

DDGT-130: INTRODUCTION TO 3D PRINTING

Effective Term

Fall 2026

CC Approval

10/03/2025

AS Approval

10/09/2025

BOT Approval

10/16/2025

COCI Approval

12/15/2025

SECTION A - Course Data Elements

CB04 Credit Status

Credit - Degree Applicable

Discipline

| Minimum Qualifications | And/Or |
|---|--------|
| Drafting/CADD (Computer Aided Drafting/Design) (Any Degree and Professional Experience) | |

Subject Code

DDGT - Digital Design Graphics Technology

Course Number

130

Department

Digital Design Graphics Technology

Division

Career Education and Workforce Development (CEWD)

Full Course Title

Introduction to 3D Printing

Short Title

Introduction to 3D Printing

CB03 TOP Code

0953.00 - *Drafting Technology

CIP Code

15.1301

CB08 Basic Skills Status

NBS - Not Basic Skills

CB09 SAM Code

C - Clearly Occupational

Rationale

CTE course review per Title V requirement.

SECTION B - Course Description

Catalog Course Description

This course focuses on 3D Modeling and 3D Printing for beginners and those currently in the industry. This course will cover the study of additive manufacturing as it pertains to 3D Printing. Topics covered include 3D Parametric Modeling, 3D Printing applications, and the advantages and limitations of 3D printing technology. Students will learn how to create three-dimensional parts and assemblies using the current version of the Autodesk Fusion 360 software, specifically for 3D Printing.

SECTION C - Conditions on Enrollment

Open Entry/Open Exit

No

Repeatability

Not Repeatable

Grading Options

Letter Grade or Pass/No Pass

Allow Audit

Yes

Requisites

SECTION D - Course Standards

Is this course variable unit?

No

Units

3.00

Lecture Hours

36.00

Lab Hours

54.00

Outside of Class Hours

72

Total Contact Hours

90

Total Student Hours

162

Distance Education Approval

Is this course offered through Distance Education?

Yes

Online Delivery Methods

| DE Modalities | Permanent or Emergency Only? |
|-----------------------------|------------------------------|
| Entirely Online | Permanent |
| Hybrid | Permanent |
| Online with Proctored Exams | Permanent |

SECTION E - Course Content

Student Learning Outcomes

Upon satisfactory completion of the course, students will be able to:

1. Demonstrate proficiency with AutoCAD tools and commands to earn an Autodesk Certificate of Training.
2. Implement technical skills in the creation of 3D parts and assemblies utilizing the Autodesk Fusion 360 software.

Course Objectives

Upon satisfactory completion of the course, students will be able to:

1. Explain current and emerging 3D Printing applications in a variety of industries.
2. Describe the advantages and limitations of various 3D Printing technologies.
3. Identify opportunities to apply 3D Printing technology for time and cost savings.
4. Discuss the economic implications of 3D Printing.
5. Effectively use the latest release of the Autodesk Fusion 360 software program in a three-dimensional workspace.
6. Perform various geometric constructions.
7. Construct and edit two-dimensional and three-dimensional CAD entities.
8. Construct multi-view drawings utilizing orthographic projection.
9. Place and edit detail drawing annotations.
10. Print hard copies of detail drawings.
11. Design and 3D Print objects containing moving parts without assembly.

Course Content

1. 3D Printing
 - a. Applications
 - b. Industries
 - c. Materials
 - d. Cost Analysis
 - e. Advantages
 - f. Limitations
2. Fusion 360 Fundamentals
 - a. User Interface
 - b. Creating the First Feature
 - c. Creating Sketched Geometry
 - d. Additional Sketching Tools
 - e. Sketched Secondary Features
 - f. Pick and Place Features
 - g. Construction Features
 - h. Equations and Parameters
 - i. Additional Features and Operations
 - j. Design and Display Manipulation
 - k. Single Path Sweeps
 - l. Loft Features
 - m. Feature Duplication Tools
 - n. Distributed Design
 - o. Component Design Tools
 - p. Multi-Body Design
 - q. Sculpting Geometry
 - r. Editing Sculpted Geometry
 - s. Drawing Basics
 - t. Detailing Drawings
 - u. Static Analysis Using the Simulation Environment
3. 3D Printing Design Considerations
 - a. Materials
 - b. Structural Integrity
 - c. Expenses

- d. Tolerances and Clearances
- e. Scaling

Methods of Instruction

Methods of Instruction

| Types | Examples of learning activities |
|-------------------------------|--|
| Activity | Students complete step#by#step Autodesk Fusion 360 modeling exercises from Autodesk approved courseware, preparing designs specifically for 3D printing. |
| Lecture | Instructor lectures on Autodesk approved courseware. |
| Observation and Demonstration | Instructor provides computer demonstrations of best practices utilizing the class software for given assignments. |
| Projects | Students will 3D Print their own designs of various parts and assemblies. |
| Other | Class lectures and demonstrations are recorded and posted online as a student resource. |

Online Adaptation

| Types | Examples of learning activities |
|------------|---|
| Activity | Students complete step#by#step Autodesk Fusion 360 modeling exercises from Autodesk approved courseware, preparing designs specifically for 3D printing. |
| Discussion | Students share images or short videos of their 3D prints (or simulated prints for remote learners) and provide constructive peer feedback on design choices, materials, and tolerances. |
| Lecture | Recorded demonstrations covering Fusion 360 workflows, slicing software preparation, and common troubleshooting strategies for successful prints, with embedded quiz checkpoints. |

Instructor-Initiated Online Contact Types

Announcements/Bulletin Boards
 Chat Rooms
 Discussion Boards
 E-mail Communication
 Telephone Conversations
 Video or Teleconferencing

Student-Initiated Online Contact Types

Chat Rooms
 Discussions
 Group Work

Course design is accessible

Yes

Methods of Evaluation

Methods of Evaluation

| Types | Examples of classroom assessments |
|--------------------|--|
| Quizzes | Written exams and quizzes will be given to test student knowledge on software and technical skills. Exams and quizzes will contain short answer, multiple choice, and true or false. |
| Projects | Research Projects - Students will research 3D Printing applications and technologies. Student will pick one new application (within last 6 months) and present findings to the class. Projects - Students will 3D Print their own designs of various parts and assemblies. |
| Oral Presentations | Students will research 3D Printing applications and technologies. Student will pick one new application (within last 6 months) and present findings to the class. |
| Work Assessments | Students may have lab time available during class to work on their homework. |

| | |
|----------------|---|
| Homework | Homework can be found on the assignment list handed out on the first day of class or on the department website. Homework assignments will be submitted either digitally or printed. Homework assignments will demonstrate the student's ability to successfully utilize the software and demonstrate the student's skill set. |
| Lab Activities | 3D Printing of various parts and assemblies. |
| Exams/Tests | Final Exam will be based on student's final project. |

Assignments

Reading Assignments

Students will read and answer questions from the Ascent courseware on Autodesk Fusion 360.

Writing Assignments

Written reports on new 3D Printing technologies and how it will impact current technology, industry, and related fields.

Outside-of-Class Assignments

Students will 3D Print their own designs of various parts and assemblies.

Possible examples of projects may include: the 3D Printing of a single part like a logo, small assembly like salt and pepper shakers, or a complex assembly like a light cover.

Students will also research current 3D Printing applications and present to the class.

SECTION F - Textbooks and Instructional Materials

Material Type

Open Educational Resource (OER)

Author

Ascent

Title

Autodesk Fusion 360 - Introduction to Parametric Modeling

Edition/Version

Newest

Publisher

Ascent

Material Type

Other required materials/supplies

Description

Software #1:

Title: Autodesk Fusion 360

Publisher: Autodesk

Edition: Newest

SECTION G - Diversity, Equity and Inclusivity

How does your course and/or course outline of record reflect strategies for accommodating and engaging diverse student populations, advancing equitable outcomes, and fostering inclusion for all students?

This course is taught in a high-flex format, allowing students to participate in person, online, or through a combination of both, providing flexibility for diverse learning needs and personal circumstances. Multiple instructional methods, such as live demonstrations, recorded lectures, guided practice, and hands-on lab activities, ensure accessibility for varied learning styles and abilities. Students explore a range of 3D printing applications and materials, developing skills that can be adapted to multiple disciplines and industries worldwide.

Course Codes (Admin Only)

CB00 State ID

CCC000589907

CB10 Cooperative Work Experience Status

N - Is Not Part of a Cooperative Work Experience Education Program

CB11 Course Classification Status

Y - Credit Course

CB13 Special Class Status

N - The Course is Not an Approved Special Class

CB23 Funding Agency Category

Y - Not Applicable (Funding Not Used)

CB24 Program Course Status

Program Applicable

Allow Pass/No Pass

Yes

Only Pass/No Pass

No