

# 3D PRINTING (DPT)

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## DPT 100 (3 credit hours)

### Introduction to 3D Printing Technology

Provides an introduction to the world of additive manufacturing, or more commonly known as three-dimensional printing (3DP), and its applications in conjunction with computer technology. Introduces topics including computer hardware and software, 3D printing technology, file management, the Internet, email, the social web, sustainability, security, and computer and intellectual property ethics. Presents basic use of applications, programming, systems, and utility software. Integrated Lecture/Lab: 3 credit hours (60 contact hours).

**Attributes:** Digital Literacy, Technical

**Components:** LAI: Integrated Laboratory, LEI: Integrated Lecture

## DPT 102 (2 credit hours)

### 3D Printing Technology Fundamentals

Provides an introduction to the world of three-dimensional (3D) printing or additive manufacturing (AM) and its applications. Introduces topics including 3D printing technologies, basic use of 3D applications, programming, systems, 3D-scanning, and utility software. Lecture/Lab: 2.0 credits (45 contact hours).

**Pre- or co-requisite:** CIT 105, demonstration of digital literacy competency by exam or certificate, or other approved course with digital literacy status.

**Attributes:** Technical

**Components:** LEC: Lecture

## DPT 150 (3 credit hours)

### Introduction to Engineering Mechanics for 3D Printing

Provides an introduction to simplified engineering mechanical principles as they apply to 3D printing, or additive manufacturing, designs and products. Requires students to apply concepts related to simple force and stress analysis, material property selection, and deformation to their designs for the purpose of improving functional performance and overall printing success. Explores finishing and post processing techniques to enhance the final appearance and marketability of their printed work. Lecture/Lab: 3.0 credits (60 contact hours).

**Pre-requisite:** DPT 100 or DPT 102.

**Attributes:** Technical

**Components:** LEC: Lecture

## DPT 210 (3 credit hours)

### Introduction to Powder-Based Additive Manufacturing

Prepares technicians for the advanced applications and utilization of powder-based additive manufacturing, or 3D printing, materials, and equipment.. Requires students to demonstrate knowledge of related safety, additive manufacturing processes, lightweighting, generative design, appropriate equipment utilization, and quality control methodologies. Directs students in applying finishing and post-processing techniques through the use of conventional machining equipment to enhance the final appearance, strength, and marketability of their work. Integrated Lecture/Lab: 3.0 credits (60 contact hours).

**Pre-requisite:** DPT 100, CIT 105.

**Attributes:** Technical

**Components:** LAI: Integrated Laboratory, LEI: Integrated Lecture

## DPT 212 (3 credit hours)

### Additive Manufacturing for Supply Chain and Broad Industry Production

Prepares industry technicians and professionals for the use of additive manufacturing technologies, also known as 3D printing, to produce new or existing products in low-and-medium-run volumes in response to the variety of reasons for global supply chain disruption or to facilitate new product market entry. Focuses on using technology to quickly produce specialized products for critical industry sectors such as biomedical, aerospace, agricultural, transportation, and industrial equipment repair. Prepares technicians to employ additive manufacturing technologies to support, enhance, or even replace conventional injection molding for consumer and industrial products. Integrated Lecture/Lab: 3 credits (60 contact hours).

**Pre-requisite:** DPT 150.

**Attributes:** Technical

**Components:** LAI: Integrated Laboratory, LEI: Integrated Lecture

## DPT 280 (1 credit hours)

### Special Projects for 3D Printing, Level I

Allows the student to gain intermediate level experience in their prospective fields through projects and tasks assigned by the instructor and based on applications the student may one day experience as a professional. Focuses on various assignments and curriculum as determined by the program instructor. Lecture/Lab: 1.0 credits (30 contact hours)

**Pre-requisite:** DPT 100 or DPT 102.

**Attributes:** Technical

**Components:** LEC: Lecture