BIOTECHNOLOGY LABORATORY TECHNICIAN (BTN)

BTN 100 (4 credit hours)
Contextual Science with Laboratory
Introduces students to laboratory focused concepts and skills necessary for entry-level positions in a biotechnology laboratory. Exposes students to selected laboratory exercises that parallel the concepts introduced in BTN 103 and BTN 104. Lecture: 3.0 credits (45 contact hours). Lab: 1.0 credit (30 contact hours).
Co-requisite: BTN 103, BTN 104.
Attributes: Due to Inacitvity
Components: LAB: Laboratory, LEC: Lecture

BTN 101 (1 credit hours)
Introduction to Biotechnology
Introduces current and future applications of biotechnology. Covers biotechnology career opportunities and bioethics. Lecture: 1.0 credit (15 contact hours).
Attributes: Technical
Components: LEC: Lecture

BTN 103 (3 credit hours)
Contextual Laboratory Language
Introduces students to basic scientific language and concepts of biotechnology. Academic study skills needed for success in bioscience courses will be emphasized. Covered topics parallel the concepts introduced in BTN 100 and BTN 104. Lecture: 3.0 credits (45 contact hours).
Co-requisite: BTN 100 and BTN 104.
Attributes: Technical
Components: LEC: Lecture

BTN 104 (3 credit hours)
Contextual Laboratory Math
Introduces concepts of basic laboratory calculations emphasizing practical applications in biotechnology laboratories. Covered topics parallel the concepts introduced in BTN 100 and BTN 103. Lecture: 3.0 credits (45 contact hours).
Co-requisite: BTN 100 and BTN 103.
Attributes: Technical
Components: LEC: Lecture

BTN 105 (3 credit hours)
Applied Laboratory Calculations for Biotechnology
Introduces concepts, techniques, and applications of common basic laboratory calculations that are routinely used in the biotechnology laboratory. Emphasizes application of basic computational concepts required of biotechnicians. Requires students to apply strategies to calculate amounts of chemicals required to make solutions, calibrate instruments, collect data, and interpret data. Introduces some computer applications. Lecture: 3.0 credits (45 contact hours).
Pre-requisite: MAT 65 or equivalent as determined by KCTCS examination.
Attributes: Technical
Components: LEC: Lecture

BTN 106 (3 credit hours)
Fundamentals of Scientific Communication
Introduces methods and strategies necessary for written, oral, and visual communications as they are used in popular science. Lecture: 3.0 credits (45 contact hours).
Attributes: Technical
Components: LAB: Laboratory

BTN 110 (4 credit hours)
Nucleic Acid Methods
Covers theory of DNA structure and function. Emphasizes laboratory skills in a variety of DNA manipulations. Lecture: 2.0 credits (30 contact hours). Lab: 2.0 credits (60 contact hours).
Pre-requisite: One semester of college biology with lab or college chemistry with lab or consent of instructor.
Attributes: Technical
Components: LAB: Laboratory, LEC: Lecture

BTN 115 (4 credit hours)
Biomanufacturing
Surveys basic biomanufacturing principles and procedures designed to assure the quality and safety of a product as the manufacturing team moves the product down the biotechnology production pipeline. Introduces upstream and downstream manufacturing processes through a combination of lecture and laboratory activities. Emphasizes the role of government oversight and regulation during discovery, development, and manufacturing of bioproducts as outlined in the Good Laboratory and Good Manufacturing Practices (GLP and GMP) of the Food and Drug Administration (FDA). Lecture: 2.0 credits (30 contact hours). Lab: 2.0 credits (60 contact hours).
Pre-requisite: Completion of BTN 201 and BTN 202 with a grade of C or better, or permission of program coordinator.
Attributes: Technical
Components: LAB: Laboratory, LEC: Lecture

BTN 120 (4 credit hours)
Biofuels
Introduces students to combustion fuels made from nonpetroleum sources, and includes topics on feedstocks, processing, utilization, and social impacts. Lecture: 2.0 credits (30 contact hours). Lab: 2.0 credits (60 contact hours).
Pre-requisite: Completion of BTN 201 and BTN 202 with a grade of C or better, or permission of program coordinator.
Attributes: Technical
Components: LAB: Laboratory, LEC: Lecture

BTN 125 (2 credit hours)
Bioinformatics I
Introduces the concepts and tools used in the application of information technology to the field of biology. Includes methods for data collection, storing and accessing biological data, fundamentals of sequence alignment, biological molecule structure prediction, and data mining and analysis. Lab: 2.0 credits (60 contact hours).
Pre- or co-requisite: Completion of, or concurrent enrollment in BTN 201 and BTN 202.
Attributes: Technical
Components: LAB: Laboratory

BTN 126 (2 credit hours)
Bioinformatics II
Applies concepts introduced in BTN 125 in the design and implementation of basic programming relating to bioinformatics problems. Emphasizes current trends in bioinformatics programming language, databases, and technology. Lab: 2.0 credits (60 contact hours).
Pre-requisite: Completion of BTN 125 with a grade of C or better or permission of program coordinator.
Attributes: Technical
Components: LAB: Laboratory

BTN 160 (4 credit hours)
Introduction to Agricultural Biotechnology
Introduces theory and methods relating to applications of biotechnology in agriculture. Emphasizes emerging laboratory technologies in the area of agricultural biotechnology including food and natural resource management. Explores plant and animal genetic engineering. Lecture: 2.0 credits (30 contact hours). Lab: 2.0 credits (60 contact hours).
Pre-requisite: BTN 201 and BTN 202 with a grade of C or better, or permission of the program coordinator.
Attributes: Technical
Components: LAB: Laboratory, LEC: Lecture

BTN 201 (4 credit hours)
Biotechnology Techniques I
Introduces theory and techniques for media and solution preparations, use of analytical equipment, and laboratory safety. Includes various nucleic acid techniques, gene expression and purification, and bioinformatics. Lecture: 2.0 credits (30 contact hours). Lab: 2.0 credits (60 contact hours).
Pre-requisite: A semester of college biology with lab or college chemistry with lab or consent of instructor.
Attributes: Technical
Components: LAB: Laboratory, LEC: Lecture

BTN 202 (4 credit hours)
Biotechnology Techniques II
Covers various protein techniques, extraction and purification, and assays. Lecture: 2.0 credits (30 contact hours). Lab: 2.0 credits (60 contact hours).
Pre-requisite: BTN 201.
Attributes: Technical
Components: LAB: Laboratory, LEC: Lecture

BTN 210 (4 credit hours)
Cell Culture and Function
Covers use of cell culture in modern biotechnological applications with emphasis on laboratory skills in a variety of cell culture techniques. Lecture: 2.0 credits (30 contact hours). Lab: 2.0 credits (60 contact hours).
Pre-requisite: (BTN 110 with a grade of C or better) or consent of instructor.
Attributes: Technical
Components: LAB: Laboratory, LEC: Lecture

BTN 220 (4 credit hours)
Immunological Methods
Covers immunological theory and applications with focus on techniques such as isolation, purification, and labeling of antibody molecules. Lecture: 2.0 credits (30 contact hours). Lab: 2.0 credits (60 contact hours).
Pre-requisite: (BTN 110 with a grade of C or better) or consent of instructor.
Attributes: Technical
Components: LAB: Laboratory, LEC: Lecture

BTN 225 (4 credit hours)
Protein Bioseparation Methods
Introduces the strategies to purify proteins as part of a biotechnology process. Introduces specific methods such as activity assays for enzymes, extraction of proteins from bacterial cells, salting out, dialysis, ion exchange chromatography, and polyacrylamide gel electrophoresis. Lecture: 2.0 credits (30 contact hours). Lab: 2.0 credits (60 contact hours).
Pre-requisite: Completion of BTN 201 and BTN 202 with a grade of C or better, or permission of the program coordinator.
Attributes: Technical
Components: LAB: Laboratory, LEC: Lecture

BTN 295 (1-3 credit hours)
Independent Investigation in Biotechnology
Investigates specific topics or problems in the field of the biotechnology under direction of the faculty. May be repeated for a maximum of six credits. Laboratory varies with credit. Lab: 1.0 - 3.0 credits (30-90 contact hours).
Pre-requisite: Permission of instructor.
Attributes: Technical
Components: LAB: Laboratory

BTN 298 (1-8 credit hours)
Biotechnology Learning Laboratory
Provides contextual, real-world experience and an opportunity to reinforce previously learned concepts, skills, and critical thinking ability related to business and technical job functions typical of biotechnology companies. Prepares students to conduct mentored activities on various workforce projects assigned by Biotechnology faculty/ staff or in collaboration with biotechnology companies at the Learning Laboratory. Emphasizes twenty-first century skills and workforce readiness. May be repeated for a maximum of 8 credits. Practicum: 1.0 - 8.0 credits (60-480 contact hours).
Pre- or co-requisite: Completion of BTN 201 and BTN 202 with a C or better, or permission of program coordinator.
Attributes: Technical
Components: PCM: Practicum

BTN 299 (1-3 credit hours)
Selected Topics in Biotechnology
Addresses recent trends and discoveries in selected areas of biotechnology in a seminar format. Emphasizes discussion and critical thinking. May be repeated for a maximum of 12 credits if topics and/or learning outcomes vary. Lecture: 1.0 - 3.0 credits (15-45 contact hours).
Pre-requisite: Permission of instructor.
Attributes: Technical
Components: LEC: Lecture