



South San Francisco Unified School District

Biotechnology 1-2 Syllabus 2022-2023

Instructor:

Mr. Rocky Ng

Contact Information:

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Textbook:

Biotechnology: Science for the New Millennium: Text 2nd Revised Edition, Ellyn Daugherty (provided)

Biotechnology: Science for the New Millennium: Lab Manual 2nd Revised Edition, Ellyn Daugherty (provided)

Websites:

1. <https://sites.google.com/ssfusd.org/mr-ng-ssfhs-biotechnology/home>
 - a. Specific course information
2. <https://sciencegarage.wixsite.com/ssfusd>
 - a. General Science Garage information

Course and Pathway Goals:

Welcome to biotechnology, this is a dual-enrolled course designed to prepare you for the biotechnology industry workforce. Biotechnology 1-2 is a one-year laboratory course designed to give students an introduction to the scientific concepts and basic laboratory research techniques currently used in the field of biotechnology. Biotechnology 1 (first semester) has a focus on mastering basic standard laboratory operating procedures, extensive record-keeping through a laboratory notebook, communication skills, safety, and proper use of equipment. Students will learn about sterile technique, cell culture, DNA and protein isolation, and electrophoresis. Biotechnology 2 (second semester) builds on the skills developed in Biotechnology 1, with an emphasis on assay development, spectrophotometry, recombinant DNA technology, and bacterial transformation. Through extensive research and laboratory experience, students will also evaluate career opportunities in the field.

Course Requirements:

Biotechnology 1-2 is limited to students who have taken Biology with “C” or above. Chemistry background is not essential. However, students are recommended to take chemistry concurrently or in the future if they want to pursue future biotech courses.



Dual Enrollment with Skyline College

Biotechnology 1-2 is dual-enrolled with Skyline College [BTEC 400](#) (2-semester college units). By definition, students who are dual-enrolled are *college students*. Upon completion of Biotechnology 1-2, students will receive community college credits. These units are transferable to CSU. The college final grade is a compilation of the two-term grades given by the instructor.

Technical Requirements

- District-managed Chromebook (no personal laptops)
- Google Classroom account and class-specific passcode
- Composition notebook

Course Dates

- Quarter 1: August 10 through October 7
- Quarter 2: October 10 through December 16
- Quarter 3: January 4 through March 10
- Quarter 4: March 13 through May 26

Course Objectives

Students will be able to:

- Implement use of the metric system, orders of magnitude, and the pH scale in preparation of reagents, analysis of data, and graphing.
- Follow sustainable and safe practices with high regard for quality control.
- Calculate and prepare solutions of various molarities; calculate and prepare buffers of various pH; and prepare serial dilutions
- Discuss the structure and function of the macromolecules that compose cells, including carbohydrates, lipids, DNA, RNA, and protein molecules.
- Describe conditions that promote cell growth under aseptic conditions in the laboratory and workplace.
- Employ standard protein techniques, including antibody production, enzyme assays, spectrophotometry, gel electrophoresis, and chromatography and document and evaluate results.
- Analyze and interpret data as well as construct explanations using evidence.
- Identify several products obtained through recombinant DNA technology.

Midterm and Final Examination:

Midterm 1 Exam: 10/5 - 10/7

Final Exam 1: 12/14-12/16

Midterm 2 Exam: 3/8 - 3/10

Final Exam 2: 5/24-5/26

Examinations are assessments for students to demonstrate skills learned. These assessments will consist of a written and laboratory portion. Final examinations will typically begin one week prior to final exam week.



Course Expectations

- Students are expected to arrive to class on time .
- Students are expected to have a working Google Classroom account.
- Students are expected to have an electronic laboratory notebook (ELN) where you will document all of your classwork and lab work.
- Students are expected to use all equipment safely, correctly, and as directed.
- Students are expected to respect the rights of others to learn and work, online and in class.
- Students are expected to participate in all lab work and discussions.
- Students are to clean individual work areas and help maintain common work areas.
- Students must maintain a C or better to qualify for college general elective credits from Skyline College.

Grading:

SSF biotechnology courses are designed to get students ready for the workforce. Students are evaluated using techniques similar to those in the industry. Course evaluation/grade and continued participation in the biotechnology program is based on a standards-based grading system and a traditional weighted percentage grading system. Students are responsible for keeping track of their grades on Infinite Campus. Parents/guardians and students can access Infinite Campus online.

Category	Weighed Percentage
Standards-based Grading	90%
Assignments and others	10%

A - 80% to 100%, B - 60% to 79%, C - 40% to 59%, D - 20% to 39%, F - Below 20%

Standards-based grading is a grading system that involves measuring students' proficiency on well-defined course objectives (Tomlinson & McTighe, 2006). Assignments are generally graded on 0-4 point scale with multipliers applied on some major standards. For example, some assignments are worth 4 points while some assignments can be worth 8, 12, 16, 20, or a multiple of 4s. Students will have the opportunity to improve on the same assignment in order to achieve a higher grade. The remaining 10% of the final grade derives from assignments. This "other" category encourages students to submit assignments that are reinforcing the standards.

Hall Passes:

Students should prioritize maximizing classroom instructional time. Therefore, hall passes are discouraged. In the case of an emergency, a hall pass will be issued in exchange of their cell phone for the duration of the hall pass usage. Students will need to sign-in using the bathroom sign-in sheet. Hall passes will not be issued in the first/last 10-minutes of the class period.



Cheating and Plagiarism:

Plagiarism and cheating is not acceptable. Students who submit work belonging to another person claiming it as their own, copying from another person at any time, or allowing another student to copy from them will receive consequences. Cheating includes and is not limited to the use of any electronic device to take pictures of and/or copy another person's work. Cheating also includes copy and pasting from a search engine like Google without citations.

Consequences: Plagiarism/Cheating on Major Assessments

1. First Offense
 - a. Zero for the assignment, the student cannot make up the assignment
 - b. Referral to AP
 - c. Parent/Teacher/AP Conference
 - d. Sign Academic Honor Contract
2. Second Offense
 - a. Withdrawal from class with and an F for the semester
 - b. Loss of CSF eligibility Consequences

Cheating on Homework/Classwork

1. First Offense:
 - a. Zero for the assignment, the student cannot make up the assignment
 - b. Referral to AP
 - c. Sign Academic Honor Contract
2. Second Offense:
 - a. Zero for the assignment, student is not able to make-up the assignment
 - b. Referral to AP
 - c. Parent/Teacher/AP Conference
 - d. Sign Academic Honor Contract
3. Third Offense:
 - a. Withdrawal from class with and an F for the semester
 - b. Loss of CSF eligibility

Attendance and Late Work

- Any absences will need to be processed through the Attendance Office
 - Students should notify the instructor in advance through email, if possible
- For standard-based grading assignments, late work are accepted until the end of the semester.
- For non-standard-based assignments, late work are not accepted.

Tardy Policy

A student who arrives late to class without authorization will be marked with an "unexcused tardy". The below policy is per semester and applies to unexcused tardies:

1st Tardy Student receives a warning from the teacher and remains in class.



2nd Tardy Teacher notifies the parent/guardian and the student remains in class.

3rd Tardy Teacher notifies parent/guardian. The student remains in class. The teacher will complete a MIR (Minor Incident Report) and the student will participate in a restorative circle.

4th Tardy Referral sent by the teacher--AP will assign 1-hour detention. The student remains in class.

5th Tardy Referral sent by the teacher--AP will give 2-hour detention. The student remains in class.

6th Tardy Referral sent by a teacher--Student is assigned to the Saturday program. AP contacts a parent or guardian. The student remains in class.

7th Tardy Referral sent by a teacher--Prompts a conference with parent/teacher/student/AP. The student remains in class and is assigned an additional day in the Saturday program

8th Tardy Referral sent by the teacher. Parent/Guardian and student are notified and the student is assigned to ATS.

9th Tardy Referral sent by the teacher. Parent/Guardian and student meeting with Assistant Principal.

Technical Issues/Support

If you are having trouble accessing any material, such as a reading or a video, or if you are having software/hardware problems, you can always send an email to your instructor explaining the problem and what is being done to solve the problem.

Before you email your instructor:

1. Ask a friend
2. Ask a second friend
3. Ask your instructor
4. Call 650 -877- 8700 Ext 8611 for technical issues on Chromebook

Field Trips

Each year, biotechnology students will be sponsored to attend a field trip that provides an extension to their biotechnology classes. Students are required to attend these events. For example, all Biotechnology 1-2 students attend the Genentech Job Shadow Day to experience the different biotech and non-biotech-related jobs at Genentech. In exceptional circumstances with the parent/guardian's approval, the field experience may be waived. Since field trips are counted as excused absences, teachers from other classes will provide arrangements for missed work.

Accessibility Statement

It is the instructor's goal to create an accessible learning experience for all students. If students anticipate issues related to the format, materials, or requirements of this course, students should contact the instructor to explore potential options. Students with disabilities may also work with the Counseling Department and instructor to discuss options to remove barriers for this course.

Please note that this syllabus may be revised or updated during the semester. Changes will be announced in class and posted on the course website.



References

Tomlinson, C., & McTighe, J. (2006). Integrating differentiated instruction and understanding by design. Alexandria, VA: ASCD