

CATALOG COURSE DESCRIPTION*

BTC 2335 BioTech Proteomics and Instrumentation

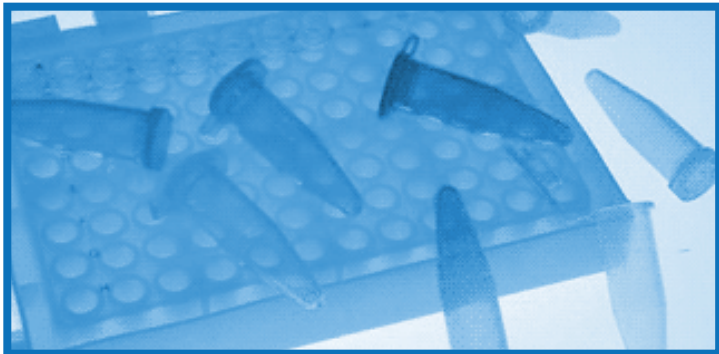
Lecture will discuss theory, applications, and operation of various analytical instruments with an emphasis on protein purification in both an R&D laboratory and a biomanufacturing facility. Laboratory exercises will focus on calibration of instruments, quantitative and qualitative analyses by chromatography, centrifugation, spectrophotometry, and SDS-PAGE gel analysis. Additionally, basic immunology including humoral and cellular immunity with ELISAs, Western Blots and cytoimmunology will be taught. An introduction to protein bioinformatic tools is included. Lecture 2 hr, Lab 6 hr. Prerequisite: BIT 1534 with a grade of "C" or better.

BTC 2512 BioTech Apprenticeship

This is an experience external to the college for an advanced student in a specialized field involving a written agreement between the educational institution and a business or industry partner. Mentored and supervised by a workplace employee, the student achieves objectives in a biotechnical project that are developed and documented by the college that directly relate to specific occupational outcomes. This may be a paid or unpaid experience. This course may be repeated if topics and learning outcomes vary. The student should have a minimum of 160 hrs on the job. Lecture 10 hr, Lab 10 hr. Prerequisite: BIT 2246, BIT 2335 with grades of "C" or better.

BTC 2101 BioTech Quality Assurance

the issues of quality control in a biotechnology setting will be explored, along with FDA, EPA and OSHA regulations. Lecture 1 hr. Prerequisites: BIT 1315.



* Continued from inside panel

Biotechnology has an impact on many aspects of our lives: agriculture, forensic analysis, medicine, research and bioethics. Biotechniques provide tools to solve important scientific problems for the benefit of man and the environment.



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A CAREER IN BIOTECHNOLOGY



 **Tulsa Community College**



A CAREER IN BIOTECHNOLOGY

Biotechnology may be defined as the use of living organisms or biomolecular processes to make useful products or solve a problem. New biotechnological advances are being developed at a mind-boggling pace; we are on the first part of a great journey into understanding and utilizing the molecular processes of living organisms.

Currently, there is an unmet need for entry-level lab workers equipped with techniques and technologies for the emerging biotechnology field. Biological technician is one of the 30 fastest-growing jobs in the state, with the number of technicians expected to increase by 26 percent by 2012.

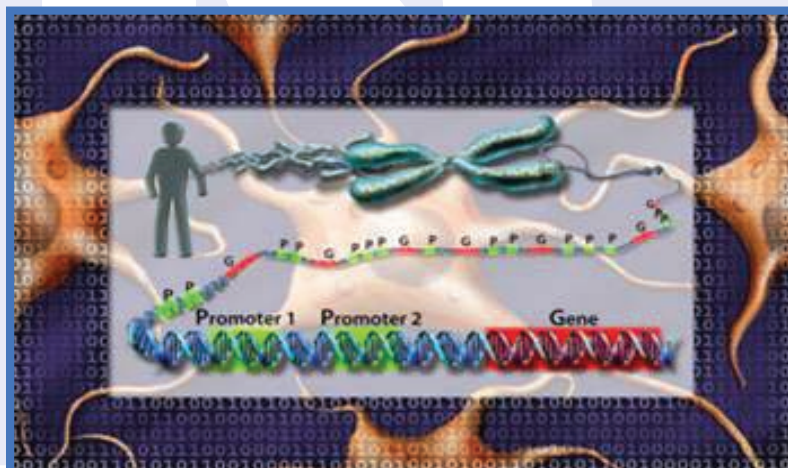
The Biotechnology program at Tulsa Community College offers an Associate of Science, an Associate of Applied Science and a Certificate program to meet the needs of a varied population.

The Associate of Applied Science in Biotechnology degree is a two-year program which requires 64 hours to complete. It will prepare graduates to enter the workforce trained in a wide variety of skills including genetic engineering and DNA analysis, protein purification and cell culture. Students will be job ready immediately upon graduation.



The Associate of Science in Biotechnology degree includes the first two years of a four-year curriculum. Students considering this major should consult the catalog of the college or university to which they are planning to transfer and carefully select courses that will meet requirements for both the baccalaureate and associate degree programs.

A Biotechnology Laboratory Techniques Certificate is available for students who may want to update skills with the latest research technologies.



CATALOG COURSE DESCRIPTION

BTC 1113 Intro to BioTech

An introduction to biotechnology including career exploration, history and applications of DNA/RNA technology, molecular biology, bioethics, safe laboratory practices and bioinformatics. The course covers calculations for solution preparations, instruction on making buffers, determining pH, pipetting, making dilutions, calibration of pipets and balances as well as an introduction into DNA and protein isolation and analysis. Lecture 2 hr; Lab 2 hr.

BTC 1315 BioTech Lab Methods and Techniques

Emphasis is on laboratory operations, management, equipment, instrumentation, quality control techniques, and safety procedures. Lecture emphasis will be on biochemistry, bioorganic topics and the scientific method, including assay design. Laboratory practice will stress lab safety and the design of assays for various classes of biochemicals, including RNA, DNA, enzyme and total protein assays. Lecture 2 hr, Lab 6 hr. Prerequisite: BIT 1113, BIO 1124, & CHE 1114 or CHE 1315 with grades of "C" or better.

BTC 1534 Cell Culture Techniques

This course will discuss the lecture topics of the cell cycle, cell requirements for growth, and bacterial and animal viruses. Lab topics will include sterile technique, bacterial media preparation, the process of preparative fermentation, and the handling of bacteriophage in prokaryotic cultures. In the study of eukaryotic cell culture techniques, the laboratory emphasizes the principles and practices of media preparation and sterilization, initiation, cultivation, maintenance, and the preservation of cell lines including applications such as project development and biomanufacturing. The topic of lab safety with potentially biohazardous agents will be covered. Lecture 1 hr, Lab 6 hr. Prerequisite: BIT 1315, BIO 2164 & CHE 1124 or CHE 1415 with grades of "C" or better.

BTC 2246 Molecular Biology and Techniques

An introduction to the principles of heredity and theory of molecular biology with an emphasis on DNA replication, transcription, gene expression and regulation, recombinant DNA, and RNA interference. Techniques such as DNA and RNA isolation, DNA restriction digests, cell transformation, transfection, PCR, DNA sequencing, real-time PCR, blot assays, microarray analysis, DNA mapping, cloning and DNA bioinformatic tools will be discussed and explored. Lecture 3 hr, Lab 6 hr. Prerequisite: BIT 1315, BIO 2164 & CHE 1124 or CHE 1415 with grades of "C" or better.