MVLA
2025-2026
COURSE INFORMATION SHEET

Course Title: Engineering 2
CTE Pathway Sequence (if applicable): Engineering Technology
School: Los Altos High School
UC/CSU requirement: Yes/Yes
MVLA Graduation requirement:
Textbook and/or other learning resources: No required text, supplemental materials will be provided

Course Description:

In this second year course, students build on their computer modeling skills with Fusion360 to design and create mechanical systems. Students will push beyond the fundamentals of mechanical engineering while using CAD assemblies as their primary communication tool. Mechanical designs will allow for the investigation and application of applied physics concepts such as mechanical advantage and torque versus speed relationships. Students will learn how to power motion using motors and robotics electronics as well as apply basic programming to control their mechanical systems. Students will also learn how to apply statistical analysis to designs in order to objectively characterize performance and guide future design iterations using evidence to support design decisions. Students will add to an existing digital design portfolio to showcase their major projects, and will use a personal notebook to document and communicate daily work.

Course Outline/Units of Study/CTE Industry Standards(If applicable to your course):

Units of Study (Engineering and Architecture - Engineering Technology)

1. Motion Systems (B1.0, B4.0, B5.0, & B6.0)
    a. CAD assemblies
    b. Simple machines
    c. Transferring force
    d. Compound machine design
2. Powering Motion (B1.0, B3.0 &, B6.0)
    a. Simple circuits
    b. Motor characteristics
    c. Gearbox design
3. Testing Using Data (B1.0, B6.0, & B7.0)
    a. Statistical analysis
    b. Improving design
    c. Catapult launcher
4. Control Systems (B1.0, B6.0, B8.0, & B10.0)
    a. Basic machine control
    b. Drones in Engineering

Students are expected to create and maintain a digital portfolio of major class projects. (B1.0 & B11.0)

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:**
   Classwork: 30%
   Projects: 45%
   Portfolio: 10%
   Professionalism: 15%

2. **Achievement evidence collected within each grading category:**
   Classwork: In-class assignments will be given for each section. Many of these assignments will be in the form of group investigations, presentations, or practice problems to deepen the mathematical concepts that define

various engineering principles. In all cases, assignments should be completed during the class period allotted. In the event that a student needs additional time to complete any of these assignments, they will be allowed to take them home and turn them in at the beginning of the following class period. Daily assignments and activities must be documented in each student's personal notebook, ensuring to complete work thoughtfully and with full detail.

Projects: Each unit includes multiple minor projects and one major project that require students to demonstrate understanding of and apply the skills and concepts they learn throughout the unit. These assignments are typically hands-on design challenges and often build upon all prior knowledge within the course as well as the prerequisite Engineering 1 course.

Digital Portfolio: Major unit projects will be documented in each student's digital portfolio using Google Sites. All students should have their Google Site from at least their Engineering 1 course last year and will add to it to help document their developing abilities in engineering.

Professionalism: A true engineering experience involves equipment that can be expensive but also potentially dangerous. Students are expected to show care and respect of their workspace by handling materials and tools appropriately as instructed. Maintaining a clean learning and working environment is vital to supporting effective and efficient workflow, as well as the learning of other students.

3. **Grading scales:**
   A 90 to 100%
   B 80 to 90%
   C 70 to 80%
   D 60 to 70%
   F 50- 60%
   Missing work: 0%

4. **Homework/outside of class practices (AR 6154):**
   Students will be expected to complete all classwork on a daily basis. Classwork includes in-class individual assignments, and group assignments or projects. All assignments must be completed on time in order to receive full credit. Each section of a unit may have a minor project where students are asked to demonstrate their understanding of the classwork through a practical and often hands-on design challenge. Each unit also has a major project that requires demonstration of understanding through a culmination of all skills and concepts from the unit and the prior units. Therefore staying caught up on classwork assignments is essential to success in this class. Students should expect to spend between 30-45 minutes outside of each class period working on individual projects and completing assignments.

5. **Excused absence make up practices (Education Code 48205(b)):**
   Students with excused absences will give additional days (the same amount as they were absent) to make up missed assignments for full credit.

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. Please refer to the Academic Integrity policy in the student handbook. For categories A and C, the 'V' will be worth zero. For violations in category B, there will be a process for students to learn the material and show mastery of the content. Check with your teachers if you are unsure or unclear about his/her expectations regarding the use of the Internet.

7. **Late work practices:**
   Late assignments will not receive full credit unless the student had an excused absence. It is the student's responsibility to find out what work is missing. All missed assignments are due within the same number of days as the absences. **Unexcused** absences are not covered under the above policy and may result in a score of zero.

8. **Revision practices:**
   This is primarily a project-based and experiential learning class. Projects are completed over multiple class periods which provide ample time for check in and guidance. Students are also encouraged to use all available resources to help them as they demonstrate skills and understanding. Therefore revision is not generally required or available in this class.

9. **Extra credit practices:**
   Extra credit will not be granted in this course.

10. **Additional grading practices:**
    Some of the work completed in this class, often larger projects, will be done in groups of 2-3. Students will be assessed according to the group's final product, as well as their individual contributions. On all classwork assignments and even when working on group projects, students are never allowed to submit work "as a group" and must submit their own individually completed assignments.

Instructors' email addresses:

Mr. Joseph Manildi: Joseph.manildi@mvla.net

Additional information:

This class is taught by a Career Technical Education certified teacher in the sector of Engineering and Architecture, as well as a single subject teaching credential in Science and Physics. This class also qualifies for UC lab science "D" credit as a 3rd year or more, given that students have satisfied their core requirements of one life science and one physical science.