PMC 5976. Directed Study. 1-4 Hours.
Offers independent work under the direction of members of the department on a chosen topic.

PMC 5978. Independent Study. 1-4 Hours.
Offers independent work under the direction of members of the department on a chosen topic.

PMC 5984. Research. 1-4 Hours.
Offers students an opportunity to conduct research under faculty supervision.

PMC 6145. Combinatorial Chemistry in Drug Discovery. 4 Hours.
Introduces the rapidly evolving science of combinatorial chemistry and high throughput synthesis as applied to the area of drug discovery. Investigates automation and analysis in organic synthesis, along with the informatics of data handling, the design of diverse screening libraries, and the role of structure-aided drug design.

PMC 6210. Pharmacy Benefit Management: Operations and Practices. 4 Hours.
Introduces the history, growth, current operating practices, and future challenges of organizations commonly referred to as pharmacy benefit managers (PBMs). Focuses on PBMs (Ex. Express Scripts, CVS Caremark, Medco Health Solutions) but also examines methods to control medication-related costs by other organizations, such as Medicare and Medicaid. Highlights traditional approaches to managing drug costs (pharmacy and therapeutics committees, drug utilization review, and preferred drug lists or formularies) and discusses their pros and cons. Explores PBMs' relationships with pharmaceutical companies and other key stakeholders. Offers students an opportunity to learn about the pharmacy benefits management industry and how insurance companies, health maintenance organizations (HMOs), Medicare, and Medicaid deal with rising costs of prescriptions. Analyzes how to reduce costs without compromising quality of care or delaying treatment.

Examines the process of planning, collecting, analyzing, and reporting data from drug development studies. Focuses on the goals of each phase (1-4) of the clinical drug development process and how to achieve these objectives within the confines of the FDA regulations and ICH guidelines. Covers requirements in other countries, including the UK Data Protection Act, issues related to the differences between the development of drugs for oncologic or AIDS indications compared to traditional drugs, cultural influences, current standards of therapy, the need for validated tools, and failure analyses.

PMC 6220. Drug Marketing and Distribution. 4 Hours.
Introduces methods employed by manufacturers before, during, and immediately after the launch of a new medication. Presents specific areas such as publication of new medical literature, interactions with key opinion leaders, and lobbying efforts to gain a favorable opinion of the new product. Addresses the role of medication distribution systems throughout multiple healthcare settings and their potential effects on these efforts. Offers students an opportunity to learn about the relationships that pharmaceutical companies have with multiple organizations, including the healthcare system as a whole, medical journals, managed care groups, and organizations that directly distribute their products. Focuses on the effect that these relationships have on the prescribing of medications. Discusses the current status of advertising and promotion of medications.

PMC 6230. Healthcare Information and Data Systems. 4 Hours.
Explores the administrative and research applications of information technology in today's healthcare delivery system. Surveys the major "players" in healthcare from an information systems perspective, focusing on concepts, processes, and challenges. Discusses emerging trends and issues in the field of healthcare informatics, including the complex social and legal implications. Explores the legal and ethical standards needed to ensure statutory compliance, patient confidentiality, and information security. Requires general understanding of information systems—including processes, concepts, terminology, and basic hands-on computer experience—as well as a fundamental understanding of the key components of the healthcare delivery system.

PMC 6250. Pharmacogenetics in Drug Metabolism. 4 Hours.
Offers a historical perspective on the emergence of pharmacogenetics as a new field, as well as the rationale, aims, and significance of pharmacogenetics. Explores the pharmacology of human variation in drug response and the drug dose-response relationships in pharmacogenetics. Discusses quantitation of phenotypic resemblance in relatives of different degrees, twin studies in pharmacogenetics, and a mathematical treatment of heterogeneity in human drug response. Covers a survey of experimental models developed for pharmacogenetic research and an introduction and orientation to PharmGKB, the pharmacogenetics knowledge base on the Internet.

PMC 6252. Clinical and Molecular Pharmacogenetics. 4 Hours.
Focuses on genetic factors in drug therapy, including classification of pharmacogenetic phenomena. Topics include the integration of new technologies with drug development, including electrophoresis-based fluorescent dideoxy-terminator sequencing, mass spectrometry for protein-based approaches in functional genomics, and a clinical molecular scanner to study human proteome complexity. Discusses polygenic effects in pharmacogenetics and a summary of common themes and applications.

PMC 6253. Bioethical Issues of Pharmacogenetics. 4 Hours.
Explores the major bioethical issues facing companies involved in pharmacogenetics research, including human tissue collection, analysis, probable commodification, informed consent issues, privacy, and the status of the human embryo. Discusses examples of corporate strategies used to address these issues in the United States and abroad (including ethics committees and ethics consultants). Examines legal and ethical issues in using human tissue and stem cells for commercial research and reviews intellectual property issues associated with using research results derived from donated tissue. Studies practical recommendations to the researcher and biotechnology company on how best to balance commercial interests with the rights of a donor of tissue or stem cells. Is there a bioethicist in the company? (And should there be?).

PMC 6961. Internship. 1-4 Hours.
Provides students with an opportunity for internship work. May be repeated without limit.

PMC 6962. Elective. 1-4 Hours.
Offers elective credit for courses taken at other academic institutions. May be repeated without limit.

PMC 6964. Co-op. 0 Hours.
Provides eligible students with an opportunity for work experience.

PMC 6966. Practicum. 1-4 Hours.
Provides eligible students with an opportunity for practical experience.
**Pharmacy - Medicinal Chemistry - CPS (PMC)**

**PMC 6970. Seminar. 1-4 Hours.**
Offers an in-depth study of selected topics.

**PMC 6980. Capstone. 1-4 Hours.**
Offers students an opportunity to integrate their course work, knowledge, and experiences into a capstone project.

**PMC 6983. Topics. 1-4 Hours.**
Covers special topics in pharmacy-medicinal chemistry. May be repeated without limit.

**PMC 6995. Project. 1-4 Hours.**
Focuses on in-depth project in which a student conducts research or produces a product related to the student's major field. May be repeated without limit.