SCCH 152 General Chemistry II (3 credits)

2/2025

Course Coordinator: Asst. Prof. Dr. Manthana Jariyaboon (manthana.jar@mahidol.ac.th)

Instructors: Asst. Prof. Dr. Soraya Pornsuwan (soraya.por@mahidol.ac.th)
Asst. Prof. Dr. Manthana Jariyaboon (manthana.jar@mahidol.ac.th)

Time: Wednesday 9.30 a.m. – 12.30 p.m. **Room:** SC1-154

Google classroom class code: uvjeyfgv

Program: Y1ENNM, Y1SCBE

Course Goals:

The main goal of this course is to provide a broad foundation in chemistry in the topics of thermodynamics, kinetics, properties of matters, equilibria and electrochemistry. Students should be able to apply and integrate basic concepts gained from this course to their study in upper-level courses and to solve chemistry problems. Students can communicate their ideas on how to solve chemistry problems.

Course-Level Learning Outcomes (CLOs):

After completion of this course, students are able to:

CLO1 Describe the principles and theories in the following topics: chemical thermodynamics, nature and types of energy, laws of thermodynamics and chemical reaction, rate of reaction, rate law, reaction mechanism, chemical equilibrium, acid-base equilibria, solubility equilibria, factors that affect equilibria, redox reaction, galvanic and electrolytic cell, applications of electrochemistry, physical and chemical properties of gas, liquid and solution.

CLO2 Apply appropriate chemistry concepts to solve uncomplicated chemistry problems in the following areas: chemical thermodynamics, chemical kinetics, equilibria, electrochemistry, gas, liquid, solid and solutions.

CLO3 Use appropriate calculation to solve quantitative problems in the following areas: chemical thermodynamics, chemical kinetics, equilibria, electrochemistry, gas, liquid, solid and solutions.

CLO4 Communicate their ideas effectively in written form how to solve uncomplicated chemistry problems based on basic concepts gained from this course.

Evaluation:

	homework/assignment	15%
	Attendance/Activity in class	5%
	Quiz	10%
	Exam (Midterm 35%, Final 35%)	70%
	Total	100%

Score (percentage)	Symbols
75-100	A
69-74	B+
62-68	B
55-61	C+
48-54	C
42-47	D+
36-41	D
0- 35	F

Schedule

Wk	Date	Topic	Hrs.	Instructor
Wednesday: 9.30 a.m. – 12.30 p.m.				**Room: SC1-154**
1	7 Jan 2026	Introduction, Chemical Thermodynamics	3	Dr. Manthana
2	14 Jan 2026	Chemical Thermodynamics	3	
3	21 Jan 2026	Chemical Kinetics	3	
4	28 Jan 2026	Chemical Kinetics, Chemical Equilibrium	3	
5	4 Feb 2026	Chemical Equilibrium	3	
6	11 Feb 2026	Acid-base Equilibria and Solubility Equilibria	3	
7	18 Feb 2026	Acid-base Equilibria and Solubility Equilibria	3	
8	25 Feb 2026	Review & Q&A	3	
9	2-6 Mar 2026	Midterm Exam Week		
10	11 Mar 2026	Electrochemistry	3	Dr. Soraya
11	18 Mar 2026	Electrochemistry	3	
12	25 Mar 2026	Gases, solid, liquid, and solutions	3	
13	1 Apr 2026	Gases, solid, liquid, and solutions	3	
14	8 Apr 2026	Gases, solid, liquid, and solutions	3	
15	15 Apr 2026	No class (Compensatory holiday)		
16	22 April 2026	Review & Q&A	3	
17	27 Apr- 8 May 2026	Final Exam Week		

Texts and main documents

- Chang, R. Chemistry 13th ed. (International ed.). USA: McGraw-Hill, Inc.; 2019.

- Olmsted, J. A. and Williams, G. W. *Chemistry*. 4th ed. USA: John Wiley & Sons, Inc.; 2005.

- McMurry, J. and Fay, R.C. *Chemistry*. 4th ed. USA: Prentice Hall; 2004.

- Oxtoby, D. W.; Gillis, H. P. and Campoin, A. *Principles of Modern Chemistry*. 7th ed. USA: Thomson Brooks; 2012.

- Hill, J.W. and Petrucci, R.H. General Chemistry, An Integrated Approach. 3rd edition. USA: Prentice Hall; 2002.

- Catherine H. Middlecamp, et al. Chemistry in Context: Applying Chemistry to Society. 7th ed., New York: McGraw-Hill; 2012.