

BIOLOGY (BIOL)

BIOL 101 Opportunities in Biological Sciences (1 credit)

This course will provide a first-year experience for new students by introducing them to departmental faculty and areas of study within biological sciences. Students will explore their interests and opportunities available within the department and university. Graded Pass/Fail. Typically Offered: Fall.

BIOL 102 Biology and Society (3 credits)

General Education: Natural/Integrated Science
Not open to majors or for minor credit in the department of Biological Sciences. Study of ecology, evolution, cells, heredity, and human body processes with a focus on connecting to issues in society. Three lectures per week. Typically Offered: Fall and Spring.

BIOL 102L Biology and Society Lab (1 credit)

General Education: Natural/Integrated Science
Not open to majors or for minor credit in the department of Biological Sciences. The lab follows Biology 102 lecture topics and offers hands-on practice and experimentation with core course concepts. It is strongly recommended that the lecture and lab be taken in the same semester. One 3-hour lab per week. Typically Offered: Fall and Spring.

BIOL 114 Organisms and Environments (4 credits)

General Education: Natural/Integrated Science
Topics include an overview of ecology and a detailed foundation in evolutionary processes and the diversity of life; intended for students in biology-related majors. Three lectures and one 3-hour lab per week. Typically Offered: Fall and Spring.

BIOL 115 Cells and the Evolution of Life (3 credits)

General Education: Natural/Integrated Science
This course provides a detailed foundation of biomolecules, the cell, metabolism, and heredity; intended for students in biology-related majors. Three lectures per week. Typically Offered: Fall and Spring.
Prereqs: CHEM 101 or CHEM 111

BIOL 115L Cells and the Evolution of Life Laboratory (1 credit)

General Education: Natural/Integrated Science
Laboratory for introductory biology; experiments are designed to teach problem solving, scientific methods and the aspects of biology related to the cell. Typically Offered: Fall and Spring. **Prereqs** or
Coreqs: BIOL 115

BIOL 151 Intro to Health Professions (1 credit)

This course is primarily for first- and second-year students, but all students interested in healthcare careers are welcome. The primary content of this course is centered on a series of presentations by guests from a variety of health professions, ranging from occupational therapy to dentistry. Students will learn about the presenters' educational process and personal journey to become a professional in their chosen field, as well as the responsibilities, professional interactions, joys, and challenges of working in that field. Discussions and assignments are designed to broaden the perspective of the healthcare field for the student, and to begin preparing them to be successful applicants in their chosen field. This is a dynamic course and the content varies from one year to the next due to the availability of guest speakers and number of students registered.

BIOL 204 (s) Special Topics (1-16 credits)

Credit arranged

BIOL 213 Structure and Function Across the Tree of Life (4 credits)

Comparative study of morphological and physiological adaptations that have evolved across the tree of life, with the focus of the course split equally between animals and plants. Three lectures and one 3-hour lab per week. Typically Offered: Spring semester.
Prereqs: BIOL 114

BIOL 227 Anatomy and Physiology I (4 credits)

Study of the general organization of the human body and its function, followed by more specific study of the anatomy and physiology of the integumentary, skeletal, muscular, cardiovascular, and respiratory systems. Labs include anatomical models, prosected cadavers, and physiological data collection software. Three lectures and one 3-hour lab per week. (Fall only)
Prereqs: BIOL 102 or BIOL 115

BIOL 228 Anatomy and Physiology II (4 credits)

Continuation of the study of the organization of the human body and its function, including specific study of the anatomy and physiology of the nervous, endocrine, digestive, urinary, and reproductive systems. Labs include anatomical models, prosected cadavers, and physiological data collection software. Three lectures and one 3-hour lab per week. (Spring only)
Prereqs: BIOL 227

BIOL 250 General Microbiology (3 credits)

General Education: Natural/Integrated Science
Introduction to nature and activity of bacteria and other microorganisms; their importance in all life systems. Three hours of lecture per week. (Fall only) Typically Offered: Fall.
Prereqs: BIOL 115, BIOL 115L and either CHEM 101 and CHEM 101L or CHEM 111 and CHEM 111L

BIOL 255 General Microbiology Lab (2 credits)

General Education: Natural/Integrated Science
Training in the handling of microscopes, basic lab equipment, and manipulation of microbes. Two 2-hour labs per week. Typically Offered: Fall and Spring. **Prereqs** or
Coreqs: BIOL 250

BIOL 299 (s) Directed Study (1-16 credits)

Credit arranged

BIOL 300 Survey of Biochemistry (3 credits)

Cannot be taken for credit after BIOL 380. Survey of biochemical principles and the molecular structure and function that describe the chemical basis of life. Typically Offered: Fall.
Prereqs: CHEM 101 and CHEM 101L or CHEM 111 and CHEM 111L; and CHEM 275 or CHEM 277

BIOL 301 Undergraduate Research (0-4 credits, max 8)

Undergraduate research for students without senior standing. BIOL 301 cannot be used for upper-division elective requirement credit in degrees offered by the Department of Biological Sciences.
Prereqs: Permission

BIOL 310 Genetics (3 credits)

Genetic mechanisms in animals, plants, and microorganisms. Three hours of lecture per week. (Fall only)
Prereqs: BIOL 115 and BIOL 115L or BIOL 250

BIOL 312 Molecular and Cellular Biology (3 credits)

Current theory and experimental basis of the structure/function of eukaryotic cells. Topics include plasma membrane, organelles, cytoskeleton and cell mobility, the nature of genes, gene expression, DNA replication and cellular reproduction, and signal transduction. Three one-hour lectures per week. Recommended: CHEM 275 or 277 Typically Offered: Spring.

Prereqs: BIOL 115/BIOL 115L and one of the following: BIOL 310 or GENE 314 or BIOL 250 or BIOL 380.

BIOL 313 Molecular and Cellular Laboratory (1 credit)

1 credit Laboratory experiments and techniques related to molecular and cellular biology. One 3-hour lab per week. (Spring only) Typically Offered: Spring.

Coreqs: BIOL 312

BIOL 314 Ecology and Population Biology (4 credits)

Population genetics, population ecology, species interactions, community ecology, biodiversity, and data analysis. Three lectures and one 3-hour lab per week. (Spring only)

Prereqs: BIOL 114 and BIOL 115, BIOL 115L; STAT 251 or STAT 301; and MATH 160 or MATH 170

BIOL 315 Genetics Lab (1 credit)

Laboratory on genetic mechanisms in animals, plants, and microorganisms. One 3-hour lab per week. (Fall only)

Prereqs: BIOL 115 or BIOL 250

Coreqs: BIOL 310

BIOL 324 Comparative Vertebrate Anatomy (4 credits)

Evolution of vertebrates and their organ systems with an emphasis on structure – function relationships. Two lectures and two 3-hour labs per week. (Spring only, alt/years).

Prereqs: BIOL 114 and BIOL 115, BIOL 115L and BIOL 213; or Permission

BIOL 340 Pathophysiology (3 credits)

This course will cover the physiological basis for altered health, the study of the structural and functional changes in the body leading to disease states. Case studies will be presented and discussed in class to apply and understand the material learned. Typically Offered: Spring.

Prereqs: BIOL 115, BIOL 115L, BIOL 227

Coreqs: BIOL 228

BIOL 350 Microbiomes (3 credits)

The study of microbiomes – microbial communities that may be host-associated or not – has exploded in the past decade. It is now abundantly clear that the interactions within microbiomes and between the microbiomes and their host greatly affect function. This course covers the evolution and ecology of microbial communities and how these dynamics and the resulting functions affect the environment or host they live in. Typically Offered: Spring.

Prereqs: BIOL 250

BIOL 380 Biochemistry I (4 credits)

Carries one credit after Biol 300. Introduction to the structure and function of major molecular constituents of living systems. Emphasis on proteins, enzyme kinetics and catalysis, and carbohydrate metabolism. Three hours of lecture and one hour of interactive problem solving per week. (Fall only)

Prereqs: CHEM 112, CHEM 112L and CHEM 277

BIOL 382 Biochemistry I Laboratory (2 credits)

Lab training in modern methods. One 3-hour lab and one 1-hour recitation per week. (Fall only)

Coreqs: BIOL 380 or equivalent

BIOL 398 (s) Internship (1-3 credits, max 3)

Supervised internship in professional biological, non-university settings, integrating academic study with work experience; requires formal written plan of activities to be approved by academic advisor and department chair before engaging in the work; a final written report will be evaluated by on-campus faculty. Graded P/F.

Prereqs: Permission

BIOL 400 (s) Seminar (1-16 credits, max arranged)

May be used as a science elective after 1 required credit, up to a maximum of 4 credits. Graded P/F.

BIOL 401 Undergraduate Research (1-4 credits, max 8)

General Education: Senior Experience

Undergraduate research at the senior level. BIOL 401 cannot be used for major upper-division elective requirement credit in degrees offered by the Department of Biological Sciences.

Prereqs: Senior Standing and Permission of Instructor

BIOL 403 (s) Workshop (1-16 credits)

Credit arranged

BIOL 404 (s) Special Topics (1-16 credits)

Credit arranged

BIOL 407 Practicum in Biology Laboratory Teaching (2-6 credits, max 12)

General Education: Senior Experience

Organization, preparation, and teaching of lab experiments or demonstrations under faculty supervision.

Prereqs: Any four of the following courses: BIOL 114, BIOL 115, BIOL 213, BIOL 310, BIOL 312, or BIOL 314; and Permission

BIOL 408 Human Anatomy and Physiology Laboratory Pedagogy (2-4 credits, max 8)

General Education: Senior Experience

Developing presentations, learning assessments, and grading schemas for undergraduate anatomy and physiology courses. Includes specimen preparation, data collection, and analysis. Fall and Spring semester, variable credit. 2 credits per each 3-hour lab per week, one hour lab meeting per week.

Prereqs: Instructor Permission

BIOL 411 Senior Capstone (2 credits)

General Education: Senior Experience

Application of biological principles and information to the analysis of societal and philosophical issues. Typically Offered: Spring.

Prereqs: BIOL 310, BIOL 312, and BIOL 314 or BIOL 380, and Senior standing

BIOL 416 Plant Diversity and Evolution (4 credits, max 4)

Origin, evolution, and diversity of major land plant groups; emphasis on systematics, anatomy, morphology, ecological diversity, and macroevolution. Two lectures and one 3-hour lab a week; one field trip. Cooperative: open to WSU degree-seeking students. (Fall only).

Prereqs: BIOL 114 and BIOL 115, BIOL 115L

BIOL 419 Microbial Physiology (3 credits)

This course examines how fundamental cellular phenomena like growth, stress response, or the coordination of metabolism arise. This is critical to understand how microbes overcome physiological challenges and survive in a stressful, changing world, thereby relating physiology to evolutionary pressures and ecological interactions. In particular, we explore quantitative concepts that synthesize understanding and seek to develop predictive models of cellular behavior. Typically Offered: Fall (Even Years).

Prereqs: BIOL 250

BIOL 421 Advanced Evolution (3 credits)

Scientific understanding of the processes of evolution, the history of life on earth, and application of evolutionary principles across fields in biology. Typically Offered: Spring.

Prereqs: BIOL 310 or BIOL 314 or FOR 221 or REM 221 or WLF 220.

BIOL 425 (s) Experimental Field Ecology (3 credits)

General Education: Senior Experience

Intensive course on diverse aspects of field ecology to be held off-campus. Various global locations (i. e. Costa Rica, Oregon coast, Hawaii) are possible. The course will be scheduled during an 8-10 day period preceding/following the Spring Term (i. e. January or May). Will involve travel and lodging costs at student expense.

Prereqs: BIOL 114, BIOL 115, BIOL 213, BIOL 310, BIOL 312, and BIOL 314

BIOL 426 Systems Biology (3 credits)

Joint-listed with BIOL 526

Systems Biology will use quantitative approaches including theory and computation to understand the complex function that emerges from physiological systems. Topics will include transcriptional networks and their common motifs, robustness in chemotaxis and development, noise and variability, evolution of modularity, and optimality in metabolism. Two lectures per week. Cooperative: open to WSU degree-seeking students. (Fall only, alt/years).

Prereqs: BIOL 115, BIOL 115L and MATH 170 or permission of instructor

BIOL 428 Microscopic Anatomy (4 credits)

Basic principles of histology and advanced microscopic anatomy of vertebrate tissues and organs. (Fall, alt/even years)

Prereqs: BIOL 213 or BIOL 312

BIOL 432 Immunology (3 credits)

Theory and mechanisms of the cellular basis of immune response; antibody structure, function, and synthesis; cell-mediated immunity; complement; hypersensitivity; immunologic diseases; transplantation; tumor immunity. Extra oral and/or written assignments required for graduate credit. Typically Offered: Spring.

Prereqs: BIOL 300 or BIOL 380; and BIOL 312

BIOL 433 Pathogenic Microbiology (3 credits)

Epidemiology, host-parasite relationships, pathology, host response; treatment, prevention, and control of pathogenic microorganisms. Extra oral and/or written assignments required for graduate credit. Typically Offered: Fall.

Prereqs: BIOL 250

BIOL 444 Genomics (3 credits)

Structural, functional, and comparative genomics of animals, plants, fungi, and microbes. Case studies illustrating a genomic approach to questions of fundamental biological and societal relevance will be drawn from diverse fields such as human medicine, evolutionary biology, agriculture, and bioterrorism. Typically Offered: Spring.

Prereqs: BIOL 310 or GENE 314

BIOL 446 Phylogenetics (3 credits)

Joint-listed with BIOL 545

The inference of evolutionary trees (phylogeny) and the processes that generate biodiversity from analyses of morphological, molecular, and behavioral data; uses of phylogenies in testing evolutionary and other hypotheses at both inter and intraspecific levels. Two hours of lecture and one 3-hour lab per week. Additional project required for graduate credit. Typically Offered: Spring (Odd Years).

Prereqs: BIOL 310 Cooperative: open to WSU degree-seeking students.

BIOL 447 Virology (3 credits)

Joint-listed with BIOL 547

A survey of virology, with special emphasis on the molecular basis of replication, host-pathogen interactions and diseases associated with animal viruses. Extra oral and/or written assignments required for graduate credit. Recommended preparation: BIOL 250. (Fall, alt/years)

Prereqs: BIOL 312 or Permission

BIOL 454 Biochemistry II (3 credits)

Joint-listed with BIOL 554

Advanced protein structure and function, analyses of metabolism, nitrogen metabolism including amino acids and nucleotides, topics in secondary metabolism, and applications of biochemistry including biofuels and drug discovery. Extra oral and/or written assignments required for grad credit. Typically Offered: Spring.

Prereqs: CHEM 372; BIOL 380 or CHEM 302 or 306; or Permission

BIOL 456 Computer Skills for Biologists (3 credits)

Joint-listed with BIOL 549

Exploration and analysis of biological datasets such as those in molecular evolution, systematics, and genomics. Demonstrations, exercises, and student projects to teach Unix skills, git version control, and computer programming for data exploration and analysis. Graduate credit requires a project and presentation. Cooperative: open to WSU degree-seeking students. (Fall, alt/even years)

Prereqs: BIOL 310 and STAT 251 or STAT 301; or Permission

BIOL 460 Advanced Field Botany (3 credits)

Joint-listed with BIOL 560

Hands-on training in field botany as applied to evolutionary, ecological, and floristic studies; two-week field course in the Inland Northwest. Additional projects/assignments required for graduate credit. (Summer only)

Prereqs: Instructor Permission

BIOL 461 Neurobiology (3 credits)

Joint-listed with BIOL 565

Study of the nervous system, with an emphasis on mechanisms of neuronal signaling, the function of sensory and motor systems, and neural development. Recommended: PHYS 111, PHYS 112, and CHEM 275 or CHEM 277. Cooperative: open to WSU degree-seeking students. (Fall, Alt/years)

Prereqs: BIOL 213, BIOL 310, BIOL 312, GENE 314, BIOL 300, or BIOL 380

BIOL 474 Developmental Biology (3 credits)

Joint-listed with BIOL 573

Embryology of model organisms, mechanisms of developmental processes, reproductive biology, stem cells, growth, and tissue regeneration. Additional projects/assignments required for graduate credit. (Fall, Alt/years)

Prereqs: BIOL 310 or BIOL 312

BIOL 478 Animal Behavior (3 credits)

Evolution, causation, development, and function of behavior in vertebrates and invertebrates. (Spring only)

Prereqs: BIOL 114 and BIOL 115, BIOL 115L

BIOL 482 Protein Structure and Function (3 credits)

Joint-listed with BIOL 582

Detailed analysis of protein structure and function including enzyme activity, binding, folding and stability, and techniques for structure determination. Additional projects/assignments required for graduate credit. (Fall, alt/years) Prereq : BIOL 380

BIOL 483 Mammalogy (3 credits)

Evolution, systematics, distribution, and biology of mammals. Two lectures and one 3-hour lab per week; one field trip. (Fall only)

Prereqs: BIOL 114 and BIOL 115, BIOL 115L

BIOL 484 Invertebrate Zoology (4 credits, max 4)

Evolution, systematics, and ecology of invertebrate animals. Course organized around three main fundamental themes: (1) form and function; (2) development and life history; and (3) diversity and evolutionary history. Focus on non-insect invertebrates. Three lectures and one 3-hour lab a week. Field trips. Typically Offered: Spring (Odd Years).

Prereqs: BIOL 114

BIOL 485 Prokaryotic Molecular Biology (3 credits)

Joint-listed with BIOL 585

Current theory and experimental basis for prokaryotic DNA, RNA, and protein synthesis, gene regulation, and cell wall metabolism. Extra oral and/or written assignments required for graduate credit. (Spring only)

Prereqs: BIOL 250 and BIOL 380

BIOL 487 Cellular and Molecular Basis of Disease (3 credits)

Joint-listed with BIOL 587

Basic principles of cell biology explored in the context of human diseases. Emphasis on molecular mechanisms of cancer, Alzheimer's disease, and prion diseases. Extra oral and/or written assignments required for graduate credit. Typically Offered: Fall.

Prereqs: BIOL 380; and BIOL 310 or GENE 314

BIOL 489 Herpetology (4 credits)

Evolution, systematics, physiology, and ecology of reptiles and amphibians. Three lectures and one 3-hour lab per week; field trip. (Fall only)

Prereqs: BIOL 114 and BIOL 115, BIOL 115L

BIOL 499 (s) Directed Study (1-16 credits)

Credit arranged

BIOL 500 Master's Research and Thesis (1-16 credits)

Credit arranged

BIOL 501 (s) Seminar (1-16 credits)

Credit arranged

BIOL 502 (s) Directed Study (1-16 credits)

Credit arranged

BIOL 503 (s) Workshop (1-16 credits)

Credit arranged

BIOL 504 (s) Special Topics (1-16 credits)

Credit arranged

BIOL 505 Colloquium (1 credit)

Oral presentation required for credi. Graded P/F.

Prereqs: Permission

BIOL 508 Topics in Neuroscience (1 credit, max arranged)

Seminars and discussion of current topics in neuroscience.

Prereqs: Graduate standing

BIOL 521 Graduate Teaching Practicum (3 credits)

Organization, preparation, and teaching of lab experiments or demonstrations under faculty supervision. Graded P/F.

Prereqs: Graduate standing and Permission

BIOL 522 Molecular Evolution (3 credits)

Understanding evolutionary processes and patterns at the molecular level, techniques for using genetic and genomic data to understand evolutionary history of organisms, 3 lectures per week. Cooperative: open to WSU degree-seeking students. (Fall, alt/years)

Prereqs: Undergraduates require permission of instructor

BIOL 524 Research & Curriculum Progress (1 credit, max arranged)

Required of all graduate students one semester per year. The grade is based on preparation of an oral and written presentation of research goals and coursework for the completion of the degree. A letter grade is assigned by committee members at the time of the student's graduate committee meeting. Recommended preparation: Undergraduate degree in Microbiology, Biochemistry, or related topic.

Prereqs: Permission

BIOL 526 Systems Biology (3 credits)

Joint-listed with BIOL 426

Systems Biology will use quantitative approaches including theory and computation to understand the complex function that emerges from physiological systems. Topics will include transcriptional networks and their common motifs, robustness in chemotaxis and development, noise and variability, evolution of modularity, and optimality in metabolism. Two lectures per week. Cooperative: open to WSU degree-seeking students. (Fall only, alt/years).

Prereqs: BIOL 115, BIOL 115L and MATH 170 or permission of instructor

BIOL 536 Phylogenetics Reading Group (1 credit, max arranged)

Review recent articles in phylogenetics and systematics journals. Students choose, critically review, and discuss the articles to develop critical-thinking skills and confidence in their knowledge of the literature. Graded P/F. Cooperative: open to WSU degree-seeking students.

BIOL 545 Phylogenetics (3 credits)

Joint-listed with BIOL 446

The inference of evolutionary trees (phylogeny) and the processes that generate biodiversity from analyses of morphological, molecular, and behavioral data; uses of phylogenies in testing evolutionary and other hypotheses at both inter and intraspecific levels. Two hours of lecture and one 3-hour lab per week. Additional project required for graduate credit. Typically Offered: Spring (Odd Years). Cooperative: open to WSU degree-seeking students.

BIOL 547 Virology (3 credits)

Joint-listed with BIOL 447

A survey of virology, with special emphasis on the molecular basis of replication, host-pathogen interactions, and diseases associated with animal viruses. Extra oral and/or written assignments required for graduate credit. Recommended preparation: BIOL 250. (Fall, alt/years)

Prereqs: BIOL 312 or Permission

BIOL 548 Evolutionary Ecology (3 credits, max 3)

This course develops the theoretical underpinnings for the field of evolutionary ecology and illustrates how this conceptual basis is used to address major questions of social and economic importance such as the spread of invasive species and the evolution of infectious disease. Cooperative: open to WSU degree-seeking students. (Spring, alt/yrs)

BIOL 549 Computer Skills for Biologists (3 credits)

Joint-listed with BIOL 456

Exploration and analysis of biological datasets such as those in molecular evolution, systematics, and genomics. Demonstrations, exercises, and student projects to teach Unix skills, git version control, and computer programming for data exploration and analysis. Graduate credit requires a project and presentation. Cooperative: open to WSU degree-seeking students. (Fall, alt/even years)

Prereqs: BIOL 310 and STAT 251 or STAT 301; or Permission

BIOL 551 Seminar on Reproductive Biology (1 credit, max 5)

Current topics in reproductive biology. Cooperative: open to WSU degree-seeking students. (Spring only)

Prereqs: Graduate standing

BIOL 552 Professional Development for Biologists (3 credits)

Oral and written presentation skills for communicating scientific information, including grant writing and data presentation for manuscripts and seminars.

Prereqs: Graduate standing

BIOL 553 Ethical Issues in Biological Research (1 credit)

Practical ethical issues for biologists.

Prereqs: Graduate standing

BIOL 554 Biochemistry II (3 credits)

Joint-listed with BIOL 454

Advanced protein structure and function, analyses of metabolism, nitrogen metabolism including amino acids and nucleotides, topics in secondary metabolism, and applications of biochemistry including biofuels and drug discovery. Extra oral and/or written assignments required for grad credit. Typically Offered: Spring.

Prereqs: CHEM 372; BIOL 380 or CHEM 302 or 306; or Permission

BIOL 560 Advanced Field Botany (3 credits)

Joint-listed with BIOL 460

Hands-on training in field botany as applied to evolutionary, ecological, and floristic studies; two-week field course in the Inland Northwest.

Additional projects/assignments required for graduate credit. (Summer only)

Prereqs: Instructor Permission

BIOL 563 Mathematical Genetics (3 credits)

Cross-listed with MATH 563

Investigation of aspects of evolutionary biology with an emphasis on stochastic models and statistical methods; topics include: diffusion methods in molecular evolution, gene genealogies and the coalescent, inferring coalescent times from DNA sequences, population subdivision and F statistics, likelihood methods for phylogenetic inference, statistical hypothesis testing, the parametric bootstrap. Cooperative: open to WSU degree-seeking students.

Prereqs: MATH 160 or MATH 170 and STAT 251 or STAT 301

BIOL 565 Neurobiology (3 credits)

Joint-listed with BIOL 461

Study of the nervous system, with an emphasis on mechanisms of neuronal signaling, the function of sensory and motor systems, and neural development. Recommended: PHYS 111, PHYS 112, and CHEM 275 or CHEM 277. Cooperative: open to WSU degree-seeking students. (Fall, Alt/years)

Prereqs: BIOL 213, BIOL 310, BIOL 312, GENE 314, BIOL 300, or BIOL 380

BIOL 573 Developmental Biology (3 credits)

Joint-listed with BIOL 474

Embryology of model organisms, mechanisms of developmental processes, reproductive biology, stem cells, growth, and tissue regeneration. Additional projects/assignments required for graduate credit. (Fall, Alt/years)

Prereqs: BIOL 310 or BIOL 312

BIOL 582 Protein Structure and Function (3 credits)

Joint-listed with BIOL 482

Detailed analysis of protein structure and function including enzyme activity, binding, folding and stability, and techniques for structure determination. Additional projects/assignments required for graduate credit. (Fall, alt/years) Prereq : BIOL 380

BIOL 585 Prokaryotic Molecular Biology (3 credits)

Joint-listed with BIOL 485

Current theory and experimental basis for prokaryotic DNA, RNA, and protein synthesis, gene regulation and cell wall metabolism. Extra oral and/or written assignments required for graduate credit. (Spring only)

Prereqs: BIOL 250 and BIOL 380

BIOL 587 Cellular and Molecular Basis of Disease (3 credits)

Joint-listed with BIOL 487

Basic principles of cell biology explored in the context of human diseases. Emphasis on molecular mechanisms of cancer, Alzheimer's disease, and prion diseases. Extra oral and/or written assignments required for graduate credit. Typically Offered: Fall.

Prereqs: BIOL 380; and BIOL 310 or GENE 314

BIOL 598 (s) Internship (1-16 credits)

Credit arranged

BIOL 599 (s) Non-thesis Master's Research (1-16 credits)

Credit arranged

BIOL 600 Doctoral Research and Dissertation (1-45 credits)

Credit arranged