NOVA COLLEGE-WIDE COURSE CONTENT SUMMARY EGR 121 – FOUNDATIONS OF ENGINEERING (2 CR.)

Course Description

Introduces the engineering profession and its impact on society and the environment, including engineering problem solving, the engineering design process, and professional practices. Covers fundamental engineering calculations, descriptive statistics, basic spreadsheet and mathematical scripting language applications, professional ethics, teamwork, and communication. Lecture 2 hours. Total 2 hour per week.

General Course Purpose

Prepare students for further study in any Engineering curriculum.

Course Prerequisites/Corequisites

Prerequisites: ENG 111 eligible; MTH 162 or MTH 167, or equivalent; or departmental approval.

Course Objectives

- Problem Solving
 - Identify and solve problems using engineering methodologies
- Information Literacy
 - Find, evaluate, and effectively use technical information, including scholarly literature
- Technology Application
 - Use spreadsheet, word processing and presentation software to collect, organize, analyze and present engineering data
- Communication
 - Effectively communicate engineering work in oral, written, and visual formats, using graphical information as relevant
- Collaboration
 - o Form, plan, and complete team-based engineering work
- Introduction to Engineering Profession
 - Demonstrate knowledge of the Engineering profession including engineering disciplines, professional societies, accreditation, and licensing
- Professional Ethics
 - Demonstrate an understanding of basic engineering ethics concepts using a professional engineering society code of ethics
- Problem Solving
 - Use systematic methods to create a proper engineering solution including formulation, representation, assumptions, questioning, communication, and evaluation.
 - Analyze flowchart algorithms using standard symbols.
- Design Process
 - Demonstrate basic understanding of the engineering design process including needs identification, specification, analysis of design alternatives, planning, prototyping, testing, and delivery
 - Consider sustainability and global, societal and environmental impacts of design options
- Significant Figures and Dimensional Analysis

- Understand and apply significant figures and appropriate number representations.
- Solve problems using unit conversions in both AES and SI units, and dimensional analysis.
- Technology Skills
 - Utilize basic spreadsheet software skills including built-in and user-defined functions, graphing, and trendlines
 - Create mathematical software scripts, including inputs, outputs, graphing, and conditional statements
- Technology Application
 - Build and use data to control a simple physical system with input and output
 - Analyze data using basic descriptive statistics, histograms, and linear trendlines

Major Topics to be Included

- Problem Solving
- Information Literacy
- Technology Application
- Communication
- Collaboration
- Introduction to Engineering Profession
- Professional Ethics
- Problem Solving
- Design Process
- Significant Figures and Dimensional Analysis
- Technology Skills
- Technology Applications