

ESC 120 – Intro to Engineering Design (1-2-2) – Spring 2021

Pre-requisite: Placement in one of the academic colleges at CSU

Class Location: TBD

Instructors and Lab Times:

Section 1:	Prof Marvin Thrash	Fridays, 3:40 – 4:30 pm
Section 2:	Prof. Monty-Bromer,	Tuesdays, 12:30 – 2:20 pm
Section 3:	Prof. Monty-Bromer,	Thursdays, 12:30 – 2:20 pm
Section 4:	Prof. Michael Adams,	Mondays, 2:00 – 3:50 pm
Section 5:	Prof. Michael Adams,	Wednesdays, 2:00 – 3:50 pm
Section 51:	Prof. Woldering,	Tuesdays, 4:00 – 5:50 pm
Section 52:	Prof. Woldering,	Thursdays, 4:00 – 5:50 pm
Section 53:	Prof. Monty-Bromer,	Mondays, 4:00 – 5:50 pm

Office Hours: TBD

Catalog Description: An introduction to the practice of engineering design, use of hand tools, reverse engineering, the creative process, and the various career paths within engineering. This course is intended for engineering students and for any other student interested in understanding the basics of engineering design and learning about engineering as a possible career.

Course Objectives:

1. Clarify why engineers need math and science in their curriculum.
2. Construct basic systems for testing. Instill several fundamental skill sets, e.g., safe use of tools, measurement, etc.
3. Promote professional and ethical behavior throughout all course activities.
4. Foster effective communication skills.
5. Initiate the development of good problem-solving skills and knowledge synthesis.
6. Expose students to various fields of engineering, computer science and technology

Textbook (Recommended):

Engineering Skills for Career Success. 1st Ed. Charles Alexander and James Watson. ISBN 10: 0073385921. ISBN 13: 9780073385921

Grade Components: The course grade is based on your overall and sustained performance throughout the entire semester. The final grade is distributed among the following components:

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| 1. Lab participation activity | – 40% |
| 2. Weekly journals | – 30% |
| 3. Friday quizzes and class participation | – 10% |
| 4. Oral presentations | – 10% |
| 5. Written report | – 10% |

In general, grades are determined as follows:

Grade \geq 90%	---	A
87 \leq Grade $<$ 90	---	A-
83 \leq Grade $<$ 87	---	B+
80 \leq Grade $<$ 83	---	B
75 \leq Grade $<$ 80	---	B-
70 \leq Grade $<$ 75	---	C+
65 \leq Grade $<$ 70	---	C
60 \leq Grade $<$ 65	---	D
Grade $<$ 60	---	F

Weekly Journals and Homework: At the end of each experiment, groups will be required to submit one journal entry to Blackboard. Each journal entry is based on the lab activity your group worked on. These journal entries are intended for you to explore your lab activities in the context of your real-life experiences, as well as some independent research. Journal entries will appear on Blackboard as assignments. Your lab instructor will provide specifics about the requirements for each journal report. Please make note of due dates as they appear on Blackboard. Homework may be assigned by your lab instructor for specific projects. Homework will be designated as individual assignments unless otherwise specified by your lab instructor.

Quizzes: Throughout the semester, you will be presented with periodic quizzes, mostly based on material presented to you during the Friday lectures and lab materials. You will receive notice before the quizzes to go online, and you will complete the quizzes on Blackboard.

Class Participation: Your attendance for the Friday lectures is required. Attendance will be taken at the beginning of class and at the end of class. Students who enter the class after the first attendance is taken will not receive full credit for being present. Periodic assignments (requiring your presence and participation) will be assigned during the semester. Also note that ESC-120 students will be required to attend at least one senior design presentation this semester. Your attendance for all labs is also required. Unexcused lab absences will result in zero activity points and zero journal points. Unexcused absences from the Friday lecture will result in zero attendance points. Lab makeups are possible on Fridays from 1-3:30pm provided one of the teaching assistants is available.

Design Project: The last few weeks of the semester, you will work on a small design project, drawing from the lessons you have learned from the experiments you completed through the course of the semester. At the end of the project, you will present your design and lessons learned orally to the class, as well as submit a written report. Details of the presentation and report will be provided to you during the semester.

Peer Evaluation: All members of each group will evaluate each other. The instructor will use this information to determine if grade adjustments are necessary.

Final Exam: There is no final exam for this class.

Student Conduct: You are expected to do your own work. Academic misconduct, student misconduct, cheating and plagiarism will not be tolerated. Violations will be subject to disciplinary action as specified in the CSU Student Conduct Code. A copy can be obtained on the web page at: <http://www.csuohio.edu/studentlife/conduct/index.html> or by contacting the Judicial Affairs office at the Division of Student Affairs at 216-687-2048. If you're in doubt that some action can be construed as cheating, *don't do it! It's not worth it!*

COVID-19 Safety: The COVID-19 pandemic is still present and serious. Before entering class, you should have completed your daily health assessment. While you are in class on campus, you are required to: sit in your designated seat, maintain physical distance, wear your facial covering (e.g., masks or face shields), always cough or sneeze into your elbow or tissue, use the materials provided to clean your desk and chair before and after use, and adhere to other public safety protocols and directives for your specific classroom/lab/studio.

Students who do not follow these health and safety requirements will be instructed to leave class immediately. Students who violate this protocol will need to leave the classroom and MAY be marked absent. Repeated violations of these health-saving protocols may lead to sanctions under the Student Code of Conduct (3344-83-04 [E] and [Z]) up to and including suspension or expulsion. The CSU community thanks you for your cooperation!

For additional information please refer to <https://www.csuohio.edu/safe-campus/personal-community-measures> and <https://www.csuohio.edu/safe-campus/safe-campus>

Course Calendar: The following page is a **tentative** calendar of topics for this semester. The instructors reserve the right to make adjustments as needed

Week	Dates	Topic	Special Notes
1	1/11 - 1/15	Spring Break	No Class
2	1/18 – 1/22	Intro to course	Mondays labs (MLK – Holiday) Tuesday, Wednesday, and Thursday lab sessions - Intro to the course (via zoom)
3	1/25 - 1/29	AutoCAD	Mondays labs – Intro to the course (via zoom) Tuesday, Wednesday, and Thursday lab sections AutoCAD (via zoom)
4	2/1- 2/5	AutoCAD and Solidworks	Mondays labs – AutoCAD (via zoom) Tuesday, Wednesday, and Thursday labs sections- Solidworks (via zoom)
5	2/8 - 2/12	Solidworks	Monday – Solidworks (via zoom)

		Arduino: Basic Arduino Programming	Tuesday, Wednesday, and Thursday labs (Basic Arduino Programming)
6	2/15 - 2/19	Arduino Sensors and Actuators	Monday - (Presidents Day Holiday) Tuesday, Wednesday, and Thursday labs – Arduino Sensors and Actuators
7	2/22 - 2/26	Arduino Sensors and Actuators Arduino Closed Loop Control	Monday labs – Arduino Sensors and Actuators Tuesday Wednesday and Thursday labs – Arduino Closed Loop Control.
8	3/1 - 3/5	Arduino Closed Loop Control Water Filtration	Monday labs – Closed Loop Control Tuesday, Wednesday and Thursday labs – Water Filtration
9	3/8 - 3/12	Water Filtration Capstone Project Introduction	Monday labs – Water Filtration Tuesday labs, - Capstone Project Introduction
10	3/15 – 3/19	Capstone Project	Monday labs – Capstone Project Introduction Tuesday, Wednesday and Thursday labs – Capstone Project
11	3/22 – 3/26	Capstone Project	Monday labs – Capstone Project Introduction Tuesday, Wednesday and Thursday labs – Capstone Project
12	3/29 - 4/2	Capstone Project	All Labs
13	4/5 - 4/9	Capstone Project	All Labs
14	4/12 - 4/16	Capstone Project	All Labs
15	4/19- 4/23	Capstone Project	All Labs
16	4/26 - 4/30	Capstone Project	Final Presentation and Report Submission