SLO Presentation

ENGT
Date: 09-15-2022

ISLO

Civic Engagement
• Students will develop values and beliefs in their role as a member of local, national and global societies to promote truth, fairness and goodwill to others. They will use the democratic process to further their values and beliefs and recognize and accept differing perspectives based on cultural diversity. They will engage in actions which provide service to others and have a positive impact on their local community.

Communication and Expression
• Students will demonstrate the ability to effectively and appropriately communicate their thoughts and ideas both in written and oral forms. They will develop verbal and non-verbal delivery skills, in an appropriate manner, to communicate their ideas as well as evaluate the ideas of others in a wide variety of contexts.

Critical Thinking and Quantitative Reasoning
• Students will demonstrate the ability to recognize assumptions within an argument and actively and skillfully analyze underlying reasoning to develop a conclusion. They will apply qualitative and/or quantitative analysis to solve problems, predict outcomes, test hypotheses, and explore alternatives in an ethical manner.

Information Literacy
• Students will demonstrate the ability to determine when gathering additional information is necessary. They will use appropriate resources and technologies to locate, evaluate and incorporate the information when developing supporting arguments and drawing conclusions. Students will also develop the ability to understand any legal, ethical or social issues regarding the use of information.

Personal Knowledge and Responsibility
• Students will develop the necessary skills to define, maintain and complete their personal educational goals. They will learn to work independently to accomplish personal goals toward realizing their full potential academically, physically and emotionally whether for personal enrichment, further education or career advancement.

Technology
ENGT

Engineering Design and Production Technology--Cert
• Students design production fixtures and tooling using parametric 3D Modeling.

• Students design parts, fixtures and tooling for plastics, composites, wood and metals manufacturing.

• Students recognize principles of parametric modeling in CATIA.

• Students recognize principles of parametric modeling in SolidWorks.

• Students recognize principles of parametric modeling in Inventor.

Engineering Design and Production Technology--Degree
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Engineering Design Technology--Cert
• Student use basic principles of statics and strength of materials, aided by computer simulations, to dimension parts.

• Student create and interpret 2D blueprints.

• Student create parametric parts and assembly drawings.

• Student learn how to do design for manufacturing, 3D printing, and concurrent engineering.

• Student learn how to make 2D assembly drawings.

• Student perform basic machine design.

• Student use and interpret GD&T.

- Student use AutoCAD to make 2D drawings and basic 3D models.

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CSLO

ENGT100 - Soft Skills for Manufacturing, Technology and Engineering Professionals

- Understands diversity of the modern technology workplace and utilize it to work productively both as team member/ follower and as a team leader.

- Demonstrate effective resume writing and job application letters for the entry level engineering, manufacturing or technology job.

- Presents solutions to the technical or organizational issues as related to technology, in a clear, effective and reasonable way.

- Create basic self management and project management documents.

- Demonstrate use of effective office technology in a diverse work environment.

- Identify and fit within the particular corporate culture of the workplace, while making ethical, just and effective decision.

- Perform basic office and shop floor quantitative measurements using common tools.

ENGT102 - Arduino for Internet of Things (IoT) and Embedded Systems Design

- A. Perform design of simple embedded system and internet of things (IoT) device.

- B.   Identify role of microcontrollers and different components of the embedded system.

- C. Design basic embedded systems using Arduino

- D.Write basic embedded code for Arduino.

ENGT103 - Introduction to Engineering Design Using Inventor

- Students represent physical objects of moderate complexity in three dimensions using the software program.

- Students apply virtual loads to their designs and use analysis tools to determine the viability of their designs.

- Students design a functioning assembly by using design methodologies learned in the course.

- Students document a design idea using both a manual sketch and a digital portfolio item.

- Students model mechanisms using the design software.

ENGT105 - Product Design, Development, and Prototype Fabrication

- A.   Identify the stages of products design and development

- B.   Formulate products specification

- C.   Evaluate product feasibility

- D.   Develop product development plan

- E.   Design the prototype

- F.   Fabricate prototype

- G.   Evaluate prototype

- H.   Write and present product/project report

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.

ENGT116 - Blueprint Reading

- 1. Read blueprints recognizing industry standards

- 2. Analyze 2-D orthographic views to visualize 3-D objects

- 3. Produce an isometric drawing of a simple production part using 2-D orthographic views

- 4. Recognize different design scales

- 5. Distinguish between various cams and gears

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.

ENGT131 - Design Fundamentals Including Solid Modeling

- The student is able to use elementary AutoCAD software techniques.

- Students select sufficient number of views to describe the objects.

- Students are able to use elementary AutoCAD software techniques.

- Students place views in correct positions.

- Students choose line types.

- Students perform correct dimensioning and annotations including lettering practices.

- Students are able to choose line types .

- Students create designs using elementary AutoCAD software techniques.

- Students use section views needed to enhance the clarity of part interiors in design drawings.

ENGT133 - SolidWorks for Sheet Metal Design

- Perform calculations for bend deduction, bend allowance, and set back

- Create layouts and dimension flat patterns

- Employ methods for solving sheet metal design problems

- Build 3-D models, 2-D drawings, and flat patterns using 3-D software

- Apply design techniques to boxes, elbows, cones, and transition pyramids

- Construct 3-D models using paper or similar material

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

ENGT138 - Introduction to Engineering Design Using Autocad

- Students create designs utilizing AutoCAD software.

- Students distinguish different line types for various usages.

- Students utilize the O'snap functions for more accurate designs.

- Students create sections from orthographic projection views.

- Students create 3-D parts from 2-D designs.

- Students establish blocks to save time for duplicate designs.

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.

ENGT237 - Statics and Strength of Materials Using Simulation
- Students use the proper concepts of statics.

- Students recognize tension, compression, and shear.

- Students analyze the proper load concepts using basic theories of strength of material.

- Students select the correct structural sizes, shapes, and material.

- Students apply finite element methods of analysis within parametric 3D CAD environment for solving basic engineering problems.

ENGT257 - Advanced Modeling Using Inventor
- Students interpret dimensional and geometrical constraints to create sketches.

- Studnets 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 - TOOLS AND FIXTURES APPLICATIONS 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 Introduction
- 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.   Discuss concepts of parametric modelling of weldment structures using SolidWorks

- B.   Describe different types of weldment structures

- C.   Demonstrate use of standard profiles and creating their own profiles

- D.   Demonstrate creation of parametric weldment structures

- E.   Prepare for CSWPA-Weldments certification exam

ENGT263 - Solidworks for Industrial Mold Tools Design
- A.   Describe constrains on design of molded parts

- B.   Identify different types of molding processes

- C.   Design parametric molded parts using the advanced SolidWorks commands

- D.   Create parametric molds in SolidWorks

- E.   Prepare for the CSWPA-Mold Tools Certification exam

ENGT265 - CATIA I
- Students create 2-D iso-constrained sketchs 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 assembles for fits.

• Students do kinematic analysis of simple mechanisms.