stress process.
immune system functions will be synthesized to inform an understanding
fundamental information underlying mutually interact neuroendocrine-
understanding mind-body relationships. Beginning at the cellular level,
immunology and psychology will be examined as a foundation for
essential to wellness. Theory and research drawn from neuroscience,
systems interact to maintain physiological and biochemical steady-states
This course will provide an in-depth overview of how brain and immune
immunology, biochemistry or psychology, or permission of instructor.
graduate-level course in immunocompetence, pharmacology, physiology,
Semester course; 1 lecture hour. 1 credit. The basic principles of
rotation research in pharmacology and toxicology laboratories for
enrollment is restricted to graduate students. The goal of the course is
to offer experience in pharmacology skills related to the design, conduct
and regulatory concerns; and risk assessment and management are
presented for graduate students in the biomedical sciences.
PHTX 535. Introduction to Toxicology. 4 Hours.
Semester course; 4 lecture hours. 4 credits. The basic principles of
toxicology and toxicological evaluations; correlations of toxicological
responses with biochemical, functional and morphological changes;
environmental (including occupational and public health), forensic
and regulatory concerns; and risk assessment and management are
presented for graduate students in the biomedical sciences.
PHTX 548. Drug Dependence. 3 Hours.
Semester course; 3 lecture hours. 3 credits. Enrollment is restricted to
students with junior or senior standing, or permission of instructor.
This course is a general survey of pharmacology and related disciplines.
The basic principles of pharmacokinetics and pharmacodynamics
are presented followed by discussions of neuropharmacology,
including drugs for treating neurological disorders and drugs of abuse;
immunopharmacology and drugs for pain management; systems
pharmacology, including autonomic, cardiovascular, respiratory,
renal and endocrine pharmacology; and drugs targeting infectious
diseases and cancer chemotherapy. The course will also cover selected
topics such as drug design and development, herbal medications and
pharmacogenomics.
PHTX 597. Introduction to Pharmacological Research. 1-12 Hours.
Semester course; 1-12 credits. Prerequisite: permission of instructor.
Rotation research in pharmacology and toxicology laboratories for
beginning graduate students.
PHTX 606. Introduction to Pharmacology of Therapeutic Agents. 1 Hour.
Module course; 1 lecture hour. 1 credit. The basic principles of
pharmacology and an in-depth consideration of the biodisposition and
mechanisms of action of these agents. Drugs acting on the autonomic
system are covered.
PHTX 614. Foundation in Psychoneuroimmunology. 3 Hours.
Semester course; 3 lecture hours. 3 credits. Prerequisite: at least one
graduate-level course in immunocompetence, pharmacology, physiology,
immunology, biochemistry or psychology, or permission of instructor.
This course will provide an in-depth overview of how brain and immune
systems interact to maintain physiological and biochemical steady-states
essential to wellness. Theory and research drawn from neuroscience,
immunology and psychology will be examined as a foundation for
understanding mind-body relationships. Beginning at the cellular level,
fundamental information underlying mutually interact neuroendocrine-
immune system functions will be synthesized to inform an understanding
of wellness as well as a variety of pathophysiological states related to the
stress process.
PHTX 636. Principles of Pharmacology. 5 Hours.
Semester course; 5 lecture hours. 5 credits. Prerequisite: PHTX 630 or permission of instructor and graduate program director.
Corequisite: PHTX 639. A comprehensive course in pharmacology for graduate students. The mechanisms of action of major classes of pharmacologically active agents and basic principles of pharmacology are discussed. Topics include autonomic and cardiovascular pharmacology; CNS pharmacology; pharmacology of antimicrobials and cancer; gastrointestinal and endocrine pharmacology.

PHTX 638. Cellular Mechanisms of Toxicology. 3 Hours.
Semester course; 3 lecture hours. 3 credits. Prerequisite: PHTX 536 or permission of instructor. A holistic approach is taken to describe and analyze toxicological information. Intact animal, organ, cellular, and biochemical responses to toxic agents are presented. Immunologic, genetic, endocrine, and central nervous system paradigms and their relationship to the mechanism of action of toxic agents as well as the predictive value of tests of these systems are presented. Kinetics and metabolism of toxic agents as well as statistical and analytical procedures are integrated into the discussions.

PHTX 639. Principles of Pharmacology Journal Club. 1 Hour.
Semester course; 1 lecture hour. 1 credit. Prerequisite: PHTX 630 or permission of instructor. Corequisite: PHTX 636. This course will be in journal club format run in parallel with PHTX 636. Journal club articles pertaining to drug classes and their mechanism of action will be presented by students. Topics include autonomic, CNS, endocrine, cardiovascular and cancer pharmacology.

PHTX 640. Pharmacology of Analgesics. 3 Hours.
Semester course; 3 lecture hours. 3 credits. Prerequisites: PHTX 630 and PHTX 636 or permission of the instructor. The course will be divided into three sections. In the first, students will review methods for measurement of pain and analgesia in humans and animals and describe the implications of these measures for translational pain research. In the second section, students will review the neurobiology of pain, with a focus on neural systems that mediate sensory and affective dimensions of pain and their modulation by endogenous pain inhibitory systems. In the final section, students will review the pharmacology of existing classes of drugs and the research strategies for evaluation of new candidate analgesics. Throughout the class, readings and discussions will consider both seminal literature and recent research papers.

PHTX 641. Introduction to Clinical Pharmacology. 3 Hours.
Semester course; 3 lecture hours. 3 credits. Enrollment is restricted to students who have completed a post-baccalaureate degree or an undergraduate physiology degree or by permission of the instructor. This course is a general survey of clinical pharmacology designed for students pursuing professional degrees including dental, medical and pharmacy programs. The basic principles of pharmacokinetics, pharmacodynamics and pharmacogenetics are presented followed by discussions of neuropharmacology, including drugs for treating neurological disorders and drugs of abuse; immunopharmacology and drugs for pain management; systems pharmacology including autonomic, cardiovascular, respiratory, renal, GI and endocrine pharmacology; and drugs targeting infectious diseases and cancer chemotherapy.

PHTX 690. Pharmacology Research Seminar. 1 Hour.
Semester course; 1 lecture hour. 1 credit. Members of the departmental staff, students, and visiting lecturers participate in discussions on topics of current and historical interest.

PHTX 691. Special Topics in Pharmacology. 1-4 Hours.
Semester course; 1-4 credits. Prerequisite: permission of instructor. Special topics in pharmacology or toxicology covered in less detail in other courses will be studied in depth in this course.

PHTX 692. Special Topics. 1-4 Hours.
Semester course; 1-4 variable hours. 1-4 credits. Lectures, tutorial studies, library assignments in selected areas of advanced study or specialized laboratory procedures not available in other courses or as part of the research training. Graded as S/U/F.

PHTX 697. Directed Research in Pharmacology. 1-15 Hours.
Semester course; 1-15 credits. Research leading to the M.S. or Ph.D. degree and elective projects for other students.