# BTEC 2020: Biomolecular Separation and Analysis

**COURSE DESCRIPTION***: Students are taught how to apply purification and analysis techniques to biologically active substances. The class emphasizes applying electrophoretic and chromatographic technologies to protein purification and kinetic analysis of enzymes.*

INSTRUCTORS: Jean Bower Chuck Rettberg

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JHS 257 JHS 254B

**PREREQUISITES:** Students are required to have completed BTEC 1000, BTEC 1100, BTEC 1200, and BTEC 1300, all with a B or better.

**COURSE MATERIALS:** Students need access to the Canvas online course management system (slcc.instructure.com). Instructional material can only be accessed through Canvas. A lab coat and lab notebook will be provided.

**COURSE FORMAT and OBJECTIVES**: The course uses a hybrid, competency-based format in which online instruction and activities are reinforced by select laboratory experiences. Students may conduct experiments during the open lab hours whenever it suits their own schedule.

This course has five primary learning objectives (referred to as competencies):

* The student explains the four levels of protein structure.
* The student separates proteins using SDS-PAGE.
* The student separates molecules using chromatography.
* The student determines the turnover rate of an enzyme in particular conditions.
* The student expresses a protein of interest.

**LEARNING LAB:** **JHS 263**. The standard hours for the learning lab are Monday – Thursday 10am – 8pm, Friday 10am – 4pm, and Saturday 8am – 2pm. Semester breaks and college holidays are observed. Students must sign up for lab time through [biotech.youcanbook.me](http://biotech.youcanbook.me/). All students who work in the lab must clean up after themselves, participate in community chores, and maintain an environment conducive to experimentation and learning for all who use the learning lab.

**GRADING POLICY:** The grading system used in this class is designed to show how well you have mastered the competencies for the course. A grade of B or better is required to move on to the next biotechnology course.

Use the following breakdown as a guideline when computing your final grade.

Because this course is competency-based, grades are given solely on the final assessments associated with this course. Grades will be assigned based on the percentage scale below. **Students must achieve a 80% or better on the final exam and 80% for each criteria in the grading rubric on the final lab to continue in the next biotechnology course.**

If your scores for both the final exam and final lab (BglA expression, detection, purification, and kinetics study) are both 80% or above, your final grade will be the average of the two scores.

If either the final exam or final project score is below 80%, your grade will be determined solely by that lower score, and you will not be able to move on to the next biotechnology course.

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| --- | --- | --- |
| **Final Exam Score** | **Final Lab Score** | **Final Grade** |
| Less than 80% | Anything | Determined by the lowest of the two scores |
| Anything | Less than 80% | Determined by the lowest of the two scores |
| 80% or better | 80% or better | Determined by the average of the two scores |

For example,

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| --- | --- | --- |
| **Final Exam Score** | **Final Lab Score** | **Final Grade** |
| 77% | 93% | 77% (C+) |
| 79% | 72% | 72% (C) |
| 95% | 85% | 90% (A) |

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| --- | --- |
| ***Final %*** | ***Grade*** |
| ***90-100*** | ***A*** |
| ***87-89*** | ***B+*** |
| ***80-86*** | ***B*** |
| ***77-79*** | ***C+*** |
| ***Final %*** | ***Grade*** |
| ***70-76*** | ***C*** |
| ***67-69*** | ***D+*** |
| ***60-66*** | ***D*** |
| ***Below 60*** | ***E*** |

**INCOMPLETE POLICY**

If you have not achieved an 80% or higher on both the final exam and final lab by the end of the semester, you are at risk of getting a grade below B, which will prevent continuation of the program. An incomplete may be negotiated if you have submitted all milestones and are making consistent progress. The incomplete will allow you extra time to meet with your instructor, practice and study, and master the competencies.

**The syllabus is not a binding legal contract. It may be modified by the instructor when the student is given reasonable notice of the modification.**