

Engineering Graphics and Design Technology (EGDT)

EGDT 1000

Introduction to Engineering Drawing and Technical Design

2:2:0 Fall, Spring

Covers basic sketching, instruments and their use, lettering, geometric construction, dimensioning, multi-view drawings, and section views, using CAD (computer-aided drafting) and traditional hand tools. Teaches introductory skills required in several first-year drafting technology courses. Software fee of \$18 applies. Lab access fee of \$35 for computers applies.

EGDT 1010

Electrical Electronic Drafting

3:3:0 Fall, Spring

* Prerequisite(s): EGDT 1000 or equivalent and EGDT 1040 both with a grade of C- or higher

Introduction to several types of electrical-electronic drawings such as Block, Connection, Logic, Schematic, Wiring, and Panel Diagrams. Introduction to basic DC theory, electricity and electrical terms, including Ohm's law, Watt's law, Logic Truth Tables, Series and Parallel Circuits, and Printed Circuit Board Design, using lectures, projects, worksheets, labs, and drawing assignments. Prepares students for advancement to EGDT 2010. Software fee of \$18 applies. Lab access fee of \$35 for computers applies.

EGDT 1020

3D Architectural Modeling

3:3:0 Fall, Spring, Summer

For Engineering Graphics and Design Technology and Construction Management majors. Utilizes a Building Information Modeling system (BIM) to design 3D architectural models. Covers model design theory, parametric modeling methods, generation of residential and commercial construction plans and details, building components and systems, and manipulation of model information. Software fee of \$18 applies. Lab access fee of \$35 for computers applies.

EGDT 1040

Computer Aided Drafting AutoCAD

3:3:0 Fall, Spring, Summer

Teaches drafting using AutoCAD (or other) software system. Includes enough exposure to Windows to create files, read directories, create directories and operate the AutoCAD software as it applies to Windows and Graphics. Uses CAD system to produce, plot, print, check, and correct drawings. Applies other drafting skills and standards. Software fee of \$18 applies. Lab access fee of \$35 for computers applies.

EGDT 1050

Introduction to 3D Printing

2:2:0 Fall, Spring

Introduces basic knowledge and skills related to 3D printing. Covers the acquisition of 3D print files and teaches basic 3D computer modeling skills using common 3D modeling software. Introduces 3D printing software and the use of 3D printers to produce prototype or functional models. Requires students to create and print projects given as class assignments and model and print a project of their choosing.

EGDT 1060

MicroStation

2:2:0 Spring

* Prerequisite(s): EGDT 1000

* Corequisite(s): EGDT 1000

Teaches the drafting MicroStation software system in Windows. Drawings are produced, plotted, printed, checked, and corrected on the CAD system. Software fee of \$18 applies. Lab access fee of \$35 for computers applies.

EGDT 1070

3 Dimensional Modeling Inventor

3:3:0 Fall, Spring

Teaches basic 3D computer modeling course which emphasizes the development of 3D machine parts, assemblies, and drawings in a constraint-based modeling environment using AutoDesk Inventor. Emphasizes the feature based design process, which simulates actual manufacturing processes with 2D sketching tools and with 3D modeling tools including extrusions, revolutions, sweeps, lofts, coils, shells, placed features, patterns, and many others. Also teaches creation of basic multi-part assemblies, constraint-driven assembly animation, and generation of detailed production drawings. Software fee of \$18 applies. Lab access fee of \$35 for computers applies.

EGDT 1071

3 Dimensional Modeling--Solidworks

3:3:0 Fall, Spring, Summer

Teaches basic 3D computer modeling, which emphasizes the development of 3D machine parts, assemblies, and drawings in a constraint-based modeling environment using Solidworks. Emphasizes the feature based design process, which simulates actual manufacturing processes with 2D sketching tools and with 3D modeling tools including extrusions, revolutions, sweeps, lofts, coils, shells, placed features, patterns, and many others. Also teaches creation of basic multi-part assemblies, constraint-driven assembly animation, and generation of detailed production drawings. Software fee of \$18 applies. Lab access fee of \$35 for computers applies.

EGDT 1080

AutoLisp

2:2:0 On Sufficient Demand

* Prerequisite(s): EGDT 1040 with a grade of C- or higher

Covers creating and storing AutoLisp files and programs. Includes customizing the AutoCAD menu for personal and drafting use. Teaches creating new macros for speeding up repetitive drawing tasks. Software fee of \$18 applies. Lab access fee of \$35 for computers applies.

EGDT 1090

Introduction to Architectural Drafting and Design

2:2:0 On Sufficient Demand

Covers basic procedures used in the development of residential plans. Includes architectural drafting standards, symbols, and techniques. Uses lectures and text reading assignments related to the drawings and worksheets. Introduces students to the architectural profession and related fields. Software fee of \$18 applies. Lab access fee of \$35 for computers applies.

EGDT 1100

Architectural Drafting

3:3:0 Fall, Spring

* Prerequisite(s): EGDT 1000 or equivalent and EGDT 1020 both with a grade of C- or higher

For Engineering Graphics and Design Technology majors and other students who wish to broaden their basic drafting skills in the field of residential architectural drafting. Covers procedures used in developing a complete set of residential plans. Includes architectural drafting standards and code requirements. Reinforces math skills using dimensioning and estimating exercises. Uses lectures and text reading assignments with related worksheets and drawings. Prepares students for advancement into EGDT 2100 and for entry-level employment in related fields. Software fee of \$18 applies. Lab access fee of \$35 for computers applies.

EGDT 1200

Mechanical Drafting

3:3:0 Fall, Spring

* Prerequisite(s): EGDT 1000 or equivalent and EGDT 1070 or EGDT 1071, both with a grade of C- or higher

Requires previous knowledge of linework, lettering, geometric construction, and dimensioning. Teaches engineering sketching and detail drawing from design layouts. Uses Machinery's Handbook, ANSI Standard and manufacturer's reference materials involving retaining rings, bearings, oil seals, and other hardware. Emphasizes geometric dimensioning and tolerancing. Includes precision dimensioning, surface finish, materials, screw threads, and machining processes and applications. Course fee of \$10 for materials applies. Software fee of \$18 applies. Lab access fee of \$35 for computers applies.

Course Descriptions

EGDT 1300

Structural Drafting

3:3:0 **Fall, Spring**

* Prerequisite(s): EGDT 1000 or equivalent and EGDT 1040 both with a grade of C- or higher

Covers fundamentals of structural design. Studies structural steel detailing of beams, columns, braces, templates, marking and numbering systems, bill of materials, welding symbols, and erection drawings to AISC standards. Software fee of \$18 applies. Lab access fee of \$35 for computers applies.

EGDT 1400

Surveying Applications and Field Techniques I

3:3:0 **Fall, Spring, Summer**

For people seeking a surveyor's license, civil engineering majors, Engineering Graphics and Design Technology majors, Construction Management majors, and anyone else wishing to learn fundamentals of surveying. Covers history of surveying, mathematics, field notes, measurement and computations, basic surveying instruments and equipment, leveling procedures, bearing computations, topography, mathematical traverse closures, area computations, and basic property surveying. Completers should be able to work in the job-entry phase of the surveying field. Software fee of \$18 applies. Lab access fee of \$35 for computers applies.

EGDT 1600

Technical Math Algebra

3:3:0 **Fall, Spring**

* Prerequisite(s): MAT 0920 or equivalent with "C-" grade or better or appropriate test scores

Covers the basic principles of algebra, geometry, and trigonometry as they relate to problem solving on the job. Includes solving equations, percent, proportion, variation, calculator operations, measurements, formula rearrangement, functions and graphs, and solving right and oblique triangles.

EGDT 1610

Technical Math Geometry Trig

3:3:0 **Fall, Spring**

* Prerequisite(s): EGDT 1600 or equivalent course with a grade of C- or higher

Covers more advanced principles of algebra, geometry, and trigonometry as they relate to problem solving on the job. Includes systems of equations, powers and roots, trigonometry functions, vectors, polynomials, quadratic equations, exponents and radicals, and circle concepts.

EGDT 1720

Architectural Rendering

3:3:0 **Fall, Spring, Summer**

Discusses how Architectural Rendering plays an important role in the way we view and present the world around us, including: elements in the physical and natural world, as well as the influences human cultures have on our society through the construction of buildings, structures, and other works of man. Introduces the necessary skills and practices required in architectural rendering theory and presentation. Develops skills in perspective, layout, shading, color theory and presentations of interior and exterior architectural rendering projects. Course fee of \$10 applies.

EGDT 1810

Principles of Technology

2:1:3 **On Sufficient Demand**

* Prerequisite(s): MAT 0990 Recommended

A course in applied physics for those who plan to pursue careers as technicians or who want to keep pace with the advances in technology. Blends an understanding of basic principles with practice in practical applications. This course is made up of six units, each of which focuses on one of the important physics concepts such as force, work, rate, resistance, energy, and power. Each unit explains how that concept applies to mechanical, fluid, electrical, and thermal systems.

EGDT 2010

Advanced Electrical CAD

2:2:0 **On Sufficient Demand**

* Prerequisite(s): EGDT 1010 and EGDT 1040, with "C-" grade or higher

For second year Drafting Technology majors. Concentrates on the completion of electrical-electronic diagrams using CAD procedures. Those layout procedures studied will include logic and schematic diagrams. Printed wiring board and AC motor control wiring diagram layout from reference schematics will also be covered. Includes a basic introduction to AC electrical theory including inductance and capacitance and their relationship to AC motors and motor controls. Completers should have entry-level skills for an electrical-electronic drafting position. Software fee of \$18 applies. Lab access fee of \$35 for computers applies.

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EGDT 2020

Descriptive Geometry

3:3:0 **Fall, Spring**

* Prerequisite(s): EGDT 1000 or equivalent and EGDT 1040 both with a grade of C- or higher

Required for Engineering Graphics and Design Technology majors. Elective for engineering majors or others interested in graphical problem solving. Teaches advanced orthographic projection principles used to render view of objects from any conceivable direction. Instructs students in the creation of views needed to solve problems graphically rather than mathematically. Solutions include true length and angle, true size and shape, clearance, bearing, slope and grade, intersections, shortest distance, dihedral angle, and revolution. Use of accurate scaling techniques is reinforced. Problems are completed either manually or using CAD. Software fee of \$18 applies. Lab access fee of \$35 for computers applies.

EGDT 2040

Piping Drafting

2:2:0 **Fall, Spring**

* Prerequisite(s): EGDT 1040 with a grade of C- or higher

Includes single-line and double-line pipe symbols. Covers both isometric and orthographic projection. Studies piping connections such as welded, screwed, soldered, flanged, and bell and spigot. Uses manufacturer's and reference materials specifications. Includes information on copper tubing and brass fittings. Uses hydraulic theory and formulas. Also uses computer (CAD) to develop drawings. Software fee of \$18 applies. Lab access fee of \$35 for computers applies.

EGDT 2050

Plate Layout

2:2:0 **Fall, Spring**

* Prerequisite(s): EGDT 2020 with a grade of C- or higher

A continuation of Descriptive Geometry (EGDT 2020). Patterns are made of rolled or folded surfaces such as bins, hoppers, duct work, vent pipes, tanks, storage containers, etc. Patterns are also made for pipe end cuts, pipe intersections, transition pieces and twist angles. Emphasizes three types of pattern development: (1) parallel line, (2) radial line, (3) triangulation. Includes practical problems in finding the line of intersection between surfaces and drawing patterns. Software fee of \$18 applies. Lab access fee of \$35 for computers applies.

EGDT 2100
Advanced Architectural
3:3:0 **Fall**
 * Prerequisite(s): EGDT 1100 and EGDT 1020 both with a grade of C- or higher

Covers the layout, detailing, dimensioning, and room identification of a commercial floor plan in a 3D Architectural software. Includes completing a door and window schedule, a furnishing plan, a reflected ceiling plan, building sections, a roof plan, and exterior elevations. Covers the sketching of common details along with discussions on the various methods and materials used in commercial construction. Software fee of \$18 applies. Lab access fee of \$35 for computers applies.

EGDT 2200
Advanced Mechanical
3:3:0 **Spring**
 * Prerequisite(s): EGDT 1200 and (EGDT 1070 or EGDT 1071) all with a grade of C- or higher

Employs 3D modeling software to enhance design processes, including sketching, parametric modeling, 3D assemblies, and producing 2D working drawings. Included are sheet metal, structural parts, mass property, and stress analysis. Software fee of \$18 applies. Lab access fee of \$35 computers applies.

EGDT 2300
Advanced Structural CAD
3:3:0 **Spring**
 * Prerequisite(s): EGDT 1300 and (MATH 1060 or EGDT 1610) both with a grade of C- or higher

A second year class for students who have completed first year structural drafting and want to enhance their knowledge of structural steel detailing. Includes the proper views and dimensioning practices for columns, stairways, handrails, cross-bracing, anchor bolt layout, erection drawing, and field bolt lists. Completers should be ready for entry-level employment as a structural steel detailer for small detailing companies or large construction companies. Software fee of \$18 applies. Lab access fee of \$35 computers applies.

EGDT 2310
Structural Steel Modeling
3:3:0 **Spring**
 * Prerequisite(s): EGDT 1040 and EGDT 1300 both with a grade of C- or higher

Teaches Tekla Structures modeling software. Includes modeling of structural steel buildings, hoppers, stairs, piping, and miscellaneous steel projects. Prepares students for detail and erection drawings which are produced for fabrication and erection of structural steel projects. Software fee of \$18 applies. Lab access fee of \$35 computers applies.

EGDT 2400
Surveying Applications and Field Techniques II
3:3:0 **Fall**
 * Prerequisite(s): EGDT 1040 or equivalent, EGDT 1400 and (EGDT 1600 or MATH 1060) both with a grade of C- or higher

Covers advanced concepts in the U.S. Public Land and State Plane Coordinate systems. Utilizes advanced surveying instruments such as total station, automatic level, GPS equipment, and data collectors. Covers advanced leveling procedures, volume computations, monumentation, mapping, boundary surveys, and route surveys. Features the writing of legal property descriptions. Builds upon knowledge of safe surveying procedures. Includes use of surveying calculation softwares. Covers horizontal curve calculations and highway staking. Completers should be able to work as an instrument person on survey crews and also prepare the drawings related to the surveys. Lab access fee of \$35 for computers applies. Software fee of \$18 applies. Course fee of \$12 for materials applies

EGDT 2500
3 Dimensional Modeling--Civil 3D
3:3:0 **Spring**
 * Prerequisite(s): EGDT 1040, EGDT 1400

Introduces design workflow of typical civil engineering firms. Employs functions of Autodesk Civil 3D application software for civil design and modeling. Includes Digital Terrain Models (DTM's), street alignments, plan and profiles, grading, and utilities/piping design and drafting. Focuses on the development of a full set of civil engineering improvement plans for a residential subdivision. Software fee of \$18 applies. Lab access fee of \$35 for computers applies.

EGDT 2600
Statics
3:3:0 **Fall, Spring**
 * Prerequisite(s): MATH 1060 or EGDT 1610 both with a grade of C- or higher

For students preparing for the second year design classes. Covers the basic principles of statics, coplanar force systems, coplanar-concurrent force systems, and noncoplanar-concurrent force systems. Prepares students for entry-level employment as a design drafter in structural, architectural, and mechanical drafting.

EGDT 2610
Strength of Materials
3:3:0 **Fall, Spring**
 * Prerequisite(s): EGDT 2600 with a grade of C- or higher

Studies strength of materials dealing with direct stress in compression, tensile, and shear. Also covers engineering materials and their properties dealing with stress and deformation, centroids, moments of inertia, section modules, tension and the calculations of beams, girders and columns under various loading conditions. Includes calculations to determine the deflection in beams and girders under various load conditions.

EGDT 2710
Special Problems Mechanical
2:2:0 **On Sufficient Demand**
 * Prerequisite(s): EGDT 2200 with a grade of C- or higher

An advanced course in mechanical layout and design using solid modeling techniques. Students, with approval, may design and layout projects of their choice. Final details are fabricated in the machine shop. Lab access fee of \$35 for computers applies.

EGDT 2720
Special Problems Surveying
2:2:0 **On Sufficient Demand**
 * Prerequisite(s): EGDT 2400 and (MATH 1060 or EGDT 1610) both with a grade of C- or higher

For people seeking a surveyor's license, civil engineering, drafting and construction management majors. Covers instrument maintenance and calibration, basic photogrammetry and surveying for photogrammetry, mine surveying, construction surveying, resection, and legal aspects of land surveying. Completers should have job skills for surveying and civil technology. Software fee of \$18 applies. Lab access fee of \$35 for computers applies.

EGDT 2730
Special Problems Civil Drafting
2:2:0 **On Sufficient Demand**
 * Prerequisite(s): EGDT 1400 with a grade of C- or higher

For people seeking a surveyor's license or intended Civil Engineering and Engineering Graphics and Design majors desiring a civil drafting emphasis. Covers preparation of drawings associated with surveying and civil engineering and design. Projects include: property surveys and subdivision design, geotechnical investigations, wastewater treatment, storm drains, highway design, topographic mapping, earthen and concrete dams, and NICET certifications. Software fee of \$18 applies. Lab access fee of \$35 for computers applies.

Course Descriptions

EGDT 2740

Special Problems Architectural

2:2:0 On Sufficient Demand

* Prerequisite(s): EGDT 1100 with a grade of C- or higher

A special problems course in architectural drafting. Teaches how to layout and detail a floor plan using a 3D modeling package. Software fee of \$18 applies. Lab access fee of \$35 for computers applies.

EGDT 2750

Special Problems Architectural Rendering

2:2:0 On Sufficient Demand

For students who wish to develop additional architectural rendering skills to enhance their job performance. Covers theory of perspective, laying out a building perspective from blueprints, inking techniques to develop a finished rendering, and quick coloring methods for ink renderings. Course fee of \$10 for materials applies.

EGDT 2760

Special Problems Structural

2:2:0 On Sufficient Demand

* Prerequisite(s): EGDT 1300 with a grade of C- or higher

Provides opportunities for in-depth study in structural steel drafting. Teaches beam sizing and selection for design drawing. Requires a special class project with complete objectives and goals outlined and presented to the instructor for approval. Emphasizes project documentation. Computer graphics are an important part of this course. Software fee of \$18 applies. Lab access fee of \$35 for computers applies.

EGDT 2780

Special Problems Electrical

2:2:0 On Sufficient Demand

* Prerequisite(s): EGDT 1010 with a grade of C- or higher

For students who wish to advance beyond EGDT 2010 through the development of an outside project which incorporates advanced theory and drawing procedures. The instructor will review project outline to ensure that it meets course objectives and will monitor student progress, establishing progressive goals. Software fee of \$18 applies. Lab access fee of \$35 for computers applies.

EGDT 281R

Cooperative Work Experience

1 to 8:1 to 8:0 Fall, Spring, Summer

* Prerequisite(s): EGDT 1010, EGDT 1040, EGDT 1070 or EGDT 1071, EGDT 1020, EGDT 1100, EGDT 1200, EGDT 1300, and EGDT 1400, all with a C- or higher

For drafting students to receive actual on-the-job work experience. Requires work assignments to be set up with businesses and industries who are involved in drafting and design, construction, or manufacturing. Eight credits may apply toward graduation. May be graded credit/no-credit.

EGDT 2850

Cooperative Correlated Instruction

Orientation

.5:5:0 Fall

Designed to orient the student to opportunities offered by the school, department, community, and industry, and to assist cooperative work experience. Time is spent on the importance of working and communicating with others.

EGDT 2860

Cooperative Correlated Instruction

SkillsUSA

.5:5:0 Spring

SkillsUSA is a first year class for Engineering Graphics and Design Technology majors. Includes leadership training, parliamentary procedure, job interview skills, prepared speaking, extemporaneous speaking, and organizational skills. Upon completion, the student should understand the SkillsUSA organization and how it helps to build leadership skills.

EGDT 2870

Portfolio and Career Preparation

1:1:0 Fall, Spring

Required for Engineering Graphics and Design Technology majors. Teaches necessary job acquisition skills. Instructs students in the job search process, including production of typical types of correspondence, job interview techniques, and creation of presentation-quality portfolios. Correspondence includes letters of application, resumes, follow-up letters, letters of acceptance and rejection, and references. Interview techniques include interview preparation, appearance, and question/answer techniques. Final project is portfolio of samples of work in all areas of Engineering Graphics & Design Technology learned for the degree. Software fee of \$18 applies. Lab access fee of \$35 for computers applies.

EGDT 3500

Advanced Civil Drafting and Design

3:3:0 Spring

* Prerequisite(s): [(EGDT 1040 or EGDT 1060) and EGDT 1400 each with a grade of C- or higher] and University Advanced Standing

Covers the analysis, design and preparation of drawings associated with the surveying and civil engineering fields. Exposes the student to the NICET certification process. Focuses on GPS and GIS technologies to acquire design data. Develops a working knowledge of the Utah Department of Transportation Standard Plans and Specifications. Projects include: property surveys, topographic mapping, subdivision design, geotechnical investigations, Water and Wastewater Treatment Plants, storm drainage, highway design, traffic flow diagrams, and earthen and concrete dams. Lab access fee of \$35 for computers applies.