

DEPARTMENT OF BIOLOGY

Non-Degree Pathway(s):

- 2-Year Pre-Nursing (<https://catalog.tsu.edu/undergraduate/schools-colleges/science-engineering-technology/biology/2-year-pre-nursing/>)

Undergraduate Degree(s):

- Bachelor of Science in Biology (Comprehensive Concentration) (<https://catalog.tsu.edu/undergraduate/schools-colleges/science-engineering-technology/biology/biology-comprehensive-concentration-bs/>)
- Bachelor of Science in Biology (Geographic Information Systems Certificate) (<https://catalog.tsu.edu/undergraduate/schools-colleges/science-engineering-technology/biology/biology-gis-certificate-bs/>)
- Bachelor of Science in Biology (Pre-Health Professional Concentration) (<https://catalog.tsu.edu/undergraduate/schools-colleges/science-engineering-technology/biology/biology-pre-health-professional-concentration-bs/>)

Minor(s):

- Biology (<https://catalog.tsu.edu/undergraduate/schools-colleges/science-engineering-technology/biology/biology-minor/>)

As the largest instructional unit in the College of Science, Engineering & Technology (COSET), the Department of Biology offers courses in Biology (BIOL) to the general student population, the Bachelor of Science (B.S.) Degree in Biology, the Master of Science (M.S.) Degree in Biology, and a minor in Biology for students pursuing majors in other departments where the declaration of a minor is required. In addition, the Department of Biology serves as the academic unit overseeing Texas Southern University's Pre-Nursing Program. This is a non-degree program designed to prepare students for admission into a Bachelor of Science (B.S.) Degree in nursing program. The teaching, research, and office facilities for faculty members are housed on the second and third floors of the TSU Science Center with the Department Office located in Room 203Z.

Students interested in pursuing the Master of Science in Biology should consult the Graduate School Bulletin of Texas Southern University for further information:

For the Masters in Biology click here (<https://catalog.tsu.edu/graduate/schools-colleges/science-engineering-technology/biology/biology-ms/>).

The mission of the Department of Biology is threefold:

1. to provide the opportunity for all students who matriculate through Texas Southern University to become better informed about biological phenomena and life processes, as well as apply information and knowledge gained toward an improved understanding of man, society, and the universe;
2. to provide undergraduate students with the appropriate background in Biology that will allow them to pursue medical, biomedical, and other allied or related careers; and
3. to ensure that undergraduates who intend to matriculate in graduate programs in the biological sciences, or related areas, are adequately prepared.

In pursuing the B.S. in Biology, students may select from the Comprehensive, or the Pre-Health Professional, or Bachelor of Science degree in Biology with Geographic Information Systems (GIS) Certification concentrations. The Comprehensive Concentration is designed to prepare students to enter the workforce or for additional study at the graduate level, while the Pre-Health Professional Concentration is intended to prepare students for professional schools (Medical, Dental, Veterinary, Optometry, Physical Therapy and etc.) upon graduation. Students should contact professional schools directly to ascertain specific admission requirements. **Grades of "C" or better, where grades of "C-" are unacceptable, must be earned in all courses needed to satisfy the major and the minor.** Students should seek detailed advisement from their designated advisors when selecting a minor because the selection of said minor could impact the total number of credits required for graduation. In no case will a student majoring in Biology qualify for graduation at the undergraduate level without satisfactorily completing a minimum of 120 semester credit hours.

The Biology undergraduate curriculum at Texas Southern University is designed to provide a comprehensive general education in the natural sciences, humanities, and social sciences and a strong foundation in the principles of modern biology. Interested students must gain admission to the University, satisfy TSI or any equivalent test requirements, and remove deficiencies identified at the time of admission with the University's TSI Testing Center. Shortly after arriving at Texas Southern University, all students interesting in pursuing a degree in Biology will be assigned a pre-major advisor, who will assist in planning their program of study and mentoring them in achieving their career goals.

All students following the Comprehensive Concentration will be required to maintain a GPA of 2.00. All students following the Pre-Health Professional Concentration will be required to maintain an overall GPA of 3.5 or better. If a student's overall GPA falls below the stated requirements for two consecutive semesters the student will be removed from the list of designated majors and minors in Biology. All majors should request that the Faculty Chair or the Departmental Appointee evaluate their transcripts at the beginning of their senior year to verify eligibility for degree conferral at the end of that year. Please note that BIOL 401-Undergraduate Research serves as a capstone course and is required.

Additionally, to satisfy program assessment requirements, all biology majors are required to take an EXIT EXAM administered during their senior year.

Individuals interested in seeking certification for teaching in the public schools of Texas in Biology should contact the Teacher Certification Officer in the College of Education at Texas Southern University for application instructions.

For the minor in Biology click here (<https://catalog.tsu.edu/undergraduate/schools-colleges/science-engineering-technology/biology/biology-minor/>).

Further information may be obtained by contacting the Department Office at (713) 313-7005.

- 2-Year Pre-Nursing (<https://catalog.tsu.edu/undergraduate/schools-colleges/science-engineering-technology/biology/2-year-pre-nursing/>)
- Biology (Comprehensive Concentration), Bachelor of Science (<https://catalog.tsu.edu/undergraduate/schools-colleges/>)

science-engineering-technology/biology/biology-comprehensive-concentration-bs/)

- Biology (Geographic Information Systems Certificate), Bachelor of Science (<https://catalog.tsu.edu/undergraduate/schools-colleges/science-engineering-technology/biology/biology-gis-certificate-bs/>)
- Biology (Pre-Health Professional Concentration), Bachelor of Science (<https://catalog.tsu.edu/undergraduate/schools-colleges/science-engineering-technology/biology/biology-pre-health-professional-concentration-bs/>)
- Biology Minor (<https://catalog.tsu.edu/undergraduate/schools-colleges/science-engineering-technology/biology/biology-minor/>)

Biology Courses

BIOL 111 Biological Science Lab I (1 Credits)

Lab: 3

Biological Science Laboratory I (1) Laboratory course devoted to the study of basic life processes and the structural and functional organization of plants and animals. One hour of lecture and two hours of laboratory per week. Corequisite: BIOL 131. Listed as BIOL 1106 in the Texas Common Course Numbering System.

Prerequisite(s): BIOL 1306 (may be taken concurrently) or BIOL 131 (may be taken concurrently)

College/School: Col of Science, Engr & Tech

Department: Department of Biology

BIOL 112 Biological Science Lab II (1 Credits)

Lab: 3

Biological Science Laboratory II (1) Continuation of Biology 111 with emphasis on biological concepts and processes. One hour of lecture and two hours laboratory per week. Prerequisite: BIOL 111. Co-requisite: BIOL 132. Listed as BIOL1107 in the Texas Common Course Numbering System.

Prerequisite(s): (BIOL 111 and BIOL 131) or (BIOL 132 (may be taken concurrently))

College/School: Col of Science, Engr & Tech

Department: Department of Biology

BIOL 132 Biological Science II (3 Credits)

Lecture: 3, **Lab:** 0

Biological Science II (3) Continuation of BIOL 131. Three hours of lecture per week. Prerequisites: BIOL 121, BIOL 131. Co-requisite: BIOL 122. Listed as BIOL 1307 in the Texas Common Course Numbering System.

Prerequisite(s): (BIOL 131 or BIOL 111)

College/School: Col of Science, Engr & Tech

Department: Department of Biology

TCCN: BIOL 1307

BIOL 136L Hum Anat Phys Lab (1 Credits)

Lecture: 0, **Lab:** 1

Human Anatomy and Physiology Laboratory II (1) Laboratory course emphasizing some of the techniques and principles presented in BIOL 136. One hour of lecture and two hours laboratory per week. Listed as BIOL 2102 in the Texas Common Course Numbering System.

College/School: Col of Science, Engr & Tech

Department: Department of Biology

TCCN: BIOL 2102

BIOL 200 Science Colloquium (2 Credits)

Lecture: 2, **Lab:** 0

College/School: Col of Science, Engr & Tech

Department: Department of Biology

BIOL 211 Cell Biology Lab (1 Credits)

Lab: 3

Cell Biology Laboratory (1) Laboratory experiments and exercises to complement BIOL 231 Cell Biology. Three hours of laboratory per week. Co-requisite: BIOL 231.

College/School: Col of Science, Engr & Tech

Department: Department of Biology

BIOL 212 Developmental Biology Lab (1 Credits)

Lab: 3

Developmental Biology Laboratory (1) Laboratory experiments and exercises to complement BIOL 232 Developmental Biology. Three hours of laboratory per week. Co-requisite: BIOL 232.

College/School: Col of Science, Engr & Tech

Department: Department of Biology

BIOL 231 Cell Biology (3 Credits)

Lecture: 3

Cell Biology (Previously BIOL 241) (3) Molecular biology of cells encompassing ultra-structure, biosynthesis of macromolecules, chromosome and gene structure, control of gene expression, cell cycles, cytoskeleton movement, and energetic. Three hours of lecture per week.

Co-requisite: BIOL 211 (laboratory). Prerequisites: BIOL 111, BIOL 112, BIOL 131, BIOL 132, and one year of college level chemistry.

Prerequisite(s): (BIOL 111 and BIOL 112 and BIOL 131 and BIOL 132) and (CHEM 131 and CHEM 112 and CHEM 132 and CHEM 111)

College/School: Col of Science, Engr & Tech

Department: Department of Biology

BIOL 232 Developmental Biology (3 Credits)

Lecture: 3

Developmental Biology (Previously BIOL 243) (3) Consideration of development in diverse organisms with an emphasis on comparative vertebrate development. Three hours of lecture per week. Co-requisite: BIOL 212 (laboratory). Prerequisites: BIOL 111, BIOL 112, BIOL 131, and BIOL 132.

Prerequisite(s): (BIOL 111 and BIOL 112 and BIOL 131 and BIOL 132)

College/School: Col of Science, Engr & Tech

Department: Department of Biology

BIOL 241L Cell Biology Lab (0 Credits)

Lecture: 0, **Lab:** 0

College/School: Col of Science, Engr & Tech

Department: Department of Biology

BIOL 242 Comparative Anat Of Vertebrate (4 Credits)

Lecture: 3, **Lab:** 3

College/School: Col of Science, Engr & Tech

Department: Department of Biology

BIOL 242L Comp Anat Vert Lab (0 Credits)

Lecture: 0, **Lab:** 0

College/School: Col of Science, Engr & Tech

Department: Department of Biology

BIOL 245 Human Anatomy & Physiology (4 Credits)

Lecture: 3, **Lab:** 3

Human Anatomy and Physiology (4) Integrated approach to the study of the organ systems of man for non-majors where the relationship between anatomy and function is emphasized. Three hours of lecture and three hours of laboratory per week. Prerequisite: One year of college level biology. (BIOL 143 does not qualify in meeting this prerequisite.)

Prerequisite(s): (BIOL 131 and BIOL 111) or (BIOL 132 and BIOL 112)

College/School: Col of Science, Engr & Tech

Department: Department of Biology

BIOL 245L Human Anat & Phys Lab (0 Credits)**Lecture:** 0, **Lab:** 0**College/School:** Col of Science, Engr & Tech**Department:** Department of Biology**BIOL 246 Microbiol Hlth Rel Professions (4 Credits)****Lecture:** 3, **Lab:** 3

Microbiology for Health Related Professions (4) Morphology and physiology of microorganisms important in community health. Three hours of lecture and three hours of laboratory per week. Prerequisites: BIOL 135 and BIOL 136. Listed as BIOL 2420 in the Texas Common Course Numbering System.

Prerequisite(s): (BIOL 135 and BIOL 136)**College/School:** Col of Science, Engr & Tech**Department:** Department of Biology**TCCN:** BIOL 2420**BIOL 246L Micro Hlth Rel Pr Lab (0 Credits)****Lecture:** 0, **Lab:** 0**College/School:** Col of Science, Engr & Tech**Department:** Department of Biology**BIOL 248 Experiments in Biology I (4 Credits)****Lecture:** 1, **Lab:** 5

Experiments in Biology I (4) Key experiments in developmental, organismic, and environmental biology. One hour of lecture and five hours of laboratory per week. Prerequisite: Sophomore standing in Biology.

College/School: Col of Science, Engr & Tech**Department:** Department of Biology**BIOL 300 Seminar Hlth Related Profs (1 Credits)****Lecture:** 1, **Lab:** 0

Seminar for Health Related Professions (1) Designed to broaden the perspectives of students preparing to pursue health professional careers. Students may enroll for a maximum of two semesters. One hour of lecture per week. Prerequisites: BIOL 112 and BIOL 132

Prerequisite(s): BIOL 112 and BIOL 132**College/School:** Col of Science, Engr & Tech**Department:** Department of Biology**BIOL 332 Bioinformatics (3 Credits)****Lecture:** 3

Bioinformatics (3) Investigates the application of molecular biology, computers and the internet to generate and manage DNA and protein sequence data. Lecture and laboratory will involve generation, management and analysis of real and archived (in Genbank) data, including that from the Human Genome Project. Emphasis on genome organization and evolution, archival (web-based) and information retrieval, sequence assembly, alignment, comparative genomics, phylogenetics and evolutionary inferences, analyses of protein structure and micro-array data. Two hours of lecture per week and three hours of laboratory. Co-requisite: BIOL 332L. Prerequisites: BIOL 131 and BIOL 132.

College/School: Col of Science, Engr & Tech**Department:** Department of Biology**BIOL 332L Bioinformatics Lab (0 Credits)****Lab:** 2**College/School:** Col of Science, Engr & Tech**Department:** Department of Biology**BIOL 334 Conservation Biology (3 Credits)**

Conservation Biology (3) This course is designed to investigate biodiversity patterns across evolutionary time and place, the human impact on wild populations and habitats, the social, cultural and political issues at the local and global level, and search for sustainable solutions to a world of expanding human populations with limited resources. Three hours of lecture per week. Prerequisites: BIOL 131 and BIOL 132.

Prerequisite(s): (BIOL 111 and BIOL 112 and BIOL 131 and BIOL 132)**College/School:** Col of Science, Engr & Tech**Department:** Department of Biology**BIOL 338 Genetics (3 Credits)****Lecture:** 3, **Lab:** 0

Genetics (3) In-depth discussion of the basic concepts of Mendelian, neo-Mendelian, molecular, and population genetics. Three hours of lecture per week. Prerequisites: Two years of college level biology and one year of college level chemistry.

Prerequisite(s): (BIOL 231 and BIOL 232 and BIOL 211 and BIOL 212 and BIOL 111 and BIOL 112 and CHEM 112 and CHEM 132 and CHEM 111 and CHEM 131 and BIOL 131 and BIOL 132)**College/School:** Col of Science, Engr & Tech**Department:** Department of Biology**BIOL 340 Biochemistry of Biological Com (3 Credits)****Lecture:** 2, **Lab:** 2

Biochemistry of Biological Compounds (3) Physico-chemical nature of proteins, carbohydrates, lipids, and nucleic acids; kinetic function of enzymes; and structure of biological membranes. Three hours of lecture per week. Prerequisites: One year of college level biology and chemistry.

Prerequisite(s): (CHEM 112 and CHEM 132 and BIOL 131 and BIOL 112 and BIOL 132 and BIOL 111 and CHEM 131 and CHEM 111)**College/School:** Col of Science, Engr & Tech**Department:** Department of Biology**BIOL 340L Biochem Preparations Lab (0 Credits)****Lecture:** 0, **Lab:** 0**College/School:** Col of Science, Engr & Tech**Department:** Department of Biology**BIOL 341 Organismic Biology (4 Credits)****Lecture:** 3, **Lab:** 3

Organismic Biology (4) Comparative and integrated approach to the study of organisms emphasizing diversity, maintenance, coordination, and function of organ systems. Three hours of lecture and three hours of laboratory per week. Prerequisites: BIOL 122 and BIOL 132.

Prerequisite(s): (BIOL 132 and BIOL 112 and BIOL 111 and BIOL 131)**College/School:** Col of Science, Engr & Tech**Department:** Department of Biology**BIOL 341L Organismic Biol Lab (0 Credits)****Lecture:** 0, **Lab:** 0**College/School:** Col of Science, Engr & Tech**Department:** Department of Biology**BIOL 343 Ecology (3 Credits)****Lecture:** 3, **Lab:** 0

Ecology (3) A study of ecosystems from the standpoint of functional dynamics as well as the roles of ecological, evolutionary and adaptive processes in shaping the environment. Three hours of lecture per week. Prerequisites: BIOL 122 and BIOL 132.

Prerequisite(s): (BIOL 112 and BIOL 132 and BIOL 111 and BIOL 131)**College/School:** Col of Science, Engr & Tech**Department:** Department of Biology

BIOL 343L Environmental Biol Lab (0 Credits)**Lecture:** 0, **Lab:** 0**College/School:** Col of Science, Engr & Tech**Department:** Department of Biology**BIOL 344 Vertebrate Anatomy and Hist (4 Credits)****Lecture:** 4, **Lab:** 0

Human Anatomy and Histology (4) Anatomy of organ systems of humans with an emphasis on histochemistry of normal tissues as well those affected by drugs (designed primarily for pharmacy students). Three hours of lecture hours of laboratory per week.

Prerequisite(s): (BIOL 111 and BIOL 112 and BIOL 131 and BIOL 132)**College/School:** Col of Science, Engr & Tech**Department:** Department of Biology**BIOL 344L Vert Anat & Hist Lab (0 Credits)****Lecture:** 0, **Lab:** 0**College/School:** Col of Science, Engr & Tech**Department:** Department of Biology**BIOL 345 Ecology Laboratory (1 Credits)****Lecture:** 0, **Lab:** 3

Ecology Laboratory (1) This course is designed for both field and laboratory ecological studies. Three hours of laboratory per week.

Prerequisites: BIOL 122 and BIOL 132.**Prerequisite(s):** (BIOL 112 and BIOL 132 and BIOL 111 and BIOL 131)**College/School:** Col of Science, Engr & Tech**Department:** Department of Biology**BIOL 347 Microbiology (4 Credits)****Lecture:** 3, **Lab:** 3

Microbiology (4) Taxonomy, structure, life cycles, physiology, biochemistry, and role in ecosystems of selected groups of microorganisms. Three hours of lecture and three hours of laboratory per week. Prerequisites: One year of college level biology and organic chemistry.

Prerequisite(s): (CHEM 232 and BIOL 131 and BIOL 112 and BIOL 132 and BIOL 111 and CHEM 231)**College/School:** Col of Science, Engr & Tech**Department:** Department of Biology**BIOL 347L Microbiology Lab (0 Credits)****Lecture:** 0, **Lab:** 0**College/School:** Col of Science, Engr & Tech**Department:** Department of Biology**BIOL 348 Experiments in Biology II (4 Credits)****Lecture:** 1, **Lab:** 5

Experiments in Biology II (4) Key experiments in cell biology, biochemistry, cell physiology, and genetics. One hour of lecture and five hours of laboratory per week. Prerequisite: BIOL 248.

College/School: Col of Science, Engr & Tech**Department:** Department of Biology**BIOL 349 Principles of Entomology (3 Credits)****Lecture:** 3, **Lab:** 3

Entomology (4) To study biology, anatomy, physiology, development, classification, ecology and relation of insects to human welfare. Three hours of laboratory per week. Co-requisite: BIOL 349L. Prerequisites: One year of college level biology.

Prerequisite(s): (BIOL 111 and BIOL 112 and BIOL 131 and BIOL 132)**College/School:** Col of Science, Engr & Tech**Department:** Department of Biology**BIOL 349L Principles of Entomology Lab (0 Credits)****Lecture:** 0, **Lab:** 3**College/School:** Col of Science, Engr & Tech**Department:** Department of Biology**BIOL 401 Undergraduate Research (Capstone Course) (3 Credits)****Lecture:** 0, **Lab:** 3

Undergraduate Research (Capstone Course) (3) Designed to require that senior students demonstrate the ability to develop critical thinking skills, correctly analyze and address relevant problems facing society today and in the near future, present their research-based results before their peers and experts in the related field via written, oral, and multimedia format. Thus, the course will include extensive interaction with faculty mentors, presentations before their peers and members of the scientific community, a final written document developed according to the scientific method and, satisfactory passage of the departmental exit exam. Required of all biology majors. Prerequisite: Senior standing in biology.

College/School: Col of Science, Engr & Tech**Department:** Department of Biology**BIOL 431 Radiation Biology (3 Credits)****Lecture:** 3, **Lab:** 0

Radiation Biology (3) Course covers physical and chemical principles of radiation; use of radioactive nuclides in Biochemical and biological research; biological effects of low and high levels of radiation; acute and chronic effects of radiation; safety measures and regulations in the use of radioactive nuclides in research and medicine; technical aspects of the generation of energy by nuclear power stations; and social, moral and medical aspects of the use of atomic weapons. Three hours of lecture per week. Prerequisite: Junior or Senior standing in Biology.

College/School: Col of Science, Engr & Tech**Department:** Department of Biology**BIOL 432 General Parasitology (4 Credits)****Lecture:** 3, **Lab:** 3**College/School:** Col of Science, Engr & Tech**Department:** Department of Biology**BIOL 432L Parasitology Lab (0 Credits)****Lecture:** 0, **Lab:** 0**College/School:** Col of Science, Engr & Tech**Department:** Department of Biology**BIOL 433L Genetics Lab (0 Credits)****Lecture:** 0, **Lab:** 0**College/School:** Col of Science, Engr & Tech**Department:** Department of Biology**BIOL 434 Evolutionary Biology (3 Credits)****Lecture:** 3

Evolutionary Biology (3) This course will investigate the fundamental principles of evolution by natural selection, population genetics, historical reconstructions, and attempt to apply these principles to ecology, development, physiology, medicine, and sociobiology. Three hours of lecture per week. Prerequisites: BIOL 131 and BIOL 132.

Prerequisite(s): (BIOL 131 and BIOL 132 and BIOL 111 and BIOL 112)**College/School:** Col of Science, Engr & Tech**Department:** Department of Biology

BIOL 435 Hist & Philosophy of Science (3 Credits)**Lecture:** 3, **Lab:** 0

History & Philosophy of Science (3) A study of the history and philosophy of science, and, in particular, the history of the life sciences giving broader insight into the evolutionary process of how science was developed and what mechanisms operated. The course will examine characteristics, distinguishing scientific inquiry from other types of investigation; procedures scientists use in investigating nature; conditions to be satisfied for a scientific explanation to be correct; and the cognitive status of scientific laws and principles. Three hours of lecture per week. Prerequisite: Senior standing.

College/School: Col of Science, Engr & Tech**Department:** Department of Biology**BIOL 438 Plant Biology (3 Credits)****Lecture:** 2, **Lab:** 3

Plant Biology (3) Plant structure and physiology; plant biotechnology; medicinal plants; and interactions between plants and their environment. Two hours of lecture and three hours of laboratory per week.

Prerequisites: BIOL 112 and BIOL 132.

Prerequisite(s): BIOL 112 and BIOL 132**College/School:** Col of Science, Engr & Tech**Department:** Department of Biology**BIOL 438L Plant Biol Lab (0 Credits)****Lecture:** 0, **Lab:** 0**College/School:** Col of Science, Engr & Tech**Department:** Department of Biology**BIOL 439 Principles of Biology (3 Credits)****Lecture:** 2, **Lab:** 2

Principles of Biology (3) Comprehensive review of basic biological principles operating at various levels of organization in living systems. Two hours of lecture and two hours of laboratory per week. Prerequisites: BIOL 112 and BIOL 132.

Prerequisite(s): BIOL 112 and BIOL 132**College/School:** Col of Science, Engr & Tech**Department:** Department of Biology**BIOL 439L Principles of Biology Lab I (0 Credits)****Lecture:** 0, **Lab:** 0**College/School:** Col of Science, Engr & Tech**Department:** Department of Biology**BIOL 441 Histology (4 Credits)****Lecture:** 3, **Lab:** 3

Histology (4) Microscopic study of the anatomy and relevant functions of vertebrate tissues and organs using light microscopy and selected electron micrographs. Three hours of lecture and three hours of laboratory per week. Prerequisite: BIOL 231 or BIOL 232 or BIOL 341.

Prerequisite(s): (BIOL 231 or BIOL 232 or BIOL 341)**College/School:** Col of Science, Engr & Tech**Department:** Department of Biology**BIOL 441L Histology Lab (0 Credits)****Lecture:** 0, **Lab:** 0**College/School:** Col of Science, Engr & Tech**Department:** Department of Biology**BIOL 442 Laboratory Mets in Biol Scie (4 Credits)****Lecture:** 3, **Lab:** 3**College/School:** Col of Science, Engr & Tech**Department:** Department of Biology**BIOL 442L Lab Methods Animal Biol Lab (0 Credits)****Lecture:** 0, **Lab:** 0**College/School:** Col of Science, Engr & Tech**Department:** Department of Biology**BIOL 443 Molecular Biology (4 Credits)****Lecture:** 3, **Lab:** 3

Molecular Biology (4) Study of intracellular molecular processes. Three hours of lecture per week. Corequisite: BIOL 443L. Prerequisites: 2 years of college level biology and 2 years of college level chemistry; junior standing in Biology.

Prerequisite(s): (BIOL 111 and BIOL 112 and BIOL 131 and BIOL 132 and CHEM 111 and CHEM 112 and CHEM 131 and CHEM 132 and BIOL 211 and BIOL 212 and BIOL 231 and BIOL 232 and CHEM 211 and CHEM 212 and CHEM 231 and CHEM 232)**College/School:** Col of Science, Engr & Tech**Department:** Department of Biology**BIOL 443L Molecular Biol (0 Credits)****Lecture:** 0, **Lab:** 0

Molecular Biology Laboratory (0) Laboratory experiments and exercises to complement BIOL 443 Molecular Biology. Three hours of laboratory per week. Corequisite: BIOL 443. Prerequisites: 2 years of college level biology and 2 years of college level chemistry; junior standing in Biology.

College/School: Col of Science, Engr & Tech**Department:** Department of Biology**BIOL 444 Mechanism of Development (4 Credits)****Lecture:** 3, **Lab:** 0**College/School:** Col of Science, Engr & Tech**Department:** Department of Biology**BIOL 446 Human Physiology Lab (1 Credits)****Lecture:** 1, **Lab:** 2

Human Physiology Laboratory (1) Laboratory experiments and exercises to complement BIOL 447 Human Physiology. Prerequisites: BIOL 112, BIOL 132 and one year of college chemistry.

Prerequisite(s): (BIOL 112 and BIOL 132)**College/School:** Col of Science, Engr & Tech**Department:** Department of Biology**BIOL 447 Human Physiology (3 Credits)****Lecture:** 2, **Lab:** 2

Human Physiology (3) Comprehensive treatment of the physiology, biochemistry and biophysics of organ systems in humans. Three hours of lecture per week. Prerequisites: BIOL 112, BIOL 132 and one year of college chemistry.

Prerequisite(s): BIOL 112 and BIOL 132**College/School:** Col of Science, Engr & Tech**Department:** Department of Biology**BIOL 447L Human Physiology (0 Credits)****Lab:** 3**College/School:** Col of Science, Engr & Tech**Department:** Department of Biology**BIOL 448 Cellular Physiology (3 Credits)****Lecture:** 3, **Lab:** 0

Molecular Physiology and Biophysics (3) Physiological, biochemical, and biophysical consideration of various cellular processes with special emphasis on molecular mechanisms in photosynthetic and respiratory reactions. Three hours of lecture per week. Prerequisites: Senior standing in Biology and/or one year of General Chemistry, one year of Organic Chemistry and one year of College Physics.

College/School: Col of Science, Engr & Tech**Department:** Department of Biology

BIOL 448L Cellular Phys Lab (0 Credits)**Lecture:** 0, **Lab:** 0**College/School:** Col of Science, Engr & Tech**Department:** Department of Biology**BIOL 449 General Physiology (3 Credits)****Lecture:** 2, **Lab:** 2

General Physiology (3) Comprehensive treatment of the functioning of the digestive, circulatory, neuromuscular, endocrine, and renal systems. Three (3) hours of lecture per week. (Prerequisite: Senior standing in biology)

Prerequisite(s): CHEM 112 and CHEM 132 and (BIOL 122 or BIOL 112) and BIOL 132**College/School:** Col of Science, Engr & Tech**Department:** Department of Biology**BIOL 449L Gen Physiology Lab (0 Credits)****Lecture:** 0, **Lab:** 0**College/School:** Col of Science, Engr & Tech**Department:** Department of Biology**BIOL 450 Molecular Genetics (3 Credits)****Lecture:** 3, **Lab:** 3

Molecular Genetics (3) In-depth study of the biochemistry and chemistry of genes including aspects of gene expression and that of biotechnology. Three hours of lecture per week. Prerequisite: Senior standing in Biology.

College/School: Col of Science, Engr & Tech**Department:** Department of Biology**BIOL 450L Molecular Genetics Lab (0 Credits)****Lecture:** 0, **Lab:** 0**College/School:** Col of Science, Engr & Tech**Department:** Department of Biology**BIOL 451 General Parasitology (4 Credits)****Lecture:** 4

Parasitology (4) The study of parasites, their hosts, and the relationships between them as illustrated by the study of protozoans, helminths, nematodes and arthropods. Three hours of lecture and three hours of laboratory per week. Co-requisite: BIOL 451L. Prerequisites: One year of college level biology; BIOL 341.

Prerequisite(s): (BIOL 341 and BIOL 111 and BIOL 112 and BIOL 131 and BIOL 132)**College/School:** Col of Science, Engr & Tech**Department:** Department of Biology**BIOL 451L General Parasitology Lab (0 Credits)****Lab:** 3**College/School:** Col of Science, Engr & Tech**Department:** Department of Biology**BIOL 452 Intermediary Cellular Metabol (3 Credits)****Lecture:** 3, **Lab:** 0

Intermediary and Cellular Metabolism (3) Quantitative bioenergetics; patterns of breakdown and synthesis of cellular metabolite; metabolic and hormonal regulations; integration and pathological disorders; and relevance of metabolism to medicine. Three hours of lecture per week. Prerequisite: BIOL 340.

Prerequisite(s): BIOL 340**College/School:** Col of Science, Engr & Tech**Department:** Department of Biology**BIOL 454 Immunology (3 Credits)****Lecture:** 2, **Lab:** 0

Immunology (3) Comprehensive overview of the immune system and immunological mechanisms. Two hours of lecture and three hours of laboratory per week. Prerequisite: Senior standing in Biology.

College/School: Col of Science, Engr & Tech**Department:** Department of Biology**BIOL 454L Immunology Lab (0 Credits)****Lecture:** 0, **Lab:** 0**College/School:** Col of Science, Engr & Tech**Department:** Department of Biology**BIOL 460 Biostatistics (3 Credits)****Lecture:** 3, **Lab:** 0

Biostatistics (3) Evaluation of the significance of the results of biological experiments, observations, and clinical data through statistical analysis. Three hours of lecture per week. Prerequisites: BIOL 112, BIOL 132, and one year of college level mathematics, and Junior or Senior standing in Biology.

Prerequisite(s): (BIOL 112 and BIOL 132) and (MATH 133 or MATH 134 or MATH 136 or MATH 236)**College/School:** Col of Science, Engr & Tech**Department:** Department of Biology**BIOL 461 Environ Sampling & Analysis (3 Credits)****Lecture:** 3

Environmental Sampling and Analysis (3) Sampling of water, air and other substances of ecological significance and their chemical and statistical analysis for suspected pollutants in Harris and other counties in Texas.

Prerequisites: Senior standing in Biology.

College/School: Col of Science, Engr & Tech**Department:** Department of Biology**BIOL 499 Biology Seminar (1-4 Credits)****Lecture:** 1, **Lab:** 0

Biology Seminar (1) Consideration of various biological problems and recent research. One hour of lecture per week. Prerequisite: Junior or Senior standing in Biology.

College/School: Col of Science, Engr & Tech**Department:** Department of Biology**BIOL 1108 Life Science Lab (1 Credits)****Lab:** 1

Survey of Life Science Laboratory (1) Laboratory experiments and exercises designed to complement BIOL 143. One hour of laboratory per week.

College/School: Col of Science, Engr & Tech**Department:** Department of Biology**BIOL 1306 Biological Science I (3 Credits)****Lecture:** 3, **Lab:** 0

Biological Science I (3) Integrated approach to the study of basic biological principles which are presented through the hierarchy of living systems. Three hours of lecture per week. Corequisite: BIOL 111.

College/School: Col of Science, Engr & Tech**Department:** Department of Biology

BIOL 1308 Survey of Life Science (3 Credits)**Lecture:** 2, **Lab:** 1

Survey of Life Science (3) In-depth coverage of selected biological principles for non-majors covering the molecular through the population levels of life forms and functions. Methods of inquiry and analysis emphasized. Two hours of lecture and one hour of demonstrations per week.

College/School: Col of Science, Engr & Tech**Department:** Department of Biology**TCCN:** BIOL 1308**BIOL 2101 Human Anat Physiol Pre-Nur Lab (1 Credits)****Lecture:** 0, **Lab:** 1

Human Anatomy and Physiology Laboratory I (1) Laboratory course emphasizing some of the techniques and principles presented in BIOL 135. One hour of lecture and two hours laboratory per week. Listed as BIOL 2101 in the Texas Common Course Numbering System.

College/School: Col of Science, Engr & Tech**Department:** Department of Biology**BIOL 2102 Hum Anat Phys Lab (1 Credits)****Lab:** 1

Human Anatomy and Physiology Laboratory II (1) Laboratory course emphasizing some of the techniques and principles presented in BIOL 136. One hour of lecture and two hours laboratory per week. Listed as BIOL 2102 in the Texas Common Course Numbering System.

College/School: Col of Science, Engr & Tech**Department:** Department of Biology**TCCN:** BIOL 2102**BIOL 2301 Human Anat & Phys I (3 Credits)****Lecture:** 3

Human Anatomy and Physiology I (3) Course designed for health careers and pre-nursing students emphasizing the structure-function relationships of human organ systems. Three hours of lecture per week. Co-requisite BIOL 115.

College/School: Col of Science, Engr & Tech**Department:** Department of Biology**TCCN:** BIOL 2301**BIOL 2302 Human Anat & Phys II (3 Credits)****Lecture:** 3

Continuation of BIOL 135

Prerequisite(s): BIOL 135**College/School:** Col of Science, Engr & Tech**Department:** Department of Biology