Fundamentals of Engineering I - Scholars

ENGR 1181.02

Credit Hours:
2.00

Course Levels:
Undergraduate (1000-5000 level)

Course Components:
Lecture
Lab

Course Description:
Engineering problem solving utilizing computational tools such as Excel and MATLAB; hands-on experimentation; modeling; teamwork; written, oral and visual communications.

Prerequisites and Co-requisites:
Prereq or concur: Math 1140 or 1141; or Math 1150 or above; and Scholar status.

Course Goals / Objectives:
- Develop professional skills for success in engineering, including teamwork; written, oral, and visual communications; and ethics
- Understand basic elements for engineering problem solving utilizing tools such as Excel and MATLAB
- Have an introductory knowledge of a wide range of fundamental engineering tasks and principles gained through homework and hands-on laboratory exercises
- Be motivated towards opportunities within engineering careers and gain an appreciation of the range of engineering disciplines available to them

Course Topics:
- Course introduction and overview
- Teamwork fundamentals and agreements
- Problem solving fundamentals -- Problem types, systems descriptions, SI units, significant digits, understanding analysis vs design
- Using spreadsheets for problem solving -- Excel spreadsheet structure; equations, operators, array elements; models and systems; mathematical models; plots and charts
- Using MATLAB for problem solving -- MATLAB tool/environment; command mode; script files, arrays, and strings; problem solving structure for MATLAB, algorithms, statements and functions; input, output, plotting; systems and mathematical models
- Series of laboratory exercises will draw from a wide range of engineering domains - Fundamental engineering concepts; hands-on measurement and instrumentation; collection and analysis of data; reporting of results; modeling

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Designation:
Required