SCCH 161 GENERAL CHEMISTRY

Semester 1 Academic year 2024

Date Thursday 1.30-4.30 PM **Room SC2-323** **Student Group EGBI/EGCG/EGII**

Instructors: Preeyanuch Junkong SC4-215 (Salaya) preeyanuch.jun@mahidol.ac.th
Suarwee Akavipat C610 (Phayathai) suarwee.sni@mahidol.edu
Department of Chemistry, Faculty of Science Mahidol University

Google classroom (for uploading the lecture materials/assignment)

Invite link: https://classroom.google.com/c/Nzg4NzY5ODg5MTgw?cjc=dxk6kawu

Class code: dxk6kawu

Course description

This course emphasizes the general principles in chemistry; atomic structure, chemical bonding, gases and kinetic molecular theory of gases, phase equilibria, solutions and colloids, periodic table, representative and transition metals, chemical thermodynamics, chemical kinetics, ionic equilibria, electrochemistry

No	Date	Topics	Instructor
1	August 7, 2025	**Introduction to Chemistry:** scientific method, classification of matter, international system of unit (SI) etc.	Preeyanuch Junkong
2	August 14, 2025	**Atomic structure:** atomic structure & theory, quantum theory, atomic orbitals, electron configuration	
3	August 21, 2025	**Chemical bonding:** Lewis dot symbols, the ionic bond, the covalent bond, electronegativity, concept of resonance etc.	
4	August 28, 2025	**Chemical bonding:** molecular geometry, valence bond theory, hybridization of atomic orbitals, molecular orbital theory	
5	September 4, 2025	**Solutions and colloids:** solution process, solubility, colligative properties	
6	September 11, 2025	**Gas and kinetic molecular theory of gases:** ideal gas equation, kinetic molecular theory of gases	
7	September 18, 2025	**Phase equilibria:** liquid-gas equilibria, solid-liquid equilibria, solid-gas equilibria, phase diagram	
8	September 25, 2025	**Thermochemistry**: Introduction; Enthalpy and Chemical Reactions; The First Law of Thermodynamics	Suarwee Akavipat
9	**September 29 - October 3, 2025**	**MIDTERM Examination**	Preeyanuch Junkong
10	October 9, 2025	-No class-	Suarwee Akavipat
11	October 16, 2025	**Thermochemistry**: Gibbs Free Energy and Chemical Equilibrium; The Second Law of Thermodynamics	
12	October 23, 2025	-No class-	
13	October 30, 2025	**Chemical kinetics**: The Rate of Reaction and Rate Law; Reaction Mechanisms	
14	November 6, 2025	**Chemical kinetics**: Integrate Rate Law; Relationship between Reactant Concentration and Time; Activation Energy	
15	November 13, 2025	**Ionic equilibria**: Equilibrium Constant and Factors that Affect Chemical Equilibrium	
16	November 20, 2025	**Ionic equilibria**: Definitions of Acids and Bases; Ionization Constant; Molecular Structure and Strength of Acids	

No	Date	Topics	Instructor
17	November 27, 2025	**Electrochemistry**: Redox Reactions; Galvanic Cells; Standard Reduction Potentials; Spontaneity of Redox Reactions	
18	**December 1–12, 2025**	**Final Examination**	Suarwee Akavipat

Note: *Depending on the situation, this schedule can be changed or the class will be added up. Please check the announcement from the instructors.*

Measurement and evaluation

Score (100):	Attendance	5%
	Homework/Assignment	15%
	Quiz	20%
	Midterm Exam	30%
	Final Exam	30%

Note: *This student evaluation is in accordance with the rules and regulations of the Faculty of Science, Mahidol University*

Criteria and conditions for measurement and evaluation are to be enforced in accordance with Mahidol Univesity Regulation on Diploma and Undergraduate Study and recently Annoucement, the Faculty of Science on Undergraduate Study, by using symbols showing results with assigned scores as shown in the table:

Score (percentage)*	Symbols
80 – 100	A
70 – 79	B+
65 – 69	B
60 – 64	C+
55 – 59	C
50 – 54	D+
40 – 49	**D**
< 49	F

Symbol with D means pass in this course.

*Note Grading criteria could be changed from the given table. Other grading evaluation based on number of student and total score distribution of that course could be assessed to assigned symbol-based student's score using normal distribution curve on mean and standard deviation.

Reference:

1. Hill, J.W. and Petrucci, R.H. General Chemistry, An Integrated Approach. 3th Edition. USA: Prentice Hall. 2002.
2. Atkin, P.W. Atkin's Molecules. 2nd Edition. UK: Cambridge University Press. 2003.
3. Middlecamp, C.H. et al. Chemistry in Context: Applying Chemistry to Society. 7th Edition., USA: McGraw-Hill. 2012.
4. Chang, R. Chemistry. 13th Edition. New York: McGraw-Hill, 2017.