

**MVLA  
2025-26  
COURSE INFORMATION SHEET**

**Course Title:** Robotics 1

**CTE Pathway Sequence (if applicable):** Engineering Design

**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:**

Students will engage in all engineering related fields that are required to build a modern robot. These disciplines broadly include computer 3D modeling (Computer Aided Design), manufacturing and machining, as well as programming and automation. Students will work in groups to design and build a small robot from the ground up, learning and applying core robotics concepts along the way. This class works with our FIRST Robotics Team 114 Eaglestrike which is the LAHS competitive robotics team. Students that go on to take the second year course will become full members of Team 114. While not a requirement, students in Robotics 1 are highly encouraged to attend after school shop hours to support the team and learn about the yearly competition.

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

**Units of Study ([Engineering and Architecture - Engineering Design](#))**

1. Gearbox prototyping (C2.0, C4.0, C5.0, C8.0, C9.0, & C10.0)
  - a. Assembling and testing a powered robot gearbox
  - b. Gear ratios, chain and sprockets
  - c. Machine shop tool safety and use
  - d. Metal bandsaw and lathe work
2. Minibot design (C2.0, C3.0, C4.0, C5.0, C8.0, C9.0, & C10.0)
  - a. Drive geometry
  - b. Woodworking machines safety and use
  - c. Manual milling
  - d. Robot electronics
  - e. Drive control
3. Control systems (C2.0)
  - a. Arduino programming
  - b. Sensor feedback
  - c. Autonomous control
4. Mechanism design (C2.0, C3.0, C4.0, C5.0, C8.0, C9.0, & C10.0)
  - a. Add a gripping system to the minibot
  - b. Modify minibot to tackle obstacles better

Students are expected to create and maintain a digital portfolio of major class projects. (C11.0)

**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: Due to the reliance on a small number of heavy machines in our machine shop, this course is organized in a module format where students will have the autonomy to work on various assignments as needed, and as the time allows. Each module includes one major project with accompanying skill building

activities and other assignments to learn the core robotics concepts. Students will be scheduled to use the limited machines and will be expected to complete related assignments during their scheduled time, otherwise general module assignments can be completed when students are not scheduled to use the machines. This class will require students to be self-motivated and productive every day to stay on track.

Every week, students are to complete a weekly report documenting the work they completed as well as what work was not completed for various reasons. This document serves as evidence of work completion as well as a reflective analysis tool for students to improve their project process.

Projects: Each module is centered around 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.

Digital Portfolio: Major unit projects will be documented in each student's digital portfolio using Google Sites. Some students may have a digital portfolio already from a course they took last year and will add to it to help document their developing abilities in engineering. Otherwise, students will create their portfolio towards the beginning of the year.

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. Students will be expected to clean their workspace and any machines or tools they use during each class period.

**3. Grading scales:**

- A** 90 to 100%
- B** 80 to 90%
- C** 70 to 80%
- D** 60 to 70%
- F** below 60%

**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, homework, and group assignments or projects. All homework must be completed prior to the next class period. 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 between 30-45 minutes of homework after each class period.

**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.

**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. The required media to submit will vary depending on the assignment.

**Other Course Information:**

This course involves the use of potentially dangerous machines and equipment that require care and maturity to use safely. The teacher always reserves the ability to remove any students from the course that demonstrate the potential to cause harm to themselves or others.

**Instructors' email addresses:**

Stephen Hine: [stephen.hine@mvla.net](mailto:stephen.hine@mvla.net)

**Additional information:**

This class is taught by a Career Technical Education certified teacher in the sector of Engineering and Architecture, with a single subject teaching credential in Science with a focus in Physics.