

**Graduate Courses****COURSE LISTINGS**

Each course 45 hrs, 3 cr, unless otherwise noted. Prior to registration, students must obtain the approval of the instructor and/or graduate adviser to attend courses. The specific prerequisites listed below are aids for evaluation of the background required.

**MOLECULAR AND CELL BIOLOGY**

**BIOL 710.13 Molecular Biology Lecture** Structure and function of biomolecules; enzyme mechanisms; replication, transcription, translation; regulation of macromolecular biosynthesis; energy transformations. prereq: 1 yr of organic chemistry 75 hrs, 5 cr fall only

**BIOL 710.14 Molecular Biology Laboratory** Isolation of RNA and DNA, construction and screening of DNA libraries, Southern and Northern blot analysis, cloning, DNA sequencing. coreq: BIOL 710.13 or comparable course in biochemistry 105 hrs lab and conf, 4 cr fall only

**BIOL 714.01 Cell Biology** In-depth examination of cellular and subcellular organization and activity. Topics include membrane structure, biogenesis, transport; cell surface interactions, cells in culture, the cell cycle; organelle structure, function and assembly; modern experimental tools and techniques. prereq: undergraduate organic chemistry or biochemistry 60 hrs, 4 cr spring only

**GENETICS AND DEVELOPMENTAL BIOLOGY**

**BIOL 700.05 Genetics** Prokaryotic and eukaryotic genetics; organization of DNA, replication repair, mutagenesis, recombination, control of gene expression, genetic engineering and molecular techniques. prereq: undergraduate genetics and molecular biology (or biochemistry) 60 hrs lec, 4 cr fall only

**BIOL 750.03 Developmental Biology** Analysis of morphological and molecular aspects of development and differentiation. Topics include gametogenesis, fertilization, early development, differentiative processes, organogenesis, neoplasia and aging with emphasis on genetic regulation in development. prereq or coreq: BIOL 710.13 and BIOL 714.01

60 hrs lec, 4 cr spring only

**PHYSIOLOGY AND NEUROSCIENCE**

\* **BIOL 790.51 Neuroscience I** Given at CUNY Graduate Center. Comprehensive introduction to neuroscience with regard to structure and function at the cellular level. fall only

**BIOL 790.70 Neuroscience II** Given at CUNY Graduate Center. Introduction to sensory and motor systems and to neural behavioral development. spring only\*Students must register for Neuroscience I at City College of CUNY.

**BIOTECHNOLOGY**

**BIOL 610 Workshop in Biotechnology** Laboratory-intensive experimental projects which introduce current research techniques and include individual participation in planning and preparation for experiments. The focus is on a broad biotechnology topic such as the isolation, cloning, and expression of a gene, utilizing the techniques of molecular genetics. prereq: BIOL 710 or permission of instructor 30 hrs/wk for 4 wks, 4 cr

**BIOL 620 Internship** Students who successfully complete BIOL 610 are eligible for a 3-month internship as an opportunity to acquire research experience and additional skills in industrial/private laboratory settings. A paper on the internship is required. prereq: BIOL 610 3 months, 4 cr

**SEMINARS**

**BIOL 790.51-BIOL 790.99** Seminars may be offered in any of the following areas: cell biology, genetics, biochemistry, molecular genetics, physiology, developmental biology, neuroscience, biotechnology, and other special topics. prereq: BIOL 700.05 and BIOL 710.13 fall and spring

**TUTORIALS**

**BIOL 792.02 and BIOL 792.04** prereq: perm grad adviser

30 or 60 hrs, 2 or 4 cr

**THESIS RESEARCH - MA**

**BIOL 799.1, BIOL 799.2, BIOL 799.3** prereq: perm grad adviser

15, 30, or 45 hrs, 1, 2, or 3 cr, respectively

**INDEPENDENT DOCTORAL RESEARCH**

**BIOL U899.1-U899.10** prereq: perm grad adviser each 15 to 150 hrs, 1 to 10 cr

(course listed in the schedule of classes at the CUNY Graduate Center)

**PROGRAM FOR TEACHERS OF ADOLESCENT EDUCATION**

**BIOL 600 Molecular Biology for Science Teachers** Molecular aspects of cellular function; properties of biomolecules, their biosynthesis and breakdown; structure and function of proteins and enzymes, metabolites, membranes, and nucleic acids; cellular mechanisms of energy transduction; integration and control of cell metabolism. prereq: an undergraduate degree in biology and a course in organic chemistry and permission of instructor fall only

**BIOL 602.10 Molecular Genetics for Science Teachers** A comparison of viral, procaryotic, and eucaryotic systems; review of classical Mendelian principles and mechanisms; bacterial DNA replication, transcription, and their control; mechanisms of gene mutation, repair, recombination, and transposition; applications of recombinant DNA technology; organization of nucleic acid into chromosomes; control of gene expression in procaryotes, in the eucaryotic cell cycle, and in cell development. prereq: BIOL 600 or equivalent and permission of instructor spring only

**BIOL 610.55 Laboratory Workshop in Biology Education** A series of laboratory-intensive experimental projects, each lasting one week or more, which introduce current research techniques and include individual participation in planning, preparation, and analysis of experiments. The focus is on broad biotechnology topics such as the isolation, cloning, and expression of a gene, utilizing the techniques of molecular genetics, and how these topics may be applied to the high school science classroom. prereq: a graduate course in biology or permission of instructor

120 hrs, 3 cr

**BIOL 630 Science and Society** A study of the interactions between technological and societal changes, with an emphasis on eliciting within the classroom productive oral and written critiques and debates concerning potentially controversial technological change. Focusing on present-day issues, students will learn various models for analyzing the impact scientific change has on society and how social change directs science. prereq:

**BIOL 640 Biodiversity and Evolution** This course is designed to prepare secondary science educators to examine essential questions in the life sciences and prepare them to teach the Living Environment regents course for ninth grade high school students and eighth grade middle school students, through the use of resources at the American Museum of Natural History. Students will be shown different approaches to developing, applying and planning science investigations for life sciences at all grade levels. prereq: BA degree in Biology/Biology Education, or permission of instructor.

**Courses offered only upon sufficient student demand**

**BIOL 650 Cell and Tissue Culture**

**BIOL 722.02 Endocrinology**

**BIOL 770.06 Fine Structure of Cells**

**BIOL 771.01 Analysis of Mammalian**

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