**BIOLOGY (BIOG)**

**BIOG 050, PREPARING FOR ANATOMY & PHYSIOLOGY I 2 (2)**
Remedial course designed to help students gain skills and basic science knowledge necessary to succeed in Anatomy and Physiology. Topics include classroom skills, study tools, learning style analysis, time management, critical thinking and problem solving, basic chemistry, basic cell biology concepts, introduction to body systems, and terminology. Prerequisite: Placement assessment or a grade of "C" or better in RDST 022 and ENGL 012.

*Typically Offered:* Summer, Fall and Spring Semesters

**BIOG 051, PREPARING FOR ANATOMY & PHYSIOLOGY II 2 (2)**
Remedial course designed to help students gain skills and basic knowledge necessary to succeed in Anatomy and Physiology II. Topics include classroom skills, study tools, learning style analysis, time management, critical thinking and problem solving, terminology, and review of primary concepts of membrane transport processes and neurological and endocrine function. Prerequisite: BIOG 121.

*Typically Offered:* Summer, Fall and Spring Semesters

**BIOG 115, BODY STRUCTURE AND FUNCTION 3 (3)**
Basic introduction to the structure and function of the human body systems. A course intended primarily for Health and Wellness certificate program students or as a preliminary course to prepare for Anatomy and Physiology I and II. Natural Science Core Course.

*General Education:* C3, IN1, IN5

*Course Entry Requirement(s):* None

*Typically Offered:* Summer, Fall and Spring Semesters

**BIOG 121, ANATOMY AND PHYSIOLOGY I 4 (5)**
This course offers an introduction to chemistry, cell biology and histology, as well as an in-depth study of the following human organ systems: integumentary, skeletal, muscular, nervous (including special senses), and endocrine. This course is intended primarily for Health and Wellness associate degree students and Science majors. Laboratory (involving dissection of specimens) required. (A special fee will be assessed.) Recommend prior completion of one or more of the following: high school biology or chemistry, BIOG 050, BIOG 115, or CHMY 161. Natural Science Core Course. (OTM)

*General Education:* C3, IN1, IN5

*Course Entry Requirement(s):* None

*Typically Offered:* Summer, Fall and Spring Semesters

**BIOG 122, ANATOMY AND PHYSIOLOGY II 4 (5)**
This course is a continuation of Anatomy & Physiology I. The structure and function of the following human organ systems are examined: reproductive (including embryology and fetal development), digestive, cardiovascular, lymphatic (including immunity), respiratory, and urinary (including fluid/electrolyte and acid/base balance). Cadaver-based laboratory required. (A special fee will be assessed.) Natural Science Core Course. (OTM)

*General Education:* C3, IN1, IN5

*Course Entry Requirement(s):* Prerequisite: Grade of C or better in BIOG 121

*Typically Offered:* Summer, Fall and Spring Semesters

**BIOG 123, CROSS-SECTIONAL ANATOMY 2 (2)**
A survey of the human body as seen in cross-section. Course is designed primarily for students of Radiologic Technology and Diagnostic Medical Sonography.

*General Education:* IN1

*Course Entry Requirement(s):* Prerequisite: BIOG 121 and previous or concurrent enrollment in BIOG 122.

*Typically Offered:* Fall and Spring Semesters

**BIOG 150, INFECTIOUS DISEASE A TO Z 2 (2)**
This course is designed for both science and non-science majors. The stresses of increased population size, climate change, increased world travel, and global commerce threaten a greater disease burden in the coming years. This course will examine various organisms, disease transmission, the host’s response to infection, and medical treatments, as well as various public health procedures that can help control infectious diseases in the population. Natural Science Core Course. (OTM)

*General Education:* C3, IN1, IN5

*Typically Offered:* Summer, Fall and Spring Semesters

**BIOG 151, GENERAL BIOLOGY 4 (5)**
An introductory biology course designed for non-science majors. Topics include basic chemistry and cell biology, evolution, genetics, ecology and a survey of the kingdoms. Laboratory required. (A special fee will be assessed.) Natural Science Core Course. (OTM)

*General Education:* C3, IN1

*Course Entry Requirement(s):* None

*Typically Offered:* Summer, Fall and Spring Semesters

**BIOG 152, HUMAN BIOLOGY 4 (5)**
An introductory course intended for the non-science major covering basic anatomy and physiology of the human body. Laboratory with dissection of preserved specimens required. (A special fee will be assessed.) Natural Science Core Course. (OTM)

*General Education:* C3, IN1, IN5

*Course Entry Requirement(s):* None

*Typically Offered:* Summer, Fall and Spring Semesters

**BIOG 153, BASIC HUMAN NUTRITION 3 (3)**
Course designed for the non-science major to educate the consumer about normal physiological activities used to process food nutrients, dietary requirements for all stages of the human life cycle, and food safety. World hunger and global issues related to the food supply are also addressed.

*General Education:* IN1, IN3, IN5

*Course Entry Requirement(s):* None

*Typically Offered:* Summer, Fall and Spring Semesters

**BIOG 156, HIV/AIDS 1 (1)**
The study of the biology and issues which surround the transmission and containment of HIV, the virus that causes acquired immune deficiency syndrome (AIDS). Current medical protocol, the political ramifications of the disease and the challenge of dealing with human behaviors, attitudes and social stigmas will be addressed.

*General Education:* IN1, IN3, IN4, IN5

*Course Entry Requirement(s):* None

*Typically Offered:* Fall and Spring Semesters

**BIOG 158, BIRD WATCHING 2 (4)**
A study of bird behavior, taxonomy and ecology. Field study required. (A special fee will be assessed.)

*General Education:* IN1

*Course Entry Requirement(s):* None

*Typically Offered:* Not offered this year
BIOG 159, AQUATIC LIFE 3 (4)
Introductory course designed for non-science majors to explore various aquatic environments, with an emphasis on aquatic species and the interaction of humans with such environments. Laboratory required. (A special fee will be assessed.) Natural Science Core Course. (OTM)
General Education: C3, IN1
Course Entry Requirement(s): None
Typically Offered: Summer, Fall and Spring Semesters

BIOG 161, PRINCIPLES OF BIOLOGY I 4 (6)
Course designed for science majors that focuses on the introduction to the principles of biology recommended for Science majors. Topics include basic chemistry, the cell, metabolism, photosynthesis, genetics and evolution. A considerable writing component is present. Laboratory required. (A special fee will be assessed.) Natural Science Core Course. (OTM, TAG)
Typically Offered: Fall and Spring Semesters

BIOG 162, PRINCIPLES OF BIOLOGY II 4 (6)
A continuation of BIOG 161 emphasizing a taxonomic survey of the kingdoms, as well as a study of animal and plant anatomy and physiology and ecology. Laboratory required. (A special fee will be assessed.) Natural Science Core Course. (OTM, TAG)
General Education: C3, IN1, IN2
Course Entry Requirement(s): Prerequisite: BIOG 161 or division approval.
Typically Offered: Fall and Spring Semesters

BIOG 163, THE MICROBIAL WORLD 4 (5)
Course designed for non-science majors which examines the Unseen Life on Earth. Students will explore the scientific detective work that leads investigators from the world of the very large to the world of the very small, from the present to the remote past, from humankind at large to the delicate life systems within and around every one of us. Laboratory required. (A special fee will be assessed.) Natural Science Core Course. (OTM)
General Education: C3, IN1, IN5
Course Entry Requirement(s): None
Typically Offered: Fall and Spring Semesters

BIOG 164, EXPLORATIONS IN FIELD SCIENCE 3 (4)
This course is designed to introduce students to methods of sampling and analysis in Environmental Science. Topics include air pollution; noise pollution; water pollution; soil health assessment; plant identification and biodiversity estimation; and methods in basic statistics, experimental design, and scientific reporting. Students will participate in the design, implementation, analysis, and presentation of a Capstone Project based on original student research. Course may include a service learning component. Natural Science Core Course. (OTM)
General Education: C3, IN1, IN2
Course Entry Requirement(s): Course placement policy. Satisfactory placement assessment into college level mathematics or previous or concurrent enrollment in a co-requisite mathematics course.
Typically Offered: Fall Semester

BIOG 165, INTRODUCTION TO ECOLOGY 3 (3)
Introductory course provides a survey of environmental issues and highlights interactions between human beings and the ecosystem. Course also addresses the economic, social and environmental dimensions of sustainable development. Course may include a Service Learning component. Natural Science Core Course. (OTM, CTAG)
General Education: C3, IN1, IN3, IN5
Course Entry Requirement(s): None
Typically Offered: Summer, Fall and Spring Semesters

BIOG 185, SUPPLEMENTAL BIOLOGY LAB I 1 (2)
Laboratory-only course designed to provide lab experience for students transferring in credits from another institution or for transient students completing requirements for a two-hour lab for a lab science biology course. This lab will be used for an Anatomy and Physiology, General Biology, or Human Biology lab experience. (A special fee will be assessed.) Course repeatable up to 2 times.
Course Entry Requirement(s): Prerequisite: Previous credit in acceptable lecture-only course from a transfer institution and division approval

BIOG 251, GENERAL MICROBIOLOGY 4 (6)
Course designed for Health and Wellness associate degree students and Science majors which explores the major groups of microorganisms and the role they play in the environment and in disease. The host response to microorganisms, as well as control of microbial disease, are addressed. Laboratory provides the student with basic techniques of infection control, microbial identification, microscopy, and sterile technique. Laboratory required. (A special fee will be assessed.) Natural Science Core Course. (OTM)
General Education: C3, IN1, IN5
Course Entry Requirement(s): Prerequisite: Grade of C or better in BIOG 121 or BIOG 161 or CHMY 161
Typically Offered: Summer, Fall and Spring Semesters

BIOG 252, MICROBIOLOGY 5 (7)
Course designed for Science Majors. Discussion of the major groups of microorganisms and the role they play in the environment, disease, agriculture, biotechnology, and the food/beverage industry. This class will examine the host response to microorganisms, as well as chemical and pharmaceutical control of microbial disease. Laboratory provides the student with techniques of infection control, microbial identification, molecular genetic techniques involving manipulation of nucleic acid and proteins, microscopy, and sterile technique. Laboratory required. (A special fee will be assessed.) Natural Science Core Course. (OTM)
General Education: C3, IN1, IN5
Course Entry Requirement(s): Prerequisite: Grade of C or better in BIOG 161 and CHMY 171 or division approval
Typically Offered: Spring Semester

BIOG 260, BOTANY 3 (6)
Introductory course designed for Science majors exploring the various aspects of plant biology. Topics include plant anatomy, physiology, genetics, diversity, growth, reproduction, ecology and impact on human society. Laboratory required. (A special fee will be assessed.) Natural Science Core Course. (OTM)
General Education: C3, IN1, IN5
Course Entry Requirement(s): Prerequisite: BIOG 161 or division approval
Typically Offered: Spring Semester
BIOG 268, CLINICAL NUTRITION 3 (3)
The science of food nutrients, their role in the body, and their effects on health and disease. Topics include digestion, absorption, metabolism of nutrients, food energy and nutrient requirements throughout the life cycle. This course is designed for Health and Wellness associate degree students and Science majors. Natural Science Core Course. (OTM, TAG)

Course Entry Requirement(s): Prerequisite: Grade of C or better in CHMY 161 or CHMY 171 or division approval

Typically Offered: Summer and Spring Semesters

BIOG 275, GENETICS 4 (4)
GENETICS Course designed for Science majors that will examine gene transmission, function, expression, and regulation in prokaryotic and eukaryotic organisms. Natural Science Core Course. (OTM)

General Education: C3, IN1, IN2, IN3

Course Entry Requirement(s): Course placement policy: Satisfactory placement assessment into college level mathematics or previous or concurrent enrollment in a co-requisite mathematics course; Prerequisite: BIOG 161 or BIOG 251

Typically Offered: Fall and Spring Semesters

BIOG 281, MOLECULAR BIOLOGY 4 (4)
Course designed for Science majors that will study how the biological molecules DNA, RNA and proteins determine the properties of living things. This course will explore gene transmission, expression, and regulation in prokaryotic and eukaryotic cells. Natural Science Core Course.

General Education: C3, IN1, IN2

Course Entry Requirement(s): Prerequisite: Grade of C or better in BIOG 161 or BIOG 251 or BIOG 252 and CHMY 161 or CHMY 171

Typically Offered: Spring Semester

BIOG 282, METHODS IN BIOTECHNOLOGY I 3 (5)
Course designed for Science majors that focuses on basic laboratory techniques that are fundamental to everyday work in all biotechnology/bioscience laboratories. Students will become proficient in laboratory safety, sterile techniques and molecular techniques involved in manipulating DNA. Laboratory required. (A special fee will be assessed.) Natural Science Core Course.

General Education: C3, IN1

Course Entry Requirement(s): Prerequisite: MTHM 171 or 181 or 182 and BIOG 161 or 251 or 252 and CHMY 161 or 171 and previous or concurrent enrollment in BIOG 281 or BIOG 275

Typically Offered: Fall Semester

BIOG 283, METHODS IN BIOTECHNOLOGY II 3 (5)
A continuation of Methods in Biotechnology I focusing on basic laboratory techniques that are fundamental to everyday work in all biotechnology/bioscience laboratories. Students will become proficient in tissue culture techniques, molecular techniques involved in manipulating and analyzing proteins, and the use of computers in the laboratory for biostatistics and bioinformatics. Laboratory required. (A special fee will be assessed.) Natural Science Core Course.

General Education: C3, IN1

Course Entry Requirement(s): Prerequisite: BIOG 282

Typically Offered: Spring Semester

BIOG 284, INDEPENDENT STUDENT RESEARCH 1 (5)
Laboratory-only course designed to provide students with an opportunity to participate in authentic scientific research utilizing appropriate research techniques and laboratory equipment. (A special fee will be assessed.) Course repeatable up to 10 times.

Course Entry Requirement(s): Prerequisite: Division approval

BIOG 285, SUPPLEMENTAL BIOLOGY LAB II 1 (3)
Laboratory-only course designed to provide lab experience for students transferring in credits from another institution or for transient students completing requirements for a three-hour lab for a lab science biology course. This course will be used for a Principles of Biology or Microbiology lab experience. (A special fee will be assessed.) Course repeatable up to 2 times

Course Entry Requirement(s): Prerequisite: Previous credit in acceptable lecture-only course from a transfer institution and division approval

BIOG 287, WORK-BASED LEARNING I - BIOG 1-3 (1)
This course provides supervised, paid work experience with approved employer(s) in an area related to the student's program. Emphasis is placed on integrating prior or concurrent classroom learning with work experience through career readiness competencies. Students will be able to evaluate career selection and satisfactorily demonstrate work-related competencies.

General Education: IN1, IN2, IN3, IN4, IN5

Course Entry Requirement(s): A student must be pursuing a degree seeking program at LCCC; have completed 12 semester hours with a minimum of 6 semester hours in the discipline of placement; have a min GPA of 2.5 in the discipline and a 2.0 overall GPA; and have division approval.

Typically Offered: Offer as required

BIOG 288, WORK-BASED LEARNING II - BIOG 1-3 (1)
Building on experiences from Work Based Learning I, this course provides supervised, paid work experience with approved employer(s) in an area related to the student's program. Emphasis is placed on integrating prior or concurrent classroom learning with work experience through career readiness competencies. Students will be able to evaluate career selection and satisfactorily demonstrate work-related competencies.

General Education: IN1, IN2, IN3, IN4, IN5

Course Entry Requirement(s): Prerequisite: BIOG 287

Typically Offered: Offer as required

BIOG 289, WORK-BASED LEARNING III - BIOG 1-3 (1)
Building on experiences from Work Based Learning II, this course provides supervised, paid work experience with approved employer(s) in an area related to the student's program. Emphasis is placed on integrating prior or concurrent classroom learning with work experience through career readiness competencies. Students will be able to evaluate career selection and satisfactorily demonstrate work-related competencies.

General Education: IN1, IN2, IN3, IN4, IN5

Course Entry Requirement(s): Prerequisite: BIOG 288

Typically Offered: Offer as required

BIOG 299, INDIVIDUALIZED STUDIES IN BIOLOGY 1-2 (1)
An in-depth study of areas in Biology presented by discussion and/or individual research and reading. Topics will vary. Repeatable up to a total of four (4) credit hours.

Course Entry Requirement(s): Prerequisite: Second-year standing and division approval

Typically Offered: Offer as required