

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—one 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 460 undergraduate students, 44 graduate students and 31 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 10% in North America and in the top two in Canada.

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 14 of the past 16 years. In 10 of those 14 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 from \$1.5 to 2 million annually in external research grants and contracts. The Faculty has also excelled in transferring its research technology to the marketplace. Eight of the University's spin-off companies originated in the Faculty of Pharmacy and Pharmaceutical Sciences. The Faculty is also home to the Noujaim Institute for Pharmaceutical Oncology Research and the University's SLOWPOKE nuclear reactor facility.

141.2 Members of the Faculty

Officers of the Faculty

Dean

FM Pasutto, PhD

Director of Graduate Affairs

MR Suresh, PhD

R Löbenberg, PhD

(Pharmaceutics)

C Nelson BSP, MCE (Clinical)

N Rae, BScPharm (Clinical)

SH Simpson, BSP, PharmD, MSc

(Clinical)

M Snatser, BScPharm (Clinical)

M Tachuk, BScPharm (Clinical)

C Wiens, PharmD (Clinical)

Professors Emeriti

JA Bachynsky, PhD

DF Biggs, PhD

LG Chatten, PhD

RT Coutts, PhD, DSc

RE Moskalyk, PhD

AA Noujaim, PhD

JA Rogers, PhD

A Shysh, PhD

LG Stephens-Newsham, PhD

LI Wiebe, PhD

Professional Officers

C Cox, BSP, MBA (Director,

Clinical Placements)

L Deydey, BScN, LLB (Research

Facilitator)

T Legaarden, BScPharm

(Director, Fund Development)

K Nicholson-Scheer, BA

(Executive Assistant to the

Dean)

T Schindel, BSP, MCE (Director,

Continuing Education)

Associate Academic Staff

Adjunct Members

J Baker, PhD

D Birkholz, PhD

CW Briggs, MSc, DVM

C Chambers, BScPharm, MBA

C Coester, PhD

D Druiteika, PharmD

J Duke, PhD

S Gupta, PhD

G Kwon, PhD

S Long, BScPharm, MBA

H Lopatka, PhD

RG Micetich, PhD

GG Miller, PhD

EA Olszewski, BScPharm, LLB

E Palylyk-Colwell, PhD

L Poloway, BScPharm

TR Sykes, PhD

YK Tam, PhD

UM Tauscher, BScPharm, LLB

C Volume-Smith, PhD

B Willsey, BScPharm

B Windwick, LLM

Honorary Members

M Adria, PhD (Associate

Professor)

GB Baker, PhD (Professor)

GG Griener, PhD (Assistant

Professor)

EG Hunter, PhD (FSO)

LD Jewell, BA, MD, FRCP

(Professor)

J Johnson, PhD (Associate

Professor)

DF LeGatt, BScPharm, PhD

AJ McEwan, MB (Professor)

G Pearson, PharmD (Assistant

Professor)

DC Rayner, BSc, MD, FRCP

(Associate Professor)

H Uludag, PhD (Assistant

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, Suite 603, 123 Edward Street, Toronto, ON M5G 1E2.

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

142.3 Criminal Record 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 placement. Refer §23.8.3 for more information.

142.4 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 Academic Standing and Immunization Requirements

143.2.1 Academic Standing

Academic performance is normally measured by the GPA attained during a Fall/Winter Term. In this determination, grades of W are ignored. Grades of courses completed during Spring/Summer or grades in courses accepted for transfer credit are not included in the calculation of the GPA for measuring academic performance.

Each student's academic performance will normally be assessed at the end of the regular academic year. Students who have achieved conditional or probationary performance will be assessed at the end of each term.

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.

Promotion of the student from year to year depends on satisfactory academic performance.

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 five courses in each term. 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.

Students will not proceed to second year until they have met the full requirement for service learning.

The GPA, as determined above, places the student in one of the following categories of academic performance:

Satisfactory performance is that which yields a GPA of 2.0 or greater if no course is failed.

Conditional performance is that which yields a GPA of 2.0 or greater but includes one or more failed courses.

Probationary performance is that which yields a GPA of less than 2.0, but not less than 1.7, with or without failed courses. Students may achieve probationary performance only once during any undergraduate degree program in Pharmacy.

Unsatisfactory performance is that which yields a GPA of less than 1.7 or less than 2.0 for students in a probationary year.

Promotion to the next year of the program requires satisfactory performance. Promotion is awarded to conditional performance students after they have achieved a passing grade in the failed course or courses.

Probationary Year: A repeat of the year in question is mandatory for all probationary performance students. During this probationary year, the student must repeat all core courses in which (s)he achieved a grade of less than 2.0. Additional approved non-core courses may be included to make up a normal course load, with permission of the Faculty. To clear probation and qualify for promotion, a student must pass all the core courses (s)he repeated and also attain a GPA of at least 2.0 in these required courses.

Only one period of probation is allowed while registered in the Faculty of Pharmacy and Pharmaceutical Sciences. Students who have cleared probation and whose GPA at the end of a subsequent Fall/Winter Term falls below 2.0 will not be permitted to continue on probation. Such students are required to withdraw and are not normally readmitted to the Faculty.

Required to Withdraw: Students whose performance is unsatisfactory, or who fail to clear probation, or who achieve probationary status a second time, are required to withdraw from the program.

Reexamination: See §23.5.5.

First-Class Standing: Awarded to students who achieve a GPA of at least 3.5 during a Fall/Winter if they have taken ★30 in that Fall/Winter.

The notation "With Distinction" is inscribed on the permanent record and graduate parchment if the candidate has obtained a GPA of 3.5 or higher in all courses in the last two years of the program.

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.

Practicum Placements: Students are not permitted to register in practicum placements while on Academic Probation.

A student who has been assigned a grade of "W" or "NC" in a practicum placement is entitled to a second registration in this course, subject to satisfactory completion of such remedial work as may be assigned by the Faculty. If a student receives a "W" or "NC" in the second attempt of a practicum placement, the student is required to withdraw from the Faculty of Pharmacy and Pharmaceutical Sciences. Any student who has withdrawn from a practicum placement must receive the approval of the Professional Officer (Clinical Placements) to reregister in the course.

Although special services are provided on campus to assist disable students, these same services may not be available for off-campus placements.

The Faculty of Pharmacy and Pharmaceutical Sciences is committed to a regional placement program in which students are normally required to complete field experiences in centres other than Edmonton and Calgary.

Access to transportation is not considered in making placements in the Edmonton area. Placements can be made anywhere in the Greater Edmonton area, including Devon, Fort Saskatchewan, Leduc, Morinville, St Albert, Sherwood Park, Spruce Grove, Beaumont and Stony Plain.

Practicum placements are not normally offered during Spring/Summer.

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.

143.2.2 Immunization and Bloodborne Pathogens Policy

Pharmacy students are health care professionals who will be exposed to patients during the course of studies at the University. To ensure, insofar as possible, both student and patient safety, the Faculty requires immunization, or proof of immunity, to poliomyelitis, diphtheria, tetanus, measles, mumps, rubella, and hepatitis B.

Students in all health sciences faculties are recommended to be tuberculin tested upon entry to the program, unless they can provide documentation of a prior positive tuberculin test, a recent negative test (within the past year), had TB in the past, or had a severe reaction to tuberculin in the past. If the initial tuberculin test, performed upon entry to the program, is negative, a second (booster test) should be performed within 1-3 weeks.

Subsequent targeted tuberculin testing of students within health sciences faculties is recommended if:

- (1) They are a contact of a known case of infectious tuberculosis, or

(2) They undertake a portion of their training, for example a practicum, in an area highly endemic for tuberculosis.

After completion of their training, students from health sciences faculties may be required to have tuberculin testing as part of their employment in a health care institution.

The University of Alberta recognizes its duty to minimize the risk of transmission of bloodborne pathogens to/by individuals studying or working at this University. The Bloodborne Pathogens Policy 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. Refer to the *GFC Policy Manual*, §108.12, for additional information.

The Faculty of Pharmacy and Pharmaceutical Sciences, in accordance with University policies and other available guidelines, has developed the following policies concerning bloodborne pathogens. These policies will be reviewed and adapted as further information on bloodborne pathogens becomes available.

Immunization/bloodborne pathogen requirements must be fulfilled by September 30 of the current academic year. Students must sign a waiver if they are unable to meet immunization requirements due to medical contraindication.

Hepatitis B: Hepatitis B surface antigen testing will be performed by the University of Alberta Health Centre on all students after acceptance into the program. For those students who test negative for hepatitis B surface antigen (HBsAg), hepatitis B vaccination will be required. An exception will be made for those individuals for whom it is medically contraindicated or for those individuals who have proof of prior vaccination and test positive for antibody to hepatitis B surface antigen. After vaccination, students are required to have a second test to determine if they have converted to produce the appropriate antibody. If a student fails to convert a second vaccination course is required with subsequent retesting for antibodies. Those students who then fail to convert will be counselled as to their potential risk status during training and future practice.

All students who test positive for hepatitis B antigen will be required to undergo further testing and evaluation and may be required to follow a modified clinical program.

Hepatitis C and Human Immunodeficiency Virus (HIV): Currently, the data relating to transmission of hepatitis C and the human immunodeficiency virus (HIV) from a health care worker to a patient in a health care setting is limited, although transmission from patients to a health care worker is more common. Therefore, all students accepted into a Health Sciences faculty are encouraged to undergo HIV and hepatitis C testing upon admission and at any time during their program when concerns about infection have arisen. Testing is not mandatory at this time.

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

143.3 Practicum Placements, Professional Practice and the Public Interest

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 Placements, Professional Practice and the Public Interest, and §87, *GFC Policy Manual* for additional information.

143.4 Professional Ethics/Code of Student Behavior

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 Behavior in the *GFC Policy Manual* for additional information.

144 Programs of Study

144.1 Degree of BSc in Pharmacy

144.1.1 General Information

Note: The Faculty of Pharmacy and Pharmaceutical Sciences is in the process of revising its undergraduate pharmacy program curriculum. Pending

approval, the revised program is anticipated to commence in 2004. Refer to the Faculty website at www.pharmacy.ualberta.ca to view the new program.

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 prior to 2004/2005.

	Term 1 hours	Term 2 hours
Year 1		
ANAT 200	3-0-0	—
Option* or BIOCH 220	3-0-0	—
Option*	—	3-0-0
PHARM 302 (Introduction to the Profession of Pharmacy)	3-4s-0	—
PHARM 303 (Pharmacy Dispensing Procedures and Pharmaceutical Calculations)	—	3-0-3
PHARM 320 (Introduction to Medicinal Chemistry)	3-0-0	3-0-0
PHARM 325 (Introduction to Quantitative Pharmaceutical Analysis)	—	3-0-3
PHYSL 252 (Human Physiology)	3-0-0	3-0-0
	15-4s-0	15-0-6
	Term 1 hours	Term 2 hours
Year 2		
PMCOL 331 (Pharmacology)	3-0-0	3-0-0
PHARM 340 (Pharmacy Administration)	—	3-2s-0
PHARM 352 (Jurisprudence and Ethics)	3-1s-3	—
PHARM 360 (Pharmaceutics)	3-0-3	3-0-3
PHARM 370 (Medicinal Chemistry)	3-0-0	3-0-0
PHARM 380 (Introduction to Disease Processes)	3-0-0	—
INT D 410 (Interdisciplinary Health Team Development)	—	0-3s-0
	15-1s-6	12-5s-3
	Term 1 hours	Term 2 hours
Year 3		
PHARM 403 (Toxicity of Drugs and Related Products)	3-3s-0	—
PHARM 404 (Clinical Pharmacy)	3-0-0	—
PHARM 405 (Introduction to Institutional Practice and Patient Counselling with the Emphasis on Non-Prescription Drugs)	3-1s-3	—
PHARM 406 (Monitoring Drug Therapy Based on Patient Interviews, Patient Counselling and Drug Information)	—	3-1s-3
PHARM 415 (Biopharmaceutics and Pharmacokinetics)	3-0-0	—
PHARM 431 (Therapeutics)	3-0-0	3-0-0
PHARM 432 (Antimicrobial Agents and Infectious Diseases)	—	3-2s-0
PHARM 443 (Radiopharmacy I)	—	3-0-0
Option*	—	3-0-0
	15-4s-3	15-3s-3
	Term 1 hours	Term 2 hours
Year 4		
(Students will be off campus in either the first or second term. Coursework will be completed in the opposite term.)		
PHARM 456 (Clinical Pharmacy Rotations)	12 weeks	or 12 weeks
PHARM 457 (Contemporary Issues in Pharmacy)	1-0-0	or 1-0-0
Specialization Elective**	3-0-0	or 3-0-0
Specialization Elective**	3-0-0	or 3-0-0
Specialization Elective**	3-0-0	or 3-0-0
Option*	3-0-0	or 3-0-0
Option*	3-0-0	or 3-0-0
	16-0-0	16-0-0

*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. Students wanting to further develop their intended pattern of specialization may want to select options from the list of pattern-related options provided by the Faculty of Pharmacy and Pharmaceutical Sciences.

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

Junior courses are those numbered 199 or lower.

**Specialization electives are available as follows:

- (1) **Term 1:** PHARM 455, 458, 460, 461, 471, 489, 494, 498, 561, 570, 575, 593.
- (2) **Term 2:** PHARM 455, 481, 483, 484, 485, 489, 493, 498, 565, 586.
- (3) **Spring or Summer Term:** PHARM 455

It may be necessary to limit enrolment in certain specialization electives.

Note: The following plan applies to students admitted to the BSc in Pharmacy program in 2004/2005.

	Term 1 hours	Term 2 hours	Year 3	Term 1 hours	Term 2 hours
Year 1					
PHARM 300 (Experiential Learning—Part 1)	30 hours	30 hours	PHARM 467 (Oncology)	13.5-2s-2 in 3 weeks	—
PHARM 306 (Introductory Biomedical Science)	15-0-0 in 3 weeks	—	PHARM 372 (Pharmacy Management)	4-0-0 in 8 weeks	—
Option* or BIOCH 220	3-0-0	—	PHARM 417 (Neurology)	13.5-2s-2 in 4 weeks	—
PHARM 301 (Introduction to Medicinal Chemistry)	15-0-0 in 3 weeks	—	PHARM 447 (Psychiatry)	15-3s-2 in 3 weeks	—
PHARM 304 (Introduction to Core Skills of a Health Professional—Informatics-Part 1)	2-2s-1 in 2 weeks	—	PHARM 407 (Infectious Diseases I)	13.5-2s-2 in 5 weeks	—
PHARM 314 (Introduction to Core Skills of a Health Professional—Communication Skills -Part 1)	36 hours in 11 weeks	—	Option	3-0-0	—
PHARM 321 (Pharmaceutical Biotechnology and Immunology)	15-0-0 in 3 weeks	—	PHARM 487 (Pulmonary)	—	12-3s-2 in 2 weeks
PHARM 341 (Pharmaceutical Analysis)	15-0-0 in 2 weeks	—	PHARM 437 (Bone and Joint)	—	12-2s-2 in 2 weeks
PHARM 322 (Role of the Pharmacist in the Canadian Health Care System)	37 hours in 10 weeks	—	PHARM 477 (Infectious Diseases II)	—	12-2s-2 in 6 weeks
PHARM 307 (Dermatology/EENT)	—	15-4s-3 in 3 weeks	PHARM 497 (Endocrine)	—	12-2s-2 in 2 weeks
PHARM 324 (Introduction to Core Skills of a Health Professional—Informatics-Part 2)	—	0-5s-0-in 3 weeks	PHARM 499 (Women's and Men's Health)	—	12-2s-2 in 2 weeks
PHARM 331 (Pharmaceutics 1)	—	5-2s-3 in 8 weeks	PHARM 382 (Provincial and Canadian Healthcare)	—	3-2s-0 in 13 weeks
PHARM 334 (Introduction to Core Skills of a Health Professional—Communication Skills-Part 2)	—	28 hours in 11 weeks	PHARM 430 (Comprehensive Assessment)	—	0-10s-2 in 1 week
PHARM 342 (Introduction to Drug Use Process and Patient Care)	—	3-0-3 in 11 weeks		Term 1 hours	Term 2 hours
PHARM 305 (Experiential Learning—Level 1 -160 hours in 4 weeks in summer)	—	—			
	Term 1 hours	Term 2 hours	Year 4		
Year 2			(Students will be off campus in either the first or second term. Coursework will be completed in the opposite term.)		
PHARM 361 (Pharmaceutics II)	6-1s-3 in 3 weeks	—	PHARM 425 (Clinical Pharmacy Rotations)	17 weeks	or 17 weeks
PHARM 351 (Biopharmaceutics and Pharmacokinetics)	3-0-0 in 11 weeks	—	Specialization Elective**	3-0-0	or 3-0-0
PHARM 311 (Radiopharm and Diagnostic Imaging)	5-0-3 in 3 weeks	—	Specialization Elective**	3-0-0	or 3-0-0
PHARM 362 (Pharmacy Laws and Ethics)	18 hours in 9 weeks	—	Specialization Elective**	3-0-0	or 3-0-0
PHARM 317 (Lab Values, Fluids and Electrolytes)	5-2s-0 in 2 weeks	—	Option*	3-0-0	or 3-0-0
PHARM 337 (Urology and Nephrology)	15-2s-2 in 2 weeks	—	Option*	3-0-0	or 3-0-0
PHARM 347 (Hematology)	15-4s-2 in 2 weeks	—		16-0-0	15-0-0
PHARM 357 (Gastroenterology)	15-6s-2 in 2 weeks	—			
PHARM 377 (Immunotherapeutics and Transplant)	26 hours in 2 weeks	—			
PHARM 387 (Pediatrics/Geriatrics)	6-3s-0 in 3 weeks	—			
PHARM 367 (Cardiology)	—	11-2s-2 in 6 weeks	*Options		
PHARM 427 (Pain)	—	11-2s-2 in 3 weeks	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. Students wanting to further develop their intended pattern of specialization may want to select options from the list of pattern-related options provided by the Faculty of Pharmacy and Pharmaceutical Sciences.		
PHARM 327 (Nutrition)	—	15-2s-2 in 2 weeks	Note: Only one junior course from each subject area is permitted. Junior courses are those numbered 199 or lower.		
PHARM 392 (Pharmacoepidemiology and Research)	—	6-0-0 in 5 weeks	**Specialization electives are available as follows:		
PHARM 330 (Comprehensive Assessment)	—	0-10s-2 in 1 week	(1) Term 1: PHARM 455, 458, 460, 461, 471, 489, 494, 498, 561, 570, 575, 593.		
INT D 410 (Interdisciplinary Health Team Development)	—	0-6.5s-0 in 5 weeks	(2) Term 2: PHARM 455, 481, 483, 484, 485, 489, 493, 498, 565, 586.		
PHARM 315 (Experiential Learning—Level 2 -80 hours in 2 weeks in summer)	—	—	(3) Spring or Summer Term: PHARM 455		
			It may be necessary to limit enrolment in certain specialization electives.		

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 §195, Graduate Programs.

145 Courses

Faculty of Pharmacy and Pharmaceutical Sciences courses can be found in §221, Course Listings, under Pharmacy (PHARM).