

Undergraduate Biotechnology Courses

BTEC 1185. Biotechnology Seminar. 1 Credit Hour (Lecture: 1 Hour, Lab: 0 Hours).

Exploration of opportunities in the biotechnology research, biotechnology industry, and related fields. Students will have the opportunity to learn the academic and co-curricular expectations necessary to be successful applicants to professional school, graduate school or entry-level industry positions.

BTEC 3350. Computational Biology. 3 Credit Hours (Lecture: 3 Hours, Lab: 0 Hours).

Introduction to computational tools and programming languages for biotechnology. Prerequisites: BIOL 2300 and MATH 3450.

BTEC 3360. Biotechnology Compliance. 3 Credit Hours (Lecture: 3 Hours, Lab: 0 Hours).

Role of regulatory agencies during the discovery, development, and manufacture of biotechnological products. Prerequisites: GOVT 2305 and GOVT 2306 (or Government Core Complete [core 070]) and BTEC 3440.

BTEC 3440. Biotechnology Research Techniques. 4 Credit Hours (Lecture: 3 Hours, Lab: 4 Hours).

Students will learn tissue culture techniques, how to introduce foreign DNA into cells, how to select for desired cells, and biochemical assays. Prerequisite: BIOL 2300, BIOL 3103 Lab Fee: \$2.

BTEC 4086. Biotechnology Problems. 1-6 Credit Hours (Lecture: 0 Hours, Lab: 1-6 Hours).

A course open by invitation to capable students wishing to pursue a biotechnology problem. Students are permitted and encouraged to work independently under the guidance of an instructor. May be repeated for credit, subject to the approval by the department head.

BTEC 4090. Special Topics. 1-3 Credit Hours (Lecture: 1-3 Hours, Lab: 3-9 Hours).

Focuses on selected topics in Biotechnology. May be repeated for credit when topics vary.

BTEC 4201. Principles of Bioprocessing Laboratory. 2 Credit Hours (Lecture: 0 Hours, Lab: 6 Hours).

An introduction to bioprocessing operations producing biomolecules from living cells. Students practice sterile inoculation, small-scale bioreactor operation, product recovery, purification, and real-time monitoring, documenting processes to entry-level Good Manufacturing Practice (GMP) standards. Prerequisite: BTEC 4301 or concurrent enrollment.

BTEC 4301. Principles of Bioprocessing. 3 Credit Hours (Lecture: 3 Hours, Lab: 0 Hours).

This course introduces engineering principles for producing biomolecules from bench to commercial scale. It also covers bioreactor design, cell culture kinetics, downstream purification, scale-up challenges, process economics, and Good Manufacturing Practice (GMP) regulations. Prerequisite: BIOL 3407.

BTEC 4319. Microbial Biotechnology. 3 Credit Hours (Lecture: 3 Hours, Lab: 0 Hours).

This course explores how microbial systems are engineered to generate bioproducts such as pharmaceuticals and biofuels. Lectures integrate genome-editing tools, metabolic-pathway design, synthetic biology, biosafety, and regulatory considerations. Prerequisite: BIOL 3407 and BIOL 3303.

BTEC 4380. Capstone in Biotechnology. 3 Credit Hours (Lecture: 3 Hours, Lab: 0 Hours). [WI (<https://catalog.tarleton.edu/academicaffairs/>)]

Students will apply knowledge and skills learned in previous courses to address biotechnology issues through writing, oral presentations, and other assessments. All majors must complete this course to graduate with a BS in Biotechnology. Prerequisites: Major in Biology, Biotechnology, or Biomedical Science and at least 80 hours of coursework completed, including BIOL 1406, BIOL 1407, BIOL 2300, BIOL 3103 and BIOL 3303, BTEC 3340, BTEC 3350 and BIOL 3407, or Department Head Approval.