

Syllabus: BIO 486: Biotechnology Capstone

Course Title: BIO 486: Biotechnology Capstone

Semester: Fall 2024

Instructor: Prof. Robert Brown

Email: rbrown@asu.edu

Office: SANCA 770B, The Polytechnic School, ASU

Office Phone: (480) 727-9500

Office Hours: Mondays 2:00-4:30 PM OR by appointment

Class Time & Place: Monday or Wednesday 3:00-4:15 PM in SANCA 775

Course Description:

This capstone course focuses on the development of biotechnology products or processes. Students will design, develop, and validate a biotechnology product, culminating in a presentation at the Innovation Showcase. The course includes the development of a project proposal, literature review, product development, and a final report.

Course Objectives:

Develop a biotechnology product or process from concept to prototype.

Conduct market analysis and testing to validate the product.

Optimize the design and functionality of the biotechnology product.

Effectively present the product at the Innovation Showcase.

Learning Outcomes:

Gain expertise in biotechnology and product development.

Develop practical skills in research, product design, and testing.

Improve communication skills through written reports and presentations.

Enhance the ability to manage biotechnology projects from conception to completion.

Group Project and Required Subtasks:

The group project for this course will involve the development of a biotechnology product or process.

The project will be broken down into the following subtasks:

1. ****Project Proposal (Week 3):****

- Create a proposal detailing the biotechnology product or process being developed, the research objectives, and the anticipated outcomes. Include a timeline and assign roles to team members.

2. ****Literature Review and Market Analysis (Weeks 4-6):****

- Conduct a thorough literature review to understand the current state of the technology and potential market applications. Develop a market analysis to identify potential users and competitors.

3. ****Product Development and Prototyping (Weeks 7-10):****

- Develop a prototype of the biotechnology product or process. Optimize the design and functionality based on initial testing and feedback.

4. ****Testing and Validation (Weeks 11-12):****

- Conduct testing and validation studies to ensure the product meets the intended specifications and regulatory requirements. Analyze the results and refine the product as needed.

5. ****Final Report and Presentation (Weeks 13-15):****

- Document the entire development process, including challenges, solutions, and outcomes in a final report.

- Prepare a presentation for the Innovation Showcase that highlights the key aspects of the biotechnology product or process.

Groups are expected to collaborate closely, meeting regularly to discuss progress and resolve any

issues. Instructor check-ins will be scheduled to provide guidance and feedback.

Evaluation:

Class meetings (5): 20 points

Individual meetings (3): 12 points

Project Proposal: 10 points

Literature Review and Market Analysis: 15 points

Product Development and Prototyping: 18 points

Testing and Validation: 10 points

Final Report: 10 points

Presentation: 5 points

Poster: 10 points

Total: 100 points

Course Policies:

Attendance and Participation: Regular attendance and active participation are crucial for success in this course. Students are expected to attend all scheduled class meetings and individual sessions. If a student is unable to attend a class, they should inform the instructor in advance and arrange to complete any missed work.

Academic Integrity: All students must adhere to ASU's academic integrity policy. Any form of academic dishonesty, including plagiarism, will be reported and may result in severe penalties, including a failing grade for the course.

Accommodations: Students with disabilities or special needs should contact the ASU Disability Resource Center to arrange appropriate accommodations and notify the instructor as soon as possible.

Important Dates:

Class Week 1: Introductions & Project Brainstorming (Aug 26)

Individual Meeting #1: Discuss Ideas and Readings (Sep 4)

Class Week 2: Proposal Presentation & Group Feedback (Sep 18)

Individual Meeting #2: Proposal Feedback & Methods Discussion (Oct 2)

Class Week 3: Revised Proposal Presentation & CERTT Tour (Oct 23)

Individual Meeting #3: Data Analysis & Progress Review (Nov 13)

Class Week 4: Professional Development & Project Discussion (Nov 27)

Innovation Showcase: Final Presentations & Poster Display (Dec 6)