

Biomedical Technology Year Two Syllabus 2021-2022

Course Overview

The second year of biomedical technology deepens students' understanding of the many aspects of biomedical science through continued immersion and inquiry. Students begin the year with their own Maniken, which is a small model of the human skeleton. In the first unit of study, the bones are labeled and directional terms are introduced. Throughout the first semester, students will add clay to the skeleton as they learn about the function and location of each body system and study diseases of those systems. They learn about biomedical technology available to treat these diseases, analyze current research for its beneficial potential, and innovate to come up with alternatives for the future.

Patient privacy (HIPAA) and bioethics are discussed and debated as we grapple with an age where new organs can be bioprinted and tissues can be grown from stem cells. Students will use computer aided design (CAD) computer software to create 3-D models of anatomy and determine how to make prosthetics to help amputees.

Students will carry out independent scientific research and/or compete in HOSA - an international organization created for students interested in a future career in health sciences. Scientific literature reviews and research will be conducted as they explore specific fields of interest to them from topics they have studied throughout the program.

Biochemistry and biology remain key components of this course as students learn about macromolecules and human body systems. Laboratory safety, aseptic technique, microscopy, microbial identification, genetic analysis, and DNA analysis will be covered. Key biological concepts include: maintaining homeostasis in the body, metabolism, inheritance of traits, and defense against disease.

Students practice problem solving with structured activities, and progress to open-ended projects and problems that require them to develop planning, documentation, communication, and other professional skills. Throughout the curriculum, pertinent careers are highlighted.

Instructional Context

This is the second year of the two-year biomedical technology curriculum and is taught to seniors in a full day course every other day.

Labs:

Labs are an integral component of the course and comprise at least 30% of class time. A laboratory notebook will be maintained throughout the two-year program. Labs are designed to emphasize science as a process and to enhance students' critical thinking, quantitative reasoning,

and writing skills. Throughout the course, students have opportunities to develop and test their own hypotheses, organize and analyze data, and draw conclusions.

Assessments:

- **Homework:** Generally, homework consists of reading/note-taking from the textbook, scientific journals, newspapers, magazines, and/or laboratory materials. Students also complete research for labs and projects.
- **Formative Assessments:** Students will be given formal formative assessments prior to each major summative assessment throughout the unit as a means of gauging their progress towards learning objectives and to help guide instruction to ensure that each student reaches the learning target. Some examples of these assessments include: student responses to warm-up activities and discussion questions during class, or practice lab practicums and quizzes.
- **Summative Assessments:** Students will have formal evaluations of their learning through graded lab practicums, quizzes, tests, lab reports, and projects. Because laboratory skills are integral to a biomedical technology program, the lab practicums and laboratory work will comprise at least 40% of the grade.