

PHARMACOLOGY

Office: 6374 Scott Hall; 313-577-1580

Chairperson: Sokol Todi

<http://www.pharmacology.med.wayne.edu/>

The discipline of pharmacology is concerned with all aspects of the effects of drugs and chemicals on living systems. The field ranges from investigations at the molecular level to population studies on a global level. Drug development and evaluation make up an important part of pharmacology, but the field also includes the use of drugs as tools to probe the functions of macromolecules, cells, organs and even whole animals, and investigation of the harmful effects of chemicals on cells, organs and animals (toxicology). The breadth of interests encompassed by pharmacology provides excellent opportunities for individuals with strong interests and training in biology or chemistry to apply their knowledge to the understanding of fundamental biological processes.

ANDERSON, GORDON F.: Ph.D., M.S., Wayne State University; B.S., Ferris State University; Professor Emeritus

ANDRADE, RODRIGO: Ph.D., Yale University; Professor

ARTALEJO, CRISTINA: M.D., Ph.D., Autonoma University; Associate Professor

BAKER, TRACIE: Ph.D., D.V.M., University of Wisconsin; M.S., University of Alaska-Fairbanks; B.S., Cleveland State University; Assistant Professor

BANNON, MICHAEL: Ph.D., M.Phil., Yale University; M.S., University of Louisville; B.A., Lewis University; Professor

DAVIS, NICHOLAS G.: Ph.D., Rockefeller University; B.S., Massachusetts Institute of Technology; Professor

GARRETT, ANDREW: Ph.D., University of Iowa; B.S., Cedarville University; Assistant Professor

GOLDMAN, HAROLD: Ph.D., University of Illinois; Ph.D., M.S., University of Chicago; Professor Emeritus

IBRAHIM, AHMED: Ph.D., M.Sc., B.Sc., Pharmaceutical Sciences; Assistant Professor

KESSEL, DAVID H.: Ph.D., M.S., University of Michigan; B.S., Massachusetts Institute of Technology; Professor

KOCAREK, THOMAS A.: Ph.D., B.S., Ohio State University; Professor

LASH, LAWRENCE H.: Ph.D., Emory University; B.A., Case Western Reserve University; Professor

LIST, KARIN: Ph.D., M.Sc., University of Copenhagen; Associate Professor

MATTINGLY, RAYMOND R.: Ph.D., University of Virginia; M.A., B.A., University of Cambridge; Professor Emeritus

MOIN, KAMIAR: Ph.D., University of Montana; M.S., University of Wisconsin; B.S., University of Minnesota; Professor (Research)

PARK, JOONGKYU: Ph.D., B.S., Yonsei University, South Korea; Assistant Professor

PETRIELLO, MICHAEL: Ph.D., University of Kentucky; B.S., Muhlenberg College; Assistant Professor

PODGORSKI, IZABELA: Ph.D., Oakland University; Associate Professor

REINERS, JOHN J.: Ph.D., Purdue University; B.S., University of Minnesota; Professor

SLOANE, BONNIE F.: Ph.D., Rutgers University; M.A., B.S., Duke University; Distinguished Professor

STEPHEN, LANIER: Ph.D., University of Tennessee Center for Health Sciences; Professor

TISDALE, ELLEN: Ph.D., Case Western Reserve University; M.S., Clemson University; Associate Professor

TODI, SOKOL: Ph.D., University of Iowa; Professor and Chair

TSOU, WEI-LING: Ph.D., National Yang Ming University; M.S., B.S., Taipei Medical University; Assistant Professor (Research)

VURAL, ALI: Ph.D., Medical University of South Carolina; B.S., Middle East Technical University; Assistant Professor (Research)

WAKADE, ARUN R.: Ph.D., M.S., State University of New York; B.S., University of Bombay; Professor Emeritus

WANG, GAN: Ph.D., Chinese Academy of Sciences; B.S., Shandong University; Associate Professor

WHITE, JENNEL: M.D., Morehouse School of Medicine; Assistant Professor Research

WU, HAI-YOUNG: Ph.D., City University of New York; B.S., National Chung-Hsing University; Associate Professor

- Pharmacology (M.S.) (<http://bulletins.wayne.edu/graduate/school-medicine/programs/pharmacology/pharmacology-ms/>)
- Pharmacology (Ph.D.) (<http://bulletins.wayne.edu/graduate/school-medicine/programs/pharmacology/pharmacology-phd/>)

PHC 5030 Individual Research in Pharmacology Cr. 2-5

Direct participation in laboratory research into the ways drugs affect cell processes, under the supervision of a departmental faculty advisor. Introduction to experimental protocol and current related scientific literature. Offered for graduate credit only. Offered Every Term.

Restriction(s): Enrollment is limited to Graduate level students.

PHC 6500 Drugs and the Addictive Process Cr. 3

Introduction to general principles of drug action; specific pharmacologic, toxicologic, and pathologic effects of abused drugs; bio-psycho-social bases for addiction. Offered Yearly.

Restriction(s): Enrollment is limited to Graduate level students.

PHC 7005 Fundamentals of Human Physiology Cr. 2

Students will gain a general understanding of human anatomy, of human physiology, and of the workings of each major organ system in the human body; and students will be able to utilize this information in future courses that discuss and detail the pharmacological targeting/treatment of various organs and organ systems. Offered Fall.

Restriction(s): Enrollment is limited to Graduate level students.

PHC 7010 Pharmacology Lecture Cr. 4

Introductory presentation of drug actions on living tissue. Offered Winter.

Corequisite: PHC 7011

Restriction(s): Enrollment is limited to Graduate level students.

PHC 7011 Pharmacology Workshop Cr. 1

This add-on course provides an in-depth treatment of Pharmacology for PhD graduate students. It builds on the foundation laid by PHC 7010 and extends it to address advanced concepts and techniques in Pharmacological research. Each week, this course will explore advanced topics related to the material covered in PHC 7010 through lectures, paper discussions and student presentations in a manner that enriches the contents provided by PHC 7010. The course will focus on a critical approach to pharmacological research and highlight key conceptual advances, experimental strategies, and fruitful controversies, spanning from historical background to current concepts. Offered Winter.

Corequisite: PHC 7010

Restriction(s): Enrollment is limited to Graduate level students.

PHC 7021 Advanced Health Assessment and Clinical Diagnosis Cr. 3

This course will provide the registered nurse anesthesia student with the knowledge and advanced systematic focus on various body systems while completing a comprehensive health assessment for patients across the lifespan, including but not limited to adult, pediatric, geriatric, and obstetric patients. Students utilize critical thinking as well as diagnostic procedure results to interpret, analyze and provide differential diagnosis of common patient problems, while utilizing common assessment techniques for each body system. Offered Fall.

Restriction(s): Enrollment is limited to Graduate level students.

Fees: \$10

Equivalent: AN 7010

PHC 7031 Advanced Pharmacology I Cr. 3

Discuss the chemistry, pharmacokinetics and pharmacodynamics of medications as pertaining to nurse anesthesia. Major drug categories pertaining to anesthesia practice, as well as drug therapies and classes pertinent to acute and chronic responses to anesthesia; indications, mechanisms, effects. Offered Fall.

Restriction(s): Enrollment is limited to Graduate level students.

Fees: \$15

Equivalent: AN 7100

PHC 7032 Advanced Pharmacology II Cr. 3

Discuss the chemistry, pharmacokinetics and pharmacodynamics of medications as pertaining to nurse anesthesia. Major drug categories covered include drug therapies and classes pertinent to acute and chronic responses to anesthesia, including indications, mechanisms, and effects. Also discuss effects of anesthetics in specialized populations such as geriatrics, obesity, obstetric, substance abuse and pediatric populations. Offered Winter.

Prerequisites: AN 7100 with a minimum grade of B or PHC 7031 with a minimum grade of B

Restriction(s): Enrollment is limited to Graduate level students.

Fees: \$15

Equivalent: AN 7110

PHC 7221 Advanced Physiology I Cr. 3

Discuss aspects of anatomy and physiology that are relevant to the science and practice of anesthesia. Topics are covered from cellular, tissue, organ, and systems perspective, and related to issues of advance nurse anesthesia practice. The focus of this course is to impart concepts of advanced physiology which are elemental to the safe practice of anesthesia. Offered Fall.

Restriction(s): Enrollment is limited to Graduate level students.

Equivalent: AN 7220

PHC 7241 Advanced Physiology II Cr. 3

Continuation of AN7240. Discuss further aspects of anatomy and physiology that are relevant to the science and practice of anesthesia, as well as pathologic processes. Topics are covered from cellular, tissue, organ, and systems perspective, and related to issues of advance nurse anesthesia practice. The focus of this course is to impart concepts of advanced physiology and pathophysiology which are elemental to the safe practice of anesthesia. Offered Winter.

Restriction(s): Enrollment is limited to Graduate level students.

Fees: \$10

Equivalent: AN 7240

PHC 7242 Pathophysiology Cr. 3

Discuss the pathophysiologic changes associated with various disease processes. The focus of this course is to impart concepts of pathophysiology in the framework of the various body systems and disruptions in normal body functioning for individuals across the lifespan. Offered Winter.

Prerequisite: AN 7240 with a minimum grade of B or PHC 7241 with a minimum grade of B

Restriction(s): Enrollment is limited to Graduate level students.

Equivalent: AN 7241

PHC 7410 Principles of Toxicology Cr. 3

Basic concepts and principles of toxicology, including toxicity of major classes of chemicals (pesticides, solvents, metals) and organ systems (renal, immune, digestive, neuro and respiratory) affected. Offered Fall.

Restriction(s): Enrollment is limited to Graduate level students.

Equivalent: BIO 7011

PHC 7501 Physics, Equipment, and Safety for Anesthesia Cr. 2

Introduction to the basic principles of physics and their application to anesthesia. Focus on processes that ensure safe anesthesia practice. Offered Fall.

Restriction(s): Enrollment is limited to Graduate level students.

Fees: \$20

Equivalent: AN 7500

PHC 7601 Regional Anesthesia Cr. 3

This course discusses key components related to regional anesthesia practice and their application in the clinical arena which includes acute and chronic pain therapies. Spinal/epidural anesthesia, upper and lower extremity nerve blocks, truncal blocks are covered with special emphasis on anatomy, physiology, drugs and equipment. Ultrasound physics and its application in regional anesthesia is covered and applied in the Anesthesia Sim Lab environment. Offered Fall.

Restriction(s): Enrollment is limited to Graduate level students.

Fees: \$20

Equivalent: AN 7600

PHC 7641 Research and Statistics Cr. 3

This course will provide the nurse anesthesia student with the knowledge, skills, and abilities to perform extensive literature searches, critically appraise the available research evidence, synthesize information from diverse formats and sources, and cogently express understanding of complex concepts in both verbal and written forms. This course will also involve discussion, review and interpretation of basic and clinical biostatistics. Offered Spring/Summer.

Restriction(s): Enrollment is limited to Graduate level students.

Equivalent: AN 7640

PHC 7650 Advanced Topics in Pharmacology Cr. 1-6

Modules of instruction in sharply-defined areas of current research in pharmacology and related disciplines. Each module will cover fundamental concepts, essential knowledge base, research protocols and techniques, and future issues. Offered Every Term.

Prerequisite: PHC 7010 with a minimum grade of C

Restriction(s): Enrollment is limited to Graduate level students.

Repeatable for 6 Credits

PHC 7700 Recent Developments in Pharmacology Cr. 1-4

Selected topics and readings in pharmacology. Offered Every Term.

Restriction(s): Enrollment is limited to Graduate level students.

Repeatable for 12 Credits

PHC 7705 Fundamentals of Human Physiology Cr. 2

Students will gain a general understanding of human anatomy, of human physiology, and of the workings of each major organ system in the human body; and students will be able to utilize this information in future courses that discuss and detail the pharmacological targeting/treatment of various organs and organ systems. Offered Fall.

Restriction(s): Enrollment is limited to Graduate level students.

PHC 7710 Individual Studies in Pharmacology Cr. 1-8

Offered Every Term.

Restriction(s): Enrollment is limited to students with a major in Pharmacology; enrollment is limited to Graduate level students; enrollment limited to students in a Doctor of Philosophy or Master of Science degrees.

Repeatable for 8 Credits

PHC 7730 Reproductive Sciences: Teratology Cr. 3

Principles of the science of birth defects; focus on impact of environmental poisons, medicines, and drugs of abuse on developing germ cells, embryos and fetuses. Roles of pharmacological/toxicological, physiological (maternal, placental, and fetal), genetic and nutritional factors in the teratogenic response are examined. Texts and current readings. Offered Every Other Fall.

Restriction(s): Enrollment is limited to Graduate level students.

Equivalent: PSL 7730

PHC 7880 Anesthesia Seminar Cr. 1

This course allows students to gain experience in critical reading of scholarly articles and case reports, including data analysis and interpretation and translation of research findings into evidence based practices. Offered Fall, Winter.

Restriction(s): Enrollment is limited to Graduate level students.

Equivalent: AN 7880

Repeatable for 4 Credits

PHC 7890 Seminar Cr. 1

Assigned readings and student presentation; faculty and outside speakers. Offered Every Term.

Restriction(s): Enrollment is limited to students with a major in Pharmacology; enrollment is limited to Graduate level students; enrollment limited to students in a Doctor of Philosophy or Master of Science degrees.

Repeatable for 12 Credits

PHC 7902 Ethics and Health Care Cr. 3

This course serves as an advanced introduction to health care ethics, designed specifically for nurse anesthesia students. Ethical principles and personal values that shape professional practice and influence decision making will be expounded upon in the discussion of contemporary issues in health care. Offered Fall.

Restriction(s): Enrollment is limited to Graduate level students.

Equivalent: AN 7902

PHC 7996 Research Cr. 1-20

Special research topics in specified areas arranged with individual faculty members. Offered Every Term.

Restriction(s): Enrollment is limited to Graduate level students.

Repeatable for 30 Credits

PHC 8888 Survey of Research at the Chemistry Biology Interface Cr. 3

The Chemistry Biology Interface course will teach students how to apply chemical approaches to study complete biological processes. It will commence with a basic overview of the biochemistry of biomolecules. Next, complex biological processes related to various diseases will be highlighted by introducing cell biology, model cells and organisms, and disease mechanisms. Finally, the course will highlight contemporary examples of how chemical methods are used to answer complex biological questions to show the value and innovation available by taking a multidisciplinary approach. The focus will be on development of skill sets that are applicable for research at the chemistry biology interface, rigor and transparency in data collection and analysis, and identification of cross-disciplinary research at Wayne State. Offered Winter.

Restriction(s): Enrollment is limited to Graduate level students.

Equivalent: BIO 8888, CHM 8888, PSC 8888, PSL 8888

PHC 8999 Master's Thesis Research and Direction Cr. 1-8

Offered Every Term.

Restriction(s): Enrollment limited to students with a class of Candidate Masters; enrollment is limited to Graduate level students.

Repeatable for 8 Credits

PHC 9990 Pre-Doctoral Candidacy Research Cr. 1-8

Research in preparation for doctoral dissertation. Offered Every Term.

Restriction(s): Enrollment is limited to Graduate level students.

Repeatable for 12 Credits

PHC 9991 Doctoral Candidate Status I: Dissertation Research and Direction Cr. 3-9

Offered Every Term.

Restriction(s): Enrollment is limited to Graduate level students.

Repeatable for 9 Credits

PHC 9992 Doctoral Candidate Status II: Dissertation Research and Direction Cr. 1-18

Offered Every Term.

Prerequisite: PHC 9991 with a minimum grade of S

Restriction(s): Enrollment is limited to Graduate level students.

Repeatable for 18 Credits

PHC 9993 Doctoral Candidate Status III: Dissertation Research and Direction Cr. 7.5

Offered Every Term.

Prerequisite: PHC 9992 with a minimum grade of S

Restriction(s): Enrollment is limited to Graduate level students.

PHC 9994 Doctoral Candidate Status IV: Dissertation Research and Direction Cr. 7.5

Offered Every Term.

Prerequisite: PHC 9993 with a minimum grade of S

Restriction(s): Enrollment is limited to Graduate level students.

PHC 9995 Candidate Maintenance Status: Doctoral Dissertation Research and Direction Cr. 0

Offered Every Term.

Restriction(s): Enrollment is limited to Graduate level students.

Fees: \$434.8

Repeatable for 0 Credits