I. **Title:** Introduction to Engineering

II. **Prerequisite:** MATH 1113 with a grade of C or better.


(2013). – Custom Book

IV. **Catalog Description:** This course provides students with an overview of various engineering disciplines to assist them in making well-informed career choices in the profession. Key topics include exploring the nature of the field and career opportunities in civil, chemical, electrical, mechanical and other major disciplines; tools of technical communication; recording and analyzing data; dimensional analysis; computational techniques of approximate solutions; and basic statistical tools for quality control.

V. **Course objectives:**

   a. To distinguish between major fields of the engineering profession and identify various career possibilities within any given field.

   b. To learn values (ethics) and responsibilities of an engineer.

   c. To describe and use the US Customary and SI systems of units, converting various physical quantities from one system to the other.

   d. To state and compute various types of errors and check their propagation.

   e. To collect and record technical data, using different graph scales and coordinates to represent data and establish empirical relationships.

   f. To introduce statistical terms as they are applied in quality control, computing by least squares the best fit for the data and determining the correlation coefficient.

   g. To describe and use basic terms in engineering economics.

   h. To distinguish approximate and exact solutions to equations and explore methods to find roots of equations in one variable.

VI. **General notes:**

   1. This is the first engineering course for students who want to major in engineering and therefore the instructor should place emphasis on:

      a. motivating students in developing problem-solving skills in SI and US Customary Units,

      b. presenting solutions in a logical manner,
c. subject areas common to most engineering disciplines, and

d. the means of gathering information on many engineering branches.

2. The instructor should provide additional notes to supplement certain topics.

3. Advisors are expected to recommend students take this course before they take other courses in engineering program.

4. The time for coverage of the topics are approximate times for each chapter.

5. Since this book is customized, the Chapter numbering in the Course Outline Section below reflect the sequential order of the chapters. Since Chapters were pulled from various Engineering books, the chapter that they were from the Engineering Book is printed in our custom Book. For example, the Chapter on Numbers is found sequentially as the 5th chapter in our custom book, however, since it was pulled from the Holtzapple, Reece, 2003 textbook, the numbering was Chapter 7 from the Holtzapple, Reece textbook. Our Publisher could not override the numbering scheme from the original textbooks.

VII. **Course Outline:**

Chapter 1 – The Engineer. Cover all sections. (1 week)

Chapter 2 – Choosing a Major and Selecting Classes. Cover all sections. (1 week)

Chapter 3 – The Undergraduate Engineering Experience. Cover all sections. (1 week)

Chapter 4 – Engineering Ethics. Cover all sections. (1 week)

Appendix B includes the NSPE Code of Ethics for Chapter 4

Chapter 5 – Numbers. Cover all sections. (1 week)

Chapter 6 – Engineering Measurements and Estimations. Cover all sections. (1 week)

Chapter 7 – Problem Solving. Cover all sections. (2 weeks)

Chapter 8 – SI System of Units. Cover all sections. (1 week)

Chapter 9 – Unit Conversions. Cover all sections. (1 Class)

Appendix A has additional information and problems for Chapter 9

Chapter 10 – Tables and Graphs. Cover all sections. (1 Class)

Chapter 11 – Statistics. Cover all sections. (1 Class)

Chapter 12 – Accounting for Mass. Cover all sections. (1 Week)

Chapter 13 – Material Balance. Cover all sections. (1 Class)

Chapter 14 – Accounting for Money. Cover all sections. (1 Week)

Chapter 15 – Bracketing Methods. Cover all sections. (1 Week)
VIII. **Evaluation:**

The details of grade determination are flexible; however, one recommended procedure would be to weigh the four components as follows:

- Labs/Homework: 15%-25%
- Tests (three): 30% (10% per test)
- Project: 20-25%
- Comprehensive Final Exam: 25-30%

The project should be based on a topic that will assist students in making informed choice of their career possibilities in engineering discipline. The instructor should encourage students to gather information using the Internet for their projects.

Revised date: September, 2013  
Adoption date: October, 2013.