GRADUATE COURSES OFFERED IN 2025-26

TERM 1

PHAR 800: Advanced Pharmaceutics and Nanomedicine – Dr. Azita Haddadi, Dr. Ellen Wasan

This course provides a comprehensive overview of the fundamentals of pharmaceutical formulations, including powders, solubility and solutions, colloids and gels, suspensions, and emulsions. Students will learn how to apply this knowledge to advanced pharmaceutical sciences and drug formulation. The course also offers an in-depth exploration of nanoparticles in drug delivery, medical devices, and imaging applications. Instruction includes tools and methodologies for experimental design, optimization, and parameter analysis. Delivery methods include lectures, guided readings, and instructor-led discussions.

PHAR 855.3: Advanced Pharmacotherapy 2: Mental Health – Dr. Katelyn Halpape

This course is designed to provide students interested in mental health with an advanced knowledge in psychopharmacotherapy. This course will provide learners with diverse, structured, and robust learning opportunities necessary to develop the professional attributes required for mental health related patient care activities and instruction of healthcare professionals and learners. This course will be taught using a variety of techniques including independent reading and writing activities, therapeutic discussions, case-based learning, and undergraduate/graduate student instruction, assessment, and mentorship. *Restriction(s): Only open to students in the Master of Clinical Pharmacy*

PHAR 871.3: Molecular Pharmacology – Dr. Robert Laprairie

Students will learn to identify, evaluate, and analyze molecular pharmacology data in order to gain insight into drug mechanism(s) of action, pharmacodynamics, pharmacokinetics, and drug-drug interactions. Learning will utilize real-world data and primary literature to help students learn drug mechanism(s) of action in conjunction with pathophysiological processes of the major body systems. Using knowledge from previous foundational sciences courses, students will learn to integrate knowledge to assess and critique data, information, and pharmacological principles. *Prerequisite: B.Sc. in natural or medical sciences.*

TERM 2

PHAR 810: Radiopharmacy – Dr. Kate Dadachova

During the lectures, the students will be presented with the basic principles of radiochemistry, radiolabeling, making radiopharmaceuticals, their quality control and applications for imaging and therapy of patients. They will have the opportunity to learn how to perform the calculations needed to manufacture radiopharmaceuticals and how to operate a radiopharmacy. They will also take part in two field trips to the Fedoruk Center for Nuclear Innovation and to the Department of Nuclear Medicine at the Royal University Hospital to observe first-hand how radiopharmaceuticals are manufactured and used in patients care, respectively.

PHAR 832.3: Drug Discovery and Development – Dr. Jian Yang

Consideration is given to the way in which new drugs are developed and the importance of drug latentiation is stressed. Some of the chemical, physicochemical and biochemical parameters affecting bioactivity are outlined. *Permission of instructor required.*

PHAR 833: Synchrotron Techniques in Nanomedicine – Dr. Ildiko Badea, Dr. Pawel Grochulski

The course is designed to offer instructor-directed readings and discussion. The students will gain fundamental knowledge of various applications of nanoparticles. Novel drug delivery development and strategies to improve drug safety and efficacy will be explored. Synchrotron techniques will be discussed in depth.

PHAR 848.3: Advanced Pharmacokinetics and Pharmacodynamics – Dr. Jane Alcorn

Qualitative and quantitative aspects of drug absorption, disposition, metabolism and excretion (ADME), and drug pharmacodynamics. The course emphasizes the physiological basis of ADME as well as the analysis of pharmacokinetic/pharmacodynamic data use of Pharmacokinetic and pharmacodynamic equations and the analysis of the data. *Prerequisite(s): Basic course in pharmacokinetics or permission of the instructor.*

PHAR 854.3: Metabolic Transformations of Xenobiotics – Dr. Ed Krol

An advanced study of the basic principles of the metabolic transformation of foreign compounds in mammals, metabolism studies and factors influencing xenobiotic metabolism. The xenobiotics covered will include drugs, food additives, agricultural chemicals and industrial chemicals. The detoxification and toxicological implications of metabolism are emphasized. *Permission of instructor required.*

PHAR 865.3: Bioanalytical Mass Spectrometry – Dr. Anas El-Aneed

The course will provide the students with fundamental knowledge of mass spectrometry theory from a biological lens and its current pharmaceutical, biomedical and agricultural applications. The theory behind various ionization methods, mass analyzers and tandem mass spectrometry for quantitative and qualitative applications will be discussed with emphasis on method development and validation for small bioactive molecules. *Permission of the instructor is required.*

SPRING/SUMMER

PHAR 870.3: Research Methods in Pharmacy Practice – Dr. David Blackburn

This course covers general study designs, methods, critical appraisal, and conceptual approaches guiding researchers and knowledge users. The focus is clinical and applied research including RCTs, drug utilization studies, surveys, SRs, and health services evaluation/interventions. *Prerequisite(s): STAT course, undergraduate degree in Pharmacy or permission of instructor required.*