

**MVLA
2024-2025
COURSE INFORMATION SHEET**

Course Title: Advanced Science Investigations (ASI)

School: LAHS

UC/CSU requirement: 10 Credits Lab Science "D" (Interdisciplinary) College Prep. "G" (Lab Science-Physical Science)

Textbook and/or other learning resources: Primary source research articles (variable depending on project)

Course Description:

This is an unusual course in that its content will be determined by you! We will work as a class to develop critical thinking skills that enhance your experimental design and data analysis. But you will be primarily working on your own research project with the mandatory goal of presenting at the **Synopsys Championship** in March at the San Jose Convention Center. You will also give a number of presentations in class to your research colleagues and be expected to participate in the annual LAHS research symposium. You will be expected to document your research via a laboratory notebook.

Vision for ASI: To provide students with a collaborative learning environment that enhances critical thinking skills and the desire to be lifelong problem solvers through the application of scientific inquiry and original research.

Student Learning Outcomes:

The focus of this course is to let students apply science and engineering practices to topics of their own choosing, with the goal of competing in local science fairs and other events. A requirement for this course will be a culminating presentation of a student's research in the form of a PowerPoint presentation, and the generation of a research poster, which will be displayed at an end of the year LAHS science symposium.

With the support of teacher and mentor coach, students will formulate questions, explore literature, conduct research, develop procedures, perform experiments, analyze results, and present their findings to staff and their peers.

Assignments/activities during course of year:

1. Journal article summaries
2. Research proposal (deadlined project)
3. Research project documentation (notebooks)
4. Research status updates
5. SYNOPSIS Science fair applications and presentation (**Must attend!!!**)
6. Detailed PowerPoint presentation on research project (**major** deadlined project)
7. Research poster and presentation (**major** deadlined project)
8. Other classwork/homework that supports progression of individual project

Below is a progression of what students will be doing each quarter. But as each project is unique, the exact timing for each activity below will also vary.

Quarter 1

- Read papers and refine/narrow down the scope of project
- Reach out to potential eMentors
- Weekly update of project to class
- First formal presentation of project to class

Quarter 2

- Continue finding and/or working with eMentors
- Write/refine protocols for project experiments

- Put together Synopsys application
- Weekly update of project to class
- Begin experimentation

Quarter 3

- Continue writing protocols
- Continue with experimentation and data gathering
- Continue working with eMentors
- Weekly update of project to class
- Prepare for/attend Synopsys Science Fair (March)

Quarter 4

- Continue with experimentation and data gathering
- Continue working with eMentors
- Weekly update of project to class
- Second formal presentation of project to class
- Attend LAHSSEE in May

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:

1st Semester

- 10% Homework (Journal Summaries, Supporting Assignments)
- 20% Weekly Progress Report
- 20% Project Presentations
- 20% Research Project Documentation (Notebooks)
- 30% Synopsys Research Project Proposal/Application

2nd Semester

- 20% Weekly Progress Report
- 15% Project Screencast
- 25% Research Project Documentation (Notebooks)
- 10% SYNOPSIS Attendance & Poster
- 30% Final Research Powerpoint

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 Google Classroom/Canvas. Lab work and documentation, presentations both in-class and in public, and final projects 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](#)):

This class is an independent study class. Students will be expected to learn as much about their research project as possible both inside and outside of class. In general, the teacher will not assign homework, rather students will decide what work they need to do to be successful.

5. Excused absence make up practices ([Education Code 48205\(b\)](#)):

If a student misses a scheduled presentation, they are expected to contact the teacher to reschedule their presentation.

6. Academic integrity violation practices ([LAHS Academic Integrity Policy](#))

Students are conducting real research in this class. Therefore, it is imperative that they cite work performed by other researchers they are working from. When reporting results, their results must be original and not taken from other's research. **Any falsification of data will result in an F in this class.**

7. Late work practices:

None

8. Revision practices:

None

9. Extra credit practices:

None

10. Additional grading practices:

None

Instructors' email addresses:

Darren Dressen	darren.dressen@mvla.net	Room 710
Tory Johnson	tory.johnson@mvla.net	Room 713

Additional information:

Students may conduct research at Regulated Research Institutions (RRI's). An example might be a private research organization or Stanford University. This research must be conducted outside of school hours and is not under the purview or responsibility of Los Altos High School or the MVLA school district. Students who enter into this arrangement are still expected to attend class daily and work on certain aspects of their project outside of the RRI laboratory setting. Any student wishing to work at an RRI must get the approval of the teacher and/or administrator before starting work.