HBH 501: Principles of Pharmacology
Basic principles and mechanism of drug distribution, absorption, metabolism and elimination. Principles of chemical carcinogenesis and tumor promotion. Autonomic, Smooth Muscle and CNS Pharmacology. Pharmacology of specific drugs of historical interest including alcohol, antibiotics, aspirin, nicotine and morphine. Review of anticoagulants & thrombolytic agents, antiparasitic, and drugs for the treatment of allergic conditions and gout. Includes discussion of specific cases taken from clinical practice and a presentation based on a set of selected readings. Crosslisted with BCP 401
Fall, 4 credits, Letter graded (A, A-, B+, etc.)

HBH 502: Advanced Principles of Pharmacology
Spring, 4 credits, Letter graded (A, A-, B+, etc.)

HBH 510: Pharmacology: Principles & Practice
Introduces the basic principles of pharmacology and covers drugs with action in the autonomic and central nervous systems. Includes the discussion of specific cases taken from the clinical practice.
2 credits, Letter graded (A, A-, B+, etc.)

HBH 511: Pharmacology: Principles & Practice
Continuation of HBH 510. Covers the action of drugs acting in the cardiovascular, respiratory, gastrointestinal, renal, and endocrine systems, as well as anticoagulant, anti-inflammatory, anti-microbial and antineoplastic agents. Includes the discussion of specific cases taken from the clinical practice.
4 credits, Letter graded (A, A-, B+, etc.)

HBH 531: Principles of Medical Pharmacology
Basic principles that underlie actions of drugs on physiological processes with particular reference to their therapeutic and toxic actions. For medical and dental students.
5 credits, Letter graded (A, A-, B+, etc.)

HBH 545: Biochemical Laboratory Techniques
Introduces theoretical principles and experimental techniques used in modern biochemical research. Lectures and homework assignments explore topics in basic molecular and cellular techniques. Prerequisites: Admission to Health Sciences Center program. Fall, 1 credit, Letter graded (A, A-, B+, etc.) May be repeated 2 times FOR credit.

HBH 546: Biochemical Laboratory Techniques
Continuation of HBH545. Lectures and demonstrations present topics in chromatography, mass spectrometry, protein sequencing, sedimentation, electrophoresis, ligand binding, basic pharmacological methods and statistical analysis of data. Includes procedures for the safe handling of toxic chemicals and radioisotopes. Prerequisites: Permission of instructor, admission to graduate Health Sciences Center program. Spring, 1 credit, Letter graded (A, A-, B+, etc.) May be repeated 2 times FOR credit.

HBH 553: Signal Transduction
The course will emphasize fundamental concepts in signal transduction (e.g. membrane-protein and protein-protein interactions, amplification of signals), and individual lectures will apply these concepts at each stage of cell signalling from the cell surface to the nucleus, where signal transduction leads to specific gene expression. Crosslisted as HBY 553 or HBH 553. Prerequisites: Admission to Graduate Health Sciences Center Program, Spring odd years, 3 credits, ABCF grading
3 credits, Letter graded (A, A-, B+, etc.)

HBH 560: Proposal Preparation in Regulatory Biology
A literature-based course focusing on major research areas in molecular and biochemical pharmacology. The first part of the course will expose students to a series of examples of recent grant proposals. The second part of the course will feature student presentations of their research proposals. Due to the coordination of this course with the Qualifying Exam, registration is limited to Pharmacology graduate students.
Fall and Spring, 2 credits, S/U grading
May be repeated 2 times FOR credit.

HBH 580: Selected Topics in Pharmacology
Student seminars and readings on topics arranged through consultation with staff.
0-1 credits, Letter graded (A, A-, B+, etc.) May be repeated for credit.

HBH 590: Pharmacology Seminars
Advanced research seminars by staff and visiting lecturers. Prerequisites: Full-time pharmacology graduate status
Fall and Spring, 0-1 credits, S/U grading
May be repeated for credit.

HBH 599: Graduate Research in Pharmacological Sciences
Original research projects under faculty supervision. Prerequisites: Full-time pharmacology graduate status
Fall and Spring, 0-1 credits, Letter graded (A, A-, B+, etc.) May be repeated for credit.

HBH 601: Practicum in Teaching Pharmacology
Practical experience and instruction in the teaching of pharmacology carried out under faculty orientation and supervision. Prerequisites: Full-time pharmacology graduate status
Fall and Spring, 0-1 credits, Letter graded (A, A-, B+, etc.)
May be repeated for credit.

HBH 631: Graduate Pharmacology I
Basic principles of pharmacology will be discussed including pharmacokinetics and pharmacodynamics in both normal and various disease states. Major problems in human pharmacology will be considered including obesity, diabetes, hypertension and heart failure. Underlying physiology as well as pathophysiological background will be presented. Drug design and development will be discussed from both scientific and socioeconomic perspectives. Prerequisites: Graduate Biochemistry, BMO 520; Molecular Genetics, MCB 503; Graduate Cell Biology BCD 656; or consent of instructor.
Fall and Spring, 3 credits, Letter graded (A, A-, B+, etc.)
May be repeated 2 times FOR credit.

HBH 632: Graduate Pharmacology II
This course introduces second-year graduate students to chemotherapy agents used to combat bacterial and viral infections as well as cancers. The course develops a detailed understanding of the strategies involved in identifying drug targets in these two diverse therapeutic settings. The antibacterial lectures emphasize the problem of drug resistance and the need to develop new agents to combat resistant organisms. The anti-cancer lectures begin with a comprehensive analysis of the molecular basis of cellular transformation leading to neoplastic disease. Lectures on cancer therapy emphasize the contrast between conventional cytotoxic chemotherapy and novel therapeutic approaches guided by recent developments in cancer research. Novel computational biology and structural biology approaches are featured throughout the course. Each student is expected to make two formal journal-club style presentations during the course and to actively participate in group discussion.

Prerequisites: Graduate biochemistry, BMO 520; Molecular Genetics, MCB 503; Graduate Cell Biology BCD 656; Graduate Pharmacology I, HBH 631

Spring, 0-3 credits, Letter graded (A, A-, B+, etc.)

May be repeated 2 times FOR credit.

**HBH 655: Neuropharmacology**

An advanced course for graduate students interested in developing an understanding of neuropharmacology and research on this topic. Following a general introduction to the nerve cell structure, synaptic and chemical transmission, three themes receptors, receptors as channels, and G-protein-coupled receptors are developed. Recent advances in cell and molecular biology provide the framework for instruction and discussion. This course is offered as both HBH 655 and BNB 655.

Prerequisite: Admission to Graduate Health Sciences Center Program.

Spring, 3 credits, Letter graded (A, A-, B+, etc.)

**HBH 699: Dissertation Research in Campus**

Original investigation undertaken as part of the Ph.D. program under supervision of thesis adviser and committee. Prerequisite: Advancement to candidacy (G5); permission of thesis advisor. Major portion of research must take place on SBU campus, at Cold Spring Harbor, or at the Brookhaven National Lab.

Prerequisite: Full-time pharmacology graduate status

Fall, 0-9 credits, S/U grading

May be repeated for credit.