



MUTAH UNIVERSITY
Faculty of Engineering
Department of Chemical Engineering



Engineering Chemistry Course Syllabus

| Course Code | Course Name | Credits | Contact Hours |
|-------------|-----------------------|---------|---------------|
| 0404112 | Engineering Chemistry | 3 | 48 |

INSTRUCTOR/COORDINATOR

| | |
|---------|---|
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TEXTBOOK

Steven S. Zumdahl and Susan A. Zumdahl, Chemistry, 7th edition, Houghton Mifflin Company Boston, New York, 2007

SPECIFIC COURSE INFORMATION

A. Brief Description of the Content of the Course (Catalog Description)

This is the second general chemistry course within the curriculum of the chemical engineering. It covers the basic concepts of chemistry that are required for the specialization of chemical engineering. The objectives of this course are as follows:

1. To introduce the basic concepts of chemistry that are required for the chemical engineering courses
2. To understand the basic calculations and basic chemistry laws required
3. To practice solving chemical engineering problems related to chemistry concepts

B. Pre-requisites (P) or Co-requisites (C)

0303101

C. Course Type (Required or Elective)

Required (Compulsory department course)

SPECIFIC GOALS

A. Specific Outcomes of Instruction

The student must know and understand:

1. The basic concepts of chemistry required for his specialization. [SLO 1]
2. The basic principles and laws of gases (Boyle, Charles, Avogadro, ideal gas law, and Dalton law for partial pressure), stoichiometry, and real gases. [SLO 1]
3. The basics in thermochemistry including: Enthalpy, calorimetry, Hess's law, and standard enthalpy of formation. [SLO 1]
4. The nature of liquids and solids through: Intermolecular forces, vapor pressure, and phase diagram. [SLO 1]
5. The properties of solutions such as solution composition, energies of solution formation, solubility, vapor pressure, boiling point elevation, freezing point depression, osmotic pressure, and colligative properties of solutions. [SLO 1]
6. The basics of chemical kinetics and chemical equilibrium and related laws and terminology. [SLO 1]

B. Student Outcomes Addressed by the Course

| | | | | | | | | | | |
|---|---|---|---|---|---|---|--|--|--|--|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | | | | |
| ✓ | | | | | | | | | | |

BRIEF LIST OF TOPICS TO BE COVERED

| List of Topics | No. of Weeks | Contact Hours |
|---|--------------|-----------------|
| Gases and related laws | 2 | 6 hours |
| Basic principles of liquids and solids | 2 | 6 hours |
| Properties of solution, vapor pressure, colligative properties Mid-Term Exam | 3 | 9 hours |
| Chemical Kinetics | 3 | 9 hours |
| Chemical Equilibrium | 3 | 9 hours |
| Final Exam | 3 | 9 hours |
| Total | 16 | 48 hours |

METHODS OF ASSESSMENT

| No. | Method of assessment | Week and Date | % |
|-------|-------------------------------|----------------------|------------|
| 1 | First Mid-term exam | 8 th week | 30 |
| 2 | Homework, Quizzes, Attendance | During the Semester | 20 |
| 4 | Final Examination | Final Week | 50 |
| Total | | | 100 |