

MOL - Molecular Biology

Molecular Biology: MOL

Lower-Division Courses

Upper-Division Courses

Graduate Courses

MOL 380. Advanced Readings in Molecular Biology.

Individual instruction in the literature of molecular biology. Individual instruction. May be repeated for credit. Prerequisite: Graduate standing and consent of instructor.

MOL 080M. Dual MD/PhD Program with UT Medical Branch.

Preclinical medical study at the University of Texas Medical Branch at Galveston. May not be taken concurrently with another course at the University of Texas at Austin. Prerequisite: Graduate standing and admission to the MD/PhD dual degree program in cell and molecular biology.

MOL 381K. Cellular and Molecular Bases of Neural Development.

Introduction to the principles by which the neural tube (brain and spinal cord) forms during embryonic development. Discuss the cellular and molecular mechanisms underlying the formation of a three-dimensional neural tube and its division into forebrain, midbrain, hindbrain, and spinal cord. Three lecture hours a week for one semester. Molecular Biology 381K and Biology 381K (Topic: Cell & Mol Bases of Neur Dev) may not both be counted. Prerequisite: Graduate standing.

MOL 382E. Epigenetics.

Examine how epigenetic modifications are covalent modifications of DNA or histones that cause changes in gene expression and how epigenetic modifications appear to be a method through which nurture or the environment can influence nature. Focus on how experience or environmental factors epigenetically modify health or behavior of animals. Three lecture hours a week for one semester. Only one of the following may be counted: Biology 381K (Topic: Epigenetics), 382E, Molecular Biology 382E, Neuroscience 382E. Prerequisite: Graduate standing.

MOL 383K. Developmental, Stem Cell, and Regenerative Biology.

Explore the principles and mechanisms of embryonic development and the processes guiding stem cell differentiation and tissue repair. Three lecture hours a week for one semester. Biology 383K (Topic: Devlpmntl/Stem Cell/Regen Bio) and Molecular Biology 383K may not both be counted. Prerequisite: Graduate standing.

MOL 384K. Topics in Advanced Molecular Biology.

Examine molecular biology topics in-depth. Three lecture hours per week for one semester. May be repeated for credit when the topics vary. Prerequisite: Graduate standing.

MOL 388M. Plant Molecular Biology.

Examine the fundamentals of plant molecular biology, including structure and expression of the chloroplast and mitochondrial genomes. Three lecture hours a week for one semester. Only one of the following may be counted: Biology 388M, Molecular Biology 388M, Plant Biology 388M. Prerequisite: Graduate standing, and consent of instructor and the graduate advisor.

MOL 190C, 290C, 390C. Topics in Molecular Biology: Seminar.

Lectures and discussions on current topics in molecular biology. One, two, or three lecture hours a week for one semester. May be repeated for credit when the topics vary. Prerequisite: Graduate standing and consent of instructor.

Topic 1: Seminar in Molecular Biology I. Students read, present, and discuss current research papers based on speakers for the Institute for Cellular and Molecular Biology weekly seminar series. Students also will present short talks on their the research from one of their laboratory rotations.

Topic 2: Seminar in Molecular Biology II. Students write a mock grant proposal with their principle investigator and present a practice part one preliminary exam talk based on the proposal.

Topic 3: Seminar in Molecular Biology III. Students present a detailed seminar on their thesis research.

MOL 391. Grant Writing and Presentation Skills.

Restricted to second-year graduate students in the Interdisciplinary Life Sciences Graduate Programs. Designed for second-year doctoral students. Prepare a detailed proposal of the dissertation research goals of each student with a presentation in the form of a short talk. Focus on critical evaluation of research aims, methodology, and communication skills. Three lecture hours a week for one semester Only one of the following may be counted: Biology 391, 394 (Topic: Grant Writing and Presentation Skills), Molecular Biology 391. Offered on the letter-grade basis only. Prerequisite: Graduate standing, and consent of instructor and the graduate advisor.

MOL 391P. Advanced Virology.

Explore the replication of and transformation by DNA and RNA animal viruses. Three lecture hours a week for one semester. Biology 391P and Molecular Biology 391P may not both be counted. Prerequisite: Graduate standing.

MOL 192, 292, 392, 492, 592, 692, 792, 892, 992. Research Problems.

One lecture hour a week for one semester, with additional laboratory hours. May be repeated for credit. Prerequisite: Graduate standing and consent of instructor and the graduate adviser.

MOL 394L. Immunology.

Introduction to the immune system for graduate students without prior coursework in immunology. Discuss innate immunity, the molecular basis of T cell and B cell antigen recognition, hematopoiesis and the development of lymphocytes, and cellular and humoral immune responses. Touch on immunodeficiency, autoimmunity, immunotherapy and vaccination. Explore current primary literature on select immunological topics in greater depth. Three lecture hours a week for one semester. Molecular Biology 394L and Biology 394L may not both be counted. Prerequisite: Graduate standing.

MOL 394M. Genomics.

Examine genome structure, organization, and function of model organisms; theory and methodology of genetic and physical mapping; sequencing analysis and annotation; genome duplication and evolution; and ethics for biotechnology and cloning. Three lecture hours a week for one semester. Biology 394M (Topic: Genomics) and Molecular Biology 394M may not both be counted. Prerequisite: Graduate standing.

MOL 195. Molecular Biology Conference Course.

Conference course. May be repeated for credit. Prerequisite: Graduate standing and consent of instructor.

MOL 395F. Genetics.

Same as Biology 395F and Chemistry 395F. Basic principles of Mendelian and molecular genetics, and an exploration of the genetic toolbox using examples of analytic methods and modern manipulations. Focus on the genetic analysis of model organisms. Use of genetic tools in dissecting complex biological pathways, developmental processes, and regulatory systems. Three lecture hours a week for one semester. Prerequisite: Graduate standing. An introductory course in genetics, such as Biology 325, is strongly recommended.

MOL 395G. Structure and Function of Proteins and Membranes.

Same as Biochemistry 395G. Explore advanced biochemistry concepts and the scientific process. Examine a detailed consideration of the structure and function of proteins, carbohydrates, lipids and nucleic acids, as well as discussion of enzyme mechanisms and kinetics. Three lecture hours a week for one semester. Only one of the following may be counted: Biochemistry 395F, 395G, Biology 395I, 395G, Molecular Biology 395I, 395G, Microbiology 395G. Prerequisite: Graduate standing; a one-year undergraduate sequence in biochemistry is strongly recommended.

MOL 395H. Cell Biology.

Same as Chemistry 395H. Detailed consideration of mechanisms of growth control, cell cycle regulation, mitosis, cell signaling, protein targeting, and the integration of these processes. Three lecture hours a week for one semester. Only one of the following may be counted: Biology 395H, Chemistry 395H, Molecular Biology 395H, Microbiology 395H. Prerequisite: Graduate standing; and consent of instructor or Biology 395F and 395G, Chemistry 395F, Molecular Biology 395F and 395G.

MOL 395I. Advanced Biochemistry.

Same as Biochemistry 395F and Biology 395I. Explore advanced biochemistry concepts and the scientific process. Consider the structure and function of proteins, carbohydrates, lipids and nucleic acids, and discuss enzyme mechanisms and kinetics. Three lecture hours a week for one semester. Only one of the following may be counted: Biochemistry 395F, 395G, Biology 395I, 395G, Molecular Biology 395I, 395G, Microbiology 395G. Prerequisite: Graduate standing; a one-year undergraduate sequence in biochemistry is strongly recommended.

MOL 395J. Genes, Genomes, and Gene Expression.

Same as Biochemistry 395J. Detailed consideration of prokaryotic and eukaryotic mechanisms of DNA replication and transcription; posttranscriptional processing of transcription products; and mechanism and regulation of the translation of messenger RNAs. Three lecture hours a week for one semester. Only one of the following may be counted: Biochemistry 395J, Biology 395J, Molecular Biology 395J, Microbiology 395J. Prerequisite: Graduate standing; and Biology 395F and 395G, or Chemistry 395F and 395G, or Molecular Biology 395F and 395G, or consent of instructor.

MOL 395L. Laboratory Studies in Molecular Biology.

Explore modern molecular biology with a research project focus in a laboratory setting. Use methods such as eukaryotic RNA purification, quantitative PCR, CRISPR or site-directed mutagenesis cloning, cell fractionation, protein purification and Western blotting detection toward experimental goals. One lecture hour and six laboratory hours a week for one semester. Molecular Biology 395L and Biology 395L may not both be counted. Prerequisite: Graduate standing.

MOL 698. Thesis.

The equivalent of three lecture hours a week for two semesters. Offered on the credit/no credit basis only. Prerequisite: For 698A, graduate

standing in molecular biology and consent of the graduate adviser; for 698B, Molecular Biology 698A.

MOL 398T. Supervised Teaching in Molecular Biology.

Teaching under close supervision of the instructor; weekly laboratory instruction of undergraduates, group meetings with the instructor, individual consultations, and reports throughout the teaching period. Three lecture hours a week for one semester. Prerequisite: Graduate standing in molecular biology.

MOL 399W, 699W, 999W. Dissertation.

May be repeated for credit. Offered on the credit/no credit basis only. Prerequisite: Admission to candidacy for the doctoral degree.

Professional Courses