1. EM215 Introduction to Mechanical and Nuclear Engineering

2. Credit Hours (3)/Contact Hours (5)

3. Course Director – Jim Cowart

4. Specific course information

a. This is an introductory course for Mechanical, General, and Nuclear Engineering majors that introduces the student to the main areas of mechanics, materials, and thermo-science with basic engineering analysis via MATLAB. In addition, it provides background in visualization skills (e.g. Solidworks) and the design process. Projects are used to enhance the understanding of mechanical engineering and the design process with companion technical writing assignments.

b. Prerequisites or Co-Requisites: EME, EGE, and ENR majors only.

c. Required for Nuclear and Mechanical Engineering Programs.

6. Educational objectives for the course

a. The student will be able to translate between a real object, or an imagined design of a real object, and two-dimensional isometric and orthographic projections of the object using hand sketches and modern visualization software (e.g. Solidworks).

b. The student will be able to develop an algorithm to solve an engineering problem by writing a computer program and using tools such as variables, arrays, functions, logical operations, and looping structures (e.g. MATLAB).

c. The student will develop written and oral technical communication skills and be able to write a technical memorandum report using an accepted formal structure.

d. The student will be able to perform basic design calculations, and also formulate and execute a project plan as part of an overall design project.

7. Specific program outcomes addressed by this course

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Introduced		X			X	X	
Reinforced							
Mastered							

8. Brief list of topics to be covered

a. MATLAB
- Introduction/MATLAB Environment
- Built in Functions
- Matrices
- Plotting
- User defined functions
- User Input/Output
- Logical Functions
- Repetition Structures

b. Solidworks
- Introduction
- Sketch entities and tools
- Features
- Orthogonal view
- Assemblies

c. Technical Writing based on the following Projects/Laboratory Exercises
d. Hand Crank Horsepower
e. Model wing design, fabrication and testing
f. Large glider fabrication and testing
g. Final Design Project: mechanical vehicle theme (new each year)