

Northwest Arkansas Community College
Business and Computer Information Systems Division

Discipline Code

DRFT

Course Number

2213

Course Title

Rapid Prototyping

Catalog Description

This course synthesizes various skills learned previously in the CAD degree. Parametric modeling, BIM, and traditional CAD software as well as theory of mechanical design will be used to create complex 3D models. These virtual models will be brought into the physical world via several prototyping machines. Basics of operating 3D printers, laser cutters, and CNC machines will be covered. There will be several open-ended design projects used to showcase students' knowledge of 3D modeling and prototyping methods.

Prerequisites

- DRFT 2543 Parametric Modeling II
- DRFT 2123 Machine Design

Credit Hours

3 credit hours

Contact hours

45 contact hours

Load hours

3 load hours

Semesters Offered

Spring

ACTS Equivalent

NONE

Grade Mode

A-F

Learning Outcomes

Students will:

- Create complex 3D models
- Set up basic 3D printer processes
- Set up more complex 3D printer setup methods
- Set up a job on a laser cutter
- Use 2D vector files and a laser cutter to create 2D and 3D objects
- Learn safety principles of working around large machines
- Create CAM tooling paths for use on the CNC router
- Produce objects utilizing various machines

General Education Outcomes Supported

None

Standard Practices

Topics list

- Creating and editing models in AutoCAD, Inventor, or Revit
- Basic/default 3D printer slicer features
- Advanced slicer features
- 3D printer operation and maintenance
- Transferring 2D files to a laser cutter
- Laser cutter operation and maintenance
- Creating CAM profiles for CNC router use
- CNC router operation and maintenance

Learning activities

Assessments

- Technical drawing and modeling assignments
- Projects

Grading guidelines

- A = 90-100%
- B = 80-89%
- C = 70-79%
- D = 60-69%
- F = 0-59%