

Engineering Design and Digital Manufacturing

Degree Type

Certificate

Students acquire foundational as well as everyday practical skills in three dimensional solid modeling, mechanical part digital fabrication, and robotic automation to aid the modern engineering/manufacturing enterprise. Principles associated with mechanical product design, visualization, documentation, configuration control, and release management are acquired through hands-on use of three dimensional solid modeling tools and software. In addition, students master skills in the design to manufacture process through extensive use of additive and subtractive manufacturing equipment including fused filament fabrication, laser polymerization stereolithography (SLA), and computerized numerical control (CNC) machines.

The certificate in Engineering Design and Digital Manufacturing prepares students for immediate employment in today's increasingly high tech manufacturing industry. The course requirements include a mixture of engineering, math, and communication courses. This mixture is designed to give the student technical and verbal skills sought by today's employer. Similarly, many of the courses specify team driven assignments and projects, another skill sought by the employers aligned with this certificate. Students earning this certificate will emerge with confidence, knowledge, and experiential skills needed to be successful as mechanical designers.

Learn more about the program and apply at [Engineering Design and Digital Manufacturing Certificate](#)

Requirements

Item #	Title	Credits
ENR106	3D Design & Analysis I	3
ENR107	3D Design & Analysis II	3
ENR103	Introduction to Robotics	4
COM103	Human Communication	3
MAT175	College Algebra	4
Total Credits		17

Career Outlook

The Engineering Design and Digital Manufacturing Certificate prepares students for a career path in Mechanical Computer Aided Design and Computer Aided Manufacturing (CAD/CAM). This certificate program provides students with the skills to become a professional CAD Designer, Solid Modeler, Design Drafter, Designer, Drafter, Drafting Technician, Mechanical Designer, Mechanical Drafter, Industrial Designer, Automation Technician, Product Designer, or Project Designer.

Employment is projected to grow 7% from 2016 to 2026, about as fast as the average for all occupations. Increased construction activity is projected to drive demand, but this is expected to be tempered as engineers and architects increasingly perform some tasks previously done by non-bachelor degreed drafters.

This [occupational profile for Mechanical Drafters](#) is provided by O*NET.

This [occupational profile for Mechanical Technicians](#) is provided by O*NET.

Program Outcomes

Upon successful completion of the Engineering Design and Digital Manufacturing Certificate, students are able to:

- Develop a concept from an idea through to a finished product all the while integrating design standards, methods, and materials into the project. Fully analyze and document the design using 3D Computer Aided Design software that optimizes the full life cycle sustainability of the product.

- Conduct a demonstration on how additive manufacturing techniques such as 3D printing can be used to rapidly prototype a design to facilitate evaluation and incorporate design changes to improve the product design.
- Justify when to use 3D CAD software as a tool in solving a wide variety of engineering design problems.
- Demonstrate mastery of orthographic projection interpretation through creating standard views and isometric views of a product design.
- Differentiate between the roles and responsibilities of the most common design engineering disciplines.
- Exhibit an understanding of professional ethics and the application to real-life product design situations.
- Exhibit skills necessary for an entry-level position in mechanical CAD design.

Program Completion

Completion of a program is based on full time enrollment. Many of our students attend part time and may not complete within the one year timeline.

Prerequisite Statement

To graduate within this program in the specified time, students must begin in the Fall semester and successfully place into required courses based on placement test results and/or high school GPA. Academic advisors can assist with questions.