ENGR 102 Design Engineering and Problem Solving — Syllabus

Computational Foundations of Engineering

Course Overview

Credits: 3  
Instructor Name: Eric L. Vogel  
Instructor Email: eric.vogel@oregonstate.edu

Course Description: Explores the science of design and Design Thinking, including vetted ways of approaching and defining design problems, assessing stakeholder needs, ideation and concept generation, and prototyping and experimental design. Conducts work in teams of engineering designers to solve complex, real-world engineering problems. Learns methods to assess your problem-solving skills and to question your assumptions, reinforcing your core mathematics and science knowledge and employing computational thinking and programming. Develops advanced professional and communication skills in an engineering design team setting.

Specific Information for Ecampus Sections 40x: Explore foundational engineering concepts such as design principles, usability, problem solving, computational thinking, and logic. Gain knowledge of Computer Science (CS) & Software Engineering through overviews and Boolean algebra operations using truth tables, digital circuit diagrams, and introductory Python. Boost your teamwork, communication, and technical writing skills by developing and testing software and researching CS topics in a group, and start building skills to find a job.

Prerequisites: None (part of ENGR 100/102/103 sequence)

NON-CS ENGINEERING STUDENTS: A SPECIAL NOTE FROM THE INSTRUCTOR

As the course description indicates, these Ecampus sections of ENGR 102 cover two types of topics:

1. General engineering principles that are relevant for all engineering majors
2. Technical topics that are most relevant for future CS majors

If you are not a CS major, you may prefer a more general set of topics that are more directly applicable to your intended major; see the Engineering+ site for ENGR 102 on-campus sections with less of a computer science focus. If you have no alternative but to take this Ecampus course, and the computer science topics are outside your comfort zone, plan to spend extra time and effort to understand them. And you may need to reach out to the course teaching assistants or the instructor to help you find your personal Rosetta Stone that unlocks those topics for you.

That effort may seem necessary only to complete the course, but it will actually benefit you in unexpected ways once you start your career in your chosen field. Virtually every project in industry is carried out by an engineering team that includes software engineers. Even though these topics may not be directly applicable to your career goals, they will help you understand the issues that software engineers face, and the things they consider and contribute to the engineering design process and to solving complex engineering problems.

This syllabus and schedule are subject to change.

Late Enrollment

If you are enrolling late during Fall, Winter, or Spring term, you must complete all OSU approvals and appear as an registered student on the course Canvas site no later than noon Pacific time Friday of week 2 of the term (end of week 1 for Summer term). The instructor will not allow new students to join the course after that due to the amount of material to make up. You must contact the instructor by that deadline with your enrolled status visible in Canvas to receive extensions for assignments already past their deadlines.

Expectations for Time and Participation

This course combines approximately 90 total hours of instruction, online activities, and assignments for 3 credits.

This course is asynchronous and somewhat flexible, but not self-paced. The schedule of course content and the due dates that appear in Canvas provide guidelines for how you’ll interact and with what frequency. I recommend that you create your own workload schedule and set reminders for assignment due dates.

Measurable Student Learning Outcomes

At the completion of this course, students will be able to:

1. Demonstrate effective team practices while designing solutions to engineering problems.
2. Identify project deliverables and create a work plan for an engineering design project as a team including concept generation, evaluation, and brainstorming. Be able to articulate limitations related to social or structural inequities such as: racial, cultural, gender, socioeconomic and accessibility.
3. Define convergent and divergent thinking and demonstrate their role in a relevant team design project.
4. Use engineering judgement to identify errors and uncertainties in a solution and diagnose their causes.
5. Communicate technical concepts effectively through written, oral, digital or visual presentation. Develop an awareness and identify communication strategies for a wide range of audiences.
6. Identify and use relevant computational tools to solve an engineering problem.
7. Articulate goals for academic, personal, and professional achievement, including major selection, by generating a resume or digital portfolio.

**Fall/Winter/Spring Term Course Content and Schedule**

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
<th>Due Wed</th>
<th>Due Fri</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Module 1 - Problem Solving</td>
<td>Discussion 1: Introductions and Computer Science Experience</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Module 2 - Data</td>
<td>Discussion 2: Current Issue Commentary</td>
<td>Quiz 1: Modules 1 &amp; 2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Exercise 1: Truth Table Practice</td>
<td>Professional Development 1</td>
</tr>
<tr>
<td>3</td>
<td>Module 3 - Logic</td>
<td>Discussion 3: Boolean Algebra Practice</td>
<td>Homework 1: Circuit Emulation (Three Ways)</td>
</tr>
<tr>
<td>4</td>
<td>Module 4 - Functions</td>
<td>Discussion 4: Homework 2 Practice</td>
<td>Quiz 2: Modules 3 &amp; 4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Exercise 2: Test Table Practice</td>
<td>Professional Development 2</td>
</tr>
<tr>
<td>5</td>
<td>Module 5 - Software Engineering</td>
<td>Discussion 5: Decision Trees</td>
<td>Homework 2: Circuit Emulation (Four Ways)</td>
</tr>
<tr>
<td>6</td>
<td>Module 6 - Usability Engineering</td>
<td>Discussion 6: Design In Real Life (IRL)</td>
<td>Quiz 3: Modules 5 &amp; 6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Exercise 3: Homework 3 Preparation (Group Exercise) *</td>
<td>Professional Development 3</td>
</tr>
<tr>
<td>7</td>
<td>Module 7 - Soft Skills for Engineers</td>
<td>Discussion 7: Job Search Aid Draft</td>
<td>Homework 3: Z-Score Python Script (Group Homework) *</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Homework 3: Z-Score Project Report (Individual Homework)</td>
</tr>
<tr>
<td>8</td>
<td>Module 8 - Computer Hardware &amp; Software</td>
<td>Discussion 8: Open Source in Society</td>
<td>Quiz 4: Modules 7 &amp; 8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Exercise 4: Job Search Aid</td>
<td>Professional Development 4</td>
</tr>
<tr>
<td>9</td>
<td>Module 9 - Computer Science at Oregon State University</td>
<td>Discussion 9: Final Project Brainstorming</td>
<td>Homework 4: Command-Line Puzzle</td>
</tr>
<tr>
<td>10</td>
<td>Module 10 - Research</td>
<td>Discussion 10: Final Project Check-In</td>
<td>Quiz 5: Modules 9 &amp; 10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Final Project Proposal (Group Proposal) *</td>
<td>Professional Development 5</td>
</tr>
<tr>
<td>Final</td>
<td>Final Project Poster (Group Portfolio Project) *</td>
<td>(due <strong>Tue</strong> of finals week)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Discussion 11: Course Reflection (Extra Credit)</td>
<td>(due <strong>Wed</strong> of finals week)</td>
<td></td>
</tr>
</tbody>
</table>

* Items shown in **bold red** are group projects.

U.S. holidays this term (no office hours; instructors and teaching assistants will not be working):

- Memorial Day Mon 27-May

**Grading**

**Letter Grade**

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade</td>
<td>Percentage</td>
</tr>
<tr>
<td>-------</td>
<td>------------</td>
</tr>
<tr>
<td>A</td>
<td>90-100 or more</td>
</tr>
<tr>
<td>A-</td>
<td>88-89.99</td>
</tr>
<tr>
<td>B+</td>
<td>85-87.99</td>
</tr>
<tr>
<td>B</td>
<td>80-84.99</td>
</tr>
<tr>
<td>B-</td>
<td>78-79.99</td>
</tr>
<tr>
<td>C+</td>
<td>75-77.99</td>
</tr>
<tr>
<td>C</td>
<td>(see Note below)</td>
</tr>
<tr>
<td>C-</td>
<td>68-69.99</td>
</tr>
<tr>
<td>D+</td>
<td>65-67.99</td>
</tr>
<tr>
<td>D</td>
<td>60-64.99</td>
</tr>
<tr>
<td>D-</td>
<td>58-59.99</td>
</tr>
<tr>
<td>F</td>
<td>0-57.99</td>
</tr>
</tbody>
</table>

**Note:** C is the minimum passing grade for required courses in the College of Engineering. In this course, this means at least 70%.

### Evaluation of Student Performance

<table>
<thead>
<tr>
<th>Assessment</th>
<th>Pts each</th>
<th>Qty</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homeworks</td>
<td>8</td>
<td>4</td>
<td>32</td>
</tr>
<tr>
<td>Quizzes</td>
<td>5</td>
<td>5</td>
<td>25</td>
</tr>
<tr>
<td>Discussions</td>
<td>1.5</td>
<td>10</td>
<td>15</td>
</tr>
<tr>
<td>Exercises</td>
<td>2</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>Professional Development Assignments</td>
<td>1</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Final Project Proposal</td>
<td>3</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Final Project Poster</td>
<td>12</td>
<td>1</td>
<td>12</td>
</tr>
<tr>
<td><strong>Total Points:</strong></td>
<td></td>
<td></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Note: since everyone must get 100% on the Syllabus quiz to unlock the remaining course materials, its score is not included in the total points for the course.
You should expect that each Exercise or Homework will be graded before the next Homework or Exercise is due, respectively, so you can incorporate the feedback from your grader into your subsequent assignments.

### Seeing Your Assignment Feedback

When you receive the announcement that assignment grades have been posted, you should go to your Grades page in Canvas, then click the name of the assignment you are interested in. The assignment page will appear, and it will have your score and often a single, overarching comment from your grader. It is at this point that many students immediately ask "Why did I lose points on this assignment?".

Here's the real magic: if you click "Show Rubric" in the upper right corner of the assignment grade page, you'll see each rubric criterion, how many points it was worth, what your score was for that criterion, and often a comment underneath as to what you did that caused you to lose points for that criterion. Everything you want to know is right there!

The point of that detailed feedback is so you can correct misconceptions, learn from your mistakes, and not propagate those misunderstandings into future assignments that are dependent on the previous things you've been studying. That feedback, right where you lost those points, is essential so that you don't repeat the same problems on all those later assignments. And if there are comments you don't understand, the summary comment at the end lists who did your grading. That gives you the ability to join their office hours and get further explanations.

Our graders work extremely hard to provide that detailed feedback. Be sure to read it carefully -- it's there to help you succeed!

### Course Policies

#### Example Student Behaviors

<table>
<thead>
<tr>
<th>Allowed</th>
<th>NOT Allowed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Showing your work to an instructor or TA, or sharing report drafts with your discussion group.</td>
<td>Giving your work to a (current or future) student so they can copy it.</td>
</tr>
<tr>
<td>Discussing strategies and concepts with classmates.</td>
<td>Submitting someone else's work as your own or claiming their work as yours.</td>
</tr>
<tr>
<td>Submitting incomplete work before a Homework 1-4 deadline with a note saying you are going to resubmit.</td>
<td>Asking for an extension after missing the deadline for an assignment (except in unavoidable emergencies).</td>
</tr>
<tr>
<td>Asking too many questions by email, in Teams, or on the class message board.</td>
<td>Not understanding what you need to do, not asking for help, and then asking what you can do after it's too late.</td>
</tr>
<tr>
<td>Disagreeing with someone on the message board.</td>
<td>Name-calling, stalking, or counter-productive comments.</td>
</tr>
<tr>
<td>Discussing the assigned reading or quiz questions in Teams or in your Canvas discussion group.</td>
<td>Sharing the quiz questions or answers publicly or outside of a class communication medium.</td>
</tr>
<tr>
<td>Using ChatGPT to help you learn a new topic (see AI Chatbot Policy below).</td>
<td>Using ChatGPT to generate code for an assignment (see AI Chatbot Policy below).</td>
</tr>
<tr>
<td>If you are retaking the course, doing new, original work on all the assignments.</td>
<td>If you are retaking the course, turning in any of the assignments you did when you took the course previously.</td>
</tr>
</tbody>
</table>

#### Late Work

You must submit all assignments before the due date. We do not accept submissions if the deadline is missed. If you do not submit before the due date, you will receive no credit.

#### Revision Grace Period Policy:

This course does have a revision grace period policy for Homeworks 1, 2, 3 and 4 only. If you are unable to complete a Homework to your satisfaction before the due date — for any reason — you may notify the TA (via a Canvas comment along with the original on-time submission) that you plan to submit a revision. All you need to say is "Revision grace period"; you do not need to state a reason or apologize for taking advantage of this policy — it's freely available, so use or for your benefit! You may then submit a revision within 3 days.

Special note: Discussion posts, Exercises, Quizzes, extra credit assignments, and the final assignments (Final Project Proposal and Final Project Poster) are not eligible for late revisions.

If you 1) submit a partial fulfillment of the requirements before the due date, 2) include a comment for the TA when you submit your first attempt, and then 3) resubmit a revised version of your work within 3 days, your grade will reflect your final submission only without incurring penalties. If you do not resubmit within 3 days, your grade will reflect your original (potentially incomplete) submission.

Please note that if nothing is submitted by the deadline, Canvas will put an automatic 0 in the gradebook for that assessment. Graders will skip grading Homeworks that have already have a 0 score. For eligible Homeworks, if you submit something (anything) before the deadline, then Canvas won't put that 0 in and your grader will see your submission. They will check for a comment to see if you are planning to use the revision period, and if so, they will delay grading your work until the revision period ends. Canvas will show your final submission as late (because of its original due date), but it will still be graded because of the revision grace period policy. So if you want this free, no-questions-asked extension, submit something before the deadline, or you'll get a 0 score that won't change. Homeworks submitted late without following the above steps 1) and 2) will not be graded.

Exceptions may be made at the instructor's discretion for documented emergencies such as illness or hospitalization, or extraordinary extenuating circumstances (e.g., weather events that impact your ability to complete assignments, or your country loses Internet access).

### Discussion Participation

- **Allowed**
  - Discussing the assigned reading or quiz questions in Teams or in your Canvas discussion group.
  - Using ChatGPT to help you learn a new topic (see AI Chatbot Policy below).
  - If you are retaking the course, doing new, original work on all the assignments.

- **NOT Allowed**
  - Using ChatGPT to generate code for an assignment (see AI Chatbot Policy below).
  - If you are retaking the course, turning in any of the assignments you did when you took the course previously.

- **1) Take your work seriously**
  - Show that you are serious about your learning by taking your assignments seriously.

- **2) Respect the work of others**
  - Always respect the work of others, even if you disagree with it.

- **3) Make your contributions clear**
  - Make sure your contributions are clear and easy to understand for others.

- **4) Ask for help if you need it**
  - Don't be afraid to ask for help if you need it.

- **5) Respect the instructor's authority**
  - Respect the authority of the instructor and follow their directions.

- **6) Be respectful in your communication**
  - Be respectful in all your communication, whether verbal or written.

- **7) Be courteous in your feedback**
  - Be courteous in your feedback, even if you disagree with it.

- **8) Be fair in your critique**
  - Be fair in your critique of others' work.

- **9) Be helpful in your assistance**
  - Be helpful in your assistance to others.

- **10) Be considerate in your interactions**
  - Be considerate in your interactions with others, whether in class or online.

- **11) Be patient in your responses**
  - Be patient in your responses to others.

- **12) Be consistent in your behavior**
  - Be consistent in your behavior, whether in class or online.

- **13) Be responsible in your actions**
  - Be responsible in your actions, whether in class or online.

- **14) Be ethical in your conduct**
  - Be ethical in your conduct, whether in class or online.

- **15) Be accountable in your decisions**
  - Be accountable in your decisions, whether in class or online.

- **16) Be honest in your communications**
  - Be honest in your communications, whether in class or online.

- **17) Be polite in your interactions**
  - Be polite in your interactions, whether in class or online.

- **18) Be respectful in your behavior**
  - Be respectful in your behavior, whether in class or online.

- **19) Be fair in your criticisms**
  - Be fair in your criticisms, whether in class or online.

- **20) Be helpful in your assistance**
  - Be helpful in your assistance, whether in class or online.
Students are expected to participate in all graded discussions. While there is great flexibility in online courses, this is not a self-paced course. Two discussion posts are due on Wednesdays (except at the start and end of the term). You will benefit more from them if you make your first post earlier than the due date.

Proctored Exams

There will be no exams in this course.

Incompletes

According to Academic Regulation 17 of OSU Academic Regulations, when a requirement of a course has not been completed for reasons acceptable to the instructor and the rest of the academic work is passing, a report of “I” (incomplete) may be made and additional time granted. For ENGR 102, this will only be in emergency cases (such as a death in the family, major illness or injury, or the birth of your child), and only if you have submitted and passed 85% of the points possible (typically everything but the Final Project Proposal and Final Project Poster). If you are having any difficulty that might prevent you from completing the coursework, please don’t wait until the end of the term; let me know right away.

Class Participation and Building Community

Active interaction with peers and your instructor is essential to everyone’s success in this online course. I encourage you to please practice the following:

- Value the diversity of the class. Recognize and respect the experiences, abilities, and knowledge each person brings to our learning environment.
- Challenge others’ ideas with the intent of facilitating growth. Acknowledge your peers’ contributions and highlight areas of further inquiry.
- Be open to being challenged on your ideas or prejudices.
- Practice self-awareness in your communication with peers and consider that your comments may hurt others unintentionally.
- Assume the best of your classmates and instructor and expect the best from them.

Expectations for Student Conduct

Student conduct is governed by the university’s policies, as explained in the Code of Student Conduct (https://beav.es/codeofconduct). Students are expected to behave in the course (e.g., on discussion boards, email postings) in compliance with the university’s regulations regarding civility.

Academic Integrity

It is important that you understand what student actions are defined as academic misconduct at Oregon State University. The OSU Libraries offer a tutorial on academic misconduct, and you can also refer to the OSU Student Code of Conduct and the Office of Student Conduct and Community Standards for more information. More importantly, if you are unsure if something will violate our academic integrity policy, ask your professors, GTAs, academic advisors, or academic integrity officers.

Academic misconduct, or violations of academic integrity, can fall into seven broad areas, including but not limited to: cheating; plagiarism; falsification; assisting; tampering; multiple submissions of work; and unauthorized recording and use.

Academic Misconduct

The Code of Student Conduct prohibits Academic Misconduct and defines it as:

Any action that misrepresents a student or group's work, knowledge, or achievement, provides a potential or actual inequitable advantage, or compromises the integrity of the educational process.

To support understanding of what can be included in this definition, the Code further classifies and describes examples of Academic Misconduct, including cheating, plagiarism, assisting and others. See the Code of Student Conduct: https://beav.es/codeofconduct for details.

You are expected to do your own work and demonstrate academic integrity in every aspect of this course. Familiarize yourself with the standards set forth in the OSU Code of Student Conduct Section 4.2. You must only access sources and resources authorized by the instructor. You may not show your work to any other current or future students without the instructor’s authorization. Violations of these expectations or the Code of Student Conduct will be reported to the Office of Student Conduct and Community Standards. If there is any question about whether an act constitutes academic misconduct, it is your responsibility to seek clarification and approval from the instructor prior to acting.

Netiquette Expectations and Harassment of Instructional Staff

The kind of negative discourse often seen on social media is not acceptable in an industry environment. Period. In industry, that kind of online communication style will cause you to lose your job — you will be fired! And here at OSU, such online behavior is a significant offense that could result in academic penalties and other sanctions, including suspension or expulsion from the university. While at OSU, you should practice professional online interactions just as you will be expected to in industry.

It is normal for students to feel frustrated or even upset when they are struggling with a difficult assignment, or have received painful-to-hear feedback about their work. However, it is not acceptable for students to behave uncivilly when communicating with the OSU instructional staff (professors, instructors, graduate teaching assistants, and undergraduate learning assistants). That kind of uncivil behavior is considered harassment, both defined in and prohibited by the Code of Student Conduct.

Harassment is commonplace in social media, but is not tolerated at OSU any more than it is in industry. Examples of harassment of the instructional staff include having a confrontational tone; being overly demanding or argumentative; making repeated grading appeals (especially when explanatory grading comments were already provided); demanding of grade adjustments; posting public negative comments referring to the instructor and/or teaching assistants. OSU instructional staff will not allow inappropriate, harassing posts in online chat, discussion boards, or email. Students who
You ARE NOT allowed to use AI chatbots to simply write your software for you, or write your documents for you. Just as you have tools to generate code and documents, we instructors have tools to identify code and documents that were generated. Any student that submits generated responses will be subject to an Academic Integrity violation. Here's why:

1. You ARE allowed to use ChatGPT, Google Bard, Bing AI, or similar AI chatbots as you would a library resource. For example, you can use ChatGPT to find solutions for errors the same way you would use Stackoverflow or other Internet resources, or to understand and improve software you are developing.

2. You ARE allowed to use AI chatbots to verify algorithms. You will learn more if you develop your algorithms yourself and use a chatbot to verify them, rather than taking the shortcut of simply (for example) asking ChatGPT to generate the algorithms for you. In fact, you'll learn more about both the problem you are trying to solve and the critical thinking skills that ChatGPT cannot replace. In your career, there are guaranteed to be problems for which ChatGPT cannot propose algorithms or solutions. If you have not developed the critical thinking skills to develop solution algorithms on your own, you will be unable to deliver the value your employer expects from a practicing engineer.

3. You ARE allowed to use AI chatbots for small snippets of code, as you would by using online reference like Reddit or a language-specific website that helps engineers understand certain tasks in different programming languages. In industry, you must be careful that small snippets obtained regardless of the source do not introduce software license restrictions or the possibility of copyright, trademark, trade secret, or confidentiality agreement violations that could put your company at great legal peril. That's why you should be cautiously selective about the number and size of code snippets you include in commercial products, whether they come from programming websites or an AI chatbot. It is wiser and safer to adapt the principles demonstrated in those snippets to your own code, and to the context in which the snippets need to run in the software system you are helping develop, rather than simply pasting something into your code verbatim. Practicing this kind of appropriate use as a student will help establish a foundation for behaviors in your career that will be consistent with your employer's code of ethics.

4. You ARE allowed to use chatbots in manners similar to the above for generating written reports or other creative elements that are not related to code. These uses come with the same possibilities of not learning to think, write, or be creative on your own, and as a result being less able to fulfill employer expectations for high-quality written documents or uniquely creative non-code-related work products.

While you are allowed to use AI chatbots as described above, they are not a panacea. You should never blindly submit something based on AI chatbots without using critical thinking and good judgment to assess the correctness and validity of their results. You won't get proper credit for work based on incorrect or invalid output from these (or any!) sources. (Assessing validity is a wise practice for any tool or source of information you use. Just as you would ignore an Internet source if you determined that the information it provided was wrong, it's no different to apply that same level of discernment to the output of AI chatbots.) And abdicating your creative thought processes to any tool won't necessarily grow your abilities to think creatively, unless you shift your creative focus to other areas. So be thoughtful and judicious about how much you use these or any tools as a replacement for your work rather than as just a supplement to it.

If you are unsure if your intended use of an AI chatbot matches any of the above purposes, send me an email explaining your planned use, and I will give you feedback on whether or not I would consider this to be an allowable use both in the course and in industry.

5. You ARE NOT allowed to use AI chatbots to do your work for you so you can skate by at OSU with minimal thought and effort. You ARE NOT allowed to use AI chatbots to write your software for you, or write your documents for you. Just as you have tools to generate code and documents, we instructors have tools to identify code and documents that were generated. Any student that submits generated responses will be subject to an Academic Integrity violation. Here's why:

Our goal at OSU is to prepare you for a career in industry, where you will be expected to solve problems through critical thinking, and adhere to industry norms for high-integrity, ethical behavior. You will not be expected to let a tool do all your work for you, without you yourself understanding the engineering problem solving process, recognizing whether what you are asking it to do is within its capability, applying it in an appropriate manner, and then being able to assess if its results are credible and reliable enough to be trusted as the basis for making business-critical decisions.

If you want to start to use AI chatbots for the described allowed purposes so you understand the capabilities and limitations of these tools, that's good preparation for being in industry with a broad toolkit at your disposal, and behaviors that mimic industry best practices both technically and ethically. If you want to use AI chatbots to do your work for you so you can skate by at OSU with minimal thought and effort, you will limit your career opportunities to those that do not require the level of diligence, thoughtfulness, professionalism, integrity, and ethics that are the hallmarks of high-performing software engineers.

There is no question that the use of artificial intelligence and machine learning tools will continue to increase in the fields of software engineering and computer science. At their current stage of development, they are language models that can generate text based on input, and have been successfully able to generate code as well. However, they were not designed to be learning tools, or to understand the context or nuances of a particular software problem. And they are not the only tools or technologies you will need to use to develop software, so it is still important that you learn and develop a strong foundation in the fundamental principles and concepts of software development. This will enable you to understand and adapt to new technologies and tools as they emerge during your software career, and use them effectively and responsibly on behalf of your employer.
Communication & Where to Go for Help

Eric L. Vogel (instructor): eric.vogel@oregonstate.edu

I am available weekdays from 7am-9am Pacific time. Contact me using the above OSU email address; per university policy, this must be from your OSU email account. Please put [ENGR 102] in the subject line so your email won't get lost, and use an email program. I will not respond to messages from Canvas Messaging or from a personal email account. You can expect a response from me within one business day of when you email me.

Live Office Hours: I'm available for regularly-scheduled live office hours using Teams every Tuesday from 8am-9am Pacific time, or by appointment. You should notice that there are far more opportunities each week to get timely help during teaching assistant office hours.

Microsoft Teams: You can ask questions to the teaching assistants, your classmates, or me (my availability will determine my response time) using Microsoft Teams, a forum for more informal interaction with other students, and also for teaching assistant office hours.

1. To join us on Microsoft Teams, visit the Microsoft Teams link in the Canvas nav bar.
2. Login with your OSU ONID and password.
3. Join the ENGR 102 Team General Channel using the Team Code 3s7gjxk.

When you email your teaching assistants or me, you should expect a response within one business day, and you can expect your assignments to be graded within five business days of the due date.

Teaching assistant office hour help session times and contact information will be provided in an announcement at the beginning of the term.

Ed Discussion: There is no Ed Discussion board for this course.

What If I Get Stuck?

There may be a time when you don’t completely understand something in this course, and you won’t know how to proceed to make progress on related assignments. What should you do?

Hunt for Answers…: First and foremost, you should rely on yourself to find the information you need from other sources than just the curriculum materials. Investigate! Dig around on the Internet! A key part of being an engineer is learning how to fill in the blanks, plug the holes, find the missing answers, and learn what you need to carry out your job. The topics in this course have been around for generations, and there are dozens of sites and YouTube videos that can explain those topics in a different manner that may resonate better with the way you think and assimilate knowledge. Use them!

…Up to a Point: As valuable as that effort is to try and figure it out on your own, there is a point of diminishing returns on the time you spend:

![Graph showing time spent studying on the horizontal axis and the benefit gained on the vertical axis]

That point is different for everyone, and over time you will figure out the right balance of benefit gained vs. time spent for you. For now, assume that you should not give up after digging for only a few minutes, nor should you keep beating your head against a wall for more than 2-3 hours for a single new topic. If you are spending more than a half a day, you should stop spinning your wheels unproductively and get some help. Sometimes all it takes is a short conversation to find the personal Rosetta Stone that makes it all clear to you.

Getting Help with this Course

1st Priority: Post in the Teams General channel to chat about the course or connect with your fellow students (even those not in the course who may have already studied these topics), so that you can all benefit and learn together from your teaching assistants and instructor.

2nd Priority: Chat with teaching assistants during their office hours on Teams for help with Exercises and Homeworks. Our teaching assistants are very knowledgeable about the course topics, and hold many sessions throughout each week to try and accommodate your work schedules and time
More importantly, they became TAs specifically because they like to help other students like you. So give them a chance to help you work through what you are wrestling with!

You are also welcome to reach out to me during my published office hours or by email. However, because my availability is limited, your first line of defense for getting live assistance should be the teaching assistant office hour sessions. If you have conflicts attending their or my office hours, let me know so we can try and set up a session that fits your schedule.

For questions about grades or requests for extensions: email your instructor (teaching assistants cannot help with these).

Contact Information

Instructor contact information:
Eric L. Vogel: eric.vogel@oregonstate.edu

Teaching assistant contact information:
Xueqiao Zhang (Jojo) zhanxueq@oregonstate.edu (GTA)
Kevin Huynh huynkevi@oregonstate.edu (ULA)
Noah Muna munan@oregonstate.edu (ULA)
Jordan Sandler sandlerj@oregonstate.edu (ULA)
Ankith Sridhar sridhaan@oregonstate.edu (ULA)

Teaching assistant office hours (scheduled times where they are available to answer your questions in real-time on Teams via video or chat):

<table>
<thead>
<tr>
<th>Day</th>
<th>All times Pacific</th>
<th>Teaching Assistant</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Start</td>
<td>End</td>
</tr>
<tr>
<td>Monday</td>
<td>11:00 AM</td>
<td>12:00 PM</td>
</tr>
<tr>
<td></td>
<td>12:00 PM</td>
<td>1:00 PM</td>
</tr>
<tr>
<td></td>
<td>1:00 PM</td>
<td>2:00 PM</td>
</tr>
<tr>
<td></td>
<td>3:00 PM</td>
<td>5:00 PM</td>
</tr>
<tr>
<td></td>
<td>5:00 PM</td>
<td>6:00 PM</td>
</tr>
<tr>
<td></td>
<td>8:00 PM</td>
<td>9:00 PM</td>
</tr>
<tr>
<td>Tuesday</td>
<td>12:00 PM</td>
<td>1:00 PM</td>
</tr>
<tr>
<td></td>
<td>3:00 PM</td>
<td>5:00 PM</td>
</tr>
<tr>
<td></td>
<td>5:00 PM</td>
<td>7:00 PM</td>
</tr>
<tr>
<td>Wednesday</td>
<td>9:00 AM</td>
<td>11:00 AM</td>
</tr>
<tr>
<td></td>
<td>12:00 PM</td>
<td>1:00 PM</td>
</tr>
<tr>
<td></td>
<td>3:00 PM</td>
<td>4:00 PM</td>
</tr>
<tr>
<td></td>
<td>4:00 PM</td>
<td>6:00 PM</td>
</tr>
<tr>
<td></td>
<td>8:00 PM</td>
<td>9:00 PM</td>
</tr>
<tr>
<td>Thursday</td>
<td>4:00 PM</td>
<td>5:00 PM</td>
</tr>
<tr>
<td></td>
<td>5:00 PM</td>
<td>7:00 PM</td>
</tr>
<tr>
<td>Friday</td>
<td>9:00 AM</td>
<td>11:00 AM</td>
</tr>
<tr>
<td></td>
<td>11:00 AM</td>
<td>12:00 PM</td>
</tr>
<tr>
<td></td>
<td>12:00 PM</td>
<td>1:00 PM</td>
</tr>
<tr>
<td>Saturday</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Sunday</td>
<td>9:00 AM</td>
<td>11:00 AM</td>
</tr>
</tbody>
</table>

You can meet or chat with any of the teaching assistants during these sessions if you have questions or need help with the course. Post your questions in the Teams General channel (for general questions) or send a chat message for questions about your work.

Learning Resources

This course provides all required materials at no cost to you. There is no required textbook; all materials are available within Canvas, online through OSU's library, and from other online resources.

College of Engineering Computing

The College of Engineering (COE) has extensive computing resources available to you as an engineering student. You can read about them in this overview.

Required Software

For ENGR 102, the minimum required software is a web browser (OSU recommends Google Chrome). There are some assignments that use Google Docs and/or Google Sheets, which are browser-based. Many assignments require turning in a PDF file, which you can create by printing to your computer's PDF printer (such as the Microsoft Print to PDF printer on Windows or the Save as PDF option from the Mac Print menu). You can choose to use other apps if you want; Microsoft Office 365 is available free for student use through OSU, as are many other software packages listed here.

Engineering Server File Storage Space
As a College of Engineering student, you have access to your own space on Engineering servers where you can store files.

Technical Assistance

If you experience any errors or problems while in your online course, contact 24/7 Canvas Support through the Help link within Canvas. If you experience computer difficulties, need help downloading a browser or plug-in, or need assistance logging into a course, contact the IS Service Desk for assistance. You can call (541) 737-8787 or visit the Service Desk online.

Help with University Life

For those of you who are new to OSU and the College of Engineering, there are many resources available to support you. Some of these are relevant to all students, and some (like walk-in services) are only really available to students on campus, but that includes Corvallis-area-based Ecampus students. Don't hesitate to take advantage of these resources, since they are funded by your fees and you are completely entitled to use them for your benefit!

This is the exhaustive list. A subset is listed below:

**Mental/Physical Care:**

- Counseling & Psychological Services (CAPS)
- Anytime Anywhere app
- OSU Assist: Mobile Crisis Response
- Student Health Services
- Survivor Care & Prevention (CAPE)

**Academic Resources:**

- Academic Success Center
- CoE IT Help Desk
- File Space on Engineering Servers
- Myoregonstate.edu
- Oregon State Page
- Study Spaces
- Valley Library
- Writing Center
- Educational Opportunities Program
- Disability Access Services
- Cultural Resource Centers
- Leadership Academy
- Ecampus Student Services
- Student Success Team

**Tutoring:**

- Engineering Tutoring
- The Mole Hole (Chemistry help)
- The Wormhole (Physics help)
- The Mathematics and Statistics Learning Center (MSLC)

**Jobs/Career:**
We just came out of a global pandemic. Systemic racism, especially anti-Black racism, economic disparities, and a divisive political landscape are additional challenges in our current community. Let us acknowledge that it is an extremely stressful time, with challenges that are affecting some of us in deeper ways than others. As we work together, let’s actively practice compassion, understanding, flexibility, and care. Our safety, health and well-being are prerequisites to learning. Let’s work together to find creative solutions that promote your well-being and learning. Join me and others across campus as we collectively stay mindful of circumstances, and provide both hope and solidarity toward each other by extending grace generously, giving ourselves and others patience, and honoring the humanity in us all.

Establishing a Positive Community

It is important you feel safe and welcome in this course. If somebody is making discriminatory comments against you, sexually harassing you, or excluding you in other ways, contact the instructor, your academic advisor, and/or report what happened here so we can connect you with resources.

Note: Most OSU employees, including faculty, may be required to report suspected sexual misconduct, domestic violence, or discrimination to the Office of Equal Opportunity and Access.

Resources for Underrepresented Students

- Educational Opportunities Program serves students from historically underrepresented backgrounds, including (but not limited to) students of color, low-income students, first-generation in college and undocumented or DACAmented students. If you identify as a student from a historically underrepresented background, please consider applying to EOP.
- Consider joining the Louis Stokes Alliance for Minority Participation (LSAMP) program at Oregon State University. LSAMP is dedicated to increasing the number of traditionally underrepresented students successfully completing science, technology, engineering and mathematics (STEM) baccalaureate degree programs through programs and resources. They have an extensive list of resources available to underrepresented students in COE.

Togetherall

As we all know, Oregon State University students are going through a tough time right now, which is why we have chosen to partner with a company providing virtual peer-to-peer mental health and wellbeing support - Togetherall. Togetherall is now available for free to all OSU students who register with their Oregon State University email address. Togetherall’s online community is clinically moderated by mental health professionals, and offers students a safe and anonymous place to express their thoughts, concerns and triumphs. Resources are free for students to use and are available 24/7/365. Students are able to draw strength and insights from peers that have real lived experiences, as well as access a range of self-directed, clinically validated tools to promote positive mental health and wellbeing. Togetherall integrates with Oregon State University’s existing campus counseling services and after-hours emergency phone lines.
For more information, visit Togetherall's website, see counseling.oregonstate.edu/togetherall, or watch this short informational video.

Parents

If you are a parent, the Family Resource Center has many things (events, resources) to support you through your time at OSU.

University Policies

Academic Calendar

All students are subject to the registration and refund deadlines as stated in the Academic Calendar: https://registrar.oregonstate.edu/osu-academic-calendar

Statement Regarding Students with Disabilities

Accommodations for students with disabilities are determined and approved by Disability Access Services (DAS). If you, as a student, believe you are eligible for accommodations but have not obtained approval please contact DAS immediately at 541-737-4098 or at http://ds.oregonstate.edu. DAS notifies students and faculty members of approved academic accommodations and coordinates implementation of those accommodations. While not required, students and faculty members are encouraged to discuss details of the implementation of individual accommodations.

Statement Regarding Religious Accommodation

Oregon State University is required to provide reasonable accommodations for employee and student sincerely held religious beliefs. It is incumbent on the student making the request to make the faculty member aware of the request as soon as possible prior to the need for the accommodation. See the Religious Accommodation Process for Students.

Accessibility of Course Materials

All materials used in this course are accessible. If you require accommodations please contact Disability Access Services (DAS).

Additionally, Canvas, the learning management system through which this course is offered, provides a vendor statement certifying how the platform is accessible to students with disabilities.

Ecampus Reach Out for Success

University students encounter setbacks from time to time. If you encounter difficulties and need assistance, it’s important to reach out. Consider discussing the situation with an instructor or academic advisor. Learn about resources that assist with wellness and academic success.

Ecampus students are always encouraged to discuss issues that impact your academic success with the Ecampus Success Team. Email ecampus.success@oregonstate.edu to identify strategies and resources that can support you in your educational goals.

Other Ecampus Student Resources

For mental health:

Learn about counseling and psychological resources for Ecampus students. If you are in immediate crisis, please call or text the Suicide & Crisis Lifeline at 988 or text the Crisis Text Line at 741741.

In addition, the Anytime Anywhere app from OSU Counseling gives students access to free and confidential mental health and wellness counseling at any time of day, from anywhere in the world, 365 days a year.

For financial hardship:

Any student whose academic performance is impacted due to financial stress or the inability to afford groceries, housing, and other necessities for any reason is urged to contact the Director of Care for support (541-737-8748).

Tutoring and Writing Assistance

You can connect live with experienced online tutors by accessing TutorMe in the side navigation bar of your Canvas course. You are eligible for up to 5 hours of tutoring each week. To learn more, go to Online Tutoring - Overview.

To get help with any form of writing, you can contact Oregon State Online Writing Support for feedback via email or live Zoom appointment.

Turnitin

Your instructor may ask you to submit one or more of your writings to Turnitin, a plagiarism prevention service. Your assignment content will be checked for potential plagiarism against Internet sources, academic journal articles, and the papers of other OSU students, for common or borrowed content. Turnitin generates a report that highlights any potentially unoriginal text in your paper. The report may be submitted directly to your instructor or your instructor may elect to have you submit initial drafts through Turnitin, and you will receive the report allowing you the opportunity to make adjustments and ensure that all source material has been properly cited. Papers you submit through Turnitin for this or any class will be added to the OSU Turnitin database and may be checked against other OSU paper submissions. You will retain all rights to your written work. For further information, visit Academic Integrity for Students: Turnitin – What is it?.

Student Learning Experience Survey
During Fall, Winter, and Spring term the online Student Learning Experience surveys open to students the Wednesday of week 9 and close the Sunday before Finals Week. Students will receive notification, instructions, and the link through their ONID email. They may also log into the survey via MyOregonState or directly at https://beav.es/Student-Learning-Survey. Survey results are extremely important and are used to help improve courses and the learning experience of future students. Responses are anonymous (unless a student chooses to “sign” their comments, agreeing to relinquish anonymity of written comments) and are not available to instructors until after grades have been posted. The results of scaled questions and signed comments go to both the instructor and their unit head/supervisor. Anonymous (unsigned) comments go to the instructor only.

Student Bill of Rights

OSU has twelve established student rights. They include due process in all university disciplinary processes, an equal opportunity to learn, and grading in accordance with the course syllabus: https://asosu.oregonstate.edu/advocacy/rights.