

SYLLABUS for Chemistry Major Laboratory I (CH252)

Course Information

- 1) Lecture: Experiment: Credit = 0: 6h: 2
- 2) All experiments and the final presentation will be performed *in person off line*, unless there is a further notice. Location: Goong-Ni Laboratory Building, room 704
- 3) Instructors: Class A- Prof. Woo Youn Kim, B- Prof. Sang Woo Han, C- Prof. Kiyong Park
- 4) Time Table

Time		Mon	Wed	Fri
p.m.	13:00~19:00	A	B	C

Objectives for the course

- 1) **Skills relating to learning chemistry:** Making chemistry real by illustrating ideas and concepts, exposing theoretical ideas to empirical teaching and teaching new chemistry.
- 2) **Practical skills:** Handling equipment and chemicals, learning safe scientific practices, mastering specific techniques, measuring accurately, and observing carefully.
- 3) **Scientific skills:** Learning the skills of observation and the skills of deduction and interpretation. Appreciation of the place of the empirical as a source of evidence in inquiry. Learning how to devise experiments that offer insights into chemical phenomena.
- 4) **General skills:** Numerous useful skills to be developed such as team working, reporting, presenting, discussing, time management, and problem solving skills.

Course requirement

- 1) Preparation in advance for experimental work
 - (a) Pre-laboratory reading preparation for successful experiment
 - (b) "Pre-lab" quizzes or pre-lab reports are required relating to the experimental details.
- 2) Wearing of eye protection and lab clothing at all times while in the laboratory
- 3) Writing up and submission of lab reports. Includes the following (but see evaluation)
 - (a) Observations and experimental detail
 - (b) Detailed method of processing the experimental data (for Quantitative analytical experiment)
 - (c) Calculations and Conclusions regarding the accuracy and the precision of experimental results and errors and the inherent errors based on the measurements.

Grading

5 experiments (each 75 pts) + Final Presentation (25 pts)

Grades: A+:95>, A0:80>, B+:70>, B0:60>, B-:50>, C+:40>, F:<40

Methods of Evaluation

The student will be evaluated based on his/her performance of requirement listed below.

Point distribution per One experiment = 15 points

- 1) Pre-laboratory Interview (0 points)
 - (a) Before starting experiments, everyone has to be answer for questions by TA
 - (b) The questions about theoretical background, procedure, and safety

- (c) One has to pass the interview to initiate experiments
- 2) Attitude (5 pts)
 - (a) Lateness (-2 pts)
 - (b) Lab Safety (-3 pts)
 - (c) Cleanliness (-2 pts)
 - (d) Concentration (-2 pts)
 - 3) Post-Laboratory Reports (10 pts)
 - (a) Data & Results (6 pts)
 - Lab note (3 pts)
 - Qualitative results: Data & Calculation, Table & Graphs (3 pts)
 - (b) Discussion (4 pts)
 - Assessment of results
 - Conclusions

Final Presentation (25 pts, 15 min per group)

-Topic will be chosen randomly two weeks before the presentation.

Lab Report Submission

- 1) Online submission: www.turnitin.com
- 2) Create your account. Enter Class ID and Password (provided by TA)
- 3) Enter your name.
- 4) Post-lab report submission due: Midnight, 7 days after the current experiment.
- 5) Submitting a post-lab report, it should include the corresponding pre-lab report.
- 6) Plagiarism results in zero for all reports involved (determined by TAs and Professor)
- 7) Late submission of post lab report (after 72 hours from the due date) is not allowed.

Examination Information

No Exams.

Reference

- 1) Handbooks
 - (a) CRC handbook of Chemistry and Physics (CRC press, Boca Raton, Florida)
 - (b) Merck Index (Merck & Co., Rahway, New Jersey)
 - (c) Lange's Handbook of Chemistry (McGraw-Hill, New York)

Tentative Schedule and Topics

- 1) Schedule

Week	Date: time (Mon, Wed, Fri: 13:00 ~ 19:00)	Experiment #	Assignment of Experimental Group per Exp# for Rotation				
			Exp1	Exp2	Exp3	Exp4	Exp5
1	9/2, 9/4, 9/6	Exp0: Orientation					
2	9/9, 9/11, 9/13	[Exp1~Exp5]	1	2	3	4	5
3	9/16, 9/18, 9/20	[Exp1~Exp5]					
4	9/23, 9/25, 9/27	[Exp1~Exp5]	6	7	8	9	10
5	9/30, 10/2, 10/4	[Exp1~Exp5]	5	1	2	3	4
6	10/7, 10/9 , 10/11	[Exp1~Exp5]	10	6	7	8	9

7	10/14, 10/16, 10/18	[Exp1~Exp5]	4	5	1	2	3
8	10/21 ~ 10/25	Mid-Term Exam period					
9	10/28, 10/30, 11/1	[Exp1~Exp5]	9	10	6	7	8
10	11/4, 11/6, 11/8	[Exp1~Exp5]	3	4	5	1	2
11	11/11, 11/13, 11/15	[Exp1~Exp5]	8	9	10	6	7
12	11/18, 11/20, 11/22	[Exp1~Exp5]	2	3	4	5	1
13	11/25, 11/27, 11/29	[Exp1~Exp5]	7	8	9	10	6
14	12/2, 12/4, 12/6	Make-up experiment & presentation preparation					
15	12/9, 12/11, 12/13	Final Presentations					
16	12/16~12/20	Final Exam Period					

2) Topics

Topics	TA in charge
Exp0. Introduction, Work Instructions, and Safety	
Exp1. Electrochemistry	
Exp2. IR/Raman/SERS Spectroscopy and Selection Rules	
Exp3. Computational Chemistry and Quantum Tunneling	
Exp4. Life Time of Fluorescence	
Exp5. Atomic Force Microscope	