

# ENGINEER TECH/DRAFT LEC/ LAB (ETDC)

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## ETDC 1150 Blueprint Reading

**Credit Hours:** 3

**Lab Fee:** Yes

This introductory course will provide the student with essential skills and knowledge for interpreting the elements of engineering drawings. The course will examine technical drawings from the fields of architectural, civil, and mechanical markets. Students will find information contained in a set of working project drawings, identify completed project characteristics, extrapolate 2D data into 3D models, and identify incorrect elements or missing information in drawings from each field.

## ETDC 1540 Civil Drafting

**Credit Hours:** 4

**Prerequisites:** ETDC 2320 with a grade of "C" or higher

**Lab Fee:** Yes

In this drafting and design course, students will gain exposure to the specific elements and processes involved in Civil Engineering projects. Topics of study include mapping symbols and legends, an introduction to surveying including measuring distances, elevations, and angles on the earth's surface, expression and calculations using azimuth and bearing angles, topographic maps and contour lines, plot plans and site plans, roadway alignments and profiles, and grading cut/fill diagrams. Computer-Aided Drafting (CAD) techniques will be utilized in laying out property lines, creating maps with contours, developing roadway alignments and profiles, and creating cut/fill diagrams.

## ETDC 2320 AutoCAD Fundamentals

**Credit Hours:** 4

**Lab Fee:** Yes

This course is designed to teach the skills required for successful operation of computer aided drafting (CAD) hardware and software.

## ETDC 2322 Creo Parametric

**Credit Hours:** 4

**Lab Fee:** Yes

In this drafting and design course, students will gain exposure to the Parametric Technology Corporation (PTC) software CREO Parametric (previously known as Pro-Engineer or Pro-E). This software is for the mechanical design industry and functions as a parametric CAD modeler. Students will learn how to create mechanical part models, sketch and constrain feature profiles, and assemble parts for correct functional presentation. Drawing layouts will be produced from 3-D models as well, and models will be modified using both part modeling and drawing modes. Students will learn to create models efficiently and add parametric and reference dimensions to drawings while following ANSI Y14 Standards.

## ETDC 2340 Advanced AutoCAD

**Credit Hours:** 4

**Prerequisites:** ETDC 2320 with a grade of "C" or higher

**Lab Fee:** Yes

This course is designed to provide 2D and 3D enhancements. Topics will include paper space, customizing the user interface, plotting and internet, using blocks, assembly drawings, and attributes and external references. Raster vs. vector format and embedding vs. linking are also explored.

## ETDC 2355 AutoCAD 3D

**Credit Hours:** 3

**Prerequisites:** ETDC 2320 with a grade of "C" or higher

**Lab Fee:** Yes

This course is designed to teach the student operating the AutoCAD software to navigate the three-dimensional (3D) coordinate system, generate 3D models of parts and assemblies, modify those models, and document them in a print layout complete with dimensions and title block. Conceptual design, rendering, 3D printing, and computer numerical control (CNC) machining will also be addressed.

## ETDC 2357 Parametric Modeling

**Credit Hours:** 3

In this drafting and design course, students will gain exposure to the Autodesk software Inventor. This software is for the mechanical design industry and functions as a parametric CAD modeler. Students will learn how to create mechanical part models, sketch and constrain feature profiles, and assemble parts for correct functional presentation. Drawing layouts will be produced from 3-D models as well, and models will be modified using both part modeling and drawing modes. Students will learn to create models efficiently and add parametric and reference dimensions to drawings while following ANSI Y14 Standards. Lab Fee

## ETDC 2364 SolidWorks Fundamentals

**Credit Hours:** 3

This introductory course is designed to teach the student how to use the SolidWorks mechanical design automation software to build and modify parametric models of parts and assemblies. Students are also introduced to computer aided drawing and manufacturing (CAD/CAM) geometry for tool path processing used to create projects on computer numeric control (CNC) machining centers.

## ETDC 2368 SolidWorks Intermediate

**Credit Hours:** 3

**Prerequisites:** ETDC 2364

**Lab Fee:** Yes

This introductory course builds upon the SolidWorks fundamental features and expands on solids, surfaces, configurations, drawings, sheet metal and assemblies. Intermediate skills broaden the students SolidWorks knowledge base by covering such features as surveys, lofts and boundaries, use of multi-bodies, generating engineering drawings and other SolidWorks functions.

## ETDC 2369 SolidWorks Advanced

**Credit Hours:** 3

**Prerequisites:** ETDC 2368

**Lab Fee:** Yes

This course builds upon the SOLIDWORKS Intermediate course and features. Advanced Techniques picks up where Intermediate Skills leave off. The aim is to take the student from an intermediate user with a solid but basic understanding of SOLIDWORKS and modeling techniques to an advanced user capable of creating complex models and using the advanced tools provided and taught. This course covers parts, surfaces, simulations, sheet metal, top-down assemblies, and core and cavity molds. The course lessons and exercises are based on real world projects. Each project has been broken down, developed, and taught in comprehensible steps.

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**ETDC 2545 Advanced Civil Drafting**

**Credit Hours:** 4

**Prerequisites:** ETDC 1540 with a grade of "C" or higher

**Lab Fee:** Yes

In this drafting and design course, students will gain exposure to the specific elements and processes involved in laying out 3D Civil Engineering projects. Topics of study include importing survey COGO points and adjusting their properties, laying out property lines at specific bearing angles and creating property parcels, creating and manipulating surfaces to represent the existing and finished ground, configuring horizontal alignments for linear features and labeling them accordingly, developing 3D corridor models, investigating grading (cut/fill) objects and quantity take-offs (QTOs), creating pipe networks, and placing profile views based on alignments. Computer-Aided Drafting techniques will be utilized in an Advanced AutoCAD software version tailored for the Civil Engineering industry.