

Pathobiology and Biomedical Sciences

Required for all students in the specialization:

LIFE8XX, Biosystems Research I: Big Questions (3cr)
LIFE8XX, Biosystems Research II: Integrating discovery approaches into basic and applied research (3cr)
LIFE8XX, Graduate Seminar (6cr total): Research and journal club presentations
LIFE8XX, Rotation Research (3cr total)
LIFE9XX, Professional Skills (1cr)
STAT 801 (4cr), Statistical methods in research
Biotechnology Core Facility instrumentation course (2cr)

Macromolecules core, minimum 3 cr, from among the following:

BIOC/BIOS/CHEM 932, Proteins (2cr)
BIOC/BIOS/CHEM 933, Enzymes (2cr)
BIOC/BIOS/CHEM 934, Genome dynamics and gene expression (3cr)
BIOC 848, Redox biochemistry (3cr)
BIOC/CHEM 836, Physical basis of macromolecular function (3cr)
BIOS 945, RNA Biology (3cr)

Additional specialty courses appropriate for the specialization (list is not comprehensive; additional courses may be approved by supervisory committees):

ASCI 832, Genome Analysis (3cr)
ASCI 843, Physiology of Animal Cells and Tissues (3cr)
ASCI/BIOS/VBMS 842, Endocrinology (3cr)
ASCI/VBMS 845/BIOS 813, Animal Physiology I (4cr)
ASCI/VBMS 846/BIOS 814, Animal Physiology II (4cr)

BIOC/BIOS/ASCI/NUTR 949, Biochemistry of Nutrition (3cr)
BIOC/BIOS/CHEM 831, Structures and Metabolism (3cr)
BIOC/BIOS/CHEM 832, Gene Expression and Replication (3cr)
BIOC/BIOS/CHEM 935, Metabolic Function and Dysfunction (3cr)
BIOC/BIOS 837, Research Techniques in Biochemistry (4cr)
BIOC/STAT 842, Computational Biology (3cr)

BIOS 802, Cancer Biology (3cr)
BIOS 807, Biology of cells and organelles (4cr)
BIOS/VBMS 808, Functional Histology (4cr)
BIOS 812, Human Genetics (3cr)
BIOS 815, Developmental Biology (3cr)
BIOS 818, Advanced Genetics (3cr)
BIOS/VBMS 820, Molecular Genetics (3cr)
BIOS 822, Comparative Physiology (3cr) + Lab (1cr)
BIOS/VBMS 824, Basic Molecular Infectious Diseases (3cr)
BIOS 826, Systems Biology (3cr)
BIOS 827, Practical Bioinformatics Lab (3cr)
BIOS 829, Phylogenetic Biology (3cr)
BIOS/VBMS 840, Microbial Physiology (3cr)
BIOS/VBMS 841, Pathogenic Microbiology (3cr)
BIOS/VBMS 843, Immunology (3cr)
BIOS845/FDST805, Food Microbiology (3cr)
BIOS846/FDST806, Food Microbiology Lab (2cr)
BIOS 877, Bioinformatics and Molecular Evolution (3cr)
BIOS 897, Physical Biology of the Cell (3cr)
BIOS 910, Developmental Genetics (3cr)
BIOS 940, Microbial Diversity (3cr)
BIOS/VBMS 950, Medical Molecular Virology (3cr)
BIOS/VBMS 964, Signal Transduction (3cr)

BIOS/VBMS 966, Advanced Viral Pathogenesis (3cr)
BSEN 814, Medical Imaging Systems (3cr)
BSEN 815, Introduction to MRI (3cr)
BSEN 816, Introduction to Biomaterials (3cr)
BSEN 818, Tissue Engineering (3cr)
BSEN 912, Advanced ultrasound imaging (3cr)
CHEM 821, Analytical Chemistry (3cr)
CHEM 823, Analytical Chemistry Lab (2cr)
CHEM 825A-J, miscellaneous specialized analytical topics (1-3cr)
CHEM 835, Chemical Biology (3cr)
CHEM 886, Advanced topics in biophysical chemistry (3cr)
CHME 876, Micro/nanosystems for engineering and life science (3cr)
CHME 882, Polymers (3cr)
ENTO 815, Medical Entomology (3cr)
FDST 870, Nutraceuticals and functional foods (3cr)
NUTR 803, Physiological Foundation of Health and Disease (3cr)
NUTR 820, Molecular Nutrition (3cr)
NUTR 856, Clinical Exercise Physiology (3cr)
NUTR 884, Physiology of exercise (3cr)
STAT 802, Design and analysis of research studies (3cr)
STAT 841 Statistical Methods for high throughput biological data (3cr)
STAT 843, Next generation sequencing and systems biology (3cr)
STAT 876, Introduction to survival analysis (3cr)
VBMS 805, Introduction to Mechanistic Disease (3cr)
VBMS 852, Molecular Virology and Viral Pathogenesis (3cr)
VBMS 908, T Cell Biology: Repertoire and Effector Functions (3cr)
VBMS 944, Immunovirology (3cr)
VBMS 951, Advanced Molecular Infectious Diseases (3cr)