

# SCCH 161 GENERAL CHEMISTRY

Semester 1 Academic year 2022

Date Thursday 1.30-4.30 PM

Room SC1-161

Student Group EG/SIPO

Instructors: Preeyanuch Junkong

SC2-213 (Salaya)

preeyanuch.jun@mahidol.ac.th

Suarwee Snitsiriwat

C310B (Phayathai)

suarwee.sni@mahidol.ac.th

Department of Chemistry, Faculty of Science Mahidol University

Google classroom (for uploading the lecture materials/assignment)

Invite link: <https://classroom.google.com/c/NTM3MjM3MTczODM0?cjc=knk7onl>

Class code: knk7onl

## 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 11, 2022	- No class - (Faculty of Engineering's orientation)	-
2	August 18, 2022	- No class - (Instructor's private leave)	-
3	August 25, 2022	<b>Introduction to Chemistry:</b> Definition of chemistry; International system of unit (SI); scientific notation; significant figures; accuracy and precision etc.	Preeyanuch Junkong
4	September 1, 2022	<b>Atomic structure:</b> Atomic structure; quantum theory; electron configuration, etc.	Preeyanuch Junkong
5	September 8, 2022	<b>Chemical bonding I:</b> The ionic bond; the covalent bond; writing Lewis structure, etc.	Preeyanuch Junkong
6	September 15, 2022	<b>Chemical bonding II:</b> Molecular geometry (VSEPR model); hybridization of atomic orbitals; molecular orbital theory (MO), etc.	Preeyanuch Junkong
7	September 22, 2022	<b>Gas, Liquid, Solids and Phase equilibria:</b> Characteristics properties of gases, liquid and solids; the gas laws; intermolecular forces; properties of liquid, crystalline solid, amorphous solid, phase change, etc.	Preeyanuch Junkong
8	September 29, 2022	<b>Solutions:</b> Types of solution; solution process; concentration unit; solubility and factors; colligative properties; colloids and suspension, etc.	Preeyanuch Junkong
9	October 3-7, 2022	MIDTERM Examination	Preeyanuch Junkong
10	October 13, 2022	- No class -	-
11	October 20, 2022	<b>Thermochemistry:</b> introduction; enthalpy and chemical reactions; laws of thermodynamics; Gibbs free energy and chemical equilibrium	Suarwee Snitsiriwat
12	October 27, 2022	<b>Thermochemistry:</b> introduction; enthalpy and chemical reactions; laws of thermodynamics; Gibbs free energy and chemical equilibrium	Suarwee Snitsiriwat

No	Date	Topics	Instructor
13	November 3, 2022	<b>Chemical kinetics:</b> rate of reaction and rate law; reaction mechanisms; relationship between reactant concentration and time; activation energy	Suarwee Snitsirawat
14	November 10, 2022	<b>Chemical kinetics:</b> rate of reaction and rate law; reaction mechanisms; relationship between reactant concentration and time; activation energy	Suarwee Snitsirawat
15	November 17, 2022	<b>Ionic equilibria:</b> equilibrium constant and factors that affect chemical equilibrium; definitions of acids and bases; ionization constant; molecular structure and strength of acids; buffer solutions and acid-base titrations	Suarwee Snitsirawat
16	November 24, 2022	<b>Ionic equilibria:</b> equilibrium constant and factors that affect chemical equilibrium; definitions of acids and bases; ionization constant; molecular structure and strength of acids; buffer solutions and acid-base titrations	Suarwee Snitsirawat
17	December 1, 2022	<b>Electrochemistry:</b> redox reactions; galvanic cells; standard reduction potentials; spontaneity of redox reactions; effect of concentration on cell EMF	
18	December 6 – 16, 2022	Final Examination	Suarwee Snitsirawat

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

### Measurement and evaluation

Letter grades of A, B+, B, C+, C, D+, D, and F will be given according to the student's score.

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+
<b>40 – 49</b>	<b>D</b>
< 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:**

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.