MVLA
2025-26
COURSE INFORMATION SHEET

Course Title: Innovative Design Capstone
School: Los Altos High School
UC/CSU requirement: G - Elective
MVLA Graduation requirement: NA
Textbook and/or other learning resources: There is no formal textbook for this course. Instead, instructional materials and student research will be gathered from a variety of online learning resources pertaining to innovation and product design. In addition, students will have access to the software and equipment provided in the LAHS Design and Fabrication Lab, including Fusion 360, Ultimaker 3 3D printers, and a Universal Laser Systems laser cutter.

Course Description/Student Learning Outcomes:

The purpose of this course is to provide students with an opportunity to work collaboratively in order to conceive, design, and develop a product that solves a problem for a specified end user. Throughout the process, students will be required to document their group's progress as it pertains to a designated design process. In addition, students will be asked to document their individual progress in the area of the interpersonal skills that are so highly valued by employers.

As a result of participation in this course, students will be expected to demonstrate evidence of their ability to:

1. Identify and define an appropriate problem to solve, along with identifying an end user;
2. Use research and brainstorming techniques to generate a wide range of possible solutions;
3. Create and apply a decision matrix for choosing which of the generated solutions is most viable;
4. Construct and test a prototype of their chosen solution;
5. Test and evaluate their solution;
6. Present their solution at various stages of development, including a final presentation and design review;
7. Demonstrate evidence of personal growth in one or more areas self-selected by individual students.

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

1. Problem definition and research
2. Brainstorm and Scale determination
3. Plan and Design
4. Build and Create
5. Test and Analyze
6. Reflect and Improve
7. Communicate success and failures

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:
   Group Project Development - 40%
   Project Management and Documentation - 20%
   Research and Design - 20%
   Design Review Presentations - 20%

2. Achievement evidence collected within each grading category:
   Group Project Development - Students will be part of a design team throughout the entire year. The team will progressively work on designing a solution to an identified problem for a specified end user. Projects will follow the design thinking process and may involve the use of 3D printers, laser cutters, programing, or other

materials/resources. Group Projects will be graded on how well they follow the given design process, as evidenced by documentation via Google Sites. All steps of the design process will be embedded in the student's website, along with evidence of overall progress in product development. Documentation is graded based on detail of activity and project work as well as an introduction and summary to the process step. All websites must be ADA compliant and students will be guided through this in class.
Project Management and Documentation - Each individual student will be responsible for documenting their own progress as it pertains to their self-selected goals and development. The steps of the project will be recorded on a student group created gantt chart that details the start and due date for every part of the project that needs to be completed. Maintenance and compliance with the gantt chart will be assessed on a quarterly basis.
Research and Design - Problem definition and research, brainstorming solutions, scale determination for the project, and final product design will all be assessed through a variety of individually graded assignments including a short research paper and a CAD design of the product.
Design Review Presentations - At various stages throughout the year, student groups will be asked to present their progress for design review. These could be in the form of peer reviews, end user reviews, or more formal presentations given to members of the greater community. In all cases, students will be graded on their ability to present their ideas clearly, as well as their openness and willingness to listen to any feedback that they receive. Students will then have the choice as to whether they would like to integrate any of the suggestions they receive, and to document the justifications for those decisions.

3. Grading scales:
   A: 100% - 90%
   B: 89.99% - 80%
   C: 79.99% - 70%
   D: 69.99% - 60%
   F: 59.99% - 0%

4. Homework/outside of class practices (AR 6154):
   While this course does not give homework every night, students are expected to update their digital portfolios via Google Sites regularly to reflect their current progress. There will also be assigned reading and discussion assignments given periodically throughout the course.

5. Excused absence make up practices (Education Code 48205(b)):

6. Academic integrity violation practices (LAHS Academic Integrity Policy):

7. Late work practices:
   While the work of updating student digital portfolios will be an ongoing process, we will still check that progress bi-weekly, in whatever stage it happens to be. Students will be expected to adhere to strict deadlines for formal design reviews as well as peer reviews. These deadlines could potentially impact the schedules of others, including any outside professionals who might choose to donate their time in order to offer feedback. Therefore it will be of critical importance to honor the timeline for design reviews.

8. Revision practices:
   Revisions (iterations) are expected for the Capstone project as an important part of the design process.

9. Extra credit practices:
   We do not offer any extra credit opportunities

10. Additional grading practices:

11. LMS Used: Canvas

Instructors' email addresses:

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Additional information: This class is taught by Career Technical Education certified teachers in Manufacturing and Product Development.