

**MVLA
2025-26
COURSE INFORMATION SHEET**

Course Title: Biotechnology

School: Los Altos High School

UC/CSU requirement: [Lab Science D, 10 units](#)

Textbook and/or other learning resources: Ellyn, Daugherty. *Biotechnology Science for the New Millennium*. CBS Publishers & Distributors, 2008 (Textbook and Lab Manual)

Course Description/Student Learning Outcomes:

The Convention on Biological Diversity defines biotechnology as: *"any technological application that uses biological systems, living organisms, or derivatives thereof, to make or modify products or processes for specific use"*.

Through this course students will:

- Define and assess biotechnology and recognize the diverse applications and impact on society.
- Understand the ethical, moral, legal, and cultural issues related to the use of biotechnology research and product development.
- Demonstrate competencies in the fundamentals of molecular cell biology, including DNA, proteins, and standard techniques for their purification and manipulation.
- Recognize basic concepts in cell biology and become familiar with the laboratory tools used for their analysis.
- Integrate computer skills into program components.
- Implement use of the metric system, orders of magnitude, and the pH scale in preparation of reagents, analysis of data, and graphing.
- Understand the function of regulatory agencies for the biotechnology industry and the lasting impact of routine laboratory and communication practices on product development and manufacturing.
- Follow sustainable and safe practices with high regard for quality control.
- Understand that manufacturing represents inter-connectedness between science and production.

Course Outline/Units of Study (Subject to Change):

- Unit 1: History and Tools of Biotechnology
- Unit 2: Microbes and Standard Lab Operating Procedure
- Unit 3: Solutions Preparation, Transcription & Translation (TXTL)
- Unit 4: CRISPR Technology and Applications
- Unit 5: Recombinant DNA and Genetic Engineering
- Unit 6: Model Organisms Research and Bioethics
- Unit 7: Precision Medicine and DNA Analysis
- Unit 8: Proteomics

Assessment and Grading ([BP 5121](#) / [AR 5121](#)): To ensure that every student has an equal opportunity to demonstrate their learning, the course instructors implement aligned grading practices and common assessments with the same frequency.

1. **Grading categories and their percentage weights:**
25%: Tests and Quizzes (concept and skills-based)
35%: Labs (standard practices of notebook use and computer-based skills)
30%: Assignments (in-class and homework)
10%: Final Exam (end of semester assessment)
2. **Achievement evidence collected within each grading category:**
Students will be informed of the quantity, weight, and due dates of assignment/assessments in each grading category on Aeries. Lab work, classwork, homework, tests, quizzes, and projects/presentations will all contribute to the overall grade earned by the student.
3. **Grading scales:**
A = 100%-90% C = 79%-70%
B = 89%-80 D = 69%-60 F = 59% and below

4. **Homework/outside of class practices** ([AR 6154](#)):
Homework could include reading, taking notes, worksheets, lab reports, researching topics online, and/or reviewing for tests. Notebook work will be stamped for completion and accuracy through use of unit stamp sheets at the beginning of class when due. On average, students are expected to have 1-2 nights per week of homework, often completing a task that began in class.
5. **Excused absence make up practices** ([Education Code 48205\(b\)](#)):
 - A. When absent, it is YOUR responsibility to find out what you missed from Canvas, a fellow student, or the teacher.
 - B. Make-up exams will not be given, unless there is an excused absence. It is the student's responsibility to contact the teacher the day of the missed exam. Parents will be contacted when a student is absent on the day of the exam more than once.
 - C. Students should try not to miss block period lab days. Make-up labs can be completed during ACT if absences are excused and arrangements have been made prior to the ACT period. There may be cases where you may not be able to make up a lab due to equipment availability/time sensitive materials. You are still responsible for the material covered in the lab.
 - D. Students who fail to complete a make-up test or lab will not have the opportunity to make it up again and will earn a score of zero.
 - E. Completion of work is due in the number of days missed, unless the assignment was given prior to the absence (for instance, a test will be given on the day you return to class).
6. **Academic integrity violation practices** ([LAHS Academic Integrity Policy](#)):
Honesty, trust and integrity are vital components of the education process. The Governing Board believes that academic honesty and personal integrity are fundamental components of a student's education and character development. The Board expects that students will not cheat, lie, plagiarize or commit other acts of academic dishonesty. Students and families should understand and act upon the values of academic integrity and should encourage the highest standards of academic behavior from themselves and their peers. It is assumed that all work completed for a class is original work created for that class, for a specific assignment. Violations of Academic Integrity will be dealt with in a manner consistent with the MVLA-LAHS Academic Integrity Policy. *Students caught cheating will earn a score of zero, denoted by a "V" in the grade book. There will not be an opportunity to make up the assignment.*
7. **Late work practices:**
Over the course of a unit, students will have their work checked on the Unit Stamp Sheet, which will be submitted on the day of the Unit Exam - points will be lost for missing stamps. Any and all late work (including digital assignments on Canvas) will be accepted for a 20-40% penalty depending on the time overdue. Work from previous units will be accepted within the same academic quarter, but not previous academic quarters. (ex: work from September will not be accepted in November) Technology issues do not constitute a valid excuse for why an assignment is late. Tech help can be requested at <https://mvla.incidentiq.com/>.
8. **Revision practices and Extra Credit:**
It is expected that a student seeks assistance and feedback prior to an assignment due date. Students may revise their multiple choice and written exam questions for 1/3 of the original credit. There are no lab practical retake opportunities.
9. **Extra credit practices:**
The main extra credit opportunity can be found in the Revision Practices segment above. Students should not expect any other extra credit opportunities.
10. **Additional grading practices:**
Group work: while students often work collaboratively on laboratory and other assignments, each student is required to submit his/her own written report for credit, including data analysis (graph). Raw data is the only information to be shared.
Grade Book Update Policy: grades will be updated every 1-2 weeks on the Aeries [Student Information System](#) (SIS).
11. **LMS Used:**
Students are expected to use **Canvas** on a daily basis in order to access class materials.

Instructors' email address:

James Stiltner (james.stiltner@mvla.net) (Room 712)
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Additional information:

1. Each student must maintain a bound, quadrille notebook and have a charged device.
2. There will be no eating, no drinking (other than water in the lecture area only), and no gum allowed during class for the health and safety of students around hazardous chemicals. Please wait until the given breaks.
3. Take care of all restroom/bathroom needs before class, or during breaks if possible. Please let your instructor know if you need to take care of this during class.
4. Always demonstrate respect for your classmates, teacher, and yourself. Our classroom is a place where people work together towards a common goal in an atmosphere of mutual trust and respect. As young adults, you know what behaviors are appropriate in such a setting. Listen to each other carefully and speak when it is your turn.
5. All rules from the student handbook apply in class (dress code, no cell phones, cheating, etc.)
6. Remove jewelry for labs and pull back long hair.
7. Phones/laptops/earbuds are not permitted unless the instructor requests their use.