Biomedical Sciences (BMS)

BMS 40196 INDIVIDUAL INVESTIGATION IN BIOMEDICAL SCIENCES (ELR) 1-3 Credit Hours
(May be repeated for up to 6 credit hours) Research study under the direction of a BMS faculty mentor. Students majoring in biology (BSCI), biotechnology (BTEC), chemistry (CHEM), integrated life sciences (ILS) and physics (PHY) majors are eligible to enroll in this course, but must have 18 credit hours in their major completed.
Prerequisite: Minimum overall 2.750 GPA; and departmental and faculty mentor approvals required.
Schedule Type: Individual Investigation
Contact Hours: 3-9 other
Grade Mode: Standard Letter
Attributes: Experiential Learning Requirement

BMS 50701 CLINICAL NEUROANATOMY 3 Credit Hours
(Slashed with BMS 70701) (Cross-listed with PSYC 43001, PSYC 53001 and PSYC 73001) Course examines the anatomical organization of the human brain, emphasizing functional aspects of various neural systems, neuroimaging and topics of clinical relevance. Students must have a conceptual understanding of central nervous system organization and memorization of specific neural structures and pathways, as well as knowledge of the impact of structure and systems dysfunction.
Prerequisite: Graduate standing and special approval.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

BMS 50702 CURRENT TECHNIQUES IN BEHAVIORAL NEUROSCIENCE 3 Credit Hours
(Slashed with BMS 70702) (Cross-listed with PSYC 43002, PSYC 53002 and PSYC 73002) Course details current and advanced techniques used in behavioral neuroscience research. Emphasis is placed on understanding the theory behind each technique, and its use in understanding the neural mechanisms of behavior. Detailed protocols for each technique are also covered.
Prerequisite: Graduate standing and special approval from instructor.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

BMS 50703 NEURAL MECHANISMS OF LEARNING AND MEMORY 3 Credit Hours
(Slashed with BMS 70703) (Cross-listed with PSYC 43003, PSYC 53003 and PSYC 73003) Course examines the neural and molecular mechanisms underlying learning and memory formation. Covers cellular mechanisms of learning, including long-term potentiation and basic electrophysiology in invertebrate and mammalian preps. Transcriptional and post-translational modifications required for learning and memory formation, genomic signaling and protein synthesis. Also covers structural changes of neurons associated with memory formation, and the different behavioral methods for studying memory.
Prerequisite: Graduate standing.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

BMS 60196 INDIVIDUAL INVESTIGATION 1-3 Credit Hours
(Repeatable once for credit) Directed investigation under supervision of faculty member in biomedical sciences and with prior approval.
Prerequisite: Graduate standing; and special approval.
Schedule Type: Individual Investigation
Contact Hours: 1-3 other
Grade Mode: Standard Letter-IP

BMS 60198 RESEARCH 1-15 Credit Hours
(Repeatable for credit) Research for master's level graduate students. Credits earned may be applied toward degree requirements if department approves.
Prerequisite: Graduate standing; and special approval of adviser.
Schedule Type: Research
Contact Hours: 1-15 other
Grade Mode: Satisfactory/Unsatisfactory-IP

BMS 70196 INDIVIDUAL INVESTIGATION 1-3 Credit Hours
(Slashed with BMS 70196) Directed investigation under supervision of faculty member in biomedical sciences and with prior approval.
Prerequisite: Graduate standing; and special approval.
Schedule Type: Individual Investigation
Contact Hours: 1-3 other
Grade Mode: Standard Letter-IP

BMS 70198 RESEARCH 1-15 Credit Hours
(Repeatable for credit) Research for master's level graduate students. Credits earned may be applied toward degree requirements if department approves.
Prerequisite: Graduate standing; and special approval of adviser.
Schedule Type: Masters Thesis
Contact Hours: 1-15 other
Grade Mode: Satisfactory/Unsatisfactory-IP
BMS 60200  FOUNDATIONS OF NEUROSCIENCE  3 Credit Hours  
(Slashed with BMS 80200) (Cross-listed with BSCI 60200 and BSCI 80200) This is a graduate-level introductory neuroscience course that will survey aspects of molecular and cellular neuroscience, the biophysics of the nervous system, basic neuroanatomy, and the homeostatic regulation of the periphery. After completion of this course students should have an understanding of how cells of the nervous system work, how these cells interact with homeostatic systems important to the regulation of peripheral physiology and behavior, and the basic neuroanatomy of these regulatory systems, including major neurotransmitter and neuroendocrine systems. Upon completion of this course, students should be prepared for advanced neuroscience coursework.  
**Prerequisite:** Graduate standing.  
**Schedule Type:** Lecture  
**Contact Hours:** 3 lecture  
**Grade Mode:** Standard Letter

BMS 60251  THEORY AND PRACTICE OF CLONING AND GENETIC ENGINEERING  2 Credit Hours  
(Slashed with BMS 70251) Recent advances in the development and understanding of genetic engineering, genomic DNA organization and gene therapy will be discussed.  
**Prerequisite:** BSCI 50158; and graduate standing.  
**Schedule Type:** Lecture  
**Contact Hours:** 2 lecture  
**Grade Mode:** Standard Letter

BMS 60291  SEMINAR IN CELLULAR AND MOLECULAR BIOLOGY  1 Credit Hour  
(Repeatable for credit) (Slashed with BMS 70291) Credits may be applied toward degree if department approves.  
**Prerequisite:** Graduate standing; and special approval.  
**Schedule Type:** Seminar  
**Contact Hours:** 1 other  
**Grade Mode:** Satisfactory/Unsatisfactory

BMS 60295  SPECIAL TOPICS IN CELLULAR AND MOLECULAR BIOLOGY  1-5 Credit Hours  
(Slashed with BMS 70295) (Repeatable for credit) Study of subject or problem of current importance. Content dependent upon student requirements and recent developments in the field. Sections may be standard letter or satisfactory/unsatisfactory (S/U) graded.  
**Prerequisite:** Graduate standing; and special approval.  
**Schedule Type:** Lecture  
**Contact Hours:** 1-5 lecture  
**Grade Mode:** Standard Letter-S/U

BMS 60299  THESIS II  2 Credit Hours  
Thesis students must continue registration each semester until all degree requirements are met.  
**Prerequisite:** 6 hours of BMS 60199; and graduate standing.  
**Schedule Type:** Masters Thesis  
**Contact Hours:** 2 other  
**Grade Mode:** Satisfactory/Unsatisfactory-IP

BMS 60440  CELLULAR AND MOLECULAR SIGNALING  3 Credit Hours  
(Slashed with BMS 70440) The relevant and current topics associated with cellular signaling are covered. Topics include receptor pharmacology, classes and regulation, transcription factors, cell cycle signaling and cell-cell communication.  
**Prerequisite:** BSCI 40143 or BSCI 50143 or BSCI 70143; and graduate standing.  
**Schedule Type:** Lecture  
**Contact Hours:** 3 lecture  
**Grade Mode:** Standard Letter

BMS 60441  MEDICAL PHYSIOLOGY  5 Credit Hours  
(Slashed with BMS 70441) Investigation of how the integration of biophysics, biochemistry and structure induces organ function in the cardiovascular, renal, respiratory, endocrine and gastrointestinal systems. Limited discussion of how pathologies alter normal organ function.  
**Prerequisite:** Graduate standing.  
**Schedule Type:** Lecture  
**Contact Hours:** 5 lecture  
**Grade Mode:** Standard Letter

BMS 60462  NEUROBIOLOGY: SYSTEMS AND BEHAVIOR  4 Credit Hours  
(Slashed with BMS 70462) (Cross-listed with BSCI 60462 and BSCI 80462) Provides broad coverage of the parts of the central nervous systems and how they integrate sensory information, drive motor function and regulate behavior.  
**Prerequisite:** BMS 60729 or BMS 70729; and graduate standing.  
**Schedule Type:** Lecture  
**Contact Hours:** 4 lecture  
**Grade Mode:** Standard Letter

BMS 60465  MEDICAL NEUROSCIENCE  6 Credit Hours  
(Slashed with BMS 70465) Detailed examination of human neuroanatomy and nervous system function.  
**Prerequisite:** Graduate standing; and special approval.  
**Schedule Type:** Combined Lecture and Lab  
**Contact Hours:** 5 lecture, 3 lab  
**Grade Mode:** Standard Letter

BMS 60491  SEMINAR IN MEDICAL PHYSIOLOGY  1 Credit Hour  
(Repeatable for credit) (Slashed with BMS 70491) Credits may be applied toward degree if department approves.  
**Prerequisite:** Graduate standing; and special approval.  
**Schedule Type:** Seminar  
**Contact Hours:** 1 other  
**Grade Mode:** Satisfactory/Unsatisfactory

BMS 60495  SPECIAL TOPICS IN PHYSIOLOGY  1-5 Credit Hours  
(Slashed with BMS 70495) (Repeatable for credit) Study of subject or problem of current importance. Content dependent upon student requirements and recent developments in the field. Sections may be standard letter or satisfactory/unsatisfactory (S/U) graded.  
**Prerequisite:** Graduate standing; and special approval.  
**Schedule Type:** Lecture  
**Contact Hours:** 1-5 lecture  
**Grade Mode:** Standard Letter-S/U
BMS 60501 INTRODUCTION TO PHARMACOLOGY 1 Credit Hour
(Slashed with BMS 70501) Satisfactory/Unsatisfactory (S/U) graded. Basic aspects of pharmacology. Intended to provide a general understanding of fundamental concepts in pharmacology and opportunities for students to read and present peer-reviewed manuscripts covering introductory pharmacological concepts.
Prerequisite: Graduate standing.
Schedule Type: Seminar
Contact Hours: 1 other
Grade Mode: Satisfactory/Unsatisfactory

BMS 60502 MOLECULAR PHARMACOLOGY 4 Credit Hours
(Slashed with BMS 70502) General principles of pharmacology including metabolism, action, interactions, side effects, toxicity and therapeutic use of select drug topics. Focus is placed on the molecular and cellular targets of drug action.
Prerequisite: Graduate standing; and special approval.
Schedule Type: Lecture
Contact Hours: 4 lecture
Grade Mode: Standard Letter

BMS 60503 PHARMACOLOGY JOURNAL REVIEW 1 Credit Hour
(Repeatable maximum four times) (Slashed with BMS 70503) Satisfactory/Unsatisfactory (S/U) graded. Review and discussion of advanced pharmacology journal articles. Students will present and critique articles from peer-viewed publications and actively participate in discussions. Background in physiology and biochemistry required.
Prerequisite: Graduate standing.
Schedule Type: Seminar
Contact Hours: 1 other
Grade Mode: Satisfactory/Unsatisfactory

BMS 60504 CHEMOTHERAPY AND TOXICOLOGY 2 Credit Hours
(Slashed with BMS 70504) Specialized topics in chemotherapy of microbial and neoplastic diseases as well as principles of toxicity.
Prerequisite: Graduate standing; and special approval.
Schedule Type: Lecture
Contact Hours: 2 lecture
Grade Mode: Standard Letter

BMS 60505 DRUG DISCOVERY AND CLINICAL PHARMACOLOGY 2 Credit Hours
(Slashed with BMS 70505) Basic concepts underlying drug discovery and clinical pharmacology including principles of pharmacokinetics, metabolism, pharmacogenomics and drug design.
Prerequisite: Graduate standing; and special approval.
Schedule Type: Lecture
Contact Hours: 2 lecture
Grade Mode: Standard Letter

BMS 60506 HERBALS AND SUPPLEMENTS 2 Credit Hours
(Slashed with BMS 70506) Provides an understanding of the basic scientific, therapeutic and pharmacological principles underlying the use of medicinal plants, herbal medications, natural products, vitamins, minerals and supplements.
Prerequisite: Graduate standing; and special approval.
Schedule Type: Lecture
Contact Hours: 2 lecture
Grade Mode: Standard Letter

BMS 60509 SEMINAR IN PHARMACOLOGY 1 Credit Hour
(Repeatable for credit) (Slashed with BMS 70509) Credits may be applied toward degree if department approves. Repeated registration permitted.
Prerequisite: Graduate standing; and special approval.
Schedule Type: Seminar
Contact Hours: 1 other
Grade Mode: Satisfactory/Unsatisfactory

BMS 60505 SPECIAL TOPICS IN PHARMACOLOGY 1-5 Credit Hours
(Slashed with BMS 70505) (Repeatable for credit) Study of subject or problem of current importance. Content dependent upon student requirements and recent developments in the field. Sections may be standard letter or satisfactory/unsatisfactory (S/U) graded.
Prerequisite: Graduate standing; and special approval.
Schedule Type: Lecture
Contact Hours: 1-5 lecture
Grade Mode: Standard Letter-S/U

BMS 60501 INTRODUCTION TO PHARMACOLOGY 1 Credit Hour
(Slashed with BMS 70501) Satisfactory/Unsatisfactory (S/U) graded. Basic aspects of pharmacology. Intended to provide a general understanding of fundamental concepts in pharmacology and opportunities for students to read and present peer-reviewed manuscripts covering introductory pharmacological concepts.
Prerequisite: Graduate standing; and special approval.
Schedule Type: Seminar
Contact Hours: 1 other
Grade Mode: Satisfactory/Unsatisfactory

BMS 60502 MOLECULAR PHARMACOLOGY 4 Credit Hours
(Slashed with BMS 70502) General principles of pharmacology including metabolism, action, interactions, side effects, toxicity and therapeutic use of select drug topics. Focus is placed on the molecular and cellular targets of drug action.
Prerequisite: Graduate standing; and special approval.
Schedule Type: Lecture
Contact Hours: 4 lecture
Grade Mode: Standard Letter

BMS 60503 PHARMACOLOGY JOURNAL REVIEW 1 Credit Hour
(Repeatable maximum four times) (Slashed with BMS 70503) Satisfactory/Unsatisfactory (S/U) graded. Review and discussion of advanced pharmacology journal articles. Students will present and critique articles from peer-viewed publications and actively participate in discussions. Background in physiology and biochemistry required.
Prerequisite: Graduate standing.
Schedule Type: Seminar
Contact Hours: 1 other
Grade Mode: Satisfactory/Unsatisfactory

BMS 60504 CHEMOTHERAPY AND TOXICOLOGY 2 Credit Hours
(Slashed with BMS 70504) Specialized topics in chemotherapy of microbial and neoplastic diseases as well as principles of toxicity.
Prerequisite: Graduate standing; and special approval.
Schedule Type: Lecture
Contact Hours: 2 lecture
Grade Mode: Standard Letter

BMS 60505 DRUG DISCOVERY AND CLINICAL PHARMACOLOGY 2 Credit Hours
(Slashed with BMS 70505) Basic concepts underlying drug discovery and clinical pharmacology including principles of pharmacokinetics, metabolism, pharmacogenomics and drug design.
Prerequisite: Graduate standing; and special approval.
Schedule Type: Lecture
Contact Hours: 2 lecture
Grade Mode: Standard Letter

BMS 60506 HERBALS AND SUPPLEMENTS 2 Credit Hours
(Slashed with BMS 70506) Provides an understanding of the basic scientific, therapeutic and pharmacological principles underlying the use of medicinal plants, herbal medications, natural products, vitamins, minerals and supplements.
Prerequisite: Graduate standing; and special approval.
Schedule Type: Lecture
Contact Hours: 2 lecture
Grade Mode: Standard Letter

BMS 60509 SEMINAR IN PHARMACOLOGY 1 Credit Hour
(Repeatable for credit) (Slashed with BMS 70509) Credits may be applied toward degree if department approves. Repeated registration permitted.
Prerequisite: Graduate standing; and special approval.
Schedule Type: Seminar
Contact Hours: 1 other
Grade Mode: Satisfactory/Unsatisfactory

BMS 60505 SPECIAL TOPICS IN PHARMACOLOGY 1-5 Credit Hours
(Slashed with BMS 70505) (Repeatable for credit) Study of subject or problem of current importance. Content dependent upon student requirements and recent developments in the field. Sections may be standard letter or satisfactory/unsatisfactory (S/U) graded.
Prerequisite: Graduate standing; and special approval.
Schedule Type: Lecture
Contact Hours: 1-5 lecture
Grade Mode: Standard Letter-S/U

BMS 60501 INTRODUCTION TO PHARMACOLOGY 1 Credit Hour
(Slashed with BMS 70501) Satisfactory/Unsatisfactory (S/U) graded. Basic aspects of pharmacology. Intended to provide a general understanding of fundamental concepts in pharmacology and opportunities for students to read and present peer-reviewed manuscripts covering introductory pharmacological concepts.
Prerequisite: Graduate standing; and special approval.
Schedule Type: Seminar
Contact Hours: 1 other
Grade Mode: Satisfactory/Unsatisfactory

BMS 60502 MOLECULAR PHARMACOLOGY 4 Credit Hours
(Slashed with BMS 70502) General principles of pharmacology including metabolism, action, interactions, side effects, toxicity and therapeutic use of select drug topics. Focus is placed on the molecular and cellular targets of drug action.
Prerequisite: Graduate standing; and special approval.
Schedule Type: Lecture
Contact Hours: 4 lecture
Grade Mode: Standard Letter

BMS 60503 PHARMACOLOGY JOURNAL REVIEW 1 Credit Hour
(Repeatable maximum four times) (Slashed with BMS 70503) Satisfactory/Unsatisfactory (S/U) graded. Review and discussion of advanced pharmacology journal articles. Students will present and critique articles from peer-viewed publications and actively participate in discussions. Background in physiology and biochemistry required.
Prerequisite: Graduate standing.
Schedule Type: Seminar
Contact Hours: 1 other
Grade Mode: Satisfactory/Unsatisfactory

BMS 60504 CHEMOTHERAPY AND TOXICOLOGY 2 Credit Hours
(Slashed with BMS 70504) Specialized topics in chemotherapy of microbial and neoplastic diseases as well as principles of toxicity.
Prerequisite: Graduate standing; and special approval.
Schedule Type: Lecture
Contact Hours: 2 lecture
Grade Mode: Standard Letter

BMS 60505 DRUG DISCOVERY AND CLINICAL PHARMACOLOGY 2 Credit Hours
(Slashed with BMS 70505) Basic concepts underlying drug discovery and clinical pharmacology including principles of pharmacokinetics, metabolism, pharmacogenomics and drug design.
Prerequisite: Graduate standing; and special approval.
Schedule Type: Lecture
Contact Hours: 2 lecture
Grade Mode: Standard Letter

BMS 60506 HERBALS AND SUPPLEMENTS 2 Credit Hours
(Slashed with BMS 70506) Provides an understanding of the basic scientific, therapeutic and pharmacological principles underlying the use of medicinal plants, herbal medications, natural products, vitamins, minerals and supplements.
Prerequisite: Graduate standing; and special approval.
Schedule Type: Lecture
Contact Hours: 2 lecture
Grade Mode: Standard Letter
BMS 60795  SPECIAL TOPICS IN NEUROBIOLOGY  1-5 Credit Hours
(Slashed with BMS 70795)(Repeatable for credit) Study of problems of current importance. Content dependent upon student requirements and recent developments in the field. Sections may be standard letter or satisfactory/unsatisfactory (S/U) graded.
Prerequisite: Graduate standing; and special approval.
Schedule Type: Lecture
Contact Hours: 1-5 lecture
Grade Mode: Standard Letter-S/U

BMS 61000  RESPONSIBLE CONDUCT OF RESEARCH  1 Credit Hour
(Slashed with BMS 71000) (Cross-listed with PHIL 61000) Introduction to professional and ethical conduct of research. Topics include codes and laws governing research, identification of scientific misconduct, plagiarism, authorship and intellectual properties, ethical animal and human research.
Prerequisite: Graduate standing.
Schedule Type: Lecture
Contact Hours: 1 lecture
Grade Mode: Standard Letter

BMS 61001  INTRODUCTION TO BIOMEDICAL SCIENCES  1 Credit Hour
(Slashed with BMS 71001) Seminar for all students in Biomedical Sciences. Repeat registration permitted.
Prerequisite: Graduate Standing in the School of Biomedical Sciences; Biological Anthropology, Biomedical mathematics, Cellular and Molecular Biology, Neurosciences, Pharmacology, Physiology Interdisciplinary.
Schedule Type: Seminar
Contact Hours: 1 lecture
Grade Mode: Satisfactory/Unsatisfactory

BMS 70120  LABORATORY TECHNIQUES IN BIOMEDICAL SCIENCES  2 Credit Hours
(Slashed with BMS 60120) (Repeatable once for credit) Minimum of two laboratory rotations per semester by arrangement with individual faculty members. May be repeated once.
Prerequisite: Doctoral standing; and special approval.
Schedule Type: Research
Contact Hours: 2 other
Grade Mode: Satisfactory/Unsatisfactory

BMS 70196  INDIVIDUAL INVESTIGATION  1-3 Credit Hours
(Slashed with BMS 60196) (Repeatable for credit) Directed investigation under supervision of faculty member in biomedical sciences and with prior approval.
Prerequisite: Doctoral standing; and special approval.
Schedule Type: Individual Investigation
Contact Hours: 1-3 other
Grade Mode: Satisfactory/Unsatisfactory

BMS 70251  THEORY AND PRACTICE OF CLONING AND GENETIC ENGINEERING  2 Credit Hours
(Slashed with BMS 60251) Recent advances in the development and understanding of genetic engineering, genomic DNA organization and gene therapy will be discussed.
Prerequisite: BSCI 50158; and doctoral standing.
Schedule Type: Lecture
Contact Hours: 2 lecture
Grade Mode: Standard Letter

BMS 70291  SEMINAR IN CELLULAR AND MOLECULAR BIOLOGY  1 Credit Hour
(Repeatable for credit) (Slashed with BMS 60291) Credits may be applied toward degree if department approves.
Prerequisite: Doctoral standing; and special approval.
Schedule Type: Seminar
Contact Hours: 1 other
Grade Mode: Satisfactory/Unsatisfactory

BMS 70440  CELLULAR AND MOLECULAR SIGNALING  3 Credit Hours
(Slashed with BMS 60440) The relevant and current topics associated with cellular signaling are covered. Topics include receptor pharmacology, classes and regulation, transcription factors, cell cycle signaling and cell-cell communication.
Prerequisite: BSCI 40143 or BSCI 50143 or BSCI 70143; and doctoral standing.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

BMS 70441  MEDICAL PHYSIOLOGY  5 Credit Hours
(Slashed with BMS 60441) Investigation of how the integration of biophysics, biochemistry and structure induces organ function in the cardiovascular, renal, respiratory, endocrine and gastrointestinal systems. Limited discussion of how pathologies alter normal organ function.
Prerequisite: Doctoral standing.
Schedule Type: Lecture
Contact Hours: 5 lecture
Grade Mode: Standard Letter

BMS 70462  NEUROBIOLOGY: SYSTEMS AND BEHAVIOR  4 Credit Hours
(Slashed with BMS 60462) (Cross-listed with BSCI 60462 and BSCI 80462) Provides broad coverage of the parts of the central nervous systems and how they integrate sensory information, drive motor function and regulate behavior.
Prerequisite: BMS 60729 or BMS 70729; and doctoral standing.
Schedule Type: Lecture
Contact Hours: 4 lecture
Grade Mode: Standard Letter

BMS 70465  MEDICAL NEUROSCIENCE  6 Credit Hours
(Slashed with BMS 60465) Detailed examination of human neuroanatomy and nervous system function.
Prerequisite: Doctoral standing; and special approval.
Schedule Type: Combined Lecture and Lab
Contact Hours: 5 lecture, 3 lab
Grade Mode: Standard Letter
BMS 70491 SEMINAR IN MEDICAL PHYSIOLOGY 1 Credit Hour
(Repeatable for credit) (Slashed with BMS 60491) Credits may be applied toward degree if department approves.
Prerequisite: Doctoral standing; and special approval.
Schedule Type: Seminar
Contact Hours: 1 other
Grade Mode: Satisfactory/Unsatisfactory

BMS 70495 SPECIAL TOPICS IN PHYSIOLOGY 1-5 Credit Hours
(Slashed with BMS 60495) (Repeatable for credit) Study of subject or problem of current importance. Content dependent upon student requirements and recent developments in the field. Sections may be standard letter or satisfactory/unsatisfactory (S/U) graded.
Prerequisite: Doctoral standing; and special approval.
Schedule Type: Lecture
Contact Hours: 1-5 lecture
Grade Mode: Standard Letter-S/U

BMS 70501 INTRODUCTION TO PHARMACOLOGY 1 Credit Hour
(Slashed with BMS 60501) Satisfactory/Unsatisfactory (S/U) graded. Basic aspects of pharmacology. Intended to provide a general understanding of fundamental concepts in pharmacology and opportunities for students to read and present peer-reviewed manuscripts covering introductory pharmacological concepts.
Prerequisite: Doctoral standing.
Schedule Type: Seminar
Contact Hours: 1 other
Grade Mode: Satisfactory/Unsatisfactory-IP

BMS 70502 MOLECULAR PHARMACOLOGY 4 Credit Hours
(Slashed with BMS 60502) General principles of pharmacology including metabolism, action, interactions, side effects, toxicity and therapeutic use of select drug topics. Focus is placed on the molecular and cellular targets of drug action.
Prerequisite: Doctoral standing; and special approval.
Schedule Type: Lecture
Contact Hours: 4 lecture
Grade Mode: Standard Letter

BMS 70503 PHARMACOLOGY JOURNAL REVIEW 1 Credit Hour
(Repeatable maximum four times) (Slashed with BMS 60503) Review and discussion of advanced pharmacology journal articles. Students will present and critique articles from peer-reviewed publications and actively participate in discussions. Background in physiology and biochemistry required. Satisfactory/Unsatisfactory (S/U) graded.
Prerequisite: Doctoral standing.
Schedule Type: Seminar
Contact Hours: 1 other
Grade Mode: Satisfactory/Unsatisfactory

BMS 70504 CHEMOTHERAPY AND TOXICOLOGY 2 Credit Hours
(Slashed with BMS 60504) Specialized topics in chemotherapy of microbial and neoplastic diseases as well as principles of toxicology.
Prerequisite: Doctoral standing; and special approval.
Schedule Type: Lecture
Contact Hours: 2 lecture
Grade Mode: Standard Letter

BMS 70505 DRUG DISCOVERY AND CLINICAL PHARMACOLOGY 2 Credit Hours
(Slashed with BMS 60505) Basic concepts underlying drug discovery and clinical pharmacology including principles of pharmacokinetics, metabolism, pharmacogenomics and drug design.
Prerequisite: Doctoral standing; and special approval.
Schedule Type: Lecture
Contact Hours: 2 lecture
Grade Mode: Standard Letter

BMS 70506 HERBALS AND SUPPLEMENTS 2 Credit Hours
(Slashed with BMS 60506) Provides an understanding of the basic scientific, therapeutic and pharmacological principles underlying the use of medicinal plants, herbal medications, natural products, vitamins, minerals and supplements.
Prerequisite: Doctoral standing; and special approval.
Schedule Type: Lecture
Contact Hours: 2 lecture
Grade Mode: Standard Letter

BMS 70507 CLINICAL NEUROANATOMY 3 Credit Hours
(Slashed with BMS 60507) Cross-listed with PSYC 43001, PSYC 53001 and PSYC 73001. Course examines the anatomical organization of the human brain, emphasizing functional aspects of various neural systems, neuroimaging and topics of clinical relevance. Students must have a conceptual understanding of central nervous system organization and memorization of specific neural structures and pathways, as well as knowledge of the impact of structure and systems dysfunction.
Prerequisite: Doctoral standing; and special approval.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter-IP
BMS 70702  CURRENT TECHNIQUES IN BEHAVIORAL NEUROSCIENCE  3 Credit Hours
(Slashed with BMS 50702)(Cross-listed with PSYC 43002, PSYC 53002 and PSYC 73002) Course details current and advanced techniques used in behavioral neuroscience research. Emphasis is placed on understanding the theory behind each technique, and its use in understanding the neural mechanisms of behavior. Detailed protocols for each technique are also covered.
Prerequisite: Doctoral standing and special approval from instructor.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

BMS 70703  NEURAL MECHANISMS OF LEARNING AND MEMORY  3 Credit Hours
(Slashed with BMS 50703)(Cross-listed with PSYC 43003, PSYC 53003 and PSYC 73003) Course examines the neural and molecular mechanisms underlying learning and memory formation. Covers cellular mechanisms of learning, including long-term potentiation and basic electrophysiology in invertebrate and mammalian preps. Transcriptional and post-translational modifications required for learning and memory formation, genomic signaling and protein synthesis. Also covers structural changes of neurons associated with memory formation, and the different behavioral methods for studying memory.
Prerequisite: Doctoral standing.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

BMS 70729  CELLULAR AND MOLECULAR NEUROSCIENCE  4 Credit Hours
(Slashed with BMS 60729) The relation of aspects of the neurosciences to the fundamental properties of nervous tissue, establishing a firm base in experimental neurobiology.
Prerequisite: Doctoral standing; and special approval of instructor.
Schedule Type: Lecture
Contact Hours: 4 lecture
Grade Mode: Standard Letter

BMS 70751  CURRENT RESEARCH IN AUDITORY NEUROBIOLOGY  1 Credit Hour
(Slashed with BMS 60751) (Repeatable for a maximum of four credit hours) Presentation-based by faculty in the Auditory Neuroscience Group. Topics will vary each semester. Each class presentation will highlight recent advances in auditory neurobiology, cover relevant background, and involve discussion of methodology, experimental design, and interpretive issues related to the research. Students will prepare a presentation on a topic chosen in conjunction with one of the faculty members. Assessment is based on presentation quality and active participation throughout the semester.
Prerequisite: Doctoral standing; and special approval.
Schedule Type: Seminar
Contact Hours: 1 lecture
Grade Mode: Satisfactory/Unsatisfactory

BMS 70791  SEMINAR IN NEUROBIOLOGY  1 Credit Hour
(Repeatable for credit) (Slashed with BMS 60791) Credits may be applied toward degree if department approves.
Prerequisite: Doctoral standing; and special approval.
Schedule Type: Seminar
Contact Hours: 1 other
Grade Mode: Satisfactory/Unsatisfactory

BMS 70795  SPECIAL TOPICS IN NEUROBIOLOGY  1-5 Credit Hours
(Slashed with BMS 60795)(Repeatable for credit) Study of problems of current importance. Content dependent upon student requirements and recent developments in the field. Sections may be standard letter or satisfactory/unsatisfactory (S/U) graded.
Prerequisite: Doctoral standing; and special approval.
Schedule Type: Lecture
Contact Hours: 1-5 lecture
Grade Mode: Standard Letter-S/U

BMS 71000  RESPONSIBLE CONDUCT OF RESEARCH  1 Credit Hour
(Slashed with BMS 61000) (Cross-listed with PHIL 61000) Introduction to professional and ethical conduct of research. Topics include codes and laws governing research, identification of scientific misconduct, plagiarism, authorship and intellectual properties, ethical animal and human research.
Prerequisite: Doctoral standing.
Schedule Type: Seminar
Contact Hours: 1 lecture
Grade Mode: Standard Letter

BMS 71001  INTRODUCTION TO BIOMEDICAL SCIENCES  1 Credit Hour
(Slashed with BMS 61001) Introductory seminar for new students in Biomedical Sciences graduate programs. This seminar will expose students to the different faculty research programs available in the program.
Prerequisite: Doctoral standing in Biomedical Sciences.
Schedule Type: Seminar
Contact Hours: 1 lecture
Grade Mode: Satisfactory/Unsatisfactory

BMS 78630  PRINCIPLES OF BIOLOGICAL ANTHROPOLOGY  3 Credit Hours
(Slashed with ANTH 68630) Graduate-level introduction to the field of biological anthropology. Topics include genetics, human variation, fossil and modern primates and early man.
Prerequisite: Doctoral standing; and special approval.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

BMS 78637  BIOANTHROPOLOGICAL DATA ANALYSIS I  5 Credit Hours
(Cross-listed with ANTH 68637) Examination of methods of univariate and bivariate experimental design. This survey emphasizes tests of hypothesis and estimation techniques with both classical and nonparametric procedures.
Prerequisite: Doctoral standing.
Schedule Type: Lecture
Contact Hours: 5 lecture
Grade Mode: Standard Letter

BMS 78638  BIOANTHROPOLOGICAL DATA ANALYSIS II  3 Credit Hours
(Cross-listed with ANTH 68638) This survey of multivariate analysis in anthropology includes one-sample data exploration, multiple sample problems and regression methods. It also includes computer applications.
Prerequisite: BMS 78637; and Doctoral standing.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter
BMS 78691  SEMINAR IN BIOLOGICAL ANTHROPOLOGY  1 Credit Hour  (Repeatable for credit) Credits may be applied toward degree if department approves.  
Prerequisite: Doctoral standing; and special approval.  
Schedule Type: Seminar  
Contact Hours: 1 other  
Grade Mode: Satisfactory/Unsatisfactory

BMS 78692  FIELD WORK IN PALEOANTHROPOLOGY  1-5 Credit Hours  
(Repeatable for credit) Excavation and/or field survey of miocene and/or plio-pleistocene hominid localities.  
Prerequisite: Doctoral standing; and special approval.  
Schedule Type: Field Experience  
Contact Hours: 1-5 other  
Grade Mode: Standard Letter

BMS 78695  SPECIAL TOPICS IN BIOLOGICAL ANTHROPOLOGY  1-5 Credit Hours  
(Repeatable for credit) Study of subject or problem of current importance. Content dependent upon student requirements and recent developments in the field. Sections may be standard letter or satisfactory/un satisfactory (S/U) graded.  
Prerequisite: Doctoral standing; and special approval.  
Schedule Type: Lecture  
Contact Hours: 1-5 lecture  
Grade Mode: Standard Letter-S/U

BMS 80198  RESEARCH  1-15 Credit Hours  
(Repeatable for credit) Research for doctoral students who have not yet passed candidacy examination.  
Prerequisite: Doctoral standing; and special approval of adviser.  
Schedule Type: Research  
Contact Hours: 1-15 other  
Grade Mode: Satisfactory/Unsatisfactory-IP

BMS 80299  DISSERTATION II  15 Credit Hours  
(Repeatable for credit) Continuing registration of doctoral students who have completed the initial 30 hours of dissertation and continuing until all degree requirements are met.  
Prerequisite: 30 hours of BMS 80199; and Doctoral standing.  
Schedule Type: Dissertation  
Contact Hours: 15 other  
Grade Mode: Satisfactory/Unsatisfactory-IP

BMS 80200  FOUNDATIONS OF NEUROSCIENCE  3 Credit Hours  
(Slashed with BMS 60200) (Cross-listed with BSCI 60200 and BSCI 80200) This is a graduate-level introductory neuroscience course that will survey aspects of molecular and cellular neuroscience, the biophysics of the nervous system, basic neuroanatomy, and the homeostatic regulation of the periphery. After completion of this course students should have an understanding of how cells of the nervous system work, how these cells interact with homeostatic systems important to the regulation of peripheral physiology and behavior, and the basic neuroanatomy of these regulatory systems, including major neurotransmitter and neuroendocrine systems. Upon completion of this course, students should be prepared for advanced neuroscience coursework.  
Prerequisite: Doctoral standing.  
Schedule Type: Lecture  
Contact Hours: 3 lecture  
Grade Mode: Standard Letter