

## Course Syllabus

**Courses: ME199 SAE, ADV and DES**

**Credit and contact hours:**

1 undergraduate credit hour (ME199 SAE and DES)

3 undergraduate credit hours (ME199 ADV)

Lecture: 1 meeting/week for 1 hour

Team Meetings: 1 team meeting per week (~1hr)

Shop time: 2 hrs min per week (ESPL as available)

**Instructor:** Mike Philpott

**Textbook(s) and/or other required material:**

No required text but required to read and understand the respective competition rules available online.

**Course description:**

Students involved in design/build/compete projects as members of student clubs and teams on campus may enroll in one of these ME199 design classes and receive credit for their contributions. The class structure varies a little from team to team, but they have many common attributes, including:

- Senior team members are the instructors, teaching junior members: competition rules, hands-on fabrication skills, practical engineering design and analysis tools, project management skills, fund raising, managing budgets etc.
- Facilities are provided by the College of Engineering and supporting departments, such as ESPL (Engineering Student Projects Lab) with workshop space, a student machine shop welding equipment, 3D printing, and various hand tools and fabrication equipment.
- Teams manage their own budgets and apply for funds from corporations, environmental organizations, NGOs, local businesses, professional societies etc.
- Some funds are provided by the College of Engineering and supporting departments, however, these must be applied for, through annual solicitations.
- Funding covers procurement of materials and components, competition registration fees, and out-of-pocket travel expenses (though not meals, which are often but not always provided by competition sponsors).

Members of the SAE teams ([Formula SAE](#), [Baja SAE](#), and [Formula Electric SAE](#)) enroll in ME199 SAE. The concept behind the International SAE (Society of Automotive Engineering) design series is that a fictional manufacturing company has contracted a student design team to develop a small race car (e.g. formula style gas or electric, Baja off-road, solar racer etc). The prototype race car is to be evaluated for its potential as a production vehicle. Each student team designs, builds and tests a prototype based on a series of rules; and competes in a number of events including design and business presentations, and on-road or track racing for performance, fuel efficiency, and durability. The students are also required to submit design, cost and structural safety reports. The judges at these events are professional engineers from industry.

Members of other DESign teams such as [EcoIllini](#), [EVconcept](#), and [iRobotics](#) enroll in ME199 DES. There are two Eco-marathon teams, EcoIllini which participates in the Shell Eco-marathon and the SAE Supermileage competitions, and EVconcept which participates only in the Shell Eco-marathon. The teams' goal is to design and build the most energy efficient vehicle. Only these two ME199 DES teams meet as a class on Monday afternoons, other DES teams (such as iRobotics) meet at club meeting times organized by their team leaders.

### **Prerequisites:**

For ME199 SAE and DES – No prerequisites; though instructor approval is required for the DES section. SAE section is open enrolment.

For ME199 ADV – Instructor approval is required; must be junior standing, a sub-team leader, have previously participated in ME199 SAE or DES, and attended competition.

### **Designation:**

ME199 ADV – 3 hr. Free Elective

ME199 SAE or DES – 1 hr. Free Elective, however, enrolment in 3 consecutive semesters and a technical engineering design report may be used to convert these 3 individual free elective hours into a 3hr MechSE/Technical Elective (see requirements on the [homepage](#) for more details)

### **List of topics:**

Students' primary task is to work effectively as a member of a large overall design/build/compete team. After deciding on a team to join, students enrolled in the class must meet with a team leader and be assigned a project. Students are then guided through the following phases of the project:

Project phases (Fall through Spring) include:

1. Project review and selection
2. Problem statement and project objectives
4. Design vehicle (Design freeze by Thanksgiving)
5. Design Jigs, Fixtures and molds
7. Manufacture (Complete by Engineering Open House – early March)
8. Test
9. Compete (static and dynamic events April – June/July)

### **Assignments**

1. [Proposal Report](#) – by the end of week 4 of semester each student must have met with a team leader and been assigned a project. The student must then write a brief (1 page) report outlining the proposed project, identifying his or her team, sub-team and project supervisor.
2. [Final Report](#) – at the end of semester each student must have completed a final report covering the work completed. For 1 hr students, these are short 2 page summary reports; for 3 hr students (ADV section) these are more extensive reports (10+ pages).
3. [Weekly Class Meetings](#) – each week students are required to attend the weekly class meetings for updates and tech talks from each team. Attendance will be taken.

## **Grading Scheme**

Proposal Report: 25pts

Final Report: 50pts (1 credit hour), 110pts (3 credit hour ADV)

Attendance: 60pts - 5pts per class meeting to max of 60pts (i.e. must attend at least 12 meetings to receive full 60pts)

Team Leader Evaluations - Effort and Team Contributions: 100pts

Total Points: **235 pts** (SAE and Eco-Marathon Teams), **175 pts** (non-car DES teams such as iRobotics)

### *Grade Distribution:*

Excellent: A+  $\geq$  95%    A  $\geq$  90%    A-  $\geq$  85%

Good:        B+  $\geq$  80%    B  $\geq$  75%    B-  $\geq$  70%

Fair:         C+  $\geq$  65%    C  $\geq$  60%    C-  $\geq$  55%

Poor:         D+  $\geq$  50%    D  $\geq$  45%    D-  $\geq$  40%

FAIL:         F < 40%

## **Due Dates and Late Assignment Policy**

Penalty for late assignments is 50% credit after the deadline up to 2 weeks late.

Zero credit after 2 weeks.

If you need an extension due to illness, university affiliated trip, death in the family or some other unexpected event, please email the instructor and request an extension, specifying the reason and proposing a revised due date.

## **University Policies and Procedures**

### **COVID**

Following University policy, all students are required to engage in appropriate behavior to protect the health and safety of the community, including wearing a facial covering properly, maintaining social distance (at least 6 feet from others at all times), disinfecting the immediate seating area, and using hand sanitizer. Students are also required to follow the campus COVID-19 testing protocol.

Students who feel ill must not come to class. In addition, students who test positive for COVID-19 or have had an exposure that requires testing and/or quarantine must not attend class. The University will provide information to the instructor, in a manner that complies with privacy laws, about students in these latter categories. These students are judged to have excused absences for the class period and should contact the instructor via email about making up the work.

Students who fail to abide by these rules will first be asked to comply; if they refuse, they will be required to leave the classroom immediately. If a student is asked to leave the classroom, the non-compliant student will be judged to have an unexcused absence and reported to the Office for Student Conflict Resolution for disciplinary action. Accumulation of non-compliance complaints against a student may result in dismissal from the University.

## **Emergency Response Recommendations**

Emergency response recommendations can be found at the following website: <http://police.illinois.edu/emergency-preparedness/>. I encourage you to review this website and the campus building floor plans website within the first 10 days of class. <http://police.illinois.edu/emergency-preparedness/building-emergency-action-plans/>.

### **Sexual Misconduct Reporting Obligation**

The University of Illinois is committed to combating sexual misconduct. Faculty and staff members are required to report any instances of sexual misconduct to the University's Title IX Office. In turn, an individual with the Title IX Office will provide information about rights and options, including accommodations, support services, the campus disciplinary process, and law enforcement options.

A list of the designated University employees who, as counselors, confidential advisors, and medical professionals, do not have this reporting responsibility and can maintain confidentiality, can be found here: [wecare.illinois.edu/resources/students/#confidential](http://wecare.illinois.edu/resources/students/#confidential).

Other information about resources and reporting is available here: [wecare.illinois.edu](http://wecare.illinois.edu).

### **Academic Integrity**

The University of Illinois at Urbana-Champaign Student Code should also be considered as a part of this syllabus. Students should pay particular attention to Article 1, Part 4: Academic Integrity. Read the Code at the following URL: <http://studentcode.illinois.edu/>.

Academic dishonesty may result in a failing grade. Every student is expected to review and abide by the Academic Integrity Policy: <https://studentcode.illinois.edu/article1/part4/1-401/>. Ignorance is not an excuse for any academic dishonesty. It is your responsibility to read this policy to avoid any misunderstanding. Do not hesitate to ask the instructor(s) if you are ever in doubt about what constitutes plagiarism, cheating, or any other breach of academic integrity.

### **Religious Observances**

Illinois law requires the University to reasonably accommodate its students' religious beliefs, observances, and practices in regard to admissions, class attendance, and the scheduling of examinations and work requirements. You should examine this syllabus at the beginning of the semester for potential conflicts between course deadlines and any of your religious observances. If a conflict exists, you should notify your instructor of the conflict and follow the procedure at <https://odos.illinois.edu/community-of-care/resources/students/religious-observances/> to request appropriate accommodations. This should be done in the first two weeks of classes.

### **Disability-Related Accommodations**

To obtain disability-related academic adjustments and/or auxiliary aids, students with disabilities must contact the course instructor and the Disability Resources and Educational Services (DRES) as soon as possible. To contact DRES, you may visit 1207 S. Oak St., Champaign, call 333-4603, e-mail [disability@illinois.edu](mailto:disability@illinois.edu) or go to <https://www.disability.illinois.edu>. If you are concerned you have a disability-related condition that is impacting your academic progress, there are academic screening appointments available that can help diagnosis a previously undiagnosed

disability. You may access these by visiting the DRES website and selecting “Request an Academic Screening” at the bottom of the page.

### **Family Educational Rights and Privacy Act (FERPA)**

Any student who has suppressed their directory information pursuant to Family Educational Rights and Privacy Act (FERPA) should self-identify to the instructor to ensure protection of the privacy of their attendance in this course. See <https://registrar.illinois.edu/academic-records/ferpa/> for more information on FERPA.

### **Anti-Racism and Inclusivity**

The Grainger College of Engineering is committed to the creation of an anti-racist, inclusive community that welcomes diversity along a number of dimensions, including, but not limited to, race, ethnicity and national origins, gender and gender identity, sexuality, disability status, class, age, or religious beliefs. The College recognizes that we are learning together in the midst of the Black Lives Matter movement, that Black, Hispanic, and Indigenous voices and contributions have largely either been excluded from, or not recognized in, science and engineering, and that both overt racism and micro-aggressions threaten the well-being of our students and our university community.

The effectiveness of this course is dependent upon each of us to create a safe and encouraging learning environment that allows for the open exchange of ideas while also ensuring equitable opportunities and respect for all of us. Everyone is expected to help establish and maintain an environment where students, staff, and faculty can contribute without fear of personal ridicule, or intolerant or offensive language. If you witness or experience racism, discrimination, micro-aggressions, or other offensive behavior, you are encouraged to bring this to the attention of the course director if you feel comfortable. You can also report these behaviors to the Bias Assessment and Response Team (BART) (<https://bart.illinois.edu/>). Based on your report, BART members will follow up and reach out to students to make sure they have the support they need to be healthy and safe. If the reported behavior also violates university policy, staff in the Office for Student Conflict Resolution may respond as well and will take appropriate action.