

Transportation Design and Model Making

School of Mathematics, Computer Science and Engineering

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Certificate Programs Under Development

The growth of digital technology has opened up many new areas of development in the representation and construction of models, digital simulation and rapid prototyping. The new certificates in industrial, commercial and transportation design are intended to prepare students with the skills necessary to design products and build models using both traditional and emerging technologies. Students will gain a unique insight into both the physical and digital disciplines of model making and design, cultivating technical and arts skills based on critical thinking.

MODEL MAKING AND TRANSPORTATION DESIGN

This certificate program will engage students in the methods and techniques used to explore, record and communicate the visual information in design. Career options include transportation design model making and digital design simulation and prototyping.

INDUSTRIAL AND COMMERCIAL DESIGN

Industrial and commercial design is a valued part of many industries, including architecture, product and packaging, media and entertainment. The core courses in this program study the elements of creative thinking and interpretation used in the design process, including the techniques and methods used to construct prototypes and models. In advanced courses, students will explore a number of options in digital, architectural and media simulation modeling and rapid prototyping. Career options include simulation modeling and model making in architectural design and entertainment, and industrial and commercial design modeling and rapid prototyping.

For further information about these programs, call (949) 451-5450.

Courses

ICT 200: Introduction to Model Making and Design **1.5 Units**

1.5 hours lecture

This course introduces students to career options within the model-making industry. Onsite studio visits, guest speakers and career guides will give students an overview of the job skills and technologies required in the various disciplines of model making. Areas of interest will include entertainment, product design, packaging, transportation, aerospace, medical design and architecture. The goal of the course is to facilitate each student's career path selection. Field trips may be required. NR

ICT 201: Technical Graphics **2 Units**

1 hour lecture, 3 hours lab

This course introduces basic blueprint reading, related nomenclature, conventions and graphic practices used throughout the model-making and design industry. Emphasis is on industrial metrology methods and quality-control techniques standard to industry. Students develop basic skills in laying out three-dimensional objects from two-dimensional drawings and sketches. NR

ICT 210: Visual Communication I **3 Units**

2 hours lecture, 3 hours lab

This course introduces the principles of three-dimensional design as they relate to model making. Students work with a variety of materials and techniques, exploring three-dimensional description elements: value, texture, lighting, shade, shadow, composition, and perspective. Emphasis is placed on manual skill and dexterity. The course also introduces the fundamentals and techniques of ideational sketching. NR

ICT 220: Model Making I **3 Units**

2 hours lecture, 3 hours lab

This course focuses on developing forms and shapes using a variety of basic model-making materials and hand fabrication techniques, with an emphasis on wood, plastic and metal processes. In addition to modeling with basic materials, students begin to develop skills using quick, visual model-development materials, including foam core, cardboard and clay. NR

ICT 221: Model Making II **3 Units**

2 hours lecture, 3 hours lab

Prerequisite: ICT 220.

This course focuses on more advanced and complex methods used throughout the model-making industry. The course covers thermoforming, reinforced plastics, two-dimensional routing and engraving, and a variety of flexible tooling techniques used to make complex molds and parts. Students learn techniques for working with advanced casting materials, and surface preparation with textures, plating and painting. NR

ICT 222: Model Making III

2 hours lecture, 3 hours lab

Prerequisite: ICT 221.

This course develops skills in using computer-aided design and manufacturing equipment and software to fabricate models. Designs will be created on three-dimensional solid modeling software and transferred to three-dimensional computer-aided manufacturing software for coding and postprocessing. Students will fabricate parts on a variety of equipment including CNC mills and lathes, laser cutters, and two and three-dimensional rapid modeling equipment. NR

3 Units**ICT 230: 3D Computer Design I**

2 hours lecture, 3 hours lab

A beginning level Computer-Aided Design course that provides basic techniques and applications utilized in the model making industry. Students will learn to create basic 2D drawings and 3D solid models incorporating state of the art PC based softwares. Graphic creation and control will be learned using a variety of common softwares. NR

3 Units**ICT 260: Materials and Processes I**

1 hour lecture, 3 hours lab

This course introduces the many universal plastic materials and fabrication processes currently used in design and modeling. Emphasis is on the applications, fabrication techniques, and properties of many common plastic materials used today as well as emerging materials and their processes. NR

2 Units**ICT 261: Materials and Processes II**

1 hour lecture, 3 hours lab

This class introduces the common metal, wood, ceramic and textile materials and applications as they apply to design and modeling. Also included are the high technology materials and processes, such as composites, advanced alloyed metals, and vapor deposition of ceramic and other related materials. NR

2 Units