BIOMEDICAL SCIENCES (BMSC)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-level undergraduate courses that also may be taken for graduate credit with permission and additional work assigned
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

BMSC 5099. Variable Topics. 1-99 Credits.

BMSC 6218. Ethics for Translational Sciences. 2 Credits.
Ethical issues relevant to the practice of medicine and biomedical research involving human subjects. Permission of the instructor required prior to enrollment. Recommended background: ANAT 6130, ANAT 6150, ANAT 6160, ANAT 6181 and ANAT 6292.

BMSC 8210. Genes to Cells. 3 Credits.
Molecular aspects of cellular composition, gene expression, and processes; replication and regulation of gene expression, protein and cell structure, and functions.

BMSC 8212. Systems Physiology. 3 Credits.
The physiological bases of organ systems and origins of disease; key concepts and hypotheses in mammalian organ systems essential for pursuing contemporary experimental studies. Prerequisite: BMSC 8210.

BMSC 8215. Lab Rotations. 2 Credits.
For PhD students enrolled in the Institute for Biomedical Sciences. Laboratory training in advanced techniques in biomedical sciences research practices. May be repeated for credit.

BMSC 8216. Scientific Writing, Presentation Skills, and Seminar Planning. 1 Credit.
Instruction in the basic skills of scientific writing, integration with laboratory rotation (BMSC 8215) report writing, and genes to cells (BMSC 8210) blog writing.

BMSC 8217. Ethics and Grant Writing. 1 Credit.
Ethical issues related to the conduct of research, animal use, and human subject participation. The design of a successful grant proposal.

BMSC 8218. Career Options in the Biomedical Sciences. 1 Credit.
Professionals with PhD degrees in the biomedical sciences discuss their positions and provide doctoral students with networking opportunities and advice regarding career paths such as research in various settings, policy and program planning, grants administration, and biotechnology issues within intellectual property law.

BMSC 8219. Writing the Grant-Style Qualifier. 2 Credits.
Process of proposal development for PhD students. Research proposals in the format of an NIH F31 predoctoral fellowship, including specific aims, research plan, candidate background, biosketch, and training plan sections. Recommended for second-year students preparing for the grant-style qualifying examination. Restricted to students in the PhD programs in biomedical sciences. Prerequisites: BMSC 8210 and BMSC 8212.

BMSC 8220. IBS Research Practicum. 3 Credits.
Self-paced literature synthesis and mentored research development. Design and execute experiments, conduct data analysis, prepare research results for publication. Develop specific aims, research strategy, and data for the IBS PhD qualifying exam. Restricted to students in the Institute for Biomedical Sciences PhD programs.

BMSC 8230. Molecular Basis of Human Disease. 3 Credits.
Genetic causes of human disease, diagnostic methods of genomic medicine human molecular genetics, established and developing molecular methods, and current research topics and therapies; principles of precision medicine in the context of disease examples including intersex conditions, cancer, neuropsychiatric disorders, and inborn errors of metabolism.

BMSC 8233. Integrative Bioinformatics. 3 Credits.
Bioinformatics techniques for analysis of macromolecular sequences, structures, gene expression arrays, and proteomics. Systems biology approaches to research problems. Permission of the instructor required prior to enrollment. Prerequisite: BMSC 8230. Recommended background: Undergraduate background in biology, computer sciences, biochemistry, or a related field.

BMSC 8235. Applied Biostatistics for Basic Research. 2 Credits.
The handling and interpretation of large data sets, including biological data and genomic data. Permission of the instructor required prior to enrollment.