Biotech Program/Course Matrix

Program outcome: Students who complete the AAS degree will be able to	**BTC 101** Introduction to Biotechnology	**BIO 201** Cell Biology	**BIO 205** Microbiology	**BTC 201** Discovery Research	**BTC 202** Biomanufacturing	**BTC 269** Biotechnology Internship
1. Apply a basic core of scientific and quantitative knowledge to situations in a working laboratory and real-life scenarios	Apply a basic core of scientific and quantitative knowledge to real-life scenarios. Use technology to access scientific information, generate and analyze empirical data, and solve problems.	Apply a basic core of scientific and quantitative knowledge to enhance understanding of cell structure and function at the molecular level.	Verbally and in writing be able to compare the differences between microbes and higher organisms with regard to morphology, physiology, genetics, reproduction and their role in the environment and disease. Grow microbes in the laboratory and be able to identify and characterize them based on biochemical, staining, microscopic and physical growth characteristics. Demonstrate in lab and in written reports and assessments the concepts of control of microbes, principles of disinfection, sterilization, antisepsis and antibiotic therapy. Students will be able to demonstrate, by verbal and written testing, the interaction of microbes and the disease state including principles of epidemiology and immunology.	Apply a basic core of scientific and quantitative knowledge to enhance understanding of DNA, RNA, protein, and tissue culture related to advancement in biotechnology related research.	Apply a basic core of scientific and quantitative knowledge to enhance understanding of biomanufacturing processes and methods.	Reinforce and expand basic laboratory skills learned in academic coursework to include techniques and equipment needed in scientific research laboratories. Work with the internship site supervisor to develop an individualized project that utilizes sound scientific research procedures. Explore career opportunities for someone interested in Biotechnology and develop an academic path that will help the student achieve necessary preparation and experience for their own career goals. Keep a record of new skills and tasks learned while working at the internship site.
2. Develop and maintain a notebook of laboratory records	N/A	Develop and maintain a notebook of laboratory records.	Complete lab manual forms for each experiment	Develop and maintain a notebook of laboratory records.	Develop and maintain a notebook of laboratory records.	Keep a record of new skills and tasks learned while working at the internship site.
3. Analyze and evaluate the effect of variables on experimental results	N/A	Analyze and evaluate the effect of variables on experimental results including cell type, concentration and media components while participating in a group environment.	Grow microbes in the laboratory and be able to identify and characterize them based on biochemical, staining, microscopic and physical growth characteristics. Demonstrate in lab and in written reports and assessments the concepts of control of microbes, principles of disinfection, sterilization, antisepsis and antibiotic therapy.	Analyze and evaluate the effect of variables on experimental results including enzymes, assay parameters and sample concentration while participating in a group environment.	Analyze and evaluate the effect of variables on experimental results including enzymes, reaction time and protocol adherence while participating in a group environment.	Work with the internship site supervisor to develop an individualized project that utilizes sound scientific research procedures.
4. Effectively communicate and function as a professional laboratory team member	N/A	Analyze and evaluate the effect of variables on experimental results including cell type, concentration and media components while	Recognize and explain in writing the significance of the role that microbes play in the world around us.	Analyze and evaluate the effect of variables on experimental results including enzymes, assay parameters and sample concentration	Analyze and evaluate the effect of variables on experimental results including enzymes, reaction time and protocol	Enhance public speaking and presentation skills that will be useful for a career in science. Share information involving the project with

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		participating in a group environment.	Demonstrate in lab and in written reports and assessments the concepts of control of microbes, principles of disinfection, sterilization, antisepsis and antibiotic therapy. Students will be able to demonstrate, by verbal and written testing, the interaction of microbes and the disease state including principles of epidemiology and immunology.	while participating in a group environment.	adherence while participating in a group environment.	other members of the scientific community.
5. Relate aspects of biotechnology to society and personal career choices	Relate aspects of biotechnology to society and personal career choices.		Recognize and explain in writing the significance of the role that microbes play in the world around us.	Relate different biotechnology skills to various career paths.	Apply a basic core of scientific and quantitative knowledge to enhance understanding of biomanufacturing processes and methods.	Explore career opportunities for someone interested in Biotechnology and develop an academic path that will help the student achieve necessary preparation and experience for their own career goals.
6. Understand and apply basic skills essential for following Standard Operating Procedures (SOP)					Understand and apply basic skills essential for following Standard Operating Procedures (SOPs). Analyze and evaluate the effect of variables on experimental results including enzymes, reaction time and protocol adherence while participating in a group environment.	SOPs dependent on internship site.