

Faculty of Pharmacy and Pharmaceutical Sciences

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140 The Faculty of Pharmacy and Pharmaceutical Sciences

The Faculty has a long and proud history of achievement. It began as a Department in the Faculty of Medicine on April 13, 1914. Two programs were offered at that time—a one-year Licensing Diploma (discontinued in 1918) and a two-year PhmB degree. The Department became a School in 1917 under the Faculty of Arts and Science. The first graduates of the newly approved Bachelor of Science in Pharmacy degree program obtained their degrees in 1921 (three students). They had the unique distinction of being the first in the British Empire to graduate from a four-year degree program in Pharmacy (others at the time were three years in length). Over the next two decades, the School continued to grow and prosper, jurisdiction having been transferred back to the Faculty of Medicine in 1939. The School was granted Faculty status in 1955, and in the 1989-90 academic year, Pharmacy became a five-year program (one-professional year plus four professional years in the Faculty).

Graduate Studies and Research has always been a strength of the Faculty and goes back to its first PhD graduate in 1961. This was the first PhD degree granted by a School or Faculty of Pharmacy in Canada. In recognition of its flourishing Graduate Studies program in the Pharmaceutical Sciences, in 1968 the Faculty was renamed the Faculty of Pharmacy and Pharmaceutical Sciences.

Current enrolment in the Faculty includes 514 undergraduate students, 51 graduate students and 24 teaching and research Faculty members.

The Faculty's mission is to serve the needs of society as they relate to pharmacy and the pharmaceutical sciences through education, research and community service. Its pledge is to carry out that mission based upon the highest national and international standards. The vision of the Faculty is to be recognized as the leader provincially and nationally and as a leader internationally for

- The quality and success of its programs in pharmaceutical education, including the design of its curriculum and its innovative approaches to teaching at an undergraduate, graduate and postgraduate level; and
- The quality and success of its science-based and practice-related research programs in selected areas of the pharmaceutical sciences and of pharmacy practice.

141 The Professors

141.1 Teaching and Scholarship

The Faculty's undergraduate program is fully accredited by the Canadian Council for Accreditation of Pharmacy programs in Canada. Its Graduate Studies and Research programs have been ranked by an External Review Committee as being in the top rankings in North America.

Students of the Faculty continually place first in Canada in the National Pharmacy Examining Board of Canada examinations. In fact, they have held that honor for 17 of the past 19 years. In 11 of those years, a student from the Faculty won the individual award for the highest achievement in these examinations in all of Canada.

The Faculty's researchers attract approximately \$2 million annually in external research grants and contracts. The Faculty has also excelled in transferring its research technology to the marketplace. Many of the University's spin-off companies originated in the Faculty of Pharmacy and Pharmaceutical Sciences.

141.2 Members of the Faculty

Officers of the Faculty

Dean

FM Pasutto, PhD

Associate Dean (Graduate Studies and Research)

MR Suresh, PhD

Assistant Dean Undergraduate Studies (Admissions and Standards)

D Brocks, PhD

Assistant Dean Undergraduate Studies (PharmD Development)

SL Mitchell, PhD

Assistant Dean (Administration)

K Nicholson-Scheer, BA

Academic Staff

Professors

F Jamali, PhD (Pharmacokinetics)

S McQuarrie, PhD

(Radiopharmacy/
Bionucleonics)

FM Pasutto, PhD (Medicinal
Chemistry)

MR Suresh, PhD

(Immunconjugates)

R Tsuyuki, PharmD, MSc (Clinical)

Associate Professors

D Brocks, PhD (Pharmacokinetics)

A El-Kadi PhD (Drug Metabolism)

C Hughes, PharmD (Clinical)

A Lavasanifar, PhD

(Pharmaceutics)

R Löbenberg, PhD

(Pharmaceutics)

C Sadowski, PharmD

SH Simpson, BSP, PharmD, MSc

(Clinical)

N Yuksel, PharmD (Clinical)

Clinical Associate Professors

SL Mitchell, MPharm, PhD

C Nelson BSP, MCE

Assistant Professors

M Doschak, MSc, PhD

(Pharmacology of Bone

Adaptation)

L Guirguis, BScPharm, MSc, PhD

(Pharmacy Practice)

P Jurasz, PhD (Pharmacology)

K Kaur, PhD (Medicinal

Chemistry)

M Makowsky, PharmD (Clinical)

JM Seubert, MS, PhD

(Cardiovascular

Pharmacology)

AG Siraki, PhD (Toxicology/Drug

Metabolism)

C Velazquez, PhD (Medicinal

Chemistry)

Clinical Assistant Professors

M Gukert, BScPharm (Clinical)

Professors Emeriti

JA Bachynsky, PhD

DF Biggs, PhD

LG Chatten, PhD

RT Coutts, PhD, DSc

EE Knaus, PhD

RE Moskalyk, PhD

JA Rogers, PhD

A Shysh, PhD

LG Stephens-Newsham, PhD

LI Wiebe, PhD

Professional Officers

C Cox, BSP, MBA (Coordinator,

Experiential Education)

T Legaarden, BScPharm

(Director, Development and

External Relations)

K Nicholson-Scheer,

BA (Assistant Dean,

Administration)

T Schindel, BSP, MCE (Director,

Continuing Education)

Associate

Academic Staff

Adjunct Members

S Aung, MD, PhD

C Biggs

D Birkholz, PhD

CW Briggs, MSc, DVM

C Chambers, BSc Pharm, MBA

T Charrois, BSc Pharm, MSc

DG Freitag, PhD

R George, PhD

M Guirguis, PhD

H Lopatka, PhD

E Mathews, BSc Pharm, PharmD

C Mitchell, BSc Pharm, MSc

EA Olszewski, BSc Pharm, LLB

E Palylyk-Colwell, PhD

YK Tam, PhD

UM Tauscher, BSc Pharm, LLB

B Willsey, BSc Pharm

B Windwick, LLM

Clinical Adjunct Professors

M Ackman, PharmD (Capital

Health)

D Albertson, PharmD (Capital

Health)

D Druiteika, PharmD (Capital

Health)

S Koshman, PharmD (Capital

Health)

E Kozyra, PharmD (Capital

Health)

T Mysak, PharmD (Capital

Health)

M Snaterse, BSc PharmD (Capital

Health)

M Zolezzi, BPharm, MSc (Capital

Health)

Honorary Members

K Bagnell PhD (Professor)

GB Baker, PhD (Professor)

J Duke, PhD (F50)

GG Griener, PhD (Associate

Professor)

AJ McEwan, MB (Professor)

J Mercer, PhD (Associate

Professor)

G Pearson, PharmD (Associate

Professor)

G Tyrell, PhD (Associate

Professor)

H Uludag, PhD (Associate

Professor)

D Wishart, PhD (Professor)

142 General Information

142.1 Opportunities in Pharmacy

Pharmacy has progressed from the compounding and dispensing of drugs to a "knowledge system" about drugs and drug products. Pharmacy practice has increasingly become oriented to the patient and accordingly requires the aspiring pharmacist to possess excellent communication skills and to be aware of, and sensitive to, the frequent need for compassion and understanding.

Various career options are open to the pharmacist on graduation and licensure.

Community Practice

Community practice provides the "place of practice" for the majority of pharmacists. It can take many forms, namely, independently owned, a chain, a unit within a department store, or a part of a clinic. It can be large, providing a range of products and services, or small, dealing exclusively in medicines and related supplies. In whatever form, the practice environment of community pharmacy is one where the professional activities of the pharmacist involve direct contact with the client seeking either prescription medication or self-medication products or services. In balancing the commercial and professional aspects of community pharmacy, the pharmacist is accountable for ensuring that the patient properly takes only those medicines essential for the maintenance of health, and the prevention or treatment of disease.

Hospital Practice

Hospital pharmacists provide services in complex health care organizations. Traditionally, the pharmacist is responsible for the institutional procurement, preparation, distribution, and control of pharmaceuticals. As a member of a health care team, the pharmacist is also responsible for patient-oriented services such as therapeutic consultations, drug information, and patient counselling and education. Some hospital pharmacists concentrate their practice on areas such as management, clinical services, and drug information. Others find careers as generalists in the country's many small- to medium-sized institutions.

Pharmaceutical Industry

The pharmaceutical industry has taken over the traditional compounding responsibilities on behalf of the practising pharmacist. By freeing the pharmacist from the time constraints of compounding medication, a redirection toward a patient-oriented pharmacy practice is possible.

The pharmacist who chooses the pharmaceutical industry as his or her practice environment identifies with one or more distinct parts of the compounding function: discovery or invention, formulation, ensuring safety, ensuring efficacy, or the actual manufacture of drugs. However, one may alternatively become involved with marketing the product. Opportunities in other areas are often enhanced for graduates who proceed for postgraduate training in one of the pharmaceutical sciences.

Government Regulatory and Association Pharmacy Services

Career opportunities for pharmacists exist in federal and provincial government departments. These opportunities often relate to inspection and analyst functions in the regulatory sense. Each provincial licensing body is staffed by pharmacists involved in regulatory activities, as pharmacy is a self-governing profession.

Education and Research

Graduates may choose a university as their career environment. Normally, training is to the doctoral level, although practising pharmacists in the community, hospitals, associations, and the pharmaceutical industry contribute to specific educational programs.

Opportunities in research can be found in universities, government institutions and private industry. Again, training to the doctoral level is often essential.

Finally, many pharmacists have found greatly expanded career opportunities by adding a law or business degree to their basic degree in pharmacy.

142.2 Qualifications for Practice in Alberta

The Bachelor of Science degree in Pharmacy of the University of Alberta is the minimum academic requirement accepted by the Alberta College of Pharmacists for a licence to practise pharmacy in Alberta.

To register as a pharmacist in Alberta, a graduate must also have successfully completed an internship program sponsored and operated by the Alberta College of Pharmacists and the qualifying examination administered

by the Pharmacy Examining Board of Canada. Information concerning the regulations applying to practical experience in Alberta is available from the Registrar, Alberta College of Pharmacists, Suite 1200, 10303 Jasper Avenue, Edmonton, AB T5J 3N6. Information concerning the Qualifying Examination may be obtained from the Registrar, Pharmacy Examining Board of Canada, 717 Church Street, Toronto, ON M4W 2M4.

The regulations governing the practice of pharmacy in the Province of Alberta are set forth in the *Alberta Pharmaceutical Profession Act*.

142.3 Faculty Accreditation

The BSc (Pharmacy) program at the University of Alberta has been granted Full Accreditation Status by the Canadian Council for Accreditation of Pharmacy Programs for a six-year term, 2004-2010.

143 Faculty Regulations

143.1 Admission

See §§13 and 14 for general admission requirements to the University. Specific admission information for the Bachelor of Science in Pharmacy is set out in §15.12.

143.2 Professional Ethics/Code of Student Behaviour

Students in the Pharmacy program are required to adhere to the professional code of ethics of the Alberta College of Pharmacists. Refer to §30.3.3 of the Code of Student Behaviour in Appendix A of the University of Alberta Calendar for additional information and §15.12 of the University of Alberta Calendar for additional information.

143.3 Academic Standing

143.3.1 Academic Standing and Promotion

(1) Grades

- The means of assessing a student's progress and determining a student's grades may vary from one course to another, according to the nature of the course. Factors other than examination results may be used to a variable extent by instructors in determining grades. Students are informed at the beginning of each course how grades are to be determined.
- Students must satisfactorily complete all components of all courses.

(2) Promotion and/or Continuation

- Progression in the program is year by year and not by courses completed. Accordingly, all students in a particular year of the program normally should be registered in the same courses in each term (§144.1.) Students will not normally register in any core (i.e., non-elective) courses from a particular year of the program until they have satisfactorily completed core courses from the previous year of the program.
- Academic standing is assessed on the basis of
 - the pass or failure of individual courses and
 - the GPA attained in a given year of the program (including courses taken in Spring Term). In computing the GPA, grades of W and CR/NC, and grades in courses accepted for transfer credit are not included.

Each student's academic standing will normally be assessed at the end of the regular academic year, but in Years 1 and 2 of the program, such assessment will be delayed until grades are available for the practicums completed in Spring Term. Students who are on Academic Warning will be assessed at the end of each term. See §23.6.21.

- A student who is awarded First-Class Standing or Satisfactory Standing, as defined below, will normally qualify for promotion:

First-Class Standing: Awarded to an undergraduate student who obtains a GPA of 3.5 or above and passes all courses while enrolled in

the full normal academic course load in that year (Year 1, ★28.5; Year 2, ★32; Year 3, ★29.5; Year 4, ★25).

Satisfactory Standing: Awarded to a student who achieves a GPA of 2.0 or above if no course is failed.

- Conditional Standing:** Assigned to a student who achieves a GPA of 2.0 or above but has failed one or more courses.

A student who is assigned Conditional Standing will be placed on Academic Warning and must retake and pass all failed courses. Other courses are to be taken, up to a normal course load, as scheduling permits and as approved by the Faculty.

Students on Academic Warning as a result of acquiring Conditional Standing will clear their Academic Warning upon passing the repeated courses and will qualify for promotion if they achieve Satisfactory Standing on the basis of all courses taken during Fall, Winter, and Spring terms. Students who fail a course a second time will be required to withdraw from the program.

- Required to Withdraw:** Any student failing to obtain a minimum GPA of 2.0 in any academic year is required to withdraw from the program. Such students are not normally readmitted to the program.

- Probation:** Students who have been required to withdraw and who have successfully appealed that decision will be placed on Probation and required to repeat the program year.

To clear probation and qualify for promotion, the student must achieve Satisfactory Standing in the probationary year. Students who fail to do so will be required to withdraw. Any student in a probationary year who fails a course in Fall Term will be required to withdraw immediately and subsequent registration will be cancelled.

Only one year of probation is allowed while registered in the Faculty of Pharmacy and Pharmaceutical Sciences.

- Appeals and Grievances:** Decisions on academic standing are made by the Faculty Council. Appeals may be made to the Academic Appeals Committee. Certain academic standing decisions made by the Faculty Academic Appeals Committee may be appealed to the General Faculties Council Academic Appeals Committee. Enquiries concerning standing in individual courses should be made to the professor in charge of the course. If the issue is still not resolved, the student may report the matter to the Office of the Dean for enquiry. See §23.8 (Appeals and Grievances) for further information.

The Faculty's regulations governing academic appeals and grade appeals may be obtained in the Dean's Office.

143.3.2 Graduation

(1) Time Limit for Completion of Degree:

Normally, all students must complete their degree requirements within five calendar years from the time of their initial admission. This time limit includes all time during which a student is not in attendance, either by personal choice or as a result of suspension or requirement to withdraw.

(2) Academic Performance for Graduation

Students must achieve Satisfactory Academic Standing in their final year of the program; present credit (CR or a minimum University of Alberta grade of D or equivalent) in all program requirements; and present a graduation average of at least 2.0. The graduation average is a cumulative measure of a student's grade points obtained while registered in the Faculty in all years and terms, including Spring/Summer. It is the quotient of (a) the total number of grade points earned by a student in courses credited to the degree and (b) the total weight of those courses.

(3) Degree With Distinction

Degrees with Distinction shall be awarded to students who achieve a GPA of 3.5 or higher on the last ★64.5 that are taken in, or are approved specialization electives of, the Faculty and are included in the calculation of GPA.

143.4 Practicum Intervention Policy

The Dean, or Supervisor acting on behalf of the Dean, may immediately deny assignment of a student to, withdraw a student from, or vary terms, conditions or site of a practicum/clinical placement if the Dean or Supervisor has reasonable grounds to believe that this is necessary in order to protect the Public Interest. Refer to §23.8.2 Practicum Intervention Policy for additional information.

143.4.1 Practicum Policies and Requirements

- (1) **Registration with Alberta College of Pharmacists** Section 2(1) of the Pharmaceutical Profession Act requires that pharmacy students be registered as interns (restricted practitioners) with the College in order to practice in the exclusive scope areas of pharmacy to which they are exposed in a clinical rotation. All fees and other costs associated with this registration are the responsibility of the student.
- (2) **Security Clearance Check:** Students should be aware that under *The Protection for Persons in Care Act*, they can be required to satisfy a criminal records check before being allowed to serve a period of internship, practicum placement, work experience, or to complete a course requirement. Refer to §23.8.3 for more information.
Students will be required to satisfy a criminal records check at entrance into the undergraduate program of the Faculty in order to meet PHARM 300 requirements. Subsequent criminal records checks must be satisfied for all practicum placements where it is required by the site, including all institutional site placements. All fees and other costs associated with obtaining security record checks are the responsibility of the student.
- (3) **CPR Certification:** Students in the Faculty must obtain certification in cardiopulmonary resuscitation (CPR) by the end of the Fall term in which they are admitted. Please note that this requirement is satisfied by a HEART SAVER (basic 4-hour) course. All fees and other costs for CPR certification are the responsibility of the student.
- (4) **Immunization and Bloodborne Pathogens Policy:**

Immunizations

To ensure, insofar as possible, both student and patient health and safety, the Faculty requires vaccination against, or proof of immunity to, poliomyelitis, diphtheria, tetanus, measles, mumps, rubella, varicella (chicken pox), and hepatitis B. As well, a one-step tuberculin skin test is required in the first year of the program. After completion of their training, students from health science faculties may be required to have tuberculin testing as part of their employment in a health care facility. It is recommended that all testing and vaccination be performed or confirmed by University Health Centre.

Bloodborne Pathogens

The University of Alberta recognizes its duty to minimize the risk of transmission of bloodborne pathogens to/by individuals studying/working at the University. The GFC Bloodborne Pathogens Policy §108.12 limits the possibility of transmission of bloodborne pathogens within the educational setting. The University recognizes, however, that it is not possible to completely eliminate the risk of infection. The Faculty, in accordance with University policies and other current guidelines, has developed the following recommendations concerning bloodborne pathogens. These recommendations will be reviewed and adapted as further information on bloodborne pathogens becomes available.

Any exposure to human blood/body fluids shall be reported immediately according to the University of Alberta protocols. Refer to the Faculty Office for guidance.

Hepatitis B Virus (HBV): Current information indicates that there is a potential risk of transmission of hepatitis B from practitioner to patients in the clinical experience in practice settings. Therefore, applicants will be required to be tested for hepatitis B surface antigen by a personal physician or a physician at University Health Centre. Applicants who test positive for hepatitis B surface antigen will be further tested to help determine infectivity risk. Applicants who test positive for the antibody to hepatitis B surface antigen shall not require hepatitis B surface antigen testing.

For those applicants who test negative to hepatitis B surface antigen and are registered in the Pharmacy program, hepatitis B vaccination will be required. An exception will be made for those who have medical contraindications or for those who already have proof of hepatitis B immunity. After vaccination, students will be tested to determine if they have developed immunity. If they have not, further hepatitis B vaccination and counselling will be determined by the University Health Centre.

At all times students will follow Universal Precautions when there is a potential of exposure to human blood or body fluids.

Immunization requirements must be fulfilled by September 30 in the first year of the program. Students must sign a waiver if they are unable to meet immunization requirements due to medical contraindications.

Human Immunodeficiency Virus (HIV) and hepatitis C Virus (HCV): Current evidence-based research data indicates that transmission of HIV and HCV from a health care worker (HCW) to a patient in a health care setting is extremely rare, although transmission from patients to a HCW

is more common. Mandatory testing for HIV and HCV is not recommended at this time.

Note: For updates on changes to medical and immunization requirements refer to the Faculty Office.

N 95 Respirator Fit Testing

Students with potential exposure to airborne infectious agents during clinical placement are required to be fit tested for N 95 respirators, as required by the clinical placement facility. Check with the Faculty office for the procedure to schedule this fit testing.

- (5) **Procedures:** The procedures governing practicums and placement are binding and will be provided in a procedures manual.
- (6) **Placement:** All required practicums are undertaken at Faculty-approved sites within Alberta. The Faculty of Pharmacy and Pharmaceutical Sciences is committed to a regional placement program in which students are normally required to undertake practicums in centres other than Edmonton.
Access to transportation and accommodation is not considered in making practicum placements. Such access, and the associated costs, are the responsibility of the student.
- (7) **Site protocols:** Students on volunteer or practicum placements are required to follow the administrative procedures and regulations (including dress requirements) of the placement site.
- (8) Although special services are provided on campus to assist disabled students, these same services may not be available for off-campus placements.

144 Programs of Study

144.1 Degree of BSc in Pharmacy

144.1.1 General Information

The first degree program in Pharmacy is four years.

The courses to be taken in the first three years of the program are specified and are considered basic to the education of pharmacists. The fourth-year allows for some specialization through electives.

144.1.2 Program of Courses

Note: The following plan applies to students admitted to the BSc in Pharmacy program in 2004–2005 or later

Year 1 (★31.5)

- (1) PHARM 300 ★1
- (2) PHARM 301 ★2.5
- (3) PHARM 304 ★0.5
- (4) PHARM 305 ★4
- (5) PHARM 306 ★2.5
- (6) PHARM 307 ★2.5
- (7) PHARM 314 ★1
- (8) PHARM 321 ★2.5
- (9) PHARM 322 ★2
- (10) PHARM 324 ★1
- (11) PHARM 331 ★3
- (12) PHARM 334 ★1.5
- (13) PHARM 341 ★2
- (14) PHARM 342 ★2.5
- (15) Option (★3)

Year 2 (★32)

- (1) PHARM 311 ★1
- (2) PHARM 315 ★2
- (3) PHARM 327 ★2
- (4) PHARM 330 ★0.5
- (5) PHARM 347 ★1.5
- (6) PHARM 351 ★2
- (7) PHARM 357 ★2.5
- (8) PHARM 361 ★3
- (9) PHARM 362 ★1
- (10) PHARM 367 ★4.5

- (11) PHARM 377 ★1.5
- (12) PHARM 387 ★1.5
- (13) PHARM 392 ★1.5
- (14) PHARM 397 ★2.5
- (15) PHARM 427 ★2
- (16) INT D 410 ★3

Year 3 (★32.5)

- (1) PHARM 372 (★2)
- (2) PHARM 382 (★3)
- (3) PHARM 407 (★4)
- (4) PHARM 417(★3)
- (5) PHARM 430 (★0.5)
- (6) PHARM 437 (★2)
- (7) PHARM 447 (★2.5)
- (8) PHARM 467 (★2.5)
- (9) PHARM 477 (★4)
- (10) PHARM 487 (★2)
- (11) PHARM 497 (★2)
- (12) PHARM 499 (★2)
- (13) Option (★3)

Year 4 (★31)

(Students will be off campus in either the first or second term. Coursework will be completed in the opposite term.)

- (1) PHARM 425 (★16)
- (2) Specialization electives (★9)
- (3) Options (★6)

*Specialization Electives

Students wanting to further develop their intended pattern of specialization may want to select courses from the list of pattern-related electives identified by the Faculty of Pharmacy and Pharmaceutical Sciences. At least ★3 of the ★9 Specialization Electives must be taken as a PHARM course. A list of available Specialization Electives will be provided by the Faculty office. Specialization Electives must be University of Alberta courses and must be taken during year four of the program. Transfer credit is not accepted for Specialization Electives.

*Options

Options normally are selected from courses offered outside the Faculty of Pharmacy and Pharmaceutical Sciences. These courses allow students to pursue areas of personal interest and promote a liberal education.

Note: Only one junior course from each subject area is permitted.

Junior courses are those numbered 199 or lower.

144.2 Graduate Study

Students may undertake graduate study leading to the degree of MPharm, MSc, or PhD. Any students contemplating such work should discuss their program with the Director (Graduate Affairs) of the Faculty of Pharmacy and Pharmaceutical Sciences. They should also familiarize themselves with the admission requirements, regulations, and procedures of the Faculty of Graduate Studies and Research. These may be found in §205, Graduate Programs.

145 Courses

Faculty of Pharmacy and Pharmaceutical Sciences courses can be found in §231, Course Listings, under Pharmacy (PHARM).