MECH 1020: Mechatronic Graphics and Design

A. COURSE DESCRIPTION
   Credits: 2
   Lecture Hours/Week: 1
   Lab Hours/Week: 2
   OJT Hours/Week: *
   Prerequisites: None
   Corequisites: None
   MnTC Goals: None
   This course covers the fundamentals of the engineering design process, and visualization and design communication. Students will use Solidworks to create engineering drawings, and documentation, sectional views, auxiliary views, dimensioning, tolerancing, and reading of drawings. (Prerequisite: none) (2 Credits: 1 lecture/1 lab)

B. COURSE EFFECTIVE DATES: 05/06/2021 - Present

C. OUTLINE OF MAJOR CONTENT AREAS
   1. Engineering design process
   2. Visualization and design communication
   3. Engineering drawing standards and conventions
   4. Computer-aided drafting and design (CADD) software will be used throughout the course.
   5. Sectional views, auxiliary views, dimensioning, tolerancing, and reading of drawings.

D. LEARNING OUTCOMES (General)
   1. Students will understand, visualize, and draw orthographic projection of three-dimensional objects.
   2. Students will understand dimensioning conventions and tolerancing conventions.
   3. Students will interpret engineering blue prints.
   4. Students will use the SolidWorks® interface and basic functionality.
   5. Students will identify the steps of the design process.
   6. Students will apply design process in a team setting to solve simple engineering projects and build an environmentally friendly model.
   7. Students will write reports and presents the design project.
   8. Students will appreciate creativity and diversity of the design topics and process, get interest on larger scale engineering green design ideas, and be able to conduct literature search to find information related to the renewable energy systems design and operation and presenting them to the class.

E. Minnesota Transfer Curriculum Goal Area(s) and Competencies
   None

F. LEARNER OUTCOMES ASSESSMENT
   As noted on course syllabus
G. SPECIAL INFORMATION

None noted