BIOCHEMISTRY (BIOCHEM)

BIOCHEM 1 — COOPERATIVE EDUCATION/CO-OP IN BIOCHEMISTRY
1 credit.
Full-time off-campus work experience which combines classroom theory with practical knowledge of operations to provide students with a background upon which to base a professional career. Students receive credit only for the term in which they are actively enrolled and working. The same work experience may not count towards credit in Biochemistry 399. Enroll Info: So st, and consent of supervising instructor and academic advisor.
Requisites: None
Repeatable for Credit: Yes, unlimited number of completions

BIOCHEM 100 — BIOCHEMISTRY FRESHMAN SEMINAR
1 credit.
The Freshman Biochemistry Seminar will introduce freshmen to the discipline of biochemistry, to the UW Biochemistry Department, to some of the research projects the faculty are pursuing, to the University, and to the career options open to an individual with a biochemistry undergraduate degree. Enroll Info: None
Requisites: None
Repeatable for Credit: No
Last Taught: Spring 2019

BIOCHEM 104 — MOLECULAR MECHANISMS, HUMAN HEALTH & YOU
3 credits.
Students in the course will be introduced to the fundamentals of genetics and evolution, and with this foundation we will discuss "big-picture issues" in public health and epidemiology. Specifically, we will discuss the building blocks of the cell, how information is processed from DNA into protein, and how cellular processes are regulated. Current and medically relevant topics such as cancer, inflammation, infections, depression and drug addiction will provide the framework for further discussion of topics such as the regulation of gene expression and cellular metabolism. A major goal of this course is for students to learn about their own health and to be able to explore and question science articles they find in the mainstream media. Enroll Info: None
Requisites: None
Course Designation: Breath - Biological Sci. Counts toward the Natural Sci req
Level - Elementary
L&S Credit - Counts as Liberal Arts and Science credit in L&S
Repeatable for Credit: No
Last Taught: Spring 2019

BIOCHEM 201 — SURVEY OF BIOCHEMISTRY
3 credits.
Explore the basic chemical properties of proteins, lipids, carbohydrates, and nucleic acids and their roles in metabolic pathways and gene expression. Current biochemical techniques utilized to investigate these macromolecules will also be described. The role of vitamins in human health will be discussed. Enroll Info: None
Requisites: CHEM 104, 109, or 116
Course Designation: Breadth - Biological Sci. Counts toward the Natural Sci req
Level - Elementary
L&S Credit - Counts as Liberal Arts and Science credit in L&S
Repeatable for Credit: No
Last Taught: Spring 2019

BIOCHEM 289 — HONORS INDEPENDENT STUDY
1-2 credits.
Enroll Info: Enrolled in the CALS Honors Prgm So or Jr st. INTER-AG 288
Requisites: Consent of instructor
Course Designation: Level - Intermediate
L&S Credit - Counts as Liberal Arts and Science credit in L&S
Honors - Honors Only Courses (H)
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Spring 2016

BIOCHEM 299 — INDEPENDENT STUDY
1-3 credits.
Enroll Info: Open to Fr, So or Jr st written cons inst
Requisites: Consent of instructor
Course Designation: Level - Intermediate
L&S Credit - Counts as Liberal Arts and Science credit in L&S
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Spring 2019

BIOCHEM 375 — SPECIAL TOPICS
1-4 credits.
Examines various special topics in biochemistry. Topics and content will vary each semester and by section of the course. Enroll Info: Requisites will vary depending on the particular topic covered.
Requisites: None
Course Designation: Level - Intermediate
L&S Credit - Counts as Liberal Arts and Science credit in L&S
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Spring 2019

BIOCHEM 399 — COORDINATIVE INTERNSHIP/COOPERATIVE EDUCATION
1-8 credits.
Enroll Info: So, Jr or Sr st cons suprvsg inst, advisor, and intrshp prog coordinator
Requisites: Consent of instructor
Course Designation: Level - Intermediate
L&S Credit - Counts as Liberal Arts and Science credit in L&S
Workplace - Workplace Experience Course
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Fall 2018
BIOCHEM 400 — STUDY ABROAD IN BIOCHEMISTRY
1-6 credits.
Provides an area equivalency for courses taken on Madison Study Abroad Programs that do not equate to existing UW courses. Enroll Info: Current enrollment in a UW-Madison study abroad program
Requisites: None
Repeatable for Credit: Yes, unlimited number of completions

BIOCHEM 501 — INTRODUCTION TO BIOCHEMISTRY
3 credits.
Chemistry, nutrition, and metabolism of biological systems. Enroll Info: None
Requisites: CHEM 341 or 343 or concurrent enrollment; or graduate student
Course Designation: Breadth - Physical Sci. Counts toward the Natural Sci req
Level - Advanced
L&S Credit - Counts as Liberal Arts and Science credit in L&S
Repeatable for Credit: No
Last Taught: Spring 2019

BIOCHEM 507 — GENERAL BIOCHEMISTRY I
3 credits.
Chemistry of biological materials, intermediary metabolism and protein structure. First semester of a year-long sequence in biochemistry; Biochemistry 508 is offered in the spring. This course is designed and recommended for undergraduate Biochemistry majors, but others are welcome. Enroll Info: None
Requisites: CHEM 345
Course Designation: Breadth - Physical Sci. Counts toward the Natural Sci req
Level - Advanced
L&S Credit - Counts as Liberal Arts and Science credit in L&S
Repeatable for Credit: No
Last Taught: Fall 2018

BIOCHEM 508 — GENERAL BIOCHEMISTRY II
3-4 credits.
Biosynthesis of biological molecules, signal transduction mechanisms, chemistry and metabolism of nucleic acids, protein synthesis, and molecular and cellular biology. Enroll Info: A grade of BC or higher in BIOCHEM 507, or consent of instructor. Honors credits available with consent of instructor
Requisites: Must have completed BIOCHEM 507
Course Designation: Breadth - Physical Sci. Counts toward the Natural Sci req
Level - Advanced
L&S Credit - Counts as Liberal Arts and Science credit in L&S
Repeatable for Credit: No
Last Taught: Spring 2019

BIOCHEM/NUTR SCI 510 — BIOCHEMICAL PRINCIPLES OF HUMAN AND ANIMAL NUTRITION
3 credits.
Lectures in nutrition for students with a substantial background in biochemistry. Emphasis on biochemical and physiological fundamentals of nutrition. Discussion of protein, fat, carbohydrate, energy, minerals and vitamins and their roles and interrelationships in nutrition and metabolism. Enroll Info: None
Requisites: (BMOLCHEM 314 or 503) or (BIOCHEM 501 or 507) or graduate/professional standing
Course Designation: Breadth - Biological Sci. Counts toward the Natural Sci req
Level - Advanced
L&S Credit - Counts as Liberal Arts and Science credit in L&S
Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Spring 2019

BIOCHEM 511 — UNDERGRADUATE SEMINAR
1 credit.
Required of all senior undergraduate majors in biochemistry. Enroll Info: BIOCHEM 501 or 507 508 or cons inst. Required of all senior undergrad Biochem majors
Requisites: Biochemistry 511
Course Designation: Breadth - Physical Sci. Counts toward the Natural Sci req
Level - Advanced
L&S Credit - Counts as Liberal Arts and Science credit in L&S
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Fall 2010

BIOCHEM 550 — TOPICS IN MEDICAL BIOCHEMISTRY
2 credits.
Lectures. Biochemical and molecular analysis of selected human diseases. Topics will include lipid metabolism and atherosclerosis, cell cycle regulation and oncogene function in cancer, and human immunodeficiency virus (HIV) structure, life cycle, and mechanism of acquired immunodeficiency disease syndrome (AIDS). Enroll Info: None
Requisites: Must have completed BIOCHEM 501 or BIOCHEM 507
Course Designation: Breadth - Biological Sci. Counts toward the Natural Sci req
Level - Advanced
L&S Credit - Counts as Liberal Arts and Science credit in L&S
Repeatable for Credit: No
Last Taught: Spring 2019
BIOCHEM 551 — BIOCHEMICAL METHODS
4 credits.
Lab and student seminar. Introduction to modern biochemical laboratory techniques and current biochemical literature. Students will present a seminar based upon scientific literature that parallels experiments they will perform in lab. For advanced undergraduates and non-biochemistry graduate students. Enroll Info: None
Requisites: BIOCHEM 501 or BIOCHEM 507 or concurrent enrollment
Course Designation: Breadth - Physical Sci. Counts toward the Natural Sci req
Level - Advanced
L&S Credit - Counts as Liberal Arts and Science credit in L&S
Repeatable for Credit: No
Last Taught: Spring 2019

BIOCHEM 570 — COMPUTATIONAL MODELING OF BIOLOGICAL SYSTEMS
3 credits.
Introduction to the mathematical and computational tools needed to model biological systems spanning from molecules to ecosystems. Topics include protein folding and dynamics, gene regulation, biomolecular networks, and population dynamics. The fundamentals in quantitative thinking and analytical reasoning about complex biological systems. Enroll Info: None
Requisites: MATH 222 and (ZOOLOGY/BIOLOGY 101, ZOOLOGY/BIOLOGY 102, and BOTANY/BIOLOGY 130) or (BOTANY/BIOLOGY/ZOOLOGY 151, ZOOLOGY 153, or BIOCORE 381)
Course Designation: Breadth - Biological Sci. Counts toward the Natural Sci req
Level - Advanced
L&S Credit - Counts as Liberal Arts and Science credit in L&S
Repeatable for Credit: No
Last Taught: Spring 2019

BIOCHEM/M M & I 575 — BIOLOGY OF VIRUSES
2 credits.
Lecture-discussion. Broad coverage of animal virology taught at molecular level. Topics include virus structure, viral replication/lifecycle, aspects of pathogenesis and prevention. Enroll Info: Biocore 301/302, or AP score of 4 or 5 and ZOOLOGY/BIOLOGY/BOTANY 151 or 152; or MMI 301
Requisites: None
Course Designation: Level - Advanced
L&S Credit - Counts as Liberal Arts and Science credit in L&S
Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Spring 2019

BIOCHEM 601 — PROTEIN AND ENZYME STRUCTURE AND FUNCTION
2 credits.
Protein structure and dynamics. Protein folding. Physical organic chemistry of enzymatic catalysis. Analysis of enzyme kinetics and receptor-ligand interactions. Enzymatic reaction mechanisms. Enroll Info: None
Requisites: CHEM 345 and (BIOCHEM 501 or 507)
Course Designation: Breadth - Physical Sci. Counts toward the Natural Sci req
Level - Advanced
L&S Credit - Counts as Liberal Arts and Science credit in L&S
Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Fall 2018

BIOCHEM/B M I/BMOLCHEM/MATH 606 — MATHEMATICAL METHODS FOR STRUCTURAL BIOLOGY
3 credits.
A rigorous foundation for mathematical modeling of biological structures. Mathematical techniques include ordinary and partial differential equations, 3D Fourier analysis and optimization. Biological applications include protein folding, molecular dynamics, implicit solvent electrostatics, and molecular interactions. Enroll Info: None
Requisites: (MATH 234, 320, 340, or 375) and (COMP SCI 200, 300, 301, 302, or 310) or graduate/professional standing or member of the Pre-Masters Mathematics (Visiting International) Program
Course Designation: Level - Advanced
L&S Credit - Counts as Liberal Arts and Science credit in L&S
Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Fall 2016

BIOCHEM/B M I/BMOLCHEM/MATH 609 — MATHEMATICAL METHODS FOR SYSTEMS BIOLOGY
3 credits.
Provides a rigorous foundation for mathematical modeling of biological systems. Mathematical techniques include dynamical systems and differential equations. Applications to biological pathways, including understanding of bistability within chemical reaction systems, are emphasized. Enroll Info: None
Requisites: MATH 415 and (MATH 320, 340, 341, or 375) or graduate/professional standing or member of the Pre-Masters Mathematics (Visiting International) Program
Course Designation: Level - Advanced
L&S Credit - Counts as Liberal Arts and Science credit in L&S
Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Spring 2018
BIOCHEM/GENETICS/MICROBIO 612 — PROKARYOTIC MOLECULAR BIOLOGY

3 credits.

Molecular basis of bacterial physiology and genetics with emphasis on molecular mechanisms; topics include nucleic acid-protein interactions, transcription, translation, replication, recombination, regulation of gene expression. Enroll Info: Bact 370 or equiv BIOCHEM 501 or equiv, or cons inst

Requisites: None
Course Designation: Breadth - Biological Sci. Counts toward the Natural Sci req
Level - Advanced
L&S Credit - Counts as Liberal Arts and Science credit in L&S
Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Fall 2018

BIOCHEM/GENETICS/MD GENET 620 — EUKARYOTIC MOLECULAR BIOLOGY

3 credits.

This course focuses on the basic molecular mechanisms that regulate DNA, RNA, and protein metabolism in eukaryotic organisms. This course is intended for advanced undergraduates and first year graduate students with a firm knowledge of basic biochemistry. Enroll Info: None

Requisites: BIOCHEM 501 or 508 or graduate standing
Course Designation: Level - Intermediate
L&S Credit - Counts as Liberal Arts and Science credit in L&S
Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Spring 2019

BIOCHEM/BOTANY 621 — PLANT BIOCHEMISTRY

3 credits.

Biochemistry of photosynthesis, respiration, cell walls, and other metabolic and biosynthetic processes in plants. Enroll Info: Biochem BIOCHEM 501 or 507

Requisites: None
Course Designation: Breadth - Biological Sci. Counts toward the Natural Sci req
Level - Advanced
L&S Credit - Counts as Liberal Arts and Science credit in L&S
Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Spring 2017

BIOCHEM 624 — MECHANISMS OF ENZYME ACTION

2 credits.

Lecture. The relation of structure and kinetics to mechanisms of enzymatic catalysis; studies of specific enzymes and enzyme systems. Enroll Info: BIOCHEM 501, or 507 508, or 601; CHEM 561 or 565; or cons inst (not open to Fr)

Requisites: None
Course Designation: Breadth - Physical Sci. Counts toward the Natural Sci req
Level - Advanced
L&S Credit - Counts as Liberal Arts and Science credit in L&S
Repeatable for Credit: No
Last Taught: Fall 2012

BIOCHEM 625 — MECHANISMS OF ACTION OF VITAMINS AND MINERALS

2 credits.

Emphasizes the importance of coenzyme and cofactors of enzymes (i.e., vitamins and minerals) in biochemistry. All aspects of the biochemistry of coenzymes will be covered, including their biosynthesis as far as is known, the biochemical reactions they catalyze, their chemical and spectroscopic properties, and the mechanisms by which they facilitate biochemical reactions. Enroll Info: None

Requisites: CHEM 345 and previous or concurrent enrollment in BIOCHEM 501 or 507; or graduate standing
Course Designation: Breadth - Physical Sci. Counts toward the Natural Sci req
Level - Advanced
L&S Credit - Counts as Liberal Arts and Science credit in L&S
Repeatable for Credit: No
Last Taught: Spring 2019
**BIOCHEM/PHMCOL-M/ZOOLOGY 630 — CELLULAR SIGNAL TRANSDUCTION MECHANISMS**

3 credits.

Comprehensive coverage of human hormones, growth factors and other mediators; emphasis on hormone action and biosynthesis, cell biology of hormone-producing cells. Enroll Info: None  
**Requisites:** (BIOCHEM 501 or 507) and (BIOCORE 383, ZOOLOGY/BIOLOGY 101, or ZOOLOGY 570) or graduate/professional standing  
**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req  
**L&S Credit:** Counts as Liberal Arts and Science credit in L&S  
**Grad 50%:** Counts toward 50% graduate coursework requirement  
**Repeatable for Credit:** No  
**Last Taught:** Fall 2018

**BIOCHEM 636 — MACROMOLECULAR CRYSTALLOGRAPHY AND DYNAMICS**

2 credits.

Provide knowledge of techniques used to obtain detailed structural and dynamic information about biological macromolecules and survey results. Techniques include x-ray diffraction, electron microscopy and molecular dynamics simulations. Designed for advanced undergraduates and beginning graduate students in the biological sciences. Enroll Info: Concurrent or prior biochem; calc, freshman physics or equiv  
**Requisites:** None  
**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req  
**L&S Credit:** Counts as Liberal Arts and Science credit in L&S  
**Grad 50%:** Counts toward 50% graduate coursework requirement  
**Repeatable for Credit:** No  
**Last Taught:** Spring 2012

**BIOCHEM/NUTR SCI 645 — MOLECULAR CONTROL OF METABOLISM AND METABOLIC DISEASE**

3 credits.

Examination of various physiological states and how they affect metabolic pathways. Discussion of a number of special topics related to the unique roles of various tissues and to metabolic pathways in disease states, including adipocyte biology, beta-cell biology, epigenetics, inflammation, and aging related diseases. Enroll Info: None  
**Requisites:** BIOCHEM 501 or 508 or graduate standing  
**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req  
**L&S Credit:** Counts as Liberal Arts and Science credit in L&S  
**Repeatable for Credit:** No  
**Last Taught:** Fall 2018

**BIOCHEM 660 — METHODS IN BIOCHEMISTRY**

2 credits.

Survey of modern techniques in molecular biology and biochemistry. Enroll Info: 2 sem organic chem, intermed or adv biochem/molec biol, cons inst  
**Requisites:** None  
**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement  
**Repeatable for Credit:** Yes, unlimited number of completions  
**Last Taught:** Fall 2017

**BIOCHEM/CHEM 665 — BIOPHYSICAL CHEMISTRY**

4 credits.

Equilibrium thermodynamics, chemical kinetics and transport properties, with emphasis on solution behavior and application to noncovalent interactions of biological macromolecules in solution. For graduate students interested in the biological applications of physical chemistry. Enroll Info: Grad st or cons inst. Stdts must meet prereqs for CHEM 565 have some prev background in phys chem  
**Requisites:** Graduate standing  
**Course Designation:** Level - Advanced  
**L&S Credit:** Counts as Liberal Arts and Science credit in L&S  
**Grad 50%:** Counts toward 50% graduate coursework requirement  
**Repeatable for Credit:** No  
**Last Taught:** Spring 2019

**BIOCHEM 681 — SENIOR HONORS THESIS**

2-4 credits.

Enroll Info: Sr st cons inst (for hon Biochem majors only)  
**Requisites:** Consent of instructor  
**Course Designation:** Level - Advanced  
**L&S Credit:** Counts as Liberal Arts and Science credit in L&S  
**Honors - Honors Only Courses (H)**  
**Repeatable for Credit:** Yes, unlimited number of completions  
**Last Taught:** Fall 2018

**BIOCHEM 682 — SENIOR HONORS THESIS**

2-4 credits.

Continuation of 681. Enroll Info: Honors program candidacy  
**BIOCHEM 681.**  
**Requisites:** Consent of instructor  
**Course Designation:** Level - Advanced  
**L&S Credit:** Counts as Liberal Arts and Science credit in L&S  
**Honors - Honors Only Courses (H)**  
**Repeatable for Credit:** Yes, unlimited number of completions  
**Last Taught:** Spring 2019

**BIOCHEM 691 — SENIOR THESIS**

2 credits.

Enroll Info: Sr st cons inst  
**Requisites:** Consent of instructor  
**Course Designation:** Level - Advanced  
**L&S Credit:** Counts as Liberal Arts and Science credit in L&S  
**Repeatable for Credit:** Yes, unlimited number of completions  
**Last Taught:** Fall 2018

**BIOCHEM 692 — SENIOR THESIS**

2 credits.

Enroll Info: Sr st and cons inst  
**Requisites:** Consent of instructor  
**Course Designation:** Level - Advanced  
**L&S Credit:** Counts as Liberal Arts and Science credit in L&S  
**Repeatable for Credit:** Yes, unlimited number of completions  
**Last Taught:** Spring 2019
BIOCHEM 699 — SPECIAL PROBLEMS
1-4 credits.
Provides academic credit for research, library, and/or laboratory work under direct guidance of a faculty member. Students are responsible for arranging the work and credits with the supervising faculty member. Enroll Info: None
Requisites: Consent of instructor
Course Designation: Level - Advanced
L&S Credit - Counts as Liberal Arts and Science credit in L&S
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Spring 2019

BIOCHEM/BMOLCHEM 710 — EXPLORING BIOCHEMICAL FUNCTION OF MACROMOLECULES
2 credits.
Required for first-year IPiB graduate students, this course focuses on topics and approaches applicable to an in-depth understanding of fundamental biochemical research. Enroll Info: Graduate standing consent of instructor
Requisites: Must be a graduate student in the Integrated program in Biochemistry (IPiB) or consent of instructor
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Fall 2014

BIOCHEM 711 — SEQUENCE ANALYSIS
2 credits.
Topics will include overviews of: RNA, DNA and protein structure; mechanisms of genetic change; sequence generation methods; comparison and alignment algorithms; motif recognition; 2D predictions; phylogeny calculations; database searching; discriminating coding criteria; phenotypic selection; phylogenetic reconstruction. Enroll Info: None
Requisites: Graduate/professional standing
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Fall 2010

BIOCHEM/MICROBIO 726 — REGULATION OF GENE EXPRESSION IN PROKARYOTES
3 credits.
An intensive examination of a limited number of systems to illustrate the range of molecular mechanism utilized to control gene expression in bacteria. Enroll Info: Genetics/BIOCHEM/GENETICS/MICROBIO 612 or cons inst
Requisites: Graduate/professional standing
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Spring 2010

BIOCHEM 729 — ADVANCED TOPICS
1-3 credits.
Specialized subjects of current interest. Enroll Info: None
Requisites: Graduate/professional standing
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Spring 2019

BIOCHEM 799 — PRACTICUM IN BIOCHEMISTRY TEACHING
1-3 credits.
Enroll Info: None
Requisites: Consent of instructor
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Fall 2014
**BIOCHEM 800 — PRACTICAL NUCLEAR MAGNETIC RESONANCE THEORY**
2 credits.

Multiple pulse NMR, off-resonance effects, composite and shaped pulses, product operators, coherence transfer, one- and two-dimensional NMR, phase cycling, multiple quantum coherence, and cross relaxation. Enroll Info: None
Requisites: Graduate/professional standing
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Fall 2018

**BIOCHEM 801 — BIOCHEMICAL APPLICATIONS OF NUCLEAR MAGNETIC RESONANCE**
2 credits.

Survey of current solution-state nuclear magnetic resonance techniques used in biochemical research; the emphasis will be on how data are acquired and on practical applications. Enroll Info: None
Requisites: Graduate/professional standing
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Spring 2019

**BIOCHEM/BOTANY/GENETICS 840 — REGULATORY MECHANISMS IN PLANT DEVELOPMENT**
3 credits.

Molecular mechanisms whereby endogenous and environmental regulatory factors control development; emphasis on stimulus perception and primary events in the signal chain leading to modulated gene expression and cellular development; lecture. Enroll Info: BIOCHEM 501 or 601 BOTANY 500 or Biocore 301 323
Requisites: Graduate/professional standing
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Fall 2018

**BIOCHEM/CHEM 872 — SELECTED TOPICS IN MACROMOLECULAR AND BIOPHYSICAL CHEMISTRY**
1-3 credits.

Enroll Info: None
Requisites: Graduate/professional standing
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Spring 2019

**BIOCHEM 875 — SPECIAL TOPICS**
1-4 credits.

Enroll Info: None
Requisites: Graduate/professional standing
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Fall 2010

**BIOCHEM/NUTR SCI 901 — SEMINAR-NUTRITION AND METABOLISM (ADVANCED)**
1 credit.

Presentation of original research results; discussion of recent articles in animal metabolism and nutrition. Enroll Info: None
Requisites: Graduate/professional standing
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Fall 2018

**BIOCHEM 906 — TOPICS IN MODELING FOR BIOCHEMICAL SYSTEMS**
1 credit.

Participants discuss topics relevant to predictive modeling of bioenergy systems. Students present talks and lead brainstorming sessions intended to sharpen their skills at cross-disciplinary communication. Modeling microbes and plants at the genetic, molecular and systems level is emphasized. Enroll Info: None
Requisites: Graduate/professional standing
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Fall 2016

**BIOCHEM 909 — SEMINAR-ENZYMEOLOGY (ADVANCED)**
1 credit.

Research reports, special topics, and reports from recent literature in enzymology and enzyme mechanisms. Enroll Info: None
Requisites: Graduate/professional standing
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Spring 2016

**BIOCHEM 910 — SEMINAR-MOLECULAR VIROLOGY (ADVANCED)**
1 credit.

Research reports, special topics, and reports from recent literature in molecular virology. Enroll Info: None
Requisites: Graduate/professional standing
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Spring 2019

**BIOCHEM 911 — SEMINAR-MOLECULAR MECHANISMS OF HORMONE ACTION (ADVANCED)**
1 credit.

To train students in evaluating published papers in regard to scientific merit and content; provide training in delivering an evaluation of this material to a large group; and to help students and faculty stay abreast of current developments in the area of steroid hormone action. Enroll Info: None
Requisites: Graduate/professional standing
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Spring 2009
BIOCHEM 912 — SEMINAR-MOLECULAR MECHANISMS OF DEVELOPMENT
1 credit.

Classical and current papers concerning molecular and genetic mechanisms of eukaryotic development will be presented and discussed. Enroll Info: None
Requisites: Graduate/professional standing
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Fall 2018

BIOCHEM/BMOLCHEM 913 — SEMINAR-RI BOGROUP (ADVANCED)
1 credit.

Student-led discussions of RNA-related problems. Enroll Info: Biochem 603 or equiv, GENETICS 466 or equiv; cons inst
Requisites: Graduate/professional standing
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Spring 2019

BIOCHEM/BMOLCHEM/M M & I/MICROBIO 914 — SEMINAR-MOLECULAR BIOSCIENCES (ADVANCED)
1 credit.

During the fall semester, molecular biosciences trainees who have not achieved dissertator status will present seminars based primarily on literature related to their projects. During the spring semester, molecular biosciences trainees with dissertator status will present seminars based upon their own research. Enroll Info: None
Requisites: Graduate/professional standing
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Spring 2019

BIOCHEM/CBE/MICROBIO 916 — CELLULAR MECHANISMS OF PROTEIN BIOGENESIS AND TRAFFICKING
1 credit.

Recent literature relating to cellular aspects of the regulation of protein biogenesis including protein synthesis, folding, modification, degradation and trafficking, as well as function of molecular chaperones, will be presented and discussed. Enroll Info: None
Requisites: Graduate/professional standing
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Spring 2016

BIOCHEM/CHEM 918 — SINGLE MOLECULE APPROACHES TO BIOLOGY
1 credit.

A combination of recent literature and original research presentations relating to the use of single molecule techniques in biochemistry including fluorescence microscopy, tethered particle motion, patch-clamping, cryo-electron microscopy, optical trapping, magnetic tweezers, and super resolution microscopy. Enroll Info: None
Requisites: Graduate/professional standing
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Spring 2019
BIOCHEM/CHEM 945 — SEMINAR-CHEMICAL BIOLOGY (ADVANCED)
1 credit.
Recent published research in chemical biology and related areas.
Intended for advanced graduate students, and required of all NIH
Chemistry-Biology Interface trainees. Enroll Info: None
Requisites: Graduate/professional standing
Course Designation: Grad 50% - Counts toward 50% graduate coursework
requirement
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Spring 2019

BIOCHEM 990 — RESEARCH
1-12 credits.
Enroll Info: None
Requisites: Graduate/professional standing
Course Designation: Grad 50% - Counts toward 50% graduate coursework
requirement.
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Spring 2019

BIOCHEM 999 — SPECIAL PROBLEMS
1-3 credits.
Enroll Info: None
Requisites: Consent of instructor
Course Designation: Grad 50% - Counts toward 50% graduate coursework
requirement
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Fall 2005