

# Virginia Western Community College

## EGR 120

### Introduction to Engineering

#### Prerequisites

Introduces the engineering profession, professional concepts, ethics, and responsibility. Reviews hand calculators, number systems, and unit conversions. Introduces the personal computer and operating systems. Includes engineering problem solving techniques using computer software such as Inventor, MATLAB, Excel, and LabVIEW.

#### Course Description

Introduces the engineering profession, professional concepts, ethics, and responsibility. Reviews hand calculators, number systems, and unit conversions. Introduces the personal computer and operating systems. Includes engineering problem solving techniques using computer software such as Inventor, MATLAB, Excel, and LabVIEW.

**Semester Credits: 2 Lecture Hours: 2 Lab/Recitation Hours: 0**

#### Required Materials

##### **Textbook:**

Hands-On Introduction to LabVIEW for Scientists and Engineers, 3<sup>rd</sup>. ed., John Essick, Oxford University Press, ISBN# 9780190211899

Thinking Like an Engineer, 4th Edition Stephan, et al., Pearson Prentice Hall, ISBN# 9780134701264

#### Course Outcomes

**At the completion of this course, the student should be able to:**

1. Develop a computer program using MATLAB
2. Develop a computer program using LabVIEW
3. Complete a technical laboratory for an engineering design project.

**Topical Description**

|    |                 |                        |
|----|-----------------|------------------------|
| 1  | TLE 15          | MATLAB Intro           |
| 2  | TLE 16          | MATLAB                 |
| 3  | TLE16           | MATLAB                 |
| 4  | TLE 17          | MATLAB                 |
| 5  | TLE 18          | MATLAB                 |
| 6  | TLE 19          | MATLAB                 |
| 7  | Sound Project   | MATLAB Projects        |
| 8  | Photo Project   | MATLAB Projects        |
| 9  | Photo Projects  | MATLAB Projects        |
| 10 | LABVIEW 1       | Graphical Programming  |
| 11 | LABVIEW 2,3     | Graphical Programming  |
| 12 | LABVIEW 4,5     | Graphical Programming  |
| 13 | LABVIEW 6,7     | Graphical Programming  |
| 14 | DigitalThermo.  | LABVIEW Project        |
| 15 | Digital Thermo. | LABVIEW Project        |
|    | MATLAB/LABV     | Final Exam, Wed. 12/17 |

**Notes to Instructors**

1. All instructors teaching this course will use the same textbooks.
2. Course content within this course may be covered at the instructor's discretion but with all topics being understood.
3. This course and its grades will be structured around several projects:
  - a. MATLAB Projects (minimum of 2)
  - b. LabVIEW Projects (minimum of 1)
4. At the end of the semester, all instructors will give the outcome assessment as it relates to projects to the program head at the same time they prepare their student final grades.
5. A broad overview comprehensive final exam will be given for the two software programs.
6. A broad overview comprehensive final exam will be given for the two software programs, which must be at least 10% of the final grade.