ENGR 101 Syllabus

Introduction to Engineering Design (ENGR 101) is a required course in the engineering major.

Instructors:

Section	Time	Instructor	email	Office	Final Exam
A	8:30 AM	Monica Groenenboom	mlg32@calvin.edu	SB155	December 13 @ 1:30 PM
B	9:15 AM	Samuel Adeyemo	sa73@calvin.edu	SB145	December 15 @ 1:30 PM
C	11:00 AM	Frederick Haan	fhaan@calvin.edu	SB 141	December 16 @ 9 AM
D	1:30 PM	Ken Visser	Ken.visser@calvin.edu	EB139	December 18 @ 9 AM

Course Objectives

In this course you will be introduced to the wide range of opportunities in the engineering profession and the characteristics of the field. You will also learn to use some of the methods and tools commonly used by engineers today as you work in groups on a design project. Upon successful completion of this course, students will be able to:

I. Describe the Engineering Profession
   a. The essence of engineering
      i. Students can provide an articulate response to the question “What is engineering?”
      ii. Students can describe ABET’s role in professional engineering education
   b. Academic disciplines and job functions of engineering
      i. Students can describe the major sub-disciplines of engineering and identify the differences between them (including listing the associated engineering societies)
      ii. Students can list and describe a range of engineering job functions
   c. Engineering in industry and academia
      i. Students demonstrate awareness of the importance of internships
      ii. Students will gain exposure to engineering practice
   d. Motivation
      i. Students will be able to articulate the rewards and opportunities as well as the challenges of engineering study and show they can serve God through the profession of engineering

II. Demonstrate Engineering Skills and Concepts
   a. The design process
      i. Students can state the advantages of following a structured design process and can list and describe the steps in a particular engineering design process

ii. Students can apply the engineering design process to an ill-defined and open-ended problem (final project)
iii. Students can describe the design norms and apply them to their design activities (technology and values)
iv. Students can use some project management tools (agendas, minutes, design notebooks, scheduling)

b. Community building and teamwork
   i. Each student in the class will know the first and last name of every other student in the class
   ii. Students will interact with each other and project clients in a positive, professional, and effective manner

c. Entrepreneurship
   i. Students will be able to describe entrepreneurship and its relationship to engineering
   ii. Students will be able to describe the different types of intellectual property

d. Tools
   i. Students will be able to use spreadsheets for data, graphing, and other computations
   ii. Students will be able to find technical information using web searches and Calvin's library resources
   iii. Students will demonstrate proficiency in delivering short technical presentations using PowerPoint
   iv. Students will demonstrate proficiency in writing technical documents (design report)

e. Ethics and professionalism
   i. Students will demonstrate awareness of good ethical and professional practices
   ii. Students will be able to use a code of ethics and problem solving process to determine appropriate responses to potential ethical problems they might encounter in industry
   iii. Students will demonstrate academic integrity at all times

III. Plan for Academic Success in Engineering

a. Students will be able to articulate an understanding of Calvin's engineering degree, including the learning objectives and outcomes for the program
b. Students will be introduced to the facilities, resources, and regulations of Calvin's engineering department
c. Active Learning
   i. Students will be able to reflect on the importance of time management, course preparation, communal learning, and note taking
d. Personal Development
   i. Students will be able to describe the Teaching/Learning Process
   ii. Students can describe clear goals for their future, relate them to their faith perspective, and have a plan for achieving those goals based on a self-assessment of their strengths and weaknesses

Textbook

A Christian Field Guide to Technology for Engineers and Designers by Ethan J. Brue, Derek C. Schuurman, and Steven H. VanderLeest. ISBN: 9781514001004

Course Assessments

Grade Computation

The following table shows the weightings with which grades will be calculated.

Assessment	Grade
Engineering Project: Automata	20%
WCS Project	15%
Wood Shop Training	5%
Quizzes and Homework	20%
Tests	10%
Engineering KNight	5%
Professionalism	5%
Final Exam	20%

Test and Final Exam

Test: October 24

Final Exam:

Section A: December 13 @ 1:30 PM
Section B: December 15 @ 1:30 PM
Section C: December 16 @ 9 AM
Section D: December 18 @ 9 AM

Exceptions to this schedule will only be made in documented cases of emergency.

Engineering Exploration Night (ENGR KNight) Requirement:

Students are required to attend the Engineering KNight event hosted by Calvin University. At the beginning of the semester, you will choose the engineering discipline you are most interested in exploring. You will then be placed into a group with several other students and assigned an engineer in the field to interview. This event is mandatory and will take place the evening of **October 22, 2025.**

Time Management and Late Assignments:

All assigned work (whether in Moodle or on paper) will be due at the date and time specified by the professor. Any work handed in after the specified deadline (without prior permission) ***will receive no credit***. Assessments in Moodle can only be taken by the date specified in Moodle.

Students will be given grace for ONE regular homework assignment during the semester. This does not include the projects, the internship poster event, woodshop training, WCSP, Engineering Knight or the final exam. The student must ask the professor for the grace extension. Once the extension is granted the student has one week to complete the assignment.

Professionalism and Academic Honesty and Integrity Policy:

Because of the nature of the profession, professionalism, honesty and integrity are expected of every engineer. With this, and especially in light of our common Christian commitment, instances of unprofessional behavior and/or academic dishonesty will not be tolerated in this course.

This course is intended to be a community of learners, as documented in the Calvin Engineering Department Guidelines for Professionalism and the Academic and the Honesty and Integrity Policy (AHIP). These documents provide the framework for Engineering Department faculty to report issues or impose sanctions in response to violations of these policies, within the guidelines of Calvin's Code of Student Conduct. Any questions, comments, and concerns regarding the Guidelines for Professionalism and/or AHIP and their application in **this course** are welcomed.

You are expected to behave in a professional manner in this course. This includes interactions with the instructor and with other students, both inside and outside the classroom. We share a common responsibility to treat others with love and respect, as image-bearers of Christ.

If you need to miss class, you are responsible for finding out from a classmate what you missed. If you miss a test or deadline because of a medical issue, a doctor's note is required. If you need to miss class because of a job interview or similar professional reason, notify the instructor in advance and accommodations will be made as much as possible.

We share a common responsibility to create a learning environment that is accessible to each person. Please remember that each person has a different level of comfort with jokes, teasing, and other banter.

The Safer Spaces Policies and Procedures address discrimination, harassment, and retaliation at Calvin University. The university will review and investigate all reports of misconduct and

provide for fair and impartial evaluation and resolution. Retaliation is prohibited against a person reporting such issues.

If you feel uncomfortable with how others are behaving, you are encouraged to address it with them directly, but you are also always free to bring it to the attention of the instructor or report it in the safer spaces site. https://calvin.edu/safer-spaces

All work submitted for this course must be your own. Throughout the semester, you will routinely work with other students as you work on exercises. Overall grades in the course are based on individual work which is reflected in participation, results of tests, and the quality of reports.

Unless specifically indicated by your instructor, all reports/labs and tests/quizzes should be written or taken individually.

Using artificial intelligence (AI) tools:

Artificial intelligence (AI) tools are becoming increasingly powerful and useful. When students use AI to complete certain assignments, they lose the opportunity to learn through the assignment process, and they violate norms of academic integrity. We will have conversations about the role of AI in your academic work, weighing its benefits and limitations, considering when it should be used and when it should not be used. In this course, you may use generative AI tools (e.g. ChatGPT) for the following activities:

- Brainstorming ideas
- Finding Information
- Checking grammar and usage

The use of generative AI tools is not permitted in this course for the following activities:

- Writing a first or final draft of any assignment.
- Writing entire sentences, paragraphs or papers to complete class assignments.
- Help doing calculations or homework problems.

When you use information from an AI query, you are fully responsible for it: you must confirm that it does not violate intellectual property laws and that it does not contain misinformation. You must also properly document and cite any information from an AI query; your use of AI tools must be properly cited to stay within the university's academic integrity policy and the university definition of plagiarism. Any assignment that is found to have used generative AI tools in unauthorized ways will receive no credit and will be reported as an academic integrity violation.

*Academic dishonesty examples specific to **ENGR 101**:*

Course Component/Activity	Specific examples of academic dishonesty
In-class or on-line tests/quizzes	• Use of any unapproved resource material while taking the test/quiz • Obtaining answers from another student before or during the test/quiz • Providing answers to another student before or during the test/quiz • Completing an on-line quiz for another student
Individually graded homework assignments	• Copying from another student • Allowing another student to copy your work • Copying written work or a computer file from a group effort • Using AI *Allowed: students working on separate computers/papers, conferring occasionally when questions arise.* *Not allowed: students working on the same computer and typing information into a single file which is then printed and submitted by separate students **or** students working on separate computers/papers, but typing/writing into separate files/papers exactly the same information, which is then submitted by separate students.* ***Each student file submitted should be distinctive to that particular student. All files submitted may be checked using software copy detection tools**.*
Team design projects	• Fictionalizing data • Using someone else's ideas/designs without attribution • Claiming contributions to team work on peer evaluations that you did not contribute • Unprofessional behavior
Reports/papers	• Plagiarism as defined in Calvin's English department policy • Using AI to aid report writing

Disabilities:

Calvin University is committed to providing access to all students. If you are a student with a documented disability, please notify a disability coordinator in the Center for Student Success. (located in Spoelhof University Center 360). If you have an accommodation memo, Students should notify their instructors within the first two weeks of class.

Lecture Topics:

Week	Lecture topics
1	Studying Engineering: What is Engineering? Engineering at Calvin University
2	Engineering Concepts: Basic Mechanisms and Working with Others
3	Engineering Concepts: Technology and Values
4	Engineering Concepts: The Engineering Design Process (EDP)
5	Engineering Concepts: The Engineering Design Process (EDP)
6	Engineering Concepts: The Engineering Design Process (EDP)
7	Engineering Concepts: The Engineering Design Process (EDP) and fall break
8	Advising Break, Engineering KNight and **Test**
9	Studying Engineering: World Class Student Project (WCSP) and Working with Others
10	Engineering Concepts: Project review and Engineering Ethics
11	Engineering Concepts: Engineering Stewardship
12	Engineering Concepts: The Engineering Design Process (EDP)
13	Engineering Skills: Spreadsheets Thanksgiving
14	Engineering Skills: Spreadsheets and The Engineering Design Process (EDP)
15	Engineering Concepts: Spreadsheets and Intellectual Property