

# DIGITAL FABRICATION (DFAB)

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## **DFAB 111, INTRODUCTION TO PERSONAL FABRICATION 1 (2)**

This course is an introduction to personal fabrication in LCCC's Fab Lab. Students will learn to use commercially available technologies to: conceptualize, design, develop, fabricate and test objects. The Lab features advanced computer software and contemporary tools for cutting, milling, electronics, engraving, and other processes of rapid and automated prototyping. Products and processes are typically individualized but can be developed entrepreneurially for commercial production. LCCC's Fab Lab is modeled on Neil Gershenfeld's Fab Labs at MIT and around the world. Its tools are easy to use by anyone with basic computer skills, imagination, and a desire to invent and make new objects using modern technology and cutting-edge processes. The Lab is designed to explore interests in graphic design, visual arts, business, computer-assisted design, physical and natural science, and mathematics, as well as engineering and other advanced technologies. General computer skills highly recommended. Laboratory required. (A special fee will be assessed.)

**General Education:** IN2

**Course Entry Requirement(s):** None

**Typically Offered:** Fall and Spring Semesters

## **DFAB 121, DIGITAL FABRICATION I 3 (5)**

This course covers programming, setup, and operation of digital fabrication equipment such as computer controlled lasers, routers, and waterjet cutters. Students will apply these digital tools to create items such as prototypes, furniture, and 3D molds. Laboratory required. (A special fee will be assessed.)

**General Education:** IN1, IN2

**Course Entry Requirement(s):** Prerequisite: DFAB 111

## **DFAB 211, ADDITIVE MANUFACTURING AND 3D SCANNING 3 (5)**

An application oriented course on designing and printing 3D models using additive manufacturing technologies for applications such as prototyping, rapid tooling, and rapid manufacturing. Topics include 3D scanning, designing for additive processes and material limitations, equipment operation, and process troubleshooting. Laboratory required. (A special fee will be assessed.)

**General Education:** IN1, IN2

**Course Entry Requirement(s):** Prerequisite: CADD 213

## **DFAB 221, DIGITAL FABRICATION OF ELECTROMECHANICAL SYSTEMS 3 (5)**

This course focuses on designing, constructing, and programming embedded circuits. Students will build a variety of microcontroller based systems including a prototype machine. Topics include embedded programming, input and output devices, circuit board design, and networking. Laboratory required. (A special fee will be assessed.)

**General Education:** IN1

**Course Entry Requirement(s):** Prerequisite: ELCT 111 and ELCT 115;

Concurrent: ELCT 221

## **DFAB 231, DIGITAL FABRICATION CAPSTONE 4 (6)**

This course integrates the major topics covered in the previous Digital Fabrication related courses. The student will use a variety of digital fabrication tools to plan, design, produce, and program a microcontroller-based device. Laboratory required. (A special fee will be assessed.)

**General Education:** IN1, IN2

**Course Entry Requirement(s):** Prerequisite: DFAB 121, DFAB 211, DFAB 221 and ELCT 221