

SCCH 161 GENERAL CHEMISTRY

Semester 1 Academic year 2023

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)

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Department of Chemistry, Faculty of Science Mahidol University

Google classroom (for uploading the lecture materials/assignment)

Invite link: <https://classroom.google.com/c/NjE3MTg2NzIxNzk4?cjc=dynegc4>

Class code: dynegc4

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 10, 2023	Introduction to Chemistry: scientific method, classification of matter, international system of unit (SI) etc.	Preeyanuch Junkong
2	August 17, 2023	Atomic structure: atomic structure & theory, quantum theory, atomic orbitals, electron configuration	
3	August 24, 2023	Periodic table, Representative and transition metals	
4	August 31, 2023	Chemical bonding: Lewis dot symbols, the ionic bond, the covalent bond, electronegativity, concept of resonance etc.	
5	September 7, 2023	Chemical bonding: molecular geometry, valence bond theory, hybridization of atomic orbitals, molecular orbital theory	
6	September 14, 2023	Solutions and colloids: solution process, solubility, colligative properties	
7	September 21, 2023	Gas and kinetic molecular theory of gases: ideal gas equation, kinetic molecular theory of gases	
8	September 28, 2023	Phase equilibria: liquid-gas equilibria, solid-liquid equilibria, solid-gas equilibria, phase diagram	
9	October 3-6, 2023	MIDTERM Examination	Preeyanuch Junkong
10	October 12, 2023	Thermochemistry: Introduction; Enthalpy and Chemical Reactions; The First Law of Thermodynamics	Suarwee Akavipat
11	October 19, 2023	Thermochemistry: Gibbs Free Energy and Chemical Equilibrium; The Second Law of Thermodynamics	
12	October 26, 2023	Chemical kinetics: The Rate of Reaction and Rate Law; Reaction Mechanisms	
13	November 2, 2023	Chemical kinetics: Integrate Rate Law; Relationship between Reactant Concentration and Time; Activation Energy	
14	November 9, 2023	Ionic equilibria: Equilibrium Constant and Factors that Affect Chemical Equilibrium	
15	November 16, 2023	Ionic equilibria: Definitions of Acids and Bases; Ionization Constant; Molecular Structure and Strength of Acids	
16	November 23, 2023	Ionic equilibria: ; Buffer Solutions and Acid-Base Titrations	

No	Date	Topics	Instructor
17	November 30, 2023	Electrochemistry: Redox Reactions; Galvanic Cells; Standard Reduction Potentials; Spontaneity of Redox Reactions	
18	December 4–15, 2023	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 University Regulation on Diploma and Undergraduate Study and recently Announcement, 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
< 39	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:

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