**ENGINEERING 100** Section 450

**Introduction to Engineering:** Harness the Wind

**Winter 2024**  DeRoo/Getsoian

*Instructional team*

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| **450** | **Lecture** | **1014 Dow** | **Tu Th** | **3:00pm-4:20pm** | **DeRoo, Getsoian** |
| 451 | Lab | 1225 CSRB | Tu | 11:30am-2:20pm | Felgran |
| 452 | Discussion | 224 GFL | We | 12:30pm-1:20pm | Getsoian |
| 453 | Lab | 1225 CSRB | Fr | 9:00am-noon | Archambault |
| 454 | Discussion | 1032 FXB | We | 2:30pm-3:20pm | Feustle |
| 455 | Lab | 1225 CSRB | Fr | 12:30pm-3:20pm | Lange |
| 456 | Discussion | 107 GFL | We | 3:30pm-4:20pm | Feustle |

*Required course materials*

All required readings will be announced in class and posted to Canvas: <https://canvas.umich.edu/>

Lecture slides, handouts, etc. will be posted to Canvas. Important class announcements will be posted to Canvas and sent to your email inboxes (Please make sure you regularly check your email and read announcements from Canvas). The gradebook will be maintained on Canvas. Please check your scores and make sure your points have been entered correctly.

*Grading*

Assignments in this course are of two basic types: team and individual. Everyone will be assigned to a team, and each team will undertake the project. You will do this as a team, and your work will be assessed as a team. If the team struggles, everyone suffers; if the team shines, everyone prospers. Thus, it’s in your interest to find ways to make the team function as well as possible. In addition to the project assignments, there will be various team exercises and assignments. Unless you fully contribute to the team effort, you may receive a lower score than the team’s score on the team assignments.

The rest of the grading is done on an individual basis. There will be an individual project proposal to your team, labs, and in-class or take-home assignment and activities.

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| --- | --- | --- | --- | --- |
| **Item** |  | **# items** | **points**  **each** | **points** |
| Lab Reports (team) |  | 2 | 55 | 110 |
| Homework (individual) |  | 6 | 30-60 | 240 |
| Final Report (team\*) |  | 1 | 140 | 140 |
| Postlab 1 (individual) |  | 1 | 30 | 30 |
| Prelabs (individual) |  | 4 | 20 | 80 |
| Final Oral Report (team\*) |  | 1 | 80 | 80 |
| Critical Design Review (team) |  | 1 | 60 | 60 |
| Preliminary Design Review (team) |  | 1 | 50 | 50 |
| Design Proposal (individual) |  | 1 | 100 | 100 |
| CATME team assessments\* (individual) |  | 2 | 5, 20 | 25 |
| Team charter |  | 1 | 25 | 25 |
| Discussion assignments |  | 5 | 75 | 75 |
| Questionnaires |  | 2 | 20 | 20 |
| Safety Trainings |  | 2 | 5 | 10 |
| **Total** |  |  |  | 1045 |

\*The second team assessment may be used, in part, to differentiate the scores of individual team members on the Final Report and Final Presentation. The first team assessment can be considered a practice with the application. More details on how this is done will be shared when the project is assigned.

*Grade Scale*

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| A+ | A | A- | B+ | B | B- | C+ | C |
| ≥ 98.0% | ≥ 93.0% | ≥ 90.0% | ≥ 87.0% | ≥ 83.0% | ≥ 80.0% | ≥ 77.0% | ≥ 73.0% |

*Course policies*

Homework and pre/post labs should be typed or written neatly and legibly on 8.5x11” paper without ragged edges, and solutions should be boxed. In the upper right hand corner of the first page, write your name and the due date. Pages should be numbered and stapled together. Points may be subtracted on homework that does not follow these guidelines.

Other assignments (ex: lab reports, homework, design review slides) are due via Canvas with specific formatting requirements provided with each assignment.

Penalties apply for individual assignments turned in late as follows: 20% penalty on the score for 1st late assignment and 50% penalty on the score for 2nd, 3rd, etc. assignments.

Penalties for team assignments turned in late will be determined on a case by case basis.

If you miss a deadline for an oral presentation or a written report on a project without prior arrangement with the course instructors, you may receive a zero for that assignment or exam. Depending on the importance of the project, this may result in a failing grade for the class.

In some circumstances, we may accept legitimate excuses and make arrangements for you to turn in the work late. If you know in advance there may be a conflict that will keep you from completing an assignment on time, you must discuss your options with an instructor before the assignment is due. You may be asked to furnish a written note that has been signed by an identifiable person who will attest to the truth of the circumstances surrounding the excuse. Any situation that results in a protracted absence from school or seriously jeopardizes your ability to complete your course work will be referred to the Engineering Advising Center for consideration.

If you are not satisfied with an assignment score you can request that we take another look at it. However, such regrade requests must be accompanied by a memo from you explaining why you think your work merits a different grade, and your request must be submitted within a week after you get your assignment back. Do be aware that in this circumstance the assignment is reopened for scoring, possibly by a different grader, and the new score may be increased, unchanged, or reduced from the original score.

*Honor Code and Plagiarism Policies*

The College of Engineering Honor Code is a statement of ethical standards by which the faculty and students of the College of Engineering conduct themselves. You are bound by the provisions of the Honor Code: Ignorance of the honor code is no excuse to violate it. Each student in Engineering 100 is expected to read and abide by the Honor Code. For details regarding the University of Michigan’s College of Engineering Honor Code, please see the following URL: <http://www.crlt.umich.edu/publinks/honor.html>.

Among other things, the Honor Code forbids plagiarism and dishonesty. The Honor Code itself states: “it is dishonorable to receive credit for work which is not the result of one’s own efforts.” Therefore, all individual assignments must be prepared by the student whose assignment it is, and each student must do his or her fair share of teamwork.

In Engineering 100, you are often expected to co-author and edit reports and assignments. This may raise questions about what constitutes ethical use of other people’s work and what crosses the line into plagiarism. Therefore, the Engineering 100 faculty have developed the following rules to help you work cooperatively in this course without violating the Honor Code. These rules cover common situations, and you are expected to follow them. They are not exhaustive: Situations arise that cannot be foreseen. In such cases, as in any other, guidance will be sought in the language and spirit of the Honor Code itself.

*Plagiarism*

1. Individuals or teams may not hand in as their work any product that includes work done by any other party, and so may not have anyone else help write a report or prepare the answers of an assignment.
2. An individual may consult with other students concerning the conceptualization of an assignment of any kind, but that individual must generate the written solution by working alone.
3. Individual team members must co-author team reports and other team assignments will other students on their ENGIN 100 team. All of the co-authors’ names must appear on all copies of any team or group assignment. If a student’s name appears on a team report, this means that student has fairly contributed to it; if you allow a teammate’s name to appear on a team report to which he or she has not fairly contributed, then you have breached the Honor Code.
4. Individuals and teams may enlist the aid of another person to proofread assignments for grammar, spelling, or punctuation only. This is particularly encouraged for students learning English as a second language, as common ESL issues (such as article and preposition errors) can make otherwise good writing confusing or less professional. Your technical communications instructor is happy to help point students in the direction of writing help or to consult with writers working on drafts for this course or others.
5. Individuals or teams may not use information from any source, whether published or not, unless that source is credited.

*Participation in teamwork*

1. Each student must do his or her fair share of teamwork. Each student must take part in all aspects of the team project: research, data gathering, data analysis, building, and drafting and revision of written text and slides.

*Handling data with integrity*

1. You may not falsify or misrepresent methods, data, results, or conclusions, regardless of their source.

*Generative AI Policy*

ChatGPT and similar Generative AI ("GenAI”) technologies are rapidly becoming part of our professional lives. Learning how to use GenAI tools is important for all of us. But, in the case of writing and communication, you must first learn how to perform these tasks yourself and develop your own writing practice, voice, and expertise.

As a first-year writing course, ENGR-100 helps you build the foundational writing and communication skillset you need to advance your engineering career, including clearly explaining technical content, effectively persuading readers, communicating with stakeholders, and more. Using Gen AI at this stage in your academic writing development is not conducive to learning, and can in fact inhibit your ability to develop this important foundational skillset. Honing this skillset is essential before incorporating ChatGPT and similar GenAI technologies in your academic and professional careers.

Thus, the use of GenAI tools to produce written content in ENGR-100 is not allowed. This includes composing drafts, constructing sentences, creating paragraphs, revising for style, etc. Using GenAI for these tasks in ENGR-100 violates the Engineering Honor Code, and can be reported to the Honor Council for investigation as academic misconduct.

GenAI is an advanced writing tool, and will be incorporated into your writing curriculum in upper-level courses.

*Students with disabilities*

The instructors are available to discuss appropriate academic accommodations that may be required for students with disabilities. Requests for academic accommodations are to be made during the first three weeks of the semester, except for unusual circumstances, so arrangements can be made. Students are encouraged to register with Services for Students with Disabilities, G-664 Haven Hall, 763-3000, <http://ssd.umich.edu/> to verify their eligibility for appropriate accommodations.

*Course outcomes*

After completing Engineering 100, students should be able to:

1. Solve engineering problems using project-specific mathematics, engineering, and science concepts.
2. Analyze, interpret, and make decisions about quantitative data using basic concepts of descriptive statistics (mean, median, standard deviation, normal distributions, and mode) and measurement, including issues in:
   1. Precision and accuracy
   2. Sample and population
   3. Error and uncertainty
3. Solve an open-ended design problem by:
   1. Transforming an open-ended design problem into an answerable one
   2. Breaking down a complex design problem into sub-problems
   3. Determining assumptions involved in solving the design problem
   4. Determining resources that can be used to solve the design problem and how to obtain these resources
   5. Determining multiple possible design solutions to the design problem
   6. Selecting a design solution using a well-defined method appropriate to the problem domain
4. Use the following skills in the context of a team-based design project:
   1. Develop clearly defined, explicitly agreed-on project goals
   2. Develop and implement a project plan
   3. Conduct effective team meetings
   4. Document team activities
   5. Evaluate how well the team and individual members are functioning
5. Engage in an ethical decision-making process, given some engineering situation:
   1. Analyze the situation using an appropriate method or framework
   2. Decide on a course of action using relevant codes of ethics
   3. Support this decision
6. Design technical/professional communications by employing the following skills:
   1. Analyzing a communication situation so as to determine the audiences and their information needs and a purpose and rhetorical approach for the document or communication
   2. Breaking down a communication task into components and employing appropriate strategies at each stage of the communication process (both individually and collaboratively)
   3. Writing readable prose, as characterized by well-organized paragraphs, well-constructed sentences, precise and effective use of both non-technical and technical vocabulary, and adequate and appropriate use of transitional devices
   4. Organizing information for oral presentation
   5. Creating clear, accurate graphics that are well integrated into oral and written communications, including both quantitative graphics (charts/graphs) and representational graphics (diagrams/illustrations)
7. Deliver well-structured, technically sound communication of the following types:
   1. Well-formatted informal and formal written reports
   2. Oral reports, given without notes and with supporting visuals
8. Evaluate and effectively construct arguments, using technical content at the first-year level.

In sum, students will be able to employ the engineering design process; communicate effectively as engineers; collaborate in diverse teams; and understand and practice professional engineering values.