

# SLO Presentation

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ENGT

Date: 09/11/2019

<b>TECHNOLOGY</b>
<b>ENGT</b>
<b>Engineering Design and Production Technology--Cert</b> <ul style="list-style-type: none"><li>• Students design production fixtures and tooling using parametric 3D Modeling.</li><li>• Students design parts, fixtures and tooling for plastics, composites, wood and metals manufacturing.</li><li>• Students recognize principles of parametric modeling in CATIA.</li><li>• Students recognize principles of parametric modeling in SolidWorks.</li><li>• Students recognize principles of parametric modeling in Inventor.</li></ul>
<b>Engineering Design and Production Technology--Degree</b> <ul style="list-style-type: none"><li>• Students design production fixture and tooling using parametric 3D Modeling.</li><li>• Students design parts, fixtures and tooling for plastics, composites, wood and metals manufacturing.</li><li>• Students recognize principles of parametric modeling in CATIA.</li><li>• Students recognize principles of parametric modeling in SolidWorks.</li><li>• Students recognize principles of parametric modeling in Inventor.</li></ul>
<b>Engineering Design Technology--Cert</b> <ul style="list-style-type: none"><li>• Student use basic principles of statics and strength of materials, aided by computer simulations, to dimension parts.</li><li>• Student create and interpret 2D blueprints.</li><li>• Student create parametric parts and assembly drawings.</li><li>• Student learn how to do design for manufacturing, 3D printing, and concurrent engineering.</li><li>• Student learn how to make 2D assembly drawings.</li><li>• Student perform basic machine design.</li><li>• Student use and interpret GD&amp;T.</li><li>• Student use AutoCAD to make 2D drawings and basic 3D models.</li></ul>
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<b>CSLO</b>
<b>ENGT102 - Arduino for Internet of Things (IoT) and Embedded Systems Design</b> <ul style="list-style-type: none"><li>• A. Perform design of simple embedded system and internet of things (IoT) device.</li><li>• B. Identify role of microcontrollers and different components of the embedded system.</li><li>• C. Design basic embedded systems using Arduino</li><li>• D. Write basic embedded code for Arduino.</li></ul>

**ENGT106 - Introduction to Drone Technology**

- A. Student understands concepts and applications of the drones.
- B. Student can distinguish different types of drones
- C. Student is capable of performing selection and conceptual design of drones.
- D. Student can pass the written/theoretical portion of FAA test for the Remote Pilot sUAS certification.

**ENGT117 - Geometrical Dimensioning and Tolerancing**

- Students distinguish between conventional and geometric tolerances.
- Students demonstrate knowledge of setting up datum features in various situations.
- Students recognize and use geometric characteristic symbols for various conditions.
- Students distinguish among different modifiers.
- Students distinguish among unilateral, equal bi-lateral, unequal bi-lateral tolerances, and limits of size.

**ENGT137 - Industrial Design and 3D Modelling in Fusion360**

- A. Students understands concepts of cloud based design
- B. Student can design basic 3d parts using Fusion 360
- C. Student can design basic top down assemblies using Fusion 360
- D. Student can prepare part file for 3d printing/additive manufacturing using Fusion360
- Students understand process of industrial design

**ENGT139 - Cloud based 3D modeling with Onshape**

- A. Student learn concepts of cloud based design
- B. Student can design basic 3d parts using OnShape
- C. Student can design basic top down assemblies using OnShape
- D. Student can prepare part file for 3d printing/additive manufacturing using OnShape

**ENGT153 - Machine Design Applications Using Solid Modeling**

- Students will use the proper forms and types for threads and fasteners.
- Students will select the appropriate welding types and sizes for welded assemblies.
- Students will utilize the correct gears and cams for different applications in machines.
- Embedded test questions and software application
- Students will pull out the standard hardware needed from on-line catalogs and other related information.
- Students will apply the appropriate specifications for threads and fasteners.

**ENGT257 - Advanced Modeling Using Inventor**

- Students interpret dimensional and geometrical constraints to create sketches.
- Students convert sketches to 3-D entities using extrusion.
- Students construct assemblies from parts.
- Students create 2-D drawings for parts and assemblies from 3-D models.
- Students compare Bill of Materials and relate to the exploded views.
- Students utilize loft function for creating complex parts.

**ENGT258 - Design And Production Technology Using Solid Modeling**

- Students explore service conditions and properties of materials such as plastics, metals, and ceramics for products of assigned industries.
- Students prepare development and use of industry tooling and fasteners.
- Students produce creative product design considering customer type, functional requirements, safety, reliability, producibility, and marketability.
- Students analyze product design requirements, select and design tooling and manufacturing processes considering material, tolerances, and finish quantities needed.

- Students research online catalogs for selection of standard tooling components for tool design.

### ENGT259 - SolidWorks

- Students create part modeling for various shapes with constraints.
- Students create assemblies from previously made parts.
- Students establish sketches for different designs.
- Students utilize the extrude feature to add the third dimension to the part.
- Students use different hole features to place on correct locations.
- Students practice adding the fillet and chamfer features on material corners.

### ENGT260 - Advanced Modeling Using SolidWorks

- Students create complex assemblies.
- Students create complex parts, including loft and sweep features.
- Students create 3D sketches including variable pitch helix.
- Students create sheet metal and weldment parts.
- Students capable of passing the Certified Solidworks Professional (CSWP) examination.

### ENGT261 - Solidworks For Sustainable Design

- A. Student will demonstrate concepts of sustainability and sustainable business
- B. Student can discuss the different stages of a product life cycle
- C. Student is capable of setting up an environmental assessment study such as environmental indicators, scope of the assessment, and metrics to use
- D. Student can interpret goal and scope variables for an environmental assessment study such as system boundary and functional unit
- E. Student can apply common tools for performing environmental assessments such as product scorecards and life cycle assessment
- F. Student is able to independently perform basic steps for a life cycle assessment (LCA) study
- G. Student is capable interpreting the results of a product environmental assessment
- H. Student can devise universal strategies for sustainable design of a product
- I. Student is capable of providing proper communication of environmental assessment results and use of environmental claims

### ENGT262 - Solidworks for Weldments Design

- A. Student can discuss concepts of parametric modelling of weldment structures using SolidWorks
- B. Student will describe different types of weldment structures
- C. Student is capable of using standard profiles and creating their own profiles
- D. Student will create their own parametric weldment structures
- E. Student will pass the CSWPA-Weldments certification exam

### ENGT263 - Solidworks for Industrial Mold Tools Design

- A. Student can describe constraints on design of molded parts
- B. Student can distinguish different types of molding processes
- C. Student can design parametric molded parts using the advanced SolidWorks commands
- D. Student is capable of creating parametric molds in SolidWorks
- E. Student will be prepared for the CSWPA-Mold Tools Certification exam

### ENGT265 - CATIA I

- Students create 2-D iso-constrained sketches to build 3-D solid models of various parts.
- Students make fully constrained 3-D assemblies from 3-D models of parts.
- Students develop surface models of various parts.
- Students generate 2-D drawings from 3-D models of parts and assemblies containing orthographic and isometric views.
- Students use Excel spreadsheet to generate a family of parts.

- Students develop parametric equations to generate a family of parts.

### ENGT266 - CATIA II

- Students work with complex 2-D sketches to make 3-D models of parts.
- Students do FEA (Finite Element Analysis) for stresses.
- Students prepare top down assembly.
- Students perform Boolean Operations.
- Students use FTA (Functional Tolerancing & Annotation) Workbench.
- Students analyze assemblies for fits.
- Students do kinematic analysis of simple mechanisms.