

DESIGN TECHNOLOGY

DESIGN TECHNOLOGY (DT)

DIVISION: Career Technical Education

DT 008A INTRODUCTION TO DIGITAL DESIGN AND FABRICATION 3 unit

Transfer Credit: CSU; UC

Introduction to digital design and fabrication through the use of computer-aided design (CAD) and technical graphic production. Design centric projects with emphasis on problem solving, critical thinking, collaboration and communication across multiple industries, software and prototyping technologies with an emphasis on sustainable production methods. Integrated workflow processes including online resources, project management, sustainability and globalization. Career skills and portfolio development. Total of 36 hours lecture and 72 hours laboratory.

Grade Mode: Letter Grade

DT 008B INTERMEDIATE DIGITAL DESIGN AND FABRICATION 3 unit

Transfer Credit: CSU; UC

Prerequisite(s): DT 008A or ENGR 002 or MIT 101

Intermediate digital design and fabrication using computer-aided design (CAD) and technical graphic production standards. Design centric projects with emphasis on problem solving, critical thinking, collaboration and communication across multiple industries, software, and rapid prototyping technologies. Integrated workflow processes including online resources, project management, sustainability and globalization. Career skills and portfolio development. Total of 36 hours lecture and 72 hours laboratory.

Grade Mode: Audit, Letter Grade

DT 008C ADVANCED SYSTEMS DESIGN AND FABRICATION 4 unit

Transfer Credit: CSU; UC

Prerequisite(s): DT 008B

Recommended Preparation: DT 110

Design, develop and manufacture of CAD parametric models and prototypes through design centric projects. Emphasis on problem solving, critical thinking, collaboration and communication in an interdisciplinary environment. Advanced material selection, product development, systems analysis and strength and motion analysis for sustainable production practices. Career skills and portfolio development. Total of 36 hours lecture and 108 hours laboratory.

Grade Mode: Audit, Letter Grade

DT 017 BUILDING DESIGN & CONSTRUCTION TECHNICAL GRAPHICS 3 unit

Transfer Credit: CSU; UC

Use of Computer-Aided Drafting (CAD) in the preparation of two-dimensional architectural building design and construction technical graphics and prototypes. Specific software application includes AutoCAD. Design centric projects with emphasis on problem solving, critical thinking, collaboration and communication across multiple industries, software and prototyping technologies. Career development includes presentation skills and portfolio development. Total of 36 hours lecture and 72 hours laboratory.

Grade Mode: Letter Grade

DT 030 SUSTAINABLE TECHNOLOGIES 3 unit

Transfer Credit: CSU; UC

Fundamentals of sustainable design and their technological application for emerging green careers using the LEED (Leadership in Energy and Environmental Design) green rating system framework. Analysis of principles, processes and materials in the built environment within the realms of Architecture, Engineering, Construction, and related design industries. Emphasis on collaboration, communication through design-centric problem solving. Total of 36 hours lecture and 72 hours laboratory.

Grade Mode: Letter Grade

DT 101 FABRICATION LABORATORY 1 unit

Prototyping technologies, principles, and practices including laser cutting, 3D printing, CNC milling, and vacuum forming. Utilization of appropriate Computer-aided design (CAD) software related to equipment operation and product refinements. Development of projects through design, testing and refinement. Independent project advancement may be applicable with instructor approval. Total of 54 hours laboratory.

Grade Mode: Audit, Letter Grade

DT 105 EMERGING APPLIED TECHNOLOGIES 2 unit

Critical examination of current issues in applied technology in relation to the future of work. Research into the implications of current and future technological innovation for industry sectors, occupational clusters. Creation of adaptive strategies for long-term success in a globalized, technology-driven economy including entrepreneurship, lifelong learning, and professional development. Emphasis on sustainability, automation and equity. Total of 36 hours lecture and 18 hours laboratory.

Grade Mode: Audit, Letter Grade

DT 110 SUSTAINABLE TECHNOLOGIES 3 unit

Introduction to the fundamentals of sustainable design and their technological application for emerging green careers using the LEED (Leadership in Energy and Environmental Design) green rating system framework. Analysis of principles, processes and materials in the built environment within the realms of Architecture, Engineering, Construction, and related design industries. Emphasis on collaboration, communication through design-centric problem solving. Total of 36 hours lecture and 72 hours laboratory.

Grade Mode: Letter Grade

DT 114 BUILDING INFORMATION MODELING DESIGN (BIM DESIGN)**3 unit****Recommended Preparation:** *DT 118*

Introduction to 3-dimensional parametric Building Information Modeling (BIM) using architectural computer-aided design software including Autodesk Revit. Utilization of software to be applied towards the design, documentation, and analysis of buildings systems. Sustainable practices to be integrated throughout the various projects. Career skills and portfolio development. Total of 36 hours lecture and 54 hours laboratory.

Grade Mode: *Audit, Letter Grade***DT 118 3-DIMENSIONAL BUILDING DESIGN & REPRESENTATION****3 unit****Recommended Preparation:** *DT 017*

Three-dimensional computer-aided modeling and prototyping, with a focus on Building Design and Systems analysis within the Architectural/ Engineering/ Construction industry Software applications includes Rhino and Revit. Production of technical architectural graphics, digital models, and renderings. Design centric projects with emphasis on problem solving, critical thinking, collaboration and communication across multiple industries. Career development includes presentation skills and portfolio development. Total of 36 hours lecture and 72 hours laboratory.

Grade Mode: *Audit, Letter Grade***DT 150 READING ENGINEERING DRAWINGS****1 unit**

Focus on engineering and manufacturing technical drawings. Emphasizes visualizing and interpreting detailed drawings for mechanical components. Importance placed on generating, modifying, and interpretation of titleblocks, symbols, dimensional and geometric fits and tolerances, view representation, standard fasteners, machine elements, and weldments. Total of 18 hours lecture.

Grade Mode: *Audit, Letter Grade***DT 220 CAD TECH INTERNSHIP****2 unit****Prerequisite(s):** *All of the following: DT 140, 150, 008B and maintain enrollment in 7 units or more including internship*

Supervised, practical experience in an industry related professional environment. Pass/no pass grading. Total of 108 hours field practice.

Grade Mode: *Audit, Pass/No-Pass***DT 230 COMPUTER-AIDED MANUFACTURING****3 unit****Prerequisite(s):** *MACH 101*

Production of machining operations on CAM software to produce numerical control programming (G-Code) in order to automate numerically controlled machinery (CNC). Topics include CAD, solid modeling, work piece set-up, toolpath generation, G&M Codes, machine set-up, contour, pocket and surface machining. Total of 27 hours lecture and 81 hours laboratory.

Grade Mode: *Audit, Letter Grade***DT 240 GEOMETRIC DIMENSIONING AND TOLERANCING****2 unit****Prerequisite(s):** *DT 150 or DT 008A*

Analysis of functions and mating relationships in determining geometric dimensioning and tolerance. Continuation of the design of mechanical components using three-dimensional attributes of the component beyond two-dimensional dimensions. Application of industry standards such as American Society of Mechanical Engineers (ASME) in solving engineering problems. Topics covered include tolerancing, form controls, datums, orientations controls, tolerance of position, concentric, symmetry, runout and profile controls. Total of 18 hours lecture and 54 hours of laboratory.

Grade Mode: *Audit, Letter Grade*