**MS in Biological Sciences at LSUS**

**REQUIRED COURSES (Thesis Option)**

BIOS 670: Evolution (3 cr.) – Another course will be substituted for BIOS 670 if a student enters the program with credit for BIOS 470.
BIOS 735: Biological Sciences Seminar (1 cr.)
BCHM 722: Experimental Design and Technique (3 cr.)
BIOS 799: Thesis (6 cr.)
MATH 710: Statistics for Medical/Biological Applications (3 cr.)

**REQUIREMENTS IN CONCENTRATION – 0 -6 hours depending on background as determined by consultation with thesis committee.**

**ELECTIVES IN CONCENTRATION – 8 - 14 hours – Selected from one of the following concentration areas in consultation with thesis committee:**

**Environmental Biology Concentration**

BIOS 740: Ecological Methods (3 cr.)
GEOG 620: Geographic Information Systems (3 cr.)
ENSC 621: Environmental Analysis (3 cr.)
BIOS 640: Principles of Ecology (3 cr.)
BIOS 640L: Principles of Ecology Laboratory (1 cr.)
ENSC 641: Environmental Compliance (3 cr.)
BIOS 646: Aquatic Biology (3 cr.)
BIOS 646L: Aquatic Biology Laboratory (1 cr.)
BIOS 690: Special Topics in Biological Sciences (1-3 cr.)
BIOS 750: Ecotoxicology (3 cr.)
BIOS 753: Marine Biology for Teachers (3 cr.)
ENSC 790: Special Topics in Environmental Science (3 cr.)

**Cellular and Molecular Biology Concentration**

BIOS 630: Molecular Biology (3 cr.)
BIOS 630L: Molecular Biology Laboratory (2 cr.)
BCHM 610: Biochemistry and Molecular Biology I (3 cr.)
BCHM 610L: Biochemistry and Molecular Biology Lab (2 cr.)
BCHM 612: Biochemistry and Molecular Biology II (3 cr.)
BCHM 612L: Biochemistry and Molecular Biology II Lab (2 cr.)
BIOS 660: Microbial Genetics (3 cr.)
BIOS 665: Applied Biotechnology (3 cr.)
BIOS 690: Special Topics in Biological Sciences (1-3 cr.)
BIOS 745: Plant Molecular Biology (3 cr.)
BCHM 740: Plant Biochemistry (3 cr.)
BIOS 790: Special Topics in Biology (3)

**Organismal Biology Concentration**

BIOS 640: Principles of Ecology (3 cr.)
BIOS 640L: Principles of Ecology Laboratory (1 cr.)
BIOS 646: Aquatic Biology (3 cr.)
BIOS 646L: Aquatic Biology Laboratory (1 cr.)
BIOS 671: Biogeography (3 cr.)
BIOS 665: Applied Biotechnology (3 cr.)
BIOS 745: Plant Molecular Biology (3 cr.)
BCHM 740: Plant Biochemistry (3 cr.)
BIOS 753: Marine Biology for Teachers (3 cr.)
BIOS 790: Special Topics in Biology (3)
Computational Biology Concentration
CST 707: Data Modeling and Database Design (3 cr.)
CST 711: Informatics (3 cr.)
CSC 666: Introduction to Bioinformatics (3 cr.)
CSC 668: Introduction to Data Mining (3 cr.)
CSC 790: Selected Topics in Computer Systems Technology
BIOS 690: Special Topics in Biological Sciences (1-3 cr.)
BIOS 701: Introduction to Molecular Biology I (3 cr.)
BIOS 703: Introduction to Molecular Biology II (3 cr.)
BIOS 790: Special Topics in Biology (3 cr.)

Graduation in a thesis option concentration will require the successful writing of a thesis manuscript and an oral defense of the thesis research.

Health Sciences Concentration (Non-Thesis Option)
REQUIRED COURSES (10 cr.)
BIOS 670: Evolution (3 cr.)
BCHM 722: Experimental Design and Technique (3 cr.)
BIOS 735: Biology Seminar (1 cr.)
MATH 710: Statistics for Medical and Biological Applications (3 cr.)

REQUIREMENTS IN CONCENTRATION – 9 cr.
BCHM 610: Biochemistry and Molecular Biology I (3cr.)
BCHM 612: Biochemistry and Molecular Biology II (3cr.)
BIOS 686: Clinical Anatomy (3 cr.)

ELECTIVES IN CONCENTRATION – 11 cr.
BCHM 460: Clinical Biochemistry (3 cr.)
BIOS 630: Molecular Biology (3 cr.)
BIOS 690: Special Topics in Biological Sciences (1 – 3 cr.)
BIOS 790: Special Topics in Biology (3 cr.)
CHEM 790: Special Topics in Chemistry (3 cr.)
BIOS 620: Cell Biology (3 cr.)
BIOS 620L: Cell Biology Lab (1 cr.)
BIOS 621: Immunology (3 cr.)
BIOS 621L: Immunology Lab (1 cr.)
BIOS 675: Developmental Biology (3 cr.)
BIOS 765L: Developmental Biology Lab (1 cr.)
BIOS 634: Histology (3 cr.)
BIOS 634L: Histology Lab (1 cr.)
BIOS 687: Medical Physiology (3 cr.)
BIOS 663: Medical Genetics (3 cr.)

Graduation in the health science concentration will depend on achieving a score of 80% on a comprehensive exam with a maximum of three retakes. The final exam may be administered once each semester/year and may contain 100 questions with approximately 15 questions from each of the six core and required concentration classes (BCHM 722, BIOS 670, MATH 710, BCHM 610, BCHM 612, and Clinical Anatomy) and 10 passage-based questions. If a student has taken the 400-level equivalent of the same graduate-level course, then special permission from the department chairperson is required to take the graduate-level course.