SCHOOL OF PHARMACY

SECTION CONTENTS

List of Tables

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Structured Practice Experience Program Co-ordinator
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1 The Memorial University of Newfoundland Code

The attention of all members of the University Community is drawn to the section of the University Calendar titled **The Memorial University of Newfoundland Code**, which articulates the University's commitment to maintaining the highest standards of academic integrity.

2 School Description

The School of Pharmacy offers an undergraduate degree in pharmacy and graduate degrees in pharmaceutical sciences. The School is committed to providing an undergraduate program of quality and excellence that will prepare individuals who will contribute significantly in all settings of pharmacy practice. The experiential learning component of the program ensures students have the opportunity to integrate academic learning with professional practice and to develop the necessary knowledge, skills and attitudes required of practising pharmacists. The School encourages a close working relationship among students, faculty, and staff, and prides itself on its strong association with and support of the pharmacy community at both the provincial and national level.

Additional information regarding the School of Pharmacy is available at www.mun.ca/pharmacy.

Students must meet all regulations of the School in addition to those stated in the general regulations. For information concerning fees and charges, admission/readmission to the University, and general academic regulations (Undergraduate), refer to ***UNIVERSITY REGULATIONS***.

2.1 Vision Statement

Fostering the development of pharmacy graduates committed to enhancing the health of individuals and the community.

2.2 Mission Statement

Through the scholarly pursuits of teaching, research and service, the School of Pharmacy is dedicated to:

- preparing pharmaceutical care practitioners committed to life long learning
- fostering excellence and innovation in research and graduate studies
- developing and participating in professional practice and community outreach
- advancing the profession

2.3 Accreditation Status

The School of Pharmacy is accredited by the Canadian Council for Accreditation of Pharmacy Programs (CCAPP) to June 2010.

3 Description of Program

The School of Pharmacy offers an undergraduate program leading to the degree of Bachelor of Science (Pharmacy). This degree is designed to prepare graduates for careers primarily in community and hospital settings but also in the pharmaceutical industry, pharmacy organizations, health sciences research, government, and educational environments. After successful completion of national examinations, a graduate of the program is eligible to apply to be licensed as a pharmacist in Newfoundland and Labrador and other provinces in Canada.

The program of study leading to the Bachelor of Science (Pharmacy) degree has two phases and requires at least five years to complete. Prior to entry to the program students will acquire a background in the mathematical and physical sciences. Once in the program students will take courses in the basic health sciences, pharmacy sub-specialties and social/administrative sciences. At the end of each year students will have an opportunity to apply the academic knowledge acquired and to develop and practice patient care skills by participating in experiential learning within community and hospital settings. During the program students will develop an understanding of the professional and societal responsibilities of a pharmacist, and will recognize the need for lifelong learning.

3.1 Structured Practice Experience

Students are required to successfully complete all experiential components of the program, including the Structured Practice Experience (SPE). During SPE's students are placed in a variety of pharmacy practice settings and are brought into direct contact with patients, pharmacists and other health professionals. Students become involved in the practice of pharmaceutical care and are expected to assume increasing responsibility as their education advances. Such practice experiences ensure students are exposed to situations which cannot be provided in the classroom..

1. The Joint Committee on Structured Practice Experience, consisting of representatives from both the School of Pharmacy and the Newfoundland and Labrador Pharmacy Board, is responsible for providing the overall direction for the program and recommending policies and procedures for its operation.
2. Students will be placed at sites by the School. The Structured Practice Experience Co-ordinator liaises with students to determine placements.
3. While every effort will be made to accommodate a student's request to complete SPEs in a specific location, a student may be assigned to any participating site within the province of Newfoundland and Labrador.
4. Students are responsible for all travel and accommodation costs associated with the SPE.
5. Students who conduct themselves in such a manner as to cause their termination from the SPE site, including breaches in confidentiality, violation of policies and professional misconduct will be assigned a grade of FAL (fail) for that SPE.
6. Students are required to complete three SPEs, each of four weeks duration, and one SPE of twelve weeks duration. The first three SPEs are completed at the end of the Winter semester in the first, second, and third years of the program. The final SPE is completed in the Winter semester of the final year of the program.
7. The number of hours per week of the SPE program will be as required by CCAPP standards.
8. Students will be evaluated on their performance during the SPE and on written assignments including workbooks, pharmaceutical care case work-ups and drug information requests. Students may have workbooks audited or they may be formally examined on material learned during the SPE period. The overall evaluation of SPEs will result in the assignment of one of the following grades: PWD (pass with distinction), PAS (pass), or FAL (fail).

3.2 Registration as a Pharmacy Student

A student must be registered as a "Pharmacy Student" with the Newfoundland and Labrador Pharmacy Board. A student must be registered by September 30th of each academic year. As well, a student must be registered as a "Pharmacy Student" with the respective provincial or territorial licensing body prior to the commencement of Structured Practice Experiences. A student who fails to meet the requirements for licensing may be required to withdraw from the program.

4 Admission Regulations for the School of Pharmacy

In addition to meeting ***UNIVERSITY REGULATIONS*** students applying for admission for the program must meet the admission regulations of the School.

4.1 General Information

1. Admissions will be to the first year of pharmacy studies.
2. Entry to the School is competitive for a limited number of placements. Priority is given to applicants who are bona fide residents of this province and who are Canadian citizens or permanent residents. The final decision on admission rests with the Admissions Committee of the School.
3. The Admissions Committee considers each applicant's academic background and information on the applicant's personal characteristics and achievements as given by the applicant. Personal interviews, which may include both a written and oral component, may be required. Reports from referees may also be considered.
4. The School of Pharmacy does not require criminal record checks or other screening procedures as a condition of admission to its program. However, students should be aware that such record checks or other screening procedures may be required by agencies used by the University for clinical or structured practice experiences related to academic course assignments necessary for graduation. Such agencies may refuse to accept students on the basis of information contained in the record check or other screening procedure thus preventing the student from completing a practice experience or other clinical requirement. As a result, such students may not be eligible for promotion or graduation.

   It is the students' responsibility to have such procedures completed as required and at their own expense.

   The screening procedures of any given agency may change from time to time and are beyond the control of the University.

4.2 Application Forms and Deadlines

1. Application forms are available in person from the School and the Office of the Registrar or through the School's website at www.mun.ca/pharmacy. Application forms may also be obtained by writing the School of Pharmacy, Memorial University of Newfoundland, St. John's, NL A1B 3V6 or the Office of the Registrar, Admissions Office, Memorial University of Newfoundland, St. John's, NL A1C 5S7.
2. All application forms and fees for admission to the program for the Bachelor of Science (Pharmacy) must be submitted to the Office of the Registrar of the University on or before the deadline of March 1 in any year. The program commences in the Fall semester.
3. Applications will be reviewed after the closing date by the Admissions Committee of the School. This Committee has the delegated authority of the School's Academic Council to admit or decline to admit applicants, following guidelines and procedures acceptable to that Council.
4. Each applicant is responsible for ensuring that all the required information for application is supplied to the Admissions Committee, and for providing any further information required by the Committee. An application will not be considered to be complete until all documentation has been received and appropriate fees paid.

4.3 Admission Requirements to the School

Applicants who are not currently students at Memorial University of Newfoundland must apply for admission to the University under the **Categories of Applicants, Admission Criteria and Other Information** outlined under ***UNIVERSITY REGULATIONS* - Admission/ Readmission to the University (Undergraduate)**. In addition to meeting these regulations, applicants to the School must meet requirements as indicated below.

1. To be eligible for consideration an applicant shall have completed a minimum of 30 credit hours which have been taken or accepted for credit at a recognized university or university college.
2. An applicant is normally required to have completed each of the following courses or their equivalents. In the case of transfer students, the course equivalencies relate to courses taught at Memorial University of Newfoundland, St. John's campus.
   - Biology 1001 and 1002
   - Chemistry 1050 and 1051 or equivalent
   - English 1080 and English 1101 or equivalent
   - Mathematics 1000 and 1001
   - Physics 1020 and 1021 or Physics 1050 and 1051
3. For students attending Sir Wilfred Grenfell college campus, the following course offerings are acceptable for admission to the School;
   - Biology 1001 and 1002
   - Chemistry 1200 and 1001
   - English 1000 and 1001
   - Mathematics 1000 and 1001
   - Physics 1020 and 1021, or Physics 1050 and 1051
4. Normally an application will not be considered from an applicant who cannot produce evidence that the above requirements have been met or will have been met by the time of entry into the School.
5. An unsuccessful applicant who wishes to reapply for admission is required to submit the application forms relevant to the year of reapplication and will be required to enter into the competition for that year.

4.4 Acceptance Procedures

1. Notification of the decision of the Admissions Committee of the School will be made to applicants by the Director of the School by letter. No other form of notification will be considered official.
2. The letter of acceptance will give the successful applicant 14 days from the date of the letter of notification in which to confirm acceptance of the placement offer. The signed intention to accept the offer must be accompanied by a deposit of $100, which will be credited towards tuition fees. The deposit will be forfeited if the applicant subsequently declines the offer or fails to register. If no reply is received within 14 days, the offer by the School will be withdrawn and the applicant will be informed of this by letter.

5 Program Regulations - General Degree

5.1 Bachelor of Science (Pharmacy)

1. The 174 credit hour Bachelor of Science (Pharmacy) degree requires 30 credit hours before admission to the program and 144 credit hours after admission to the program. The program includes four structured practice experiences, three of which are non-credit, with the other having 18 credit hours.
   - The program courses shall normally be taken in the academic terms in the sequence and course load as set out in **Table 1 Bachelor of Science (Pharmacy)**. Students wishing to change the sequence and/or reduce the course load required in the academic terms must obtain permission from the School's Committee on Undergraduate Studies.
   - Elective courses may be taken from any academic unit.

Table 1 Bachelor of Science (Pharmacy)

Term	Required Courses	Elective Courses
Courses required for admission as indicated under **Admission Requirements to the School**)	Biology 1001 and 1002 Chemistry 1050 and 1051 or equivalent English 1080 and English 1101 or equivalent Mathematics 1000 and 1001 Physics 1020 and 1021 or Physics 1050 and 1051	
Fall Academic Term 1	Business 2000 Chemistry 2440 PHAR 2002 PHAR 2101 PHAR 2150 PHAR 2201 Psychology 1000	
Winter Academic Term 2	PHAR 2003 PHAR 2004 PHAR 201W PHAR 2102 PHAR 2151 PHAR 2202 PHAR 2203 Psychology 1001	
Fall Academic Term 3	Medicine 4300 PHAR 3003 PHAR 3111 PHAR 3150 PHAR 3203 PHAR 3205 PHAR 3501	
Winter Academic Term 4	Biochemistry 2600 PHAR 3009 PHAR 302W PHAR 3103 PHAR 3151 PHAR 3204 PHAR 3206 PHAR 3301	
Fall Academic Term 5	PHAR 4008 PHAR 4105 PHAR 4150 PHAR 4301 PHAR 4401 PHAR 4501	3 credit hours
Winter Academic Term 6	PHAR 403W PHAR 4151 PHAR 4402 PHAR 4502 PHAR 4503 Philosophy 2551 or the former PHIL 2803	3 credit hours
Fall Academic Term 7	PHAR 5150 PHAR 5301 PHAR 5302 PHAR 5303 PHAR 5401 PHAR 5501	3 credit hours
Winter Academic Term 8	PHAR 500X	

6 Promotion Regulations

6.1 General Information

- The Committee on Undergraduate Studies will determine each student's promotion status at the end of each academic year.
- In addition to meeting the promotion regulations for the School students must meet the general academic regulations (undergraduate). For further information refer to ***UNIVERSITY REGULATIONS* - General Academic Regulations (Undergraduate)**.
- Success in the program depends on meeting the requirements of all terms.

6.2 Promotion Status

A student's promotion status at the end of each academic year will be in one of the following two categories:

6.2.1 Clear Promotion

Clear Promotion means a student can proceed to the next academic year without restrictions.

- Students will receive a Clear Promotion from an academic year by obtaining an average of 65% and having obtained at least a pass in each course. A weighted average based on credit hours in the Bachelor of Science (Pharmacy) program courses will be calculated for determining eligibility for promotion. Neither promotion nor graduation will be permitted if a student has a numeric grade below 50% in any course in the program.
- Students completing PHAR 2102 must obtain a numeric grade of at least 70%.
- Students completing PHAR 201W, 302W, 403W, or 500X must obtain a grade of PAS or PWD in each course.
- Students must attain a passing grade in each elective, but these courses will not be included in calculating the student's average grade for the purposes of promotion, graduation, or academic awards.

6.2.2 Promotion Denied

Promotion Denied indicates Clear Promotion is not achieved at the end of each academic year.

- A student with Promotion Denied status will normally be required to withdraw from the School.
  - A student who does not obtain a clear promotion may be permitted to repeat all or part of the academic year. If a student is required to repeat a year on the grounds of unsatisfactory performance, his or her performance in the repeated year must meet the conditions for Clear Promotion. If this standard is not met, the Committee on Undergraduate Studies may require the student to withdraw from the program.
  - Normally, the option to repeat a year on the grounds of academic difficulties can be offered only once during the student's Bachelor of Science (Pharmacy) program. This restriction may be waived if it has been demonstrated that the student's academic performance has been adversely affected by factors duly authenticated and acceptable to the Committee on Undergraduate Studies.
- A student with Promotion Denied status at the end of the final academic term will not be recommended for graduation until the student's status is changed to Clear Promotion.

6.3 Other Information

- Students may be required to withdraw from their program at any time, if, in the opinion of the School, they are unlikely to benefit from continued attendance.
- The Committee on Undergraduate Studies may require a student who is deemed unlikely to benefit from continued attendance in his/her course of study to withdraw conditionally. The Chair of the committee will advise the Director of the School of the circumstances precipitating this action, the duration of the withdrawal and any conditions the student must fulfil during the withdrawal. The Director may then recommend to the Registrar that the student is on conditional withdrawal. Upon completing the conditions, the student may be permitted re-entry to the program. If the conditions are not met, the student may be required to withdraw from the program.
- The School reserves the right to require a student to withdraw from the program at any time when acceptable cause is demonstrated. In such cases, the Director, on behalf of the School, shall recommend such withdrawal to the Registrar who will then take appropriate action. Any such action is subject to the right of appeal by the student. An appeal should be made in writing clearly stating the basis for the appeal and should be directed in the first instance to the Registrar of the University. The Registrar, in consultation with the Director, will determine whether or not the grounds stated are sufficient to warrant a formal hearing of the appeal.

6.4 Leave of Absence

- Upon completion of an academic year, a student in good standing may elect to withdraw temporarily from studies. Voluntary withdrawal at other times and for other reasons may be permitted in accordance with ***UNIVERSITY REGULATIONS* - General Academic Regulations (Undergraduate) - Registration**. In all cases, the intent to withdraw voluntarily should be discussed with the Director. The Director may then recommend to the Registrar that a student be permitted to withdraw for a stated period of time. At the end of this period, the student, in consultation with the Committee on Undergraduate Studies, should ensure that sufficient revision and preparatory work is undertaken to allow studies to be resumed readily. In the absence of good cause, any such student who does not resume studies on the specified date may be deemed to have left the program.

7 Supplementary Examination Regulations

A student has the right to request to write a supplementary examination in courses offered by the School of Pharmacy that have written final examinations. In the case of Pharmacy courses, where the final examination is not cumulative, a student may be permitted to write one supplementary examination, at the discretion of the course co-ordinator, if they fail any one of the term examinations.

In addition to meeting ***UNIVERSITY REGULATIONS* - General Academic Regulations (Undergraduate)**, upon successful completion of the supplementary examination, a student must also meet the promotion regulations of the School. For further information refer to **Promotion Regulations**.

1. Students who wish to write a supplementary examination must submit the prescribed form, which is available from the School of

Pharmacy, to the Office of the Director within one week of release of grades. Normally the supplementary examination will be written no later than the first week of the semester immediately following the one in which the course was failed. The examination will be similar in length and degree of difficulty as the original examination.

2. A student who has satisfied the academic criteria for continuance at the University may write a supplementary examination in one Pharmacy course if the final grade obtained is 45-49% (F). In the case of a Pharmacy course that has a final pass mark greater than 50%, a student who obtains a final grade that is within five marks below the established pass mark may be permitted to write a supplementary examination.
3. The student must pass the supplementary examination in order to pass the course. The new grade obtained from successfully passing the supplementary examination will be calculated using the same weighting scheme used in the course, but with the result of the supplementary examination replacing that of the original failed examination. Any additional course requirements, including a requirement to pass the laboratory/practical session, will continue to apply.
4. The new course grade will replace the original grade on the student's transcript and will indicate that the course result was earned as the result of supplementary examination.
5. A student may write a supplementary examination in a particular course only once; if the course result following the supplementary examination is a fail then the course must be repeated and successfully completed.
6. A student will be permitted to write a maximum number of one supplementary examination during each year of the Pharmacy program.

8 Waiver of School Regulations

A student has the right to request waiver of School regulations. A student wishing waiver of University academic regulations should refer to ***UNIVERSITY REGULATIONS* - General Academic Regulations (Undergraduate) - Waiver of Regulations.**

8.1 General Information

- The School reserves the right in special circumstances to modify, alter, or waive any School regulation in its application to individual students where merit and equity so warrant in the judgment of the Committee on Undergraduate Studies of the School.
- All requests must be submitted to the Committee on Undergraduate Studies of the School for consideration. A student requesting a waiver of a School regulation must submit the request in writing to the Chair of the Committee on Undergraduate Studies. Medical and/or other documentation to substantiate the request must be provided.
- Any waiver granted does not reduce the total number of credit hours required for the degree.

9 Appeal of Regulations

Any student whose request for waiver of School regulations has been denied has the right to appeal. For further information refer to ***UNIVERSITY REGULATIONS* - General Academic Regulations (Undergraduate) - Appeal of Regulations**.

- An applicant who has been denied admission has the right to appeal this decision of the Admissions Committee if it is felt by the applicant that the decision was reached on grounds other than those outlined in **Admission Regulations for the School of Pharmacy**. The appeal should be made in writing within fourteen days of the notification of the decision and should be directed to the Director of the School. The letter should state clearly and fully the grounds for the appeal. If the Director of the School, in consultation with the Registrar, judges the grounds to be sufficient, the formal appeals mechanism will be initiated.
- A student has the right to make a formal appeal against a decision of the Committee on Undergraduate Studies. However, this appeal cannot be made on the basis of the grades awarded in individual courses, as the student will normally have had the opportunity of contesting grades immediately after notification. A formal appeal by a student against the decision of the Committee must be made on grounds other than the grades awarded, e.g. default of procedure. This appeal should be made in writing, clearly stating the basis for the appeal and should be directed in the first instance to the Registrar of the University. The Registrar, in consultation with the Director, will determine whether or not the grounds stated are sufficient to warrant a formal hearing of the appeal.

10 Course Descriptions

In accordance with *Senate's Policy Regarding Inactive Courses*, the course descriptions for courses which have not been offered in the previous three academic years and which are not scheduled to be offered in the current academic year have been removed from the following listing. For information about any of these inactive courses, please contact the Director of the School.

All courses of the School are designated by PHAR and are restricted to students in the School of Pharmacy.

2002 Anatomy and Physiology I presents a survey of human anatomy and physiology throughout the lifespan. It includes aspects of cytology and histology that form a foundation for the practice of pharmacy. Special emphasis is given to the skeletal, muscular, nervous and endocrine systems. The course will include both the vocabulary and concepts of anatomy and physiology with the overall goal being the understanding of the interrelationships and integration of all systems from the cell to whole organism.
CR: Nursing 1002
LH: 2; attendance is required

2003 Anatomy and Physiology II presents a survey of human anatomy and physiology throughout the lifespan. It includes aspects of cytology and histology that form a foundation for the practice of pharmacy. Special emphasis is given to the endocrine, circulatory, respiratory, urinary, digestive and reproductive systems. The course will include both the vocabulary and concepts of anatomy and physiology with the overall goal being the understanding of the interrelationships and integration of all systems from the cell to whole organism.
CR: Nursing 1012
LH: 2; attendance is required
PR: PHAR 2002

2004 Introduction to Biochemistry (formerly PHAR 3110) is an introduction to the major organic substances of living organisms, proteins, carbohydrates and lipids: their structure, analysis and biochemical function. Enzymes. Biochemistry of membranes: plasma membrane and specialized intracellular membranes. Biochemistry of selected differentiated cells.
CR: Biochemistry 2101
OR: tutorials as required
PR: Chemistry 2400 and 2401 or Chemistry 2440

201W Structured Practice Experience I is a structured practice experience in community pharmacy after completion of the first year which will provide an opportunity for students to apply their technical skills and introduce them to patient care activities. The structured practice experience is normally comprised of four weeks during May/June.
AR: attendance is required
CH: 0
LC: 0
PR: successful completion of all courses in Academic Terms 1 & 2 of the program.

2101 Pharmacy Practice I provides an overview of the Canadian Health

Care System, the organization and role of pharmacy and pharmacists in the delivery of health care, and the federal and provincial regulations that govern the practice of pharmacy. An introduction to effective communication strategies in the delivery of pharmaceutical care will be discussed.
CO: PHAR 2150

2102 Pharmacy Practice II introduces the student to the basic skills and knowledge of the practice of pharmacy. Students will learn to apply these skills to build an expertise in pharmaceutical care. Emphasis will be placed on communication and patient counselling. Students will learn to apply pharmacy regulations in the dispensing of medications. The passing grade in this course is 70%, failing which the student may be required to withdraw from the program.
CH: 2
CO: PHAR 2151
LC: 2
OR: tutorials 2 hours per week; attendance is required

2150 Pharmacy Skills provides an introduction to the pharmacy profession with emphasis on necessary learning skills and the educational outcomes of the program. Students will begin the development of drug information search skills, computer skills, public speaking and basic interpersonal communications skills necessary in practice of pharmacy. Students will participate in self-directed learning modules in medical terminology and pharmaceutical calculations.
CH: 1
CO: all Academic Term 1 Pharmacy courses
LC: 0
OR: practical sessions 3 hours per week; tutorials 1 hour per week; attendance is required

2151 Pharmacy Skills provides an introduction to the pharmacy profession with emphasis on necessary learning skills and the educational outcomes of the program. Students will continue the development of drug information search skills, computer skills, pharmaceutical calculation skills and basic interpersonal communications skills necessary in practice of pharmacy. Basic dispensing skills and the application of the legal framework in which pharmacists practice will be developed.
CH: 1
CO: all Academic Term 2 Pharmacy courses
LC: 0
OR: practical sessions 3 hours per week; tutorials 1 hour per week; attendance is required
PR: PHAR 2150 and 2101

2201 Pharmaceutics I provides an insight into a number of physicochemical basics and explains them within a pharmaceutical context. The course provides the basic foundation necessary for the study of pharmaceutical dosage forms, pharmacokinetics and bio-pharmaceutics.
LH: 3; attendance is required
PR: Mathematics 1000 and 1001 and Chemistry 1050 and 1051; or Chemistry 1200 and 1001

2202 Pharmaceutics II is designed to provide the student with an understanding of pharmaceutical dosage forms and their applications. It applies the principles taught in Pharmaceutics I to understand the design and components of the different pharmaceutical preparations.
LH: 3; attendance is required
PR: PHAR 2201

2203 Pharmaceutical Analysis is designed to introduce some important techniques and methods of analysis in pharmaceutical sciences. The laboratory exercises consist of both non-instrumental and instrumental analytical techniques that are widely employed in the analysis of pharmaceuticals.
CH: 2
LC: 2
LH: 3 hours every other week; attendance is required
PR: Chemistry 1050 and 1051 or Chemistry 1200 and 1001

3003 Pathophysiology (formerly PHAR 4004) examines the nature of disease, causes and effects, and alteration in structure and function of cells, inflammation, neoplasia, genetic and chromosomal diseases, healing and repair, stress and disease.

3009 Pharmacology (formerly PHAR 4009) explores topics in general pharmacology including drugs used in the treatment of inflammatory diseases, renal pharmacology, anticoagulant and antithrombotic drugs, antihyperlipidemics, drugs used in the treatment of anemia, and endocrine pharmacology.
PR: Medicine 4300 or equivalent

302W Structured Practice Experience II is a structured practice experience in hospital pharmacy after completion of the second year which will provide an opportunity for students to apply their technical skills and introduce them to patient care activities. The practical experience is normally comprised of four weeks during May/June.
AR: attendance is required
CH: 0
LC: 0
PR: successful completion of all courses in Academic Terms 3 & 4 of the program.

3103 Microbiology of Infectious Diseases examines the various types of micro-organisms (bacterial, viral, parasitic and fungal), the environment in which they are able to multiply and their relationship to human diseases. The classifications of their morphology, mode of reproduction and the metabolic process, the physiological and epidemiological principles of infectious diseases and their manifestations are discussed including the principles of immunization.

3111 General Biochemistry covers the catabolism of carbohydrates, lipids and amino acids. Mitochondria, chloroplasts and ATP synthesis. Biosynthesis of carbohydrates and lipids. Metabolic specialization of differentiated cells and tissues. Integration of metabolism.
CR: Biochemistry 3106
OR: tutorials as required
PR: PHAR 2004 or the former 3110 or Biochemistry 2101

3150 Pharmacy Skills continues the development of the learning skills necessary for pharmacy practice in order to meet the educational outcomes for the second year of the pharmacy program. Students will continue to develop skills of drug information, communication, pharmaceutical calculations and sterile product preparation relating to the courses of study in the second year. Students will complete a first aid course.
CH: 1
CO: all Academic Term 3 Pharmacy courses
LC: 0
OR: practical sessions 3 hours per week; tutorials 1 hour per week; attendance is required

3151 Pharmacy Skills continues the development of the learning skills necessary for pharmacy practice in order to meet the educational outcomes for the second year of the pharmacy program. Students will continue to develop skills of drug information, communication and pharmaceutical calculations relating to the courses of study in the second year. Students will participate in practice sessions necessary to develop an understanding of and skills required in clinical kinetics.
CH: 1
CO: all Academic Term 4 Pharmacy courses
LC: 0
OR: practical sessions 3 hours per week; tutorials 1 hour per week; attendance is required
PR: PHAR 3150

3203 Medicinal Chemistry I (formerly PHAR 4010) presents topics covering the molecular basis of action, metabolism, and toxicity of drugs. It provides an orientation to medicinally important nuclei and their nomenclature, followed by principles of drug discovery and development. The relationship between molecular structure and biological action of drugs together with elementary molecular modelling, and theories related to receptors and drug action will be presented. Concepts of drug metabolism and the relevant metabolic pathways in relationship to drug inactivation and toxicity, along with the principles of drug latentiation and prodrugs is covered. The structures, selected physicochemical properties, mechanism of action, structure-activity relationships, toxic effects at molecular level, and metabolism of drugs including central nervous system.
CO: Medicine 4300 and PHAR 3003
OR: tutorials 1 hour per week; attendance is required
PR: Chemistry 2440 or Chemistry 2400 and 2401

3204 Medicinal Chemistry II (formerly PHAR 4011) is a continuation of Pharmacy 3203 and focuses on the structures, selected physicochemical properties, mechanism of action, structure-activity relationships, toxic effects at molecular level, and metabolism of different pharmacological classes of drugs including cholinergic agents, analgetic and anti-inflammatory agents, insulin and oral antidiabetic drugs, steroids and related compounds, antihyperlipidemic agents, histamine and antihistaminic agents, diuretic agents, angiotensin converting enzyme inhibitors and antagonists, and calcium channel blockers.
CO: PHAR 3009
OR: tutorials 1 hour per week; attendance is required
PR: PHAR 3203

3205 Pharmaceutics III consists of several units. The standards of good manufacturing practice will be introduced. Characteristics, preparation, quality assurance and delivery systems for sterile products will be covered. The basic principles governing the application of radiation and radioactive compounds in medical diagnosis and therapy will be discussed. The status of current biotechnology-based pharmaceuticals and biotechnology related matters will be addressed.
PR: PHAR 2201 and 2202

3206 Applied Pharmacokinetics (formerly PHAR 4006) is an introduction to biopharmaceutical and pharmacokinetic principles used in the selection, dosing, monitoring and evaluation of drug therapy. Application of these principles in evaluating drug literature and developing drug dosage regimens of selected classes of drugs for individual patients will be discussed.
CO: PHAR 3009

PR: Medicine 4300, PHAR 2201and 2202

3301 Patient Care I is an introductory course in patient care, especially in the areas of self-care and self-treatment and the role of the pharmacist. The regulatory environment of non-prescription products and the prevention and treatment of health conditions amenable to self-management will be discussed.
CO: PHAR 3009
PR: Medicine 4300

3501 Pharmacy Research and Evaluation I introduces students to principle roles of health policy with a special emphasis on pharmaceutical policy and its impact on health professionals, the public and on the delivery of pharmaceutical care.
CH: 1
LC: 1
PR: PHAR 2101 and 2102

4008 Chemotherapy presents the principles of infectious diseases and cancer chemotherapy. Topics to be explored include molecular structure profiles in relation to mechanism of action, drug resistance, and toxicity of antimicrobial, antiviral, and antineoplastic agents. Antimicrobial activity/ spectrum of activity of antibacterials, antifungals, antimalarial, antituberculosis, and antiviral/antiretroviral agents will be discussed. The classification and mechanism of action of cancer chemotherapeutic agents will be presented. Pharmacokinetic considerations, adverse effects/toxicity, and drug interactions will be explored for these agents.
CH: 2
CO: PHAR 4105, PHAR 4401
LC: 2
OR: tutorials 1 hour per week
PR: Medicine 4300, PHAR 3009, 3103, 3203 and 3204

403W Structured Practice Experience III is a structured practice experience in community pharmacy after completion of the third year which will provide an opportunity for students to apply their technical skills and practice and participate in patient care activities. The practical experience is normally comprised of four weeks during May/June.
AR: attendance is required
CH: 0
LC: 0
PR: successful completion of all courses in Academic Terms 5 & 6 of the program

4105 Immunology is an introduction to the molecular and cellular basis of immunity and hypersensitivity. Manipulation of the immune system in the management and treatment of disease is discussed.
PR: PHAR 2002 and 2003 or PHAR 3201 and 3202

4150 Pharmacy Skills continues the development of the learning skills necessary for pharmacy practice in order to meet the educational outcomes for the third year of the pharmacy program. Students will continue to develop skills of drug information and communication relating to the courses of study in the third year. Students will participate in practice sessions necessary to develop an understanding of and skills required in patient assessment. Students will build on their dispensing and education skills learned in first year through participating in dispensing and interview/counselling sessions in more complex patient situations. Students will learn to appreciate the challenges faced by, and in dealing with special patient populations.
CH: 1
CO: all Academic Term 5 Pharmacy courses
LC: 0
OR: practical sessions 3 hours per week; tutorials 1 hour per week; attendance is required

4151 Pharmacy Skills continues the development of the learning skills necessary for pharmacy practice in order to meet the educational outcomes for the third year of the pharmacy program. Students will continue to develop skills of drug information and communication relating to the courses of study in the third year. Students will participate in practice sessions necessary to develop an understanding of and skills required for in-home diagnostic testing. Students will build on their dispensing and education skills learned in first year through participating in dispensing and interview/counselling sessions in more complex patient situations. Students will learn to appreciate the challenges faced by, and in dealing with special patient populations. Health promotion and illness prevention issues will be applied through an interprofessional group project.
CH: 1
CO: all Academic Term 6 Pharmacy courses
LC: 0
OR: practical sessions 3 hours per week; tutorials 1 hour per week; attendance is required
PR: PHAR 4150

4301 Patient Care II discusses the principles of health promotion and disease prevention and the role of the pharmacist.
CH: 1
OR: tutorials 1 hour per week

4401 Therapeutics I is a part of a series that looks at the therapeutic management of common diseases. Topics may include but are not restricted to infectious diseases, hematology/oncology, and dermatology. For each disease state discussion will centre around several key issues including: the establishment of desired therapeutic outcomes; development of appropriate pharmacological and non-pharmacological therapeutic alternatives; factors to be considered to aid in the selection of an individualized therapeutic regimen; and the development of a monitoring plan to evaluate efficacy and safety.
CH: 6
CO: PHAR 4105, PHAR 4008
LC: 6
OR: tutorials 2 hours per week; attendance is required
PR: Medicine 4300, PHAR 3009 and 3206

4402 Therapeutics II is a part in a series that looks at the therapeutic management of common diseases. Topics may include but are not restricted to women's health, mens' health, gastroenterology, musculoskeletal, neurological, respiratory disorders and transplantation. For each disease state discussion will centre around several key issues including: the establishment of desired therapeutic outcomes; development of appropriate pharmacological and non-pharmacological therapeutic alternatives; factors to be considered to aid in the selection of an individualized therapeutic regimen; and the development of a monitoring plan to evaluate efficacy and safety.
CH: 6
LC: 6
OR: tutorials 2 hours per week; attendance is required
PR: PHAR 4401

4501 Pharmacy Research and Evaluation II introduces the biostatistical, pharmacoepidemiologic and pharmacoeconomic concepts and develops the skills necessary to the practice of research and evaluation methods in applied pharmacy. The understanding of such methods is an important prerequisite in the critical appraisal of the health literature and the undertaking of evidence-based clinical practice.
PR: PHAR 3501

4502 Pharmacy Research and Evaluation III introduces students to principles of critical appraisal and provides opportunities to apply these principles to critique and evaluate current medical literature. Students will be assigned to a tutorial group, which will meet twice during the semester to critically appraise at least two recently published studies (journal club). Emphasis will be placed on appropriate application of critical appraisal skills and group discussion of impact of study findings on clinical practice. In addition, this course will also discuss drug utilization reviews and evaluations and the role of the pharmacist, as well as adverse drug event reporting and the role of the pharmacist.
CH: 1
LC: 1
OR: tutorials 1 hour per week; attendance is required
PR: PHAR 4501

4503 Pharmacy Administration introduces students to the basic principles of management as it relates to pharmacy practice. Topics will include human resources and financial management, marketing, strategic planning and the principles and issues associated with safe and appropriate drug distribution. These will be discussed from both a community and an institutional practice focus.

500X Structured Practice Experience IV provides experience in clinical practice. Students will participate as members of the health care team. They will be responsible for providing pharmaceutical care to patients. Activities will include attending patient care rounds, providing in-services and drug information, and participating in case presentations. Students will be evaluated periodically throughout the practice experience and will also be required to pass an exam. The structured practice experience is comprised of two six week modules.
AR: attendance is required
CH: 18
LC: 0
PR: successful completion of all course requirements for the degree and Clear Promotion

5011 Pharmaceutical Biotechnology - inactive course.

5012 Pharmaceutical Analysis - inactive course.

5013 Hospital Pharmacy Administration - inactive course.

501A/B Pharmaceutical Research - inactive course.

5150 Pharmacy Skills continues the development of the learning skills necessary for pharmacy practice. Students will continue to develop skills of drug information and communication relating to the courses of study in the fourth year. Students will participate in discussion sessions relating to current practice issues (e.g., internet pharmacy), ethical issues in practice. Students will also complete a basic CPR course.
CH: 1
CO: all Academic Term 7 Pharmacy courses
LC: 0

OR: practical sessions 3 hours per week; tutorials 1 hour per week; attendance is required

5301 Clinical Toxicology covers the toxicology and clinical management of toxicity associated with common medications.
CH: 2
CO: PHAR 5401
LC: 2

5302 Patient Care III focuses on pharmaceutical care considerations in special patient populations (e.g., geriatrics, neonates, pediatrics, pregnancy and lactation, critically ill, etc.). Implementation of pharmaceutical care in hospital, ambulatory and community practice settings will be discussed.
CO: PHAR 5401
OR: tutorials 1 hour per week; attendance is required

5303 Patient Care IV provides the student with a basic understanding of supplements natural health products and will focus on pharmaceutical care considerations in using these products for the therapeutic management of common diseases.
CH: 2
LC: 2
OR: tutorials 2 hours per week; attendance is required

5401 Therapeutics III is part in a series that looks at the therapeutic management of common diseases. Topics may include but are not restricted to endocrine, psychiatric, renal and cardiovascular disorders. For each disease state discussion will centre around several key issues including: the establishment of desired therapeutic outcomes; development of appropriate pharmacological and non-pharmacological therapeutic alternatives; factors to be considered to aid in the selection of an individualized therapeutic regimen; and the development of a monitoring plan to evaluate efficacy and safety.
CH: 6
LC: 6
OR: tutorials 2 hours per week
PR: PHAR 4402

5501 Pharmacy Research and Evaluation IV discusses the principles of critical appraisal and provides opportunities to apply these principles to critique and evaluate current medical literature. Students will be assigned to a tutorial group, which will meet twice during the semester to critically appraise at least two recently published studies. Emphasis will be placed on appropriate application of critical appraisal skills and group discussion of impact of study findings on clinical practice.
CH: 1
LC: 0
OR: tutorials 1 hour per week
PR: PHAR 4502