

SOUTHEAST COMMUNITY COLLEGE
CONSTRUCTION MANUFACTURING AND TECHNOLOGY DIVISION
Manufacturing Engineering Technology Program
Date: August 2025

I. CATALOG DESCRIPTION

Course Number: MFGT1352
Course Title: 3D Printing and Modeling
Prerequisite(s): None
Catalog Description: Fundamentals of the proper use of 3D parametric modeling software and 3D Printing technology; students will learn how to properly design and model individual parts. Students will learn the fundamentals of slicing software for 3D printing and different 3D printing technologies including proper maintenance of 3D printers.
Credit Hours: 2
Class Hours: 15
Lab Hours: 45
Total Contact Hours: 60

II. COURSE OBJECTIVES: *Course will*

- A. Introduce how to properly model a parametric three-dimensional model.
- B. Introduce how to use slicing software to generate physical prototypes.
- C. Demonstrate multiple 3D printers and introduce other 3D printing technologies.

III. STUDENT LEARNING OUTCOMES AND GENERAL EDUCATION LEARNING OUTCOMES:

- A. Student Learning Outcomes: *Student will be able to*
 - 1. Become familiar with the applications, development and terminology associated with three-dimensional parametric modeling.
 - 2. Execute basic commands, editing, dimensioning and modify commands.
 - 3. Generate tool paths used for 3D printing.
 - 4. Collect information from the model and prototype and make mathematical calculations.
- B. General Education Learning Outcomes (GELOs)
 - 1. GELO #5: Analytical, Quantitative, and Scientific Reasoning
Outcome 4: Manipulate formulas, data sets, graphs, tables, etc. in a way to produce meaningful outcome.

IV. CONTENT/TOPICAL OUTLINE (*course outline may provide more detailed information*)

- A. CAD overview
- B. Basic project management
- C. User Interface
- D. Part Modeling
- E. Modify Commands
- F. Slicing software overview
- G. Fused Deposition Modeling
- H. 3D printing parameters
- I. 3D printing technologies
- J. Prototype evaluation

- K. 3D printer maintenance

V. INSTRUCTIONAL MATERIALS

- A. Required Text(s):
Reyes, *Beginner's Guide to SolidWorks Level 1*, (current edition – see instructor)
- B. Other Resources:
 - 1. Supplemental handouts supplied by instructor

VI. METHODS OF PRESENTATION/INSTRUCTION

- A. Methods of presentation typically include a combination of the following:
 - 1. Lecture
 - 2. Small and large Group discussion
 - 3. Video presentation
 - 4. Demonstrations
 - 5. Flip charts
 - 6. Handouts
 - 7. Observations
 - 8. Assigned lab projects
 - 9. Field trips

VII. METHODS OF EVALUATION (*course outline will provide more detailed information*)

- A. Methods of evaluation, although determined by the individual instructor, traditionally includes a combination of the following:
 - 1. Notebook (if required)
 - 2. Quizzes
 - 3. Tests
 - 4. Lab grades
 - 5. Class conduct

VIII. SPECIFIC COURSE REQUIREMENTS:

- A. Completion of all tests, projects, assignments, and notebook (if required).
- B. Must earn a final grade of 70% (2.0) or higher.