

DESIGN FOR MANUFACTURING 3D PRINTING (3DPT), CERTIFICATE

The Design for Manufacturing Certificate in 3D Printing is offered as either a standalone certification or stackable credential for individuals looking to advance their knowledge of 3D printing. This certification was designed through a unique partnership between Dunwoody College of Technology and Stratasys Inc. The program prepares students to utilize 3D printing hardware and software in the development of advanced manufacturing processes. Courses are also offered to non-matriculating students looking to advance their knowledge in targeted areas. This program culminates in the opportunity for each student to build their own 3D printer.

Credits earned in the Design for Manufacturing: 3D Printing certificate directly transfer into Dunwoody's **Engineering Drafting & Design (MDES)** or **Machine Tool Technology (MACH)** associate's degree programs.

Credential Earned: Certificate

Length of Program: 1 year (2 semesters)

Classes Offered: Evening

Available Starts: Fall Semester; Spring Semester

Program Outcomes

- Create professional documentation in support of real-world designs.
- Apply knowledge of mathematics, science, and engineering.
- Analyze traditional and contemporary manufacturing processes.
- Utilize problem-solving skills to overcome manufacturing challenges.

Degree Requirements

Code	Title	Credits
MDES1110	Engineering Drawings with SolidWorks	4
MACH1000	Machine Shop Fundamentals	2
3DPT2100	3D Printing Applications	5
MDES1230	Geometric Dimensioning & Tolerances	4
MDES2130	Advanced SolidWorks	4
3DPT2200	Advanced 3D Printing Applications	5
Total Credits		24

Courses

Course Descriptions

MDES1110 | Engineering Drawings with SolidWorks | Lecture (4 Credits)

Creation of 3D solid models, assemblies and related engineering documentation using SolidWorks. Blueprint reading and application of ASME/ANSI standards to CAD drawings.

MACH1000 | Machine Shop Fundamentals | Laboratory (2 Credits)

Manufacturing of parts through layout and bench work, includes the use of band saws, drill presses, surface grinders, manual lathes and vertical mills. Basic principles in metal-cutting technology includes threading, tapers, knurling, boring, radii cutting and milling procedures such as squaring stock, the use of rotary table and the many other milling and turning operations.

3DPT2100 | 3D Printing Applications | Lecture (5 Credits)

Explore traditional, additive and hybrid applications in the core manufacturing processes. Design and print prototype parts and tools to be used in various manufacturing processes.

Prerequisite(s): MDES1110

MDES1230 | Geometric Dimensioning & Tolerances | Lecture (4 Credits)

Principles of geometric dimensioning and tolerancing in the context of engineering and manufacturing. Application of principles using coordinate measurement machines.

Prerequisite(s): MDES1110

MDES2130 | Advanced SolidWorks | Lecture (4 Credits)

Simulation (Finite Element Analysis) and advanced surface modeling techniques. Culminates in testing for CSWA certification.

Prerequisite(s): MDES1110

3DPT2200 | Advanced 3D Printing Applications | Lecture (5 Credits)

Design 3D printed tooling for traditional manufacturing processes. Utilize tools in metal-casting, thermoforming, jigs, fixtures and other applications.

Prerequisite(s): 3DPT2100