



Pharmaceutical Sciences Graduate Course Descriptions

[Go to the UB catalog for descriptions of courses below the graduate '500' level.](#) Semester credits are in parenthesis.

- [PHC500: Basic Drug Development](#) (2): Fung
 Introductory graduate course on the fundamental concepts of drug formulation and development, including discussions of the crucial physicochemical and biopharmaceutical characteristics necessary for drug absorption.
- [PHC502: Seminar on Selected Pharmaceutics Topics](#) (1-3) Staff
 Methods of utilizing the literature relating to the Pharmaceutical Sciences and discussion of recent developments in the field.
- [PHC503: Surgery Techniques for Pharmacokinetics](#) (2) Soda
 Laboratory experience in animal handling, cannulation techniques and tissue processing for pharmacokinetic studies. One three-hour laboratory session each week.
- [PHC504: Computational Basis of Pharmacometrics](#) (2) Krzyzanski
 Examination of basic mathematical components for pharmacokinetic and pharmacodynamic analysis: numerical algorithms, statistical methods, mathematical models and computer programming.
- [PHC507: Principles of Biological Transport](#) (2) Ramanathan
 This graduate course covers the physicochemical and biomolecular concepts underlying transport in biological systems from a multidisciplinary perspective. The physicochemical and the biomolecular concepts underlying transport in biological systems are analyzed. The experimental and mathematical analysis of passive, facilitated, active and vesicular transport and the impact of transporters and transport systems on the disposition and metabolic fate of their substrates is discussed.
- [PHC508: Drug Delivery: Principles and Applications](#) (2) Straubinger
 A study at the advanced level of the physical and biological principles which apply to the design, development and evaluation of drug delivery systems. Specific examples of modern systems such as transdermal preparations, liposomes, implants, monoclonal antibodies, and those involving site-targeting will be discussed.
- [PHC511: Research Proposal](#) (1) Staff
 Preparation of one NIH-type written proposal outlining a student's proposed dissertation research. This proposal must be orally defended by the student before the student's thesis committee members.
- [PHC531: Introduction to Pharmacokinetics and Biopharmaceutics 1](#) (4) Morris
 Introductory graduate course on the factors influencing the absorption, distribution, excretion and metabolism of drugs. Topics include compartmental/noncompartmental pharmacokinetics, renal clearance, hepatic clearance, protein binding and drug dosage regimen design and bioavailability and bioequivalence.
- [PHC540: Contemporary Methods in the Pharmaceutical Sciences: I-Biophysical Approaches](#) (2) Balasubramanian
 This course is an introductory overview of selected bio-physical techniques which are important in the formulation and biophysical, physical and chemical characterization of biotechnology protein drugs.
- [PHC541: Contemporary Methods in the Pharmaceutical Sciences: II- Cell Culture Techniques](#) (1) Boje
 This course is an introductory overview of selected cell culture techniques and pharmaceutical applications which represent important research and screening tools for pharmaceutical research.
- [PHC542: Contemporary Methods in the Pharmaceutical Sciences: III- Quantitative RNA Approaches](#) (1) Boje
 This course is an introductory overview of quantitative RNA techniques which is important for pharmacokinetic and pharmacodynamic studies of gene expression.
- [PHC543: Molecular Genetic Methodologies for Pharmaceutical Sciences](#) (1) D. Brazeau
 This course consists of lectures and laboratories designed to introduce the theory and basic tools used in molecular biology. The course goal is to give students hands-on experience with a number of the techniques used in molecular biology as they are applied in the pharmaceutical sciences. The lectures will provide much of the theory that underlies these techniques.
- [PHC607: Intermediate Pharmacokinetics](#) (3) Balthasar
 This course covers the theoretical development of the major methods, models, and equations used in pharmacokinetics with their physicochemical and physiological assumptions and limitations. It employs current

graphical and computer methods of applying pharmacokinetics to analysis of experimental and clinical data; and it evaluates literature and approaches of design of studies and recovery of essential drug parameters.

- [PHC608: Advanced Pharmacokinetics](#) (2) Jusko
The rigorous theoretical development and application of kinetics and related mathematical and computer techniques to the study of drug absorption, distribution, metabolism, excretion presented at an advanced level.
- [PHC609: Advanced Pharmacodynamics](#) (2) Jusko
A survey of the theoretical basis, types of models, methods of data analysis, and diverse applications of modeling the time-course of pharmacologic responses.
- [PHC613](#) & [PHC614](#): Pharmaceutical Sciences Seminar (1.1) Staff
Guidance in research in connection with graduate thesis. May be taken more than once for credit.
- [PHC630: Drug Metabolism and Disposition](#) (2) Morris
A study of the metabolism and disposition of drugs and drug metabolites. Topics include indepth discussions of Phase I and II biotransformation pathways, pharmacogenetics, biotransformation and toxicity, in vitro/in vivo techniques for evaluating drug metabolism and scale-up of drug metabolism data.