

# DRAFTING & DESIGN TECHNOLOGY (ARCE, ARTC, DFTG, MCHN)

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## **ARCE-1315. Structural Steel Detailing. (3 Credits)**

(3-2-4) This course is taken for academic credit. Students will earn an A, B, C, D, F, or W. This course covers the preparation of structural steel drawings and bills of material for the purpose of fabrication and erection. Emphasis will be placed upon using structural design framing plans to develop detailed steel members, connections, and assemblies. Lab fee.

## **ARCE-1352. Structural Drafting. (3 Credits)**

This course is taken for academic credit. Students will earn an A, B, C, D, F, or W. A study of structural systems including concrete foundations and frames, wood framing and trusses, and structural steel framing systems. Includes detailing of concrete, wood, and steel to meet industry standards including the American Institute of Steel Construction and The American Concrete Institution. Lab fee.

## **ARCE-2344. Statics and Strength of Materials. (3 Credits)**

(3-3-0) This course is taken for academic credit. (Prerequisite: DFTG 1305) Students will earn an A, B, C, D, F, or W. Internal effects of forces acting upon elastic bodies and the resulting changes in form and dimensions. Includes stress, shear, bending moments, and simple beam design. Lab fee.

## **ARTC-1017. Design Communication I. (0 Credits)**

Study of design development relating to graphic design terminology, tools and media, and layout and design concepts. Topics include integration of type, images and other design elements, and developing computer skills in industry standard computer programs.

## **DFTG-1240. Introduction to Computer Aided Drafting. (2 Credits)**

This course is taken for academic credit. Students will earn an A, B, C, D, F, or W. Topics include CAD equipment, software selection and interface; setting up a CAD workstation; upgrading a computer to run advanced CAD software; storage devices; storing, retrieving, back-up and sharing databases; file servers and local area networks (LANs); and transferring drawing files over the Internet.

## **DFTG-1305. Technical Drafting. (3 Credits)**

(3-2-4) This course is taken for academic credit. Students will earn an A, B, C, D, F, or W. An introduction to reading, interpreting, and developing technical drawings, including the principles of drafting and computer-aided design. Lab fee.

## **DFTG-1309. Basic Computer Aided Drafting. (3 Credits)**

This course is taken for academic credit. Students will earn an A, B, C, D, F, or W. An introduction to computer-aided drafting. Emphasis is placed on setup; creating and modifying geometry; storing and retrieving predefined shapes; placing, rotating, and scaling objects, adding text and dimensions, using layers, coordinate systems, and plot/print to scale.

**DFTG-1310. Specialized Basic Computer Aided Drafting (cad). (3 Credits)**

(3-2-4) This course is taken for academic credit. Students will earn an A, B, C, D, F, or W. A supplemental course to Basic Computer Aided Drafting using an alternative computer-aided drafting (CAD) software to create detail and working drawings.

**DFTG-1317. Architectural Drafting, Residential. (3 Credits)**

(3-2-4) This course is taken for academic credit. Students will earn an A, B, C, D, F, or W. Preparation of architectural drawings for residential structures with emphasis on light frame construction methods, including architectural drafting procedures, practices, terms, and symbols. Lab fee.

**DFTG-1333. Mechanical Drafting. (3 Credits)**

(3-2-4) This course is taken for academic credit. Students will earn an A, B, C, D, F, or W. Study of mechanical drawings using dimensioning and tolerances, sectioning techniques, orthographic projection and pictorial drawings. Lab fee.

**DFTG-1345. Parametric Modeling and Design. (3 Credits)**

(3-2-4) This course is taken for academic credit. Students will earn an A, B, C, D, F, or W. Parametric-based design software for 3-D design and drafting. Lab fee.

**DFTG-1357. Specialized Intermediate Computer Aided Drafting. (3 Credits)**

(3-2-4) This course is taken for academic credit. Students will earn an A, B, C, D, F, or W. A continuation of practices and techniques used in Specialized Basic Computer-Aided Drafting. Emphasizes advanced dimensioning techniques, the development and use of prototype drawings, construction of pictorial drawings, interfacing 2-D and/or 3-D environments and extracting data. Lab fee.

**DFTG-1358. Electrical/Electronics Drafting. (3 Credits)**

(3-2-4) This course is taken for academic credit. Students will earn an A, B, C, D, F, or W. Electrical and electronic drawings stressing modern representation used for block diagrams, schematic diagrams, logic diagrams, wiring/assembly drawings, printed circuit boards layouts, motor control diagrams, power distribution diagrams, and electrical one-line diagrams. Lab fee.

**DFTG-1409. Basic Computer Aided Drafting. (4 Credits)**

(4-2-4) This course is taken for academic credit. Students will earn an A, B, C, D, F, or W. An introduction to computer-aided drafting. Emphasis is placed on setup; creating and modifying geometry; storing and retrieving predefined shapes; placing, rotating, and scaling objects, adding text and dimensions, using layers, coordinate systems, and plot/print to scale. Lab fee.

**DFTG-1417. Architectural Drafting, Residential. (4 Credits)**

This course is taken for academic credit. Students will earn an A, B, C, D, F, or W. Architectural drafting procedures, practices, terms, and symbols. Preparation of detailed working drawings for residential structure. Emphasis on light frame construction methods. Lab fee.

**DFTG-1433. Mechanical Draft. (4 Credits)**

Preparation of mechanical drawings including dimensioning and tolerances, sectioning techniques, orthographic projection, and pictorial drawings.

**DFTG-1445. Parametric Modeling and Design. (4 Credits)**

Parametric-based design software for 3D design and drafting.

**DFTG-1457. Specialized Intermediate Computer Aided Draft. (4 Credits)**

This course is taken for academic credit. Students will earn an A, B, C, D, F, or W. A continuation of practices and techniques used in Specialized Basic Computer-Aided Drafting. Emphasizes advanced dimensioning techniques, the development and use of prototype drawings, construction of pictorial drawings, interfacing two-dimensional (2D) and/or three-dimensional (3D) environments and extracting data.

**DFTG-2280. Coop Education, Drafting and Design Technology/Technician, General. (2 Credits)**

(2-1-10) This course is taken for academic credit. Students will earn an A, B, C, D, F, or W. Career related activities encountered in the student's area of specialization are offered through a cooperative agreement between the College, employer and student. Under supervision of the College and the employer, the student combines classroom learning with work experience. Includes a lecture component. Lab fee.

**DFTG-2321. Topographical Drafting. (3 Credits)**

(3-2-4) This course is taken for academic credit. Students will earn an A, B, C, D, F, or W. Plotting of surveyor's field notes. Includes drawing elevations, contour lines, plan and profiles, and laying out traverses. Lab fee.

**DFTG-2323. Pipe Drafting. (3 Credits)**

(3-2-4) This course is taken for academic credit. Students will earn an A, B, C, D, F, or W. A study of pipe fittings, symbols, specifications and their applications to a piping process system. Creation of symbols and their usage in flow diagrams, plans, elevations, and isometrics. Lab fee.

**DFTG-2328. Architectural Drafting, Commercial. (3 Credits)**

(3-2-4) This course is taken for academic credit. Students will earn an A, B, C, D, F, or W. Architectural drafting procedures, practices, governing codes, terms and symbols, including the preparation of detailed working drawings for a commercial building, with emphasis on commercial construction methods. Lab fee.

**DFTG-2332. Advanced Computer Aided Drafting. (3 Credits)**

(3-2-4) This course is taken for academic credit. Students will earn an A, B, C, D, F, or W. Application of advanced CAD techniques. Lab fee.

**DFTG-2340. Solid Modeling/Design. (3 Credits)**

(3-2-4) This course is taken for academic credit. Students will earn an A, B, C, D, F, or W. A computer-aided modeling course. Development of three-dimensional drawings and models from engineering sketches and orthographic drawings and utilization of three-dimensional models in design work. Lab fee.

**DFTG-2432. Advanced Computer-Aided Drafting. (4 Credits)**

Application of advanced CAD techniques.

**DFTG-2438. Final Project, Advanced Drafting. (4 Credits)**

This course is taken for academic credit. Students will earn an A, B, C, D, F, or W. A drafting course in which students participate in a comprehensive project from conception to conclusion.

**DFTG-2440. Solid Modeling/Design. (4 Credits)**

This course is taken for academic credit. Students will earn an A, B, C, D, F, or W. A computer-aided modeling course. Development of three-dimensional drawings and models from engineering sketches and orthographic drawings and utilization of three-dimensional models in design work.

**MCHN-1320. Precision Tools and Measurement. (3 Credits)**

(3-2-4) This course is taken for academic credit. Students will earn an A, B, C, D, F, or W. An introduction to the modern science of dimensional metrology. Emphasis on identification, selection and application of various types of precision instruments associated with the machining trade. Practice of basic layout and piece part measurements while using standard measuring tools. Lab fee.

**MCHN-1326. Introduction to Computer Aided Manufacturing. (3 Credits)**

(3-2-4) This course is taken for academic credit. Students will earn an A, B, C, D, F, or W. A study of computer-aided manufacturing (CAM) systems. Software is used to develop applications for manufacturing. Emphasis on tool geometry, tool selection and the tool library. Lab fee.

**MCHN-1338. Basic Machine Shop I. (3 Credits)**

(3-2-4) This course is taken for academic credit. Students will earn an A, B, C, D, F, or W. An introductory course that assists the student in understanding the machinist occupation in industry. The student begins by using basic machine tools such as the lathe, milling machine, drill press, power saw and bench grinder. Machine terminology, theory, math, part layout and bench work using common measuring tools is included. Emphasis is placed on shop safety, housekeeping and preventive maintenance. Lab fee.

**MCHN-1380. Machine Tool Technology/Machinist. (3 Credits)**

(3-1-20) This course is taken for academic credit. Students will earn an A, B, C, D, F, or W. Career-related activities encountered in the student's area of specialization through an individualized agreement among the college, employer, and student. Under the supervision of the college and the employer, the student combines classroom learning with work experience. Includes a lecture component.

**MCHN-1480. Coop Education, Machine Tool Technology/Machinist. (4 Credits)**

This course is taken for academic credit. Students will earn an A, B, C, D, F, or W. Career-related activities encountered in the student's area of specialization offered through an individualized agreement among the college, employer and student. Under the supervision of the college and the employer, the student combines classroom learning with work experience. Includes a lecture component. Lab fee.

**MCHN-2335. Advanced CNC Machining. (3 Credits)**

(3-2-4) This course is taken for academic credit. Students will earn an A, B, C, D, F, or W. Advanced CNC operation with an emphasis on programming and operations of machining and turning centers. Lab fee.

**MCHN-2341. Advanced Machining I. (3 Credits)**

(3-2-4) This course is taken for academic credit. Students will earn an A, B, C, D, F, or W. Advanced lathe and milling operations. Emphasis on advanced cutting operations of the lathe and milling machines, including the use of special tooling, bench assembly and materials identification. Lab fee.

**MCHN-2344. Computerized Numerical Control Programming. (3 Credits)**

(3-2-4) This course is taken for academic credit. Students will earn an A, B, C, D, F, or W. An introduction to G and M codes (RS274-D) necessary to program Computer Numerically Controlled (CNC) machines. Lab fee.