EngrMAE189 and EngrMAE93 Syllabus

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Academic Year 2020-2021

Background

Welcome to MAE Projects. This syllabus describes both how the MAE Projects Program works and provides specifics for your project. An overview of how the different MAE Projects components fit together is shown in Fig 1.

If you join this project as an EngrMAE93 student, possibly with the help of other mentors and staff, your project faculty advisor will assign tasks, guide you, and assess your work. There are additional tasks that the MAE Projects Coordination Team requires that all teams and individuals complete; they will be described below. Students should not enroll in multiple MAE93 projects.

If you join this project as an EngrMAE189 student, you must also enroll in EnrgMAE195: MAE Projects or be enrolled in the 189 Capstone Design Pilot (or projects with internal check-ins). You can use the combined MAE189+195 units to satisfy the EngrMAE189 graduation requirement (for ME majors) or use the units for MAE technical elective units. Senior-Level project enrollment (MAE189+195) involves design/technical engineering work and documentation of the engineering design process for a specific component or assembly. There is a separate syllabus and Canvas page for MAE195. Project faculty advisors assess your work in the MAE189 portion of your project. The workload for a MAE189+195 enrollment is significant, and students should not be enrolled in more than one project.
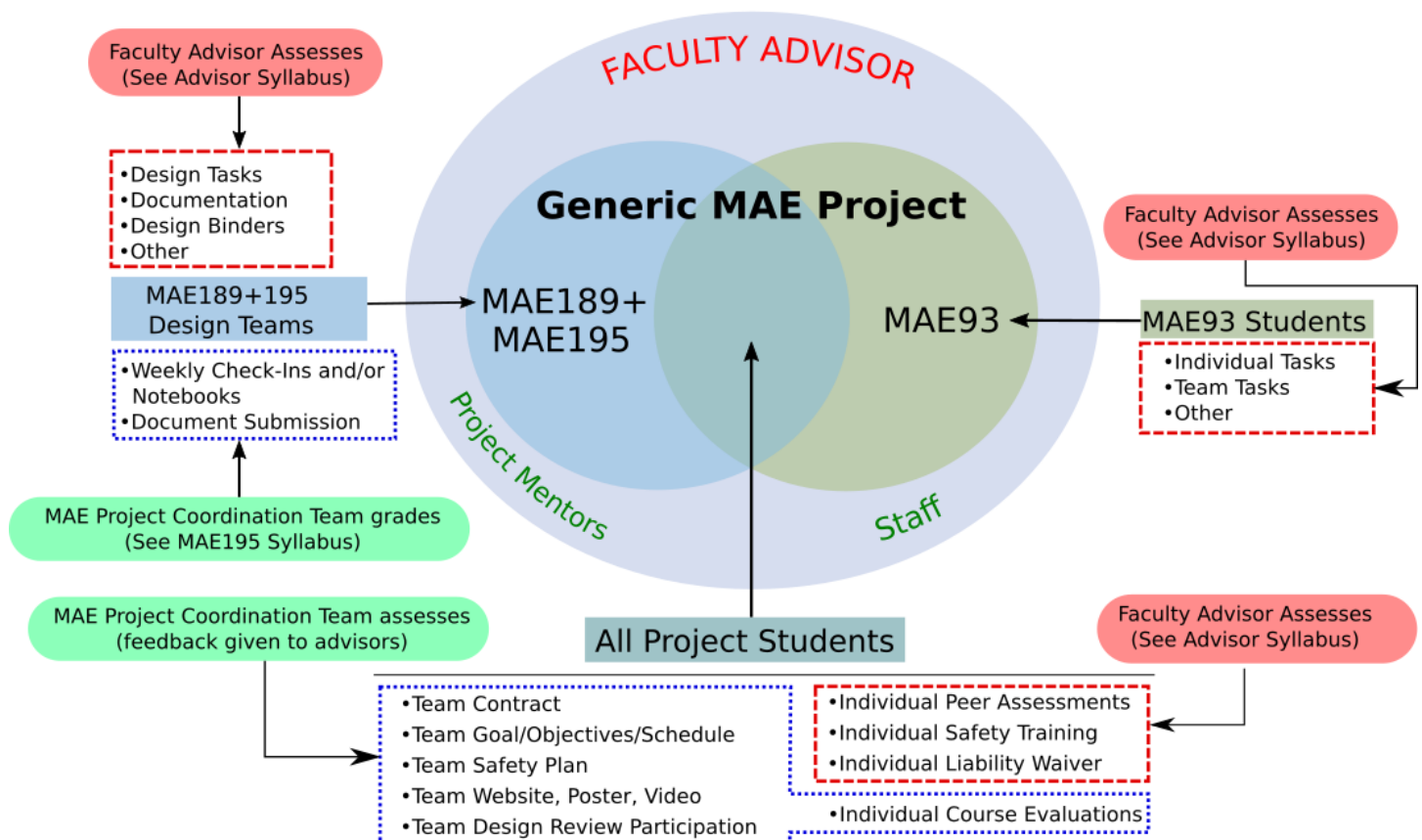

Fig. 1 Overview of the MAE Projects Program

The rest of this syllabus first provides general information on expectations for all students and all teams in MAE Projects. The syllabus concludes with specifics from your project faculty advisor.

General Information for all MAE Projects Teams and Students

Campus Standard Syllabus Content for F20 In-Person Classes

Review UCI's Health Guidelines for Inclusion in Syllabi for In-person and Hybrid' Courses campus guidelines.

MAE Projects Co-Coordinators
- Professor David Copp (dcopp@uci.edu)
- Professor Mark Walter (m.walter@uci.edu)

Course Objectives:

Provide students with an opportunity to participate in an open-ended design experience which for 189+195 students ultimately includes:
- Developing a full understanding and demonstration of the engineering design process, including documentation
- Integration of course knowledge and analytical skills into the engineering design process
- Learning and applying new knowledge
- Developing and using teaming skills
- Employing professional communication skills

Course Communication

- Canvas will be used to communicate events, due dates, opportunities, *etc.*, and as an avenue for discussion.
- Some announcements to communicate events, due dates, opportunities, *etc.* will be made through Canvas. Be sure to enable immediate notification of Canvas announcements.
- Canvas will be used for document submission and grading.
- Each student is responsible for reading all announcements and, when necessary, responding to requests.
- The program will also maintain the http://projects.eng.uci.edu/department/mae website to provide external visibility. Each team will be responsible for providing some of the content for this external portal.

Student Participation and Behavior

- All students are expected to participate in the project for which they are registered in an active and engaged manner. This means attending team meetings, completing assignments on time and as expected, and letting your teammates know ahead of time if you will be unable to attend a meeting.
- Successful projects require significant intellectual effort and time. Students should make time for project work on weekends when larger blocks of time are available for focused project work with multiple teammates. Project work ends not when an artificial units to hours conversion is met, but rather when project milestones are successfully achieved.
- Socializing in project work spaces is prohibited.

- The college environment allows for you to practice your engineering skills, which are both technical and social. However, all students are expected to behave in a professional manner at all times. Emails and communication should be formal.
- All UCI code-of-conduct policies apply.
- Safety is a critical aspect of the engineering design process that must also carry through to all actions and behaviors of individuals.
- Everyone is expected to treat their teammates, the support staff, the coordination team, UCI staff, faculty, and administrators, visitors, and bystanders in a respectful manner at all times.
- Treat all UCI, team, and personal property with respect and as if it were your own. Return borrowed items in the same or better condition than when you received them. Keep your workspaces clean at all times.
- Speak to your project advisor, a member of the Coordination Team, or the department chair if you see something that is not right.

How to have a successful MAE Projects experience

Success in this MAE Project means meeting the course objectives described in the previous section. In order to have a successful experience, you should also keep the following in mind:

(1) Design is an open-ended and iterative process - there is no "one correct" design, which means you will need to creatively apply your knowledge to new contexts and produce and evaluate *multiple* concepts.
(2) Do not engage in trial and error. Learn and practice critical thinking. Do engineering, do not do crafting. Do not take the easy path. Confront the issues head-on and apply what you know or learn what you need to know to engineer your way to the best possible outcomes.
(3) In this course, you will be building upon your prior knowledge from other courses and experiences. Make sure to use the knowledge you learned in other courses by thinking through connections of technical content to the application on which you are working.
(4) In order to have a meaningful teaming experience, you need to agree to team norms and then stick to them. You will get out what you put into a teaming experience - make sure you treat it as something that needs special care and attention. Your teammates cannot read your mind and you cannot read others' minds - speak up if you have something to say, and invite others to the conversation if you are dominating the conversation. Be trustworthy and be willing to trust others.
(5) Weekly assignments are meant to prepare you for engineering practice. As an engineer, much of your time will be spent writing about and presenting what you are working on. By practicing these communication skills in the context of a design project, you will be preparing for future job interviews and will gain confidence in talking about engineering and communicating the value of your work.

Academic Dishonesty

- All students are expected to adhere to the UCI Academic Dishonesty Policies (for more information, please visit http://senate.uci.edu/files/2015/12/Appendix-VIII-UCI-Academic-Senate-Policy-on-Academic-Honesty.pdf)

ABET Student Outcomes

As this course is a senior design course, you will be expected to demonstrate that you have achieved the following outcomes as part of your course experience.

SO 2: an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors

SO 3: an ability to communicate effectively with a range of audiences

SO 5: an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives

SO 7: an ability to acquire and apply new knowledge as needed, using appropriate learning strategies

Overall Project Team Activities

Project Website
- Teams are required to have a webpage at http://projects.eng.uci.edu/department/mae. There will be periodic requests to update the content on this site.
- Each team's website will need to show
    - An overall project goal and overall project objectives
    - A project schedule (for the expected duration of the project) with clear milestones
    - Team contacts
- Teams should consider adding additional information that highlights their achievements.
- Teams are encouraged but not required to create their own external websites. UCI Sites provides free hosting for this purpose.

Design Review
- Participation in quarterly design reviews is required.
- The design reviews in fall and winter quarters are usually on the last day of the quarter. The spring design review is usually at the end of finals week.
- Each team is required to **submit both a poster and a presentation** that describe the quarter's work.
    - Posters are usually due at the beginning of Week 9.
    - In previous years, presentations have been videos, in-person presentations, and peer review presentations. Videos are posted to the project's webpage.
    - Details on what to include, and best practices, will be provided.

Overall Individual Project Activities

Safety Training Documentation Assignment
- There will be mandatory on-line safety training through the UC Learning Center with subsequent verification of completion.
- Students who do not complete the training by the assigned date will need to drop the class/project.
- Most advisors/projects also implement their own safety training requirements which must also be followed at all times.

Liability Waiver Assignment
- A liability waiver will need to be submitted to canvas.
- Students who do not submit the waiver by the assigned date will need to drop the class/project.

Peer Assessment
- Project advisors will have a peer assessment assignment where each student evaluates the work of

> their fellow students.
> - Peer assessment participation and results will be incorporated into final grades as per the class/project advisor's grading breakdown.

Course Evaluations
- Course evaluations will be requested at the end of each quarter and possible at the middle of each quarter.
- Advisors will be told who does not complete course evaluations and it may count towards a participation/engagement portion of the final grade as per the class/project advisor's grading breakdown.

Other Internal/External Requirements
- There might be internal (advisor, team, *etc.*) or external (coordination team, mentors, sponsors, *etc.*) requirements that become the responsibilities of individuals.
- These requirements should be broadly discussed and agreed to. Individuals assigned to these tasks should acknowledge their acceptance and understanding of what is accepted.

Advisor-Specific information for your MAE189/93 Project

As previously mentioned, students in MAE189 must also enroll in MAE195 and must undertake a significant engineering design task and present a design binder/report at the end of the quarter. There is a separate syllabus for the MAE195 portion of the course. The MAE195 syllabus also gives information on the design binder/report. For projects with internal check-ins, the design binder/report will be made for advisors to distribute.

Each project advisor guides and assesses students in their MAE189 and MAE93 courses in a manner that benefits project and individual student learning outcomes. The assignments and grading for <your project> classes are given below

50% will come from advisor assessment and the rest comes from below:

MAE189 Assignments and Grading

- Project Team Grade*   20%
- Individual Tasks and Weekly Reports: 25%
- Design team documentation and presentations: 35%
- Participation, Engagement, & Communication: 10%
- Peer Assessment: 10%

MAE93 Assignments and Grading

- Project Team Grade*   35%
- Individual Tasks and Weekly Reports/Notebooks: 25%
- Final Report   25%
- Participation, Engagement, & Communication: 5%
- Peer Assessment: 10%

* Project Team Grade

The team will be assessed on how much was accomplished over the course of the quarter and on how well the team met the overall MAE Projects requirements (e.g., assignments for all teams)