



Drafting and Design Technology (DDT)

Program Information

Every new structure or machine starts out as the idea of a designer or an engineer. It is only through the knowledge and ability of highly skilled and trained drafters/designers that these ideas are put on paper and actually come to life. Drafting and design is a specialized craft that involves the process of converting an idea from a designer's mind to precise working drawings and specifications from which a product or project can be constructed. This field requires individuals with imagination, insight, the ability to think in three dimensions, the technical knowledge of mechanical and architectural drawing, and the aptitude to apply mathematics and the physical sciences.

Trenholm State Community College uses the world's most popular Computer Aided Design (CAD) software, AutoDesk's AutoCAD, to teach basic architectural and engineering design graphic principles, standards, and conventions. The courses are comprised of theory classes with associated practical laboratory assignments incorporating computer-aided drafting techniques and 3-D printing. In addition, the student is exposed to manual drafting and 3D modeling (BIM) software programs such as Inventor, Revit Architecture and Solid Works and Google Pro Sketch-Up 16.

Occupational Choices

As a graduate, a student can expect to pursue drafting careers in a variety of architectural and/or engineering disciplines. The largest demand for graduates relates to the architectural, structural, mechanical and/or civil disciplines. Graduates can also choose careers in construction, manufacturing or related engineering fields.

Source: Bureau of Labor and Statistics Occupational Outlook Handbook, 2016-2017 Edition, 2015 Survey

Average Full-Time Wage

Drafters' earnings vary by specialty, location, and level of responsibility. The median annual wages of architectural and civil drafters is \$47,880 (approx.\$23.02 per hour) and \$52,720 (approx. \$25.00 per hour) with Associate's degree.

Source: Bureau of Labor and Statistics Occupational Outlook Handbook, 2016-2017 Edition, 2015 Survey

Awards Available

Associate in Applied Science Degree
Drafting and Design Technology

Certificate
Drafting and Design Technology

Short Term Certificate
Drafting and Design Technology
Technical Drawing Concentration

Program Contact

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Program Coordinator/Instructor
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Location: Library Tower - 2nd Floor

As part of ongoing planning and evaluation, the College regularly evaluates student learning outcomes for each program.

Estimated Program Length & Cost *

| Award | Length | Credit Hours | Tuition Fees | Books | Tools | Supplies |
|------------------------|---------------|---------------------|---------------------|--------------|--------------|-----------------|
| Associate Degree | 6 Terms | 70 | \$10,150 | \$660 | \$50 | \$0 |
| Certificate | 5 Terms | 49 | \$7,105 | \$390 | \$50 | \$0 |
| Short Term Certificate | 3 Terms | 28 | \$4,060 | \$260 | \$50 | \$0 |

* Tax not included. Prices are subject to change without prior notice; cost of books may vary considerably among suppliers. Cost of general education books is in addition to the total listed above. The length of the program is based on full-time status of 12-15 credit hours per term. Enrollment in transitional level general education courses will alter the length of the program.

Associate in Applied Science Degree Drafting and Design Technology

Required Technical Courses (48 credit hours)

| Course | Title | Hrs |
|---------|--------------------------------------|-----|
| DDT-104 | Intro Computer Aided Drafting/Design | 3 |
| DDT-111 | Fundamentals of Drafting and Design | 3 |
| DDT-116 | Blueprint Reading for Construction | 3 |
| DDT-118 | Basic Electrical Drafting | 3 |
| DDT-124 | Basic Technical Drawing | 3 |
| DDT-125 | Surface Development | 3 |
| DDT-127 | Intermediate CAD | 3 |
| DDT-128 | Intermediate Technical Drawing | 3 |
| DDT-131 | Machine Drafting Basics | 3 |
| DDT-132 | Architectural Drafting | 3 |
| DDT-150 | Theory of Residential Drawing/Design | 3 |
| DDT-225 | Structural Steel Drafting | 3 |
| DDT-226 | Technical Illustration | 3 |
| DDT-233 | Solids Modeling | 3 |
| DDT-236 | Design Project | 3 |
| DDT-237 | Current Topics in CAD | 3 |

Required General Education (22 credit hours)

| Course | Title | Hrs |
|---------|-----------------------------------|-----|
| CIS-146 | Microcomputer Applications | 3 |
| ENG-101 | English Composition I | 3 |
| ENG-130 | Technical Report Writing | 3 |
| | OR ENG-102 English Composition II | |
| | OR SPH-106 Fund of Oral Comm | |
| MTH-103 | Intro to Technical Mathematics | 3 |
| MTH-104 | Plane Trigonometry | 3 |
| MUS-101 | Music Appreciation | 3 |
| | OR ART-100 Art Appreciation | |
| ORI-101 | Orientation to College | 1 |
| PSY-200 | General Psychology | 3 |

Total Hours: 70 Credit Hours; 1,568 Contact Hours

Certificate Drafting and Design Technology

Required Technical Courses (30 credit hours)

| Course | Title | Hrs |
|---------|--------------------------------------|-----|
| DDT-104 | Intro Computer Aided Drafting/Design | 3 |
| DDT-111 | Fundamentals of Drafting and Design | 3 |
| DDT-116 | Blueprint Reading for Construction | 3 |
| DDT-124 | Basic Technical Drawing | 3 |
| DDT-127 | Intermediate CAD | 3 |
| DDT-128 | Intermediate Technical Drawing | 3 |
| DDT-132 | Architectural Drafting | 3 |
| DDT-150 | Theory of Residential Drawing/Design | 3 |
| DDT-233 | Solids Modeling | 3 |
| DDT-237 | Current Topics in CAD | 3 |

Required General Education (13 credit hours)

| | | |
|---------|--------------------------------|---|
| CIS-146 | Microcomputer Applications | 3 |
| ENG-101 | English Composition I | 3 |
| MTH-103 | Intro to Technical Mathematics | 3 |
| MUS-101 | Music Appreciation | 3 |
| | OR ART-100 Art Appreciation | |
| ORI-101 | Orientation to College | 1 |

Total Hours: 49 Credit Hours; 1,040 Contact Hours

Short Term Certificate Drafting and Design Technology Technical Drawing Concentration

Required Technical Courses (27 credit hours)

| Course | Title | Hrs |
|---------|--------------------------------------|-----|
| DDT-104 | Intro Computer Aided Drafting/Design | 3 |
| DDT-111 | Fundamentals of Drafting and Design | 3 |
| DDT-124 | Basic Technical Drawing | 3 |
| DDT-127 | Intermediate CAD | 3 |
| DDT-128 | Intermediate Technical Drawing | 3 |
| DDT-131 | Machine Drafting Basics | 3 |
| DDT-225 | Structural Steel Drafting | 3 |
| DDT-233 | Solids Modeling | 3 |
| DDT-237 | Current Topics in CAD | 3 |

Required General Education (1 credit hours)

| Course | Title | Hrs |
|---------|------------------------|-----|
| ORI-101 | Orientation to College | 1 |

Total Hours: 28 Credit Hours; 736 Contact Hours

Course Descriptions for Drafting and Design Technology (DDT)

| Course # | Course Title | Theory Contact Hours/Wk | Lab Contact Hours/Wk | Credit Hours |
|----------------|---|-------------------------------|----------------------------|-----------------|
| DDT-104 | INTRODUCTION TO COMPUTER AIDED DRAFTING AND DESIGN | 1 | 4 | 3 |
| | PREREQUISITE: None This course provides an introduction to basic Computer Aided Drafting and Design (CADD) functions and techniques, using “hands-on” applications. Topics include terminology, hardware, basic CADD and operating system functions, file manipulation, and basic CADD software applications in producing softcopy and hardcopy. This is a CORE course. | | | |
| DDT-111 | FUNDAMENTALS OF DRAFTING & DESIGN TECH | 1 | 4 | 3 |
| | PREREQUISITE: None This course serves as an introduction to the field of drafting and design and provides a foundation for the entire curriculum. Topics include safety, lettering, tools and equipment, geometric constructions, and orthographic sketching, and drawings. This is a CORE course. | | | |
| DDT-116 | BLUEPRINT READING FOR CONSTRUCTION | 3 | 0 | 3 |
| | PREREQUISITE: None This course provides the students with terms and definitions, theory of orthographic projection, and other information required to interpret drawings used in the construction trades. Topics include multiview projection, dimensions and notes, lines and symbols, sketching, foundations plans, site plans, floor plans, elevations, sections, details, schedules, electrical plans and specifications. Upon completion, students should be able to interpret blueprint drawings used in the machine trades. | | | |
| DDT-118 | BASIC ELECTRICAL DRAFTING | 1 | 4 | 3 |
| | PREREQUISITE: None This course covers the universal language of electrical drafting, including electrical lines, symbols, abbreviations, and notation. Emphasis is placed on typical components such as generators, controls, transmission networks, and lighting, heating, and cooling devices. Upon completion, students should be able to draw basic diagrams of electrical and electronic circuits using universally accepted lines and symbols. | | | |
| DDT-124 | INTRODUCTION TO TECHNICAL DRAWING | 1 | 4 | 3 |
| | PREREQUISITE: None This course covers sections, auxiliary views, and basic space geometry. Emphasis will be placed on the theory as well as the mechanics of applying sections, basic dimensioning, auxiliary views, and basic space geometry. This is a CORE course. | | | |
| DDT-125 | SURFACE DEVELOPMENT | 1 | 4 | 3 |
| | PREREQUISITE: None This course covers surface intersections and developments. Emphasis is placed on the basic types of intersections using simple geometric forms. Upon completion, students should be able to draw common types of surface intersection and handle them simply as applications of the concepts learned in this class. | | | |
| DDT-127 | INTERMEDIATE CAD | 1 | 4 | 3 |
| | PREREQUISITE: None This course covers intermediate-level concepts and applications of CADD. Emphasis will be placed on intermediate-level features, commands, and applications of CADD software. This is a CORE course. | | | |
| DDT-128 | INTERMEDIATE TECHNICAL DRAWING | 1 | 4 | 3 |
| | PREREQUISITE: None This course is designed to develop a strong foundation in common drafting and design practices and procedures. Topics include dimensioning concepts and pictorial drawings. This is a CORE course. | | | |
| DDT-131 | MACHINE DRAFTING BASICS | 1 | 4 | 3 |
| | PREREQUISITE: None This course in machine drafting and design provides instruction in the largest specialty area of drafting in the United States, in terms of scope and job opportunities. Emphasis will be placed on the applications of multi-view drawings, including drawing organization and content, title blocks and parts lists, assembly drawings, detail drawings, dimensioning and application of engineering controls in producing industrial-type working drawings. Upon completion, students should be able to organize, layout, and produce industrial-type working drawings, including the application of title blocks, parts lists, assemblies, details, dimensions, and engineering controls. | | | |

| Course # | Course Title | Theory Contact Hours/Wk | Lab Contact Hours/Wk | Credit Hours |
|-----------------|--|--|-------------------------------------|-------------------------|
| DDT-132 | ARCHITECTURAL DRAFTING | 1 | 4 | 3 |
| | PREREQUISITE: None | | | |
| | This course in architectural design and drafting introduces basic terminology, concepts and principles of architectural design and drawing. Topics include design considerations, lettering, terminology, site plans, and construction drawings. Upon completion, students should be able to draw, dimension, and specify basic residential architectural construction drawings. | | | |
| DDT-150 | THEORY OF RESIDENTIAL DRAWING AND DESIGN | 3 | 0 | 3 |
| | PREREQUISITE: None | | | |
| | This course provides the theory of residential drawing and design. Topics include architectural styles, house design, site and space planning, climate, drawing requirements, construction materials and process, terminology, and specific types of drawings required to complete a full set of construction documents. Introductory, intermediate, and advanced topics are covered. Emphasis is placed on an understanding of the various issues and requirements essential to the field of residential drawing and design. | | | |
| DDT-225 | STRUCTURAL STEEL DRAFTING | 1 | 2 | 3 |
| | PREREQUISITE: None. | | | |
| | This course covers the theory and practical applications necessary to understand the basic design and terminology of structural steel components used in light commercial buildings. Emphasis is placed on structural steel drafting techniques, bolted and welded connections, framing plans, sections, fabrication and connection details, and bills of material. Upon completion, students should be able to produce engineering and shop drawings incorporating standard shapes, sizes, and details using the A.I.S.C. Manual and incorporating safety practices. | | | |
| DDT-226 | TECHNICAL ILLUSTRATION | 1 | 4 | 3 |
| | PREREQUISITE: None | | | |
| | This course provides the student with various methods of illustrating structures and machine parts. Topics include axonometric drawings; exploded assembly drawings; one point, two point, and three point perspectives, surface textures, and renderings. Upon completion, students should be able to produce drawings and illustrations using the previously described methods. | | | |
| DDT-233 | SOLIDS MODELING | 1 | 4 | 3 |
| | PREREQUISITE: None | | | |
| | This course provides instruction in 3D Design Modeling utilizing the 3D capabilities of CAD software. Emphasis is placed on 3D wire-frame, surface and solids modeling along with the development of 2D detail drawings from 3D models. Upon completion, students should be able to generate 3D surface and solid models and 2D orthographic production drawings from created solid models. | | | |
| DDT-236 | DESIGN PROJECT | 1 | 4 | 3 |
| | PREREQUISITE: None | | | |
| | This course is designed for advanced students who aspire to more advanced and specialized skills in one certain drafting area. Emphasis will be place on the student's ability to apply the principles learned in previous drafting classes in one special area, as approved by the instructor. The required project must be agreed upon by the instructor and the student, as well as how the work is to be accomplished. Upon completion, students will further reinforce previously learned concepts by apply engineering principles and controls to a personal design project. | | | |
| DDT-237 | CURRENT TOPICS IN CAD | 1 | 4 | 3 |
| | PREREQUISITE: None | | | |
| | This course serves to introduce changing technology and current CAD subjects and software and the computing hardware needed to utilize new products. Topics include currents trends in how industries use CAD applications, new developments, improvements and progressions within specific CAD applications as well as the necessary hardware. Upon completion, students should be able to use more updated software in a specific CAD application and be more aware of improvements in CAD software and how to apply advancing technology in improving their CAD proficiency. | | | |