

for preemptive and non-preemptive multi-tasking, task scheduling algorithms, task synchronization and design of a kernel for real-time systems.

**EENG 4740**  
**Queuing Theory**  
**3:3:0** **Su, F, Sp**

• Prerequisite(s): MATH 2040, EENG 3750  
Includes computer systems network modeling using stochastic processes: queuing theory models, performance analysis, resource allocations, large-system response parameters.

**EENG 4750**  
**Digital Signal Processing**  
**3:3:0** **F**

• Prerequisite(s): EENG 3770  
Introduces the theory of digital signal processing and its application to practical problems. Covers z-transforms, discrete-time Fourier transforms, FIR (Finite Impulse Response) and IIR (Infinite Impulse Response) digital filter design.

**EENG 4760**  
**Electronic Systems**  
**3:3:0** **Sp**

• Prerequisite(s): EENG 2270  
• Corequisite(s): EENG 4765  
Introduces semiconductor theory and the fundamentals of diode and transistor operation. Covers the use of discrete and integrated active devices in linear amplifier and switching applications.

**EENG 4765**  
**Electronics Systems Lab**  
**1:0:3** **Su, F, Sp**

• Prerequisite(s): EENG 2270  
• Corequisite(s): EENG 4760  
Designed to accompany EENG 4760. Electronic analog circuit design, simulation, construction, debugging and measurement of circuit performance quantities using advanced instrumentation techniques.

**EGDT—ENGINEERING GRAPHICS AND DESIGN TECHNOLOGY**

**EGDT 1000**  
**Basic Drafting**  
**2:2:0** **Su, F, Sp**

A beginning course for Engineering Graphics and Design Technology students; students in the School of Technology, Trades, and Industry programs who need a related drafting class; and general education students wanting to explore a drafting class. Covers basic sketching, instruments and their use, lettering, geometric construction, dimensioning, multi-view drawings, and section views. Completers should be qualified to take any of the first-year drafting technology courses.

**EGDT 1010**  
**Electrical-Electronic Drafting**  
**3:3:0** **F, Sp**

• 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.

**EGDT 1040**  
**Computer Aided Drafting--AutoCAD**  
**3:3:0** **Su, F, Sp**

• Prerequisite(s): EGDT 1000 recommended  
Teaches the drafting AutoCAD 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.

**EGDT 1060**  
**MicroStation**  
**2:2:0** **Sp**

Teaches the drafting MicroStation software system in Windows. Drawings are produced, plotted, printed, checked, and corrected on the CAD system.

**EGDT 1070**  
**3 Dimensional Computer Modeling**  
**3:3:0** **F, Sp**

• Prerequisite(s): EGDT 1040 with a grade of C- or higher  
For engineering, manufacturing engineering, industrial design, and engineering graphics (drafting) students, as well as anyone interested in solid modeling. A 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.

**EGDT 1080**  
**AutoLisp**  
**2:2:0** **F, Sp**

• 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.

**EGDT 1090**  
**Introduction to Architecture Drafting**  
**3:3:0** **F, Sp**

• Prerequisite(s): EGDT 1040  
For non-Engineering Graphics and Design Technology majors and others who wish to explore the field of residential architectural drafting. 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.

**EGDT 1100**  
**Architectural Drafting**  
**3:3:0** **Su, F, Sp**

• Prerequisite(s): EGDT 1040 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, hand lettering procedures, 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.

**EGDT 1200**  
**Mechanical Drafting**  
**3:3:0** **F, Sp**

• Prerequisite(s): EGDT 1040 with a grade of C- or higher  
For Engineering Graphics and Design Technology, Welding Technology, and intended Mechanical Engineering majors. 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.

**EGDT 1300**  
**Structural Drafting**  
**3:3:0** **F, Sp**

• Prerequisite(s): EGDT 1040 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.

## Course Descriptions

### EGDT 1400

#### Surveying

4:3:3

Su, F, Sp

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.

### EGDT 1600

#### Technical Math--Algebra

3:3:0

F, Sp

• Prerequisite(s): MAT 0800 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

F, Sp

• 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 1810

#### Principles of Technology

2:1:3

GP

Sp

• 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.

### EGDT 2020

#### Descriptive Geometry

3:3:0

F, Sp

• Prerequisite(s): EGDT 1040 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.

### EGDT 2040

#### Piping Drafting

2:2:0

F, Sp

• 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.

### EGDT 2050

#### Plate Layout

2:2:0

F, Sp

• 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.

### EGDT 2100

#### Advanced Architectural--CAD

3:3:0

F

• Prerequisite(s): EGDT 1100 and EGDT 1040 both with a grade of C- or higher

A computer-assisted course which covers dimensioning, filling and room identification of a previously drawn commercial floor plan. Includes layout detailing and dimensioning of the site plan, footing and foundation plan, door and window schedules; reflected ceiling plan coordinated with the HVAC; electrical lighting drawings; cross and longitude sections; roof framing; and exterior elevations. Also covers structural details including stress analysis in terms of beam and column design and footing widths. Completers should have entry-level skills to work in professional architects' offices.

### EGDT 2200

#### Advanced Mechanical--CAD

3:3:0

Sp

• Prerequisite(s): EGDT 1200 and EGDT 1070 both with a grade of C- or higher

Employs SolidWorks to produce 3D models. Include sketching, parametric modeling, 3D assemblies, and producing 2D working drawings. Included are sheet metal, structural parts, mass property, and stress analysis.

### EGDT 2300

#### Advanced Structural--CAD

3:3:0

Sp

• 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.

### EGDT 2310

#### Structural Steel Modeling

3:3:0

Sp

• 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.

### EGDT 2400

#### Surveying Applications

4:3:3

F

• Prerequisite(s): EGDT 1400 and (EGDT 1600 or MATH 1060) both with a grade of C- or higher

The second course of the surveying series. Covers the use of advanced surveying instruments, advanced leveling procedures, volume computations, monumentation,

mapping, boundary surveys, and route surveys. Works with the total station, automatic level, and GPS equipment. Completers should be able to work as an instrument person on survey crews and also prepare the drawings related to the surveys.

**EGDT 2600**

**Statics**

**3:3:0**

**F, Sp**

- 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**

**F, Sp**

- 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.

**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.

**EGDT 2730**

**Special Problems--Civil Drafting**

**2:2:0**

**Sp**

- 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.

**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 commercial drafting which allows students, with project approval, to layout and detail a commercial floor plan of their choice. CAD-based, using standard library details.

**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.

**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.

**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.

**EGDT 281R**

**Cooperative Work Experience**

**I to 8:0:5 to 40**

**Su, F, Sp**

- Prerequisite(s): EGDT 1010, EGDT 1040, EGDT 1070, EGDT 1080, 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. Work

assignments are set up with businesses and industries who are involved in drafting and design, construction or manufacturing. Two credits may apply toward graduation. Students receive pay for their work, but the real benefit is the on-the job experience.

**EGDT 2850**

**Cooperative Correlated Instruction/Orientation**

**0.5:0.5:0**

**F**

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**

**0.5:0.5:0**

**Sp**

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**

**I:I:0**

**F, Sp**

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 and Design Technology learned for the degree.

**ENGH—ENGLISH-BASIC COMPOSITION**

**ENGH 0890**

**Basic Writing I**

**5:5:0**

**Su, F, Sp**

• Prerequisite(s): Appropriate placement score  
Requires students to create portfolios to display their essays and to model the stages of writing. Teaches students to distinguish formal from informal writing. Emphasizes writing as a reflection of their reading and speaking abilities. Fosters a community of writers by practicing literate activities in the classroom and online.