

Course Name: ENR-240 Engineering Technical Project

Date Updated: 4/2022

Credit Hours/week: 3 hrs./wk. – 3 cr.

BEGINNING: SPRING 2022

Catalog Description: This course covers the design of products and processes considering functional requirements, manufacturing feasibility and economy, and the use of technical literature and catalogs. Includes design layout and working drawings and group and individual projects.

Prerequisite: None

Text: James D. Bethune, Engineering Design Graphics with Autodesk Inventor, Pearson

Supplementary Material: None

Syllabus:

Text Sections	Topics
Chapters 1-2	Chapter 1 – Introduction Chapter 2 – Two-Dimensional Sketching
Chapter 3	Chapter 3 – 3D Models
Chapter 4	Chapter 4 – Orthographic Views
Chapter 5	Chapter 5 – Assembly Drawings
Chapter 6	Chapter 6 – Threads & Fasteners
Chapter 7	Chapter 7 – Dimensioning
Chapter 8	Chapter 8 – Tolerancing
	Midterm
Chapters 9-10	Chapter 9 & 10 – Springs & Shafts
Chapter 11	Chapter 11 – Bearings
Chapter 12	Chapter 12 – Gears
Chapter 13	Chapter 13 – Sheet Metal Drawings
Chapter 14	Chapter 14 – Weldment Drawings
Chapter 15	Chapter 15 – Cams

Students are expected to adhere to the policies of the County College of Morris. These can be accessed at: (insert link here)

Statement of Expected Course LEARNING OUTCOMES

- Explain the development of solid models using Constructive Solid Geometry and Boolean operations.
- Discuss steps required in the parametric part modeling process.
- Establish proper drawing units and Basic Datum Geometry.
- Create rough two dimensional sketches correlating to a part's geometric features.
- Dimension and modify sketches by applying geometric and dimensional constraints as well as relational parametric equations.
- Transform a two dimensional sketch into a solid feature using a number of commands such as Extrude, Revolve, and Sweep.
- Develop two dimensional part and assembly drawings utilizing drawing views from the solid model including auxiliary views using title blocks in layout mode.
- Create parts using both top down and bottom up associativity.
- Set up a drawing of the assembly model and create a parts list.
- Convert the default model file into a format for export into other programs.
- Create a rapid prototype of solid models using a 3D printer.
- Generate milling procedures and profiles using post processing software in conjunction with 3D solid models.
- Create rapid prototypes using fused deposition modeling or CNC machining combined with assembly using off the shelf items.
- Work on a multidisciplinary team to design a small assembly utilizing 5-12 parts.
- Estimate production time and costs based upon part complexity.
- Address an all-encompassing look at where materials are sourced and the implications of such along with lifecycle engineering.
- Create a technical manual showcasing the features of an assembly as well as its use and maintenance along with exploded diagrams of its parts.
- Present the project to the class using multimedia and physical prototypes of the part.