Master Course Syllabus

For additional course information, including prerequisites, corequisites, and course fees, please refer to the Catalog: https://catalog.uvu.edu/

Semester: Spring
Course Prefix: EGDT
Course Title: Intro to 3D Printing and Fabrication

Year: 2025
Course and Section #: 1050-001
Credits: 3

Course Description

Introduces the history of design and fabrication. Explores how design and fabrication applies to, affects, and connects various fields, environments, cultures, and workplaces. Teaches basic design and fabrication competencies through analyzing and solving real-world problems using current technology. Encourages an appreciation for the evolution of design and fabrication and its application in diverse fields of academia and industry. Investigates the possibilities of new emerging technologies in these fields.

Course Attributes

This course has the following attributes:
☐ General Education Requirements
☐ Global/Intercultural Graduation Requirements
☐ Writing Enriched Graduation Requirements
☐ Discipline Core Requirements in Program
☒ Elective Core Requirements in Program
☐ Open Elective
Other: *Click here to enter text.*

Instructor Information

Instructor Name: Jeffrey T. Johnson

Student Learning Outcomes

1. Explain the history and evolution of design and fabrication
2. Describe the effect of design and fabrication on communities, cultures, and environments
3. Apply the Engineering Design Process in the research and design of a prototyped solution to solve a real-world problem
4. Develop, revise, and present a prototyped solution to solve a real-world problem
5. Collaborate as an effective member on a technical team throughout the prototyping process
6. Identify new applications of fabrication in career and academic pursuits

Course Materials and Texts

There are no materials or texts that the students need to acquire for this course.

Course Requirements

Course Assignments, Assessments, and Grading Policy
- Discussions: As a part of the engineering design process, students will collaborate through discussions board on their personal and group projects throughout the semester.
- Quizzes: An occasional quiz is administered throughout the semester, generally testing students' knowledge on new pieces of equipment that they will be using.
- Projects: The students will apply the engineering design process as they work through 4 different projects during the semester.

Final grades will be based on total points received between the different categories.

A	94 - 100%	B-	80 – 82.9%	D+	67 – 69.9%
A-	90 – 93.9%	C+	77 – 79.9%	D	63 – 66.9%
B+	87 – 89.9%	C	73 – 76.9%	D-	60 – 62.9%
B	83 – 86.9%	C-	70 – 72.9%	F	0 – 59.9%

Required or Recommended Reading Assignments
There are no required reading assignments for this course.

General Description of the Subject Matter of Each Lecture or Discussion
- Course Orientation
  - Review of course orientation, syllabus, instructor information, software access, and Canvas orientation
- Module 1
  - Basics of 3D Modeling in Autodesk Fusion
    - Sketches and Extrusions
- Module 2
  - 3D Modeling, Joints, & Model Organization
    - Sketches, Revolves and Rigid Joints
- Module 3
  - Intro to 3D Printing
    - History of 3D printing, Types of 3D printing and 3D printing strenghths/weaknesses
- Module 4
  - Intro to the Engineering Design Process (Catapult Project)
    - Students apply the engineering design process as they ideate, sketch, model, and test their own 3D printed catapults
- Module 5
  - Engineering Design Process (Derby Cars)
    - Students will apply the engineering design process as they design their own 3D derby cars.
    - Students will learn about compliant mechanisms
- Module 6
  - Intro to Laser Engraving

- Students will learn the process of creating a 2D vector file and will understand the process of setting up and running the laser engraver
- Module 7
  - Packaging Problem
    - Students will apply the engineering design process in groups as they develop packaging for the same part
- Module 8
  - Board Game Design
    - Students will design a board game including 3D printed and laser engraved components
    - Students will learn to create flow charts as they design their game to help prototype the game play

Required Course Syllabus Statements

Generative AI

AI programs are not a replacement for your human creativity, originality, and critical thinking. Writing, thinking, and researching are crafts that you must develop over time to develop your own individual voice. At the same time, you should learn how to use AI and in what instances AI can be helpful to you.

The use of generative AI tools (e.g. ChatGPT, Google Gemini, etc.) is permitted in this course for the following activities:
- Questions regarding software
- Finding information on related topics

The use of generative AI tools is not permitted in this course for the following activities:
- Producing Drawings
- Impersonating you in classroom contexts, such as by using the tool to compose discussion board prompts/responses assigned to you or content that you put into a Teams/Canvas chat.

You are responsible for the information you submit based on an AI query (for instance, that it does not violate intellectual property laws, or contain misinformation or unethical content). Your use of AI tools must be properly documented and cited in order to stay within university policies on academic honesty.

Any student work submitted using AI tools should clearly indicate what work is the student's work and what part is generated by the AI. In such cases, no more than 25% of the student work should be generated by AI. If any part of this is confusing or uncertain, please reach out to me for a conversation before submitting your work.

Using Remote Testing Software

☒ This course does not use remote testing software.

☐ This course uses remote testing software. Remote test-takers may choose their remote testing locations. Please note, however, that the testing software used for this may conduct a brief scan of remote test-takers' immediate surroundings, may require use of a webcam while taking an exam, may require the microphone be on while taking an exam, or may require other practices to confirm academic

honesty. Test-takers therefore shall have no expectation of privacy in their test-taking location during, or immediately preceding, remote testing. If a student strongly objects to using test-taking software, the student should contact the instructor at the beginning of the semester to determine whether alternative testing arrangements are feasible. Alternatives are not guaranteed.

Required University Syllabus Statements

Accommodations/Students with Disabilities

Students needing accommodations due to a permanent or temporary disability, pregnancy or pregnancy-related conditions may contact UVU [Accessibility Services](#) at accessibilityservices@uvu.edu or 801-863-8747.

Accessibility Services is located on the Orem Campus in BA 110.

Deaf/Hard of Hearing students requesting ASL interpreters or transcribers can contact Accessibility Services to set up accommodations. Deaf/Hard of Hearing services can be contacted at DHHservices@uvu.edu

DHH is located on the Orem Campus in BA 112.

Academic Integrity

At Utah Valley University, faculty and students operate in an atmosphere of mutual trust. Maintaining an atmosphere of academic integrity allows for free exchange of ideas and enables all members of the community to achieve their highest potential. Our goal is to foster an intellectual atmosphere that produces scholars of integrity and imaginative thought. In all academic work, the ideas and contributions of others must be appropriately acknowledged and UVU students are expected to produce their own original academic work.

Faculty and students share the responsibility of ensuring the honesty and fairness of the intellectual environment at UVU. Students have a responsibility to promote academic integrity at the university by not participating in or facilitating others' participation in any act of academic dishonesty. As members of the academic community, students must become familiar with their [rights and responsibilities](#). In each course, they are responsible for knowing the requirements and restrictions regarding research and writing, assessments, collaborative work, the use of study aids, the appropriateness of assistance, and other issues. Likewise, instructors are responsible to clearly state expectations and model best practices.

Further information on what constitutes academic dishonesty is detailed in [UVU Policy 541: *Student Code of Conduct*](#).

Equity and Title IX

Utah Valley University does not discriminate on the basis of race, color, religion, national origin, sex, sexual orientation, gender identity, gender expression, age (40 and over), disability, veteran status, pregnancy, childbirth, or pregnancy-related conditions, citizenship, genetic information, or other basis protected by applicable law, including Title IX and 34 C.F.R. Part 106, in employment, treatment, admission, access to educational programs and activities, or other University benefits or services. Inquiries about nondiscrimination at UVU may be directed to the U.S. Department of Education's Office for Civil Rights or UVU's Title IX Coordinator at 801-863-7999 – TitleIX@uvu.edu – 800 W University Pkwy, Orem, 84058, Suite BA 203.

Religious Accommodation

UVU values and acknowledges the array of worldviews, faiths, and religions represented in our student body, and as such provides supportive accommodations for students. Religious belief or conscience broadly includes religious, non-religious, theistic, or non-theistic moral or ethical beliefs as well as participation in religious holidays, observances, or activities. Accommodations may include scheduling or due-date modifications or make-up assignments for missed class work.

To seek a religious accommodation, a student must provide written notice to the instructor and the Director of Accessibility Services at accessibilityservices@uvu.edu. If the accommodation relates to a scheduling conflict, the notice should include the date, time, and brief description of the difficulty posed by the conflict. Such requests should be made as soon as the student is aware of the prospective scheduling conflict.

While religious expression is welcome throughout campus, UVU also has a [specially dedicated space](#) for meditation, prayer, reflection, or other forms of religious expression.