PA 621 QUANTITATIVE METHODS OF RESEARCH. (3)
A survey of behavioral science research methods for the public administrator. Emphasis
is placed upon problem selection and identification, research design, and data analytic
techniques. Prereq: MPA or MHA program status; prereq or concur: completion of MPA
or MHA computer skills program requirement. (Same as HA 621.)

PA 622 PUBLIC PROGRAM EVALUATION. (3)
This course is designed to provide students with the conceptual and analytical tools
to evaluate the effectiveness of public programs and policies. The focus will be on program
monitoring and evaluation. Of particular concern will be program process and outcome
measurement, quasi-experimental design, multiple regression analysis, and analysis
of variance models. Prereq: PA 621.

PA 623 DECISION ANALYSIS. (3)
An introduction to organizational decision making under conditions of uncertainty, risk,
and certainty. Concepts of analysis from the areas of economics, mathematics, and
statistics will be utilized in terms of administrative decision making in public
administration. Prereq: PA 621.

PA 625 PUBLIC MANAGEMENT COMPUTER APPLICATIONS. (3)
A general introduction to the computer, including emphasis on usage of PL/I, specific
generic computer packages, design and implementation of large scale information
systems, the concept of the database and public sector computer issues. Prereq: MPA
program status or consent of instructor.

PA 628 PERSONNEL MANAGEMENT IN THE PUBLIC SECTOR. (3)
The course will present an overview of career development, human resource planning,
staffing, training and development in the public sector. Prereq: MPA program status;
consent of instructor.

PA 631 PUBLIC FINANCIAL MANAGEMENT. (3)
An analysis of budget structure and process; revenue structure and administration; and
public capital acquisition and debt management. This course emphasizes an applied
focus and comparative analysis of alternative budget, revenue, and debt management
structures and strategies. Prereq: MPA program status; prereq or concur: completion
of MPA or MHA computer skills program requirement.

PA 632 PUBLIC FUNDS MANAGEMENT. (3)
A study of the management of public funds including the accumulation, management
and investment of such funds and the accounting for those transactions. It will also include
topics such as fund accounting, cash forecasting, cash management practices and public
funds investment strategies. Prereq: MPA or MHA program status; prereq or concur:
completion of MPA or MHA computer skills program requirement. (Same as HA 632.)

PA 636 HEALTH ECONOMICS. (3)
This course applies general theoretical principles of economics to the health care sector.
The basic approach is to recognize the importance of scarcity and incentives, allowing
for differences peculiar to health. The demand and supply of health and medical care are examined
as they involve physicians, nurses and hospitals. The competitiveness of their
markets, health insurance and the role of government are explored. Special topics include regulation and planning, benefit-cost analysis, and reform health plans. Prereq: PA 652,
HA 601, HA 621, MHA or MPA program status. (Same as ECO/HA 636.)

PA 637 HEALTH FINANCE. (3)
This course applies general principles of finance to the financial management of health
care institutions. The major financial incentives which dictate how health care is
delivered are studied and proposals to change these incentives are explored. Prereq:
MHA/MPA program status and HA 601, HA 621, PA 623, HA 635. (Same as FIN/ HA 637.)

PA 639 MANAGEMENT CONTROL SYSTEMS IN NON-PROFIT ORGANIZATIONS. (3)
This course is designed to introduce the concept of management control systems in non-
profit organizations. The focus of management control is on using resources effectively
and efficiently in accomplishing the organizational objectives. Cases covering the
spectrum of governmental and non-profit organizational settings will be used to stress
the basic concepts and illustrate management techniques that could be used effectively
to help accomplish the objectives of the organization. The use of the accounting system
database will be analyzed in terms of strengths and weaknesses in designing and
implementing an effective management control system.

PA 641 POLITICAL ENVIRONMENT OF PUBLIC ORGANIZATIONS. (3)
A study of those aspects of political and legal systems that particularly affect the
administration of public agencies. Emphasis on party systems, legislative and executive
processes, administrative law, and judicial review of administration. Prereq: MPA
program status.

PA 642 PUBLIC ORGANIZATION THEORY AND BEHAVIOR. (3)
A course which examines the interaction of both external and internal resources and
constraints upon the administrative decision processes in a number of public
organizational settings. The objective is an understanding of the practice of adminis-
tration in public organizations. Prereq: MPA or MHA program status and HA 601. (Same as HA 642.)

PA 651 THE POLICY PROCESS. (3)
Broad-based course in public policy formulation and social planning. Emphasis is on the
parameters of political formulation as well as the social planning and impact variables.
Both policy processes and relevant content areas will be stressed. Prereq: MPA program status.

PA 652 PUBLIC POLICY ECONOMICS. (3)
Principles and practices of economical resource management in the governmental sector;
tax and expenditure types, intergovernmental fiscal cooperation, debt financing,
budgeting and financial planning. Prereq: MPA or MHA program status and HA 601
and HA 621. (Same as ECO/HA 652.)

PA 656 HEALTH PROGRAM EVALUATION. (3)
A study of the tools necessary for planning and evaluating health programs: planning
systems, needs assessment methodologies, data analysis skills, the epidemiologic
method, effectiveness and efficiency evaluation. An overview of trends and requirements
leading to increased emphasis on planning and program accountability. Prereq: MHA/
MPA program status, HA 601, HA 621, PA 623, and HA 635. (Same as HA 656.)

PA 671 OVERVIEW OF THE HEALTH CARE DELIVERY SYSTEM. (3)
An introduction to the health care delivery system in the United States, including its
structure, composition, functioning, the interrelationships of organizations and professional
groups within the system in various settings, health care terminology, and major
problems and issues in the delivery of health services. Prereq: MHA/MPA program
status. (Same as HA 601.)

PA 673 HEALTH POLICY DEVELOPMENT. (3)
An analysis of the development and implementation of health policy on a national, state,
local and organizational level. The course will focus on issue and policy analysis, formal
and informal processes of policy development and the issues, values and political and
community factors affecting policy development and program implementation. Prereq:
HA 601 and one of the following courses: HA 611, 621, or 622 and MHA/MPA program
status. (Same as HA 673.)

PA 680 BENEFIT-COST ANALYSIS. (3)
Principles, practices and applications of applied welfare analysis are the content of this
course. The basic theory of benefit-cost analysis is presented and the relevance of
implementation analysis in policy analysis is established. Prereq: PA 652. (Same as ECO 680.)

PA 711 INTERNSHIP IN PUBLIC ADMINISTRATION. (3)
Practical field experience in an administrative setting under the direction of an academic
and a workplace supervisor. Prereq: MPA program status or consent of instructor.

PA 722 POLICY AND PROGRAM EVALUATION. (3)
This is a doctoral course concerning policy and program evaluation. Major emphasis
will be given to specifying the relationship between evaluation and management
functions, evaluation concepts and processes and research methods applicable to
evaluation systems and processes. Prereq: MKT 762 or PS 671, or equivalent and Ph.D.
program status or consent of instructor.

PA 724 PUBLIC FINANCIAL MANAGEMENT. (3)
The course will present a broad view of public financial management and administration
problems and techniques, as well as include sections on state and local finance and finance
in the Federal sector as it influences other levels of government. Prereq: PA 632 and
PA 652 or equivalent; MPA program status or consent of instructor.

PA 727 ENVIRONMENTAL ECONOMICS, REGULATION AND POLICY. (3)
This course takes a balanced practitioner approach to the problems of the environment
and environmental regulation. Efficiency aspects will be developed carefully, so as to
provide a background for an extensive coverage of various available alternative policies.
Prereq: PA 652 and MPA or economics program status or consent of instructor. (Same as ECO 684.)
PA 731 FISCAL AND BUDGETARY POLICY. (3)
This course examines public budgeting and finance in the public sector. Included is an analysis of economic, managerial, and political approaches to public budgeting and finance. These approaches are then used to analyze several current topics in public finance. Prereq: PA 631 or equivalent, and Ph.D. program status or consent of instructor.

PA 742 THEORY OF PUBLIC ORGANIZATIONS. (3)
This course provides doctoral students an in-depth knowledge of the various aspects of public organization theory. It will attempt to integrate the work on public organizations which is currently spread over the fields of organization theory and behavior, executive and bureaucratic politics and public choice economics. Prereq: PA 642 or equivalent, and Ph.D. program status or consent of instructor.

PA 749 DISSERTATION RESEARCH. (0-12)
Half-time to full-time work on dissertation. May be repeated to a maximum of six semesters. Prereq: Registration for two full-time semesters of 769 residence credit following the successful completion of the qualifying examinations.

PA 751 PUBLIC POLICY FORMULATION AND IMPLEMENTATION. (3)
The major goals of this course are to examine how public issues become policy proposals, how various proposals are filtered into (or out of) the political process, shaped by political institutions and rules, and the process by which policy is implemented. Prereq: PA 651, or equivalent and Ph.D. program status or consent of instructor.

PA 752 THE ECONOMICS OF POLICY ANALYSIS. (3)
This course examines economic approaches to policy analysis. Included is an analysis of the major concepts of economic analysis and their application to a number of policy problems. Prereq: PA 652 or equivalent, and Ph.D. program status or consent of instructor. (Same as ECO 752.)

PA 769 RESIDENCE CREDIT FOR THE DOCTOR'S DEGREE. (0-12)
May be repeated indefinitely.

PA 775 SPECIAL TOPICS IN HEALTH ADMINISTRATION. (1-3)
An analysis of selected issues with special significance for health administration. Prereq: MPA/MHA program status. (Same as HA 775.)

PA 785 INDEPENDENT STUDY IN HEALTH ADMINISTRATION. (1-3)
Supervised individual research on a topic related to health administration selected by the student. May be repeated to a maximum of six credits. Prereq: Consent of instructor. (Same as HA 785.)

PA 795 SPECIAL TOPICS IN PUBLIC ADMINISTRATION. (1-3)
Analysis of specialized topics in public administration of particular interest to practitioners. May be repeated to a maximum of six credits. Prereq: MPA program status or consent of instructor.

PA 796 INDEPENDENT STUDY IN PUBLIC ADMINISTRATION. (1-3)
Tutorial course of directed readings, discussion, and analysis of special topics on public administration. May be repeated to a maximum of six credits. Prereq: MPA program status and consent of instructor.

PAS Physician Assistant Studies

PAS 842 CLINICAL PRACTICUM IN PHYSICIAN ASSISTANT STUDIES. (1-6)
This field assignment offers supervised clinical experience appropriate to the PA student's chosen area of practice. May be repeated to a maximum of 12 credits. Studio, 40 hours per week. Prereq: Enrollment in Physician Assistant Program.

PAS 850 CLINICAL METHODS. (3)
This course is designed to provide the general principles of obtaining medical histories and performing physical examinations. Lecture, two hours; laboratory, three hours. Prereq: Enrollment in the Physician Assistant Program.

PAS 851 INTRODUCTION TO THE PA PROFESSION. (2)
This course provides an overview of selected health care delivery issues affecting primary care physician assistants. The first half of the semester is devoted to examination of the history and evolution of the PA profession, current PA practice demographics and regulations, principles of quality assurance, risk management, and medical literature evaluation. The second half of the semester is devoted to the study of the ethical dimensions of PA practice. Topics include moral principles and ethical theories, as well as a series of seminar discussions on contemporary ethical issues confronting primary care providers in the 20th and 21st centuries. Prereq: Enrollment in the Physician Assistant Program.

PAS 853 INTRODUCTION TO HEALTH AND DISEASE. (3)
An overview of the etiology, distribution, and prevention of basic disease processes. Prereq: Enrollment in Physician Assistant Program.

PAS 854 CLINICAL LECTURE SERIES. (5)
A study of common disease entities identifying causes, clinical presentation, diagnostic evaluation, and management. Emphasis is on primary care problems with substantial overlap in the major medical specialties. Prereq: Enrollment in Physician Assistant Program or consent of instructor.

PAS 855 PSYCHOSOCIAL FACTORS IN PRIMARY HEALTH CARE. (3)
This course focuses on psychosocial factors which play an important role in the development and treatment of common primary care health problems. Prereq: Admission to Physician Assistant Program.

PAS 856 PATIENT EVALUATION AND MANAGEMENT. (3)
A combination of formal presentations, laboratory practice sessions, and supervised patient care experiences involving patient evaluation and management skills. Lecture, one hour; laboratory, five hours per week. Prereq: Enrollment in Physician Assistant Program or consent of instructor.

PAS 857 CLINICAL LABORATORY PROCEDURES. (2)
This is a survey laboratory course covering common laboratory procedures performed in the primary care clinical setting. Emphasis will be placed on performing and interpreting basic clinical tests. Lecture, one hour; laboratory, three hours per week. Prereq: Enrollment in the Physician Assistant Program.

PAS 860 FAMILY MEDICINE CLERKSHIP. (5)
This is a five-week clinical course designed to provide the student physician assistant experience associated with family medicine. The student will have the opportunity to function in either an office-based or clinical setting supervised by a family physician. An assigned textbook and specified reading assignments will be required. In addition, students will be required to successfully pass practical as well as written examinations on course content. Prereq: Successful completion of the junior year and enrollment in the Physician Assistant Program.

PAS 861 PEDIATRIC CLERKSHIP. (5)
This is a five-week clinical course designed to acquaint the student physician assistant with clinical experience in evaluating pediatric patients. The student will have the opportunity to function in either an office-based or clinical setting supervised by a family physician. An assigned textbook and specified reading assignments will be required. In addition, students will be required to successfully pass practical as well as written examinations on course content. Prereq: Successful completion of the junior year and enrollment in the Physician Assistant Program.

PAS 862 OBSTETRICS AND GYNECOLOGY CLERKSHIP. (5)
This is a five-week course designed to provide the student physician assistant experiences in the obstetrical patient involving prenatal labor and delivery and post-partum care under medical supervision. Emphasis will be placed on gynecologic problems commonly seen in primary care settings. An assigned textbook and specified reading assignments will be required. In addition, students will be required to successfully pass practical as well as written examinations on course content. Prereq: Successful completion of the junior year and enrollment in the Physician Assistant Program.

PAS 863 SURGERY CLERKSHIP. (5)
This is a five-week clinical course that provides the student physician assistant experiences in the management of patients with surgical problems. Emphasis will be placed on the central principles of surgery. An assigned textbook and specified reading assignments will be required. In addition, students will be required to successfully pass practical as well as written examinations on course content. Prereq: Successful completion of the junior year and enrollment in the Physician Assistant Program.
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**PAS 867 PRECEPTORSHIP I.**
Provides the PA student with the opportunity to integrate his previous year of didactic education and seven months of clinical course work into a functioning system. An assigned textbook and specified reading assignments will be required. In addition, students will be required to successfully pass practical as well as written examinations on course content. Prereq: Successful completion of the junior year and enrollment in the Physician Assistant Program.

**PAS 868 PRECEPTORSHIP II.**
This course provides the student with the opportunity to integrate his previous year of didactic education and seven months of clinical course work into a functioning system. This course is a continuation of Preceptorship I. An assigned textbook and specified reading assignments will be required. In addition, students will be required to successfully pass practical as well as written examinations on course content. Prereq: Successful completion of the junior year and enrollment in the Physician Assistant Program.

**PAS 869 INTERNAL MEDICINE CLERKSHIP.**
This course provides the student with an experience in evaluating the adult patient with the variety of acute and chronic problems seen in an outpatient setting. An assigned textbook and specified reading assignments will be required. In addition, students will be required to successfully pass practical as well as written examinations on course content. Prereq: Successful completion of the junior year and enrollment in the Physician Assistant Program.

**PAS 870 EMERGENCY MEDICINE CLERKSHIP.**
This course provides the student with training in triaging, evaluating and managing patients with a wide variety of complaints seen in an emergency room setting. An assigned textbook and specified reading assignments will be required. In addition, students will be required to successfully pass practical as well as written examinations on course content. Prereq: Successful completion of the junior year and enrollment in the Physician Assistant Program.

**PAS 871 PSYCHIATRIC CLERKSHIP.**
This course provides the student with an experience in evaluating psycho-social problems and mental health in an outpatient setting, and observation of the ongoing management of these problems. An assigned textbook and specified reading assignments will be required. In addition, students will be required to successfully pass practical as well as written examinations on course content. Prereq: Successful completion of the junior year and enrollment in the Physician Assistant Program.

**PAS 872 PRACTICAL THERAPEUTICS.**
The purpose of this course is to provide the student with an understanding of the practical use of drugs utilized in primary care. Prereq: Enrollment in the Physician Assistant Program.

**PAS 880 SEMINAR IN PHYSICIAN ASSISTANT STUDIES.**
A study of selected topics and contemporary issues regarding the delivery of health care services by physician assistants. May be repeated to a maximum of six credits. Prereq: Enrollment in Physician Assistant Program or consent of instructor.

**PAT 598 CLINICAL MICROBIOLOGY.**
An introduction to the concepts of clinical microbiology through a survey of the microbial diseases of man using an organ system approach. Prereq: BIO 208 and 209, BIO 476G recommended, CHE 230 or 236, or consent of instructor. (Same as MI 598.)

**PAT 660 CLINICAL TOXICOLOGY AND DRUG MONITORING.**
A lecture and demonstration course designed to acquaint the student with the two main areas of clinical toxicology. The first part of the course will cover the scope of the drug abuse problem in the U.S.A. and detail the emerging role of the clinical toxicologist in dealing with a wide variety of analytical and medicolegal problems associated with illicit drug detection. The second part of the course will cover the rapidly expanding area of clinical toxicology which deals with the monitoring of therapeutic drugs as they relate to the appropriate clinical management of patients. Prereq: BCH 501 and 502, PHA 521 and 522 or equivalent with consent of instructor. (Same as TOX 660.)

[†PAT 821 PATHOLOGIC BASIS OF DISEASE.]
[†PAT 835 THIRD-YEAR ELECTIVE, PATHOLOGY.]

**PAT 850-899 FOURTH-YEAR ELECTIVE FOR MEDICAL STUDENTS.**
With the advice and approval of the faculty adviser and the Student Progress and Promotions Committee, the fourth-year student may choose approved electives offered by the various departments in the College of Medicine. The intent is to provide the student an opportunity to develop his or her special interests and to complement his or her clinical training. Prereq: Admission to the fourth year College of Medicine and/or permission of the Student Progress and Promotions Committee.

**Approved electives:**
- PAT 850 AUTOPSY PATHOLOGY
- PAT 851 SURGICAL PATHOLOGY
- PAT 852 LABORATORY MEDICINE
- PAT 853 NEUROPATHOLOGY
- PAT 854 LABORATORY MEDICINE-REGIONAL BLOOD CENTER SERVICES
- PAT 855 RESEARCH IN PATHOLOGY
- PAT 856 FORENSIC PATHOLOGY

**PDO Pediatric Dentistry**

**PDO 820 PEDIATRIC DENTISTRY I.**
This course is designed to introduce basic modern concepts in dentistry for children. Emphasis is placed on principles of child behavior management and basic restorative dentistry techniques. Lecture, 20 hours; laboratory, six hours. Prereq: CDS 812 and second-year standing in the College of Dentistry.

**PDO 830 PEDIATRIC DENTISTRY II.**
In this course in dentistry for children, emphasis will be placed on principles of oral surgical procedures, advanced restorative techniques, diagnosis and treatment of traumatic injuries, preventive dentistry and diagnosis and treatment of oral habits and cosmetic dentistry. Lecture, 36 hours. Prereq: PDO 820.

**PDO 831 CLINICAL PEDIATRIC DENTISTRY I.**
An intermediate clinical course designed to teach comprehensive dental treatment for the child patient. Clinic, 75 hours. Coreq: PDO 830.

**PDO 841 CLINICAL PEDIATRIC DENTISTRY II.**
An advanced clinical course designed to provide the student with an opportunity to practice methods of good parent and patient management. Additionally, the student will become more proficient in technical skills. Prereq: PDO 831 or consent of instructor.

**PDO 850 PEDIATRIC DENTISTRY ELECTIVE.**
Elective courses offered by the Department of Pediatric Dentistry provide opportunities for further study of or experience in various aspects of pediatric dentistry. Topics may include management of children with developmental/medicolegal conditions in a hospital, dental treatment of handicapped children and of normal children and adolescents, and further discussion of treatment techniques. Hours variable, ranging from a minimum of 16 hours lecture/discussion to a maximum of 10 weeks clinical experience. May be repeated to a maximum of 10 credits. Prereq: The minimum year in dental school and any course prerequisites will be announced for each topic.

**PED Pediatrics**

**PED 815 FIRST-YEAR ELECTIVE, PEDIATRICS.**
With the advice and approval of his or her faculty adviser, the first-year student may choose approved electives offered by the Department of Pediatrics. The intent is to provide the student an opportunity for exploration and study in an area which supplements and/or complements required course work in the first-year curriculum. Pass-fail only. Prereq: Admission to first year, College of Medicine.

**PED 825 SECOND-YEAR ELECTIVE, PEDIATRICS.**
With the advice and approval of his or her faculty adviser, the second-year student may choose approved electives offered by the Department of Pediatrics. The intent is to provide the student an opportunity for exploration and study in an area which supplements and/or complements required course work in the second-year curriculum. Pass-fail only. Prereq: Admission to second-year medical curriculum and approval of adviser.

[†PED 831 CHILDREN’S CLERKSHIP.]
PER 626 ADVANCED CONCEPTS IN GENERAL DENTISTRY. (1)
This course presents, by seminar, lecture or continuing education courses, advanced concepts in general dentistry that are essential to the clinical practice of periodontics. Prerequisites: College of Dentistry and consent of course director. Lecture, 24 hours; laboratory, six hours. May be repeated to a maximum of eight credits. Prerequisite: Consent of instructor.

PER 661 MODERN CONCEPTS IN PERIODONTICS. (2)
A seminar course designed to present the present understanding of the etiology of periodontal disease and current techniques for treatment of periodontal problems. Prerequisite: Consent of instructor. Discussion period, one hour; laboratory, four hours. May be repeated to a maximum of four credits. Prerequisite: Admission to a postdoctoral program of the College of Dentistry or consent of course director.

PER 748 MASTER’S THESIS RESEARCH. (0)
Half-time to full-time work on thesis. May be repeated to a maximum of six semesters. Prerequisite: All course work toward the degree must be completed.

PER 768 RESIDENCE CREDIT FOR THE MASTER’S DEGREE. (1-6)
May be repeated for a total of 12 hours. Prerequisite: Admission to the Periodontics postdoctoral program and consent of director of graduate studies.

PER 770 TREATMENT PLANNING SEMINAR. (2)
In this seminar course, graduate students present and discuss diagnosis, prognosis, ideal treatment plans and alternative treatment plans for patients with periodontal disease. Each student must present at least eight case presentations. May be repeated to a maximum of eight credits. Lecture, 40 hours. Prerequisite: Admission to the Periodontics postdoctoral program or consent of course director.

PER 772 PERIODONTAL BIOLOGY AND PATHOLOGY. (2)
Seminar discussions, review and evaluation of the literature covering periodontal anatomy, periodontal biology, the pathology of periodontal diseases and the etiological factors in periodontal disease. The subject area will be covered in four semesters. May be repeated four times for a maximum of eight credits. Lecture, 40 hours. Prerequisite: Admission to the Periodontics postdoctoral program or consent of course director.

PER 774 PERIODONTICS SURGICAL SEMINAR. (1)
This seminar course presents surgical procedures involving initial periodontal therapy. Each student will demonstrate a periodontal surgery, including suturing; splinting; referrals, maintenance and curettage. May be repeated to a maximum of two credits. Prerequisite: Admission to the Periodontics postdoctoral program or consent of course director.

PER 776 PERIODONTAL THERAPY SEMINAR. (1)
This is an advanced series of seminars on the clinical aspects of periodontal therapy. During the course, the students will learn about various modalities of periodontal therapy as presented in the periodontal literature, e.g., mucogingival treatment, implants and cutaneous. May be repeated to a maximum of two credits. Prerequisite: Admission to the Periodontics postdoctoral program or consent of course director.

PER 790 RESEARCH IN PERIODONTICS. (1-3)
This course involves direct student participation in research projects. Projects and thesis are approved by the course director and may be clinical, laboratory experimental or related to dental education. Projects may include original or ongoing research within the Department of Periodontics or other departments of the Medical Center. May be repeated to a maximum of six credits. Prerequisite: Admission to the Periodontics postdoctoral program and consent of the department involved.

PER 820 PERIODONTICS II. (1)
This course presents the components of the first stages of periodontal therapy. Emphasis is on diagnosis, prognosis, treatment planning and treatment of the periodontally involved patient. The student is also introduced to the principles of periodontal surgery. Lecture, 25 hours; laboratory, two hours. Prerequisite: PER 810 or consent of course director.

PER 821 CLINICAL PERIODONTICS II. (2)
This is a course designed to provide the student with clinical experience so that he can obtain a minimal competence in the applications of periodontal procedures. Therapeutic procedures involving initial periodontal therapy will be performed by each student. Clinic, 50 hours. Prerequisite: PER 811, or consent of instructor.

PER 830 CLINICAL PERIODONTICS III. (1)
This is a surgically oriented course which presents information necessary for the diagnosis, treatment planning and treatment of surgical cases. The information gained is applied to planning treatment for actual surgical cases. Lecture, 24 hours; laboratory, six hours. Prerequisite: PER 820 or consent of course director.

PER 831 CLINICAL PERIODONTICS IV. (2)
This is a clinical course which offers the student the opportunity to treat patients with more advanced periodontal disease. Therapeutic procedures will be performed by each student as his patients’ needs dictate. Clinic, 50 hours. Prerequisite: PER 821; corequisite: PER 836; or consent of instructor.

PER 841 CLINICAL PERIODONTICS IV. (4)
This clinical course is a continuation of PER 831. The student receives further instruction and experience in diagnosing, planning treatment and treating patients with periodontitis and mucogingival problems. Prerequisite: PER 830 and PER 831, or consent of instructor.

PER 850 PERIODONTICS ELECTIVE. (1-10)
Elective courses offered by the Department of Periodontics provide opportunities for further study of or experience in various aspects of periodontics. Topics may include treatment planning, diagnosis, treatment and prognosis in periodontal disease; periodontal surgery, including suturing; splinting; referrals; maintenance and prevention. Hours variable, ranging from a minimum of 16 hours lecture/discussion to a maximum of 10 weeks clinical experience. May be repeated to a maximum of 10 credits. Prerequisite: The minimum year in dental school and any course prerequisites will be announced for each topic.

PGY Physiology

PGY 206 ELEMENTARY PHYSIOLOGY. (3)
An introductory survey course in basic human physiology. Prerequisite: One semester of college biology.

*PGY 412G PRINCIPLES OF HUMAN PHYSIOLOGY LECTURES. (4)
Intermediate level human physiology course emphasizing applied concepts. Prerequisite: One year biology or PGY 206.

PGY 502 PRINCIPLES OF SYSTEMS, CELLULAR AND MOLECULAR PHYSIOLOGY. (5)
Advanced survey of major mammalian physiological systems at the systems, cellular and molecular level; lectures, assigned reading, advanced texts or monographs, demonstrations and problem oriented study questions. Prerequisite: Each year, physics, general chemistry; PGY 206 or its equivalent. (Same as BIO 502.)

PGY 504 INDEPENDENT WORK IN PHYSIOLOGY. (2-4)
A study of some advanced problems in physiology under the direct supervision of the instructor. Discussion period, one hour; laboratory, four hours. May be repeated to a maximum of eight credits. Prerequisite: Consent of instructor.
PGY 522 QUANTITATIVE PHYSIOLOGY. (4)
Present principles of biophysics applicable to physiological systems. Mechanical and electrochemical systems are discussed and compared. Applications to neurophysiology, respiratory, cardiovascular, renal and endocrine physiology are given.

PGY 535 COMPARATIVE NEUROBIOLOGY AND BEHAVIOR. (3)
The course consists of an introduction to neurophysiology and study of the neural basis of sensory processing and motor patterns. A comparative analysis of the neurobiological basis of behavioral responses will be made, utilizing a broad range of vertebrates and invertebrates. Prereq: BIO 350 or consent of instructor. (Same as BIO 535.)

PGY 549 COMPARATIVE ENDOCRINOLOGY. (3)
An introductory and comparative survey of invertebrate and vertebrate endocrine organs and neuroendocrine mechanisms with emphasis on the evolution, chemistry, actions and functions of hormones. Prereq: BIO 350 or consent of instructor. (Same as BIO 549.)

PGY 550 AN INTRODUCTION TO INTEGRATIVE THOUGHT. (3)
Modern life, with its proliferation of specialized knowledge, offers little opportunity to develop an integrative conception of our personal existence and of the world. One result is the absence of a coherent framework within which to organize experience; another is a loss of meaning. Drawing on science, religion, literature and other sources, this course takes a few steps toward the development of such a framework. The course involves writing, oral presentation, and group discussion. Topics: the nature of living systems, the cell, cosmic evolution, the integrative way, and integrative study. Lecture, four hours per week. Prereq: Three years of undergraduate study or permission of instructor.

*PGY 560 PATHOPHYSIOLOGY: INTEGRATIVE STUDY IN PHYSIOLOGY AND MEDICINE. (1)
This course aims at the development of an integrative conception of the human organism, and involves the study of medical case histories. The complex network of physiologic interactions which underlie disease states is investigated. The physiologic bases of health, illness, dying, and death are explored. May be repeated to a maximum of three credits. Prereq: PGY 412G, PGY 502 or consent of instructor.

PGY 590 CELLULAR AND MOLECULAR PHYSIOLOGY. (4)
An intensive study of general physiological principles with emphasis on the cellular and molecular basis of physiological function. Prereq: Any physics course, general chemistry; PGY 502 or equivalent. (Same as MI 590.)

PGY 601 MAMMALIAN ENDOCRINOLOGY. (3)
An introduction to the basic anatomy, physiology and biochemistry of endocrine systems with emphasis on mechanisms of hormone synthesis, secretion and action. Lectures and reading assignments will focus on endocrine function in mammalian species, including laboratory animals, humans and livestock. Prereq: BCH 401G and BIO 350 or equivalents. (Same as ASC 601.)

PGY 602 READINGS IN SYSTEMS, CELLULAR AND MOLECULAR PHYSIOLOGY. (3)
A critical evaluation at the advanced level of the literature of the major mammalian physiological systems at the organ, cellular and molecular level. The course is intended to be taken with and to complement PGY 502. It includes a critical reading of the primary literature. Prereq: One year each of physics, general chemistry; PGY 206 or equivalent.

*PGY 604 ADVANCED CARDIOVASCULAR PHYSIOLOGY. (3)
The objective of this course is to examine in-depth the various functions of the cardiovascular system and their proposed mechanisms. Prereq: PGY 502 or consent of instructor.

PGY 605 PRINCIPLES OF NEUROBIOLOGY. (4)
The objective of this course is to provide graduate students of diverse backgrounds with an introduction and overview of neurobiology. Areas covered will include neuronal and glial cell biology, neurotransmitters, signaling mechanisms, neuroanatomy, and neuronal development. The course is designed to provide a brief overview of each of the areas and introduce students to current research questions. The course will consist of lectures and informal presentations in a 'Journal Club' format. The course will be interdisciplinary and will be of interest to graduate students in anatomy, biology, biochemistry, immunology, pharmacy, pharmacology, physiology, psychology and toxicology and to neurology and neurosurgery residents. Prereq: Introductory biochemistry course, or equivalent, and/or consent of instructor. (Same as ANA/BCH/NEU/PHA 605.)

*PGY 606 ADVANCED NEUROPHYSIOLOGY. (3)
Electrical analysis of nerve fibers and synapse; nerve impulse theories, reflexes, metabolism and central nervous function are considered from the cybernetic viewpoint. Prereq: PGY 502 or consent of instructor.

*PGY 607 HORMONAL CONTROL MECHANISMS (Subtitle required). (3)
Advanced study of the role of hormones in the physiologic regulation of vertebrate organ systems. One or two specific areas of endocrinology will be selected by the instructor. Emphasis will be placed on critical analysis and discussion of the experimental basis for current theories of the mechanisms whereby hormones modulate physiological processes. Readings will be taken from the literature. May be repeated to a maximum of six credits. Prereq: PGY 502, PGY 549 or their equivalent.

*PGY 608 ADVANCED RENAL PHYSIOLOGY. (3)
This course will examine in-depth the physiology and pathophysiology of the renal system, as well as provide an understanding of advanced renal physiological techniques. Prereq: PGY 412G, PGY 502 or consent of instructor.

*PGY 609 ADVANCED RESPIRATORY PHYSIOLOGY. (3)
This course will examine in-depth the physiology and pathophysiology of the respiratory system. Prereq: PGY 412G, PGY 502 or consent of instructor.

*PGY 610 EXPERIMENTAL PHYSIOLOGY. (4)
This course will introduce students to the nature of physiological experimentation, and provide an opportunity to gain first-hand experience in conducting experiments which illustrate fundamental physiological concepts. Laboratory, eight hours per week. Prereq: PGY 502 or consent of instructor.

PGY 611 ADVANCED MEDICAL PHYSIOLOGY. (9)
Advanced study of major mammalian physiological systems with particular emphasis on human (medical) physiology. A core content of lectures, assigned readings and laboratories will be supplemented with in-depth discussion group sessions of contemporary topics in physiology using advanced texts and readings in the original literature. Lecture, nine hours; laboratory, four hours per week. Prereq: Enrollment in physiology graduate program or consent of DGS.

PGY 618 MOLECULAR NEUROBIOLOGY. (4)
This course provides knowledge base and analytical skills in the field of molecular neurobiology. An in-depth introduction to current technologies, their rationale and limitations, will be the focus to address normal brain function and neuropathological conditions. Lecture, eight hours per week. Prereq: PGY 502 or consent of instructor.

PGY 627 PROSEMINAR IN PHYSIOLOGICAL PSYCHOLOGY. (3)
An intensive examination of theories, methods of investigation, and current developments in the field of physiological psychology. Prereq: Graduate standing or consent of instructor. (Same as PSY 627.)

*PGY 630 ADVANCED TOPICS IN PHYSIOLOGY. (1-3)
Contemporary topics in physiology. Course designed to utilize the special research interests of resident and visiting faculty. May be repeated to a maximum of six credits. Prereq: PGY 502 or consent of instructor.

PGY 638 DEVELOPMENTAL NEUROBIOLOGY. (3)
An explanation of the processes which contribute to the development of the nervous system. Neurophysiological, cell biological and molecular approaches to cell differentiation, neuronal pathfinding and synapse formation and stabilization will be explored and discussed. Examples will be drawn from both vertebrate and invertebrate preparations. Prereq: BIO 535 or consent of instructor. (Same as ANA/BCH/PSY 638.)

PGY 748 MASTER'S THESIS RESEARCH. (0)
Half-time to full-time work on thesis. May be repeated to a maximum of six semesters. Prereq: All course work toward the degree must be completed.

PGY 749 DISSERTATION RESEARCH. (0)
Half-time to full-time work on dissertation. May be repeated to a maximum of six semesters. Prereq: Registration for two full-time semesters of 769 residence credit following the successful completion of the qualifying exams.

PGY 767 TOPICAL SEMINAR IN BEHAVIORAL NEUROSCIENCE. (3)
A study of selected topics in behavioral neuroscience with emphasis on recent research and theory. May be repeated to a maximum of nine credits. Prereq: Consent of instructor. This course may be elected to fulfill requirements in the psychology and physiology graduate programs. (Same as PSY 767.)

PGY 768 RESIDENCE CREDIT FOR THE MASTER'S DEGREE. (1-6)
May be repeated to a maximum of 12 hours.
PGY 769 RESIDENCE CREDIT FOR THE DOCTOR'S DEGREE. (0-12)
May be repeated indefinitely.

*PGY 771 PROSEMINAR IN CELL PHYSIOLOGY. (2)
A comprehensive discussion of topics in cellular physiology and biophysics using advanced texts and readings in the original literature. Includes such topics as biological membranes, transport mechanisms, effects of hormones on membranes. Prereq: Graduate student in physiology and biophysics or consent of Director of Graduate Study.

PGY 774 GRADUATE SEMINAR IN PHYSIOLOGY. (1)

PGY 791 RESEARCH IN PHYSIOLOGY. (1-15)
May be repeated to a maximum of 15 credits. Prereq: Consent of instructor.

†PGY 811 MEDICAL PHYSIOLOGY. (1-3)
With the advice and approval of his or her faculty adviser, the first-year student may choose approved electives offered by the Department of Physiology and Biophysics. The intent is to provide the student an opportunity for exploration and study in an area which supplements and/or complements required course work in the first-year curriculum. Pass-fail only. Prereq: Admission to first year, College of Medicine.

*PGY 815 FIRST-YEAR ELECTIVE, PHYSIOLOGY. (1-4)
With the advice and approval of his or her faculty adviser, the second-year student may choose approved electives offered by the Department of Physiology and Biophysics. The intent is to provide the student an opportunity for exploration and study in an area which supplements and/or complements required course work in the second-year curriculum. Pass-fail only. Prereq: Admission to second-year medical curriculum and approval of adviser.

†PGY 835 THIRD-YEAR ELECTIVE, PHYSIOLOGY AND BIOPHYSICS.
PGY 850-899 FOURTH-YEAR ELECTIVE FOR MEDICAL STUDENTS. (1-6)
With the advice and approval of the faculty adviser and the Student Progress and Promotions Committee, the fourth-year student may choose approved electives offered by the various departments in the College of Medicine. The intent is to provide the student an opportunity to develop his fund of knowledge and clinical competence. Prereq: Admission to the fourth year, College of Medicine and/or permission of the Student Progress and Promotions Committee.

Approved elective:
PGY 850 RESEARCH IN PHYSIOLOGY

PHA Pharmacology

PHA 522 SYSTEMS PHARMACOLOGY. (3)
This course is aimed to give a fundamental understanding of the pharmacodynamic action of drugs most commonly used in medical practice. Prereq: PHA 521; consent of instructor.

PHA 602 NEUROPHARMACOLOGY. (4)
A study of drugs which modify the function of all parts of the nervous system, including the brain, spinal cord, nerve fibers, the pituitary gland and endocrinics as well as an introduction to receptor theory and principles of general pharmacology. Lecture, 77 hours; demonstration, four hours. Prereq: BCH 501 and 502, and PGY 502 and/or consent of faculty.

PHA 603 PHARMACOLOGY OF ORGANS AND SYSTEMS. (3)
Discussion of the pharmacodynamic principles underlying the action of cardiovascular, renal, gastrointestinal, and hematologic drugs, as well as drugs used in the treatment of infections. Inaddition, cancer chemotherapeutic drugs, drugs for treating arteriosclerosis, principles of toxicology and drug metabolism and kinetics are discussed. Lecture, 43 hours. Prereq: BCH 501 and 502, PGY 502, PHA 602 and/or consent of faculty.

PHA 605 PRINCIPLES OF NEUROBIOLOGY. (4)
The objective of this course is to provide graduate students of diverse backgrounds with an introduction and overview of neurobiology. Areas covered will include neuronal and glial cell biology, neurotransmitters, signaling mechanisms, neuroanatomy, and neuronal development. The course is designed to provide a brief overview of each of the areas and introduce students to current research questions. The course will consist of lectures and informal presentations in a ‘Journal Club’ format. The course will be interdisciplinary and will be of interest to graduate students in anatomy, biology, biochemistry, immunology, pharmacy, pharmacology, physiology, psychology and toxicology and to neurology and neurosurgery residents. Prereq: Introductory biochemistry course, or equivalent, and/or consent of instructor. (Same as ANA/BCH/NEU/PGY 605.)

PHA 606 MECHANISMS OF NEUROLOGIC DISEASE. (4)
The objective of this course is to provide graduate students of diverse backgrounds with an introduction and overview of current problems and controversies in neurobiology and clinical neurology. The course will cover a variety of illnesses including epilepsy, neurodegenerative diseases, stroke, psychiatric illness, pain, diseases of immune origin, motor dysfunction and inherited disorders. Prereq: ANA/BCH/NEU/PGY/PHA 605 or consent of instructor. (Same as ANA/NEU/606.)

PHA 612 QUANTITATIVE PHARMACODYNAMICS: PHARMACOKINETICS. (3)
Quantitative treatment of dynamics of drug absorption, distribution, metabolism and excretion, including development of both mathematical models and model-independent approaches for describing these processes. Prereq: PHR 802 (or equivalent), MA 114 and consent of instructor. (Same as PHR 612.)

PHA 621 ADVANCED PHARMACODYNAMICS. (3)
Small group discussion course for students of the natural sciences who, using drugs as research tools, wish to understand the basis of drug therapy. The principles and mechanism of drug action on biochemical and physiological systems is emphasized. Prereq: Consent of instructor.

PHA 630 SPECIAL TOPICS IN PHARMACOLOGY. (1-3)
Detailed examination of current, significant topics in pharmacology such as: contemporary neuroscience methodology, molecular and cellular pharmacodynamics, transmembrane signaling. Course is designed to offer flexibility to students in different tracks, different emphasis in a given year and to utilize the special research interests in resident and visiting investigators. May be repeated to a maximum of six credits. Prereq: Consent of course director.

PHA 634 PHARMACOLOGY OF CARDIOVASCULAR DRUG THERAPY. (3)

PHA 649 MOLECULAR PHARMACOLOGY. (3)
The intent of this course is to describe the molecular aspects of a variety of physiological systems that are subject to pharmacological manipulation. Emphasis will be on the molecular genetics, biochemistry, and subcellular organization and biology of these systems, and on the pharmacological techniques used to study these systems. Genetic diseases associated with these systems will also be described. The course will focus on areas of research which represent the forefront of modern pharmacological investigation. Prereq: PHA 522, PGY 502, BCH 501, 502; or consent of instructor. (Same as PHR/TOX 649.)

PHA 658 ADVANCED NEUROPHARMACOLOGY. (3)
A study of the general theories of the mode of action of drugs upon nervous tissue and a review of the effects of analgesics, sedatives, hypnotics, anesthetics, tranquilizers, psychotomimetics, analeptics, antidepressants, anti-convulsants and drugs affecting motor dyskinesias upon neurons, synapses and functional components of the central nervous system. Prereq: PGY 412G or equivalent and PHA 522 or equivalent; consent of instructor.

PHA 663 DRUG METABOLISM AND DISPOSITION. (2)
Drug metabolism and disposition. Lectures and discussion of the chemistry and biochemistry of drug biotransformation with emphasis on the mixed-function oxidase system. Prereq: BCH 401G or 501, 502 or consent of instructor. (Same as TOX 663.)

PHA 670 CHEMICAL CARCINOGENESIS. (3)
Lectures and discussion of the chemical and biochemical reactions of chemical carcinogens and their metabolites. Prereq: CHE 232; PHR 400; or BCH 501, 502. (Same as TOX 670.)

KEY:  # = new course  * = course changed  † = course dropped
Note: Prior to the priority registration period each semester, the Department of Philosophy publishes information on courses (200 level and above) to be offered for the next semester. This information includes details on course topics and materials to be used in each course. Students are encouraged to obtain the information to assist them in course selection.

PHI 100 INTRODUCTION TO PHILOSOPHY: KNOWLEDGE AND REALITY. (3)
An introduction to philosophical studies with emphasis on issues of knowing, reality, and meaning related to human existence.

PHI 120 INTRODUCTORY LOGIC. (3)
A course which treats argumentation, syllogistic, and sentential logic. The focus will be on the use of formal methods in the construction and criticism of actual arguments, the aim being to inculcate standards of good reasoning, e.g., clarity, consistency and validity. Credit is not given to students who already have credit for PHI 320.

PHI 130 INTRODUCTION TO PHILOSOPHY: MORALITY AND SOCIETY. (3)
An introduction to philosophical studies with emphasis on a critical study of principles of moral action and social and political values.

PHI 251 PHILOSOPHY AND CLASSICAL PHYSICS. (3)
An historical introduction to the philosophical background of classical physics as it was then developed by thinkers like Isaac Newton and James Clerk Maxwell. Concentrating on metaphysics and the philosophy of scientific method, this course includes a study of scientists and philosophers like Aristotle, Copernicus, Galileo, Leibniz, and Faraday. Prereq or concur: PH 231 or consent of instructor.

PHI 260 HISTORY OF PHILOSOPHY I: FROM GREEK BEGINNINGS TO THE MIDDLE AGES. (3)
An introductory study of the development of Western philosophy from ancient through late medieval times including systematic work in logic, metaphysics, epistemology and ethics by such philosophers as Plato, Aristotle, Augustine and Aquinas.

PHI 270 HISTORY OF PHILOSOPHY II: FROM THE RENAISSANCE TO THE PRESENT ERA. (3)
An introductory study of the development of Western philosophy from early modern to recent times including systematic work in logic, metaphysics, epistemology and ethics by such philosophers as Descartes, Hume and Kant.

PHI 300 UNDERGRADUATE SEMINAR. (3)
An intensive study of special topics in philosophy with emphasis on current scholarship. The focus may be interdisciplinary or interdisciplinary. Prerequisite is appropriate to the specific topic will be listed in the schedule book for each offering. May be repeated to a maximum of six hours.

PHI 305 HEALTH CARE ETHICS. (3)
A consideration of the ethical issues and difficult choices generated or made acute by advances in biology, technology, and medicine. Typical issues include: informed consent, healer-patient relationships, truth telling, confidentiality, problem of birth defects, abortion, placebos and health, allocation of scarce medical resources, genetic research and experimentation, cost containment in health care, accountability of health care professionals, care of the dying, and death.

PHI 310 PHILOSOPHY OF HUMAN NATURE. (3)
A course introducing philosophy at the upper division level which studies various issues involved in analyzing what it means to be human, in the interest of developing a coherent conception of man. Answers will be sought to questions like these: Is there a human nature? What would differentiate the properly human from the nonhuman? What kind of relations tie a human being to environment, society, and history?

PHI 317 EXISTENTIALIST THOUGHT AND LITERATURE. (3)
A survey of existentialism as a literary movement as well as a philosophical one, with emphasis upon their intersection and interaction. The course will trace the emergence of existentialist themes in modern thought and culture, and will analyze and assess the movements’ continuing significance.

PHI 320 SYMBOLIC LOGIC I. (3)
A systematic study of sentential logic, elementary quantification, and the logic of identity. The student will acquire specific skills in symbolic methods of analysis which are necessary for further study in logic as well as useful for addressing complex issues in philosophy and other areas.

PHI 330 PROFESSIONAL ETHICS. (3)
A study of ethical issues related to professional roles, especially those of physicians and lawyers. Among the topics to be considered are the nature and justification of professional responsibilities and duties; obligations of professions to society; the professional-client relationship and its rights and obligations; enforcement of codes of ethics.

PHI 333 AGRICULTURAL ETHICS. (3)
This course examines the moral dilemmas which arise from the production, distribution and consumption of food in modern societies. Various ethical issues, such as Libertarianism, Utilitarianism, Egalitarianism, are examined. In addition the course will consider how the right of everyone to an adequate diet can be justified as well as what that right implies for public policy decisions.

PHI 335 THE INDIVIDUAL AND SOCIETY. (3)
An examination of several incompatible views concerning the relation between the individual and society, including radical individualism and collectivism, as well as more moderate theories. Attention will be given to contemporary as well as classical spokesmen for these views and emphasis will be placed upon relating these theories to contemporary social, cultural, and political issues.
PHI 337 INTRODUCTION TO LEGAL PHILOSOPHY. (3)
A general introduction to basic concepts, institutions, and mechanisms of law. Understanding of the legal system and its methods is promoted through discussion of topics which include: basic legal reasoning, the function of the legal process, fundamental legal concepts and categories (such as property, crime, and contract).

PHI 338 MORALITY AND BUSINESS. (3)
A systematic analysis of moral questions for business and economics. How do major ethical theories view the practice of business in general? What moral principles underlie activities such as stock issuance, advertising, accounting and the social audit? What ethical issues are involved in hiring and promotion, ecological concerns and conflicts of interest?

PHI 343 ASIAN PHILOSOPHY. (3)
An introduction to the main concepts, assumptions, problems and texts of one or more Asian philosophical traditions, such as Hinduism, Buddhism, Taoism, and Confucianism.

PHI 350 DEATH, DYING AND THE QUALITY OF LIFE. (3)
A philosophical and interdisciplinary investigation of death and dying, grief, dying persons, and the quality of life of the terminally ill. Among topics included are: death definitions and criteria; allowing to die vs. killing; euthanasia and suicide; life prolongation, ethics of care of the terminally ill; and rights of the dying.

PHI 361 BIOLOGY AND SOCIETY. (3)
A study of the implications of biology for understanding and changing society. Emphasis is on sociobiology and the value of viewing social behavior as a product of adaptive evolution by natural selection. Representative philosophical issues include biological constraints on human nature and society, genetic engineering, reductionism, the scientific method, and bioethics. Prereq: A college course in biology or consent of instructor.

PHI 395 INDEPENDENT WORK. (3)
Open only to students who have distinguished themselves in philosophy or in allied subjects. May be repeated to a maximum of 12 credits. Prereq: Major and standing of 3.0 in department.

PHI 399 EXPERIENTIAL LEARNING. (1-6)
To provide the opportunity for students to earn credit for work-study experience. The student must work with a faculty member to describe the nature of the experience, the work to be performed, the accompanying philosophical reflection and study, appropriate course credit for the work, and criteria by which the work may be evaluated. This information must be written and filed in the Philosophy Department and the Office for Experiential Education prior to the student's registration for the course. May be repeated to a maximum of 12 credits. Pass-fail only. Prereq: Consent of instructor and department chairperson; completion of a departmental learning agreement.

PHI 500 TOPICS IN PHILOSOPHY (Subtitle required). (3)
Topics that cross traditional systematic or historical lines in philosophy or that relate philosophy to topics or periods in other disciplines. May be repeated to a maximum of six credits.

PHI 520 SYMBOLIC LOGIC II. (3)
An intermediate course in symbolic logic which reviews sentential logic, develops further the logic of quantification, and introduces metalogical issues such as the construction, consistency, and completeness of deductive systems. Prereq: PHI 320 or consent of instructor.

GROUP A

PHI 503 TOPICS IN ANCIENT PHILOSOPHY. (3)
A study of representative texts and issues in Ancient Philosophy with special attention to historical continuity and the interrelations of thinkers and problems. Possible Topics: Pre-Socratic Philosophers, Plato, Aristotle, Stoicism, Epicureanism, Skepticism. May be repeated to a maximum of six credits.

PHI 504 ISLAMIC AND JEWISH PHILOSOPHY AND THE CLASSICAL TRADITION. (3)
A study of representative texts and issues in Islamic and Jewish philosophy with special attention to the historical continuity with the Greek philosophical tradition and the interrelations of thinkers and problems. Possible topics: the commensurability of philosophy and (revealed) law, the creation or eternity of the world, the nature of prophecy, the human good, the nature of God and divine language. Prereq: PHI 260 or consent of instructor.

PHI 506 TOPICS IN MEDIEVAL PHILOSOPHY. (3)
An investigation of issues in Medieval Philosophy. Topics will be chosen which illustrate continuity both with Ancient Greek Sources and with problems in Modern Philosophy. Possible Topics: Neo-Platonism, Faith and Reason, Freedom and Determinism, Universals, the Existence of God, Renaissance reactions. May be repeated to a maximum of six credits.

PHI 509 TOPICS IN THE HISTORY OF MODERN PHILOSOPHY. (3)
A selective study of representative issues and texts in modern philosophy, with special emphasis upon historical continuity and interrelation of thinkers and problems. Possible topics: British empiricism; Leibniz and Locke; Descartes and his critics; Hobbes and Rousseau; Hume and Kant; philosophy and the rise of modern science. May be repeated to a maximum of six credits.

PHI 513 NINETEENTH CENTURY PHILOSOPHY. (3)
An examination of the major topics and trends in 19th century philosophy. Prereq: PHI 270 or consent of instructor.

PHI 514 AMERICAN PHILOSOPHY. (3)
A study of the development of philosophy in America from colonial to recent times with attention to religious, political, literary and scientific influences on American thought. The focus will be on the pragmatic spirit that was the moving force from 19th century idealism to 20th century naturalism, with emphasis on the works of such thinkers as Royce, Peirce, James and Dewey.

PHI 515 CONTEMPORARY PHILOSOPHY: THE ANALYTIC TURN. (3)
A survey of several 20th century philosophical movements, such as logical positivism and ordinary language philosophy, whose members agreed that careful attention to language is one of the keys to the resolution of philosophical problems. The works of representative thinkers such as Moore, Russell, the Vienna Circle, Wittgenstein and Austin will be studied.

PHI 516 CONTEMPORARY PHILOSOPHY: PHENOMENOLOGICAL DIRECTIONS. (3)
A study of 20th century philosophies represented by the works of thinkers such as Husserl and Heidegger, Gadamer and Ricoeur, Habermas and Apel. Generally based in a reflection on human experience, these philosophies undertake a radical criticism of common conceptions of human nature while variously emphasizing rationality, ontology, language, or social and historical context. Prereq: PHI 270 or consent of instructor.

PHI 517 EXISTENTIALISM. (3)
A systematic study of the fundamental concepts and problems of existentialism. Readings selected from such philosophers as Kierkegaard, Nietzsche, Sartre, Marcel, Heidegger, and Jaspers.

PHI 520 SYMBOLIC LOGIC II. (3)
An intermediate course in symbolic logic which reviews sentential logic, develops further the logic of quantification, and introduces metalogical issues such as the construction, consistency, and completeness of deductive systems. Prereq: PHI 320 or consent of instructor.

GROUP B

PHI 530 ETHICAL THEORY. (3)
A study of ethical theories by detailed examination of a few selected works. Theories considered may include naturalism, intuitionism, noncognitivism, utilitarianism, universalizability, and natural law.

PHI 533 SOCIAL AND POLITICAL PHILOSOPHY. (3)
A critical examination of some philosophical problems concerning the nature and evaluation of social and political organizations. For example, questions concerning the nature, justification, and limits of political power may be explored in connection with a study of important classical positions. Prereq: One course in philosophy.

PHI 537 PHILOSOPHY OF LAW. (3)
Concept of law; relations between law and morals; nature of legal reasoning; analysis of legal concepts; justification of punishment. Pass/fail basis only for law students. (Same as LAW 837.)

PHI 545 PHILOSOPHY OF RELIGION. (3)
An analysis of the philosophical issues raised by religion, such as the problem of religious knowledge, the nature of religious language, science and religion, concepts of God, death, and evil.

PHI 592 AESTHETICS. (3)
A philosophical and interdisciplinary investigation of a cluster of prominent issues about the arts. Interrelations of the arts. Lectures, discussions, reports. (Same as A-H 592.)
PHI 550 PHILOSOPHICAL PROBLEMS IN KNOWLEDGE AND REALITY. (3)
Critical examination of issues regarding the foundations of knowledge, the nature of reality and the relation between the two. Evidence, belief, certainty, perception and justification will be among problems considered. Understandings of truth, existence, causality, freedom, time, space and matter will also be attended to. Prereq: PHI 100 or PHI 260 or PHI 270 or equivalent.

PHI 560 PHILOSOPHY OF SCIENTIFIC METHOD. (3)
An examination of the logical and epistemological foundations of empirical science, including fundamentals of concept formation, criteria of cognitive significance, issues of explanation, interpretation, and prediction, and testing and confirmation of theories and laws. Prereq: PHI 120 or equivalent or consent of instructor.

PHI 561 PHILOSOPHICAL PROBLEMS IN THE NATURAL SCIENCES (Subtitle required). (3)
A systematic examination of selected conceptual and/or metaphysical problems in the natural sciences. Possible topics include: reductionism, teleology, causality and determinism, the structure of space-time, and the "anthropic principle" in cosmology. Prereq: PHI 120 or PHI 320, or two semesters of natural sciences or consent of instructor.

PHI 562 PHILOSOPHICAL PROBLEMS IN THE SOCIAL AND BEHAVIORAL SCIENCES. (3)
An examination of various methodological issues and broader philosophical questions of special concern in the social sciences. Among the topics to be studied: the structure of theories and the roles of mathematics and experimentation in the social sciences, the possibility of an objective or value free social science, and the conceptions of human nature presupposed by different schools of social science.

PHI 565 PHILOSOPHY OF LANGUAGE. (3)
An investigation of problems current in the philosophy of language such as meaning and reference, the nature of analysis, linguistic relativity and the relation of linguistics to philosophy.

PHI 570 PHILOSOPHY OF HISTORY. (3)
An examination of the theories and methods utilized by historians with special attention to the problems of laws and explanations in history, the nature of historical knowledge and narrative, and the roles of causal judgments and historical understanding. Attention will also be given to theoretical interpretations of history as offered by Marx, Hegel, Toynbee and others.

PHI 575 PHILOSOPHY OF MIND. (3)
An examination of problems current in the philosophy of mind, such as the concept of person, the relation of mind and body, the relation of minds and machines, knowledge of other minds, and the roles of dispositions and volitions in human action. Attention will be given to the philosophical analysis of such psychological categories as consciousness, feeling, emotion, perception, imagination, thinking and will.

GRADUATE SEMINARS

PHI 630 SEMINAR IN MORAL PHILOSOPHY. (3)
A specialized graduate course in moral philosophy that treats the history of moral issues and doctrines, or emphasizes contemporary methodological discussions, or examines the concrete societal implications of major theories, or combines these approaches. May be repeated to a maximum of six credits. Prereq: Consent of instructor.

PHI 650 SEMINAR IN METAPHYSICS AND EPIDEMIOLOGY (Subtitle required). (3)
A specialized advanced study of topics in traditional areas of metaphysics and epistemology or of more contemporary topics, some of which may cut across or even challenge the framework of those traditional domains. Topics may include such issues as the nature of human action, problems of reference and modality, conceptions of time and space, and the sociology of knowledge. May be repeated to a maximum of nine credits under different subtitles. Prereq: Consent of instructor.

PHI 680 SPECIAL TOPICS IN PHILOSOPHY. (3)
Studies in philosophical problems which either cut across or lie outside the standard areas of philosophical inquiry. May be repeated to a maximum of six credits.

PHI 700 SEMINAR IN ANCIENT PHILOSOPHY. (3)
Intensive study of original works of such major classical philosophers as Plato and Aristotle. May be repeated to a maximum of six credits. Prereq: PHI 260 or equivalent.

PHI 705 SEMINAR IN MEDIEVAL PHILOSOPHY. (3)
An intensive study of the issues treated by one or more medieval philosophers, e.g., Augustine, Aquinas, Scotus or Ockham. May be repeated to a maximum of six credits. Prereq: PHI 506.

PHI 710 SEMINAR IN MODERN PHILOSOPHY. (3)
Intensive study in the major works of such prominent philosophers of modern times as Descartes, Locke, Hume, Kant, and Hegel. May be repeated to a maximum of six credits. Prereq: PHI 270 or equivalent.

PHI 715 SEMINAR IN RECENT PHILOSOPHY. (3)
Intensive study of major philosophers of the 20th Century such as Russell, Wittgenstein, J.L. Austin, and Merleau-Ponty. May be repeated to a maximum of six credits. Prereq: PHI 515 or equivalent.

PHI 749 DISSERTATION RESEARCH. (0)
Half-time to full-time work on dissertation. May be repeated to a maximum of six semesters. Prereq: Registration for two full-time semesters of 769 residence credit following the successful completion of the qualifying exams.

PHI 750 SEMINAR IN INTERDISCIPLINARY ISSUES. (3)
This course focuses on issues and topics which require the integration of philosophical aims and methods with work in other disciplines. May be repeated to a maximum of nine credits. Prereq: Consent of instructor.

PHI 755 TUTORIAL IN INTERDISCIPLINARY ISSUES. (1-6)
As a tutorial, this course is structured individually to a student’s research and study projects. Topics and issues are to be chosen and pursued in work that integrates philosophical methods and ideas within other disciplinary areas. May be repeated to a maximum of nine credits. Prereq: Approval of the Student’s Advisory Committee.

PHI 768 RESIDENCE CREDIT FOR THE MASTER’S DEGREE. (1-6)
May be repeated to a maximum of 12 hours.

PHI 769 RESIDENCE CREDIT FOR THE DOCTOR’S DEGREE. (0-12)
May be repeated indefinitely.

PHI 790 RESEARCH IN PHILOSOPHY. (3)
This course is primarily intended for advanced students who desire and are prepared to do research in philosophy. May be repeated to a maximum of 12 credits.

PHR 222 DRUGS, MEDICINES, AND SOCIETY. (3)
The course is designed to enable the university graduate to be sufficiently sophisticated in his understanding of the physiological and behavioral effects of medicines, environmental toxicants, and psychoactive chemicals so that he may make informed decisions regarding their use in his life, home and community. This course provides such information in the context of drug development, standardization, distribution, control, use and misuse in a modern society. (Note: It is felt that this course might be of particular interest to freshmen.)

PHR 303 HISTORY AND ETHICS OF PHARMACY. (3)
A study of the development of the profession of pharmacy, emphasizing the historical background and ethical principles upon which the profession rests. The nature and place of pharmaceutical services in society are considered. The moral standards and professional conduct required of a pharmacist are emphasized. Coreq: BSC 331.

PHR 336 PHYSIOLOGIC BASIS FOR THERAPEUTICS I. (4)
Basic concepts of human anatomy and physiology integrated with an introduction to pathophysiology and the pharmacodynamics of typical drugs. Strong emphasis is placed on homeostasis, cell and nerve function and the organization of the central and autonomic nervous systems. Lecture, four hours. Prereq: BIO 104, 105; CHE 232 and PHY 203.

PHR 337 PHYSIOLOGIC BASIS FOR THERAPEUTICS II. (4)
A continuation of PHR 336 involving the integrated physiology of the cardiovascular, renal and pulmonary systems with an introduction to the pathophysiology of each system and the pharmacodynamics of typical drugs. Lecture, three hours. Prereq: PHR 336.

PHR 340 PRINCIPLES OF MEDICINAL CHEMISTRY. (4)
A course designed to introduce the fundamental concepts of the application of chemical principles to the study of medicinal agents. Basic heterocyclic chemistry as is needed to develop the chemistry of physiologically active molecules. Physicochemical properties of drugs and their relation to physiological activity, and fundamental consideration of the metabolic changes in drug molecules are major areas of development of the course presentation. Prereq or concur: PHR 400.
PHR 395 INDEPENDENT WORK IN PHARMACEUTICAL CHEMISTRY. (1-3)
Selected problems of interest from the general field of pharmaceutical chemistry. May be repeated to a maximum of six credits. Prereq: Pharmacy major and standing of 3.0 in major. Consent of instructor.

PHR 400 BIOCHEMISTRY. (4)
A fundamental course in the chemistry and interrelationships of carbohydrates, lipids, and proteins, as well as the role of enzymes, vitamins, and hormones in physiological processes. Prereq: CHE 232 or equivalent.

PHR 474 INDEPENDENT PROBLEMS IN TOXICOLOGY. (1-3)
Selected problems requiring literature and laboratory research are designed to meet specific needs of graduate minors in toxicology and satisfy professional elective requirements for pharmacy students. May be repeated to a maximum of six credits. Prereq: Consent of instructor.

PHR 475 INDEPENDENT PROBLEMS IN PHARMACOGNOZY. (1-3)
Selected problems requiring literature and laboratory research are designed to meet specific needs of graduate minors in pharmacognosy and satisfy professional elective requirements for pharmacy students. May be repeated to a maximum of six credits. Prereq: Consent of instructor.

PHR 476 INDEPENDENT PROBLEMS IN PHARMACOLOGY. (1-3)
Selected problems requiring literature and laboratory research are designed to meet specific needs of graduate minors in pharmacology and satisfy professional elective requirements for pharmacy students. May be repeated to a maximum of six credits. Prereq: Consent of instructor.

PHR 510 MODERN METHODS IN PHARMACEUTICAL ANALYSIS. (5)
A course which deals with the application of modern analytical methods, primarily instrumental methods, in the determination of the strength, purity, and quality of drugs and pharmaceuticals. Laboratory exercises include analysis of raw materials and finished dosage forms. Lecture, three hours; laboratory, four hours. Prereq: CHE 226.

PHR 520 SPECIAL TOPICS IN PHARMACY LAW. (2)
Discussion of the legal framework and special legal issues in pharmacy practice. Topics will include application of antitrust laws to pharmacy, patent and trademark issues relevant to pharmacy, legal issues related to prescription drug insurance programs, professional liability and legislative issues such as drug product selection. Prereq: PHR 831.

PHR 525 INTRODUCTION TO SOCIOPHARMACOLOGY. (2)
An introductory study of drug-taking experiences and behaviors. The course provides an overview of theories and research findings which describe the relationships between social and cultural factors and drug-taking experiences. These theories and research findings are contrasted with the pharmacological paradigm of drug effects and the medical model. Prereq: Six credit hours in behavioral, social and pharmacologic sciences.

PHR 530 RADIOPHARMACEUTICS. (3)

PHR 541 PHARMACEUTICAL TECHNOLOGY CLERKSHIP. (4)
An integrated experience in the acquisition and application of physicochemical principles and pharmaceutical technology procedures to the provision of institutional pharmaceutical services involving drug efficacy, drug safety and drug administration. The lecture-laboratory sessions supported by the clerkship experiences in an institutional setting will acquaint the student with various aspects of pharmaceutical technology, such as sterile product formulation, parenteral admixture program, hyperalimentation therapy, unit dose packaging, preparation and control of radiopharmaceuticals, sterilization of drugs and devices, decontamination techniques, compounding of special formulas and quality control testing. Lecture, one hour; laboratory and clerkship, six hours. Prereq: PHR 806 and permission of instructor.

PHR 545 STERILE PARENTERALS AND DEVICES. (2-3)
The course will describe the fundamental concepts, principles and techniques involved in the characterization, development, evaluation and preparation of sterile products. Lecture, two credits; lecture with laboratory, three credits. Prereq: PHR 846 and PHR 825 or equivalent and consent of instructor.

PHR 595 INDEPENDENT PROBLEMS IN PHARMACY ADMINISTRATION. (1-3)
Selected problems of interest in the areas of behavioral, economic, ethical, historical, legal, psychological and social aspects of pharmacy. Methods may include literature search, surveys, field studies and experimental design. The course may serve as a professional elective for the pharmacy student and as a graduate course for the graduate student. May be repeated for a maximum of six credits. Prereq: Consent of the instructor.

PHR 612 QUANTITATIVE PHARMACODYNAMICS: PHARMACOKINETICS. (3)
Quantitative treatment of dynamics of drug absorption, distribution, metabolism and excretion, including development of both mathematical models and model-independent approaches for describing these processes. Prereq: PHR 802 (or equivalent) and consent of instructor. (Same as PHA 612.)

PHR 622 ADVANCED BIOPHARMACEUTICS. (2)
An advanced treatment of the factors affecting drug availability from dosage forms and the influence of the route of administration and the dosage regimen on drug availability. Prereq: PHR 612.

PHR 630 PHARMACEUTICAL RATE PROCESSES. (3)
Kinetics of reactions of pharmaceutical interest; mechanisms of drug decomposition and theoretical approaches to stabilization and preservation; accelerated stability analysis. Prereq: Physical chemistry and chemical kinetics.

PHR 631 EQUILIBRIUM PHENOMENA IN PHARMACEUTICAL SYSTEMS. (3)
An advanced study in special topics of a physical chemical nature which are applicable to pharmacy, with special emphasis on physical properties and molecular structure, solubility, complexation and equilibria in solution. Prereq: Physical chemistry.

PHR 645 NEUROTOXICOLOGY. (2)
Multidisciplinary discussions of the major sites and mechanisms of drug-induced nervous system toxicity. Presentations by faculty and graduate students. Prereq: BCH 501 and 502, PGY 502 and PHA 522 or equivalent and consent of instructor. (Same as TOX 645.)

PHR 647 INTRODUCTION TO MOLECULAR PHARMACOTHERAPEUTICS. (3)
A discussion of the development of potential therapeutic entities using molecular biotechnology. Recent advances in the design and delivery of target-specific treatments such as special peptides, monoclonal antibodies and gene therapies will be the primary focus. Prereq: BCH 501 and 502, BCH 401G or equivalent or consent of instructor.

PHR 649 MOLECULAR PHARMACOLOGY. (3)
The intent of this course is to describe the molecular aspects of a variety of physiological systems that are subject to pharmacological manipulation. Emphasis will be on the molecular genetics, biochemistry, and subcellular organization and biology of these systems, and on the pharmacological techniques used to study these systems. Genetic diseases associated with these systems will also be described. The course will focus on areas of research which represent the forefront of modern pharmacological investigation. Prereq: PHA 522, PGY 502, BCH 501, 502, or consent of instructor. (Same as PHA/ TOX 649.)

PHR 664 THEORY AND PRACTICE OF DRUG METABOLISM. (3)
A broad overview of the chemistry of drug biotransformation with emphasis on experimental considerations and analytic methodology for the isolation and identification of metabolites and the study of metabolic processes. Prereq: BCH 501 and CHE 538 or consent of instructor.

PHR 668 PSYCHOTHERAPEUTICS FOR ADVANCED NURSING PRACTICE. (3)
This course provides advanced background in psychotherapeutics for psychiatric/mental health nurse practitioners. Psychiatric disorders and their pharmacotherapy are addressed with emphasis on indications for use, mechanisms of action, side effects, pharmacokinetics and nursing management problems. Prereq: Graduate standing in nursing or permission of instructor. (Same as NUR 668.)

PHR 748 MASTER'S THESIS RESEARCH. (0)
Half-time to full-time work on thesis. May be repeated to a maximum of six semesters. Prereq: All course work toward the degree must be completed.

PHR 749 DISSERTATION RESEARCH. (0)
Half-time to full-time work on dissertation. May be repeated to a maximum of six semesters. Prereq: Registration for two full-time semesters of 769 residence credit following the successful completion of the qualifying exams.
PHR 760 TOPICS IN PHARMACEUTICAL SCIENCES. (2-4)
This course deals with emerging concepts in pharmaceutical sciences which are not being covered in other courses. May be repeated to a maximum of 10 hours. Prereq: Consent of instructor.

PHR 762 BIOORGANIC MECHANISMS. (3)
An in-depth discussion on the bioorganic chemistry aspects of the active sites of enzymes and drug receptors, the molecular basis of drug design, and principles of drug metabolism. Within these topics, the mode of action of some of the major coenzymes and drugs will be discussed from a mechanistic chemistry point of view. Prereq: CHE 538, CHE 633, BCH 501 or consent of instructor.

PHR 768 RESIDENCE CREDIT FOR THE MASTER'S DEGREE. (1-6)
May be repeated to a maximum of 12 hours.

PHR 769 RESIDENCE CREDIT FOR THE DOCTOR'S DEGREE. (0-12)
May be repeated indefinitely.

PHR 774 GRADUATE SEMINAR IN PHARMACOLOGY AND EXPERIMENTAL THERAPEUTICS. (1)
Reports and discussion of current research and literature of general interest in the area of pharmacology and experimental therapeutics. The grade will be based on the presentation of the required annual seminar which will be objectively evaluated by the faculty of the Division of Pharmacology and Experimental Therapeutics. May be repeated to a maximum of eight credits. Prereq: Graduate standing.

PHR 776 SEMINAR IN PHARMACEUTICAL SCIENCES I. (1)
Reports and discussion of pertinent research and literature in the pharmaceutical sciences. Required of all graduate students. Prereq: Graduate standing.

PHR 777 SEMINAR IN PHARMACEUTICAL SCIENCES II. (1)
Reports and discussion of pertinent research and literature in a disciplinary area of the pharmaceutical sciences. May be repeated to a maximum of eight credits. Prereq: Graduate standing.

PHR 779 MEMBRANE SCIENCES COLLOQUIUM. (1)
Outstanding membrane scientists present their current research on biological and/or synthetic membranes. Students read a pertinent paper by the speaker prior to his/her talk and write a short paper on the talk; especially important is relevance of the main points of the talk to membrane science in general and the student's own research in particular. May be repeated to a maximum of six credits. (Same as BCH/CHE/CM/PHA 779.)

PHR 780 SPECIAL PROBLEMS IN PHARMACEUTICAL SCIENCES. (1-6)
Selected problems of laboratory or literature nature in which a student pursues a topic of interest to him under the supervision of a faculty member particularly qualified in that area. May be repeated once. Prereq: Consent of instructor.

PHR 790 RESEARCH IN PHARMACEUTICAL SCIENCES. (1-12)
Research work to be conducted in selected areas of pharmaceutical sciences. Prereq: Approval of student's special committee and consent of instructor.

PHR 804 PHARMACEUTICS I: ANALYSIS AND PHYSICAL PHARMACY. (4)
A study of the analytical techniques commonly used to conduct drug quality assurance and determine drug concentrations in biologic fluids. Emphasis is placed on compendial standards, pharmaceutical literature and the physical chemical principles of drug dosage form design. Demonstration of competence in pharmaceutical calculations by examination is required for passing the course.

PHR 805 PHARMACEUTICS II: DRUG DELIVERY SYSTEMS. (4)
A continuation of PHR 804, concentrating on contemporary drug delivery systems, principles of compounding, and methods of manufacture. Emphasis is placed on the design, function, use, and evaluation of modern drug delivery systems. Laboratory experiences are directed toward a study of the analytical and physical-chemical aspects of dosage form design and quality assurance. Lecture, three hours; laboratory, four hours. Prereq: PHR 804.

PHR 806 PHARMACEUTICS III: BIOPHARMACEUTICS AND PHARMACOKINETICS. (4)
A continuation of PHR 805, concentrating on the physical-chemical principles underlying in vivo dosage form performance and the absorption, distribution, metabolism, and excretion of drugs. Emphasis is placed on the biopharmaceutics of drug product performance and the pharmacokinetic calculation of dosage regimens. Lecture, three hours; laboratory, four hours. Prereq: PHR 805.

PHR 811 COMPUTER APPLICATIONS IN PHARMACY. (2)
A guide to the selection and use of computers in pharmaceutical practice. Descriptions of functions, cost-benefit considerations, hardware and software, capabilities of various systems, language, application to patient profiles, inventory control and accounts are considered.

PHR 812 COMMUNICATION SKILLS FOR PHARMACISTS. (3)
An analysis and application of the factors that promote or hinder successful communication between pharmacists and patients, pharmacists and the general public, and pharmacists and other health care personnel. The course is designed to make the student more aware of the importance of the role of communication on interpersonal interaction and the consequences of poor communication. The primary focus is to improve upon the student's ability to communicate effectively in specific situations. Prereq: BSC 331, and PHR 831.

PHR 813 GERIATRIC PHARMACY. (3)
A course designed to educate students in the basic knowledge of attitudes and skills required to meet the pharmaceutical needs of the elderly. Topics include discussions of the aging process, physiological and psychological changes in the elderly, how these changes influence patient compliance and the responses to drug and nondrug treatments, monitoring drug use in long-term care facilities, and special community services available to the elderly. Prereq: PHR 849, 852, 853, 854 and 856 or permission of instructor. (Same as GRN 513.)

PHR 826 INTRODUCTION TO NUCLEAR PHARMACY. (3)
The subject matter in this course includes: an introduction to basic atomic structure, radioactivity, detection of radiation, interactions of radiation with matter, radiation safety, dosimetry, the major emphasis being placed on radiopharmaceuticals and nuclear medicine instrumentation. Prereq: PHR 806 and consent of instructor.

PHR 827 PRACTICE OF NUCLEAR PHARMACY. (3)
Basic theory and methodology in radionuclide labeling of agents used in nuclear medicine, drug product information, quality control procedures, legal requirements, dosage preparation, dose calculations, and basic manipulative functions using protective barriers. Two hours lecture and three hours laboratory per week. Prereq: PHR 826 and consent of instructor.

PHR 828 NUCLEAR PHARMACY EXTERNSHIP. (4, 8, 12, or 16)
This externship provides the student with an integrated practice experience in the provision of nuclear pharmaceutical services in various practice settings. Each four-credit block consists of four weeks of full time (40 hr/week) directed externship experience. The student may elect the externship experience in blocks of four credits. May be repeated to a maximum of 16 credits. Prereq: PHR 827 and consent of instructor.

PHR 831 PHARMACY MANAGEMENT AND HEALTH CARE SYSTEMS. (4)
An introduction to the basic concepts, principles and methods of pharmacy management applicable to all practice settings with emphasis on practice alternatives, management approaches and styles, organizational principles, behavior and forms, personnel, purchasing and inventory control, pricing, professional fees, and pharmacy services and patronage. Topics are discussed within the framework of the health care delivery system in the United States, and the role of the pharmacist within these systems and within professional organizations. Prereq: BSC 331, PHR 303.

PHR 832 ADVANCED COMMUNITY PRACTICE MANAGEMENT. (2)
A study of the principles and methods unique to the management of a community pharmacy, building on previous foundations and focusing on the entrepreneurial aspects of management. Prereq: PHR 831 and consent of instructor.

PHR 833 ADVANCED INSTITUTIONAL PRACTICE MANAGEMENT. (2)
Application of management principles to institutional and group practices. Emphasis is on the acquisition, distribution and control of drugs by pharmacists in the institutional practice settings and the justification, establishment and evaluation of clinical pharmacy services. Prereq: PHR 831, PHR 848.

PHR 835 PHARMACEUTICAL LAW. (3)
A study of important legislation, regulations and rulings related to the practice of pharmacy. Prereq: PHR 831.

PHR 848 INSTITUTIONAL PRACTICE AND STERILE PRODUCTS. (4)
An introduction to the practice of pharmacy in institutional settings and clinics. Emphasis is placed on principles of parenteral drug preparation, home health care and the delivery of pharmaceutical services in group practices. Lecture with some laboratory experiences and demonstrations. Prereq: PHR 805; coreq: PHR 849.
## PHR 840 DisPensIng PharmACEUTICALS.
A discussion of the principles of dispensing medications with emphasis on patient counseling, patient monitoring, drug interactions and physical-chemical incompatibilities involved in compounding. Lecture, two hours; laboratory, three hours. Prereq: PHR 806, PHR 830; coreq: PHR 848.

## PHR 850 PHARmacoTherAPEUTICS: IMMUNe SYstems.
A study of the immune systems, immunotherapy, and select autoimmune diseases and their treatment. The course includes a discussion of neoplasias and anti-neoplastic therapy. Prereq or coreq: PHR 337.

## PHR 851 PHARmacoTherAPEUTICS: NERVOUs SYstems.
A study of human disease processes and rational pharmacotherapeutics relating to the autonomic and central nervous systems. Emphasis is placed on the scientific principles of pathophysiology, pharmacology and toxicology, the incorporation of these principles to the clinical application of modern drug therapy, and how these principles can be utilized in pharmacy practice. Prereq: PHR 805, PHR 340, PHR 337.

## PHR 852 PHARmacoTherAPEUTICS: CARDiOuLARY AND RENAL SYstems.
An extension of PHR 851 dealing primarily with cardiovascular, renal and respiratory pathologies and the agents used in their treatment. Prereq: PHR 851.

## PHR 853 PHARmacoTherAPEUTICS: ENDOCRINE SYstems.
A study of the physiology, pathology and therapeutics of the endocrine system. A discussion of principles of toxicity and the treatment of exposure to select chemicals is included. Prereq: PHR 337; coreq: PHR 851.

## PHR 854 PHARmacoTherAPEUTICS: NUTrITIONAL AND DERMATOLOGIC SYstems.
An extension of PHR 851, concentrating on the physiology and major pathologies of the gastrointestinal and dermatologic systems, the agents used in their treatments, and the problems and treatments of nutritional and hematologic disorders. Prereq: PHR 851.

## PHR 856 CHEMOTHERAPEUTICS.
An extension of PHR 851, concentrating on infectious diseases and agents used in their treatment. Prereq: PHR 850; coreq: PHR 806.

## PHR 865 DISEASE PROCESSES I.
An interdisciplinary course in which in-depth study of specific disease processes, especially the quantifiable, pathognomonic parameters permit the student to develop a unique understanding of the pathologic factors influencing clinical drug use. Prereq: PHR 849,852, 853, 854 and 856.

## PHR 866 APPLIED THERAPEUTICS I.
An in-depth integration of patient factors including age, history, concurrent disease states, medications, allergies, renal and hepatic function, and drug product factors including bioavailability, pharmacokinetics, efficacy, toxicity, risk to benefit ratios, and cost in the application of drug therapy to specific patient situations. Also included are discussions of the prominent considerations relative to patient education about their disease and therapy. Prereq: PHR 849, 852, 853, 854 and 856.

## PHR 870 CLINICAL ORIENTATION CLERKSHIP.
This course acquaints the student with the techniques and various considerations involved in the diagnosis and evaluation of disease states and their treatment. It affords the student opportunity to gain an appreciation of the scientific, social, emotional and psychological aspects of illness and provides the student with ability to work with other health professionals. Offered for letter grade credit only (A, B, C, D, E, I). Prereq: PHR 812, 848, 849, 850, 853, 854 and 856.

## PHR 872 NONPRESCRIPTION PHARMACEUTICALS AND SUPPLIES.
A study of various nonprescription pharmaceuticals, medical and surgical supplies, and appliances commonly found in community pharmacy practice. Their evaluation, rational use and therapeutic efficacy will be stressed. The use of home remedies and their limitations in the treatment of minor ailments will be considered. Prereq: PHR 850, PHR 851, PHR 853; coreq: PHR 848, 849, 852, and 854.

## PHR 874 DRUG LITERATURE EVALUATION.
This course acquaints the student of the pharmacological and toxicological principles and techniques employed in the clinical evaluation of drugs and enables the student to use more effectively the clinical literature. Prereq: PHR 852, PHR 853, PHR 854 and PHR 856.

## PHR 875 CLINICAL PHARmacokinetics.
Application of pharmacokinetic principles to drug dosing on an individual patient basis, with emphasis on those drugs which have narrow therapeutic ranges or have unique pharmacokinetic or pharmacologic properties. Prereq: PHR 806 or consent of instructor.

## PHR 881 PHARMACY PRACTICE EXTERNSHIP.
This externship is designed to provide the student with a faculty-directed, integrated experience in the provision of pharmaceutical services in a variety of patient care settings under the supervision of selected pharmacy practitioners on a one-to-one basis of student to practitioner. This experience includes participation in traditional practice settings and may involve participating in new and innovative pharmacy practice models. The course consists of four-week rotations which are full-time (not less than 40 hours per week) directed externship experiences. Offered on a pass/fail basis only. Prereq: PHR 849, 850, 853, 854, 856, permission of instructor, and minimum 2.0 pharmacy cumulative GPA.

## PHR 882 PHARMACY PRACTICE CLERKSHIP: MEDICINE.
A clinical experience in the use of drugs in the diagnosis, treatment and management of diseases. Experience will be obtained in general internal medicine. Emphasis is placed on the rationale of drug therapy. Prereq: PHR 868, 874, 875 and 867 or 870 and a 2.0 pharmacy cumulative GPA.

## PHR 883 PHARMACY PRACTICE CLERKSHIP: AMBULATORY CARE.
A clinical experience in the use of drugs in the treatment of diseases in ambulatory patients. Experience will be obtained in ambulatory care settings. Prereq: PHR 868, 874, 875 and 867 or 870 and a 2.0 pharmacy cumulative GPA.

## PHR 884 PHARMACY PRACTICE CLERKSHIP: SPECIALTY AREAS.
A clinical experience in the use of drugs in the treatment of diseases encountered in specialized areas. Areas in which experience may be obtained include (but are not limited to) pediatrics, surgery, intensive care and psychiatry. May be repeated to a maximum of 24 credits. Prereq: PHR 868, 874, 875 and 867 or 870 and a 2.0 pharmacy cumulative GPA.

## PHR 885 PHARMACY PRACTICE EXTERNSHIP ELECTIVE.
This elective externship is designed to provide the student with additional faculty-directed, integrated experience in the provision of pharmaceutical services in a variety of patient care settings under the supervision of selected pharmacy practitioners on a one-to-one basis of student to practitioner. This experience includes participation in new and innovative pharmacy practice models as well as in traditional practice settings. The rotation is six weeks of full-time (not less than 40 hours per week) directed externship experience. Offered on a pass-fail basis only. Prereq: PHR 849, 850, 853, 854, 856, permission of instructor, and minimum 2.0 pharmacy cumulative GPA.

## PHR 886 PHARMACY PRACTICE CLERKSHIP.
A structured set of rotations designed to provide clinical experience in the use of drugs for the treatment of diseases. Students will be assigned to a variety of patient care areas on a full-time basis under the supervision of a faculty preceptor. Emphasis is placed on the active participation of the student in the provision of contemporary pharmaceutical care in different environments. The experiences provide the opportunity to integrate material presented in previous courses and stress outcome oriented decision making in clinical situations regarding drug therapy. May be repeated to a maximum of 40 credits. Prereq: PHR 867, 868, 874, 875, minimum 2.0 pharmacy GPA, required immunizations.

## PHR 890 CLINICAL PHARMACY SEMINAR.
Topics in areas of clinical pharmacy concepts and principles of practice emphasizing the technical and professional knowledge and abilities required for involvement of the pharmacist in the health care team. May be repeated to a maximum of two credits. Prereq: Admission to the Doctor of Pharmacy program.

## PHR 892 CLINICAL DRUG COMMUNICATIONS.
The course is designed as a natural continuation of PHR 874 and serves the specific purpose of providing instruction and experience of such a nature and quality as to promote the professional role of the pharmacist in the communication of clinical pharmacology data and therapeutics information. May be repeated to a maximum of 10 credits. Lecture, one hour; laboratory, four-16 hours.
PHR 919 PHYSIOLOGICAL BASIS FOR THERAPEUTICS II. (4)
A continuation of PHR 911 covering integrated concepts of human organ system functions with particular emphasis on the physiology of the cardiovascular, renal, pulmonary and endocrine systems. The course includes an introduction to the pathophysiology of each system and the pharmacodynamics of prototype therapeutic agents as a framework for discussion. Variable mixture of lecture, group discussions and independent study. Prereq: PHR 911 and admission to the first year, College of Pharmacy.

PHR 922 PHYSIOLOGICAL CHEMISTRY AND MOLECULAR BIOLOGY II. (3)
A continuation of PHR 912. Variable mixture of lectures, group discussion and independent study. Prereq: Admission to the first year, College of Pharmacy.

PHR 923 PHARMACOLOGICAL BASIS FOR THERAPEUTICS, NUTRITION, HEALTH PROMOTIONS. (3)
Consideration of the role of the pharmacist in health promotion and disease prevention including both pharmacologic and non-pharmacologic methods. Major problems of nutrition and certain metabolic chronic disorders for which nutrition plays a pivotal role will be addressed including hypertension, cancer, and eating disorders. In addition the pharmacology of drugs affecting the gastrointestinal tract and drugs used to treat common gastrointestinal problems are discussed. Variable mixture of lecture, group discussion and independent study. Prereq: Admission to the first year, College of Pharmacy.

PHR 924 BASIC PRINCIPLES OF PHARMACEUTICAL SCIENCE: DRUG FORM DESIGN. (3)
This is the second course in a three semester sequence dealing with the principles of medicinal chemistry and pharmaceuticals. The application of chemical kinetics to drug stability and the application of physical-chemical principles to the formulation of pharmaceutical solutions and solids are discussed. Variable mixture of lecture, group discussion and independent study. Prereq: Admission to the first year, College of Pharmacy and PHR 914.

PHR 926 NONPRESCRIPTION PHARMACEUTICALS AND SUPPLIES II. (2)
A continuation of PHR 916. Variable mixture of lecture, group discussions and independent study. Prereq: Admission to the first year, College of Pharmacy and PHR 916.

PHR 929 CONTEMPORARY ASPECTS OF PHARMACY PRACTICE II. (4)
A continuation of PHR 919 completing skill development in resolving simple patient/drug problems and including year one comprehensive skill assessment. Variable mixture of lecture, seminar, group discussion, individual study, laboratory exercises, public service projects and portfolio development. Coreq: Required PHR 92X series courses.

PHR 931 PHARMACOLOGICAL BASIS FOR THERAPEUTICS: NERVOUS SYSTEM. (4)
A study of human disease processes and rational pharmacotherapeutics relating to the autonomic central and peripheral nervous systems and substances of abuse. Emphasis is placed on the principles of pathophysiology, pharmacology, toxicology and therapeutics, the incorporation of these principles in the clinical application of modern drug therapy, and how these principles can be utilized in pharmacy practice. Variable mixture of lecture, group discussion and independent study. Prereq: Admission to the second year, College of Pharmacy.

PHR 932 PHARMACOLOGICAL BASIS FOR THERAPEUTICS: IMMUNOLOGY AND BIOTECHNOLOGY. (3)
A study of the immune system, immunopathologies and select autoimmune diseases and their treatment. Includes a discussion of immunizations, immunology of cancer, neoplasias and an introduction to antineoplastic therapy. The course concludes with a discussion of biotechnology and its application to the production and use of pharmaceuticals, diagnostic agents and advanced therapies. Variable mixture of lecture, group discussion and independent study. Prereq: Admission to the second year, College of Pharmacy.

PHR 933 PHARMACOLOGICAL BASIS FOR THERAPEUTICS: ENDOCRINE SYSTEMS. (3)
A study of the pathophysiology of the major disorders affecting the endocrine system concentrating on the pharmacology of the therapeutic agents used to treat those disorders, including discussions of the rational use of endocrine agents and their conjugens in the treatment of non-endocrine diseases. Variable mixture of lecture, group discussion and independent study. Prereq: Admission to the second year, College of Pharmacy.
PHR 937 INTRODUCTION TO PHARMACOKINETICS. (1)
Basic elements of the pharmacokinetic principles of clearance, volume of distribution, half-life and therapeutic range. Intended to prepare the student to understand issues related to pharmacokinetics. The student is expected, early in the program, to appreciate the applications and utility of pharmacokinetics. Variable mixture of lecture, group discussion and individual study. Prereq: Admission to the first year, College of Pharmacy.

PHR 939 CONTEMPORARY ASPECTS OF PHARMACY PRACTICE III. (6)
A continuation of PHR 929 concentrating on initial skill development in resolving moderately complex patient/drug related problems. Variable mixture of lecture, seminar, group discussion, individual study, laboratory exercises, public service projects and portfolio development. Coreq: Required PHR 93X series courses.

PHR 941 PHARmacological BASIS FOR THERAPEUTICS: CARDIOVASCULAR AND RENAL SYSTEMS. (5)
A study of the pathophysiology of the major disorders affecting the cardiovascular, renal and respiratory system concentrating on the pharmacology of the therapeutic agents used to treat those disorders. Variable mixture of lecture, group discussion and independent study. Prereq: Admission to the second year, College of Pharmacy and PHR 931.

PHR 944 BASIC PRINCIPLES OF PHARMACEUTICAL SCIENCE: NEW AND NOVEL DOSAGE FORMS. (3)
The last course in a medicinal chemistry and pharmaceutics sequence consisting of a discussion of in vivo testing to establish the bioequivalence of drug products, the application of physical-chemical principles to the formulation of pharmaceutical dispense systems, and a survey of modern drug delivery systems with a review of the scientific principles upon which they are based. Variable mixture of lecture, group discussion and independent study. Prereq: Admission to the second year, College of Pharmacy.

PHR 947 APPLIED BIOPHARMACEUTICS AND PHARMACOKINETICS. (4)
The theoretical and practical considerations of the processes of drug absorption (including dosage formulation), distribution, metabolism and excretion and the mathematical models that describe these events including the calculation of dosage regimens for patients with problems ranging from simple to complex. A variable mixture of computer-assisted learning, formal lecture, interactive lecture and problem-based learning laboratory experiences. Prereq: Admission to the second year, College of Pharmacy and PHR 937.

PHR 948 INTRODUCTORY PHARMACY PRACTICE CLERKSHIP. (4)
An introductory experience in the clinical use of drugs in the diagnosis, treatment and management of diseases. Experiences may involve on call and evening/weekend responsibilities. Offered on a pass/fail basis only. Laboratory, 40 or more hours per week. Prereq: Successful completion of required courses in the 930 series and consent of instructor.

PHR 949 CONTEMPORARY ASPECTS OF PHARMACY PRACTICE IV. (5)
A continuation of PHR 939 completing skill development in resolving moderately complex patient/drug related problems and including a year two comprehensive skill assessment. Variable mixture of lecture, seminar, group discussion, individual study, laboratory exercises, public service projects and portfolio development. Coreq: Required PHR 94X series courses.

PHR 951 INTEGRATED THERAPEUTICS I. (7)
Integrated advanced application of pharmaceutical sciences to patient care following an organ system/disease state approach and emphasizing the development and implementation of patient-specific pharmacotherapeutic treatment plans. Therapeutic areas are integrated with corresponding applied pharmacokinetic (e.g. cardiovascular pharmacotherapy with pharmacokinetics of digitalis glycosides and antiarrhythmics). Basic science considerations (usually in pharmacology, biochemistry or pharmaceutics) are incorporated within each area to reinforce basic principles and their importance in drug therapy. Variable mixture of lecture, group discussion and independent study. Prereq: Admission to the third year, College of Pharmacy; coreq: PHR 952.

PHR 952 DISEASE PROCESSES I. (3)
A comprehensive study of disease following an organ system approach and emphasizing the etiology, pathogenesis and clinical significance of disease processes with a special emphasis on disease processes that are amenable to drug treatment, influence drug disposition and or are a result of complications of drug therapy. Variable mixture of lecture, group discussion, independent study and autopsy laboratory. Prereq: Admission to the third year, College of Pharmacy.

PHR 959 CONTEMPORARY ASPECTS OF PHARMACY PRACTICE V. (7)
A continuation of PHR 949 concentrating on initial skill development in resolving very complex patient/drug related problems. Variable mixture of lecture, seminar, group discussion, individual study, laboratory exercises, public service projects and portfolio development with primary emphasis on problem based learning and further independent learning skill development. Coreq: Required PHR 95X series courses.

PHR 961 INTEGRATED THERAPEUTICS II. (7)
A continuation of PHR 951 Integrated Therapeutics I. Variable mixture of lecture, independent study and group discussion. Prereq: Admission to the third year, College of Pharmacy, PHR 951 and PHR 952; coreq: PHR 962.

PHR 962 DISEASE PROCESSES II. (3)
A continuation of PHR 952 Advanced Pathophysiology I. Variable mixture of lecture, group discussion, independent study and autopsy sessions. Prereq: Admission to the third year, College of Pharmacy and PHR 952.

PHR 969 CONTEMPORARY ASPECTS OF PHARMACY PRACTICE VI. (7)
A continuation of PHR 959 concentrating on skill development in resolving very complex patient/drug related problems and including a year three comprehensive skill assessment. Variable mixture of lecture, seminar, group discussion, individual study, laboratory exercises, public service projects and portfolio development with primary emphasis on problem based learning and independent learning skill development. Coreq: Required PHR 96X series courses.

PHR 988 PHARMACY PRACTICE CLERKSHIP. (4)
A clinical experience in the use of drugs in the diagnosis, treatment and management of diseases. Emphasis is placed on a rationale of drug therapy, the provision of contemporary pharmaceutical care services and functioning as a member of an interdisciplinary health-care team. Experiences will be obtained in a variety of areas and may involve on call and evening/weekend responsibilities. May be repeated to a maximum of 44 credits. Laboratory, 40 or more hours per week. Prereq: Admission to the fourth year, College of Pharmacy and permission of instructor.

PHR 997 ADVANCED CLINICAL PHARMACOKINETICS AND PHARMACODYNAMICS. (2)
Advanced topics in clinical pharmacokinetics and dynamics theory and practice. Designed for students interested in careers in clinical pharmacokinetics, service, research, industry or education. Variable mixture of lecture, group discussion and independent study. Prereq: Admission to the first year, College of Pharmacy and PHR 947.

PHR 998 PHARMACY PRACTICE CLERKSHIP: MENTORING. (4)
A continuation of PHR 998 but with the additional responsibilities of serving, with the preceptor, as part of a team mentoring students in introductory clerkship experiences and involving the introductory principles of serving as a preceptor. May be repeated to a maximum of eight credits. Laboratory, 40 or more hours per week. Prereq: Successful completion of 24 credits of PHR 988 and permission of instructor.

PHR 999 CONTEMPORARY ASPECTS OF PHARMACY PRACTICE VII. (7)
A continuation of PHR 959 concentrating on initial skill development in resolving very complex patient/drug related problems. Variable mixture of lecture, seminar, group discussion, individual study, laboratory exercises, public service projects and portfolio development with primary emphasis on problem based learning and further independent learning skill development. Coreq: Required PHR 95X series courses.

PHY 124 PHYSICS I. (3)
Concepts of linear wave motion, standing waves, sound waves, light, and mechanics. Conceptual understanding. Five lecture hours and one lab hour per week. Prerequisites: Two years of high school physics. Corequisite: PHY 125.

PHY 125 PHYSICS II. (3)
Concepts of linear wave motion, standing waves, sound waves, light, and mechanics. Conceptual understanding. Five lecture hours and one lab hour per week. Prerequisites: Two years of high school physics. Corequisite: PHY 124.

PHY 130 PHYSICS OF MATERIALS. (3)
An introduction to the principles of physics related to the properties of materials. Topics include mechanical behavior of materials, thermal properties of materials, and electrical properties of materials. Prerequisite: PHY 124 or PHY 125.

PHY 140 MUSIC ACOUSTICS. (3)
An introduction to the effects of sound on musical instruments and on the human ear. Includes topics such as the physics of sound waves, the behavior of sound in different media, and the perception of sound by the human ear. Prerequisite: PHY 124 or PHY 125.
PHY 151 INTRODUCTION TO PHYSICS. (3)
A lecture demonstration course covering the mechanics of solids, liquids, gases, heat, and sound. Credit is not given to students who already have credit for PHY 201, 211 or 231. Prereq: Two years of high school algebra or MA 108R.

PHY 152 INTRODUCTION TO PHYSICS. (3)
A lecture demonstration course covering electricity, magnetism, optics, atomic and nuclear physics. Credit is not given to students who already have credit for PHY 203, 213 or 232. Prereq: Two years of high school algebra or MA 108R.

PHY 153 LABORATORY FOR ELEMENTARY AND MIDDLE SCHOOL TEACHERS. (1)
Laboratory to accompany PHY 151-152 with experiments and exercises designed especially for students preparing to be elementary and middle school teachers. Laboratory, two hours per week. Prereq: PHY 151; coreq: PHY 152.

#PHY 160 PHYSICS AND ASTRONOMY FOR ELEMENTARY TEACHERS. (3)
Course sequence (GLY 160-PHY 160 six credit hours) in physical science for prospective elementary teachers. The sequence addresses basic concepts of earth science, astronomy and physics appropriate for elementary teachers and is taught with an emphasis on inquiry-based, laboratory activities. PHY 160 includes the basics of the motion of objects, astronomy by sight, electrical circuits, magnetism and the behavior of light. Lecture, one hour; laboratory, five hours per week. Prereq: GLY 160.

PHY 201 GENERAL PHYSICS. (4)
Same as PHY 211, but without laboratory. Credit is not given to students who already have credit for PHY 211 or 231. Prereq: A working knowledge of algebra and basic trigonometry as obtainable, for example, in MA 109 and MA 112 or demonstrated by an ACT math score of at least 25.

PHY 203 GENERAL PHYSICS. (4)
Same as PHY 213, but without laboratory. Credit is not given to students who already have credit for PHY 213 or 232. Prereq: PHY 201.

PHY 211 GENERAL PHYSICS. (5)
A general course covering the mechanics of solids, liquids, and gases; heat; and sound. Lecture, two hours; recitation, two hours; laboratory, two hours. Credit is not given to students who already have credit for PHY 231 and 241. Prereq: A working knowledge of algebra and basic trigonometry as obtainable, for example, in MA 109 and MA 112 or demonstrated by an ACT math score of at least 25.

PHY 212 GENERAL PHYSICS. (5)
Continuation of PHY 211, covering electricity and magnetism, optics, and modern physics. Lecture, two hours; recitation, two hours; laboratory, two hours. Credit is not given to students who already have credit for PHY 231 and 241. Prereq: PHY 211 or equivalent.

PHY 231 GENERAL UNIVERSITY PHYSICS. (4)
An advanced general course covering the mechanics of solids, liquids, and gases; heat; and sound. Lecture, three hours; recitation, one hour. Prereq or concur: MA 114.

PHY 232 GENERAL UNIVERSITY PHYSICS. (4)
An advanced general course covering electricity, magnetism, and optics. Lecture, three hours; recitation, one hour. This course is prerequisite to a significant number of courses in this and related areas of study. Prereq: PHY 231; concur: MA 213.

PHY 241 GENERAL UNIVERSITY PHYSICS LABORATORY. (1)
An advanced general laboratory course with experiments on the mechanics of solids, liquids, and gases; and on heat and sound. Prereq or concur: PHY 231.

PHY 242 GENERAL UNIVERSITY PHYSICS LABORATORY. (1)
An advanced general laboratory course with experiments on electricity, magnetism, and light. This course is prerequisite to other courses in physics and related areas of study. Prereq: PHY 241; concur: PHY 232.

PHY 308 PRINCIPLES OF OPTICS. (3)
A lecture and problems course covering the basic phenomena of geometrical and physical optics. Topics include electromagnetic waves, the nature of light in media, optical systems, interference, diffraction and polarization. Prereq: PHY 232 or 213; concur: MA 214, and PHY 242 (unless completed PHY 213) or consent of instructor.

PHY 361 PRINCIPLES OF MODERN PHYSICS. (3)
An introduction to the principles of special relativity, elementary concepts of quantum mechanics and selected topics in atomic and nuclear physics. Prereq: MA 114, PHY 211 or 231, PHY 213 or 232. Note: If necessary, PHY 213 or 232 may be taken concurrently with PHY 361.

PHY 385 INDEPENDENT WORK IN PHYSICS. (1-3)
Students may select an approved topic for study under the direction of a faculty member. May be repeated to a maximum of 12 credits. Prereq: Major and a standing of 3.0 in the department.

PHY 401G SPECIAL TOPICS IN PHYSICS AND ASTRONOMY FOR ELEMENTARY AND HIGH SCHOOL TEACHERS. (2-4)
Selected topics in physics and astronomy of special interest to teachers will be discussed. When the course is offered, a specific title with specific credits, the number of hours in lecture-discussion and laboratory will be announced. Lecture/discussion, two-four hours; laboratory, zero-four hours. May be repeated to a maximum of eight credits. Prereq: Open only to elementary school and/or high school teachers; consent of instructor.

PHY 402G ELECTRONIC INSTRUMENTATION AND MEASUREMENTS. (3)
Elementary laboratory treatment of electronic circuits. Topics will include AC circuits, filters, simple circuits using transistors and other semiconductor devices, simple treatment of operational amplifiers, and an introduction to digital circuits. Lecture, two hours; laboratory, three hours. Prereq: EE 305 or PHY 242 or consent of instructor. (Same as EE 402G.)

PHY 404G MECHANICS. (3)

PHY 416G ELECTRICITY AND MAGNETISM. (3)
A lecture and problem course covering the theory of electrostatic fields, conductors, dielectrics, and steady currents. Prereq: PHY 232, 242 or 213; MA 213.

PHY 417G ELECTRICITY AND MAGNETISM. (3)
A continuation of PHY 416G. A lecture and problem course covering electromagnetic induction, magnetic fields, magnetic materials, alternating currents and electromagnetic radiation. Prereq: PHY 416G.

PHY 422 COMPUTATIONAL PHYSICS LABORATORY. (3)
An introductory laboratory and lecture course covering the application of numerical methods to the solution of problems encountered in mechanics and electrostatics. Lecture, one hour; laboratory, four hours per week. Prereq: PHY 404G or equivalent.

PHY 472G INTERACTION OF RADIATION WITH MATTER. (3)
Basic aspects of the interaction of ionizing radiation with matter. Bohr atom, atomic spectra, radioactivity, energetics of decay. Sources of radiation, penetration of charged particles, electromagnetic radiation, and neutrons through matter; excitation and ionization processes; selected nuclear reactions; basic radiation detection and dosimetry. Prereq: PHY 213 or 232; MA 114 (may be taken concurrently); or equivalent. (Same as RM 472G.)

PHY 477 PHYSICS AND ASTRONOMY SEMINAR. (1)
Reports and discussion on student research projects and research topics from the literature of physics and astronomy. May be repeated to a maximum of two credits. Prereq: PHY 361, COM 199 or equivalent.

PHY 504 ADVANCED MECHANICS. (3)

PHY 506 METHODS OF THEORETICAL PHYSICS I. (3)
The course and its sequel (MA/PHY 507) are designed to develop, for first-year graduate students, familiarity with the mathematical tools useful in physics. Topics include curvilinear coordinates, infinite series, integrating and solving differential equations of physics, and methods of complex variables. Work with Green’s functions, eigenvalues, matrices and the calculus of variations are included as a part of MA/PHY 506 and 507. Prereq: PHY 404G or equivalent. (Same as MA 506.)

PHY 507 METHODS OF THEORETICAL PHYSICS II. (3)
Continuation of MA/PHY 506. Fourier and Laplace Transforms, the special functions (Bessel, Elliptic, Gamma, etc.) are described. Work with Green’s functions, eigenvalues, matrices and the calculus of variations are included as a part of MA/PHY 506 and 507. Prereq: MA/PHY 506. (Same as MA 507.)

PHY 508 OPTICS. (3)
A lecture and problems course covering the basic phenomena of geometrical and physical optics. Topics include thick lenses, apertures, wave motion, interference, diffraction, polarization, double refraction, and the theory of selected optical instruments. Prereq: PHY 417G, PHY 361, MA 214.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHY 520</td>
<td>INTRODUCTION TO QUANTUM MECHANICS.</td>
<td>3</td>
<td>A lecture and problem course providing an introduction to quantum mechanics at the undergraduate level. Primary emphasis is on the Schrodinger equation, and its applications. Prereq: PHY 361, MA 214.</td>
</tr>
<tr>
<td>PHY 522</td>
<td>HEAT AND THERMODYNAMICS.</td>
<td>3</td>
<td>A lecture and problem course stressing some of the fundamental principles of heat phenomena, the laws of thermodynamics, equations of state for ideal and real gases, continuity, derivation of thermodynamic relations. Prereq: PHY 361 and MA 214.</td>
</tr>
<tr>
<td>PHY 524 &amp; 525 SOLID STATE PHYSICS.</td>
<td></td>
<td>3 ea.</td>
<td>Introductory solid state physics with emphasis on the properties of electrons in crystals; crystal structure, crystal diffraction, reciprocal lattice, lattice vibrations and phonons, free electron theory, energy bands in solids, semiconductors. Prereq: (For 524) PHY 520 or consent of instructor. PHY 525 is a continuation of PHY 524. Crystal binding, elastic constants and elastic waves; superconductivity; ferromagnetism, optical and transport properties of metals, semiconductors, insulators, and interfaces. Prereq: (For 525) PHY 524.</td>
</tr>
<tr>
<td>PHY 530</td>
<td>EXPERIMENTAL PHYSICS: OPTICS AND SPECTROSCOPY.</td>
<td>2</td>
<td>An advanced laboratory dealing with the wave nature of light, optical systems, interference, diffraction, polarization and spectroscopy. Prereq: PHY 308 or PHY 508.</td>
</tr>
<tr>
<td>PHY 535</td>
<td>EXPERIMENTAL PHYSICS: ATOMIC AND NUCLEAR.</td>
<td>3</td>
<td>A combined lecture and laboratory course in which students both learn the statistical methods by which observational data are analyzed and repeat many of the experiments which established the quantum-mechanical behavior of atomic and nuclear systems. Experiments include the quantization of charge, the energy levels of atomic systems, the wave nature of matter, Compton scattering from electrons, X-ray diffraction, Planck constant. Lecture, one hour; laboratory, four hours per week. Prereq: PHY 361.</td>
</tr>
<tr>
<td>PHY 545</td>
<td>RADIATION HAZARDS AND PROTECTION.</td>
<td>3</td>
<td>An analysis of common radiation hazards encountered in medicine, research, industry, and the environment. Regulations and procedures for the safe use of ionizing and nonionizing radiations. Lecture, two hours; laboratory, two and one-half hours. Prereq: PHY/RYM 472G or consent of instructor. (Same as RM/RAS 545.)</td>
</tr>
<tr>
<td>PHY 546</td>
<td>GENERAL MEDICAL RADIOLOGICAL PHYSICS.</td>
<td>3</td>
<td>The uses and dosimetric aspects of radiation in medicine will be analyzed, including many basic applications in the fields of diagnostic radiology physics, therapy physics, and nuclear medical physics. Prereq or concur: RM/PHY 472G or consent of instructor. (Same as RM/RAS 546.)</td>
</tr>
<tr>
<td>PHY 554</td>
<td>FUNDAMENTAL ATOMIC PHYSICS.</td>
<td>3</td>
<td>Topics covered include electromagnetic radiation, atomic spectra and their interpretation in terms of atomic models, the Zeeman and Stark effects. Prereq: PHY 520.</td>
</tr>
<tr>
<td>PHY 555</td>
<td>FUNDAMENTAL NUCLEAR PHYSICS.</td>
<td>3</td>
<td>Topics covered include nuclear systematics, the nucleon-nucleon-interaction, nuclear models, radioactivity, nuclear reactions, fusion and fission. Prereq: PHY 520.</td>
</tr>
<tr>
<td>PHY 556</td>
<td>FUNDAMENTAL PARTICLE PHYSICS.</td>
<td>3</td>
<td>Introduction to elementary particle physics. Topics include: particle interactions and families, the quark model, symmetries and conservation laws, particle reactions and decays, quark dynamics, and elements of quantummechanodynamics and electroweak interactions. Prereq: PHY 520.</td>
</tr>
<tr>
<td>PHY 567</td>
<td>INTRODUCTION TO LASERS AND MASERS.</td>
<td>3</td>
<td>Basic principles of laser action, atomic transitions; population inversion; two- and three-level systems; optical resonators, pumping methods; applications. Prereq: Engineering upper division status or consent of instructor. (Same as EE 567.)</td>
</tr>
<tr>
<td>PHY 570 Seminar on Teaching Physics.</td>
<td></td>
<td>1</td>
<td>A seminar course for teaching assistants focused on developing the art and science of teaching physics. Journal articles, books and other texts will be studied to serve as sources of discussion about the teaching and learning activities in the Department of Physics and Astronomy. Prereq: Consent of instructor.</td>
</tr>
<tr>
<td>PHY 571 Seminar on Teaching Physics Laboratories.</td>
<td></td>
<td>1</td>
<td>A seminar course for teaching assistants focused on developing the art and science of teaching physics laboratories. Journal articles, books and other texts will be studied to serve as sources of discussion about the teaching and learning activities in the laboratory classes in the Department of Physics and Astronomy. Prereq: Consent of instructor.</td>
</tr>
<tr>
<td>PHY 591</td>
<td>ASTROPHYSICS I - STARS.</td>
<td>3</td>
<td>Structure of the universe; an overview: hierarchy of objects, the distance ladder. Stellar structure: hydrostatic equilibrium, energy transport, nuclear energy generation, equilibrium solutions. Stellar evolution: nucleosynthesis, evolution off the main sequence, final stages of stellar life - white dwarfs, supernovae, neutron stars and black holes. Binary stellar systems. Prereq: PHY 361, PHY 416G, PHY 417G. (Same as AST 591.)</td>
</tr>
<tr>
<td>PHY 592</td>
<td>ASTROPHYSICS II - THE GALAXY.</td>
<td>3</td>
<td>Interstellar matter: gas and dust, interstellar reddening, absorption lines, 21 cm observations. Phases of the interstellar medium: HII regions, atomic and molecular clouds. Star formation. Stellar populations. Galactic structure and dynamics: the galactic nucleus, spiral structure, rotation curve, dark matter. Prereq: PHY 591. (Same as AST 592.)</td>
</tr>
<tr>
<td>PHY 600</td>
<td>SELECTED TOPICS IN ADVANCED PHYSICS.</td>
<td>2-3</td>
<td>Topics of an advanced and specialized nature such as the theory of angular momentum, topics in advanced theoretical nuclear physics, topics in advanced statistical mechanics. May be repeated to a maximum of nine hours. Prereq: Consent of instructor.</td>
</tr>
<tr>
<td>PHY 611</td>
<td>ELECTROMAGNETIC THEORY I.</td>
<td>3</td>
<td>A lecture and problem course treating electrostatics, boundary conditions, potential problems, energy in electric and magnetic fields, magnetic materials and Maxwell’s equations. Prereq: PHY 416G; MA 214.</td>
</tr>
<tr>
<td>PHY 613</td>
<td>ELECTROMAGNETIC THEORY II.</td>
<td>3</td>
<td>Continuation and extension of PHY 611. Includes theory of electromagnetic waves and applications to optical phenomena and radiation. Special theory of relativity and the covariant treatment of Maxwell’s equations will be discussed. Prereq: PHY 611.</td>
</tr>
<tr>
<td>PHY 614</td>
<td>QUANTUM MECHANICS I.</td>
<td>3</td>
<td>A lecture and problem course dealing with the description of quantum systems in the forms of wave mechanics, matrix mechanics and state vectors. Also includes angular momentum and its addition, and approximation methods for bound states. Prereq: PHY 520.</td>
</tr>
<tr>
<td>PHY 615</td>
<td>QUANTUM MECHANICS II.</td>
<td>3</td>
<td>Continuation of PHY 614 covering time dependent perturbation theory, symmetry and invariance principles, and elementary scattering theory including the method of partial waves. Prereq: PHY 614.</td>
</tr>
<tr>
<td>PHY 624, 625</td>
<td>THEORY OF THE SOLID STATE.</td>
<td>3 ea.</td>
<td>A lecture and problem course covering the fundamental theories of the structure and properties of solids, including lattice dynamics, electron propagation, electrical, thermal and optical properties. Prereq: PHY 524, 525 and 614.</td>
</tr>
<tr>
<td>PHY 629</td>
<td>NUCLEAR PHYSICS.</td>
<td>3</td>
<td>A lecture and problem course dealing with the structure of atomic nuclei, nuclear processes, and nuclear radiations. Topics include nuclear shell structure, nuclear properties, inter-nucleon forces, nuclear binding energies, and nuclear reactions. Prereq: PHY 614.</td>
</tr>
<tr>
<td>PHY 630</td>
<td>TOPICS IN NUCLEAR AND INTERMEDIATE ENERGY PHYSICS (Subtitle required).</td>
<td></td>
<td>A lecture-problem course alternately dealing with advanced topics in nuclear and intermediate energy physics. Nuclear physics topics include theories of transitions rates and moments, the formal theory of nuclear reactions, microscopic models of nuclear matter, and collective and single particle aspects of nuclear structure. Topics in intermediate energy physics include photonuclear reactions, pion absorption and scattering, the role of spin in nucleon scattering, and the relativistic description of scattering and reactions. (May be repeated to a maximum of six hours when taken under different subtitles.) Prereq: PHY 629.</td>
</tr>
<tr>
<td>PHY 632</td>
<td>STATISTICAL MECHANICS.</td>
<td>3</td>
<td>A lecture and problem course dealing with the thermal properties of matter from the standpoint of statistical mechanics. Topics include thermodynamic properties, perfect gases, and Fermi-Dirac statistics. Prereq: PHY 522, 604.</td>
</tr>
<tr>
<td>PHY 639</td>
<td>PHYSICAL PROCESSES IN ASTROPHYSICS.</td>
<td>3</td>
<td>A lecture and problem course covering the physical processes encountered in astrophysics. The topics covered will include micro-physical processes in stellar atmospheres and the interstellar medium, high-energy astrophysics, and basic hydrodynamics and shock waves. Prereq: PHY/AST 592 or consent of instructor. (Same as AST 639.)</td>
</tr>
</tbody>
</table>
PLS 220 INTRODUCTION TO PLANT IDENTIFICATION. (3)
An introduction to the techniques used for plant identification based on over one hundred plants encountered in everyday life. Lecture, one hour; laboratory, four hours per week.

PLS 366 FUNDAMENTALS OF SOIL SCIENCE. (3)
Development of concepts and understanding of the properties and processes that are basic to the use and management of soils. Prereq: CHE 105, or consent of instructor.

PLS 386 PLANT PRODUCTION SYSTEMS. (4)
In-depth analysis of the underlying principles of plant production systems. Successful strategies, based on application of the principles developed by lecture and laboratory activities, will be discussed in either agronomic or horticultural contexts. Special attention will be given to minimizing the environmental impact of the plant production techniques employed. Prereq: PLS 366 or consent of instructor.

PLS 490 TOPICS IN PLANT AND SOIL SCIENCE. (3)
A capstone course for majors in Plant and Soil Science to be taken near the conclusion of the student's academic career. The course provides the student the opportunity to integrate knowledge acquired in previous courses in the plant and soil science and support areas. Emphasis will be placed on problem solving, synthesizing and integrating information, critical thinking, group activities, and written and oral communication. Instructional methods may include formal lectures, laboratories or supervised individual research. The specific nature of the course depends upon the student's Area of Emphasis within the Plant and Soil Science major. All topics offered will be approved by the Undergraduate Education Committee in the Area of Emphasis. Prereq: Senior in Plant and Soil Science.

PM Preventive Medicine and Environmental Health

PM 521 EPIDEMIOLOGY. (4)
Initial graduate level course in the principles of epidemiology and its uses and applications in preventive medicine and public health. Lecture, three hours; laboratory, two hours per week. Prereq: Graduate students in Public Health and Nursing students in the Community Health Management component graduate program and consent of instructor.

PM 601 ENVIRONMENTAL AND OCCUPATIONAL HEALTH. (4)
An overview of occupational and environmental health problems, toxicology related to the work place and other environments, industrial hygiene, safety, and other topics relevant to environmental health. Lecture, three hours; laboratory, two hours per week. Prereq: PHA 603 and PGY 502 or equivalents, or consent of instructor.

PM 602 OCCUPATIONAL AND ENVIRONMENTAL HEALTH. (4)
A continuation of topics in PM 601. Lecture, three hours; laboratory, two hours per week. Prereq: PM 601 or consent of instructor.

PM 621 TOPICS IN ADVANCED EPIDEMIOLOGY. (2)
This course provides specialized epidemiologic content and method designed to meet the research and practice needs of health professionals. A series of topic-driven lectures and discussions will focus on the role of epidemiology in the prevention of disease and injury. Prereq: PM 521 or permission of instructor.

PM 651 WORK PLACE VENTILATION. (3)
This course will cover ventilation fundamentals for control of the work environment. Principles of airflow, fans, blowers, and basic hood design will be covered. Airflow measurements and ventilation will be discussed. Laboratory experience and field studies will be utilized as part of the teaching approach. Lecture, two hours; laboratory, two hours per week. Prereq: PM 661 or consent of instructor.

PM 661 INDUSTRIAL HYGIENE SAMPLING. (3)
This course, using lectures and laboratory exercises, will cover sampling and analysis techniques for industrial hygiene assessment and monitoring. The laboratory experiments are intended to simulate typical industrial hygiene measurement situations and to provide a basis for selection of sampling techniques and critical evaluation of laboratory results. Lecture, two hours; laboratory, two hours per week. Prereq: Consent of the instructor.

PM 662 PUBLIC HEALTH PRACTICE AND ADMINISTRATION. (3)
This course is to be a practical application of the principles of health care organization to public health at the national, state, and local levels. Prereq: Health care organization course.
PM 663 PRACTICUM IN ADVANCED INDUSTRIAL HYGIENE. (1-3)
In this individual tutorial/internship course, the student will apply sampling and workplace hazard survey techniques to real-world problems. Evaluations of ventilation and engineering controls will be conducted and discussed, and special techniques for the evaluation of personal protective equipment and documentation of dermal exposures will be utilized. May be repeated to a maximum of six credits. Prereq: Completion of PM 601, 602, and 661.

PM 748 MASTER’S THESIS RESEARCH. (0)
Half-time to full-time work on thesis. May be repeated to a maximum of six semesters. Prereq: All course work toward the degree must be completed.

PM 768 RESIDENCY CREDIT FOR MASTER’S DEGREE. (1-6)
May be repeated to a maximum of six credits.

PM 770 SEMINAR IN PREVENTIVE MEDICINE AND PUBLIC HEALTH. (1-3)
A special seminar focusing each semester on an important topic, such as health problems of special working groups, cancer control, and health policy issues. May be repeated to a maximum of six credits. Prereq: Consent of instructor.

PM 780 SPECIAL PROBLEMS IN PREVENTIVE MEDICINE AND PUBLIC HEALTH. (1-3)
Organized study or tutorial focused on special problems or issues. May be repeated to a maximum of six credits. Prereq: Consent of instructor.

PM 790 RESEARCH IN PREVENTIVE MEDICINE AND PUBLIC HEALTH. (1-3)
Individually directed research under the supervision of one or more faculty members. Laboratory, two to six hours per week. May be repeated to a maximum of six credits. Prereq: Consent of instructor.

PM 815 FIRST-YEAR ELECTIVE, PREVENTIVE MEDICINE AND ENVIRONMENTAL HEALTH. (1-3)
With the advice and approval of his or her faculty adviser, the first-year student may choose approved electives offered by the Department of Preventive Medicine and Environmental Health. The intent is to provide the student an opportunity for exploration and study in an area which supplements and/or complements required course work in the first-year curriculum. Pass-fail only. Prereq: Admission to first year, College of Medicine.

†PM 821 PREVENTIVE MEDICINE AND ENVIRONMENTAL HEALTH. (1-3)
With the advice and approval of his or her faculty adviser, the second-year student may choose approved electives offered by the Department of Preventive Medicine and Environmental Health. The intent is to provide the student an opportunity for exploration and study in an area which supplements and/or complements required course work in the second-year curriculum. Pass-fail only. Prereq: Admission to second-year medical curriculum and approval of adviser.

†PM 835 THIRD-YEAR ELECTIVE, PREVENTIVE MEDICINE AND ENVIRONMENTAL HEALTH. (1-3)
With the advice and approval of the faculty adviser and the Student Progress and Promotions Committee, the fourth-year student may choose approved electives offered by the various departments in the College of Medicine. The intent is to provide the student an opportunity to develop his fund of knowledge and clinical competence. Prereq: Admission to the fourth year, College of Medicine and/or permission of the Student Progress and Promotions Committee.

PM 850-899 FOURTH-YEAR ELECTIVE FOR MEDICAL STUDENTS. (1-6)
Approved electives:
PM 850 PREVENTIVE MEDICINE OFF-SITE ELECTIVE.
PM 851 CLINICAL CLERKSHIP IN PREVENTIVE MEDICINE AND ENVIRONMENTAL HEALTH.
PM 852 RESEARCH IN PREVENTIVE MEDICINE AND ENVIRONMENTAL HEALTH.

PPA Plant Pathology

PPA 400G PRINCIPLES OF PLANT PATHOLOGY. (3)
To present students with the principles of plant pathology. The causes, effects, control and nature of plant diseases will be studied; the laboratory will expose students to common diseases and pathogens discussed in lecture. Emphasis will be given to diseases important in Kentucky. Lecture, two hours; laboratory, two hours. Prereq: One semester of botany (e.g. BIO 351) and microbiology (e.g. BIO 108/109) or consent of instructor.

PPA 410 FOREST PATHOLOGY. (3)
Symptomatology, epidemiology, host-pathogen relations and control of selected diseases of forest trees. Lecture, two hours; laboratory, two hours. Prereq: BIO 106 and 107 or BIO 351 or one equivalent semester of botany. (Same as FOR 410.)

PPA 503 PLANT BIOCHEMISTRY. (3)
The chemical constituents of plants, their interaction and the regulation of their interaction in key plant metabolic systems will be studied. Included in the course will be discussions of photosynthesis, nitrogen, nitrate reduction, nitrogen assimilation, plant growth and its regulation and the structure and metabolism of constituents unique to plants. Prereq: BCH 501 and 502 or equivalent or consent of instructor. (Same as BCH 503.)

PPA 601 SPECIAL TOPICS IN MOLECULAR AND CELLULAR GENETICS. (1)
Each semester five distinguished scientists visit the UK campus to deliver a series of three formal lectures each and participate in numerous informal contacts with graduate students. The emphasis is on the presentation of the most current advances (often unpublished) in selected topics in molecular and cellular genetics. May be repeated to a maximum of six credits. (Same as AGR/BIO/BCH/MI 601.)

PPA 640 IDENTIFICATION OF PLANT DISEASES. (3)
Recognition and identification of plant diseases and their causes and development. The course is designed to give students practical experience in dealing with a wide array of plant diseases, symptom expressions, causal agents and interactions with environmental factors encountered in the difficult task of identifying plant diseases. May be repeated to a maximum of nine credits. Lecture, one hour; laboratory, six hours. Prereq: PPA 400G or equivalent or consent of instructor.

PPA 652 PLANT PATHOGENIC FUNGI. (3)
An advanced study of plant pathogenic fungi with emphasis on diagnosis and identification of fungus plant diseases and inoculation and infection of plants. Lecture, two hours; laboratory, three hours. Prereq: PPA 640 or equivalent or consent of instructor.

PPA 656 PLANT VIROLOGY. (3)
Structure of viruses and viroids that cause plant diseases; replication and genome expression; biology of plant virus infections; ecology, epidemiology and control strategies for virus diseases. Prereq: PPA 400G and BCH 401G or consent of instructor.

PPA 660 MOLECULAR AND PHYSIOLOGICAL DYNAMICS OF PLANT-MICROBE INTERACTIONS. (4)
The course is intended to introduce the advanced student to the dynamic nature of plant-microbe interactions through diverse considerations of molecular genetic, physiological, biochemical and cytological aspects of plant diseases and symbioses. Prereq: AGR 360 or BIO 404G, BCH 401G, PPA 400G, or consent of instructor.

PPA 661 GENETICS OF PLANT-MICROBE INTERACTIONS. (3)
Genetics and molecular genetics of interactions between organisms. Primary emphasis will be plant interactions with fungi and bacteria. Areas of study will be: principles of interorganismal genetics and the gene-for-gene model; race-cultivar interactions; genetic determinants of disease in pathogenic relationships, and symbiosis in mutualistic relationships. Examples will include Flor’s flax/flax rust system, plant transformation by Agrobacterium, mutualisms involving Rhizobium, and others. Prereq: AGR 562 or equivalent, or consent of instructor.
PRO 820 INTRODUCTION TO COMPLETE DENTURE PROSTHODONTICS. (4)
A preclinical lecture and laboratory introduction to basic concepts of diagnosis and treatment planning, fabrication, placement and maintenance of complete dentures. This course presents the related biological and mechanical factors that must be incorporated for living tissue to be compatible with complete dentures. The methods and materials for constructing complete dentures are presented, and certain laboratory phases of construction are performed by the student in simulated situations. Lecture, 30 hours; laboratory, 68 hours. Prereq: ANA 530, ANA 534 and RSD 814.

PRO 821 CLINICAL COMPLETE DENTURE PROSTHODONTICS. (1)
The treatment of a patient with complete maxillary and mandibular denture needs is performed in the clinic by the student. The student will assist an upper level student in the examination of a complete denture and a removable partial denture recall patient. Clinic, 52 hours. Coreq: PRO 820.

PRO 824 REMOVABLE PARTIAL DENTURES. (2)
This course is designed to teach the student the basic principles and the practical procedures in providing a therapeutic and functional removable restoration. The course also presents the laws and effects of leverages as related to removable partial dentures as well as the considerations for support, occlusion, and health of all oral structures. Lecture, 13 hours; laboratory, 39 hours. Prereq: PRO 820.

PRO 830 ADVANCED REMOVABLE PROSTHODONTICS. (1)
This course is a continuation of PRO 820. It presents more advanced technique and treatment planning for complex prosthodontic needs. Subjects included are immediate dentures, overdentures and dental implants. Lecture, 21 hours. Prereq: PRO 820 and PRO 824.

PRO 831 CLINICAL REMOVABLE PROSTHODONTICS. (2)
A patient with complete denture needs is treated by the student clinically in the course. The student may opt to treat a patient with immediate, intermediate or overdenture needs. He may initiate and/or complete the treatment of two patients with removable partial denture needs. The student may also treat an optional, additional patient in need of a complete or removable partial denture. The student will recall a minimum of two removable prosthodontic patients and perform any treatment necessary for these patients. Clinic, 110 hours. Prereq: PRO 821; coreq: PRO 830.

PRO 841 ADVANCED CLINICAL REMOVABLE PROSTHODONTICS. (2)
This course covers basically the same area as PRO 831 with the exception that the student is to treat the patient with complete denture needs with less supervision from the instructors. If not done previously, the student must initiate and complete the treatment of two patients with removable partial denture needs. The student will recall three removable prosthodontic patients and will perform any treatment necessary for these patients. Clinic, 114 hours. Prereq: PRO 831.

PRO 850 PROSTHODONTICS ELECTIVE. (1-10)
Elective courses offered by the Department of Prosthodontics provide opportunities for further study of or experience in various aspects of prosthodontics. Topics may include treatment of patients who require complete dentures, removable partial dentures and overdentures; maxillofacial prosthodontics; and other prosthodontic treatment procedures. Hours variable, ranging from a minimum of 16 hours lecture/discussion to a maximum of 10 weeks clinical experience. May be repeated to a maximum of 10 credits. Prereq: The minimum year in dental school and any course prerequisites will be announced for each topic.

PS Political Science

Note: It is assumed that all prerequisites include, in addition to any specific course listed, the phrase “or equivalent,” or “consent of instructor.”

PS 101 AMERICAN GOVERNMENT. (3)
A survey of national government and the political process in the United States, with emphasis on the Constitution, the President, Congress, and the judicial system.

PS 202 ORIENTATION TO POLITICAL SCIENCE. (1)
An introduction to topics studied by political scientists and the techniques used in these studies. Lectures, discussions and assigned readings will cover major fields of the discipline and will introduce students to research methods. The course will be offered Pass/Fail only.

PS 210 INTRODUCTION TO EUROPEAN POLITICS: EAST AND WEST. (3)
An introduction to the comparative study of political institutions, policy-making processes, citizen participation, and political outcomes in Eastern and Western European states.

PS 212 CULTURE AND POLITICS IN THE THIRD WORLD. (3)
This course analyzes the politics of selected states in Africa, Asia, and Latin America. Various bases of political cleavage and cooperation will be examined: ethnicity, language, social class and ideology. Cultural differences between Africa, Asia and Latin America will be identified and their political implications explored, as well as differences within geo-cultural areas.

PS 235 WORLD POLITICS. (3)
A study of the most significant problems of world politics, including the fundamental factors governing international relations, the techniques and instruments of power politics, and the conflicting interests in organizing world peace.

PS 240 IDEOLOGY, POLITICAL CHANGE, AND CONTEMPORARY INDUSTRIAL SOCIETY. (3)
A study of contemporary political ideas, social and political change, and their reciprocal relationship primarily in the advanced industrial societies. Ideology as a tool of both political action and analysis will be examined. Substantive discussion of political doctrines will deal with traditional and contemporary forms of liberalism, conservatism, socialism, anarchism and fascism, as well as current revolutionary movements and ideologies.

PS 245 INTRODUCTION TO POLITICAL ANALYSIS. (3)
Introduction to the basic knowledge of research methodology in political science; a review of methods of data collection; historical, quantitative and comparative techniques of analysis.
PS 255 STATE GOVERNMENT. (3)
An introduction to the institutions, political processes and policies of state governments, and the relationships of state governments with other levels of government in the United States.

PS 271 INTRODUCTION TO POLITICAL BEHAVIOR. (3)
The study of behavior in a political context; the analysis of basic behavioral concepts used in political science such as political roles, group behavior, belief systems, personality, power and decision-making.

PS 280 ISSUES IN PUBLIC POLICY. (3)
An examination of selected major public policy problems, focusing on their nature, political ramifications and alternate methods of dealing with them. Policies covered will vary from semester to semester, but will include such areas as poverty, health care, energy, education, race relations, environment, etc. Prereq: PS 101.

PS 390 SEMINAR IN POLITICAL SCIENCE. (1-3)
A topical seminar primarily for majors in political science and in related fields. May be repeated to a maximum of 12 credits in seminars of differing topics. Prereq: A standing of 3.0 in the student's major department or consent of instructor.

PS 395 INDEPENDENT WORK. (1-6)
Consent of instructor. May be repeated to a maximum of 12 credits. Prereq: A standing of 3.0 in political science courses.

PS 399 INTERNSHIP IN GOVERNMENT. (1-6)
This course is designed for students who are participating in a state, local or federal internship program with which the political science department is associated. The student must have approval of the department chairperson upon the recommendation of the Committee on Internship and Experiential Education to take the course, negotiate a learning contract with a departmental academic supervisor, and provide the department with a report or a paper on his internship. Pass/Fail only. May be repeated to a maximum of 12 credits.

PS 411G COMPARATIVE GOVERNMENT – PARLIAMENTARY DEMOCRACIES I. (3)
A study of the governments of Britain and selected Commonwealth countries.

PS 412G COMPARATIVE GOVERNMENT – PARLIAMENTARY DEMOCRACIES II. (3)
A study of the political systems of selected continental European countries with special attention to France and Germany.

PS 417G SURVEY OF SUB-SAHARAN POLITICS. (3)
A survey of sub-Saharan government and politics intended to give the student broad knowledge about the setting of African politics, precolonial African political systems, the political legacies of major European colonial powers, and problems of political development.

PS 418G THE GOVERNMENTS AND POLITICS OF EASTERN ASIA. (3)
A comparative analysis of the modern political experiences of China and Japan, exploring their responses to the West, the development of differing political elites in each country, and contemporary problems of the Chinese Communist and Japanese politics.

PS 420G GOVERNMENTS AND POLITICS OF SOUTH ASIA. (3)
A comparative analysis of contemporary political development in India, Pakistan, Bangladesh and Sri Lanka, with emphasis on political cultures, participation, institutions and the capabilities of these political systems.

PS 421G GOVERNMENT AND POLITICS OF SOUTHEAST ASIA. (3)
Study of the political processes, problems and behavior of the several states of Southeast Asia with emphasis on their chief determinants. The different patterns of political development will be examined. Lecture, three hours.

PS 427G EAST EUROPEAN POLITICS. (3)
This course is meant to provide an opportunity for advanced undergraduates and graduate students to (1) understand the historical, socioeconomic and philosophical context of the communist party states in Eastern Europe, (2) to learn who governs in Eastern Europe and the structures through which they rule, (3) to test the “dynamics” of communist politics, i.e., factors contributing to political change vis-a-vis political continuity. Prereq: Junior or senior standing and instructor’s written permission.

PS 428G LATIN AMERICAN GOVERNMENT AND POLITICS. (3)
A study of contemporary Latin American political institutions and of the dynamics of the Latin American political process.

PS 429G GOVERNMENT AND POLITICS IN RUSSIA AND THE POST-SOVIET STATES. (3)
Analysis of political development in the Soviet Union with emphasis on party-government relations, Communist ideology, and major approaches to the study of Soviet politics.

PS 430G THE CONDUCT OF AMERICAN FOREIGN RELATIONS. (3)
The formulation of American foreign policy from several analytic perspectives, with somewhat more emphasis on inputs and process than on substantive outcomes. Prereq: PS 101 or consent of instructor.

PS 431G NATIONAL SECURITY POLICY. (3)
The organization and formulation of military policy; the theory and practice of deterrence; and the problems of disarmament and arms control. Prereq: PS 235 or consent of instructor.

PS 433G POLITICS OF INTERNATIONAL ECONOMIC RELATIONS. (3)
The course examines contending theoretical approaches to global political economy. These approaches are used to analyze various issues of global political economy, such as the international monetary system, multinational corporations, foreign aid, and trade.

PS 436G INTERNATIONAL ORGANIZATION. (3)
A study of the evolution of international organizations in the 20th Century. Examination of the increasing size, complexity, and diversity of contemporary global and regional international organizations. The role of international organizations in future world order.

PS 437G DYNAMICS OF INTERNATIONAL LAW. (3)
An examination of the politics of the development of international law and its operation in a multicultural world. Legal principles and international political processes are discussed through illustrative issue areas: management of conflict; distribution of territorial resources; environmental problems; and human rights.

PS 439G CONTEMPORARY INTERNATIONAL PROBLEMS. (3)
An examination of selected current problems in world politics and foreign policy. Students will be encouraged to apply their knowledge to the analysis of contemporary international issues.

PS 441G EARLY POLITICAL THEORY. (3)
A survey of political theorists in the Western political tradition from classical Greece to the Renaissance. The formative influences upon our conceptions of politics, citizenship, justice, and natural rights will be highlighted and key issues in controversies over rhetoric and philosophy, time and political order, education and the body politic, and political action and human artifice will be illuminated.

PS 442G MODERN POLITICAL THEORY. (3)
Western political theory from Machiavelli to Marx and Weber with emphasis on the impact of early modern culture and liberalism upon contemporary views of power, individualism, community, and political consciousness. Key contributions of modern political theorists to perennial debates on power and the intellectual, institutional bases of modern constitutionalism, human nature and aggression, the sources of alienation, and the relation of modern science and technology to contemporary forms of domination will be explored.

PS 453G URBAN GOVERNMENT AND POLITICS. (3)
An analysis of the formulation of public policy in small towns, middle-sized cities, and metropolitan areas. A theoretical model appropriate to all three settings will be formulated. The principal methods of studying community decision-making will be evaluated. Prereq: Three hours of social sciences.

PS 454G POLITICS OF LAND USE AND GROWTH MANAGEMENT. (3)
A study of the legal and structural features of the land use regulatory system, the social and political environments within which this system operates, and the values, stakes, and perspectives of those who operate or seek to influence this system. Topics will include land use planning, zoning and other regulatory tools, as well as growth management techniques and problems. Prereq: PS 453G.

PS 456G APPALACHIAN POLITICS. (3)
A study of the interrelationships of the Southern Appalachian region and its people with the larger American political system, culture, and economy. Selective examination of public policies and major issues and their development in the politics of the region.

PS 461G CIVIL LIBERTIES. (3)
An analysis of the politics and protection of civil liberties in the U.S. Major concentration on the interpretation of constitutional guarantees by the Supreme Court.
<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Prerequisites/Remarks</th>
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</thead>
<tbody>
<tr>
<td>PS 463G</td>
<td>THE AMERICAN JUDICIAL PROCESS.</td>
<td>(3)</td>
<td>A study from the standpoint of the social sciences, of the judicial process at the state and national levels, dealing with the organization of courts, the making of judicial decisions, and the exercising of judicial power.</td>
</tr>
<tr>
<td>PS 465G</td>
<td>CONSTITUTIONAL LAW.</td>
<td>(3)</td>
<td>A non-chronological study of major Supreme Court decisions and recent issues relating to separation of powers, federalism, the commerce clause, taxes, criminal justice, and political non-civil liberties areas. Prereq: PS 101 or consent of instructor.</td>
</tr>
<tr>
<td>PS 467G</td>
<td>THE U.S. SUPREME COURT.</td>
<td>(3)</td>
<td>A study of the Court as a political-legal institution, focusing on the appointment of justices, the development of its docket, the decisional process, and its interaction with other political institutions. Prereq: PS 101 or consent of instructor.</td>
</tr>
<tr>
<td>PS 470G</td>
<td>AMERICAN POLITICAL PARTIES.</td>
<td>(3)</td>
<td>An analysis of American national and state party systems, organization, and functions; nominations and elections; and voting patterns.</td>
</tr>
<tr>
<td>PS 472G</td>
<td>POLITICAL CAMPAIGNS AND ELECTIONS.</td>
<td>(3)</td>
<td>An analysis of individual voting behavior and candidate strategies during presidential and congressional elections. The effect of the mass media, political action committees, and political advertising on the vote decision is examined. Attention is also devoted to candidates' campaign organizations and communication strategies.</td>
</tr>
<tr>
<td>PS 473G</td>
<td>PUBLIC OPINION.</td>
<td>(3)</td>
<td>An introduction to the nature and content of public opinion, how polls are conducted, the political effects of polling, and the role of public opinion in the policymaking process.</td>
</tr>
<tr>
<td>PS 474G</td>
<td>POLITICAL PSYCHOLOGY.</td>
<td>(3)</td>
<td>An exploration of different models of political behavior, based on concepts of psychoanalysis, behaviorism, human, and social psychology. Prereq: PS 101 and PSY 100 or equivalent, or consent of instructor.</td>
</tr>
<tr>
<td>PS 475G</td>
<td>POLITICS AND THE MASS MEDIA.</td>
<td>(3)</td>
<td>The ways the modern mass media affect the dynamics of politics in the United States are examined in this course. Specific topics include the impact of television on political discourse; the structure and ownership of mass media; how news is made and how it influences our political attitudes and behaviors; the role of the media in campaigns, elections and policy making. Prereq: PS 101.</td>
</tr>
<tr>
<td>PS 476G</td>
<td>LEGISLATIVE PROCESS.</td>
<td>(3)</td>
<td>A study of Congress and the state legislatures, covering the legislative power structure, legislative committees, the selection of legislators and the roles they play, decision making, and the relations of the legislative and executive branches.</td>
</tr>
<tr>
<td>PS 479G</td>
<td>WOMEN AND POLITICS.</td>
<td>(3)</td>
<td>A study of the role of women as political actors in the United States including the status of women in American society and the contribution of government policy to maintaining or changing that status. The political behavior of women at the mass and elite level will be examined.</td>
</tr>
<tr>
<td>PS 480G</td>
<td>GOVERNMENT AND THE ECONOMY.</td>
<td>(3)</td>
<td>This course analyzes the relationship between political and economic systems in the modern, democratic, capitalist state. While the focus is primarily upon the United States, other political/economic systems as well as more general theoretical statements will be considered. Prereq: PS 101 and ECO 101 or equivalent.</td>
</tr>
<tr>
<td>PS 482G</td>
<td>FOOD, ENERGY, AND ECOLOGY.</td>
<td>(3)</td>
<td>An examination of agricultural policy, the food-energy connection, and ecological farming practices in national and international perspective. Special attention is given to the farmer in cultural myth and political folklore and in farm movements as political phenomena taking populist and reactionary forms. Prereq: PS 101 or GEN 101, or consent of instructor.</td>
</tr>
<tr>
<td>PS 487G</td>
<td>INTRODUCTION TO PUBLIC ADMINISTRATION.</td>
<td>(3)</td>
<td>A study of theories of administration and organization, problems of management and control, the principal staff and auxiliary functions and agencies, and the problem of administrative responsibilities under democratic government, and the political, social, and institutional context of administration.</td>
</tr>
<tr>
<td>PS 489G</td>
<td>THE ANALYSIS OF PUBLIC POLICY.</td>
<td>(3)</td>
<td>A study of the development, implementation and impacts of government policies; and the sources of variation in policies adopted by differing governmental units.</td>
</tr>
<tr>
<td>PS 490G</td>
<td>HONORS IN POLITICAL SCIENCE.</td>
<td>(3)</td>
<td>This course will provide a seminar setting, the opportunity for students to concentrate on developing and implementing research projects on topics of their own choice. The course will allow discussion of various perspectives in political science as well as on problems encountered in the research process. Prereq: Senior standing with 3.25 overall GPA and 3.50 GPA in major.</td>
</tr>
<tr>
<td>PS 491G</td>
<td>SPECIAL TOPICS IN POLITICAL SCIENCE (Subtitle required).</td>
<td>(1-3)</td>
<td>Course will focus on selected topics drawn from various areas of political science taught by faculty members with special interests and competence. May be repeated in courses of differing topics to a maximum of 12 credits.</td>
</tr>
<tr>
<td>PS 538G</td>
<td>CONFLICT AND COOPERATION IN LATIN AMERICAN RELATIONS.</td>
<td>(3)</td>
<td>An examination of (1) national development strategies as determinants of Latin American foreign policies, (2) the origins and political consequences of economic nationalism, (3) historical patterns of U.S. response to communist and revolutionary change, (4) the role of extra-continental contenders for influence in the Americas, and (5) at least one contemporary foreign policy issue in inter-American relations. Prereq: PS 428G or permission of instructor.</td>
</tr>
<tr>
<td>PS 539G</td>
<td>THE FOREIGN POLICY OF THE SOVIET UNION.</td>
<td>(3)</td>
<td>A broad survey of Soviet foreign affairs from the Bolshevik Revolution to the present and an introduction to the key theories, guiding concepts, and competing techniques for analyzing Soviet foreign policy-making. A critical and comparative approach, informed by relevant case studies, will be used to clarify the strategic, technological, organizational, and political dimensions of the Soviet policy-making process in the international realm. Prereq: PS 429G or consent of instructor.</td>
</tr>
<tr>
<td>PS 545G</td>
<td>AMERICAN POLITICAL THOUGHT.</td>
<td>(3)</td>
<td>This course explores the American tradition of political thought, its formation, and the ways it is involved in major problems of culture, political economy, ideology, and identity. Alternative ideas of work, power, political obligation, science and technology, and related issues are examined. Relationships of theory and practice, public and private, and government and society are analyzed.</td>
</tr>
<tr>
<td>PS 557G</td>
<td>KENTUCKY GOVERNMENT AND POLITICS.</td>
<td>(3)</td>
<td>A study of current political issues and institutions in Kentucky.</td>
</tr>
<tr>
<td>PS 566G</td>
<td>CONSTITUTIONAL INTERPRETATION.</td>
<td>(3)</td>
<td>A study of the political and the philosophical origins of the U.S. Constitution and of the competing and overlapping philosophies about how it should be interpreted in modern times. Prereq: One of the following: PS 461G, PS 465G, or HIS 573.</td>
</tr>
<tr>
<td>PS 571G</td>
<td>INTEREST GROUPS.</td>
<td>(3)</td>
<td>A study of interest groups, their roles in the political process, and techniques of lobbying and influencing opinion. Prereq: Junior standing.</td>
</tr>
<tr>
<td>PS 580G</td>
<td>THE BUDGETARY PROCESS.</td>
<td>(3)</td>
<td>A study of the development of budgetary techniques in the United States, the uses to which budgets are put, the roles of the budgetary process in budgetary politics and in the functioning of government, and the distribution of government resources through the budget.</td>
</tr>
<tr>
<td>PS 584G</td>
<td>THE AMERICAN PRESIDENCY AND THE FEDERAL EXECUTIVE.</td>
<td>(3)</td>
<td>A course in the American presidency, emphasizing institutional developments and the impact of recent presidents on the office, on other governmental institutions, on domestic and foreign policies, and including an examination of the broader context of the executive branch of government.</td>
</tr>
<tr>
<td>PS 620G</td>
<td>COMPARATIVE POLITICS: THEORY AND METHOD.</td>
<td>(3)</td>
<td>A study of the evolution and development of comparative government and politics within the discipline with particular emphasis upon the formulation, application, and limitations of the theories, taxonomies and conceptual frameworks employed in comparative research.</td>
</tr>
<tr>
<td>PS 630G</td>
<td>PROSEMINAR IN NON-INSTITUTIONAL POLITICAL BEHAVIOR.</td>
<td>(3)</td>
<td>Focuses on literature with implications for individual-level political behavior, particularly mass behavior. Major works in such fields as political socialization, biopolitics, political communication, and political games and coalitions. Specific content may vary in response to current demands. Readings in a substantive field such as voting behavior are also examined as examples of the application of listed areas. Prereq: Consent of instructor.</td>
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</tbody>
</table>
PS 654 PROSEMINAR IN JUDICIAL PROCESS. (3) A thorough survey of the recent literature in the judicial process, focusing particularly on judicial recruitment, the relationship of the judiciary to other power centers, and the decision-making process of judges.

PS 671 STRATEGIES OF INQUIRY IN POLITICAL SCIENCE. (3) Analysis of research paradigms for political science, and investigation into the foundations of scientific inquiry. Emphasis on topics such as explanation, concept formation, the construction and function of theory, data, and verification.

PS 672 INTRODUCTION TO TECHNIQUES OF POLITICAL RESEARCH. (3) Basic techniques of data collection, coding, and processing applicable to political research are introduced. Various statistical techniques of data analysis are discussed and applied to political data. Prereq: PS 671, familiarity with appropriate statistical methods and consent of instructor.

PS 674 PROSEMINAR IN THEORIES OF INTERNATIONAL POLITICS. (3) A survey of the major theoretical approaches to the study of international systems and processes.

PS 680 PROSEMINAR IN POLITICAL INSTITUTIONS AND PROCESS. (3) A thorough survey of recent literature on political institutions and the political process, including political parties and the legislative and executive processes, at the national and sub-national levels.

PS 685 PROSEMINAR IN PUBLIC ADMINISTRATION AND POLICY. (3) A survey of recent literature on public administration and public policy, including organizational theory, the political environment of administration, public budgeting, public personnel administration, public policy administration, and public management.

PS 690 PROSEMINAR IN CONTEMPORARY POLITICAL THEORY. (3) An examination of contemporary political theories, especially their relationships to theoretical issues in policy analysis. Major problems such as inquiry and change, ideology and power, and knowledge and authority will be studied, particularly in the context of public policy.

PS 711 TOPICAL SEMINAR IN POLITICAL SCIENCE (Subtitle required). (3) Topic and instructor will vary from semester to semester. Faculty member presents seminar on topic in which he has particular research competence or special expertise. May be repeated under different subtitle to a maximum of nine hours. Prereq: Two semesters of graduate work and consent of instructor.

PS 730 AMERICAN FOREIGN POLICY. (3) The course emphasizes contending interpretations of the nature and sources of American foreign policy, the position of the United States in the international system, and foreign policy decision making. Prereq: Consent of instructor.

PS 731 INTERNATIONAL SECURITY/CONFLICT ANALYSIS. (3) The seminar examines international security affairs, with an emphasis on the sources and nature of conflict, and methods of conflict, the patterns of conflict, and methods of conflict resolution and regulation, both within states and among them. Prereq: Consent of instructor.

PS 733 INTERNATIONAL POLITICAL ECONOMY. (3) The course examines the contending theoretical perspectives and substantive functional issues underlying the politics of international economic relations. Special attention is paid to international trade and money, the politics of North-South relations, and comparative foreign economic policies. Prereq: Consent of instructor.

PS 737 TRANSNATIONAL ORGANIZATIONS AND PROCESSES. (3) An analysis of approaches to the study of international, transnational and regional political and economic organizations and processes within the context of world politics. An examination of the impact of these activities and processes on contemporary problems of world order. Prereq: Graduate student status.

PS 738 SEMINAR IN THE POLITICS OF ECONOMIC DEVELOPMENT (Subtitle Required). (3) An analysis of the political environment and consequences of policy-making for developmental ends in Latin America, Africa, the Mid-East or Asia. Economic policy-making will be emphasized, but consideration may also be directed to housing, health, and educational policy-making. Course will generally focus on a geographic area. May be repeated to a maximum of nine credits under different subtitles. Prereq: Introductory economics or consent of the instructor.

PS 748 MASTER'S THESIS RESEARCH. Half-time to full-time work on thesis. May be repeated to a maximum of six semesters. Prereq: All course work toward the degree must be completed.

PS 749 DISSERTATION RESEARCH. Half-time to full-time work on dissertation. May be repeated to a maximum of six semesters. Prereq: Registration for two full-time semesters of 769 residence credit following the successful completion of the qualifying exams.

PS 750 POLITICAL PARTIES AND ELECTIONS IN AMERICA. (3) A study of the organization and functions of political parties, nominations and elections, and voting alignments. Prereq: An undergraduate political parties course or consent of instructor.

PS 757 SEMINAR IN COMPARATIVE DEMOCRATIC POLITICAL SYSTEMS. (3) An analysis of democratic political systems with emphasis upon the comparative approach as a method of political analysis. Prereq: PS 411G or consent of instructor.

PS 758 SEMINAR IN SOVIET POLITICS, GOVERNMENT AND FOREIGN POLICY. (3) Emphasis on methodology of various approaches to the study of the USSR, as well as substantive research. Subjects will alternate yearly between Soviet politics and Soviet foreign policy. Prereq: PS 429G and PS 539 or consent of instructor.

PS 762 SEMINAR IN JUDICIAL POLICY MAKING. (3) Formulation, development and implementation of Constitutional policy by the United States Supreme Court and other agencies. Primary focus on areas of contemporary importance (excluding civil rights). Cases and supporting materials. May be repeated to a maximum of six credits. Prereq: Consent of instructor.

PS 763 SEMINAR IN ADMINISTRATIVE POLITICS. (3) The process by which administrative agencies establish and enforce policy are analyzed in terms of both legal and political considerations and behavioral theory. Prereq: Consent of instructor.

PS 769 RESIDENCE CREDIT FOR THE MASTER’S DEGREE. (1-6) May be repeated to a maximum of 12 hours.

PS 769 RESIDENCE CREDIT FOR THE DOCTOR’S DEGREE. (0-12) May be repeated indefinitely.

PS 770 DEMOCRATIC THEORY AND PUBLIC POLICY. (3) This seminar typically focuses on the relationship of democratic theories to specific issues of public policy, including the role of values in policy analysis. Questions of science, ethics, and democracy and the relationship between technical knowledge and political knowledge may receive attention. Prereq: PS 690 or consent of instructor.

PS 772 ADVANCED PROBLEMS IN RESEARCH METHODS. (3) A seminar in selected topics; the application of mathematical models and advanced statistical techniques to political science data. May be repeated to a maximum of six credits.

PS 775 SEMINAR IN PUBLIC POLICY. (3) A political analysis of the domestic policy process including the formation, implementation, and impact of policy.

PS 778 RESEARCH PROBLEMS IN TRANSNATIONAL POLITICS. (3) This seminar focuses on research strategies that can be utilized in dealing with problems in transnational politics. May be repeated to a maximum of six hours with consent of the instructor. Prereq: PS 620 or PS 674.

PS 780 LEGISLATIVE BEHAVIOR. (3) A study of recent research in the legislative process emphasizing both the substantive and methodological aspects. Prereq: An upper division course in the legislative process or consent of instructor.
**PSY 795 PSYCHOLOGICAL BASES OF POLITICAL BEHAVIOR.** (3)
The role of psychological constructs and theory in political explanation; measurement and inference problems; critical analysis of research concerned with such topics as the effect of psychological mechanisms on loyalty, quiescence, participation, political change and revolution. Prereq: PS 671 and PS 672 or consent of instructor.

**PSY 796 DIRECTED RESEARCH IN POLITICAL SCIENCE.** (1-3)
Individual research in a particular field of political science under the supervision of selected faculty. Open to advanced graduate students who are prepared for intensive study and research beyond that offered in regular classes in each field. May be repeated to a maximum of six hours. Prereq: Consent of the instructor and the director of graduate studies.

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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>PSC 815</td>
<td>First-Year Elective, Psychiatry</td>
<td>(1-3)</td>
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<td>PSC 821</td>
<td>Psychopathology of Behavior</td>
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<td>PSC 831</td>
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<td>PSC 835</td>
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**Approved electives:**
- PSC 865 Clinical Clerkship in Psychiatry
- PSC 869 Research in Psychiatry
- PSC 872 Private Practice Psychiatry
- PSC 875 Geriatrics/Geriatric Psychiatry
- PSC 876 Triple Board Acting Internship
- PSC 890 Off-Site Clerkship in Psychiatry

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**University of Kentucky 1996-1997 Undergraduate Bulletin**

**KEY:**  
# = new course  
* = course changed  
† = course dropped
PSY 399 FIELD BASED/COMMUNITY BASED EDUCATION. (1-6)
A community-based or field-based experience in psychology, under the supervision of a faculty member. May be repeated to a maximum of 12 credits (if applicable). Pass-fail only. Prereq: Consent of instructor and department chairperson; filing of a learning contract with departmental office and Office for Experiential Education; completion of 12 hours in psychology with a GPA of 2.5 in psychology courses. Psychology majors, juniors and seniors only.

PSY 400 HISTORY AND SYSTEMS OF PSYCHOLOGY. (3)
The course is designed primarily for majors in psychology in the senior year. A review of the history of psychology with special emphasis on the development of major psychological theories. The philosophical origins of psychology as a science are analyzed, along with their impact on important psychologists. The influence of psychology’s history on its current concepts, methods and problems is studied. Prereq: PSY 100.

*PSY 421 COGNITIVE PROCESSES LABORATORY. (1)
Laboratory for PSY 427 to provide experience with the research methods of cognitive psychology. Lab sessions involve participation in a series of experiments on attention, memory, language, and problem-solving. Laboratory: two hours. Prereq or concurrent: PSY 427.

PSY 423 PROCESSES OF PSYCHOLOGICAL DEVELOPMENT. (3)
An advanced lecture course for majors in the life sciences (social, behavioral, and biological). The course will examine the nature of developmental processes in the areas of intelligence, learning, personality, and social behavior. Students will be required to do extensive reading in primary source materials. Prereq: PSY 223 or consent of instructor.

*PSY 424 HUMAN SENSES AND PERCEPTION. (3)
A study of the stimulus, receptor and organism variables that underlie perceptual experience and perceptually-based behavior with emphasis upon theory and experimental method. Prereq: PSY 100.

*PSY 425 DIMENSIONS OF AGING. (3)
Analysis of demographical and institutional patterns, social roles, psychological and physiological changes, and social policies and programs associated with aging. Prereq: Six hours of social science or permission of instructor. (Same as SOC 425, ANT 425.)

*PSY 426 HUMAN SENSE AND PERCEPTION LABORATORY. (1)
Laboratory to accompany PSY 424. Laboratory consists of a series of exercises and experiments with students serving as experimenters and subjects. Emphasis is on perceptual content, but methods and report writing are also stressed. The course includes prescribed studies of visual fields, auditory discrimination, visual acuity, form perception, space perception and binocular rivalry in addition to a final independent project of the student’s own choice. Laboratory, two hours. Prereq or concurrent: PSY 424; PSY 216 is recommended.

*PSY 427 COGNITIVE PROCESSES. (3)
Theory and experimental techniques in the study of human thought processes. Emphasis on research in memory, information processing, language, and concept formation. Prereq: PSY 100.

*PSY 428 RESEARCH METHODS IN DEVELOPMENTAL PSYCHOLOGY. (4)
An advanced course in research methods in human development. Emphasis will be placed on the understanding and use of research designs and techniques that examine behavior change from a developmental perspective. Students are expected to design and carry out a research project. Lecture, three hours; laboratory, two hours. Prereq: PSY 100, 215, and 216.

*PSY 430 INTERPERSONAL PROCESSES. (3)
A systematic analysis of interpersonal behavior. Topics covered include social-cognitive aspects of interpersonal relations (e.g., expectancies, attribution), personal relationships (e.g., friendship, romance), and small-group dynamics (e.g., minority influence, cooperative learning). Prereq: PSY 100.

PSY 444 SOCIAL PSYCHOLOGY. (3)
Theoretical and empirical analysis of individual behavior in the social setting with particular emphasis on social learning, motivation, and the measurement, formation, and changing of social attitudes. (Note: Not open for graduate credit to graduate students in Psychology and Sociology.) Prereq: One of the following: PSY 100, SOC 101, or GEN 102. (Same as SOC 444G.)

*PSY 447 SOCIAL PSYCHOLOGY LABORATORY. (1)
Participation in the use of survey, laboratory, and field research methods for studying social-psychological phenomena. Class members will design and carry out research on basic social-psychological processes. Laboratory, two hours. Prereq: PSY 215; and (may be concurrent) one of the following: PSY 444, PSY 448, or PSY 439.

*PSY 448 APPLIED SOCIAL PSYCHOLOGY. (3)
Application of social-psychological knowledge, both theoretical and empirical, to contemporary social issues. Coverage includes application to such diverse topics as health, education, business, law, and international relations. Prereq: PSY 100. (Same as SOC 448.)

*PSY 450 PSYCHOLOGY OF LEARNING. (3)
Fundamental principles and findings from laboratory investigations of classical, instrumental, and verbal learning. Prereq: PSY 215.

*PSY 451 PSYCHOLOGY OF LEARNING LABORATORY. (1)
Laboratory demonstration of, and participation in, the use of scientific methodology as it applies to basic principles of learning appearing in human and subhuman subjects. Laboratory, two hours. Prereq or concurrent: PSY 450; PSY 216 is recommended.

*PSY 456 BEHAVIORAL NEUROSCIENCE. (3)
An intensive study of neural bases of behavior. Principal concerns are the neural and chemical substrates of processes such as sensation and perception, learning and memory, motivation and emotion, and behavior disorders. Prereq: PSY 215 and BIO 103, or 150 or equivalent, or consent of instructor.

*PSY 457 BEHAVIORAL NEUROSCIENCE LABORATORY. (1)
Laboratory for PSY 456 provides firsthand experience with the research methodology of physiological psychology. Prereq: or concurrent: PSY 456.

PSY 459 DRUGS AND BEHAVIOR. (3)
General principles of drug action from a physiological perspective. Major emphasis is on the psychoactive drugs encountered in experimental, clinical and social settings. Prereq: PSY 215 and BIO 103, or BIO 150 or equivalent.

*PSY 495 SENIOR THESIS SEMINAR. (4)
This course focus will be on the development and presentation of a research question, and the design of an experimental test of the question. The course will use a seminar format. Students will be expected to give both an oral and written presentation of their research proposal and to participate in the discussion of the proposals of other students. Prereq: Major in psychology, senior status, research sponsor, approval of instructor.

*PSY 496 SENIOR THESIS RESEARCH. (4)
This course focus will be on the oral and written presentation of research results. The course will use a seminar format. Students will complete their thesis research, prepare a written report, and present it to the seminar. Prereq: PSY 495.

PSY 503 PSYCHOLOGY OF INDUSTRIAL PERSONNEL PROCEDURE. (3)
A practical course for those preparing for personnel administration and for psychology in industry and business. A study is made of the theory and methods of position classification, job analysis, job evaluation, merit rating, supervisor selection and training, and collective bargaining. Prereq: PSY 100.

PSY 529 PSYCHOLOGICAL STATISTICS. (3)
Study of the acquisition, production and perception of human language. The relationship between linguistic theories and experimental data will be critically examined. Prereq: Either PSY 215 or LIN 211.

PSY 532 PERSONALITY. (3)
An examination of several prominent personality theories in terms of the contexts in which they were originated, their influence upon contemporary psychological thought, and their present applications. Prereq: PSY 100 plus one of the following: PSY 215, 216 or 223.

PSY 533 ABNORMAL PSYCHOLOGY. (3)
A study of the major mental disorders, especially the psychoneuroses and the psychoses, and the biological, psychological, and sociological factors which contribute to their causation. Prereq: PSY 100 plus one of the following: PSY 215, 216 or 223.

PSY 534 CHILD PSYCHOPATHOLOGY. (3)
The course is designed to cover issues in the classification, assessment, and treatment of the major childhood behavior disorders, including attention deficit and conduct disorders, learning disabilities, depression, and child abuse. In addition, issues relating to parent-child relations, divorce, and children’s attributions will be covered. Prereq: PSY 215; and either PSY 223 or 533 or FAM 255.

PSY 535 PSYCHOLOGICAL TESTING. (3)
A general orientation to the field of psychological testing. Introduction to the principles and methods of psychological testing, and a survey of the various kinds of psychological tests. Prereq: PSY 100 and 216.
PSY 552 ANIMAL BEHAVIOR. (3)
Experimental techniques used in the study of animal behavior. Particular emphasis is placed on the assessment of intellectual capacities in animals. Topics include: memory, concept learning, imitation, tool use, language, cooperation, and altruism. Prereq: PSY 215 or consent of instructor.

PSY 553 ANIMAL BEHAVIOR LABORATORY. (1)
Application of techniques used in the study of animal behavior. The class will design and carry out experiments in animal behavior. Students will organize and discuss results and will explore theoretical and applied implications of the research. Laboratory, two hours. Prereq or concur: PSY 552. Prereq: PSY 216.

PSY 558 BIOLOGY OF MOTIVATION. (3)
An examination of the causes of human and nonhuman behavior from a biological perspective. Special attention is paid to the interaction between genetic inheritance, individual experience, and physiological state in the control of the appetitive and consummatory behaviors. Prereq: PSY 215 and BIO 103, or BIO 150 or equivalent.

PSY 561 ADVANCED TOPICS IN FOUNDATIONS OF CLINICAL PSYCHOLOGY (Subtitle required). (3)
Selected topics in clinical psychology such as health psychology and introduction to clinical psychology. Course topics will vary from year to year, providing students with a diversity of material in the area of clinical psychology. May be repeated to a maximum of six credits. Prereq: PSY 533 or PSY 532.

*PSY 562 ADVANCED TOPICS IN COGNITIVE PSYCHOLOGY (Subtitle required). (3)
This course is designed to provide in-depth study of a specialized topic within cognitive psychology. Topics will vary from year to year and may include: theories of memory; theories of reading; cognition and emotion; connectionist modeling; engineering and environmental psychology. May be repeated to a maximum of six credits. Prereq: PSY 427 or equivalent.

PSY 563 ADVANCED TOPICS IN DEVELOPMENTAL PSYCHOLOGY (Subtitle required). (3)
This course is designed to provide in-depth study of a specialized topic in developmental psychology. Topics will vary from year to year and may include: cognitive development; development of memory and attention; development of reasoning and problem solving; and media use and children’s development. May be repeated to a maximum of six credits. Prereq: PSY 223 or equivalent.

*PSY 564 ADVANCED TOPICS IN LEARNING (Subtitle required). (3)
The course will provide in-depth study of specialized topics in the area of higher learning in animals. Topics will vary from year to year and may include: cognitive development, language, and cooperation. The course will also examine these processes from the perspective of sociobiology. May be repeated to a maximum of six credits. Prereq: PSY 450, PSY 552 or consent of instructor.

*PSY 565 ADVANCED TOPICS IN NEUROSCIENCE (Subtitle required). (3)
Advanced coverage of recent research within the field of behavioral neuroscience. The course will provide in-depth coverage of one topic, such as developmental psychobiology, neurobiology of learning and memory, or the biological basis of reward. May be repeated to a maximum of six credits. Prereq: PSY 456 or consent of instructor.

*PSY 566 ADVANCED TOPICS IN SOCIAL PSYCHOLOGY (Subtitle required). (3)
Selected topics exploring aspects of social psychology. The content of the course will vary from year to year, focusing on topics such as social cognition, the self, cross-cultural psychology, personal relationships, consumer and organizational psychology, and nonverbal communication. Class format will be determined by the instructor, with some years having a small seminar structure and other years having a more traditional lecture format. May be repeated to a maximum of six credits. Prereq: PSY 444, PSY 216, or consent of instructor.

PSY 603 PSYCHOPATHOLOGY. (3)
An examination of the descriptive, theoretical, and research material relevant to the major classes of disturbed behavior. Special attention is devoted to the stylistic features of neurotic and psychotic communication and behavior. Prereq: Enrollment in the graduate program in clinical psychology.

PSY 610 PSYCHOMETRICS. (3)
Analysis and interpretation of human measurements. The course deals with the application of basic inferential procedures to the analysis and interpretation of psychological data. Required of all graduate students in psychology. Prereq: A course in statistics.
PSY 633 PRACTICUM IN CLINICAL METHODOLOGY II.  
Practice in the administration and scoring of projective techniques and batteries of clinical tests. Laboratory, four hours. Prereq: PSY 630 and 631, and enrollment in graduate program in clinical psychology. Prereq or concur: PSY 632.

PSY 636 SYSTEMS OF PSYCHOTHERAPY.  
An intensive examination of the major theoretical and research approaches to therapeutic behavior change. Prereq: PSY 632 and 633, and enrollment in graduate program in clinical psychology.

PSY 637 PRACTICUM IN PSYCHOTHERAPY AND BEHAVIOR CHANGE.  
Supervised experience in the techniques of psychotherapy with adults, children and groups, and in community mental health approaches. Laboratory, two to six hours. Each clinical student must have a cumulative minimum of three different supervisors. May be repeated to a maximum of six credits. Prereq: PSY 636 and enrollment in graduate program in clinical psychology.

PSY 638 DEVELOPMENTAL NEUROBIOLOGY.  
An explanation of the processes which contribute to the development of the nervous system. Neurophysiological, cellular biological and molecular approaches to cell differentiation, neuronal pathfinding and synapse formation and stabilization will be explored and discussed. Examples will be drawn from both vertebrate and invertebrate preparations. Prereq: BIO 535 or consent of instructor. (Same as ANT/BSC 664.)

PSY 664 CULTURAL ISSUES IN MENTAL ILLNESS.  
An in-depth discussion of theory and method of the various approaches to cultural and social factors in the etiology, distribution, and treatment of mental illness. Data from non-Western and Western cultures are examined. Prereq: Enrollment in graduate program in anthropology, sociology, psychology, educational and counseling psychology, or consent of instructor. (Same as ANT/BSC 664.)

PSY 710 TOPICAL SEMINAR IN CLINICAL PSYCHOLOGY.  
A selected topics course designed to cover content areas which are not being met by the current faculty; may be taught by persons with special qualifications from the community or by existing faculty exploring new areas. The topics, which may be offered as the need arises, may include on a semester basis mental retardation, intensive psychoanalytic theory, psychopharmacology, etc. May be repeated to a maximum of six credits. Prereq: As specified by instructor.

PSY 748 MASTER’S THESIS RESEARCH.  
Half-time to full-time work on thesis. May be repeated to a maximum of six semesters. Prereq: All course work toward the degree must be completed.

PSY 749 DISSERTATION RESEARCH.  
Half-time to full-time work on dissertation. May be repeated to a maximum of six semesters. Prereq: Registration for two full-time semesters of 769 residence credit following the successful completion of the qualifying exams.

PSY 767 TOPICAL SEMINAR IN BEHAVIORAL NEUROSCIENCE.  
A study of selected topics in behavioral neuroscience with emphasis on recent research and theory. May be repeated to a maximum of nine credits. Prereq: Consent of instructor. This course may be elected to fulfill requirements in the psychology and physiology graduate programs. (Same as PGY 767.)

PSY 768 RESIDENCE CREDIT FOR THE MASTER’S DEGREE.  
May be repeated to a maximum of 12 hours. (1-6)

PSY 769 RESIDENCE CREDIT FOR THE DOCTOR’S DEGREE.  
May be repeated indefinitely. (0-12)

PSY 772 TOPICAL SEMINAR IN LEARNING.  
The study of selected topics in the learning area with emphasis on the recent experimental and theoretical literature. May be repeated to a maximum of six credits. Prereq: PSY 550 and consent of instructor.

PSY 776 SEMINAR IN DEPENDENCY BEHAVIOR.  
The course is designed to explore theories of dependency behavior by examining the concept of dependency as it can be applied to the study of various phenomena including alcohol use and abuse; dependence on other psychoactive substances; institutional dependency; dependency in work settings; and poverty and welfare. Prereq: Consent of instructor. (Same as ANT/SOC/BSC 776.)

PSY 778 TOPICAL SEMINAR IN DEVELOPMENTAL PSYCHOLOGY.  
An advanced seminar in selected topics in human development, including cognition, learning, language, personality, socialization, life span issues, and developmental aspects of psychopathology. Prereq: PSY 625 and enrollment in graduate psychology program, or consent of instructor. May be repeated a maximum of six credits.

PSY 779 TOPICAL SEMINAR IN SOCIAL PSYCHOLOGY.  
Each semester some topic in the field of social psychology, such as attitudes and beliefs, structures and function of social groups, social determinants of behavior, leadership, and morale will be studied intensively. May be repeated to a maximum of six credits. Prereq: PSY 444G. (Same as SOC 779.)

PSY 780 PROBLEMS IN PSYCHOLOGY.  
This number is used for topical seminars taught on an experimental basis or covering special material that may not be presented again. May be repeated to a maximum of six credits.

PSY 781 RESEARCH PARTICIPATION.  
Emphasis on the team approach to research. Designed primarily for first year graduate students. May be repeated to a maximum of four credits. Laboratory, two to four hours. Prereq: Enrollment in the graduate program in psychology.

PSY 790 RESEARCH IN PSYCHOLOGY.  
A minimum of three hours per credit a week is required on research conducted in consultation with the instructor. May be repeated as necessary with the approval of the Director of Graduate Studies.

PT 603 PHARMACOLOGY FOR PHYSICAL THERAPY STUDENTS.  
Fundamental concepts of pharmacology and their impact on the physical therapy management of patients. This course focuses on the integration of basic science, research, and clinical intervention. Prereq: Admission to the Physical Therapy Professional program and successful completion of the spring and summer semesters in the first year.

#PT 605 WELLNESS AND SPORTS NUTRITION.  
Emphasis is directed toward nutrition as applied to prevention of disease through lifestyle management and the application of nutrition in exercise and sport. Targeted focus areas are: body composition and energy expenditure, the metabolic basis of weight management, nutrient needs throughout the lifecycle, the metabolic changes associated with obesity, behavioral management of obesity, nutrient metabolism and exercise, water and electrolyte balance during exercise, nutritional ergogenic aids, nutrition-strength and performance enhancement. Prereq: PGY 412G, and BCH 401G or equivalent or consent of instructor. (Same as CNU 605.)

#PT 610 ETHICS IN CLINICAL SCIENCES RESEARCH.  
Students will examine ethical issues in biomedical research using case-study approach. Representative issues addressed may include data selection and retention, plagiarism, scientific review of grants and manuscripts, scientific misconduct, and informed consent. Prereq: Graduate student status. (Same as CD/CLS/CNU/RAS 610.)

PT 625 ADVANCED ASSESSMENT AND MANAGEMENT OF THE PATIENT WITH MUSCULOSKELETAL DISORDERS.  
Assessment and management approaches will be presented. A treatment framework will be developed from assessment approaches. The student will utilize a problem solving approach to select and implement specific therapeutic interventions. Lecture, three hours; laboratory, two hours per week. Prereq: Admission to Physical Therapy and successful completion of the first year or consent of instructor.

PT 628 GERONTOLOGY FOR PHYSICAL THERAPY STUDENTS.  
This course is designed to provide the learner the fundamental concepts of aging which have a profound impact on the care of the geriatric patient. Concepts examined include the physiologic, medical, psychological, and behavioral changes which effect the physical therapy treatment of these patients. Students will conduct a clinical research project involving a geriatric clinic in the Lexington area. Prereq: Admission to the Physical Therapy Professional program and successful completion of the first year.
<table>
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<th>Course Code</th>
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<th>Description</th>
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<tr>
<td>PT 645</td>
<td>RESEARCH AND MEASUREMENT IN PHYSICAL THERAPY.</td>
<td>3</td>
<td>An analysis of various procedures and measuring instruments used in clinical practice and research in physical therapy. Emphasis is placed on the theory, application, and interpretation of the measurements in the evaluation of published materials. Basic statistical techniques and their appropriate use will be presented. Prereq: Admission to the Physical Therapy professional program and to the Graduate School.</td>
</tr>
<tr>
<td>PT 650</td>
<td>DYSFUNCTION OF PERIPHERAL JOINTS.</td>
<td>3</td>
<td>This course is an advanced approach to assessment and therapeutic management of musculoskeletal problems involving peripheral joints. Lecture, two hours; laboratory, two hours per week. Prereq: Consent of instructor.</td>
</tr>
<tr>
<td>PT 651</td>
<td>DYSFUNCTION OF VERTEBRAL JOINTS.</td>
<td>3</td>
<td>This course concentrates on advanced theories and techniques of assessment and therapeutic management of musculoskeletal problems of the back. Lecture, two hours; laboratory, two hours per week. Prereq: Consent of instructor.</td>
</tr>
<tr>
<td>PT 654</td>
<td>MECHANISMS OF MOTOR CONTROL.</td>
<td>3</td>
<td>This advanced course explores current knowledge regarding the neurophysiological mechanisms involved in motor control. Prereq: Consent of instructor.</td>
</tr>
<tr>
<td>PT 676</td>
<td>ELECTROPHYSIOLOGICAL TESTING AND THERAPEUTICS.</td>
<td>2</td>
<td>The student is introduced to the principles of electricity, how it affects the muscle and nerve, its use in physical therapy for patient assessment and management, and its safety aspects. Lectures and laboratory exercises are included. Prereq: Admission to the Physical Therapy Professional program and successful completion of the first year.</td>
</tr>
<tr>
<td>PT 686</td>
<td>SPECIALTY ELECTIVES.</td>
<td>2-4</td>
<td>Introduction to emerging specialty areas within the physical therapy profession. Students will select multiple specialty areas under faculty direction. Prereq: Admission to the Physical Therapy Professional program and successful completion of the first year or consent of instructor.</td>
</tr>
<tr>
<td>PT 695</td>
<td>INDEPENDENT STUDY IN PHYSICAL THERAPY.</td>
<td>1-3</td>
<td>Independent work devoted to specific problems or area of interest in physical therapy. Work to be supervised by a graduate faculty member proficient in the area under study. May be repeated to a maximum of six credits. Prereq: Consent of instructor.</td>
</tr>
<tr>
<td>PT 748</td>
<td>MASTER'S THESIS RESEARCH.</td>
<td>0</td>
<td>Half-time to full-time work on thesis. May be repeated to a maximum of six semesters. Prereq: All course work toward the degree must be completed.</td>
</tr>
<tr>
<td>PT 768</td>
<td>RESIDENCE CREDIT FOR THE MASTER'S DEGREE.</td>
<td>1-6</td>
<td>May be repeated to a maximum of 12 hours.</td>
</tr>
<tr>
<td>PT 770</td>
<td>SEMINAR IN PHYSICAL THERAPY.</td>
<td>3</td>
<td>Each semester a contemporary topic in the field of physical therapy will be studied intensively. Lecture, two to three hours per week; laboratory, zero to two hours per week. May be repeated to a maximum of nine credits.</td>
</tr>
<tr>
<td>PT 805</td>
<td>NORMAL FUNCTIONAL ANATOMY.</td>
<td>3</td>
<td>A regional study of the normal functional aspects of the neuromusculoskeletal systems, including the basic principles of biomechanics and human locomotion. This course runs during the entire 12-week summer term. Prereq: Admission to the Physical Therapy professional program and successful completion of the spring semester (first year of the professional program).</td>
</tr>
<tr>
<td>PT 815</td>
<td>BASIC CLINIC SKILLS.</td>
<td>4</td>
<td>Theory, techniques, rationale, physiological effects, and indications of basic physical therapeutic procedures of hydrotherapy and massage, muscle testing and goniometry evaluations, gait analysis and muscle function are presented in lecture. Techniques are demonstrated and practiced in laboratory. This course runs during the entire 12-week summer term. Prereq: Admission to the Physical Therapy Professional program and successful completion of the spring semester (first year of the professional program).</td>
</tr>
<tr>
<td>PT 821</td>
<td>ASSESSMENT AND MANAGEMENT OF PATIENTS WITH ACUTE CARE DISORDERS.</td>
<td>2</td>
<td>The theoretical and clinical framework for physical therapy assessment and management of patients with acute care disorders, emphasizing those of the integumentary system, (i.e., wounds, burns, etc.) are discussed. These injuries will include open wounds as well as burns and their implications to the integumentary system. The student will utilize a problem solving approach to select and implement tests and measurements as well as therapeutic interventions. This course runs during the entire 12-week summer term. Prereq: Admission to the Physical Therapy professional program and successful completion of the first year.</td>
</tr>
<tr>
<td>PT 826</td>
<td>ORTHOTICS/PROSTHETICS.</td>
<td>4</td>
<td>This course will prepare the student to perform the physical therapy evaluation and provide patient management as part of a prosthetic or orthotic team. Lecture, two hours; laboratory, four hours per week. Prereq: Admission to the Physical Therapy professional program and successful completion of the first year.</td>
</tr>
<tr>
<td>PT 827</td>
<td>SPINAL CORD REHABILITATION TECHNIQUES.</td>
<td>2</td>
<td>Prepare the student as a participating member of the rehabilitation team with an emphasis on the role of the physical therapist. Patient evaluation, physical restoration, and vocational training for a variety of long-term illnesses are presented, discussed, demonstrated, and clinical techniques practiced. Prereq: Admission to the Physical Therapy professional program and successful completion of the first year.</td>
</tr>
<tr>
<td>PT 831</td>
<td>CLINICAL NEUROPHYSIOLOGY.</td>
<td>2</td>
<td>The study of the regional organization of the brain and spinal cord, the ways in which they connect and how these connectivities influence human behavior with emphasis on motor behavior. The effect of disease states on normal brain and spinal cord function will be discussed. Prereq: Admission to the Physical Therapy professional program and successful completion of the spring and summer semesters in the first year.</td>
</tr>
<tr>
<td>PT 834</td>
<td>INTRODUCTION TO PHYSICAL THERAPY AND BIOETHICS.</td>
<td>3</td>
<td>An orientation to the profession of physical therapy including history, professional organization, role in health care, elementary patient care skills, use of the medical library and professional documentation. Bioethics will be introduced in relationship to moral issues in health care. Prereq: Admission to the Physical Therapy professional program.</td>
</tr>
<tr>
<td>PT 835</td>
<td>CLINICAL CLERKSHIP I.</td>
<td>1</td>
<td>The student observes patient treatment by experienced staff members and is supervised in the performance of elementary procedures involved in patient care. Offered on a pass-fail basis only. This course runs during the entire 12-week summer term. Prereq: Admission to the Physical Therapy professional program and successful completion of the spring semester (first year of the professional program).</td>
</tr>
<tr>
<td>PT 836</td>
<td>HUMAN GROWTH AND DEVELOPMENT.</td>
<td>2</td>
<td>In this course the on-going development of humans from birth to death is discussed. Aging is an irreversible, cumulative, predictable, universal process. The continuum of birth to death with the characteristics of onset, integration, disintegration as they relate to function are emphasized. Prereq: Admission to the Physical Therapy professional program and successful completion of the spring and summer semesters (first year of professional program).</td>
</tr>
<tr>
<td>PT 837</td>
<td>CLINICAL CLERKSHIP II.</td>
<td>3</td>
<td>Under competent supervision, students participate clinically in the care of patients in a variety of extramural facilities: general, children’s and Veteran’s Administration hospitals, and special out-patient facilities. Offered on a pass-fail basis. Prereq: Admission to the Physical Therapy professional program and successful completion of the first year.</td>
</tr>
<tr>
<td>PT 838</td>
<td>CLINICAL CLERKSHIP III.</td>
<td>3</td>
<td>Continuation of PT 837 includes a unit of study planning and coordination of hospital and community services in comprehensive care of patients by way of seminars and case presentations. Offered on a pass-fail basis only. Clinic, 170 hours. This course runs during the entire 12-week summer term. Prereq: Admission to the Physical Therapy professional program and successful completion of the first year.</td>
</tr>
<tr>
<td>PT 839</td>
<td>CLINICAL INTERNSHIP IN PHYSICAL THERAPY.</td>
<td>9-16</td>
<td>Supervised internship through which the student acquires understanding and skill in physical therapy procedures. Offered on a pass-fail basis. Sixty clock hours equal one credit hour. Prereq: Admission to the Physical Therapy professional program and successful completion of the second year.</td>
</tr>
<tr>
<td>PT 846</td>
<td>MEDICAL AND PHYSICAL THERAPY MANAGEMENT OF ORTHOPEDIC PROBLEMS.</td>
<td>3</td>
<td>An introduction to medical procedures, including history, physical exam, laboratory data, radiographic film and medical and physical therapy management of orthopedic problems, including fractures, soft tissue injuries, scoliosis, joint replacements, muscle transplants and tendon repairs, will be presented. Prereq: Admission to the Physical Therapy professional program and successful completion of the first year.</td>
</tr>
<tr>
<td>PT 847</td>
<td>MEDICAL AND PHYSICAL THERAPY MANAGEMENT OF NEUROLOGICAL PROBLEMS.</td>
<td>3</td>
<td>Medical and physical therapy management of neurological problems, including the neurological examination, seizures, degenerative and neurological diseases, will be presented. Lecture/laboratory, patient contact, and case study formats will be used. Lecture, two hours; laboratory, two hours. Prereq: Admission to the Physical Therapy professional program and successful completion of the first year.</td>
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</table>

**Key:** # = new course  * = course changed  † = course dropped
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PT 854</td>
<td>BIOLOGY OF DISEASE.                                                          (3)</td>
<td>A study of the concept and process of disease. May be repeated for a total of five credits. Prereq: Admission to the Physical Therapy professional program and successful completion of the spring and summer semesters (first year of professional program). (Same as HSE 854.)</td>
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<tr>
<td>PT 856</td>
<td>THERAPEUTIC EXERCISE I.                                                      (2)</td>
<td>This introductory course provides an overview of therapeutic exercise and its relation to patient management, and development of skill in basic therapeutic exercise approaches for improving muscle performance, relaxation and mobilization. Lecture and laboratory sessions are included. This course runs during the entire 12-week summer term. Prereq: Admission to the Physical Therapy professional program and successful completion of the spring semester in the first year.</td>
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<tr>
<td>PT 858</td>
<td>ADVANCED ASSESSMENT AND MANAGEMENT OF THE PEDIATRIC PATIENT.                (3)</td>
<td>Includes the normal and abnormal development of movement and its relation to treatment of children with central nervous system deficits. Medical and physical therapy management of patients with mental retardation and oral control problems are also presented in lecture and laboratory. Prereq: Admission to the Physical Therapy professional program and successful completion of the first year.</td>
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<tr>
<td>PT 866</td>
<td>ELECTROMODALITIES.                                                           (1)</td>
<td>Theory and techniques of electromodalities are presented. Techniques are demonstrated and practiced in laboratory. Lab, two hours. Prereq: Admission to the Physical Therapy professional program and successful completion of the spring semester (first year of professional program).</td>
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<tr>
<td>*PT 877</td>
<td>CARDIO-RESPIRATORY THERAPY.                                                 (2)</td>
<td>A combined lecture, laboratory series dealing with the mechanics and physiology of normal cardio-respiratory functions; medical and surgical pathologies; and physical theory evaluation and treatment techniques for respiratory problems, cardiac arrhythmias, myocardial infarction rehabilitation, and various cardiac stress tests. Prereq: Admission to the Physical Therapy Professional program and successful completion of the first year.</td>
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<tr>
<td>PT 887</td>
<td>INTRODUCTION TO PHYSICAL THERAPY MANAGEMENT.                                (1)</td>
<td>An introduction to basic management techniques including purpose, goals and objectives; contracts, task statement and analysis; position descriptions; medicaid; quality assurance; placement services. This course runs during the entire 12-week summer term. Prereq: Admission to the Physical Therapy professional program and successful completion of the first year.</td>
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<tr>
<td>PT 888</td>
<td>ADVANCED PHYSICAL THERAPY MANAGEMENT.                                       (3)</td>
<td>Emphasis is placed on operational aspects of physical therapy department including relationship to total facility operation, designing and equipping a department, contracts, salaries, fees, personnel policies, records, data processing, budget process, medical-legal implication, continuing education, and the consultative process. Prereq: PT 887 or consent of instructor.</td>
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<tr>
<td>PT 898</td>
<td>INDEPENDENT STUDY.                                                          (1-4)</td>
<td>The student will pursue in-depth a particular aspect of physical therapy or related fields. May be repeated to a maximum of four credits. Prereq: Consent of instructor.</td>
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