# Applied Molecular Biology

BTEC1500 ███

Instructor Information

Course Student Learning Outcomes

- Understand and demonstrate various aspects of DNA Technology by completing a series of reactions to manipulate DNA.

- Learn how to express and purify a protein product from recombinant DNA by completing a series of lab experiments.

- Recall the central dogma of biology.

- Use bioinformatics to design DNA cloning strategies for recombinant DNA and analyze DNA sequence data.

- Required to keep a laboratory notebook.

- Use lab math to set up reactions and make chemical solutions.

- The project based, open lab format forces student to evaluate their own results, troubleshoot laboratory failures and optimize reactions.

- Work in an open lab format and is responsible for setting their own schedule and timetable to complete the project.

- Use online bioinformatic resources and software to work with DNA sequences.

Course Description

This course teaches students practical aspects of DNA technology that includes restriction digestion, properties of plasmids, recombinant DNA cloning, gel electrophoresis, the polymerase chain reaction, protein expression and protein analysis. It is recommended students majoring in Biotechnology complete BIOL 1610 prior to taking this course.

Prerequisite(s): BTEC 1000 and BTEC 1200 with a grade of B or better; MATH 0980 or MATH 0990 w/C or better, or appropriate placement score, BIOL 1010 or 1610 w/C grade or better.
Semesters Taught: All

College Wide Student Learning Outcomes

- Acquire substantive knowledge in the intended major and throughout General Education

- Communicate effectively

- Develop quantitative literacies necessary for the chosen field of study

- Think critically

- Express themselves creatively

- Develop civic literacy and the capacity to be community-engaged learners who act in mutually beneficial ways with community partners

- Develop the knowledge and skills to work with others in a professional and constructive manner

- Develop information literacy

- Develop computer literacy

Required Text or Materials

Title: Written materials will be provided

For more information on textbook accessibility, contact Accessibility & Disability Services at ads@slcc.edu.

Brief Description of Assignments/Exams

Completion of all the lab modules is required.

Assignment Schedule

Due Date	Assignment Name	Assignment Type	Points
	Any Questions?	Discussion	0
	Any Questions? (optional)	Discussion	0
	Assignment: Designing Primers	Assignment	100
	Exam 1 Molecular Biology of the Central Dogma	Quiz	100
	Final Exam	Assignment	100
	Introduce Yourself	Discussion	0
	Introduce Yourself	Discussion	0
	Introduce Yourself	Discussion	0
	Introduce Yourself	Discussion	0
	Lab Notebook	Assignment	100

Due Date	Assignment Name	Assignment Type	Points
	[Lab: Protein Expression and SDS-PAGE Analysis](#)	Assignment	100
	[Lab: Amplify bglA gene from Bacillus Halodurans genomic DNA by polymerase chain reaction (PCR)](#)	Assignment	100
	[Lab: Complete ligation independent cloning (LIC) of bglA gene into pLATE31 vector and transform competent cells](#)	Assignment	100
	[Lab: Isolate recombinant bglA-pLATE31 plasmid using miniprep kit](#)	Assignment	100
	[Lab: Purify bglA PCR reaction using PCR purification kit and verify using gel electrophoresis](#)	Assignment	100
	[Lab: Screen transformed colonies for bglA-pLATE31 recombinant DNA using PCR and gel electrophoresis](#)	Assignment	100

Due Date	Assignment Name	Assignment Type	Points
	[Lab: Verify recombinant bglA-pLATE31 plasmid using restriction digest and gel electrophoresis](#)	Assignment	100

Communication Plan

Example language:

- I will respond to email within one day. I will offer feedback on major assignments within one week The best way to contact me is via the Canvas Inbox, as I will prioritize this email over other modes of communication.
- In this course I will be posting interactive announcements which will offer specific opportunities for class questions and extra credit every other week.
- Additionally, I will be participating in the discussion forums with you to share my perspective within the discipline and to offer some nuances of interpretation that may not be present in your textbook.
- Lastly, we'll be holding small group Q & A sessions, where we can learn from our peers (and faculty) on some of the more difficult units within the course.

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.

You can access the document by clicking on the following link: https://slcc.instructure.com/courses/530981/pages/institutional-syllabus

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, please visit the Institutional Syllabus under the Tutoring and Learning Support tab: https://slcc.instructure.com/courses/530981/pages/institutional-syllabus. 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, please visit the Institutional Syllabus under the Advising and Counseling Support Services tab: https://slcc.instructure.com/courses/530981/pages/institutional-syllabus. 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:

Grading Scale

Final %	Grade
93-100	A
90-92	A-
87-89	B+
83-86	B
80-82	B-
77-79	C+
73-76	C
70-72	C-
67-69	D+
63-66	D
60-62	D-
Below 60	E

Additional Policies

Attendance:

Academic Integrity:

Generative artificial intelligence (AI) software is a rapidly emerging tool that students may be interested in using. If doing so, SLCC students are expected to adhere to the same standards as the Code of Student Rights and Responsibilities statement on plagiarism. Presenting generative AI software content as your own is a violation of academic integrity. If you use generative AI in your work, you must indicate that you have done so.

Due Dates and Late Work Policy:

Drop, Withdraw or Incomplete Grade: Last day to drop from class with refund is September 10th, withdraw without refund is October 22nd. A grade of "I" (Incomplete) is at the instructor's discretion and can be given if a student is facing extenuating circumstances preventing them from finishing the semester. In order to receive an

incomplete, most of the course work must be completed (e.g. ~70%) with a passing grade. If you have any questions about grades or grading policies please visit: https://www.slcc.edu/student/enrollment/grade-policies.aspx.

SLCC Academic Policies: SLCC academic policies may be found in the SLCC 2024-2025 Catalog, and the Code of Student Rights and Responsibilities.