



## ChE 211 - Principles of Chemical Engineering I (Required Course)

**Code and Name:** ChE211, Principles of Chemical Engineering I

**Credit Hours:** 3 (Lecture: 3, Tutorial: 1)

**Textbook:**

- Elementary Principles of Chemical Processes, M. Felder & Ronald W. Rousseau, 3<sup>rd</sup> Edition, John Wiley & Sons Inc, 2005.

**Other References:**

- Himmelblau, D.M., Basic Principles and Calculations in Chemical Engineering. 6<sup>th</sup> Edition, Prentice Hall, New Jersey, 1996.

- Reklaitis, G.V., Introduction to Material and Energy Balances, John Wiley and Sons, New York, 1983.

**Course Description:**

Introduction to chemical engineering and the role of the chemical engineer. The emphasis on engineering problem analysis, units and dimensions, engineering calculations, processes and process variables, and fundamentals of material balances that involve single-phase and multiphase systems

**Pre-requisites:** CHEM 103 General Chemistry, MATH 105 Calculus 1

**Co-requisites:** None

**Course Learning Outcomes:**

With relation to ABET Student Outcomes (SOs: 1-7)

1. Calculate quantity in various units. (1)
2. Analyze process data representation. (6)
3. Calculate various process variables. (1)
4. Plan a material balance problem in a flow diagram process including the all required information. (1)
5. Analyze degree of freedom of a system. (1)
6. Calculate material balance on chemical processes and systems in a logical sequence. (1)
7. Calculate PVT for a gas system using ideal gas equation of state. (1)

**Topics to be covered:**

- What Some Chemical Engineers Do for a Living
- Introduction to Engineering Calculations
- Processes and Process Variables
- Fundamentals of Material Balances
- Single-Phase Systems
- Multiphase Systems

**Grading Policy:**

The grading for the course are 60% coursework and 40% Final Exam. The course work consists of two Midterm Exams, where each midterm exam is worth 20%. It also includes quizzes, homework, and projects for the remaining 20% that is modified by the course instructor.

