



**FSE 100x: Introduction to Engineering:
Imagine. Design. Engineer!
Spring C 2018**

I. COURSE OVERVIEW

This 15-week 2-credit hour course is an active introduction to developing an engineering mindset that will teach you important skills you should have in your engineering toolbox. You will learn to identify opportunities, imagine new solutions, model your creations, make decisions, prototype, and showcase your ideas that impact the world. In doing so, you will also learn about the engineering design process; data-driven decision-making; engineering tools (e.g., CAD programming); and technical reports and presentations.

Learning Objectives and Topics

By the end of this course, students should be able to:

1. Use the engineering design process to create effective problem statements, and design, build, test, and analyze a prototype product that addresses realistic constraints and system requirements, while using basic project management techniques.
2. Use appropriate tools and software to collect and analyze data, to describe and predict the behavior of designs, and to justify design decisions based on appropriate models.

3. Evaluate the quality of their own work and the work of others through self and peer assessment.
4. Write a project report and create a multimedia presentation following technical communication guidelines which include formatting, explaining and justifying aspects of the project.
5. Identify their strengths and contributions, reflect on their gained engineering skills, and develop identity as an engineer.

Topics include:

- What is Engineering?
- Engineering Design Process
- Defining Problems
- Brainstorming Techniques
- Making Design Decisions
- Autodesk Fusion 360
- Technical Communication
- Project Management
- Entrepreneurial Mindset
- Modeling
- Basic Structural Analysis
- Arduino Programming
- Acceptance Testing
- Financial Analysis
- The Future of Engineering

II. WEEKLY ACTIVITIES AND TIME COMMITMENT

Class preparation means reviewing all material required in a given week and completing all assignments by the deadlines indicated. Attendance in an online course means logging into edX on a regular basis and participating in all of the activities that are posted.

This 15-week, 2-credit course requires 135 hours of student work. Therefore, expect to spend approximately 6 to 8 hours per week preparing for and actively participating in this course.

Course Content and Assignments

Video and Audio

- **Lectures** from your instructional team on specific topics, designed to help you learn key concepts
- **Guest lectures** by experts in the field

Readings

Our course makes use of open educational resources (OERs), no purchase necessary.

Qualitative Feedback

You will be giving and receiving various forms of feedback throughout the course. This feedback will be used to assess the quality of your work and help you improve. Feedback can take the following forms:

- **Peer assessment:** You will have an opportunity to learn from and provide feedback to your peers throughout the course. For some assignments, you will review other students' work and we'll provide rubrics and guidelines to help you offer meaningful feedback.
- **Self assessment:** You will assess your own work on some assignments, using provided rubrics and guidelines.
- **Instructor assessment (ID Verified students):** ID verified students will receive personalized feedback on graded assessments from a content expert. With ID verification, students have the opportunity to pursue a certificate of completion or ASU course credit toward a college degree upon completion of the course.

Graded Assignments

Graded assignments are required, and count toward the final grade for ID Verified students planning to earn either credit or a verified certificate. Students *must* submit *all* assignments via the edX platform unless otherwise instructed. Each assessment has submission instructions.

ePortfolio - 25%, 10 assignments: Engineers need a professional ePortfolio to showcase their projects and communicate their diverse skills. You will be creating your ePortfolio using the [Weebly](#) platform. Throughout this course you will be applying concepts covered to develop samples of your work. *(Note: ID Verified Students will have their ePortfolios graded by the FSE 100x course team; all other students will be invited to use the self-assessment tool provided.)*

DeVILS Project (Developing Value and Innovating Limitless Solutions) - 15%, 2 assignments: In this 5 week project, you will be identifying a problem to solve and creating a conceptual design which solves this problem. You will be completing an initial problem definition memo and a final proposal of your design (as a set of presentation slides).

Disaster Relief Project - 45%, 8 assignments: In this 10 week project, you will work through all of the stages of the engineering design process to develop an innovative solution to a customer-defined problem. You will be completing 7 weekly project memos which will document your progress as well as a final design report documenting your entire design project.

Content Mastery - 5%, 14 assignments: There are **14** interactive, content mastery exercises, at the rate of one per week. You must reach **level 0.1** on each interactive content mastery exercise to receive credit.

Final Exam - 10%: The final exam covers content from weeks **1 through 14**. It is a proctored exam. (Proctoring is required for ID Verified students interested in pursuing credit. More information follows below, as well as in both the “Before the Course Begins” and in the “Final Exam Overview” sections of the course.)

Ungraded Assignments

These assignments are optional but strongly encouraged in order to maximize your learning, as well as interaction with your peers and course team.

Discussions: Throughout the course you will have opportunities to apply what you have learned, share the results with your classmates, and receive their feedback. (Remember to keep the conversation civil, and free of harsh judgement.) The course team may also comment, to provide additional insight and expertise.

Course Readiness Quiz: This quiz is designed to ensure you are familiar with the information covered in the “Before the Course Begins” section. While this quiz does **not** count toward your grade, you **must successfully complete** it to access week 1, and the rest of the the course.

III. COURSE REQUIREMENTS AND COMMUNICATION

Course Requirements

Recommended Prior Knowledge: To be successful in this course, we recommend English language fluency and computer literacy, as well as high school algebra and understanding of basic mathematical concepts.

Online Course Requirements: You will find all content and learning activities within the edX platform. There will be at least one, optional, live session via YouTube Live. (Live session(s) are recorded, and students can watch after the initial broadcast.) All course interactions use Internet technologies. It is your responsibility to watch all required videos and assigned readings, and complete all graded assessments. You are encouraged to interact with your peers and course team in the discussion forums, and ask questions there as well.

Course Communication

All communication will take place in discussion boards, course updates, and on the course home page.

Each week, there will be a dedicated discussion board called “General Questions,” where you can post general questions and comments about the subject matter, as well as any direct inquiries for the instructor and course team. *Please use this forum to ensure timely response.*

IV. STUDENT EVALUATION

Here is the breakdown of your grade:

Item (# of assignments)	Weight	Proctored	Graded
DeVILS Project: Problem Definition (1)	3	No	Yes
DeVILS Proposal Presentation (1)	12	No	Yes
Disaster Relief Project Report (1)	30	No	Yes
Disaster Relief Project Memos (7)	15	No	Self
ePortfolios (10)	25	No	Yes
Content Mastery (14)	5	No	Yes
Final Exam (weeks 1-14)	10	Yes (ID Verified) No (Audit Track)	Yes

Final grades are based on the number of points you earn on the course activities listed above. There is no extra credit available. You can see your percentage of the total points to date on your edX progress page. Final scores will be absolute as follows: 90% or better will receive an A, 80% or better a B, 70% or better a C, below 70% is a failing grade. There will be no + or - added to grades.

You must pass the course with a grade of C (70%) or higher, and be on the ID verified track, in order to be either eligible for credit from Arizona State University or an edX verified certificate. Please note that exams that fail the proctoring

review will result in an assignment grade of 0. A student earning an overall grade of a C or higher who fails proctoring is not eligible for a certificate. If your proctored exam is marked suspicious, you have up to 75 days from when you completed the exam to appeal the decision. After that time, appeals will not be accepted or reviewed.

*Note: You have **up to one year to purchase credit** after you become eligible. Please see Section IX, below, “Taking this Course for ASU Credit or edX Verified Certificate,” for specifics on fees and deadlines.*

V. GFA POLICIES

Assignment Deadlines: This is an online course. Your instructional team will provide all content and learning activities on our edX platform. All course interactions will use Internet technologies; it is your responsibility to review all content, fulfill all assignments on time, and ask any questions you have in our designated discussion area. For more information, please see section VI, “UTC Time Zone” below.

Late assignments will not be accepted at any point during the course. We recommend that you establish your time management schedule for this course during the first two days that the course is open to meet all course obligations.

For time management tips, sign up for the [GFA Orientation course](#) and review the Time Management section. Please also review our “Tips for Student Success” video in the “Before the Course Begins” section.

Subject to Change Notice: This syllabus is to be used as a guide only. Information contained here, such as assignments, grading scales, deadlines, and other materials are subject to change. It is your responsibility to read the course announcements regularly to be aware of any changes or updates in the course.

Academic Integrity: Academic honesty is expected of all students in all coursework and exams. The possible sanctions include, but are not limited to, appropriate grade penalties, course failure (indicated on the transcript as a grade of E), course failure due to academic dishonesty (indicated on the transcript as a grade of XE), loss of registration privileges, disqualification, and dismissal. For more information, review ASU's [Academic Integrity Policy](#) and [edX's Terms of Service](#).

Prohibition of Commercial Note Taking Services: In accordance with ACD 304-06 Commercial Note Taking Services, written permission must be secured from the official instructor of the class in order to sell the instructor's oral communication in the form of notes. Notes must have the notetaker's name as well as the instructor's name, the course number, and the date.

VI. UTC TIME ZONE

To accommodate students from across the globe, all deadlines are posted in UTC time, the global standard. Please see the “Course Information and Support” subsection in “Before the Course Begins” for a detailed explanation.

Remember, it is your responsibility to understand UTC and determine the due dates and times for your time zone. Make sure you address this, ideally before the first set of assignments is due, and definitely before the midterm, to avoid any unnecessary stress. **Deadline extensions will *NOT* be granted for misunderstanding UTC time.**

VII. GENERAL AND TECHNICAL REQUIREMENTS

This course is best accessed by a reasonably modern browser on a laptop or desktop computer. Course videos can be accessed using the edX app for iPhone and Android. For more information about mobile, review [edX on the Go](#).

Students who are interested in taking the course for credit will need additional computer requirements and skills to access the remote proctor service. Please see the [Software Secure](#) site, which details Proctor Now's requirements.

If you are not certain about your system, it is highly recommended that you complete the practice proctored exam to confirm system compatibility.

VIII. GENERAL AND TECHNICAL ASSISTANCE

Student Support and General Technical Issues: Please access the [edX Help Center](#) for solutions to common problems. Please also be sure to review our “Before the Course Begins” section for further information. If you are still experiencing issues, you can reach out to gfa@edx.org.

Accessibility: If you are a student with a disability, and you would like to request an accommodation, please send an email to accessibility@edx.org.

Proctoring: For students taking the final exam proctored, please do the following to address any technical issues:

1. Contact our proctoring partner, Software Secure, at 1-855-436-2039 for US and Canada and 1-617-658-2879 for International (Outside US and Canada).
2. Send an email to edX at gfa@edx.org.

Both Software Secure and edX must be informed of the issue to ensure resolution.

Please put “Problem with proctored exam” in the subject line. Also, provide as much information as possible, including screenshots, error messages, and urgency due to upcoming deadlines.

IX. TAKING THIS COURSE FOR ASU CREDIT OR edX VERIFIED CERTIFICATE

ASU Credit: Students wishing to take this course for ASU credit are required to do the following:

- ID verify by January 19, 06:59 UTC
- **Opt in for proctoring** for the final exam
- Pass the course with a C or better (70% or higher)

Verified Certificate: Students wishing to take this course for a verified certificate are required to do the following:

- ID Verify by January 19, 06:59 UTC
- Pass the course with a C or better (70% or higher)

Cost: The course is 2 credits.

- ID verification: \$49 USD/course
- Credit: \$600 USD/course

Please note that exams that fail the proctoring review will result in an assignment grade of 0. A student earning an overall grade of a C or higher who fails proctoring is not eligible for a certificate. If your proctored exam is marked suspicious, you have up to 75 days from when you completed the exam to appeal the decision. After that time, appeals will not be accepted or reviewed.

ID Verification Status

When you verify your identity for an edX course, that verification is effective for one year. Your dashboard provides the status of your ID verification.

You must be ID verified in order to complete proctored exams. Please check your verification status regularly.

It will take a few days for the ID verification process to be completed, so please plan accordingly. Deadlines will not be extended due to re-verification issues.

Purchasing Credit

Important: Provided you have met all requirements for this course, you can purchase credit (\$600 USD) from ASU for **up to one year** after you become credit eligible.

Your date of eligibility **may differ** from the course end date or the date certificates are issued. Please visit your course progress page, specifically the “Requirements for Course Credit” section, to see the status of your credit eligibility.

Please review “Credit Eligibility: Important Information” in your “Before the Course Begins” section for additional details.

Note: Potential limitations of internet connectivity by some countries are beyond the control of Arizona State University and may limit the ability of an ID Verified student residing in those countries to complete all the assessments, and therefore potentially impede the eligibility to earn college credit. Students impacted by such limitations should contact gfa@edx.org.

