

# CHEM 1030 General Chemistry II (3: 3-0-0)

Prerequisite(s) *CHEM 1010 OR CHEM 1020*

This course is designed for students who have taken General Chemistry I and want to continue to expand their chemistry knowledge. It will cover topics related to stoichiometry and chemical reactions, properties of aqueous solutions, acids and bases, thermodynamics and equilibrium, electrochemistry, general aspects in chemistry of the main-group elements, and introduction to transition metal elements and coordination compounds.

**Spring 2022**

**Instructor:**

**Zhenyang Lin 林振陽 (Room 4533; Tel no. x-7379; Email: chzlin@ust.hk)**

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**Textbook:**

**Chemistry – an atoms first approach (3e)**

**Authors:**

**Steven S. Zumdahl, Susan A. Zumdahl and Donald J. Decoste**

**Chapter 10: Properties of Solutions**

**Chapter 11: Chemical Kinetics**

**Chapter 12: Chemical Equilibrium**

**Chapter 13: Acids and Bases**

**Chapter 14: Acid-Base Equilibria**

**Chapter 15: Solubility and Complex Ion Equilibria**

**Midterm Exam (Chapters 10-15)**

**Chapter 16: Spontaneity, Entropy, and Free Energy**

**Chapter 17: Electrochemistry**

**Chapter 18: The Nucleus: A Chemist's View**

**Chapter 19: The Representative Elements**

**Chapter 20: Transition Metals and Coordination Chemistry**

**Final Exam (Chapters 16-20)**

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## Learning Outcomes

On completion of the course, students will be able to

1. Analyze properties of solutions and determine stoichiometry of chemical transformations.
2. Describe different definitions of acids and bases theories and understand acid-base equilibrium.
3. Apply the laws of thermodynamics and account for the factors that lead to spontaneous physical and chemical changes.
4. Describe redox reactions, use electrochemical data to predict the spontaneity of redox reactions, and comprehend the structures of electrochemical cells.
5. Describe and explain the trends and patterns of structures, physical properties and reactivities of selected main group compounds, transition metal compounds.
6. Recognize the impact of chemistry to society.

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**Lecture Hours:** 4:30 pm – 5:50 pm; Wednesday, Friday

**Instructor's Office Hours:**

**Monday Mornings: via Zoom or face-to-face Meetings (upon email request)**

<b>Assessment:</b>	Mid-term exam	45%
	(4:30-6:30pm Friday 1 April 2021)	
	Final exam	45%
	Assignments 1 & 2	5% × 2

**Assessment Scheme:**

Weight	Assessment	Course ILOs
5%	Assignment 1	1, 2
5%	Assignment 2	3, 4, 5
45%	Midterm exam	1, 2, 6
45%	Final exam	3, 4, 5, 6
	Participation	1, 2, 3, 4, 5, 6

**Ungraded Problem Set will be given via Canvas for each chapter.**

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