Pharmaceutical Sciences (PHRMSCI)

Courses

PHRMSCI 1. Introduction to Pharmaceutical Sciences. 1 Unit.
Introduction to the scientific disciplines that comprise the multidisciplinary field of pharmaceutical sciences. Students gain an appreciation of basic concepts in the relevant physical, biological, and clinical sciences and how they fit together in the search for new medicines.

Grading Option: Pass/no pass only.

PHRMSCI 42. Life 101. 1 Unit.
Covers the latest scientific work on the impact of nutrition, exercise, and lifestyle choices on mental and physical health. The course will motivate students to make positive changes by fostering personal growth. Course may be offered online.

PHRMSCI 90. Speaking about Science. 4 Units.
Introductory courses in research, composition, organization, and delivery of informative and persuasive speeches for various purposes, including scientific talks. Includes strategies for reducing speaker apprehension.

PHRMSCI 120. Human Physiology. 4 Units.
Focuses on anatomy and physiology—organism structure and function, respectively—as they relate to human diseases and their treatment. Prepares students for more advanced studies in pharmacology, medicinal chemistry, biopharmaceutics, and other disciplines encompassing pharmaceutical sciences.
Prerequisite: BIO SCI 99.
Overlaps with BIO SCI E109.

PHRMSCI 120L. Human Physiology Lab. 3 Units.
Through an active learning environment, provides practical knowledge of topics covered in Human Physiology as they relate to health care professions. Participation in group projects that strengthen basic laboratory skills and teach students to work more efficiently in a team.
Corequisite: PHRMSCI 120.
Prerequisite: BIO SCI 194S or BIO SCI E109.
Overlaps with BIO SCI E112L.

PHRMSCI 170A. Molecular Pharmacology I. 4 Units.
Molecular basis of drug-receptor action at the molecular and cellular levels. Structure-function of drug targets emphasizing enzymes, ion channels, and membrane transport proteins. Understanding how the drugs' mechanisms of action contribute to the development of more efficacious and safer drugs.
Course may be offered online.
Corequisite: CHEM 51C or CHEM H52C.
Prerequisite: (CHEM 51C or CHEM H52C) and (PHRMSCI 120 or BIO SCI E109).
Restriction: Pharmaceutical Science majors have first consideration for enrollment.

PHRMSCI 170B. Molecular Pharmacology II. 4 Units.
Mechanism-based overview of pharmacology and therapeutic drugs in the fields of autonomic nervous system, central nervous system, and antimicrobials.
Prerequisite: PHRMSCI 170A.

PHRMSCI 171. Physical Biochemistry. 4 Units.
Thermodynamics and kinetic fundamentals as applied to problems relevant to pharmaceutical sciences such as receptor/enzyme-ligand interactions. Fundamentals of biophysical methods used in the pharmaceutical sciences including structure determination and biomolecular spectroscopy.
Prerequisite: MATH 2B and PHYSICS 3C and (CHEM 1C or CHEM H2C) and BIO SCI 99.
Restriction: Pharmaceutical Sciences majors have first consideration for enrollment.
PHRMSCI 172. Topics in Pharmaceutical Sciences. 2 Units.
Presents information about various fields of research, study, careers, and graduate school opportunities in pharmaceutical sciences. Taught by guest lecturers from various disciplines including 199 research course faculty. Helps Pharmaceutical Sciences students select electives appropriate to their future goals.
Prerequisite: BIO SCI 99 and as a prerequisite or corequisite: CHEM 51C or CHEM H52C.

PHRMSCI 173. Pharmacotherapy. 4 Units.
An exploration of the clinical application of medications to selected disease states. Focus is on an understanding of underlying principles of pharmacology and how this knowledge can be applied to treatment of diseases.
Prerequisite: Prerequisite or corequisite: PHRMSCI 170B.

PHRMSCI 174. Biopharmaceutics and Nanomedicine. 4 Units.
Introduces theories and tools of new drug formulations. Particularly new novel therapeutics based on biological materials, pathological characteristics utilized to achieve the maximum efficacy and specificity, and drug delivery systems based on emerging nanotechnology are extensively discussed.
Prerequisite: PHRMSCI 170B.
Restriction: Pharmaceutical Sciences majors have first consideration for enrollment.

PHRMSCI 174L. Biopharmaceutics & Nanomedicine Lab. 3 Units.
Introduction to cancer drug screening using cellular models and confirmation of comprehensive therapeutic efficacy using a live animal model. Includes basic cell culture, cytotoxicity assays, cell analysis, drug circulation test, and tumor eradication and imaging experiments.
Prerequisite: PHRMSCI 170B and BIO SCI 100.

PHRMSCI 174LW. Biopharmaceutics Laboratory. 3 Units.
Introduction to cancer drug screening using cellular models and confirmation of comprehensive therapeutic efficacy using a live animal model. Includes basic cell culture, cytotoxicity assays, cell analysis, drug circulation test, and tumor eradication and imaging experiments.
Prerequisite: PHRMSCI 170B. Satisfactory completion of the Lower-Division Writing requirement.

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PHRMSCI 176. Ethics Conduct of Research. 2 Units.
Covers the ethical responsibilities of biomedical scientists. Topics include, as discussions and case studies, the high standards of science, the responsible conduct of research, animal experimentation, and clinical trials as they relate to the pharmaceutical sciences.

PHRMSCI 177. Medicinal Chemistry. 4 Units.
An introduction of the basics of drug activity and mechanisms. Strategies used to identify lead compounds such as natural product chemistry, combinatorial chemistry, molecular modeling, and high-through put screening. Relationship of molecular structure to pharmacological activity.
Prerequisite: CHEM 51A and CHEM 51B and CHEM 51C and (BIO SCI 98 or CHEM 128).
Same as CHEM 177.
Restriction: Pharmaceutical Science majors have first consideration for enrollment.

PHRMSCI 177L. Medicinal Chemistry Laboratory. 2 Units.
An introduction of the basics of drug activity and mechanisms. Strategies used to identify lead compounds such as natural product chemistry, combinatorial chemistry, molecular modeling, and high-through put screening. Relationship of molecular structure to pharmacological activity. Materials fee.
Corequisite: PHRMSCI 177.
Prerequisite: CHEM 51A and CHEM 51B and CHEM 51C and BIO SCI 100 and (BIO SCI 98 or CHEM 128).
Same as CHEM 177L.
Restriction: Pharmaceutical Science majors have first consideration for enrollment.
PHRMSCI 177LW. Medicinal Chemistry Lab. 2 Units.
An introduction of the basics of drug activity and mechanisms. Strategies used to identify lead compounds such as natural product chemistry, combinatorial chemistry, molecular modeling, and high-throughput screening. Relationship of molecular structure to pharmacological activity.

Corequisite: CHEM 177.
Prerequisite: CHEM 51A and CHEM 51B and CHEM 51C and (BIO SCI 98 or CHEM 128) and BIO SCI 100.
Same as CHEM 177LW.

PHRMSCI 197. Professional Internship. 4 Units.
Provides students with opportunity to develop leadership and professional skills necessary for competitive placement in their chosen industry. Students gain new and field-specific skills outside the classroom environment while participating in a supervised internship for a total of 100 hours.

Grading Option: Pass/no pass only.
Repeatability: May be repeated for credit unlimited times.
Restriction: Seniors only.

PHRMSCI 198. Independent Study in Pharmaceutical Sciences. 1-4 Units.
Students interested in independent study should arrange with a faculty member to sponsor and supervise such work. A time commitment of three hours per week per unit is expected. A written report is required at the end of each quarter.

Repeatability: May be taken for credit for 4 units.

PHRMSCI 199. Undergraduate Research. 1-4 Units.
Original research in the laboratory of Pharmaceutical Sciences faculty. Attendance at regular research group meetings is also generally expected, and a quarterly written report is required. Strongly recommended for students considering research careers and/or graduate degree programs.

Repeatability: May be repeated for credit unlimited times.

PHRMSCI H199. Honors Research in Pharmaceutical Sciences. 4 Units.
Undergraduate honors research in Pharmaceutical Sciences. A student time commitment of 10-15 hours per week is required.

Repeatability: May be repeated for credit unlimited times.

PHRMSCI 223. Biological Macromolecules. 4 Units.
Introduction to nucleic acid and protein structure, dynamics, and function. Topics include analytical methods, molecular evolution, folding, and catalysis.

Same as CHEM 223.

PHRMSCI 250A. Current Topics in Pharmaceutical Sciences. 1 Unit.
Intended to expose students to the primary literature and current research in the field of Pharmaceutical Sciences. Students analyze and present information for discussion. Guest speakers from academia and industry may participate throughout the quarter.

Grading Option: Satisfactory/unsatisfactory only.
Repeatability: May be taken for credit 3 times.
Restriction: MCP Gateway Program students only.

PHRMSCI 250B. Current Topics in Pharmaceutical Sciences. 1 Unit.
Intended to expose students to the primary literature and current research in the field of Pharmaceutical Sciences. Students analyze and present information for discussion. Guest speakers from academia and industry may participate throughout the quarter.

Prerequisite: PHRMSCI 250A.
Grading Option: Satisfactory/unsatisfactory only.
Repeatability: May be taken for credit 3 times.
Restriction: MCP Gateway Program students only.
PHRMSCI 250C. Current Topics in Pharmaceutical Sciences. 1 Unit.
Intended to expose students to the primary literature and current research in the field of Pharmaceutical Sciences. Students analyze and present information for discussion. Guest speakers from academia and industry may participate throughout the quarter.

Prerequisite: PHRMSCI 250B.

Grading Option: Satisfactory/unsatisfactory only.

Repeatability: May be taken for credit 3 times.

Restriction: MCP Gateway Program students only.

PHRMSCI 270. Advanced Pharmacology. 4 Units.
Provides a mechanism-based overview of pharmacology with strong emphasis on clinical application of pharmacology. Students will learn the most recent advances in pharmacology as they relate to drug discovery, development, and clinical application.

Restriction: Graduate students only.

PHRMSCI 272. Special Topics in Pharmaceutical Sciences. 2-4 Units.
Reserved for current topics of particular interest in areas of pharmaceutical sciences that are not covered by other courses. The subject will vary from year to year, highlighting, for example, significant emerging fields or highly specialized but vital research areas.

Repeatability: Unlimited as topics vary.

Restriction: Graduate students only.

PHRMSCI 274. Nanomedicine. 4 Units.
Students will learn the current challenges in administering drugs to treat highly challenging diseases, the background theories of drug and gene delivery systems, and apply their knowledge in designing innovative forms of therapeutics formulations.

Restriction: Graduate students only.

PHRMSCI 277. Medicinal Chemistry. 4 Units.
Fundamentals of medicinal chemistry covering diverse aspects of drug design, discovery, synthesis, and development. Molecular basis of drug action with an emphasis on the structure-to-function continuum.

PHRMSCI 278. Stem Cell Therapy. 4 Units.
Introduces new paradigms in regenerative medicine particularly those that involve stem cells, and emerging molecular, nano- and micro-engineered tools for in vivo imaging that is critical for studying and monitoring regeneration.

(Design units: 0)

Same as BME 216.

Restriction: Graduate student only.

PHRMSCI 280. Graduate Research. 1-12 Units.
Supervised original research or investigation under the direction of an individual faculty member.

Repeatability: May be repeated for credit unlimited times.

PHRMSCI 298. Research Seminar. 2 Units.
Presentation and discussion of current problems and methods in teaching and research in pharmaceutical sciences.

Repeatability: May be repeated for credit unlimited times.

Restriction: Graduate students only.

PHRMSCI 399. University Teaching. 1-4 Units.
Limited to Teaching Assistants.

Grading Option: Satisfactory/unsatisfactory only.

Repeatability: May be repeated for credit unlimited times.