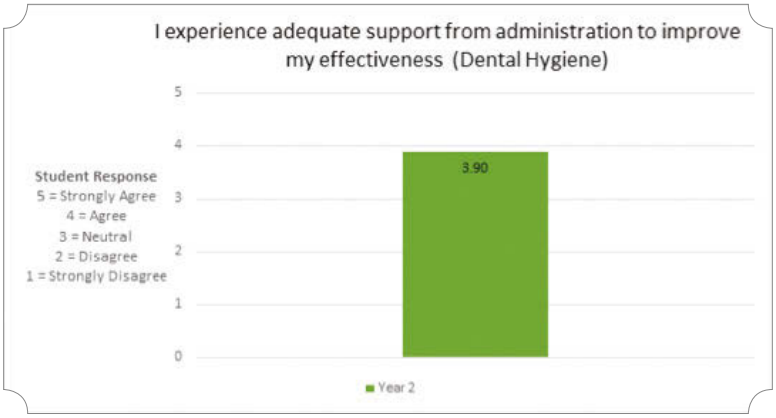
57% of year 1 students, 79% of year 2 students and 75% of year 3 students agree with the statement 'I experience adequate support from administration to improve my effectiveness'.



Dental Hygiene

71% of Dental Hygiene students agreed that they received adequate support. 29% of students responded neutrally to this statement.





Questions for Consideration

Are the guiding principles sufficient to address the challenges in this area?

Should the 'student experience' reflect the work culture that students will encounter as practitioners in their field? In what ways?

Summary

In general, a close alignment between faculty and student feedback indicated strong channels for communication between both groups, and faculty responses identified an interest in providing the support that students require.

A number of real program barriers were reported to detract from the student experience. The volume of content, the pace at which it is presented, and the timing of requirements left students indicating they were 'stretched' to meet program requirements throughout each year of the program.

Reported hours of work and levels of stress detracted from the student experience and, as reported by Faculty and Students, serve to lower their capacity to integrate the learning they experience. In turn, students under pressure reported valuing their experiences less.

There was a strong sentiment amongst students and faculty that clinical learning experiences provide great value as students apply their theoretical knowledge to assessing real patient cases, get opportunities to interact directly with patients and get direct guidance and feedback on the quality of their work.

The guiding principles that may establish direction for improvements in this area are:

Learning Pathways: The program provides each student with additional challenges and opportunities, in the form of electives, when core competencies are met.

Student Experience: Program design will be focused on student well-being, development and growth.

Student Experience: The student workload and assessment will be transparent, mapped, sequenced, planned and paced.

LEARNING PATHWAYS

Overview

This section is designed to assess the pace, timing and sequence of program experiences. Faculty and students shared their perspectives on the level of preparedness students felt and demonstrated at different points in the program, as well as the student's ability to keep pace with program demands.

The ratings and comments within this section indicated that students are not adequately prepared at program entry and for their subsequent clinical experiences. Students did not appear to develop clinical skills as quickly as the program demands. Finally, findings indicated that program sequencing improvements are required for optimized student development.

Doctor of Dental Surgery (DDS):

Both faculty and students requested changes to sequencing of the program, particularly around med-block schedules and increased exposure to dentistry-specific content in the first two years.

Students wanted more experience with clinical procedures and simulation labs earlier in the program.

Participants suggested a need for stronger connections between hands-on experience and theoretical course content to better prepare students for clinical procedures.

Faculty provided mixed feedback about whether the program sequence optimized student development.

Faculty indicated a need for improved student transitions from medicine to dentistry courses and from pre-clinical to clinical environments.

Dental Hygiene (DH):

Students felt more confident in their abilities as they progressed through the program with 86% feeling prepared at program completion.

Students felt adequately prepared for simulation labs, clinical experiences, and lectures, but requested more clinical and simulation lab exposure as well as tighter integration between lecture material and hands-on experience.

Students wanted clearer coordination around hands-on experiences and more content alignment between labs and lectures.

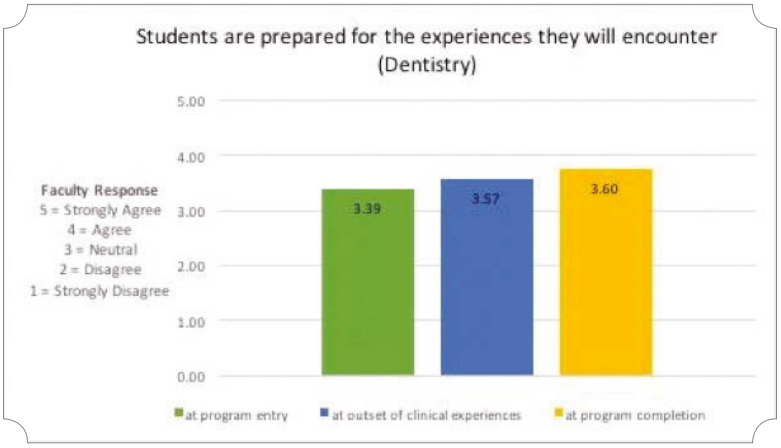
Only 36% of faculty felt the program was sequenced in such a way to optimize student development.

Preparation (DDS | DH)

Faculty were asked to indicate if students were prepared at: entry to program; their movement to clinical; and completion of the DDS and DH programs.

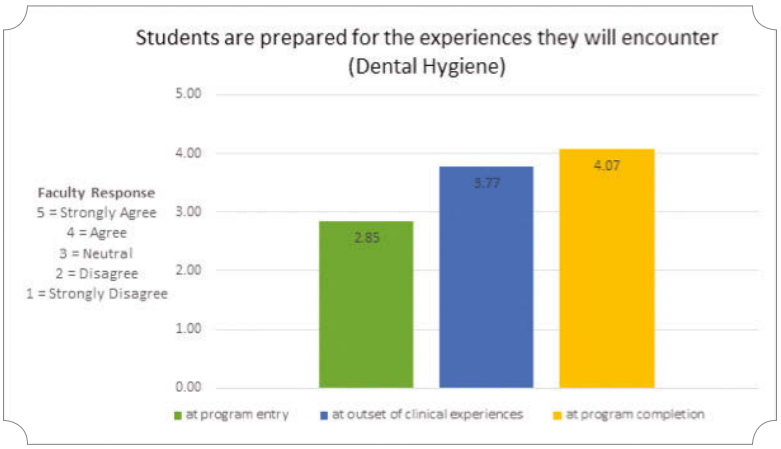
Doctor of Dental Surgery (DDS):

57% of respondents agreed that students were prepared at entry. This increased to 69% of respondents who agreed that students were prepared for clinical experiences. At program completion 82% of respondents agreed that students were prepared[3].



Dental Hygiene (DH):

36% of respondents agreed that students were prepared for the experiences they encountered at program entry. 57% agreed that students were prepared to begin clinical experiences, and 86% agreed that students were prepared at program completion.



Summary of Representative faculty focus group comment (DDS):

The following comment, captured within a faculty focus group, provides additional context around faculty concerns and interests in relation to student preparation.

> I find that we teach them things in our program the first two years, we hammer all the concepts, all the different blocks, the different medical concepts, they forget it, they don't remember it. There's an old adage in residency - see one, do one, teach one - which again is oversimplifying it. But if you take students or learners early on and you provide them with the theory, with the basic practice, and then provide some aspect of clinical or some experience that follows clinical within the realms of what their abilities are, you do theory and practice, then you go in the field and you actually do the work. If you tailor that, something that fits our program, I believe you'll get a more engaged student that may learn a little bit faster and may become confident earlier.

Representative faculty focus group comment (DH):

The following comment, captured within a faculty focus group, provides additional context around faculty concerns and interests in relation to student preparation.

> I think if you give them the adequate time to actually develop their skill, to actually learn what they're learning and understand where it fits within their knowledge, I think some of these concerns will become somewhat irrelevant.

Preparation at Program Entry

Faculty and student comments summarized below provided more insight into the factors that limit preparation.

DDS Faculty:

Admissions structure may be limiting:

Students with good problem-solving in more arduous programs may not be able to achieve the required GPA. Students in less intensive programs may not have the academic strength that will serve them well.

Professional attitudes:

Students need to develop the attitude of a professional, with a focus on quality patient care above all else. This would mean seeking self-excellence and avoiding shortcuts.

Consideration of psychomotor and clinical development:

Prior academic success does not guarantee clinical success. Early consideration of capabilities in this area must be considered. Some students are not well-rounded and their success can be limited by skills such as their ability to interact with people.

DH Faculty:

Professionalism and skills for interacting with people develop over time.

Relevant understanding of the occupation and program:

Students do not have a realistic understanding of the level of challenge they will face within the program. They have a limited understanding of the scope of practice of a Registered Dental Hygienist.

Early Practical Experiences (DDS)

DDS Student:

- The SHINE clinic exposed me to things early. I didn't know what I was doing, but just interacting with students across the program made a difference. Exposure to the students in higher years makes it easier to approach them later when we have questions.
- Shadowing experiences brought similar value. They solidify whether you see yourself being a dentist or not, it gives you a better idea of what the job really is.
- Shadowing isn't required so not everyone gets these experiences. Students who lack motivation or resources miss out.
- It would be great to extend shadowing to oral surgery or PEDO clinics so we had a better concept of what goes on there.
- Meeting the prerequisites and the first year in medicine prepared me for the workload.

At the Outset of Clinical

DDS Faculty:

- This would improve if simulation lab experiences modeled the clinic, students were introduced to the simulation lab earlier and had more time to learn and experiment.
- Students find the transition to actual patient care stressful. It may improve with lower instructor/student ratios for the earliest clinical experiences.
- A greater focus on ensuring competency can improve this transition. When students demonstrate competency in their preclinical experiences, they tend to be successful in clinical.

DH Faculty:

- Students face situations that challenge their capabilities. This is not problematic.

At Program Completion

DDS Faculty:

- Program graduates should have a clear understanding of their skill level in comparison to industry standards. For example, the dental industry is well aware that new grads tend to be single-tooth dentists for about five years. Single-tooth dentists then graduate to sextant- and eventually quadrant-dentists. Having this perspective would help them understand that they will need experience to build their speed before they can buy or build their own practice as the income is related to their ability to efficiently produce quality dentistry.
- Program graduates are competent dentists but training in general comprehensive care, chronic disease management, practice management and understanding the practice environment could be enhanced.
- Students often lack confidence. They feel they need to take more courses and work under a mentor to go into practice.

DH Faculty:

- There are large gaps in student experience versus expectations in private practice, particularly around pace of work, knowledge of standard office procedures and sterilization.
- Students need to develop confidence and problem-solving ability. They should be confident to think for themselves and apply their knowledge.
- Interpersonal relations with patients and focus on treatment planning, including a review of past treatments.

Preparation for Lectures, Simulation Labs and Clinical Experiences

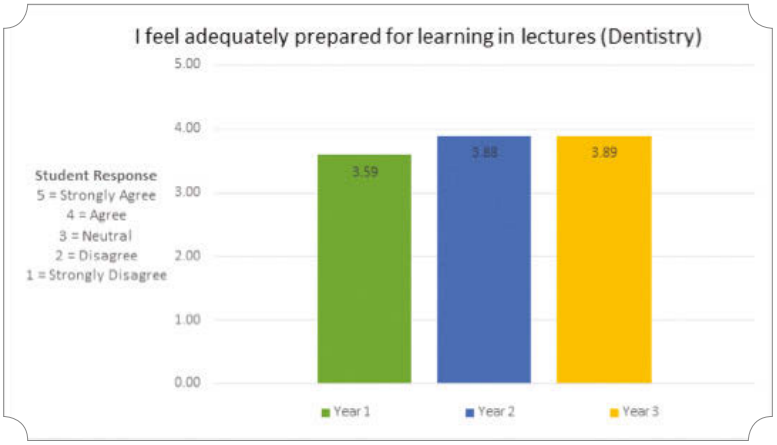
DDS Preparation:

Students were asked to indicate whether they felt adequately prepared for the learning they encountered in lectures, simulation labs and clinical experiences.

DDS student responses indicated increasing levels of neutrality and disagreement around their 'sense of preparedness' as they encountered simulation lab and clinical experiences. In year 2, 69% students felt unprepared for the clinical experiences they will encounter.

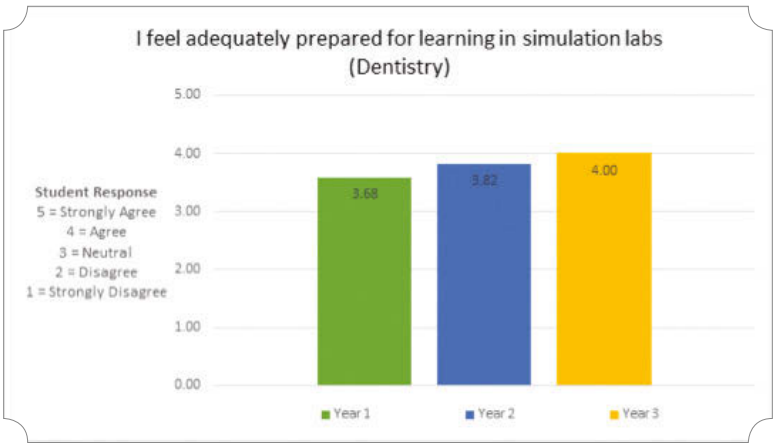
59% of students in Year 1, 82% of students in Year 2 and 84% of students in Year 3 agreed that they felt adequately prepared for lectures.

Overall, students in Year 1 indicated the lowest level of agreement with this statement.

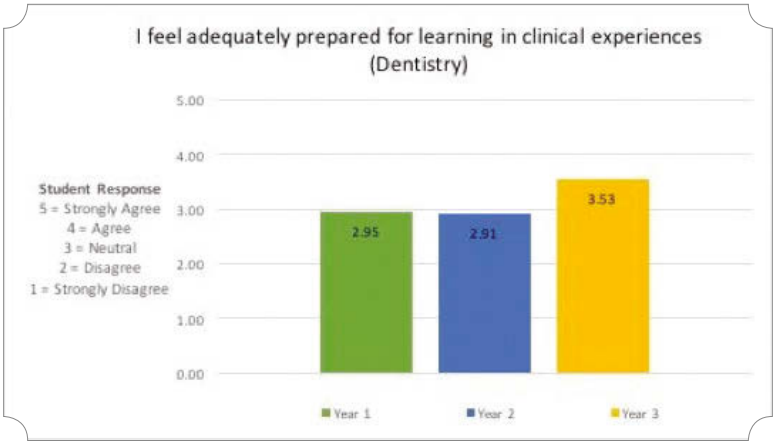


68% of Year 1 and 63% of Year 2 students agreed that they felt adequately prepared for simulation labs.

Year 1 comments: When lectures are disconnected from simulation labs or do not coincide with laboratory experiences, it is difficult to know what will be going on and how to complete the requirements for the day.



Doctor of Dental Surgery (DDS):



YEAR 1 COMMENT:

- Shadowing was disorganized and I was unclear on what I was doing, or why I was doing it when I was in the clinic for preventative.

YEAR 2 COMMENTS:

- I don't feel like I know the order of events from a patient presenting in clinic to a completed case for the majority of disciplines.
- I didn't feel I had enough instruction to feel comfortable with the restoration aspect of operative.
- I would like earlier and more experience.

- I passed operative but feel ill-prepared for patients. I would like more timed assignments to accurately reflect my clinical preparation.
- Periodontal clinic experiences need to be standardized.
- Need more practice with complete dentures and clinical situations.
- Lab sessions to learn basic skills like how to use instruments would help us maximize clinical time. I would like more and earlier feedback to improve my technique.
- I would have liked to have simulation lab time to build my dexterity while in Year 1.
- I would have liked to have been taught more base concepts like how to do a basic exam before being in the clinic.

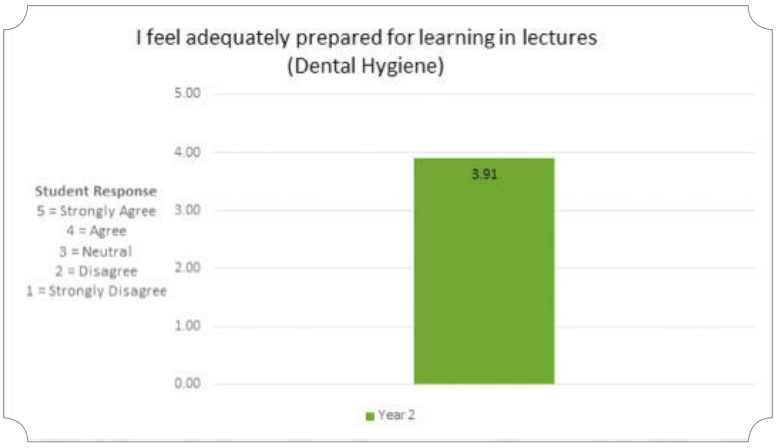
YEAR 3 COMMENTS:

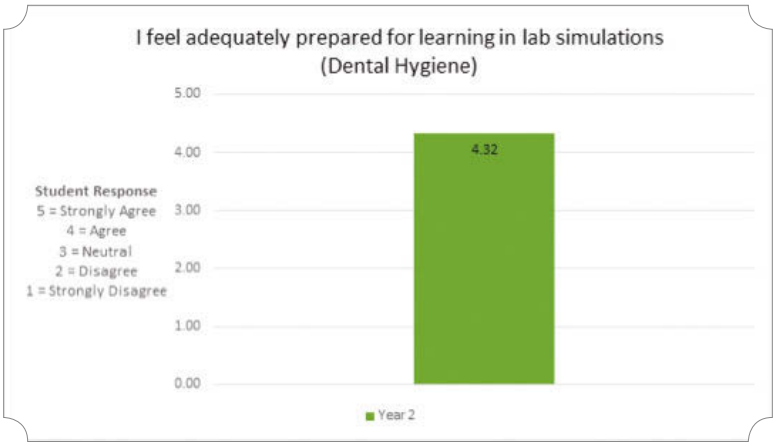
- More knowledge of the day-to-day logistics of clinic: pre-determinations, insurance, costs, timing, etc., would have been good to have.
- Often I feel unprepared for clinical procedures which we have didactic knowledge on but haven't performed on patients before. This is OK if we can get the right guidance as we work, but often there is inadequate help.
- Generally it's a steep learning curve, while earlier exposure would have been nice, I'm not sure how much learning would occur before we were immersed in the environment.

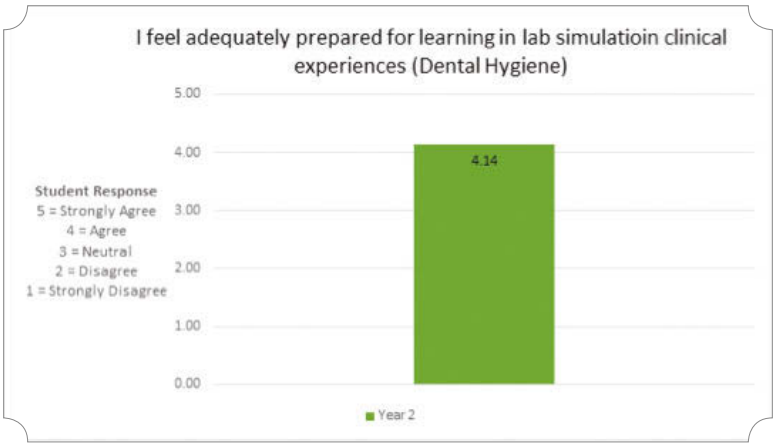
DH Preparation

Dental Hygiene (DH):

Students responded to the statements indicating they felt adequately prepared for the learning they encounter in lectures, simulation labs and clinical experiences







Lecture comments:

- Tests and keeping up with requirements. I always felt somewhat behind without enough time to study.
- I felt like I didn't know the protocols and every professor seemed to provide different guidance.
- I still have trouble with charting and using AXIUM.

Ability to Keep Pace

The statements below were derived from DDS faculty focus group feedback and are representative of the challenges with keeping pace within the program.

DDS Faculty

How much time should we give them to learn something? I think that's the inherent problem because in our lab, for example, where we have to do A to get to B, and you have to do B to get to C. So if you don't do it at C, now you can't get on to D, but we don't have time for you to get to D because we have to go on to E tomorrow. So there's not enough time in the curriculum to allow for that, and I think part and parcel for that, there's not time for us to give the appropriate assessments to the students so that they can self-reflect and have the feedback and say, "I really didn't understand that." But if they're so focused on only getting to the next step, they just lose that learning knowledge in between?

You have students who do achieve competency very, very early on in the program. What happens is - you'll see this every year - they are putting time into the program in that last year. So when we talk about clinical experiences, I think we should have a method of identifying those students who achieve competency, and then provide the challenges that are a little above and beyond what we teach in the program.

DDS and DH General

Faculty members were asked to indicate their agreement with the statement, 'Generally students are able to meet course requirements within the time available.' 87.5% of DDS Program respondents agreed with this statement and the rated average of responses was 4.13. 94% of DH Program respondents agreed and the rates average of responses was 4.29.

The comments summarized below provide context.

Doctor of Dental Surgery (DDS):

- While students meet the requirements their performance is impacted because of the heavy load and a need to juggle priorities.
- Students are always asking for extra time for their CCD patients.
- Some students do not complete all of the recommended units in fixed prosthodontics.
- Students are challenged to meet clinical requirements because of fluctuations in patients, case management and availability of student time.
- Some students struggle with psychomotor skill development.
- Restorative commonly has laggers, sometimes due to scheduling, and also due to student initiative. Need to maintain some incentive to keep production up.
- There is limited time to complete orthodontic cases.
- Lectures are limited with very little time for discussion.
- We can 'get them through,' but they struggle later in the clinic.

Dental Hygiene (DH):

- While students are able to meet course requirements, the effort detracts from their experience and they experience a great amount of stress in the process.

DDS and DH Progression

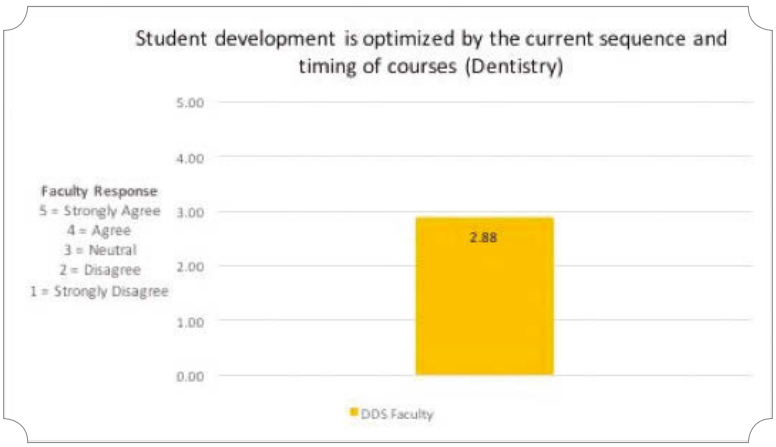
Students indicated their agreement with the statement, 'I believe my capabilities are developing in alignment with program requirements. There was a substantial level of agreement with this statement across the Dentistry Program with 95% of students in Year 3 indicating agreement with a rated average of 4.05, 79% of students in Year 2 indicating agreement with a rated average of 3.85 and 73% in Year 1 indicating agreement with a rated average of 3.73. 95% of DH students agreed with the statement and the rated average of responses was 4.23.

Comments summarized from those who were concerned about their progress are outlined below.

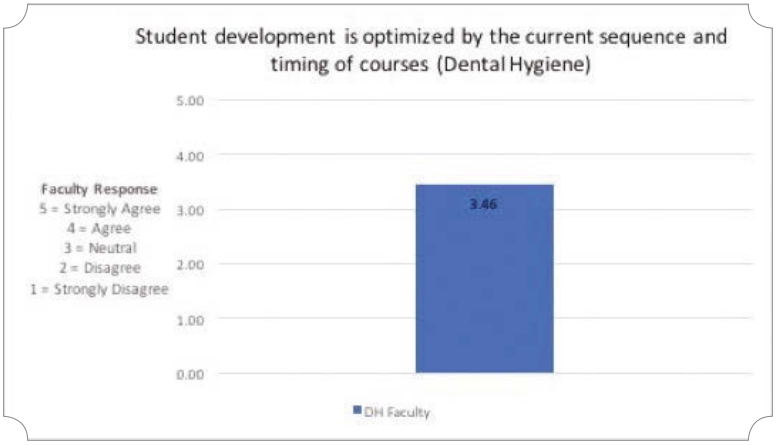
	DDS Students:	DH Students:
YEAR 1	• I feel that everything that I know about dentistry could have been taught in one semester, I don't feel I know enough. • Projects in the simulation lab move too quickly to gain a firm sense of confidence. • I am challenged to keep pace with the program. I am overwhelmed and this affects my confidence.	• I feel like topics are just briefly mentioned and then we move on and I don't have the time to do readings or go over notes to commit the subject to memory.
YEAR 2	• We could use a lot more time in labs and clinics and I feel the program could be organized to facilitate our learning better. • I feel depleted by the time I am in 2nd semester when my dentistry courses are offered. • I am challenged to develop my psychomotor skills as fast as I need to. I need more time to practice hands-on procedures. • I would like more dentistry-specific training earlier in the year.	
YEAR 3	• I'm not as good at patient management as I should be.	

Timing and Sequence of Courses is Optimal

Only 35% of DDS Faculty agreed with the statement 'student development is optimized by the current sequence and timing of courses.' In addition, Faculty were asked to respond to the statement 'There are no negative impacts at program transitions from medical to dental courses and from pre-clinical to clinical courses.' Only 29% of Faculty agreed in relation to the medical/dental transition, and 38% agreed in relation to the pre-clinical to clinical transition.



36% of DH Faculty agreed with the statement 'student development is optimized by the current sequence and timing of courses.'



The summarized faculty commentary below provides insight into the above rating.

DDS Faculty Summarized Comments

- The timing and condensed format of the current InterProfessional learning does not benefit the students.

- Poor sequencing and timing is the result of constraints due to med-block scheduling and limits on simulation lab availability
- Increase practical dentistry experience in first two years: intersperse experiences earlier, length of pre-clinical and clinical training should be increased by decreasing the time in medical.
- Content sequencing should be relevant and aligned with student experience.
- Aspects of the clinical experience should be introduced from the beginning.
- Didactic and clinic should be in tandem.
- There needs to be more focus on dentistry in the first 2 years of the program.

Transition from medical to dental courses:

- We need to teach them to do better treatment planning, better patient management, better coordination with specialists and better communication with MDs, and less about what we depend on MDs to treat.
- The students succeed in difficult medical courses and then are taken aback when they realize in third year that their motor skills aren't as good as they thought. This causes struggle, fear and resentment.
- They go from being under the radar in medicine courses and aren't prepared for the expectations around attendance and engagement in DDS courses.

Transition from pre-clinical to clinical courses:

- First clinical term is stressful for DDS students everywhere. We could reduce the stress if we introduced more programming earlier.
- We need more pre-clinical preparation for clinical. The students are expected to integrate everything they've learned into their care of patients right away. An initial department-based approach followed by an examination of competency prior to movement to full clinical would be beneficial.

Dental Hygiene Faculty Summarized Comments

- As a relatively new instructor I do not know the sequence and timing of courses or lectures – it would be helpful to understand this so my specific lecture could be better integrated.
- Local anesthesia should be taught prior to clinical experience. This course could be delivered to dentistry and DH students together.

Faculty Suggestions for Sequencing Improvements

Summarized responses from DDS Faculty focus group:

- I think we recognize - by and large - what content we need to deliver within four years, but the sequencing of that is always difficult. We're giving them information that they have no contextual understanding of. I think we're always going to have a problem with their feelings of relevancy, that doesn't become clear until a year down the road, to two years down the road. We are stuck in this paradigm where we have to deliver this content, but it's not necessarily delivered at the optimal moment. So when you see this lack of understanding and relevancy, you're seeing a reflection of that.
- I would like to indicate that DDS should participate more in the basic sciences than it currently does, in order to emphasize the dental aspects of the basic sciences. More integration is possible by having dentists doing the teaching in the first two years, and this needs to be addressed."
- And I don't know if this is too complex but the staggering of courses, I mean right now, everything is lumped into semesters, and you've got all the courses finishing, and of course, there's many courses that they take in one semester, and they all finish at the same time. And it becomes overwhelming honestly with the amount of material that you have to process at the same time. If that could ideally be staggered so that, not all courses are starting at the same time.

The Faculty were asked to share their suggestions for improvement of sequencing. Following is a summary of their recommendations.

Doctor of Dental Surgery (DDS):

- Start dental courses earlier in Year 2.
- Course directors should get together with instructors in the class to go over course content, sequence and how the course fits into the overall program. This would improve our understanding of what the students have experienced and how we can link new learning to concepts they already understand.
- Material should be delivered close to the time when students have a chance to practice.
- Earlier introduction of simulation labs so more time can be spent in clinical.
- Careful sequencing of basic and applied knowledge.
- Operative dentistry requires more teaching hours. The program should be refocused on skills that support general practice.

Dental Hygiene (DH):

- Move pre-clinic to winter term to free up 12 hours for studying physiology.

Questions for Consideration

Are the guiding principles identified above sufficient to support the requirements for change identified?

What hurdles need to be overcome to begin to appropriately sequence courses?

Summary

Faculty responses indicated that students were not prepared for what they encounter when they begin the DH or DDS program. Some comments specific to DDS link this to admission requirements that emphasize academic strength rather than potential for clinical skill development.

Faculty from DDS and DH clearly disagreed with the statement, 'Student development is optimized by the current sequencing and pace.'

Faculty and students believed that changes in sequence and timing of courses would improve development of clinical skills for students. Simulation lab and clinical experiences should increase and should begin earlier within the student's schedule. There is also an interest to create more alignment between theoretical concept learning and clinical learning.

The following guiding principles serve to anchor challenges within this area:

- **Learning Pathways:** Within the program, courses and topics are sequenced specifically to students' prerequisite knowledge, skills and experiences.
- **Learning Pathways:** The program will be sequenced to better prepare students for initial clinic/patient care experiences.
- **Learning Pathways:** The student workload and assessment will be transparent, mapped, sequenced, planned and paced.
- **Content:** The School of Dentistry maintains full control of the content and sequencing of the topics and courses in the programs.

CONTENT

Overview

This section reviews learning content from the assumption that content currently aligns with accreditation requirements.

This section assesses perceptions of students and faculty around the appropriateness of learning content that is incorporated into the Program. Students shared their sense of 'relevance' around the content they encountered and the appropriateness of the amount of time they dedicated to subject areas. Faculty representatives shared their perspectives around the way content served to develop student capabilities throughout the program.

Within this section there is evidence that, while accreditation requirements are clearly met, content does not fully align with the requirements for a beginning dental practitioner within the profession. Students are challenged to understand the relevance and Faculty representatives questioned if content is appropriate for the beginning dentist and expressed a lack of understanding of the full scope of content within the program.

Doctor of Dental Surgery (DDS):

Students and faculty reported concerns regarding med-bock courses - specifically their relevance to dental students and a need to reduce those sections.

Students reported low confidence in implant surgery, orthodontics, and endodontics.

Volume of course content has made it more difficult for students to achieve competence in their program.

65% of faculty agreed that students adequately demonstrated program knowledge in clinical practice.

Dental Hygiene (DH):

About half (55%) of students found their course content to be relevant to the program. Less relevant courses included BIOCH 200 and PHYSL 210.

80% of faculty agreed that content covered in lectures was appropriate for development of clinical practice while 56% agreed that content covered in clinical experiences helped developed clinical skills.

73% of faculty agreed that students adequately demonstrated program knowledge in clinical practice.

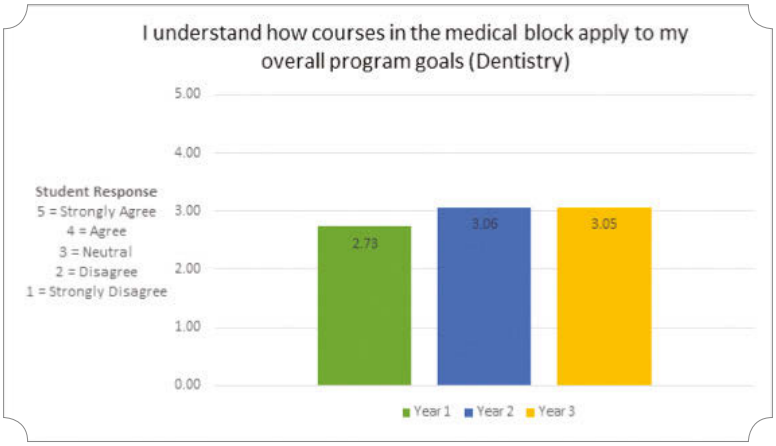
Student Sense of Content Relevance

A sense of content relevance has a significant impact on a student's willingness to engage in learning. While a student's sense of content relevance is not an indicator of the significance of content as a building block towards their development as a skilled clinician, it provides a measure of how well content is introduced and integrated.

Relevance of Medical Block Content (DDS)

When students were asked to indicate their agreement with the statement 'I understand how courses in the medical block apply to my overall program goals,' 23% of Year 1 students, 39% of Year 2 students and 53% of Year 3 students agreed.

This indicates that while their understanding improves over time, 77% of Year 1 students, 61% of Year 2 students and 47% of Year 3 students indicated a negative or neutral response to the question. This is an indication that students may not be clear on the relevance of medical block programming.



In some cases, a student's understanding of relevance improves as they progress through the program and have more clinical experiences. For this reason, it is also helpful to consider an alumni perspective of this question.

Alumni were also asked to indicate which medical block courses seemed less relevant and provide context for their assessment through comments. The findings are summarized below.

Members of the alumni were asked to identify their agreement with the following statements:

- 70% agreed with the statement 'the block system was a useful method in teaching me the foundational medical content required for practice', a rated average of 3.6.
- 60% agreed with the statement 'there was added value in learning the medical content with medical students', a rated average of 3.29.
- 61% agreed with the statement 'the medical content helped me manage medically compromised patients', a rated average of 3.57.

The following comments provided additional context:

2012 DDS Graduates (Over 1 year in practice)

- I think we could learn relevant dental related medical concerns in much more detail in 6 months rather than 16.
- The medical curriculum in general was overkill! Too much detail and time spent learning pre-clinical medicine when it could be condensed and more dentistry taught.
- I strongly believe that we need to understand our patients well in order to be a part of their overall well-being. The medical component supported this.

- Tutorials or small group learning sessions are better to be tailored to accommodate dental students to relate medical topics to practicing dentistry.

2013 DDS Graduates (Under 1 year in practice):

- The medical portion of the dental program covered too much information, which made it difficult to focus the portions actually important to be a dentist. I feel the dental related medical curriculum was rushed in the 3rd and 4th years. Overall the experience of doing medical block classes was good, but I wish there was a dental component that focused us more on the important parts.
- I really feel like being with the med students helped in creating less of a separation between the professions, and I really enjoyed all the material throughout the block system.
- I feel that there was insufficient coverage regarding how many of the medical disorders affect oral health and as a dental professional, what we should be looking for and how it affects dental treatment in general. Although the medical training we received was extensive, much of it has not proven to be of much use thus far in my dental career. There was little connection ever made in our training to how what we were learning would apply to us on a daily basis. It wasn't until we began seeing patients, by which point our medical training was completed, that we began to see the relevance of some of the things we were taught. However, many of those things had been taught so long ago, that you would often have to re-learn those aspects from our education that were necessary to use every day.
- I was grateful for the opportunity to learn the foundational medical information with the medical students. Looking back I can see that there could be more efficient ways to teach dental students the medical basics of those things which they need to know, but for me personally, learning with the medical students stretched me and made me into a better student and dentist.

Specific Content – Relevance and Sufficiency (DDS):

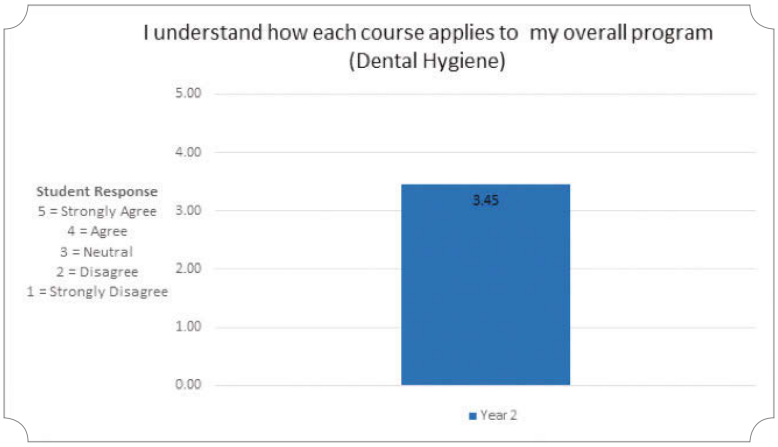
Students indicated their agreement with the statement, 'I understand how dentistry specific courses apply to my overall completion goals.' 100% of respondents from Year 1 agreed, 97% of respondents from Year 2 agreed (rated average 4.55) and 95% of respondents from Year 3 agreed (rated average 4.16).

Students also indicated which dentistry specific courses seemed less relevant:

- Year 2: 70% indicated a lack of relevance: IntD 410 – Interprofessional Health Team
- Year 3: 19% indicated a lack of relevance: DDS 545-18 – Sedation and Pain Control
- Year 3: 14% indicated a lack of relevance: DDS 545-4 – Dental Implants

Relevancy of Content (DH):

55% of students indicated that they understand how each course applies to the overall Dental Hygiene Program.



Courses of Low Perceived Relevancy (DDS | DH):

Doctor of Dental Surgery (DDS):

Dental Hygiene Program (DH):

Year 1		Year 2		Year 3		Year 1	
Course	% of respond	Course	% of respond	Course	% of respond	Course	% of respond
DMED 514(r): Renal	71%	DMED 511: Introduction to the Professions	72.2%	DDS 507(p): Psychiatry	66.7%	BIOCH 200: Introduction to Biochemistry	90%
DMED 511: Introduction to the Professions	62%	DMED 514(r): Renal	61.1%	DDS 506: Gastroenterology and Nutrition	44.4%	PHYSL 210: Human Physiology	55%
DMED 513: Endocrine System	48%	DDS 506: Gastroenterology and Nutrition	61.1%	DMED 514(r): Renal	44.4%		
DMED 514(p): Pulmonary	48%	DDS 523: Musculoskeletal System	50.0%				
		DDS 507(p): Psychiatry	50.0%				
Total Responses: 21		Total Responses: 18		Total Responses: 9		Total Responses: 20	

YEAR 1 FOCUS GROUP COMMENTS SPECIFIC TO COURSES:

Every course applied in some way. The courses were taught with a focus on diagnosis, when our real interest is around how to manage patients who are already diagnosed.

I wish dentistry students were exempt from medical professionalism lectures, embryology related topics and anatomy quizzes. We should not have the same DMED tests as the Med students.

Parasites, endemic fungi and some viruses were irrelevant.

I don't see how interpreting chest X-rays and understanding the pharmacology of various drugs for COPD and asthma are necessary for a dentist to memorize.

There was never enough that was relevant to dentistry. We learned about gigantism in endocrine block, but were never taught how it affects teeth.

YEAR 2 FOCUS GROUP COMMENTS SPECIFIC TO COURSES:

I had a better idea how the medical block information was significant after I took local anesthetics.

All medical courses go further in-depth than a dentist needs to know.

All medical courses should be taught the way that Oncology was, by a dentistry professor who knows specifically what from each of those courses applies to us.

More dental relevance in the discovery learning would help facilitate how this is important to us.

YEAR 3 FOCUS GROUP COMMENTS SPECIFIC TO COURSES:

Medical courses could be condensed. I would have appreciated more time for dentistry related courses.

As part of the exit survey, students in Year 4 DDS were asked to indicate their agreement around the following statements:

- 41% agreed (rated average 2.93) with the statement 'the amount of medical theory was appropriate'
- 24% agreed (rated average 2.62) with the statement 'the integration of dental relevancy with medical theory was adequate '
- 45% agreed (rated average 3.03) with the statement 'the time for specific dental subjects during these years was adequate'

Below is a summary of commentary that provided further context around the evaluations provided by Year 4 students. (DDS)

- Too much time was spent in med-school foundation that we forget. We need more dental courses in years 1 and Discovery learning sessions could have had more of a dental focus. The courses need to be tailored to align with a dentistry focus and relevance needs to be improved.
- I don't remember much from the first 2 years, except that I didn't feel like a dental student.

Below is a summary of Faculty focus group comments regarding content relevancy: (DDS)

- We have to foster that understanding of what it is to be a dental hygienist as a professional. And then from that, I think you can drive the innovation and the creativity. But without that, I think you have limited yourself.
- We have to bring it back to the profession at the end of every lecture and say, "This is why it's relevant. This is what you're going to see. This is why this is important." So I think that not just in one session, but it has to be integrated into the program entirely.

Adequacy of Instruction Time (DDS)

At exit, Year 4 DDS students were asked to provide feedback on the time dedicated to instruction across a number of key content areas. Members of alumni were also asked to provide feedback. 29% of Year 4 respondents (31) indicated that treatment of the content areas identified below was inadequate, the percentage of alumni that indicated that content was inadequate is identified in brackets after each item.

- Pharmacology and therapeutics (Alumni: 40% agreement)
- Practice management (Alumni: 70% agreement)
- Tobacco cessation and substance abuse
- Basic dental sciences
- Medical/dental emergencies
- Nutrition and diet counseling

The DDS alumni indicated that content was inadequate in the following additional topic areas:

- Endodontics (84% agreement)
- Orthodontics (73% agreement)
- Implants (61% agreement)
- Periodontics (47% agreement)
- Special needs (41% agreement)

At exit, Year 4 DDS students were asked to assess their experiences within discipline-specific education. Students were asked to indicate their agreement with the following statements that formed a part of this assessment:

1. Overall, the quality of the course content was excellent
2. The lab sessions provided the skills necessary for clinical
3. The classroom content was reinforced in the clinical setting
4. I felt completion of the basic requirements were adequate to prepare me for clinical practice

Ratings and comments on each discipline are outlined below.

Fixed Prosthodontics: Over 80% of students agreed with the above statements. Summary of comments: It would have been nice to know more about prepping a crown that has been rotated or tipped or has a huge filling.

Removable Prosthodontics: Over 80% of students agreed with statements 1, 3 and 4. 45% agreed that lab sessions provided the skills necessary for clinical.

Summary of comments: I only fully understood the process after my first clinical experience. Labs emphasized setting teeth, which is not common in clinical and taking impressions was underemphasized.

Dental Implants: Over 80% of students agreed with statements 1 to 3. 59% agreed that completion of the basic requirements prepared them for clinical practice. Summary of comments: Placing one implant is not enough, I would need more hours of study before I would be ready to place implants in anything but the simplest cases. Many comments identify this as a fun course and indicate appreciation for the experience.

Operative Dentistry: Over 80% of students agreed with all statements. Summary of comments: Including more textbook information into lectures would help with the Boards. I would like to see how instructors do a restoration in pre-clinical. The third restorative lab/course is unnecessary. I wish I had more clinical exposure to electrosurg or laser gingivectomy.

Periodontics: 75% of students felt that completion of the basic requirement was adequate to prepare them for clinical practice. Less than 50% agreed with statements 1 to 3. Summary of comments: Students were challenged in the Year 2 perio course, and felt that their experience in Year 3 was more beneficial in preparing them for Boards.

Pediatric Dentistry: Over 80% of students agreed with all 4 statements. Summary of comments: Lectures were less organized. Clinical experiences were appreciated. School visits introduced chaos.

Oral Surgery: Over 80% of students agreed with all 4 statements.

Summary of comments: This course prepared me for private practice. Rounds were valuable. Amazing program.

Endodontics: 52% of students indicated that completion of the basic requirements were adequate to prepare them for clinical practice. The course content rating was 15%, lab was 41% and clinic was 55%.

Summary of comments: We need more education on access openings, every case is so different in clinic that I have trouble getting beyond a conceptual understanding. We weren't properly trained on molar root canals. The lectures are out of date.

Oral Pathology: Over 80% of students agreed with all 4 statements.

Summary of comments: Best organized course in the program. I would have liked to have more experience with biopsies.

Radiology: Over 80% of students agreed with all 4 statements.

Summary of comments: The course and manual are well organized.

Orthodontics: 41% of students felt that completion of the basic requirements was adequate to prepare them for clinical practice. 46% agreed that content was excellent, 33% felt that the lab prepared them for clinical and 59% felt that classroom content was reinforced in the clinic.

Summary of comments: The lab was interesting but not helpful to prepare for clinic, binding brackets and placing elastics would have been more valuable. I

would like to have learned more about what types of cases we may be prepared to take on in private practice, clinical experiences did not build confidence.

General alumni comments on content.

2010 graduates (up to 3 years in practice):

- While I believe that my dental education at the University of Alberta was solid, I do feel that the short-comings with respect to how Endodontics is taught to dental students is the single biggest weakness in the dental curriculum. Please do whatever is necessary. Many graduates (and therefore, patients) are suffering as a result!

2012 graduates: (up to 2 years in practice):

- U of A dentistry is a strong program and taught us quite well. Focus should shift though during the years of dental school to focus on aspects of general dentistry that are the bread and butter of general practice such as fillings, root canals and exodontia. Too much time and stress is spent on dentures and a million consultations. You finally graduate and realize that general practice revolves around the basics and that you need to be good at those. There is plenty of time to learn more fixed and dentures with continuing education.

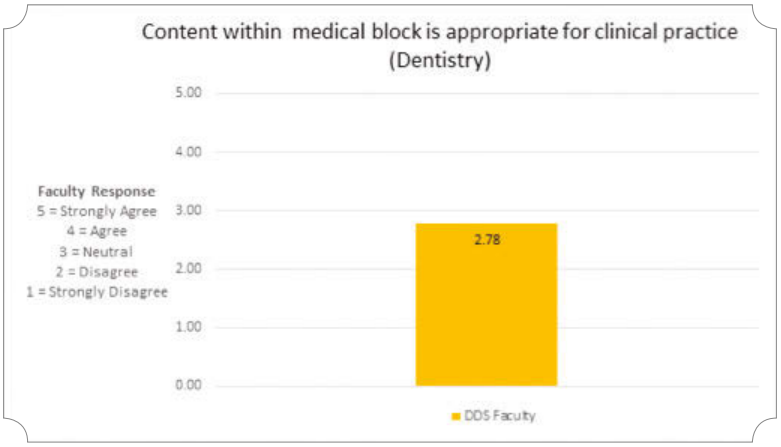
2013 graduates: (up to 1 year in practice):

- I feel the dental school has made some great improvements over the past few years. With a few more changes, particularly with improving the endodontic training and clinical experience, and lightening the load of the removable prosthodontic courses and clinical requirements, I feel the didactic training and clinical experience of the students would be excellent. I would recommend many future students to receive their dental training at the U of A.
- The basic skills and techniques I learnt during dental school have helped me to properly deal with new situations and problems encountered in private practice. I felt I was set up for success. So thank you.

Faculty Sense of Content Appropriateness

Medical Block Content (DDS)

In response to the statement 'content is appropriate to develop the capabilities required for successful clinical practice' within the combined medical block content, 26% of Faculty respondents (38) agreed.



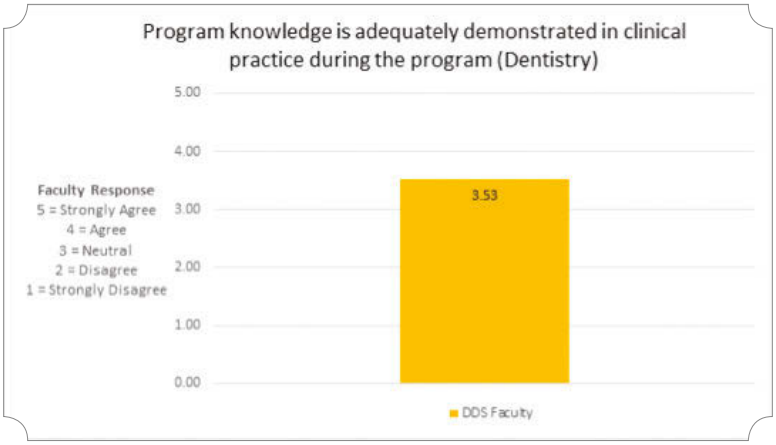
The themes that emerged from supplementary comments are summarized below.

- Medical block content needs to be minimized. It should be scaled down to include only the material that is relevant for a practicing dentist.
- Medical block content should be augmented with information that establishes relevancy of the content for dentistry.
- With input on each specialty and subspecialty of dentistry we could determine what a student needs to know for diagnosis, intraoperative and post-operative management of patients.
- The schedule is restricting and it is far more important to teach clinical dentistry and know how to work with physicians.

Many comments indicated uncertainty around which content could be removed. There was acknowledgement that unnecessary content exists in all lectures and that significant learning needs to be distilled from what exists.

Knowledge within Clinical Practice (DDS):

The Faculty indicated their agreement with the statement, 'generally, the program knowledge that students acquire is adequately demonstrated in their clinical practice during the program.' 65% of dentistry respondents (34) agreed.



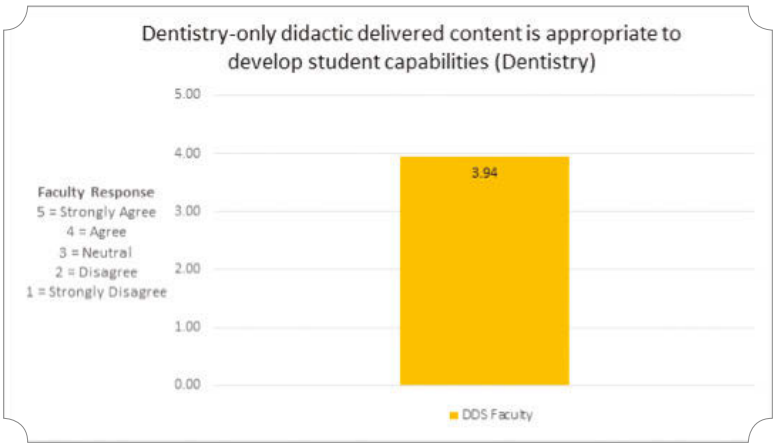
The themes that emerged from supplementary comments are summarized below.

Didactic training could be more 'timely' to clinical experiences, sometimes it is taught way in advance.

- We need to help them to learn integrated, patient-centered care as opposed to 'piece-mealing' the patient into discipline specific care.
- Students forget things from medical courses by the time they enter their clinical experiences. More medical and clinical could be meshed into simulations.

Didactic Content (DDS) :

The Faculty indicated their agreement with the statement, 'content is appropriate to develop the capabilities required for successful clinical practice' within the dentistry-only didactic content'. 74% of respondents (35) agreed.

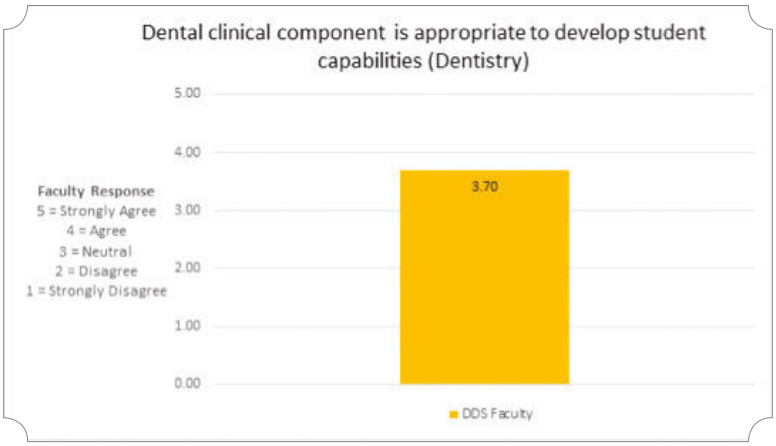


The themes that emerged from supplementary comments are summarized below:

- With more time comprehensive case study discussions could be added.
- A cardiology course would be a good addition.
- More focus on practice management
- More pre-clinical operative
- Stronger understanding of infection as it applies to teeth and use of antibiotics
- To aid teaching of overall treatment planning, Perio/Restorative case presentations would be helpful.
- Introduce clinical cases as early as possible.
- It could be argued that there is too much content without enough experiences to gain competency.
- Course electives would allow students to focus on what they value.
- Perio course material should be enhanced to prepare students for the Board exams.
- Better disciplinary integration across four years.
- Enhance all aspects of prevention.
- Ensure students understand the limitations around the experience/learning they gain in orthodontics and implant surgery.

Clinical Content (DDS):

Faculty members indicated their agreement with the statement, 'content is appropriate to develop the capabilities required for successful clinical practice' within the dental clinical component. 58% of respondents (33) agreed.



The themes that emerged from supplementary comments are summarized below:

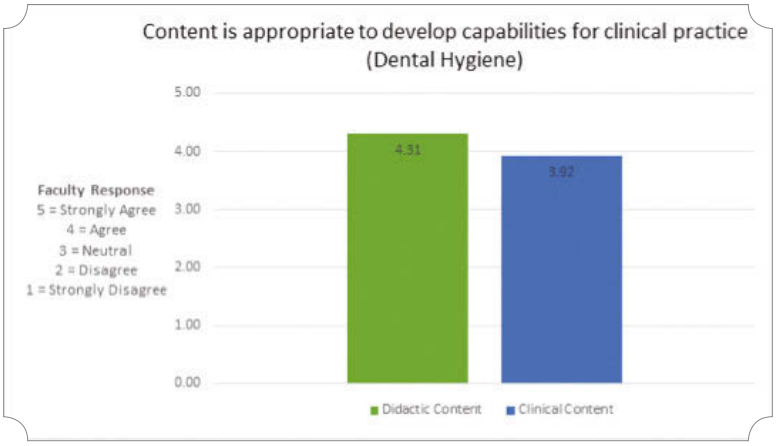
- Students would benefit from a greater number of clinical experiences.
- Students have a challenging transition to the clinic. A pre-requisite course covering technical skills for clinic should be necessary.

- Improvements in the structure to assess competency with a focus of achieving competency sooner so that students who excel can step into higher level experiences.
- Better coordination between disciplines so that clinical time can be maximized for students. Removable prosthodontics could be reduced, surgery, endodontics, implants and periodontology all need more clinical exposure.
- A focus on four-handed dentistry would be beneficial.
- We need to define and implement what is required to perform high-quality CAD-CAM restoration.
- Pediatric dentistry clinics should be increased to provide students more opportunities for treatment discussions with patients and caregivers.We need to improve the distribution and volume of clinical experiences so students get adequate exposure to gain competency.

Didactic and Clinical Content (DH):

80% of respondents agreed with the statement 'didactic content is appropriate to develop the capabilities for clinicll practice.'

56% of respondents agreed with the statement 'clinical content is appropriate to develop the capabilities for clinical practice.'



Comments in reference to didactic content:

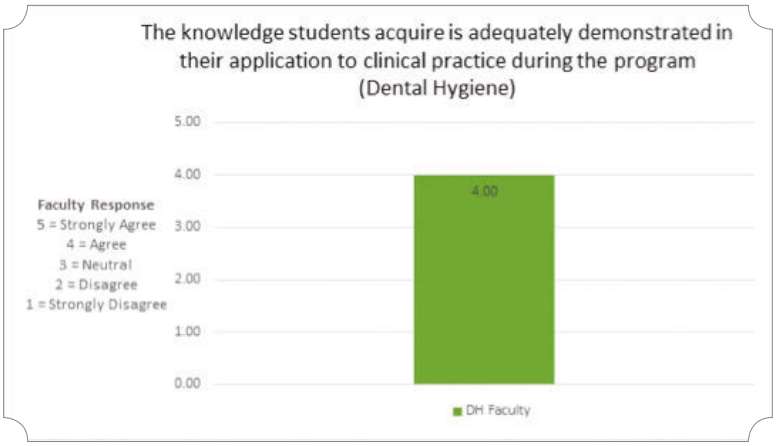
- I would like to align my lecture more closely within the curriculum, but I do not have a good level of awareness of the overall program.
- More instruction on alternate therapies and implications of hormone use (i.e. transgender situations).
- Learning that aligns with alternative career opportunities: research, public health and academia.
- Students should learn more about commercial product information.
- There should be more emphasis on professionalism and written and verbal communication.

Comments in reference to clinical content:

- There is a large gap between pre-clinical and clinical. Students need help with the transition. Time management is essential.
- Our graduates should be recognized as experts at graduation, but (at the moment) they are still just developing their skills.
- More time in the clinic practicing with dentistry students, and seeing patients more than once.
- It would be great to get beyond basics and teach topics like: lasers, use of medications and techniques and technologies like: zoom bleaching, invisalign, prescription writing, saliva testing, velscope, etc.

Knowledge within Clinical Practice (DH):

73% of dental hygiene respondents agreed with the statement 'the knowledge students acquire is adequately demonstrated in their application to clinical practice during the program.'



Comments in reference to clinical practice:

- We need to be given a clear idea of what a Dental Hygienist needs for clinical practice. Right now they are getting dentistry-light, and I am uncertain what they really need.

Questions for Consideration

Are the guiding principles identified above sufficient to address the challenges identified?

What risks or hurdles may exist?

Summary

There was a high level of concern amongst Faculty and Students that there is a significant discrepancy between the content included within medicine-block courses and the type of content that is beneficial to dental students. Content misalignment occurs within each course and modifications would require a complete review of each course. This creates dissatisfaction and frustration for students and uses valuable program time inefficiently.

There was a high level of general agreement that didactic content developed the capabilities for clinical practice amongst DDS and DH Faculty (73% and 80%). There is a general sense that time constraints limit topic exploration and that development of specializations would be required to overcome this barrier.

Students and alumni indicated they lack confidence in their skills in orthodontics, endodontics and implant surgery3.

It was clear that students were stretched to feel confident and achieve the clinical competence they desired. Faculty suggested that clinical experiences must begin earlier, be available in greater volumes and be varied enough to allow students the opportunities they need for practice.

The guiding principles that may establish direction for improvements in this area are:

- **Content:** The content will be competency based and designed to meet competencies for a beginning dental practitioner, as outlined in the Association of Canadian Faculties of Dentistry Educational Framework for Development of Competency in Dental Programs 2015.
- **Content:** The School of Dentistry maintains full control of the content and sequencing of the topics and courses in the programs.

3 In a study conducted by Lanning, Wetzel, Baines, Ellen, and Byrne, it was discovered that dental students at Virginia Commonwealth University struggled with both prosthetics and endodontics – having had less patient experience in these areas. This supports the findings in this needs assessment in relation to the reported sense of competency that students indicate in endodontics. See Lanning S, Wetzel A, Baines M, Ellen Byrne B. Evaluation of a revised curriculum: a four-year qualitative study of student perceptions. Journal Of Dental Education [serial online]. October 2012;76(10):1323-1333. Available from: MEDLINE, Ipswich, MA. Accessed May 19, 2015.

- **Content:** Each student is exposed to patient encounters throughout the entire curriculum.
- **Content:** Foundational science will be vertically integrated into clinical delivery of care.
- **Content:** Biomedical learning will be efficiently delivered and linked to relevance for dental practice.
- **Content:** Critical thinking and problem solving skills will be developed throughout the programs.
- **Content:** Discipline content areas will become more integrated as the student progresses through the curriculum.
- **Content:** The curriculum will address learning experiences that support development of leadership, scholarship, and social responsiveness.

ASSESSMENT

Overview

The assessment section includes feedback from students regarding their experiences of assessments. Faculty members reported on the types of assessments included through the program, assessment challenges and suggestions for improvement.

All students report uncertainty around how they are graded within clinical experiences. They would like to receive constructive feedback more often, but they reinforced that feedback must be delivered in ways that have a positive impact on their confidence. Students reported being overwhelmed by the volume of assessments they face and the pace at which there skills need to develop. Faculty members recognized the same challenges with assessment.

The table below highlights the major themes within this section.

Doctor of Dental Surgery (DDS):

Students understood how they were assessed for didactic learning, but were unclear how they were being assessed for clinical work

Some students noted that the sheer number of assessments made it difficult to keep up

Students felt challenged by exams, and reported that some assessments were unfair or not clear

Dental Hygiene (DH):

Students identified concerns with inconsistent assessment in relation to their clinical work

Students indicated that they had difficulty preparing for the number of exams they had.

Faculty indicated that more opportunities for self-assessment would be beneficial.

Student Perspectives

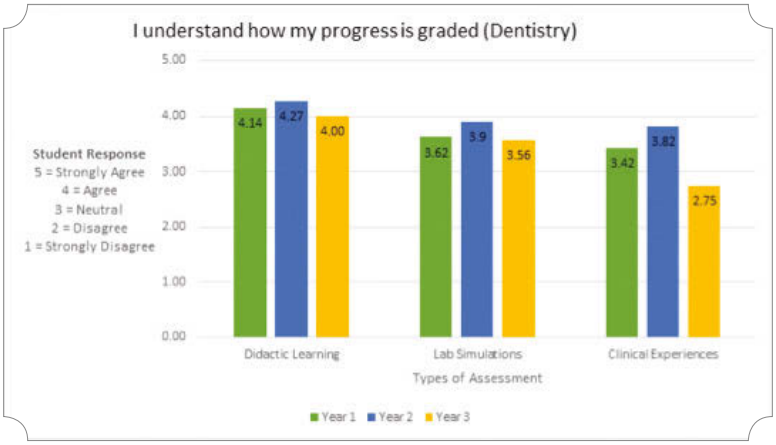
I Understand the Way I am Assessed

Students responded to statements regarding their level of understanding of how they were assessed in didactic learning, in laboratory simulations and in clinical experiences.

Dentistry students indicated they understood how they were assessed within didactic learning situations. However, they indicated lower levels of agreement in relation to assessments in laboratory and clinical experiences[4].

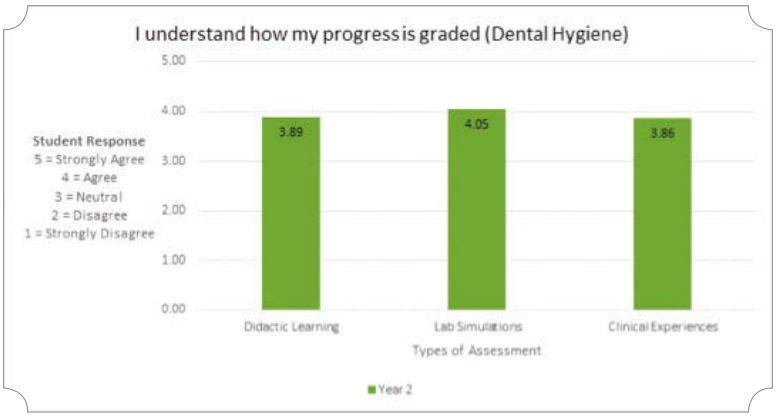
Overall, students in Year 3 indicated the lowest levels of agreement with these statements, in particular, around assessment within their clinical experiences.

52% of students in Year 1 indicate they understand how their clinical experiences are assessed, 63% of students in Year 2 and 25% of students in Year 3.



Generally, dental hygiene students indicated an understanding around how they were assessed.

Ratings dipped slightly below 'agree' (4.0) around their understanding of the way they were assessed within clinical experiences.



Students were asked to share how they thought their understanding of assessments could be improved. Following is a summary of com ments:

DDS Year 1

It would be nice to see examples of well-done projects and assignments.

I would like to see a rubric for lab work. I receive a mark back with very little feedback.

It is stressful when we are graded in relation to each other in dental anatomy and occlusion.

DDS Year 2

Laboratory grading is subjective and inconsistent.

It seems like we aren't provided enough time for adequate instruction and practice prior to laboratory assignments.

QRST seems subjective. Is Q reserved only for those projects that are better than the instructor could achieve?

Course weight should reflect where we spend the majority of our time. Why is weighting heavier in classroom when the majority of our time is in the laboratory?

Providing a concrete grade breakdown and having multiple instructors mark it.

Marking in fixed prosthodontics is great because you get instant feedback every week, and you can improve based on it.

DDS Year 3

Clinical marks do not seem objective or clinically focused.

Not consistent. As an example I was given a Q for staying overtime with one patient because I kept them from having to return for another appointment, another time, with another instructor, I was given a T because I went overtime. In both cases I had Rs in all other categories.

Dental Hygiene

Grading in the clinic needs to be consistent and instructors should agree.

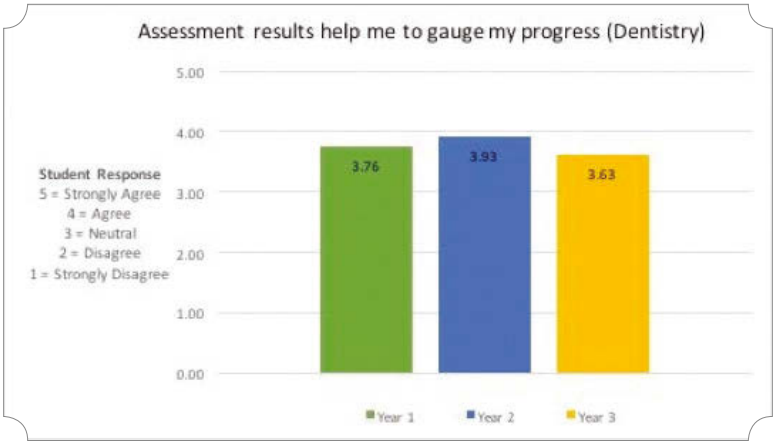
More clarity on how grades work.

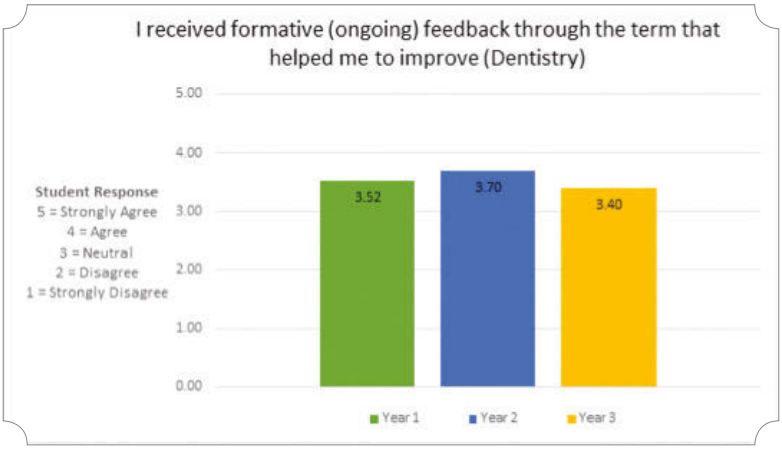
Curve grading feels unfair in a small class.

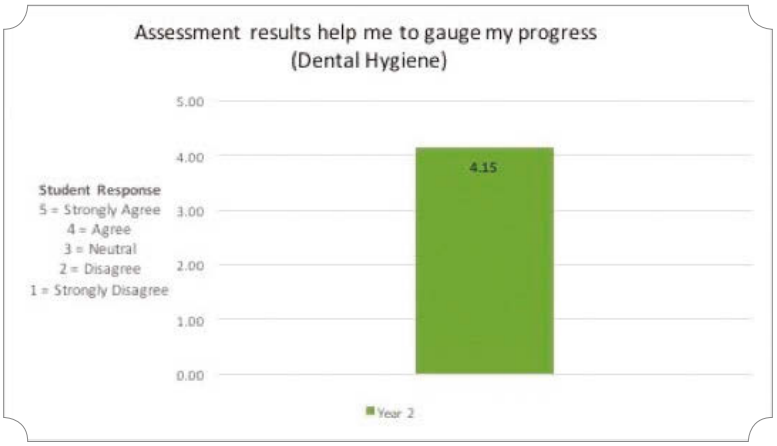
Rubrics could be more detailed.

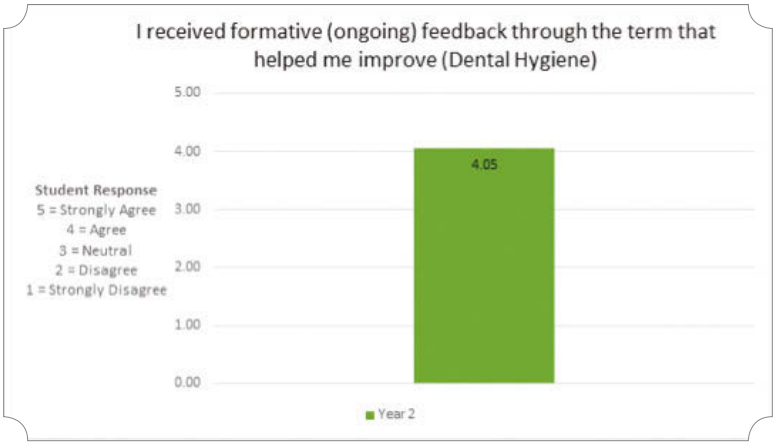
Developmental Feedback

Students were asked to indicate their sense of feedback received in the Doctor of Dental Surgery Program and the Dental Hygiene Program. Ratings pertaining to feedback helping them to gauge progress and the on-going frequency of formative feedback ranked lower than 4.0, agree within the DDS Program, and higher than 4.0, agree, within the Dental Hygiene Program.






Assessment results help me to gauge my progress (Dental Hygiene)
5.00
4.00
3.00
2.00
1.00
0.00
4.15
Student Response
5 = Strongly Agree
4 = Agree
3 = Neutral
2 = Disagree
1 = Strongly Disagree
Year 2


I received formative (ongoing) feedback through the term that helped me improve (Dental Hygiene)
5.00
4.00
3.00
2.00
1.00
0.00
4.05
Student Response
5 = Strongly Agree
4 = Agree
3 = Neutral
2 = Disagree
1 = Strongly Disagree
Year 2

Student Sense of Feedback Summary:

DDS Year 1

Laboratory grades and feedback do not indicate a pattern of improvement and often is not reflective of what I was told by professors in the lab. I like getting feedback on the process (hand grip, posture, etc.), rather than the final product.

DDS Year 2

Didactic exams do not adequately gauge an individual's progress, routine assessments in simulation lab that are of low value, but provide indications of progress would be helpful.

DDS Year 3

I feel as though some instructors don't give a lot of thought to the evaluation and how it will help me improve.

Dental Hygiene

You could get feedback constantly and it wouldn't be too much.

Because instructors are rotating areas each week, no single instructor can gauge performance change well.

It's difficult to be under constant pressure and judgment, not all procedures should be graded.

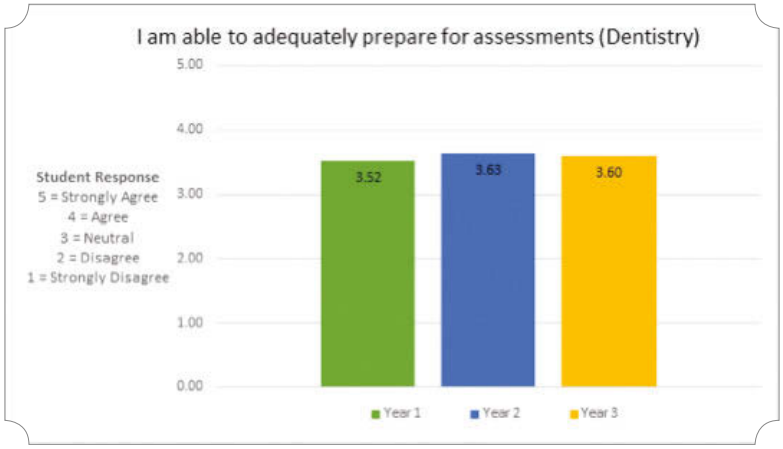
Dentistry Student Focus Group Comments:

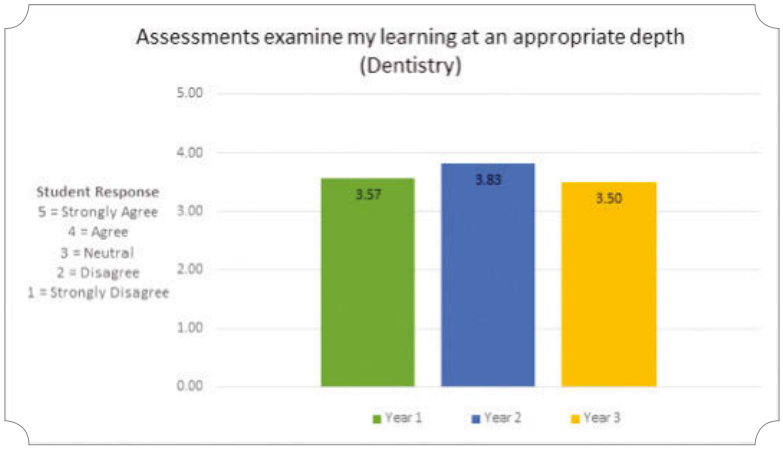
- I want to feel competent in front of the patient. Feedback that belittles me when I am working on the patient hurts the relationship with the patient and impacts my confidence.
- I prefer positive feedback that reinforces what I did well, and provides me guidance around what I haven't.
- I overheard someone in the laboratory say, 'We should be able to fail dental students out more easily'. That portrays a real lack of consideration for us.
- It is detrimental when instructors are condescending and negative when we do things wrong.
- It is also difficult when the feedback is vague. I've been told 'it's in the ballpark,' and I'm not sure how to interpret that. What do I change?
- In Fixed we leave with an assessment on a clear rubric every day. That's a lot of instructional time, but we learn from that.
- I like learning support that meets me where I am.
- (Year 3) A year of being graded every single day by some of these instructors can be tough on you. At times, it feels like we are expected to perform well from the start. I am exhausted and I am resorting myself to 'getting through', the pressure is difficult.
- If you are told you are going to fail midway through, it isn't helpful.
- Individualized feedback is more beneficial than generalized class feedback.
- I like it when the instructor tells me what to do, then leaves me to do it rather than doing the whole prep for me.

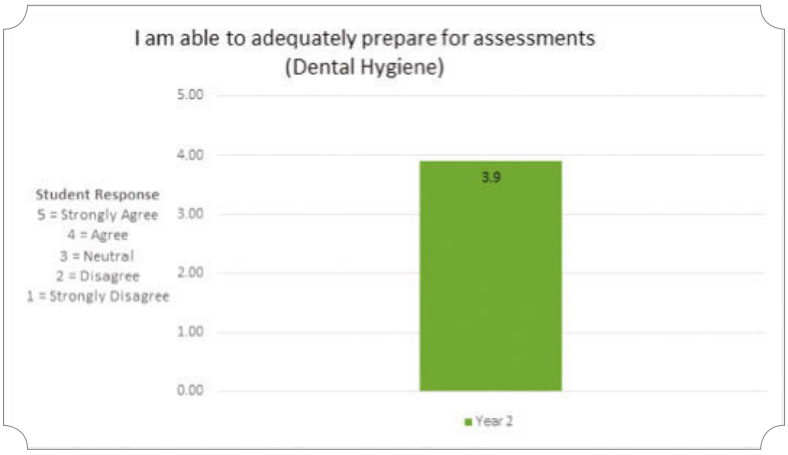
- I don't want feedback sugar coated. If it's wrong, tell me it's wrong. Being honest is important.

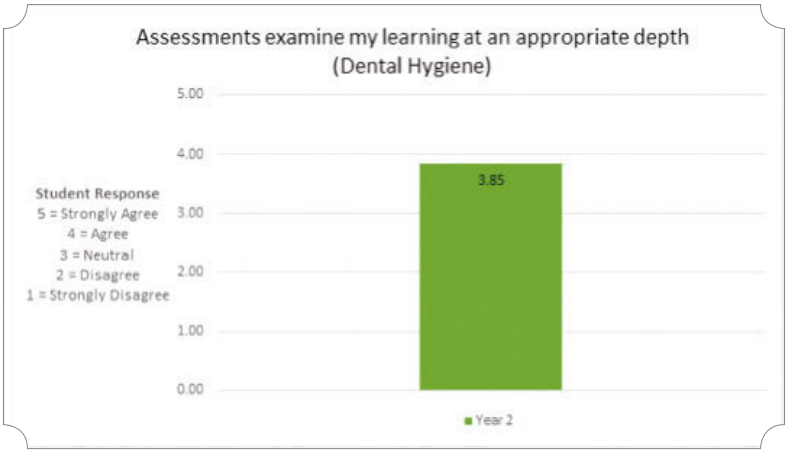
Assessments are an Appropriate Gauge for Achievement

Students were asked to rate their sense of challenge for both programs on a 5 point scale. When asked about ability to adequately prepare for assessments, average student responses ranged from 3.5 to 3.9, with the highest average (3.9) in Dental Hygiene.






I am able to adequately prepare for assessments
(Dental Hygiene)
5.00
4.00
3.00
2.00
1.00
0.00
Student Response
5 = Strongly Agree
4 = Agree
3 = Neutral
2 = Disagree
1 = Strongly Disagree
3.9
Year 2


Assessments examine my learning at an appropriate depth
(Dental Hygiene)
5.00
4.00
3.00
2.00
1.00
0.00
Student Response
5 = Strongly Agree
4 = Agree
3 = Neutral
2 = Disagree
1 = Strongly Disagree
3.85
Year 2

DDS Year 1

There were too many assessments in Operative, it was difficult to keep up.

Some exams tested exact recall and that felt unfair.

DDS Year 2

Some assessments are completed the same day we learn a new technique, that doesn't seem fair.

In some courses the requirements for testing is not made clear.

I would prefer to be assessed on my technique rather than on the finished product.

Ortho and perio exams were not at an appropriate depth.

DDS Year 3

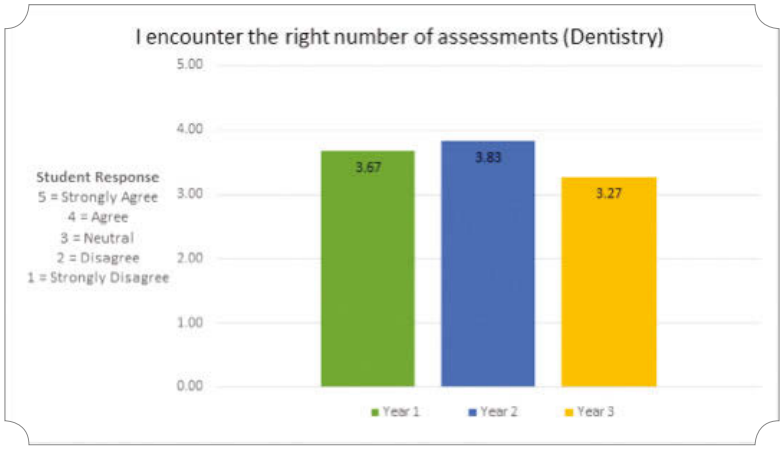
CCD grading is generally uninformative.

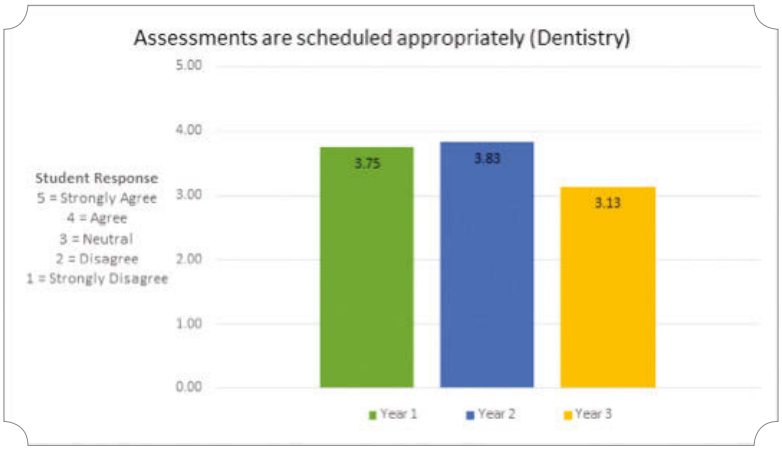
There are too many exams in a row. It makes it hard to prepare.

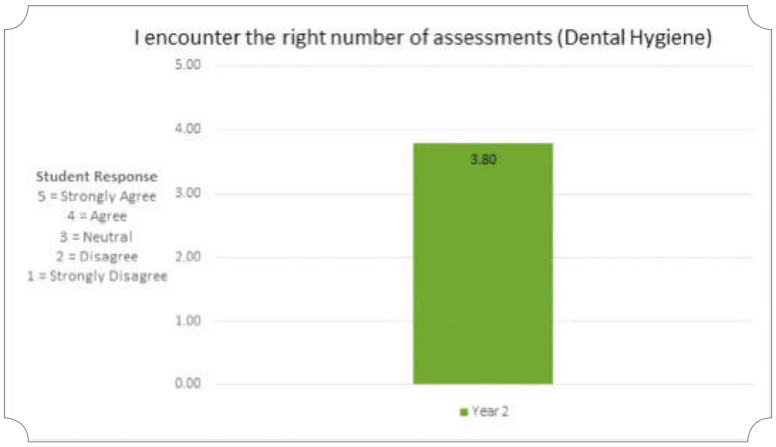
Dental Hygiene

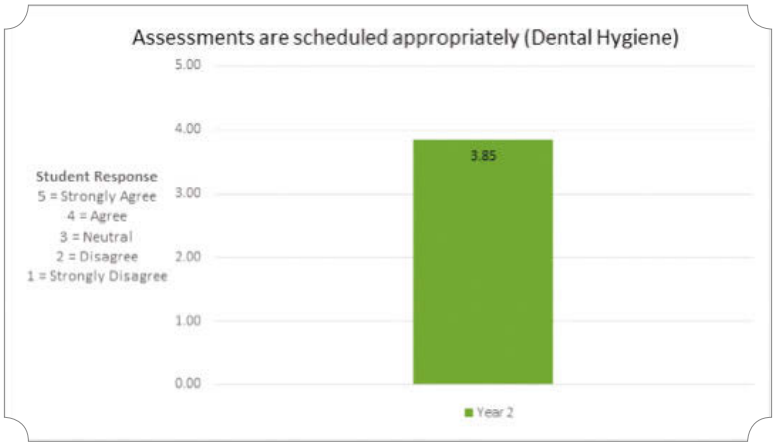
Sometimes it is difficult to know if you are progressing when each instructor grades differently.

Student Sense of Requirements and Scheduling




Assessments are scheduled appropriately (Dentistry)
5.00
4.00
3.00
2.00
1.00
0.00
Student Response
5 = Strongly Agree
4 = Agree
3 = Neutral
2 = Disagree
1 = Strongly Disagree
3.75
3.83
3.13
Year 1
Year 2
Year 3


I encounter the right number of assessments (Dental Hygiene)
5.00
4.00
3.00
2.00
1.00
0.00
Student Response
5 = Strongly Agree
4 = Agree
3 = Neutral
2 = Disagree
1 = Strongly Disagree
3.80
Year 2


Assessments are scheduled appropriately (Dental Hygiene)
5.00
4.00
3.00
2.00
1.00
0.00
Student Response
5 = Strongly Agree
4 = Agree
3 = Neutral
2 = Disagree
1 = Strongly Disagree
3.85
Year 2

Comments on Student Sense of Requirements and Scheduling

DDS Year 1

It is helpful when instructors are flexible with exams

In my opinion there are too many assessments

The more assessments, the better

The toughest exams between Medicine and Dentistry are often scheduled back to back

DDS Year 2

Need more timed lab assignments in Operative

There are instances where you write 10 exams in 5 days

Weekly assessments on top of our current schedule are difficult and unreasonable.

DDS Year 3

It would be good to have a challenging exam paired with an easier exam during scheduling.

Dental Hygiene

There are too many assessments in a short period of time.

Student Focus Group Feedback:

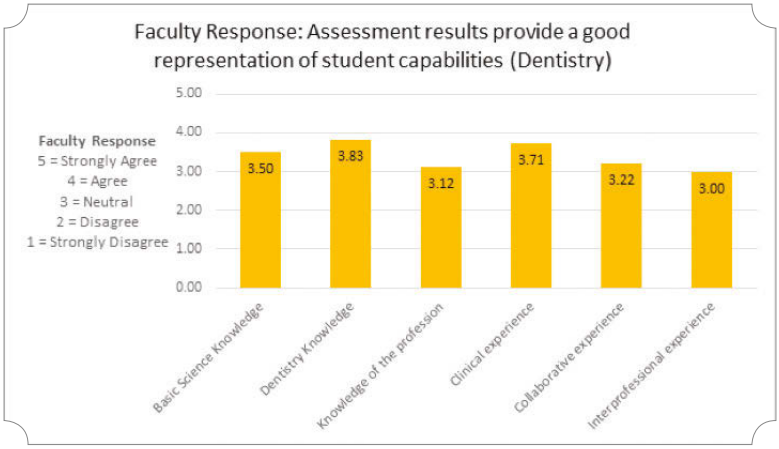
- Being marked in relation to each other creates unhealthy competition.
- It is challenging to face an assessment without knowing what is expected of you. I think a lack of clarity around what's important makes it hard to focus.
- It's more about balancing priorities. We are balancing patient care and exams right now. I want to be ready for the treatments I am doing, so I need to decide how much time I can invest in studying.
- When you have 15 exams you can't prepare well for any of them.
- Patient load is different for everyone so some people get an unfair experience at exam time. Balancing clinical responsibilities and exams can be very difficult and stressful.

Assessment Variety (DDS)

Dentistry Faculty was asked to share the ways that students were evaluated. The list below summarizes the responses provided.

- Written exams and quizzes (multiple choice, short answer)
- Daily clinical grading
- Reflective papers, small group presentations, debates
- Chart audits, progress reports
- Participation in seminars, patient experiences

- Clinical grading
- Laboratory assignments
- OSCE, clinical competency

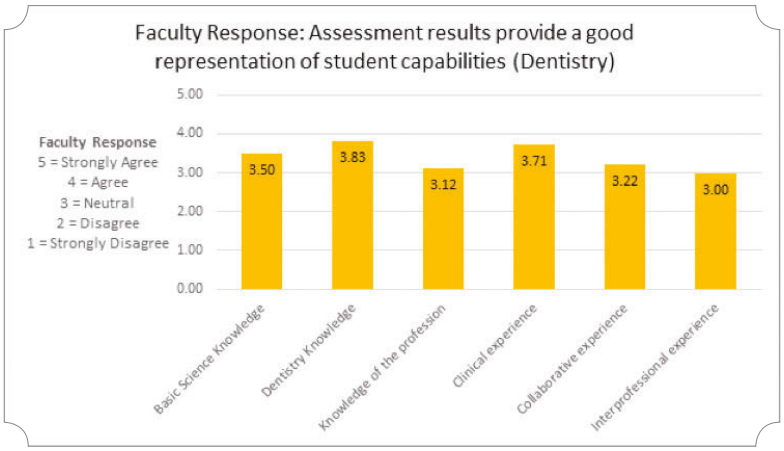


In response to the question, "How can assessment be improved," the following suggestions were provided:

- Instructor calibration has improved clinical grading.
- Some didactic assessment is not rigorous enough, and some is too rigorous.
- Sufficient practice time should precede summative assessments.
- More time with each individual student would improve this.
- The focus should be on practical competency and additional assessment should be related in the form of case reports and presentations, lit reviews related to the case that is being investigated, attendance at seminars given by specialists, etc.
- AXIUM is not an effective assessment tool.

Competency Evaluation

DDS Faculty were asked to share their perspective on competency assessment within the program. They indicated their agreement around the clarity and standardization of assessment, the adequacy of formative feedback and the opportunities available for self-assessment.



DDS Faculty were asked to indicate their agreement with the statements outlined below.

- 45% agreed with the statement,'Competency is measured in a clearly communicated and standard method for all students', a rated average of 3.3 (as indicated in the chart above).
- 67% agreed with the statement, Students receive adequate performance feedback through formative assessment to help them gauge their progress through the program, a rated average of 3.7.
- 41% agreed with the statement, 'Through the program students have adequate opportunities to reflect upon and self assess their developing competency' a rated average of 3.28.

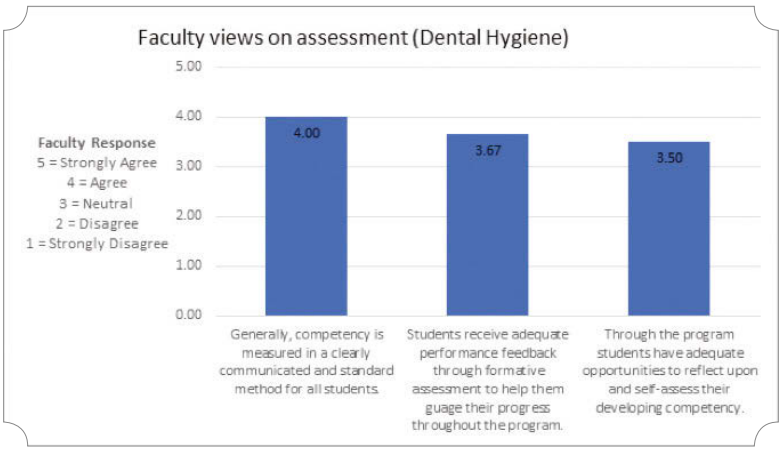
Faculty Focus Group Comments related to competency evaluation:

Doctor of Dental Surgery (DDS):

- Competency evaluation should be pass/fail with critical errors defined.
- 2 competency assessments, 2 months apart to provide an indication of improvement would be beneficial.
- Begin competencies in DDS I to identify struggling students early.
- Many of our methods do not really measure competency. We also do not really know how to use daily clinical grades to assess competency and let students know the level of competency they are performing at.
- Improvement is a course dependent question and is linked to the treatment philosophy of the discipline in question. In perio our focus is on patient management rather than technique because this emphasis positively supports the changes in practice needed in the field. We have this responsibility.

- A competency measure provided to students prior to movement to the CCD is logical.

**These are the responses for classroom instruction only. Data for preclinical and clinical courses are also available.*



Dental Hygiene (DH):

- Use of well-established evaluation tools based in competency would improve this.
- Students receive too much assessment in their pre-clinical and clinical learning. We stress them out in the exams/PE's to see what they can do when we know that stress has a profoundly negative impact.

Performance Feedback

Faculty Focus Group Comments related to performance feedback:

Doctor of Dental Surgery (DDS):

- Feedback is not always sought due to time limitations. It is not currently a requirement, but it should be.
- We need to document formative feedback more carefully. When students are told they have failed a component, they are still shocked and say they were never told they weren't doing well enough.
- Every day in the clinic includes lots of formative feedback.
- Mentorship is critical to this, and is very hard to come by once students leave the program. Good mentorship would develop a significant level of trust and relationship with students. Giving feedback is important, but teaching students to self-assess is more important.

Dental Hygiene (DH):

- Verbal, formative feedback can be difficult when clinics are busy. When feedback comes at the end of the clinic with grading and debrief, the learning potential is minimized.
- There is less chance for formative assessment in the classroom, it would increase in small group or discovery learning approaches.

Self-Assessment (DDS | DH)

Faculty Focus Group Comments related to self-assessment:

Doctor of Dental Surgery (DDS):

- This is easier to do in a lab setting, difficult within a busy clinical environment.
- Student openness to question themselves is important to develop. It could be modeled through staff humility.
- This could be done through a grading rubric. The student and instructor should both fill it out. When discrepancies exist, a feedback session could be set up.

Dental Hygiene (DH):

- Students are given adequate opportunity, but the quality of the self-reflections needs to improve4
- Assessment approaches are always questioned as students consider the factors at play for each patient.

Dental Hygiene faculty focus group comments:

- Grading until the very end develops a negative consequence in that they still feel very dependent upon us. And then two months later, they're expected to go to private practice, practice without an instructor, and then say, "Well, I am not confident to give a local anesthetic. There's no instructor watching me.
- One of the things the program then needs to look at also is recognizing the importance of self-assessment to practice. So once they leave here, they're able to practice, that

4 **The need for reflective judgment has been identified as an essential component for developing self-directed learning skills in students, which in turn is important in developing problem solving skills.** *See* **Hendricson, William D, et al. "Educational Strategies Associated With Development Of Problem-Solving, Critical Thinking, And Self-Directed Learning." Journal Of Dental Education 70.9 (2006): 925-936. MEDLINE. Web. 13 May 2015.**

we know that we need to develop their ability to be honestly being able to self-assess their own work.5

Summative Assessment (DDS)

Dentistry Faculty responded to the question, 'The number and frequency of summative assessments has been identified as a highly stressful aspect of the program. How can this best be remedied?' Their recommendations are as follows:

- Provide more guidance, including education in professional assessment.
- Increase the minimum number of clinical experiences.
- Cumulative exams with multidisciplinary questions for better prep for boards.
- Why remedy this? This is not incongruent with the clinical delivery of dentistry.
- More assessments with less weight may minimize the stress of larger assessments.
- Combine courses.
- The goal of the program is to produce new general dentists and our assessment processes currently hinder this. We should remove unnecessary structure and give more authority to CCD faculty to determine student competence. Our current methods of assessment do not account for 'student character', is may be relevant to consider if this establishes a risk to the profession.
- Can we get around this requirement? Can we schedule exams more carefully?

5 **A study from the UK found that student self-assessments not only had a high reliability rating, such types of assessment can promote higher student engagement which could potentially translate to higher active learning.** *See* **Stefani, L. (1994). Peer, self and tutor assessment: Relative reliabilities. Studies in Higher Education, 19(1), 69-75. doi:10.1080/03075079412331382153**

Questions for Consideration

Are the guiding principles sufficient to address the challenges in this area?

Should assessment experiences reflect and model professional requirements and standards within the occupation?

Can assessment experiences be designed to lead to optimized student learning?

Summary

There was general agreement that concrete knowledge requirements are assessed appropriately, but less concrete areas of focus like professionalism and collaboration may not be adequately assessed.

Students indicated that assessment requirements and scheduling are challenging.

Comments and ratings indicated that structures and methods for competency assessment are challenging to administer, questioned by students and may not provide students the feedback they require for consistent development.

Faculty suggestions for improvements such as combining assessments into a few major assessments that are reflective of Board exams and replacing midterms and finals with continual, low-weight assessments. It was also suggested that the level of difficulty of assessments be reviewed, with a focus on aligning with program competency/outcome requirements.

Around competency assessment, some of the suggestions included: begin early (DDS 1), assess competency in 2 month intervals, require more patient experiences, use well-established evaluation tools, and simplify the structure to provide CCD faculty more authority.

The guiding principles that may establish direction for improvements in this area are:

- **Assessment:** Assessments practices will align with competencies and be transparent to students.
- **Assessment:** Assessments will follow the School's overarching assessment philosophy and be created and implemented within a consistent framework to ensure fair and reliable grading.
- **Assessment:** Remediation opportunities will be available in each course.
- **Assessment:** Assessments strategies will span a spectrum of activities including: informal/formal feedback, formative and summative, self-assessment, peer evaluation, and reflection.
- **Assessment:** Clinical requirements are the responsibility of the School to provide for students and specific numbers of procedures are not tied to a grading scale based on numbers performed.
- **Assessment:** All assessments will not only assess individual course performance but also be designed as part of a global assessment plan for the program to ensure students meet the overarching core competencies.

DELIVERY

Overview

This section outlines delivery methods that are preferred by students and faculty members through the program.

While student comments provided an indication that they are challenged by the way that some courses are organized and delivered, faculty comments provided a strong indication that many active learning strategies are currently in use.

Faculty members indicated interest in testing out more active delivery methods. They indicated that a rigorous schedule and limited time between class groups limits the extent of change they can implement.

The extent to which technology is used to support delivery varied throughout the department. Some faculty members reported use of online testing, video demonstrations, online simulations and podcasts as part of their classes. Use of technology was limited by each faculty member's comfort with the tools and by the time that development of technology resources requires.

Doctor of Dental Surgery (DDS):

Having visual (picture and video) resources improved student content comprehension for physical structures and helped students prep for clinics.

Students reported higher comprehension in courses such as Operative, Head and Neck, Oral Biology, and Local Anesthesia, and Endodontics.

Students reported lower comprehension in courses such as Endocrine System, Preventative Dentistry, Cardiovascular, and Renal.

Students want more clinical and laboratory time - especially in Year 1 - and less lecture time, as well as more flexible delivery (online instruction) and more discovery and group learning.

Faculty said they thought lecture time was valuable, but also supported increased discovery learning and group learning if moderated effectively.

Faculty rated clinical cases, simulation learning, and clinical learning as being very important.

The vast majority (88-98%) of faculty felt that discovery learning, group learning, and clinical learning were effective methods for engaging students and for optimizing skill transfer.

Dental Hygiene (DH):

Students reported high comprehension levels as well as concerns regarding comprehension in Pre-clinical Dental Hygiene and Hygiene Theory courses.

Faculty responses were mixed when asked if lectures were effective in supporting student engagement.

A majority (69-75%) of faculty felt that discovery learning, group learning, and clinical learning were effective methods for engaging students and for optimizing skill transfer.

Students: How I learn Best

This section incorporates students feedback on the courses where they find their comprehension is highest, lowest, and most developed laboratory skills. They also share their preferred learning methods.

High Comprehension as Reported by Students

While methods of delivery may not be the only factor that leads to student comprehension, strong delivery methods help to support effective learning. Students identified the courses where they experienced a high sense of comprehension and provide additional comments on the experiences that supported their learning.

Doctor of Dental Surgery (DDS):

YEAR 1		YEAR 2		YEAR 3		
DDS 509-3: Operative	57%	DDS 529-7: Local Anesthesia	61%	DDS 545-6: Endodontics	59%	59%
DDS 509-8: Head and Neck Anatomy I	48%	DDS 529-14: Head and Neck Anatomy II	55%	DDS 545-1: Advanced Oral Surgery	32%	59%
DDS 518: Oral Biology I	48%	DDS 529-12: Radiology	30%			50%
DMED 512: Infection, Inflammation, and Immunity	43%	DDS 529-5: Fixed Prosthodontics	30%			
DDS 514: Dental Anatomy	43%	DDS 529-13: Removable Partial Dentures	30%			
Total Responses: 21		Total Responses: 33		Total Responses: 22		

Comments from DDS students who participated in focus groups:

Dental Hygiene (DH):

YEAR 1	
D HYG 212: Preclinical Dental Hygiene	59%
D HYG 209: Dental Hygiene Theory III	59%
D HYG 207: Dental Hygiene Theory I	50%
Total Responses: 22	

Comments from DDS students who participated in focus groups:

- When the course is presented using visuals, like Head and Neck and you can learn by looking.
- The structure of the presentation really matters. When powerpoints are well sequenced it makes it easier to get the message.
- Some courses have very good resources that help a lot.
- I know the subjects are complex but the manner of delivery was simplified. Easy vocabulary and straightforward presentation was helpful.
- It is important for our instructors to see themselves as teachers.
- Head and Neck Anatomy II included a review of the first year and it was after taking neuroscience club and we all came out with a lot of confidence and understanding. We didn't just memorize, we understood it.
- Videos help us to understand the processes.

Low Comprehension as Reported by Students

Students were asked to rate courses based on the level of comprehension:

Doctor of Dental Surgery (DDS):

YEAR 1		YEAR 2		YEAR 3	
DMED 513: Endocrine System	67%	DDS 529-1: Complete Denture Prosthodontics	45%	DDS 545-13: Orthodontics	36%
DDS 509-4: Preventive Dentistry	57%	DDS 529-10: Periodontics	42%	DDS 545-3: Comprehensive Care Delivery I	27%
DMED 514(c): Cardiovascular	52%			DDS 545-17: Removable Prosthodontics	27%
DMED 514(r): Renal	43%			DDS 555: Practice Management	27%
Total Responses: 21		Total Responses: 33		Total Responses: 22	

Dental Hygiene (DH):

YEAR 1

D HYG 212: Pre-clinical Dental Hygiene	59%
D HYG 209: Dental Hygiene Theory III	59%
D HYG 207: Dental Hygiene Theory I	50%

Total Responses: 22

- Delivery of the course can be too sophisticated, and we need to work hard to make sense of what someone really said.
- My low confidence comes from having a hard time identifying what I learned within a course.
- I recognize how much there is to know within a subject-area, and I don't feel like I know enough yet.
- When we are taken out of portions of med-block courses and don't have the same learning experience as the medicine students, we wouldn't know the same things as they did and some learning would be hard to decipher.
- Our discovery learning sections should be on dental cases, we will never need to diagnose, our focus should be different.
- I didn't think I knew much after completing Complete Dentures. There was so much to learn and I found it confusing. It wasn't until I was doing cases in clinic that I realized that I remembered it. I have more appreciation for the way it was taught and laid out.
- If we could understand this will be our experience, it may get easier, because the sense of confusion is overwhelming and it's easy to stop listening.
- It was better to have more time for Complete Dentures and keeping up with the material improved when it was moved to the fall.
- In RPD I am finding that I can rely on learning from Dentures to help me interpret new information.
- I wanted a more concrete experience in Practice Management. The course had very little time dedicated to it, and I feel it was so important, but our presentations gave us ideas, but didn't provide a lot of clear direction. It would have been good to get an understanding of the most important things to do in our first year out, our second year and so on.
- For Endocrine and Cardio, we didn't see the relevance, so it didn't feel important to invest time to learn (Year 1 student comment). We found out later that it was really important to know, and we were sorry we didn't work harder when we could have. (Year 3 student comment).

High Confidence in Clinical Skills

Students were asked to review a list of their laboratory and clinical experiences and rank them on a 5-point scale according to the level of confidence they felt. The lists below present student experiences that ranked most highly.

Doctor of Dental Surgery (DDS):

YEAR 1 (AVG. RANKING)		YEAR 2 (AVG. RANKING)		YEAR 3 (AVG. RANKING)	
DDS 509-3: Operative	2.86	DDS 529-7: Local Anesthesia	1.58	DDS 545-11: Operative	3.27
DDS 509-7: Clinical Skills	3.33	DDS 529-8: Operative	2.53	DDS 545-3: Comprehensive Care Delivery I	4.71
DDS 514: Dental Anatomy	3.76	DDS 529-10: Periodontics	4.73	DDS 545-12: Oral Surgery	5.57
		DDS 529-5: Fixed Prosthodontics	4.77	DDS 545-16: Radiology	5.60
Total Responses: 21		Total Responses: 33		Total Responses: 18	

Dental Hygiene (DH):

YEAR 1 (AVG. RANKING)	
D HYG 212: Pre-clinical Dental Hygiene	1.24
D HYG 213: Dental Hygiene Practice I	2.10
D HYG 240: Radiology	2.57
Total Responses: 22	

Comments from DDS students in Focus Group:

- In RPD every clinical procedure has a powerpoint associated to it and before your appointment you can use the powerpoint and the manual to help you feel well prepared for the procedure.
- When we get to clinic the instructors don't always know what to expect from us. They expect us to know things that we haven't been taught yet. It would be nice if the instructors we encounter through the program understand what we know, and don't know.
- We spend a lot of laboratory time doing some procedures over and over, and there are some things that we just don't see enough. Just to be clear, there is no skill that we practice too many times.

Preferred Learning Methods

Students were asked to reflect on the way their learning experiences broke down between the areas identified below and identify how they would adjust the amount of time dedicated to each type of learning.

	YEAR 1	YEAR 2	YEAR 3	DENTAL HYGIENE
Practical (Simulation or Radiology Lab)	More	More	More	More
Practical (Clinic)	More	More	More	More
Interactive or Small Group Learning Activities	More	More	Less	Same
Review of Clinical Cases	More	More	Less	Same
Online Learning	Less	More	More	--
Discovery Learning	Less	Less	Less	--
Lecture	Less	Less	Less	Less

Across the program students identified an interest to increase time in laboratory and clinical learning experiences (up to 50% in Year 1, 50% in Year 2 and 70% in Year 3). In each year, students suggested a decrease in lecture time, but they have still identified lecture time as filling up to 20% of program time.

DDS Students in focus groups were asked to share 'when they learn most effectively':

- When the learning support I receive is positive in nature.
- When I have enough time and I'm not sleep-deprived.
- When I have lots of small assignments and quizzes, but if that were the case for all courses I would have too much work and be overwhelmed.

Doctor of Dental Surgery (DDS):

YEAR 1

More clinical and laboratory experiences in Year 1: This could include shadowing and assisting would have been valuable. When I am primed with information during lecture, then get to practice what was discussed, I learn better and I am more confident in my professionalism. Psychomotor skills would improve more quickly and retention of information would be better.

Discovery learning would be great if applied to dental cases. I found it time consuming and I thought I learned better in small group learning activities because they are more structured and focused. I spent time confused in a DL learning session where the group did not hit the major points they needed to. (Year 2 student commenting on their Year 1 experience)

Review of clinical cases is valuable. It would be good to see more realistic situations and gain more practical knowledge. (Year 3 student commenting on experiences in Years 1 and 2) More review of clinical cases would help us to prepare for actual clinical situations and make us think on our feet a little more, and facilitate more in-class learning.

YEAR 2

Too much lecture time and limited opportunity to integrate learning in the laboratory causes our practical skills to deteriorate.

Online learning would allow us more flexibility for when we can do our learning. I like being able to build my school schedule with other important things in my life in mind. It would be efficient for professors to record lectures.

YEAR 3

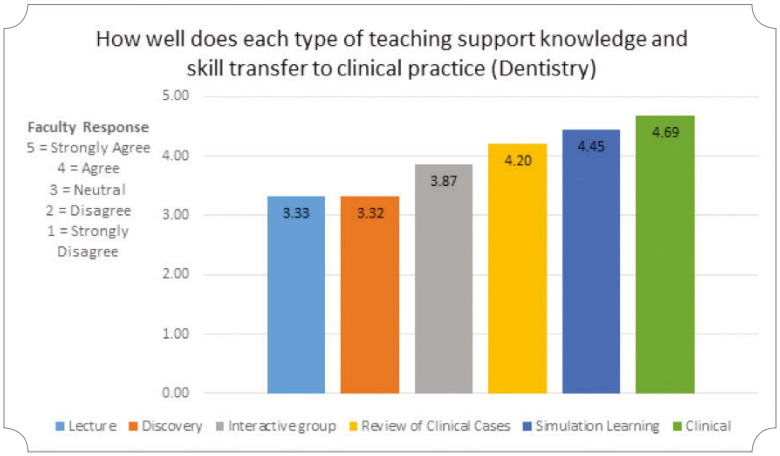
Small group learning could allow more ability to ask questions and compare notes with classmates. I would spend less time on my own figuring things out.

Faculty Perspectives

The Faculty indicated their perception of the effectiveness of a number of the instructional delivery methods used throughout the program. This section presents the perceptions that Faculty have around each delivery method, the types of experiences they have had and provides insight into the steps that are currently taken to maximize effectiveness.

Effectiveness of Delivery Methods

The graphs below provide rated averages of Faculty responses to the question, 'How well does each type of teaching support knowledge and skill transfer to clinical practice?'



LECTURE

The Dentistry Faculty indicated the effectiveness of lectures towards supporting student engagement, optimizing learning and supporting knowledge transfer to practice. 25% viewed lectures as an effective means of student engagement, 52% indicated that lectures were effective for optimizing student learning and 48% indicated that lectures supported transfer of knowledge and skill to clinical practice. Approximately 50% of respondents (32) indicated that discovery learning was effective to engage, optimize and support skill transfer.

Summary of DDS faculty comments:

- A good lecture is worthwhile. Lectures are necessary to provide structure and context that should be followed by clinical experience and mentorship.
- Student attendance is declining. Lectures are passive and students are minimally engaged. They can prefer this method because it's easier and comfortable.
- Lecture information can be made available through other sources, class time can be used to apply knowledge in case or small group discussions.
- My PowerPoints were just on and on. I'm moving away from that. You have to do some lecture, but you can move more towards case-based seminars. Maybe actually bringing in real patients and that sort of thing. My colleague's busy looking at using the technology for different types of videos and things that we normally do.

DISCOVERY

The Dentistry Faculty was asked to indicate the effectiveness of discovery learning towards supporting student engagement, optimizing learning and supporting knowledge transfer to practice.

Summary of DDS faculty comments:

- When discovery learning is well structured, facilitated by a good preceptor and taps into student's interests, it is effective. Otherwise it can be a disaster.
- The basic principles can be taught through discovery learning but clinical experience is more effective.
- The students aren't used to it. It takes work.
- This happens naturally through mentorship in the clinic. It doesn't make sense to try to separate it out.
- Discovery learning is inefficient. There should be some method that supports students to learn how to learn on their own, but it shouldn't be overly used.
- This is a good method for developing diagnosis and problem-solving skills. It is not effective for developing manual skills.

INTERACTIVE GROUP

The Dentistry Faculty was asked to indicate the effectiveness of interactive, small-group learning towards supporting student engagement, optimizing learning and supporting knowledge transfer to practice. Approximately 72% of respondents (32) indicated their agreement that interactive, small-group learning was effective to engage, optimize and support skill transfer.

Summary of DDS faculty comments:

- Small group learning supports dialogue and encourages students to read and reflect more deeply.
- Small group learning is an effective means to consider the clinical problems our patients have.
- Small group learning is most effective when students are also gaining experiences in the clinic or laboratory.
- The effectiveness of this method is dependent upon the seminar leader's effectiveness.
- Some consideration needs to be given to establishing alignment between specialists and CCD instructors for this method to be most effective. The chance of misinformation may increase.

REVIEW OF CLINICAL CASES

The Dentistry Faculty was asked to indicate the effectiveness of review of clinical cases towards supporting student engagement, optimizing learning and supporting knowledge transfer to practice. Approximately 88% of respondents (32) indicated that review of clinical cases was effective to engage, optimize and support skill transfer.

Summary of DDS faculty comments:

- Review of clinical cases can bridge the gap between theory and clinical. This is engaging for students.
- This approach supports problem-solving skills.
- We need to be careful not to bury students in cases to present. They should only be required to do one per term.
- Brings concepts together and brings disciplines together.

Dentistry Faculty Focus Group:

- When you tell them war stories that are actual clinical cases, they pay attention. They listen. They're completely engaged. So we should always have in our minds, in all four years of the program, to try and knit the experience together for them.

SIMULATION LEARNING

The Dentistry Faculty was asked to indicate the effectiveness of review of simulation learning towards supporting student engagement, optimizing learning and supporting knowledge transfer to practice. Approximately 94% of respondents (32) indicated that simulation learning was effective to engage, optimize and support skill transfer.

Summary of DDS faculty comments:

- This is effective when it can be as authentic as possible.
- This is invaluable in the first 2.5 years but it does not replace clinical experiences.
- Simulation learning cannot stand alone, it needs to be supplemented with lectures and seminars.
- Dentistry faculty focus group comment: "I think a major problem we have in our program is the lack of opportunity for skill development in the simulation lab which is a function of not enough time there because of combining two med and dental curriculums. That's significant. They're all bright, most of them have very little problem to try to memorize a book and they could, but they can't do some simple procedures. Our approach is unfair to them, because they can get there.

CLINICAL

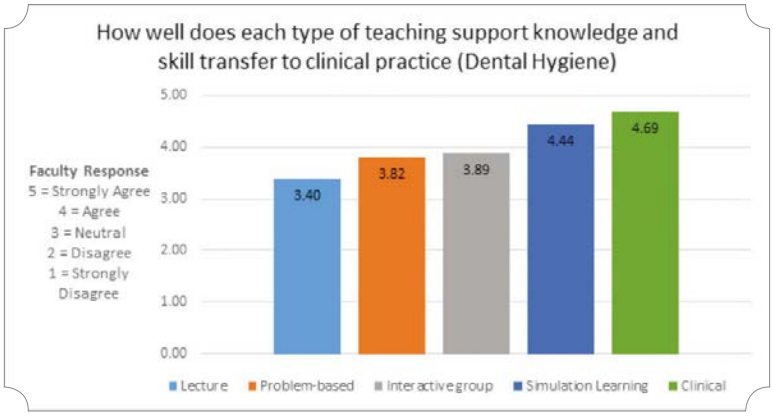
The Dentistry Faculty was asked to indicate the effectiveness of clinical learning towards supporting student engagement, optimizing learning and supporting knowledge transfer to practice. Approximately 98% of respondents (32) indicated that clinical learning was effective to engage, optimize and support skill transfer.

Summary of DDS faculty survey comments:

- They are motivated by patient-cases.
- This is a good way to learn when mentorship is available.
- They do very well in clinical when we give them the space to self-monitor and take on more responsibility over time.

Dentistry faculty focus group comment:

- I agree with having more earlier clinical or laboratory experiences because I'm a graduate of that time, where we came in and we did operative dentistry our first month of our first dental year. I do agree. I think hand skills really take a long time to develop, and they really need to be there more.



LECTURE

The Dental Hygiene Faculty was asked to indicate the effectiveness of lectures towards supporting student engagement, optimizing learning and supporting knowledge transfer to practice. 23% viewed lectures as an effective means of student engagement, 31% indicated that lectures were effective for optimizing student learning and 38% indicated that lectures supported transfer of knowledge and skill to clinical practice.

Summary of faculty comments:

- Lectures provide the content or declarative knowledge that supports a student's understanding but developing clinical skills can only be achieved through experience.
- Lecturing does not maximize student engagement. We talk, they listen.

DISCOVERY

The Dental Hygiene Faculty was asked to indicate the effectiveness of problem-based learning towards supporting student engagement, optimizing learning and supporting knowledge transfer to practice.

Comments are summarized

- Problem-based learning can be a way to transfer knowledge, but not the only way.
- Depending on the problem, certain fundamental knowledge may not be developed.
- This should support problem solving and maintain student engagement.

INTERACTIVE GROUP

The Dental Hygiene Faculty was asked to indicate the effectiveness of interactive, small-group learning towards supporting student engagement, optimizing learning and supporting knowledge transfer to practice. Approximately 64% of respondents (11) indicated that interactive, small-group learning was effective to engage, optimize and support skill transfer.

Comments are summarized

- This would only work for certain classes or subjects, specifically clinic.

SIMULATION LEARNING

The Dental Hygiene Faculty was asked to indicate the effectiveness of review of simulation learning towards supporting student engagement, optimizing learning and supporting knowledge transfer to practice. Approximately 75% of respondents (13) indicated that simulation learning was effective to engage, optimize and support skill transfer.

- If simulations are authentic and appropriately designed with clear objectives, it can be effective.

CLINICAL

The Dental Hygiene Faculty was asked to indicate the effectiveness of clinical learning towards supporting student engagement, optimizing learning and supporting knowledge transfer to practice. Approximately 69% of respondents (13) indicated that clinical learning was effective to engage, optimize and support skill transfer.

Active Learning Methods that are Successfully Used

The Faculty provided examples of the types of active learning methods they employed successfully and suggestions for future instruction. Following is a summarized list of the strategies identified.

Doctor of Dental Surgery (DDS):

- Focus on providing experiences that reinforce learning in different ways: hear, see, do, and if possible, teach.
- Learning in lectures followed by practical application in labs.
- One-on-one clinical case presentations with the instructor.
- Interactive clinical case lectures.

- Presentations from practitioners who are current.
- Debates over controversial topics and discussion of real-life scenarios.
- Feedback and routine testing.
- Online interactive exercises.

Ideas for future instructions:

- It may be a good idea to deconstruct 'siloed' instruction and develop a pod of lectures with a multidisciplinary approach. Fundamental concepts could be outlined and learning can be enhanced with practical cases.
- POD meetings.
- Create re-usable, digital learning objects that allow students to learn independently.
- Integrate flipped classroom structure.
- We need to change the way we think and go outside our comfort zone. We need to collaborate across disciplines to create super courses that emulate patient care (once students have a basic foundation).

Dental Hygiene (DH):

- Pairing gifted students with struggling students in learning pods within pre-clinic.
- Use a flipped classroom model to improve opportunities for discussion.
- Use group work and case discussions to improve engagement in lectures.

What makes active learning strategies challenging to implement?

The Faculty was asked to identify the barriers that limited their use of active learning strategies. Following is a summarized list.

Doctor of Dental Surgery (DDS):

- Students need to be prepared for discussions. This can be difficult to achieve.
- Limited time with the students makes it difficult to cover content in the time available.
- Instructors need time to construct new resources. Teaching year round makes this difficult.
- Students may be less open to interactive learning because they feel time-crunched.
- Future: Allocate time properly across the curriculum.
- Future: Rethink what students really need to know at this level. Eliminate unnecessary content and provide more time to areas that need it.

Dental Hygiene (DH):

- Limited access to simulation lab.
- Students need to be curious and creative, spoon feeding needs to be minimized.
- Active learning consumes more time.
- Faculty need to be supported and trained.

Incorporating technology

The faculty was asked how they were currently using technology and to share their successes and barriers with technology. Responses are outlined below.

How technology is currently incorporated

Doctor of Dental Surgery (DDS):

- Students have access to an online library of videos.
- All lectures are vodcasted and posted for students to use for review.
- Electronic manual is provided to students.
- Interactive exercises in Moodle.
- 3D anatomy software.
- iClicker quizzes.
- Hands-on physical models.

Dental Hygiene:

- eClass, podcasts, slides posted, video clips, webinars and grade distribution.

Technology successes

Doctor of Dental Surgery (DDS):

- Providing students an online manual limits the time I need to demonstrate things in the lab and allows students to spend more time completing practical work.
- Students appreciate having access to the vodcasts and their marks have increased.
- Students appreciate having access to technology.

Dental Hygiene (DH):

- Students are more prepared for class and they like having lecture slides.
- Interactive quizzes
- Increased student interest

Barriers to using technology

Doctor of Dental Surgery (DDS):

- Students do not access the resources.
- Time and technical knowledge. I would like access to training courses to improve my personal skills.
- Student attendance at live lectures is down, possibly due to availability of vodcast lectures
- Availability of online storage, software costs and time to develop resources

Dental Hygiene (DH):

- Student distractions – internet browsing
- Student operating systems don't support the online activity
- Know-how: using quizzes and uploading videos
- Time to produce material
- My experience, and my students' experience level with technology
- Students are not accessing resources until just before the exam

Technology use

Summarized DDS focus group comments:

- I'm wondering about the balance of bringing the technology on podcast or extra online lectures into a course. Like having videos on how to take radiographs or having videos on how to do procedures. I think that's really neat and I think it's very good, because it helps them. We didn't have that, we had just a textbook to go to. I think it's a balance because it can't be overwhelming.
- I think this is very important, the balance here, because it's fun and it looks very good when we have a lot of technology-related methods. We then count sometimes too much on their home preparations and then we get some variation in the classroom, when we had a classroom that some of them did do the preparation and they are engaged and some of them just don't understand what we're talking about and they just lose the whole point. So there are important issues that should be traditionally brought to the students as lectures probably.

- In my course, some lectures were tied to the simulation lab. So by not coming to the lecture, they lost the information that we expected them to receive by the time you get to the simulation lab. By changing one piece, we lost control of the whole piece. If you want to use the technology, you have to use it properly and look at the big picture, rather than changing one piece and then we may lose the whole thing.
- I was at a teaching and learning event lecture workshop, and it was interesting because one of the people that was highlighted there basically said, "I've done this innovating flipping of the classroom and put vodcasts and webinars, et cetera, and students loved it," he said. And it was very well received but he did caveat. He said, "But I'm the only one in our whole department that does it." So it's fresh to them, it's new to them, and they can be engaged because not all of their courses are like that. And so if we all were doing that, then it wouldn't be innovative anymore. It wouldn't be engaging anymore because the novelty has worn off. So I do think that as a whole curriculum, we do have to identify where some of that innovative change is most applicable and most useful, but then also evaluate.

Blended Delivery (DH)

Year 4 (degree) dental hygiene students provided feedback on the blended nature of their course experience. Only 45% agreed with the statement 'Overall, I liked the way the 4th year program was structured with online and face-to-face courses.' The commentary below provides context.

- Online courses makes learning difficult. Internet access is not always available. Having 6 courses online was awful.
- The online course needed proper structure and some in-class activities with the instructor.
- It was hard to keep organized, focused and motivated for the online portion.
- It wasn't the easiest way to learn, but I got used to it.
- There were too many discussion forums and group assignments. I wanted more hands-on work.
- The online aspect allowed me to work at the same time. Online exams are great.
- Moving from 100% face-to-face classes to 80% online classes was a huge change. I was unprepared for the time, effort and management of the BSc program but after a while I became comfortable with the online work. Group work is challenging.

Questions for Consideration

Are the guiding principles identified above sufficient to support the requirements for change identified?

How might members of faculty be supported and challenged to adopt new approaches?

Summary

Students indicated appreciation for the steps taken by Faculty to share information in clear and meaningful ways. They valued direct and active experiences and were motivated when these experiences reinforced the concepts they were learning. Students indicated a preference for relevant and concrete learning.

Members of Faculty report experience and interest using more active learning strategies. They demonstrated a desire to make learning relevant and connect learning to occupational requirements and to the student's developing understanding. They reported using technology to support learning and identified 'careful' openness to further adoption of technology. Concerns ranged from the way online access may change student attendance habits to wanting to influence the way students access material to avoid last minute reviews and cramming.

Members of Faculty identified time, knowledge and experience as the predominant barriers that limited their willingness to shift delivery methods.

The following guiding principles serve to anchor challenges within this area:

- **Delivery:** Delivery of content to achieve learning outcomes is supported by a variety of teaching methodologies, including the use of learning technologies.
- **Delivery:** Learning technologies will be utilized to maximize efficiency and learning effectiveness relative to the learning outcomes.
- **Delivery:** Experiences outside of the school facilities will be fully integrated into the curriculum and enhance learning and achievement of competency.
- **Delivery:** Clinical education will follow the established principles of a comprehensive care model.

SUMMARY

This report, representing the data collected from surveys and focus groups related to the Doctor of Dental Surgery (DDS) and Dental Hygiene (DH) programs informs the goals for the programmatic level curriculum redesign.

The needs assessment is comprised of the data collected from the following activities:

- Surveys:
  - » Faculty
  - » Students
  - » Existing students
  - » DDS alumni
- Focus groups:
  - » DDS students
  - » DDS faculty
  - » DH faculty
  - » Administrators

Where it was identified that alignment existed between challenges and opportunities, references to articles that form part of the literature review were made.

A curriculum map, outlining the scope of currently documented program and course structures will supplement this report.

(Footnotes)

1 The issue of assignment overload is outlined by Gadbury-Amyot et al. who proposes that the implementation of a portfolio system can streamline dental education by reducing the need for instructors to add additional assignments, thus reducing student overload. Portfolios also can help develop better reflective judgement among students. *See* Gadbury-Amyot, C. C., McCracken, M. S., Woldt, J. L., & Brennan, R. (2012). Implementation of portfolio assessment of student competence in two dental school populations. *Journal Of Dental Education*, *76*(12), 1559-1571.

2 High levels of stress among Canadian dental school students has been studied by Elani, Bedos, and Allison. Through a qualitative examination, the authors found that exams and coursework, when combined with patient treatment, were the largest contributors of stress. The authors further noted students wanted preclinical work to be better balanced throughout semesters. *See* - Evans, J., Henderson, A., & Johnson, N. (2012). Interprofessional learning enhances knowledge of roles but is less able to shift attitudes: a case study from dental education. European Journal of Dental Education, *16*(4), 239-245. doi:10.1111/j.1600-0579.2012.00749.x

3 Dental students' lack of preparedness for clinical practice at the University of Alberta might be a due to not having clinical exposure earlier on in the program. Lanning, Wetzel, Baines, Ellen, and Byrne recommend that dental school provide student with patient care experience early on. See Lanning S, Wetzel A, Baines M, Ellen Byrne B. Evaluation of a revised curriculum: a four-year qualitative study of student perceptions. Journal Of Dental Education [serial online]. October 2012;76(10):1323-1333. Available from: MEDLINE, Ipswich, MA. Accessed May 19, 2015.

4 Student confusion surrounding the assessment methods in clinical situations might be solved by implemented not only more consistent assessments, but also by introducing a wider variety of assessment methods. Kramer et al. argue that the ADEA assessment toolbox could offer students a better variety of assessments throughout the program including short answers, structured essays, triple jump exercises, clinical exams, and oral exams. Implementing such an assessment strategy throughout the program could better prepare students for professional practice, the authors note. *See* Kramer, G., Albino, J., Andrieu, S., Hendricson, W., Henson, L., & Horn, B. et al. (2009). Dental Student Assessment Toolbox. Journal Of Dental Education, 73(1), 12-35.

ABOUT US

The School of Dentistry serves the well-being of society through pursuit of truth and knowledge (research), transmission of knowledge (education) and public service (community outreach).

OUR SCHOOL AT A GLANCE

VISION

Vital to the health of our communities.

FOUNDED

Dental education was instituted at the University of Alberta in 1917 in the School of Dentistry under the Faculty of Medicine. The first full degree program was offered in 1923.

CHAIR

Dr. Paul Major

ENROLLMENT (ADMISSIONS 2011)

Dental Hygiene – 42 / Doctor of Dental Surgery – 32 / Graduate Students – 31

ALUMNI

Dental Hygiene – 1733 (living) / Doctor of Dental Surgery – 2248 (living)

CLINICAL SERVICES

- patient-centered, quality oral health care in the Kaye Edmonton Clinic, and 3 satellite clinics in rural settings
- Glenrose Dental Clinic provides treatment for individuals who face physical challenges

PROGRAMS

Offering programs at the undergraduate, graduate, and postgraduate levels, through various academic programs:

- Doctor of Dental Surgery (DDS)
- Advanced Placement (DDS)
- Dental Hygiene Diploma (DHyg)
- BSc (Dental Hygiene Specialization) Degree
- Post Diploma Degree Completion BSc (Dental Hygiene Specialization)
- MSc and PhD degrees in Medical Sciences (Dentistry)
- MSc and PhD degrees in Medical Sciences (Oral Biology)
- MSc and PhD degrees in Medical Sciences (Orthodontics)

In addition the school:

- provides an opportunity for foreign exchange with Dresden Germany
- offers an elective one-year Postgraduate Residency in General Dentistry in Edmonton or Calgary
- offers a wide variety of continuing dental education opportunities

OUR LOCATIONS

KAYE EDMONTON CLINIC — 8th Floor, 11400 University Avenue

KATZ GROUP CENTRE FOR PHARMACY & HEALTH RESEARCH — 87 Avenue - 114 Street, 7-020H

EDMONTON CLINIC HEALTH ACADEMY — 5th Floor, 11405 - 87 Avenue NW

UNIVERSITY OF ALBERTA
FACULTY OF MEDICINE & DENTISTRY
School of Dentistry

School of Dentistry Guiding Principles v2.0

January 2016
Updated: January, 2017

Learning Pathway

1. Pre-entry knowledge, skills and attitudes expected of, and identified in entrants to the DDS/DH programs will prepare students for program learning expectations.
2. Courses, topics and learning experiences are sequenced specifically to prerequisite knowledge, skills and experiences.
3. Experiential learning and application occurs as closely timed to the didactic learning of that topic as possible.
4. Sufficient time is allocated and meaningfully sequenced for development of competency and to allow for students to participate in electives.
5. The program provides integrated learning experiences between DDS and MD, and DDS and DH students.
6. The program will be sequenced to prepare students to transition successfully into all clinic/patient care experiences.
7. Interprofessional* learning opportunities, especially between dentistry and dental hygiene, are integrated throughout the programs.

*Interprofessional Education occurs when two or more professions learn with, from and about each other to improve collaboration and the quality of care" CAIPE 2002

Student Experience

8. The student will have a humanistic experience (one that demonstrates concern for human welfare, values, dignity) aligned with prescribed educational standards and competencies.
9. Program design will be focused on student wellbeing, development, and growth, including strategies to address the complexities of stress and demand associated with becoming a dental professional.
10. The student experience shall include learning opportunities that are community-based and socially responsive.
11. Professionalism and ethical behaviour will be taught, modeled and expected throughout the program.
12. The rigorous student workload and assessment, will be transparent, mapped, sequenced, planned, and paced.

Content

13. The core dentistry curriculum will be competency and evidence based and designed to meet competencies for a beginning dental practitioner, as outlined in the ACFD Educational Framework for Development of Competency in Dental Programs 2015
14. The core dental hygiene curriculum will be competency and evidence based and designed to meet competencies for a beginning dental hygienist, as outlined in the Entry-to-Practice Competencies & Standards for Canadian Dental Hygienists.
15. Electives will be available to allow enhanced learning.
16. The School of Dentistry maintains full control of the content and sequencing of the topics and courses in the programs.
17. The curriculum will be designed for maximum relevant and safe patient experiences throughout the entire curriculum.
18. Biomedical and Foundational Sciences* will be vertically integrated, efficiently delivered and linked to relevance for dental practice.
19. Critical thinking and problem solving skills will be developed throughout the program.
20. Discipline content areas will become more integrated as the student progresses through the curriculum.
21. The curriculum will provide learning experiences that support development of leadership, scholarship, professionalism and social responsiveness.

*For the purpose of this document, biomedical and foundational science refers to all foundational science learning, and aligns with definitions provided in the ACFD Competency Framework.

Delivery

22. Teaching methodologies match learner needs as well as innovative educational practice.
23. Technologies are utilized to maximize efficiency and enable learning outcomes to be met.
24. The scheduling of the delivery of clinical experiences and patient care should maximize the capacity of the clinic/lab facilities, faculty and support staff.
25. Experiences outside of the school facilities (KEC, ECHA) will be integrated into the curriculum and enhance learning and achievement of competency.
26. Clinical education will follow the established principles of a patient-centred* and comprehensive care** model provided by competent students.

*Provision of care that is respectful of and responsive to individual patient preferences, needs, and values and ensuring that patient values guide all clinical decisions. (Institute of Medicine, 2001)

**...students should learn to provide patient care in a manner and setting similar to those found in an efficient dental*/dental hygiene* practice. The continuum of care learned by predoctoral students should be that provided by the general dentist*/dental hygienist* including [1] patient examination and evaluation; [2] diagnosis and treatment planning; [3] direct treatment for a range of common dental problems; [4] *collaboration with other dental personnel;* [5] referral to specialists. (Dental Education at the Crossroads, 1995)

Assessment

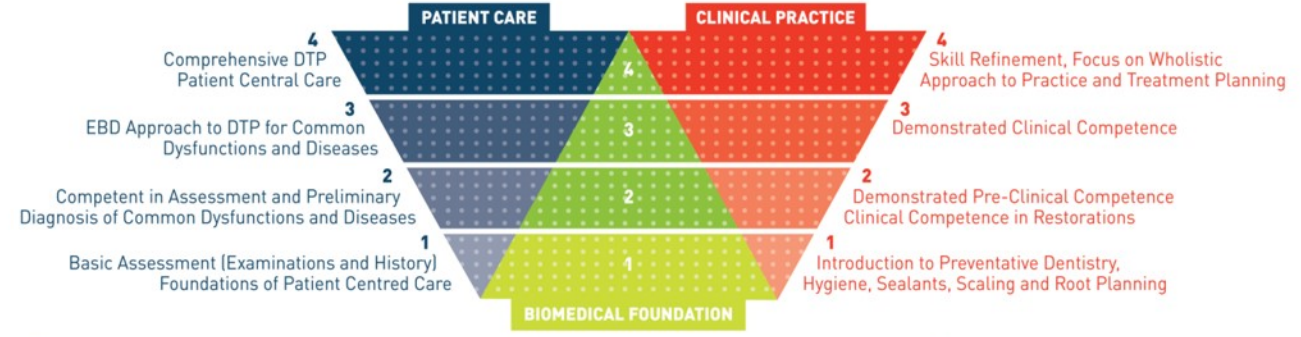
27. Assessments will follow the School's overarching assessment philosophy* and be created and implemented within a consistent framework to ensure fair, valid and reliable grading.
28. Assessment philosophy and practices will align with competencies, program and course outcomes as well as be transparent to students.
29. Formative feedback and remediation opportunities will be made available to students throughout the program.
30. Assessment strategies will span a spectrum of activities including: informal/formal feedback, formative and summative, self-assessment, peer evaluation, and reflection.
31. It is the School's responsibility to provide clinical experiences so that students have the opportunity to meet or exceed formative and summative competencies.
32. Individual assessment activities will contribute to a global assessment plan** for the program to ensure students will meet or exceed the overarching core competencies.

*A school-wide assessment philosophy would establish assessment standards that are applicable across the department. It does not currently exist.
**A global assessment plan would establish alignment between course-based assessments and program-level competencies. It does not currently exist.

NEEDS ASSESSMENT

GUIDING PRINCIPLES

A CURRICULUM FOR LEARNERS



PATIENT CARE
Progressive consideration of complexity, responsibility for patient experience

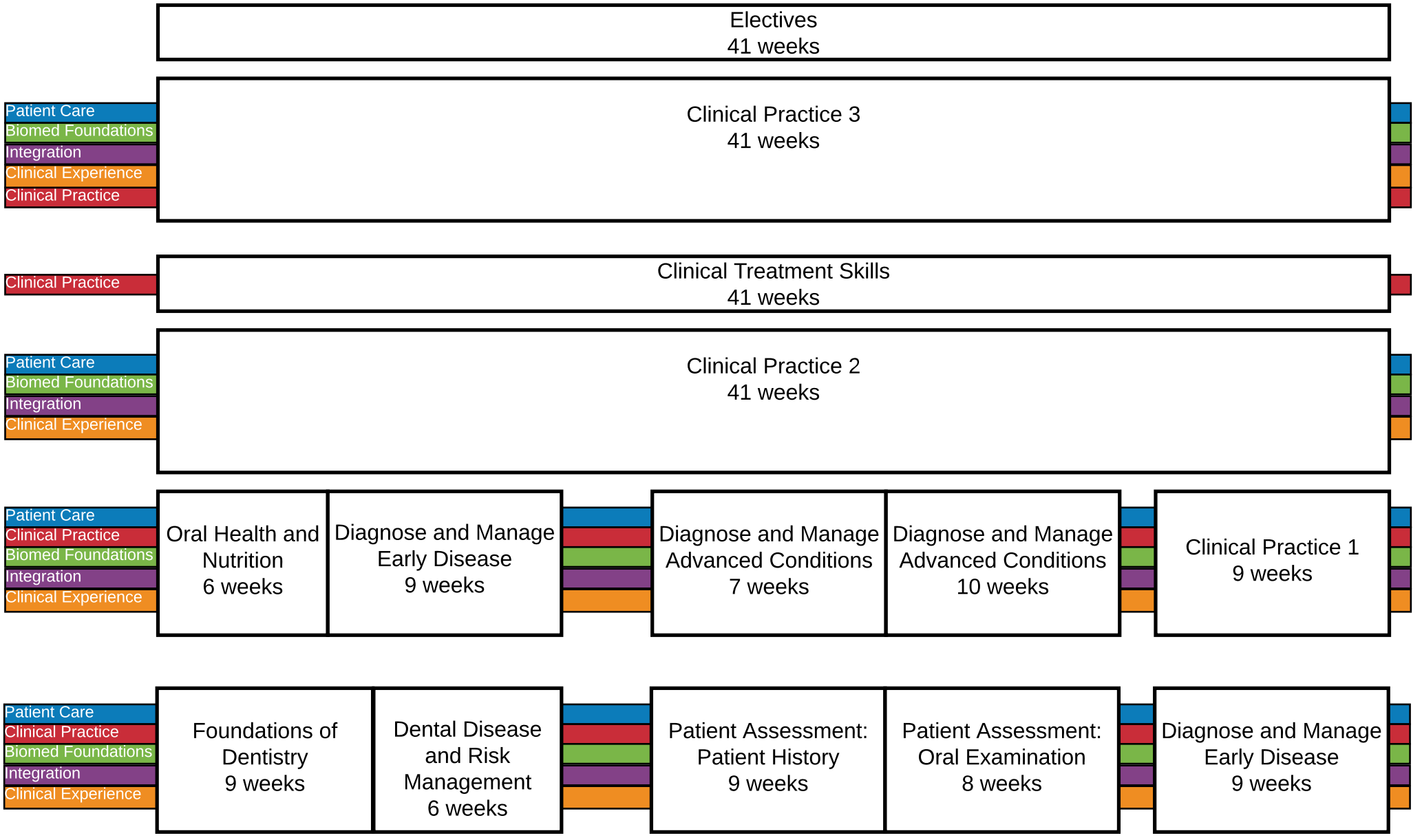
- Independent Diagnosis & Treatment Planning
- Patient Care
- Social Responsibility & Professionalism

BIOMEDICAL FOUNDATION
Develop understanding through exploration of patient cases

- Exploration
- Biomedical Foundations
- Social Responsibility & Professionalism

CLINICAL PRACTICE
Competence develops through all 4 years

- Electives & Practicums
- Clinical Practice
- Social Responsibility & Professionalism


Electives
41 weeks
Patient Care
Biomed Foundations
Integration
Clinical Experience
Clinical Practice
Clinical Practice 3
41 weeks
Clinical Practice
Clinical Treatment Skills
41 weeks
Patient Care
Biomed Foundations
Integration
Clinical Experience
Clinical Practice 2
41 weeks
Patient Care
Clinical Practice
Biomed Foundations
Integration
Clinical Experience
Oral Health and Nutrition
6 weeks
Diagnose and Manage Early Disease
9 weeks
Diagnose and Manage Advanced Conditions
7 weeks
Diagnose and Manage Advanced Conditions
10 weeks
Clinical Practice 1
9 weeks
Patient Care
Clinical Practice
Biomed Foundations
Integration
Clinical Experience
Foundations of Dentistry
9 weeks
Dental Disease and Risk Management
6 weeks
Patient Assessment: Patient History
9 weeks
Patient Assessment: Oral Examination
8 weeks
Diagnose and Manage Early Disease
9 weeks

Dr. Steven K. Patterson, B.Sc., D.D.S., M.P.H., F.I.C.D.
Associate Chair (Academic) & Professor
School of Dentistry, Faculty of Medicine & Dentistry
University of Alberta - Edmonton Clinic Health Academy
11405-87th Avenue, NW
Edmonton, Alberta, Canada T6G 1C9
Phone: (780) 492-8240
email: steven.patterson@ualberta.ca

Dear Dr. Patterson:

Please accept this letter of support in respect of the recent changes to the 4-year DDS curriculum to be inclusive of Indigenous Health Course content.

As you are aware, the Indigenous Health Course arises out of the collaborative work of the University of Alberta's Indigenous Health Working Group (IHWG) that was established shortly after the release of the Truth and Reconciliation Commission's (TRC) final report and 94 Calls to Action in 2015. Over the course of two years, the IHWG developed a comprehensive 12-module course that responds directly to TRC Call to Action #24 that states:

> We call upon medical and nursing schools in Canada to require all students to take a course dealing with Aboriginal health issues, including the history and legacy of residential schools, the *United Nations Declaration on the Rights of Indigenous Peoples*, Treaties and Aboriginal rights, and Indigenous teachings and practices. This will require skills-based training in intercultural competency, conflict resolution, human rights, and anti-racism.

We are pleased that the new Indigenous Health Course not only responds to this Call, but extends student learning and development into domains that deepen their understanding of the historical and structural manifestations that underpin the persistent gaps in the health outcomes experienced disproportionately by First Nation, Inuit, and Métis peoples. These are important considerations for all future healthcare professionals as the course will, in part, build student capacity through knowledge transmission to work safely and respectfully with Indigenous peoples from varying contexts and lived experiences. From a systems-perspective, an emerging body of medical professionals who have the knowledge and capacity to provide care more

effective and safe care to Indigenous patients is an important part of closing the gap in health outcomes and to improving the quality of life of Indigenous peoples throughout Canada.

At a more local level, the Indigenous Health Initiatives Program (IHIP), working in partnership with all five faculty programs, understands the significance of the Indigenous Health Course to prospective Indigenous students who seek to find a place for themselves in our programs by recognizing their lived experience, histories, perspectives and contributions in the work we do as a faculty. As the TRC (2015) and the Royal Commission on Aboriginal Peoples (1996) have made clear, there is a distinct imperative to make targeted and meaningful measures to foster greater engagement among Indigenous peoples in health professions if progress is to be made in closing the long-standing gaps in Indigenous health outcomes. We believe that the Indigenous Health Course is one such measure and will foster greater engagement by prospective Indigenous students in all health professions.

Through that lens, the Indigenous Health Course holds significant promise in meeting a number of important objectives including working to close persistent gaps in health outcomes and the under-representation of Indigenous peoples in health professions, and to improving the overall quality of life of Indigenous peoples. We are honoured to work alongside the DDS Program as the course is implemented and will support your program throughout.

Sincerely,

Tibetha Kemble, B. Mgt., M. Ed., PhD (c)
Director, Indigenous Health
Faculty of Medicine & Dentistry
Division of Community Engagement
2-115 Edmonton Clinic Health Academy
11405 87 Avenue
Edmonton, Alberta T6C 1G9
780-492-8482
kemble@ualberta.ca

As per GFC Policy 37.3.7, Faculties seeking changes to existing programs must consider and seek the agreement to any impact of the proposed program changes on the library system and on course enrolments in other academic units. In addition, any new program proposal going forward for approval will require a service impact statement. Where the affected Faculties and/or Library are in agreement this statement will note that fact and details of the arrangement.

Please contact your subject librarian to solicit feedback on your program proposal and request a Library Impact Statement.

Library Contact:

Name: Liza Chan; Lisa Tjosvold; Dagmara Chojecki	Date: September 27, 2018
Library Unit: John W. Scott Health Sciences Library	Email: liza.chan@ualberta.ca; lisa.tjosvold@ualberta.ca; dagmara.chojecki@ualberta.ca

Program Proposal Contact:

Name: Giselle Gaudet-Amigo	Dept./School: School of Dentistry
Faculty: Faculty of Medicine and Dentistry	E-mail: ggaudet@ualberta.ca

Proposed Program Changes:

Relevant Courses: The use of Evidence Based Dentistry will be reinforced across the 4 years of the DDS program of study.

Library Service or Resource	Description of Library Impact
Instruction (e.g., classes with a librarian, tours, online resource guides, online tutorials, etc.)	Library instruction specifically related to DDS 511 will be useful for students in the program. Library instruction may also be required at other points throughout the dentistry curriculum especially in relation to the topic of Evidence-based Dentistry. The library offers a range of drop in research workshops throughout the academic year to assist students with their research needs. In addition, online instructional guides and tutorials are accessible via the Library web site to support the research process. Course/assignment specific instruction may also be useful. Please contact the appropriate subject librarian to discuss.
Reference assistance (e.g., ongoing one-on-one help)	Health sciences librarians are available for consultations by appointment for specialized research support. In addition, general reference assistance is available at all UAL service desks. Ask us services are also available via chat,

	email and phone.
Collections – reserves, print, electronic [note any impacts on simultaneous users, licensing considerations etc.]	The Library's current subscriptions to print and electronic journals and books should adequately support this program. Any items that are not available and/or accessible through the Library can be requested through Interlibrary Loan. Members of the University of Alberta community are also encouraged to suggest additions to the Libraries' collection. As per our Collection Policy, the Libraries' preference is to acquire material in electronic format. Materials that support the research and teaching programs of the University of Alberta will be given first priority. Submit course reading list and reserve requests online. The library will respond within 5 business days with persistent links to online library resources on your reading list. Print only items will be referred to our Reserve staff and processed within 10 days.
Physical facilities (e.g., sufficient room for group work; in-library work, etc.)	Physical facilities are in place to support student research needs. There are bookable group study spaces, as well as collaborative and individual study spaces in all UAL library locations across campus.
Other (specify)	

X Proposal has an impact on the Library and can be supported.
Proposal can be supported with additional resources; see attached details.
Proposal has no impact on the Library.

John W. Scott Health Sciences Library

Unit Head Signature: M Doig Date: Sept 28/2018

Associate University Librarian Signature: Shaun Myl Date: Sept. 28/18

FINAL Item No. 6

Governance Executive Summary
Action Item

Agenda Title: **Proposal from the Faculty of Graduate Studies and Research for Program Changes to the MA and PhD programs in Economics.**

Motion: THAT the GFC Academic Planning Committee approve, with delegated authority from General Faculties Council, the proposed changes to existing MA and PhD degree programs in Economics, as submitted by the Faculty of Graduate Studies and Research and the Faculty of Arts, and as set forth in Attachment 1, as amended, to take effect upon approval and to be published in the 2019-2020 Calendar.

Item

Action Requested	☒Approval ☐Recommendation
Proposed by	Debby Burshtyn, Interim Dean and Vice Provost, Faculty of Graduate Studies and Research Lesley Cormack, Dean, Faculty of Arts
Presenter(s)	Heather Eckert, Associate Chair, Department of Economics Janice Causgrove Dunn, Associate Dean, FGSR

Details

Responsibility	Provost and Vice-President (Academic)
The Purpose of the Proposal is (*please be specific*)	To ensure that all program requirement for the MA and PhD programs in Economics are reflected in the University Calendar.
Executive Summary (*outline the specific item– and remember your audience*)	In 2017/18, the Faculty of Graduate Studies and Research embarked on a project to ensure that the regulations and requirements of all graduate programs were appropriately reflected in the University Calendar. Historically, this information was contained in annually approved departmental guidelines and, with the increased use of websites, much of this information moved over to that platform. It was recognized that websites provide accessibility for students and flexibility for programs; however, as a means of tracking date sensitive information, websites are not considered to be ideal. As such, all graduate programs are reviewing their documents and will be coming forward with additions and modifications to Calendar entries to ensure compliance with the FGSR guidelines. The MA and PhD in Economics calendar revisions reflect current practice as published on the Department of Economics website: https://www.ualberta.ca/economics/graduate-programs/current-students and are highlighted in yellow in Attachment 1. The entire proposal as submitted has received approval by the Arts Faculty Council. FGSR has delegated authority to teaching Faculty for program changes.
Supplementary Notes and context	All revisions to entrance requirements and/or academic standing will be considered for approval by the Academic Standards Committee, with delegated authority from GFC, on November 8, 2018.

Engagement and Routing (Include meeting dates)

Consultation and Stakeholder Participation (parties who have seen the proposal and in what capacity) <For information on the protocol see the Governance Toolkit section Student Participation Protocol>	*Those who are actively **participating**:* · Heather Eckert, Associate Chair, Department of Economics
	*Those who have been **consulted**:* · Maria Chia (Graduate Calendar project specialist), Janice Hurlburt, Graduate Governance and Policy Coordinator
	*Those who have been **informed**:* ·
Approval Route (Governance) (including meeting dates)	Arts Faculty Council October 4, 2018 GFC ASC-SOS, November 1, 2018 GFC ASC, November 8, 2018 GFC APC November 7, 2018 (for program requirements)

Strategic Alignment

Alignment with *For the Public Good*	OBJECTIVE 21: Encourage continuous improvement in administrative, governance, planning and stewardship systems, procedures, and policies that enable students, faculty, staff, and the institution as a whole to achieve shared strategic goals.
Alignment with Institutional Risk Indicator [Governance Office]	Student Success
Legislative Compliance and jurisdiction	Post-Secondary Learning Act (PSLA) UAPPOL Admissions Policy UAPPOL Academic Standing Policy GFC Academic Standards Committee (ASC) Terms of Reference GFC Academic Planning Committee (APC) Terms of Reference

Attachments (each to be numbered 1 - <>)

1. Department of Economics graduate programs, Calendar change request

Prepared by: Maria Chia, Graduate Calendar project specialist, mchia@ualberta.ca

Killam Centre for Advanced Studies
2-29 Triffo Hall Edmonton AB Canada T6G 2E1
Tel: 780.492.2816 / Fax: 780.492.0692
www.gradstudies.ualberta.ca

Program changes for consideration are highlighted

2019-2020 University of Alberta Proposed Calendar Graduate Program Changes:

Current	Proposed
Graduate Programs **Economics [Graduate]** Department of Economics 8-14 Tory Building University of Alberta Edmonton, Alberta T6G 2H4 E-mail: econgrad@ualberta.ca **General Information** The Department of Economics offers ~~programs leading to the Master of Arts and Doctor of Philosophy degrees.~~ **Entrance Requirements** ~~The Department's minimum admission requirements are an undergraduate degree with a grade point average of at least 3.0 in economics courses, and a TOEFL score of 580 (paper-based) or 92 (Internet-based) where applicable (see English Language Requirement). A GPA of 3.2 in MA work is required for admission to the PhD program.~~	**Graduate Programs** **Economics [Graduate]** Department of Economics 8-14 Tory Building University of Alberta Edmonton, Alberta T6G 2H4 E-mail: econgrad@ualberta.ca **General Information** The Department of Economics offers a course-based Master of Arts program, a course-based Master of Arts program with a specialization in Economics and Finance and a thesis-based PhD program. Areas of study in Economics include but are not limited to Applied Econometrics, Economic Development, Environmental and Resource Economics, Financial Economics, Industrial Organization, International Economics, Labor Economics, Macroeconomics, Monetary Economics, and Public Economics. The Department does not guarantee that each of these fields will be offered in any given year. Graduate program guidelines for each offered program are available from the Department. **Entrance Requirements** For the MA program, the Department's minimum admission requirements are an undergraduate degree in Economics 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 of graded coursework completed, or on the equivalent of the last two years of full-time graded coursework. For the MA with a specialization in Economics and Finance, the Department's minimum admission requirements are an undergraduate degree in Economics with an admission GPA of at least 3.5 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 of graded coursework completed, or on the equivalent of the last two years of full-time graded coursework. For the PhD program, the Department's minimum admission requirements are an MA in Economics 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 of graded coursework completed, or on the equivalent of the last two years of full-time graded coursework. In addition, applicants must have a minimum grade point average of 3.2 on all MA coursework. All applicants must have completed coursework in calculus and linear algebra, as well as advanced coursework in microeconomics, macroeconomics, and econometrics. Where applicable, applicants must provide proof of English Language Proficiency (refer to English Language Requirement). Any one of the following is acceptable: · A TOEFL score of 92 (Internet-based) where applicable with a minimum of 20 in each band, or equivalent.
Applicants whose most recent degree is from a non-Canadian university are required to write the Graduate Record Examinations (verbal, quantitative, and analytical sections) administered by the Educational Testing Service (Princeton, NJ). The examinations should be written early enough for scores to be available at the same time as the applicant's other supporting documents. No minimum cutoff score is specified, because GRE results are used only in conjunction with other indicators of potential academic success. ~~The Graduate Program Committee will waive this requirement only in exceptional circumstances.~~ ~~Students entering a graduate program in economics are required to have or to make up credit in a basic course in calculus and one in statistics.~~ ~~Note: These courses are required in addition to the candidate's normal graduate program.~~ Inquiries regarding details of programs offered within the Department should be directed to the Graduate Program Office.	Applicants whose most recent degree is from a non-Canadian university are required to write the Graduate Record Examinations (verbal, quantitative, and analytical sections) administered by the Educational Testing Service (Princeton, NJ). The examinations should be written early enough for scores to be available at the same time as the applicant's other supporting documents. No minimum cutoff score is specified, because GRE results are used only in conjunction with other indicators of potential academic success. Applicants are also required to submit a Curriculum Vitae and three reference letters (minimum 2 academic). In addition, PhD applicants must provide a statement of research interest. Applicants are not required to have a supervisor before applying to the programs. For information regarding tuition and fees, please refer to Tuition & Cost of Living Estimates. Inquiries regarding details of programs offered within the Department should be directed to the Graduate Program Office. Applications are open annually from September 1 through January 31 for admission in the Fall term. We offer one intake per year.

Financial Assistance

The Department automatically considers all applicants for ~~graduate teaching and research assistantships. To ensure consideration the candidate's application and supporting documents must be received by the Department before February 1. Applications received after that date will be considered for assistantships only if funds are still available.~~

Details of scholarships and other sources of financial assistance are included at www.gradstudies.ualberta.ca

Graduate Program Requirements

The Degree of MA (Economics) [Graduate]

~~The Department of Economics offers two programs: The MA in Economics and the MA in Economics and Finance.~~

The MA in Economics is a ~~coursebased~~ program consisting of at least ★27 including an independent research project (★3).

[moved below to the MA with a specialization in Economics and Finance]:
~~The MA in Economics and Finance, offered collaboratively with the Department of Finance and Statistical Analysis of the Faculty of Business is also a course-based program requiring ★42 including an independent research project (★3).~~

~~Except in special cases, no language other than English is required for the degree of MA.~~

The course-based MA in Economics ~~and MA in Economics and Finance have~~ no minimum residence period and can be completed on a purely part-time basis.

Financial Assistance

The department automatically considers all applicants for Teaching Assistantships at the time applications are reviewed. Funding offers are made to our top ranked applicants and are made separately from offers of admission. Financial need is not a factor in selecting who will be offered funding.

Funding is contingent upon students maintaining a first class standing (3.5 GPA) and satisfactorily performing their required duties. In addition, continued funding for PhD students beyond year 2 requires regular attendance at departmental seminars, an annual presentation of research in a brown bag seminar and a satisfactory annual report outlining progress in the program. Funding in year 4 of the PhD program is contingent on completion of the PhD candidacy exam.

Details of scholarships and other sources of financial assistance are included at www.gradstudies.ualberta.ca

Graduate Program Requirements

The Degree of MA (Economics) [Graduate]

The MA in Economics is a course-based program consisting of at least « 27 in coursework including a « 3 independent research project.

Required courses (« 12):
- ECON 503
- ECON 581
- ECON 598
- ECON 599

Elective courses (« 12):
- four « 3 graduate-level elective Economics courses

Research Project (« 3)
- ECON 999 (an independent research project).

The course-based MA in Economics has no minimum residence period and can be completed on a purely part-time basis.

Length of Program
The time required to complete the MA program will vary according to the previous training of the applicant. Under

Length of Program
The time required to complete ~~either of~~ the MA program~~s~~ will vary according to the previous training of the applicant. Under normal circumstances, the MA in Economics can be completed on a full-time basis in 10 months.

[moved below to the MA with a specialization in Economics and Finance]
~~The MA in Economics and Finance requires a minimum of four, four-month academic terms of full-time study and therefore requires 22 months to complete.~~

[moved from the Degree of MA above]
The MA in Economics and Finance, offered collaboratively with the Department of Finance and Statistical Analysis of the Faculty of Business is ~~also~~ a course-based program requiring ★42 including a~~n~~ independent research project ~~(★3).~~

[moved from the Degree of MA above]
The course-based ~~MA in Economics and~~ MA in Economics and Finance have no minimum residence period and can be completed on a purely part-time basis.

normal circumstances, the MA in Economics can be completed on a full-time basis in 10 months.

The maximum time to complete the course-based MA program as set by the Faculty of Graduate Studies and Research is six years.

The Degree of MA with a specialization in Economics and Finance (Economics) [Graduate]

[moved from the Degree of MA above]
The MA in Economics and Finance, offered collaboratively with the Department of Finance and Statistical Analysis of the Faculty of Business is a course-based program requiring « 42 in coursework including a « 3 independent research project.

Required courses (« 15):
- ECON 503
- ECON 581
- ECON 598
- ECON 599
- FIN 501

Elective courses (« 24):
- one « 3 graduate-level ACCTG course
- four « 3 graduate-level ECON courses
- three « 3 graduate-level FIN courses

Research Project (« 3):
- ECON 999 (an independent research project). ECON 999 is taken in the spring term after all other required coursework has been successfully completed.

No language other than English is required for the degree of MA.

[moved from the Degree of MA above]
The course-based MA in Economics and MA in Economics and Finance no minimum residence period and can be completed on a purely part-time basis.

Length of Program
The time required to complete MA with a specialization in Economics and Finance will vary according to the previous training of the applicant.

[moved from the Degree of MA above]
The MA in Economics and Finance requires ~~four, four-month academic terms of full-time study and therefore requires~~ 22 months to complete.

The Degree of PhD (Economics) [Graduate]

Program Requirements

The PhD program consists of at least ★36 and a thesis. ~~Detailed program requirements, including standards of performance, may be obtained by consulting the Department.~~

[moved below to the Degree of PhD with a specialization in Environmental and Natural Resource Economics]
~~It should be noted that students in the PhD program can choose to specialize in Environmental and Natural Resource Economics where this specialization is offered collaboratively by the Department of Economics and the~~

[moved from the Degree of MA above]
The MA in Economics and Finance requires a minimum of 22 months of full-time study to complete.

The maximum time to complete the course-based MA program as set by the Faculty of Graduate Studies and Research is six years.

The Degree of PhD (Economics) [Graduate]

Program Requirements

The PhD program consists of at least « 36 in coursework and a thesis.

Required courses (« 21):

- ECON 503
- ECON 505
- ECON 581
- ECON 582
- ECON 591
- ECON 598
- ECON 599

Elective courses (« 15):

- five « 3 graduate-level Economics courses including at least two in each of two fields of interest.

Thesis:

- Registration in 900-level THES.

Comprehensive Exams
Students are required to successfully write macroeconomic and microeconomic comprehensive exams following completion of the first year of the program. Unsuccessful students will be recommended to withdraw from the program or change to the MA program.

Candidacy Exam
Students are required to complete their ethics and professional development requirements prior to their candidacy exam. The candidacy exam must be completed by the end the third year. In preparation for the candidacy exam the student will prepare a paper answering a set of questions related to the thesis topic and methodology. The candidacy exam includes a presentation of a student's research and questions from the examination committee.

~~Department of Resource Economics and Environmental Sociology.~~

~~Except in special cases, no language other than English is required for the PhD.~~

The minimum period of residence is three academic years of full-time attendance at the University of Alberta.

Length of Program
The time required to complete the PhD will vary according to the individual candidate; however, a minimum of four years is normally required.

[moved from the Degree of PhD above]
~~It should be noted that students in the PhD program can~~ choose to specialize in Environmental and Natural Resource Economics where this specialization is offered collaboratively by the Department of Economics and the Department of Resource Economics and Environmental Sociology.

Residence Requirement
The minimum period of residence is three academic years of full-time attendance at the University of Alberta.

Length of Program
The time required to complete the PhD will vary according to the individual candidate; however, a minimum of four years is normally required.

The maximum time to complete the PhD program as set by the Faculty of Graduate Studies and Research is six years.

The Degree of PhD with a specialization in Environmental and Natural Resource Economics (Economics) [Graduate]

[moved from the Degree of PhD above]
Contingent on course offerings, students may choose to specialize in Environmental and Natural Resource Economics where this specialization is offered collaboratively by the Department of Economics and the Department of Resource Economics and Environmental Sociology.

Contact the department for further information on required course availability.

Program Requirements

The PhD with a specialization in Environmental and Natural Resource Economics consists of at least « 36 in coursework and a thesis.

Required courses (« 30):

- ECON 503
- ECON 505
- ECON 566
- ECON 567
- ECON 581
- ECON 582
- ECON 591
- ECON 598
- ECON 599
- One « 3 graduate-level course in Agriculture and Resource Economics (AREC) approved by the department

Elective courses (« 6):

- Two « 3 graduate-level courses

Thesis:

Graduate Courses Graduate courses can be found in Course Listings, under the subject heading Economics (ECON).	· Registration in 900-level THES. **Comprehensive Exams** Students are required to successfully write macroeconomic and microeconomic comprehensive exams following completion of the first year of the program. Unsuccessful students will be recommended to withdraw from the program or change to the MA program. **Candidacy Exam** Students are required to complete their ethics and professional development requirements prior to their candidacy exam. The candidacy exam must be completed by the end the third year. In preparation for the candidacy exam the student will prepare a paper answering a set of questions related to the thesis topic and methodology. The candidacy exam includes a presentation of a student's research and questions from the examination committee. **Residence Requirement** The minimum period of residence is three academic years of full-time attendance at the University of Alberta. **Length of Program** The time required to complete the PhD will vary according to the individual candidate; however, a minimum of four years is normally required. The maximum time to complete the PhD program as set by the Faculty of Graduate Studies and Research is six years. **Graduate Courses** Graduate courses can be found in Course Listings, under the subject heading Economics (ECON).
Justification: FGSR Compliance Project. · Ensuring entrance requirements are in the calendar, including required documentation · Clarification of program requirements · All changes represent current practice · Note ECON 567 has been removed from the reserve list. Approved by: Arts Faculty Council October 4, 2018	

FINAL Item No. 7

OUTLINE OF ISSUE

Action Item

Agenda Title: Increase to Required English Language Proficiency (ELP) Scores for Undergraduate Admissions - Alignment Across Tests

Motion: THAT the GFC Academic Planning Committee approve, with delegated authority from General Faculties Council and as recommended by the GFC Academic Standards Committee, changes to Undergraduate Admissions, Language Proficiency Requirements, as proposed by the Office of the Registrar, and as set forth in Attachment 1, to take effect upon approval.

Item

Action Requested	☒Approval ☐Recommendation
Proposed by	Melissa Padfield, Interim Vice-Provost & University Registrar
Presenter	Tammy Hopper, Chair, GFC Academic Standards Committee Melissa Padfield, Interim Vice-Provost & University Registrar

Details

Responsibility	Provost and Vice-President (Academic)
The Purpose of the Proposal is (please be specific)	To make changes to the secondary ELP tests (less commonly used) to align with the 2017 approved proposal for IELTS and TOEFL scores. This alignment will better support undergraduate student success and increase the likelihood of improved academic outcomes. The proposed changes are supported by research undertaken by the Office of the Registrar.
The Impact of the Proposal is	It is anticipated that the proposed changes will have a positive impact on undergraduate student success within the international student body. Research conducted by the Enrolment Management and Reporting unit in the Office of the Registrar shows the correlation between a higher overall ELP score and student success in first year courses, as indicated by final GPA and/or course withdrawals. As a result of the proposed changes, all ELP test scores will align allowing for consistent standards and messaging to applicants. There may also be a positive reputational impact associated with more rigorous ELP.
Replaces/Revises (eg, policies, resolutions)	Calendar section “Language Proficiency Requirements”
Timeline/Implementation Date	upon approval
Estimated Cost and funding source	none
Next Steps (ie.: Communications Plan, Implementation plans)	Publish in calendar. Promote to students through recruitment channels Bear Track messaging on requirements Applications and admissions of International students will continue to be monitored.
Supplementary Notes and context	

Engagement and Routing (Include meeting dates)

Participation: (parties who have seen the	*Those who have been **informed**:* • University of Alberta International (John Gregory) (May-June 2018)

proposal and in what capacity) <For further information see the link posted on the Governance Toolkit section Student Participation Protocol>	
	*Those who are actively **participating**:* Office of the Registrar, Specialists Research and Curriculum University of Alberta International (John Gregory)
Approval Route (Governance) (including meeting dates)	GFC Academic Standards Committee, October 18, 2018 GFC Academic Planning Committee, November 7, 2018
Final Approver	GFC Academic Planning Committee

Alignment/Compliance

Alignment with Guiding Documents	Alignment with the Institutional Strategic Plan – For the Public Good OBJECTIVE - Build a diverse, inclusive community of exceptional undergraduate and graduate students from Edmonton, Alberta, Canada, and the world. Strategy: Optimize our international recruiting strategies to attract well qualified international students from regions of strategic importance, and enhance services and programs to ensure their academic success and integration into the activities of the university.
Compliance with Legislation, Policy and/or Procedure Relevant to the Proposal (please quote legislation and include identifying section numbers)	Post-Secondary Learning Act (PSLA) GFC Academic Standards Committee (ASC) Terms of Reference UAPPOL Admissions Policy GFC Academic Planning Committee Terms of Reference

Attachments (each to be numbered 1 - <>)

1. Attachment 1; Calendar Change Request Form (page(s) 1 - 7)

Prepared by: <Jennifer Alabiso, Manager, Applicant Services, alabiso@ualberta.ca >

Attachment 1: Calendar - Undergraduate Admissions - Language Proficiency Requirements

CURRENT	PROPOSED
English Language Proficiency English is the primary language of instruction in all Faculties except Faculté Saint-Jean. All undergraduate applicants to any program or course except Faculté Saint-Jean need an adequate level of English language proficiency before admission, regardless of their citizenship status or country of origin. The University of Alberta reserves the right to use discretion in determining adequate levels of language proficiency to ensure success in academic programs. In some cases, additional English language testing, conducted by the Faculty of Extension, may be required to confirm English proficiency. Proficiency in English may be fulfilled in one of the following ways: 1. Successful completion of three years of full-time education in English a. In Canada (see Notes 1, 2, 3 and 8). b. In another country where English is recognized as an official language of instruction (see Notes 1, 2, 3, 5 and 8). c. At a recognized secondary school which uses English as the primary language of	**English Language Proficiency** English is the primary language of instruction in all Faculties except Faculté Saint-Jean. All undergraduate applicants to any program or course except Faculté Saint-Jean need an adequate level of English language proficiency before admission, regardless of their citizenship status or country of origin. The University of Alberta reserves the right to use discretion in determining adequate levels of language proficiency to ensure success in academic programs. In some cases, additional English language testing, conducted by the Faculty of Extension, may be required to confirm English proficiency. Proficiency in English may be fulfilled in one of the following ways: 1. Successful completion of three years of full-time education in English a. In Canada (see Notes 1, 2, 3 and 8). b. In another country where English is recognized as an official language of instruction (see Notes 1, 2, 3, 5 and 8). c. At a recognized secondary school which uses English as the primary language of

instruction (see Notes 1, 2, 3, 5 and 8). d. At a recognized postsecondary institution which uses English as the primary language of instruction (see Notes 1, 2, 3, and 5). 2. Successful completion of the equivalent of three years of full-time instruction in a school/institution in Canada in which the major language of instruction is other than English, but where the level of English proficiency required for graduation is equivalent to that in English language schools/institutions in Canada. 3. Completion of one of the following: a. A final blended grade of 75% or better in English Language Arts 30-1 from Alberta or English 12 from British Columbia. The blended grade is the final mark from the provincial Ministry of Education which includes the diploma or provincial examination mark, b. A final or predicted grade of 5 or better on the International Baccalaureate English A1, A2, or a grade of 6 or better on English B, c. A final or predicted grade of 5 or better on the International Baccalaureate English A: Literature or English A: Language and Literature d. A grade of 4 or better on the	instruction (see Notes 1, 2, 3, 5 and 8). d. At a recognized postsecondary institution which uses English as the primary language of instruction (see Notes 1, 2, 3, and 5). 2. Successful completion of the equivalent of three years of full-time instruction in a school/institution in Canada in which the major language of instruction is other than English, but where the level of English proficiency required for graduation is equivalent to that in English language schools/institutions in Canada. 3. Completion of one of the following: a. A final blended grade of 75% or better in English Language Arts 30-1 from Alberta or English 12 from British Columbia. The blended grade is the final mark from the provincial Ministry of Education which includes the diploma or provincial examination mark, b. A final or predicted grade of 5 or better on the International Baccalaureate English A1, A2, or a grade of 6 or better on English B, c. A final or predicted grade of 5 or better on the International Baccalaureate English A: Literature or English A: Language and Literature d. A grade of 4 or better on the

Advanced Placement English College Board examination, e. A grade of B or better in a GCE Advanced Level (A-level) or Advanced Subsidiary Level (AS-level), GCSE, IGCSE or O-level English Language or Literature course, f. A grade of B+ or better in ★6 of university-level English studies completed at a recognized English language institution which must be transferable as ★6 of English at the University of Alberta. 4. Graduation from a recognized degree program offered by an accredited university at which English is the primary language of instruction or in a country where English is the primary language (see Note 5). 5. One of the two TOEFL (Test of English as a Foreign Language) test formats with the appropriate score; a. Internet-based TOEFL (iBT) of at least ~~86~~, with no less than 21 on each band (see Note 4). b. Paper-based TOEFL of at least 580 with a TWE of 4.0 or better (see Note 4). 6. A score of at least 85 on the MELAB (Michigan English Assessment Battery) (see Note 4).	Advanced Placement English College Board examination, e. A grade of B or better in a GCE Advanced Level (A-level) or Advanced Subsidiary Level (AS-level), GCSE, IGCSE or O-level English Language or Literature course, f. A grade of B+ or better in ★6 of university-level English studies completed at a recognized English language institution which must be transferable as ★6 of English at the University of Alberta. 4. Graduation from a recognized degree program offered by an accredited university at which English is the primary language of instruction or in a country where English is the primary language (see Note 5). 5. One of the two TOEFL (Test of English as a Foreign Language) test formats with the appropriate score; a. Internet-based TOEFL (iBT) of at least 90, with no less than 21 on each band (see Note 4). b. Paper-based TOEFL of at least 580 with a TWE of 4.0 or better (see Note 4). 6. A score of at least 85 on the MELAB (Michigan English Assessment Battery) with no band less than 80 and a score of at least 3 in the Speaking Test (see Note

7. A score of at least 6.5 on the IELTS Academic (International English Language Testing System) with no band less than ~~5.0~~ (see Note 4). 8. A score of at least 70 on the ~~CAEL (the Canadian Academic English Language assessment exam)~~ (see Note 4). 9. A score of at least ~~59~~ on the PTE Academic (Pearson Test of English Academic) (see Note 4). 10. A total score of at least 4.5 on all four sections (Reading, Writing, Speaking and Listening) on the CanTEST (Canadian Test of English for Scholars and Trainees) with no part lower than 4 (see Note 4). 11. ~~A score of at least B~~ on the CAE (Certificate in Advanced English) (see Note 4). 12. ~~A score of at least C~~ on the CPE (Certificate of Proficiency in English) (see Note 4). 13. Successful completion of the University of Alberta's EAP 140/145. **Bridging Program Stages 1 and 2** Applicants with superior academic standing who meet all other Faculty specific program requirements but do not meet the English language requirements may be considered for admission to the Bridging Program with the following scores: **Stage 1:** - A score of at least 5.0 on the IELTS Academic (International English Language Testing System) with no band less than 4.5 (see Note 4).	4). 7. A score of at least 6.5 on the IELTS Academic (International English Language Testing System) with no band less than 5.5 (see Note 4). 8. A score of at least 70 on the Canadian Academic English Language assessment: CAEL (paper) or CAEL CE (computer) with no band less than 60 (see Note 4). 9. A score of at least 61 on the PTE Academic (Pearson Test of English Academic) with no less than 60 in each communicative skill (see Note 4). 10. A total score of at least 4.5 on all four sections (Reading, Writing, Speaking and Listening) on the CanTEST (Canadian Test of English for Scholars and Trainees) with no part lower than 4 (see Note 4). 11. An overall Cambridge English scale score of at least 180 on the CAE (Certificate in Advanced English) with no less than 165 in each skill (see Note 4). 12. An overall Cambridge English scale score of at least 180 on the CPE (Certificate of Proficiency in English) with no less than 165 in each skill (see Note 4). 13. Successful completion of the University of Alberta's EAP 140/145. **Bridging Program Stages 1 and 2** Applicants with superior academic

- Internet-based TOEFL (iBT) of at least 65, with no score less than 16 on any band (see Note 4). **Stage 2:** - A score of at least 5.5 on the IELTS Academic (International English Language Testing System) with no band less than 5.0 (see Note 4). - Internet-based TOEFL (iBT) of at least 70, with no score less than 17 on any band (see Note 4). For more information, students should contact the Office of the Registrar. **Notes** 1. Enrolment in English as a second language courses or programs will not be included in the calculation of three years of full time study. Enrolment must be in a regular high school or postsecondary for-credit program. Where students are registered in both EAP and regular programs, the EAP hours will be deducted from the total educational hours. 2. Proof of three years of education must be submitted in the form of official transcripts (including details on course enrolment and hours of instruction). 3. Failing grades/courses will not be counted when calculating full time attendance. Only courses with passing grades will be considered. 4. Standardized test results must be issued directly from the testing office. Photocopies will not be accepted. Test scores must be valid and verifiable. 5. For a list of countries and	standing who meet all other Faculty specific program requirements but do not meet the English language requirements may be considered for admission to the Bridging Program with the following scores: **Stage 1:** - A score of at least 5.0 on the IELTS Academic (International English Language Testing System) with no band less than 4.5 (see Note 4). - Internet-based TOEFL (iBT) of at least 65, with no score less than 16 on any band (see Note 4). **Stage 2:** - A score of at least 5.5 on the IELTS Academic (International English Language Testing System) with no band less than 5.0 (see Note 4). - Internet-based TOEFL (iBT) of at least 70, with no score less than 17 on any band (see Note 4). For more information, students should contact the Office of the Registrar. **Notes** 1. Enrolment in English as a second language courses or programs will not be included in the calculation of three years of full time study. Enrolment must be in a regular high school or postsecondary for-credit program. Where students are registered in both EAP and regular programs, the EAP hours will be deducted from the total educational hours. 2. Proof of three years of education must be submitted in the form of official transcripts (including details

institutions that are recognized as having met the University of Alberta's English language proficiency requirement, visit our website at: www.studyincanada.ualberta.ca/ELPExemptions. 6. When requesting official TOEFL test results to be forwarded to the University of Alberta, applicants should indicate institution code 0963 and department code 00. 7. Applicants who are asked to provide English Language Proficiency and who can demonstrate by other means that their proficiency exceeds the specified minimum levels, should direct inquiries to the Assistant Registrar, Admissions, Office of the Registrar. 8. The three years of full-time education in English must include Alberta grade 12 year (or equivalent) if secondary education is the highest level completed or if	on course enrolment and hours of instruction). 3. Failing grades/courses will not be counted when calculating full time attendance. Only courses with passing grades will be considered. 4. Standardized test results must be issued directly from the testing office. Photocopies will not be accepted. Test scores must be valid and verifiable. 5. For a list of countries and institutions that are recognized as having met the University of Alberta's English language proficiency requirement, visit our website at: www.studyincanada.ualberta.ca/ELPExemptions. 6. When requesting official TOEFL test results to be forwarded to the University of Alberta, applicants should indicate institution code 0963 and department code 00. 7. Applicants who are asked to provide English Language Proficiency and who can demonstrate by other means that their proficiency exceeds the specified minimum levels, should

combination of secondary and postsecondary education is used.	direct inquiries to the Assistant Registrar, Admissions, Office of the Registrar. 8. The three years of full-time education in English must include Alberta grade 12 year (or equivalent) if secondary education is the highest level completed or if combination of secondary and postsecondary education is used.