Introductory Biotechnology Lab

BTEC - 1200 301

Course Description

Students learn how to use proper aseptic technique while working in a hood.

Prerequisite: BTEC 1100 with a grade of B or better or with concurrency and MATH 0980 with a grade of C or better or appropriate placement score.

Semester: All

Course Student Learning Outcomes

- Correctly use laboratory safety practices when using biological and chemical materials.
- Use common equipment found in a biotechnology laboratory.
- Prepare solutions to correct pH and concentration.
- Demonstrates the ability to perform aseptic technique.
- Demonstrates the ability to create and maintain microbial cultures.
- Run molecular biology lab experiments.
- Maintain accurate laboratory notebooks.
- Use common metric system quantities and conversions.
- Apply math concepts to solve common biotechnology quantitative tasks.
- The plasmid identification project requires students to interpret their own results, troubleshoot lab failures and optimize reactions for success.
- Use Excel to graph standard curves.

Course Prerequisites

BTEC1000 or BTEC 1010

Engagement Plan

- I will respond to email within 48 hours I will offer feedback on major assignments within 1 week. The best way to contact me is via the Canvas Inbox, as I will prioritize this email over other modes of communication
- Additionally, you can visit the lab as often as you want during open lab hours and discuss topics with all of the professors or practice the lab experiments as often as needed to gain competency.

Keys for Success (how to succeed in the course)

Success in BTEC 1200 requires consistent effort and active participation in the experiments. First, go through and read the material and watch the videos for each module/experiment prior to visiting the open lab. When you come to the open lab, actively engage with the experiment and discuss topics with the professor and other students. These labs are designed to reinforce learning and help understanding of the topics presented in canvas. Success in the course requires competency and therefore visiting the open lab often and practicing the techniques often will help you master the material.

Brief Description of Assignments/Exams

Week	Experiment	Day	Timing
1	Calculations Exam #1	1. Practice Quizzes (Canvas)	
		2. Exam #1 (in class)	2 hours
2	Pipetting Practice	1. Artel Machine	2 hours
3	Pouring Plates	1. Autoclave Media	1 hour
		2. Pour plates	1.5 hours

4	Solid Cultures	1. Streak plates	1.5 hours
5	Liquid Cultures	1. Start liquid cultures	1 hour
6	Gram Stain and Microscopes	1. Gram staining	2 hours
7	Dilutions and Spectrophotometry	1. Dilutions and Spectrophotometry	1.5 hours
8	Making a buffer	1. Making a buffer	1.5 hours
9	Antibiotic susceptibility test	1. Antibiotic susceptibility test	2.5 hours
		2. Read and analyze results	30 minutes
10	Dog paternity test (gel electrophoresis)	1. Gel electrophoresis	2 hours
11	Plasmid ID Project and Write-up	1. Start Plasmid A, B, C culture	30 minutes
		2. Plasmid Purification	2 hours
		3. Digestion	1 hours
		4. Gel electrophoresis	1.5 hours
		5. Analyze results	30 minutes

Assignment Schedule

Due Date	Assignment Name	Assignment Type	Points
	Any Questions? (optional)	Discussion	0
	Any Questions? (optional)	Discussion	0
	Any Questions? (optional)	Discussion	0
	Introduce Yourself	Discussion	0
	Introduce Yourself	Discussion	0

Due Date	Assignment Name	Assignment Type	Points
	Introduce Yourself	Discussion	0
	Introduce Yourself	Discussion	0
	Introduce Yourself	Discussion	0
	Introduce Yourself	Discussion	0
	Introduce Yourself	Discussion	0
	Introduce Yourself	Discussion	0
	Quiz: Antibiotic Screen Post-Lab	Quiz	5
	Quiz: Antibiotic Screen Pre-Lab	Quiz	5
	Quiz: Autoclave Post-Lab	Quiz	5
	Quiz: Autoclave Pre-Lab	Quiz	5
	Quiz: Calculating Molarity 1	Quiz	5
	Quiz: Calculating Molarity 2 (optional)	Quiz	0
	Quiz: Calculating Molarity 3 (optional)	Quiz	0
	Quiz: Calculating Percentages 1	Quiz	5
	Quiz: Calculating Percentages 2 (optional)	Quiz	0

Due Date	Assignment Name	Assignment Type	Points
	Quiz: Calculating Percentages 3 (optional)	Quiz	0
	Quiz: Dilutions Equation 1	Quiz	5
	Quiz: Dilutions Equations 2 (optional)	Quiz	0
	Quiz: Dilutions Equations 3 (optional)	Quiz	0
	Quiz: Dimensional Analysis	Quiz	5
	Quiz: Gram Staining Post-Lab	Quiz	5
	Quiz: Gram Staining Pre-Lab	Quiz	5
	Quiz: Liquid Cultures Post-Lab	Quiz	5
	Quiz: Liquid Cultures Pre-Lab	Quiz	5
	Quiz: Making a Buffer Post-Lab	Quiz	5
	Quiz: Making a Buffer Pre-Lab	Quiz	5
	Quiz: Pawternity Post-Lap	Quiz	5
	Quiz: Pawternity Pre-Quiz	Quiz	5

Due Date	Assignment Name	Assignment Type	Points
	Quiz: Pipetting Post-Lab	Quiz	5
	Quiz: Pipetting Pre-Lab	Quiz	5
	Quiz: Plasmid ID Miniprep Post-Lab	Quiz	5
	Quiz: Plasmid ID Miniprep Pre-Lab	Quiz	5
	Quiz: Plasmid ID Restriction Digest Post-Lab	Quiz	5
	Quiz: Plasmid ID Restriction Digest Pre-Lab	Quiz	5
	Quiz: Pouring Plates Post-Lab	Quiz	5
	Quiz: Pouring Plates Pre-Lab	Quiz	5
	Quiz: Scientific Notation	Quiz	5
	Quiz: Serial Dilution Post-Lab	Quiz	5
	Quiz: Serial Dilution Pre-Lab	Quiz	5
	Quiz: Streaking a Plate Post-Lab	Quiz	5
	Quiz: Streaking a Plate Pre-Lab	Quiz	5

Due Date	Assignment Name	Assignment Type	Points
9/5/25	Exam: Calculations and Measurements	Assignment	75
9/12/25	Lab: Micropipetting	Assignment	50
9/19/25	Lab: Making Media and Using the Autoclave	Assignment	25
9/26/25	Lab: Pouring Agar Plates	Assignment	25
10/3/25	Lab: Streaking a plate	Assignment	50
10/10/25	Lab: Gram Stain	Assignment	50
10/10/25	Lab: Liquid Cultures	Assignment	50
10/17/25	Lab: Serial Dilutions and Spectrophotometry	Assignment	50
10/24/25	Lab: Making a Buffer and Using a pH Meter	Assignment	50
11/7/25	Lab: Antibiotic Susceptibility Screening	Assignment	100
11/14/25	Lab: Puppy Pawternity Test (Gel Electrophoresis)	Assignment	50
11/21/25	Lab: Miniprepping DNA Plasmids	Assignment	50
12/5/25	Lab: Plasmid Identification Lab	Assignment	50
12/11/25	Write: Lab Notebook	Assignment	100

Due Date	Assignment Name	Assignment Type	Points
12/12/25	Write: Plasmid Identification Lab Write Up	Assignment	200

Grading Scale

Final Total	Grade	Final Total	Grade
930-1000	A	730-760	C
900-929	A-	700-729	C-
870-899	B+	670-699	D+
830-869	B	630-669	D
800-829	B-	600-629	D-
770-799	C+	Below 600	E

How to Navigate to Canvas

Institutional Policies

As members of our academic community, we would like to invite you to review the Institutional Syllabus which covers important policies and procedures. This document contains important links for students on the code of student rights and responsibilities, academic integrity, and grading policies, Title IX and other important acknowledgements. By familiarizing yourself with this information, you can help us create a safe and respectful environment for everyone.

For more information, navigate to the Institutional Policies tab on the Institutional Syllabus page.

Learning Support and Tutoring Services

We are pleased to offer a range of tutoring and learning support services to help you achieve your academic goals. Whether you need assistance with a specific subject or want to improve your study skills, you have many options for tutoring or other support.

To learn more about the services we offer and how to access them, visit the Institutional Syllabus page under the Tutoring and Learning Support tab. We encourage you to take advantage of these resources to help you succeed in your studies. If you have any questions or would like to schedule a tutoring session, please don't hesitate to reach out to us. We are here to support you in any way we can.

Advising and Counseling Support Services

At our institution, we are committed to supporting your academic and personal growth. That's why we offer a range of advising and counseling services to help you navigate the challenges of college life. To learn more about the resources available to you and how to access them, visit the Institutional Syllabus page under the Advising and Counseling Support Services tab. Our advising team and the support centers across campus are here to support you in achieving your goals and overcoming any obstacles you may face.

Student Academic Calendar

As students you should be aware of all important dates in the semester, such as the day that courses begin and end, as well as the drop date and the last day to withdraw. To learn more about those dates, navigate to the Student Academic Calendar below:

SLCC Student Academic Calendar

Additional Policies

We've changed our attendance policy for all biotech classes and I wanted to give you an update. BTEC 1200 is designed to require approximately 2-3 hours of lab work each week, depending on your prior experience in biotechnology. While these classes are self-paced, it's important that students consistently progress throughout the semester. To support this, we have implemented a new policy for all biotechnology courses: you are required to attend lab and make measurable progress on your experiments at least once every three weeks. Failure to attend lab during this period, without prior communication and a written

excused absence, may result in a failing grade for the course. I understand that we have just started the semester and the first week can be challenging as you navigate the campus and new courses. Therefore, I'll waive the first week as an exception. However, I expect to see you in the lab within the next 3 weeks. Please let me know if you have any questions or concerns.