DEPARTMENT OF BIOMEDICAL SCIENCES

Office in Physiology Building, Room 102
(970) 491-6187
cvms.colostate.edu/bms (http://www.cvmbs.colostate.edu/bms)

Professor Colin Clay, Head

Undergraduate

Majors
- Major in Biomedical Sciences
- Major in Neuroscience
  - Behavioral and Cognitive Neuroscience Concentration
  - Cell and Molecular Neuroscience Concentration

Minors
- Minor in Biomedical Sciences

Graduate

Graduate Programs in Biomedical Sciences

Graduate programs lead to the Master of Science and Doctor of Philosophy degrees in Biomedical Sciences. Students interested in graduate work should refer to the Graduate and Professional Bulletin or the Department of Biomedical Sciences (http://www.cvmbs.colostate.edu/bms).

Master Programs
- Master of Science in Biomedical Sciences, Plan A
- Master of Science in Biomedical Sciences, Plan B, Coursework
- Master of Science in Biomedical Sciences, Plan B, Paper
- Master of Science in Biomedical Sciences, Plan B, Reproductive Technology Specialization

Ph.D.
- Ph.D. in Biomedical Sciences

Courses

Biomedical Sciences (BMS)

BMS 192 First Year Seminar in Biomedical Sciences Credit: 1 (0-0-1)
Course Description: The university and its resources, college survival skills, careers in the biomedical sciences; current issues in health and biotechnology.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 200 Concepts in Human Anatomy and Physiology Credit: 1 (0-0-1)
Course Description: Basic concepts in the anatomy and physiology of the human body.
Prerequisite: None.
Registration Information: Must have concurrent registration in BMS 300.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 260 Biomedical Sciences Credits: 3 (2-0-1)
Course Description: Opportunities and challenges in biomedical sciences; business of science, ethics, model systems, cellular and systemic physiology.
Prerequisite: LIFE 102.
Registration Information: Must register for lecture and recitation.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 296 Honors–Physiological Concepts Credit: 1 (0-0-1)
Course Description: Honors breakout session integrating physiological concepts for students in BMS 260.
Prerequisite: None.
Registration Information: Must have concurrent registration in BMS 260.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 300 Principles of Human Physiology Credits: 4 (4-0-0)
Course Description: Physiology of humans.
Prerequisite: (BZ 101 or BZ 110 or LIFE 102) and (CHEM 103 or CHEM 107 or CHEM 111).
Registration Information: Sections may be offered: Online.
Term Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 301 Human Gross Anatomy Credits: 5 (3-2-1)
Course Description: Structure and function of the human body. Study of prospected human cadavers; clinical applications; living anatomy.
Prerequisite: BZ 110 or LIFE 102.
Registration Information: Must register for lecture, laboratory, and recitation.
Term Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: Yes.
BMS 302 Laboratory in Principles of Physiology  Credits: 2 (1-3-0)
Course Description: Basic physiology lab exercises.
Prerequisite: BMS 300, may be taken concurrently or BMS 360, may be taken concurrently.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both BMS 302 and BMS 320.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 305 Domestic Animal Gross Anatomy  Credits: 4 (3-3-0)
Course Description: Comparative gross anatomy of domestic carnivores, ruminants, and horses.
Prerequisite: BZ 110 or LIFE 102.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both BMS 305 and VS 333.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

BMS 310 Anatomy for the Health Professions  Credits: 4 (3-3-0)
Course Description: Gross anatomy of the human body from a regional perspective, utilizing clinical applications as a basis for anatomical understanding.
Prerequisite: LIFE 000 to 499.
Registration Information: Offered as an online course only.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 320 Virtual Laboratory in Physiology  Credits: 2 (0-4-0)
Course Description: Physiology lab exercises using a virtual laboratory simulation system.
Prerequisite: BMS 300, may be taken concurrently or BMS 360, may be taken concurrently.
Registration Information: Credit not allowed for both BMS 320 and BMS 302. Offered as an online course only.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 325 Cellular Neurobiology  Credits: 3 (3-0-0)
Course Description: Cellular and molecular bases of nervous system function and behavior.
Prerequisite: BMS 300 or BMS 360.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 330 Microscopic Anatomy  Credits: 4 (3-3-0)
Course Description: Microscopic anatomy of mammalian tissue.
Prerequisite: BMS 300 or BMS 360.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both BMS 330 and VS 331.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 345 Functional Neuroanatomy  Credits: 4 (3-2-0)
Course Description: Functional systems and circuits of the human brain and spinal cord.
Prerequisite: BMS 300 or BMS 360.
Registration Information: Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

BMS 360 Fundamentals of Physiology  Credits: 4 (4-0-0)
Course Description: Cell, tissue, and organ function related to integrated whole body function.
Prerequisite: (BZ 110 or LIFE 102) and (CHEM 245, may be taken concurrently or CHEM 341, may be taken concurrently).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 384 Supervised College Teaching  Credits: Var[1-5] (0-0-0)
Course Description: Supervision by and work with graduate teaching assistants in small group learning sessions involving students enrolled in BMS 300.
Prerequisite: BMS 300 or BMS 360.
Registration Information: A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 400 Neuroanatomy Through Clinical Case Studies  Credit: 1 (0-0-1)
Course Description: Neuroanatomical case studies to reinforce and apply information gained in BMS 345, Functional Neuroanatomy.
Prerequisite: BMS 345, may be taken concurrently.
Registration Information: Biomedical sciences majors only. Required field trips.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 401 Laboratory Research in Biomedical Sciences  Credits: 4 (0-9-1)
Course Description: Hands-on experience in laboratory research methods for students working individually on a project which stems from a larger research project of a faculty member's laboratory. All students will work in the same facility equipped with appropriate equipment and supplies to conduct the student research proposal.
Prerequisite: BMS 300 or BMS 360.
Registration Information: Must register for laboratory and recitation.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 405 Nerve and Muscle-Toxins, Trauma and Disease  Credits: 3 (3-0-0)
Course Description: Structure, composition, function of nerves and muscles, etiology of genetic and autoimmune neuromuscular diseases, alteration by toxins and nerve gas.
Prerequisite: BMS 325 or BMS 345.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
BMS 409  Human and Animal Reproductive Biology  Credits: 3 (3-0-0)
Course Description: Basis for male and female reproductive function in humans and animals.
Prerequisite: BMS 300 or BMS 360.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 420  Cardiopulmonary Physiology  Credits: 3 (3-0-0)
Course Description: Normal and pathophysiology of cardiovascular and pulmonary systems.
Prerequisite: BMS 300 or BMS 360.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 421  Perspectives in Cardiopulmonary Diseases  Credits: 2 (1-0-1)
Course Description: Pathophysiology of cardiopulmonary diseases.
Prerequisite: None.
Registration Information: Must have concurrent registration in BMS 420. Biomedical sciences majors only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 425  Introduction to Systems Neurobiology  Credits: 3 (3-0-0)
Course Description: Functional organization of the nervous system at the circuit level in producing simple and complex behaviors, sensations and cognition.
Prerequisite: BMS 325.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 430  Endocrinology  Credits: 3 (3-0-0)
Course Description: Physiology of the glands of internal secretion.
Prerequisite: BMS 300 or BMS 360.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 450  Pharmacology  Credits: 3 (3-0-0)
Course Description: Pharmacologic principles, absorption, distribution, metabolism, excretion, side effects, and actions of drugs.
Prerequisite: BMS 300 or BMS 360.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 460  Essentials of Pathophysiology  Credits: 3 (3-0-0)
Course Description: Integration of different facets of mechanisms underlying health and disease.
Prerequisite: BMS 300 or BMS 360.
Registration Information: Biomedical sciences majors only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 461  Pathophysiology Perspectives  Credits: 2 (0-0-2)
Course Description: Capstone course in pathophysiology for Biomedical Sciences majors.
Prerequisite: None.
Registration Information: Must have concurrent registration in BMS 460. Biomedical sciences majors only.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 487  Internship  Credits: Var[1-6] (0-0-0)
Course Description: Work/research experience with an approved preceptor outside of a university laboratory.
Prerequisite: None.
Registration Information: Written consent of department required.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 495  Independent Study  Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 496A  Honors: Human Gross Anatomy  Credits: Var[1-3] (0-0-0)
Course Description: Honors breakout session for students in Human Gross Anatomy.
Prerequisite: BMS 301, may be taken concurrently or BMS 302, may be taken concurrently or BMS 360, may be taken concurrently.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 496B  Honors: Physiology Lab  Credits: Var[1-3] (0-0-0)
Course Description: Honors breakout session for students in Physiology Lab.
Prerequisite: BMS 301, may be taken concurrently or BMS 302, may be taken concurrently or BMS 360, may be taken concurrently.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 496C  Honors: Physiology Case Studies  Credits: Var[1-3] (0-0-0)
Course Description: Honors breakout session for students in Physiology Case Studies.
Prerequisite: BMS 301, may be taken concurrently or BMS 302, may be taken concurrently or BMS 360, may be taken concurrently.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 496D  Honors: Animal Gross Anatomy  Credits: Var[1-3] (0-0-0)
Course Description: Honors breakout session for students in Animal Gross Anatomy.
Prerequisite: BMS 305, may be taken concurrently.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
BMS 498 Research Credits: Var[1-3] (0-0-0)
Course Description: Faculty-directed research in biomedical sciences.
Prerequisite: BMS 300 or BMS 360.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: Yes.

BMS 500 Mammalian Physiology I Credits: 4 (4-0-0)
Course Description: Cell physiology of nerve, skeletal, cardiac and smooth muscle with an emphasis on how cellular functions integrate into systems behavior.
Prerequisite: BMS 300 or BMS 360.
Registration Information: Credit not allowed for both BMS 500 and NB 501. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 501 Mammalian Physiology II Credits: 4 (4-0-0)
Course Description: Respiratory, renal, digestive, endocrine, metabolic, and reproductive function.
Prerequisite: BMS 300 or BMS 360.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 503 Developmental Neurobiology Credits: 3 (3-0-0)
Also Offered As: NB 503.
Course Description: Molecular mechanisms involved in development of nervous system including differentiation, growth, pathfinding, and synaptogenesis.
Prerequisite: (BIO 100 to 481 or BZ 100 to 481 or LIFE 100 to 481) and (BC 100 to 481 and PH 100 to 481) and (MATH 141 or MATH 155 or MATH 160 to 161 or MATH 255 or MATH 261).
Registration Information: Credit not allowed for both BMS 503 and NB 503.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 505 Neuronal Circuits, Systems and Behavior Credits: 3 (3-0-0)
Also Offered As: NB 505.
Course Description: Anatomical and physiological organization of the nervous system.
Prerequisite: BMS 325 or BMS 500 or NB 501.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 521 Comparative Reproductive Physiology Credits: 3 (3-0-0)
Course Description: A comparative overview of reproduction in vertebrates (focusing on mammals) emphasizing both conserved and species-specific aspects of physiology.
Prerequisite: BMS 300 or BMS 360.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 531 Domestic Animal Dissection Credits: 3 (0-9-0)
Course Description: Dissection of domestic animals.
Prerequisite: BMS 305.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.
BMS 632 Metabolic Endocrinology Credits: 2 (2-0-0)
Course Description: Endocrine regulation of metabolic homeostasis; effects of exercise or pregnancy.
Prerequisite: BMS 631.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

BMS 633 Domestic Animal Anatomy-Case Discussions Credits: 2 (0-0-2)
Course Description: Clinical case discussions utilized in advanced understanding of domestic animal anatomy and physiology.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must have concurrent registration in BMS 531.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

BMS 640 Reproductive Physiology and Endocrinology Credits: 4 (4-0-0)
Course Description: Reproductive physiology and endocrinology of vertebrate animals.
Prerequisite: BMS 501.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

BMS 642 Research Techniques for Gametes and Embryos Credit: 1 (0-3-0)
Course Description: Collection, storage, evaluation, in vitro manipulation, and replacement of sperm, oocytes, embryos, and other reproductive tissues.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to Biomedical Sciences graduate program required.
Term Offered: Fall.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 684 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description: Current topics in neuroscience; how to evaluate scientific presentations.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 695A Independent Study: Developmental Anatomy Credits: Var[1-18] (0-0-0)
Course Description: Current topics in neuroscience; how to evaluate scientific presentations.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 695B Independent Study: Microscopic Anatomy Credits: Var[1-18] (0-0-0)
Course Description: Current topics in neuroscience; how to evaluate scientific presentations.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 695C Independent Study: Neuroanatomy Credits: Var[1-18] (0-0-0)
Course Description: Current topics in neuroscience; how to evaluate scientific presentations.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 695D Independent Study: Radiographic Anatomy Credits: Var[1-18] (0-0-0)
Course Description: Current topics in neuroscience; how to evaluate scientific presentations.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 695E Independent Study: Surgical Anatomy Credits: Var[1-18] (0-0-0)
Course Description: Current topics in neuroscience; how to evaluate scientific presentations.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 695F Independent Study: Gross Anatomy Credits: Var[1-18] (0-0-0)
Course Description: Current topics in neuroscience; how to evaluate scientific presentations.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 696 Group Study-Neurosciences Credits: Var[1-3] (0-0-0)
Course Description: Current topics in neuroscience; how to evaluate scientific presentations.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Instructor Option.
Special Course Fee: No.
BMS 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.

BMS 784 Supervised College Teaching Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 792A Seminar: Biomedical Sciences Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 792B Seminar: Neurophysiology Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 792C Seminar: Reproductive Physiology Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 795A Independent Study: Endocrinology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 795B Independent Study: Neurophysiology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 795C Independent Study: Cell Physiology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 795D Independent Study: Cardiopulmonary Physiology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 795E Independent Study: Reproductive Physiology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 796A Group Study: Topics in Neuroscience Credits: Var[1-4] (0-0-0)
Also Offered As: NB 796C.
Course Description: Faculty-directed exploration of areas of special interest in neuroscience.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Written consent of instructor. May not be taken concurrently with NB 796C.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 796B Group Study: Cardiopulmonary Physiology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 796C Group Study: Reproductive Physiology Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

BMS 799 Dissertation Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.