

Syllabus for General Chemistry Laboratory I

2022 SPRING Semester

Course Information

- 1) Course Number: CH102
- 2) Lecture: Experiment: credit = 0:3 h:1
- 3) Location: Lab 402, 406, 704 (Goong-Ni Laboratory Building, E6-5)

Laboratory Manual (Textbook)

Laboratory manual for principles of general chemistry 10/e, Beran

Objectives for the Course

- 1) To teach basic laboratory techniques.
- 2) To introduce elementary methods of assessing the significance of experimental measurements.
- 3) To provide an experience that enables the students to acquire a positive attitude toward chemistry, or science.

Course Requirements

- 1) Preparation in advance for experimental work.
 - (a) Pre-laboratory reading preparation for successful experimentation.
 - (b) Pre-lab quizzes are or pre-lab reports are required relating to the experimental details.
- 2) 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.
 - (c) (For Quantitative analytical experiments)
Calculations and Conclusions regarding the accuracy and the precision of experimental results and errors and the inherent errors based on the measurements.

Grading

A (45-50%), B (45-50%), C-D (the others) per one class

(Two unexcused absences = F for this course)

Topics and Schedule

Exp#	Topics	Non-real time online lab class	Off-line Rotation lab class
Exp0	Orientation: Introduction, Lab Schedule, and Method of Evaluation	O *	
Exp1	Atomic and Molecular Structure (<i>Dry Lab 3</i>)		O
Exp2	Quantum Chemical Calculation: The Potential Energy Curve and the Orbitals of H ₂ ⁺	O	
Exp3	Synthesis of Potassium Alum (<i>Exp 15</i>)	O	
Exp4	A carbonate Analysis; Molar Volume of Carbon Dioxide (<i>Exp 13</i>)		O
Exp5	Molar Mass of a Solid (<i>Exp 14</i>)		O
Exp6	Thermodynamics of the Dissolution of Borax (<i>Exp 26</i>)	O	
Exp7	LeChatelier's Principle; Buffers (<i>Exp 16</i>)		O
Exp8	Potentiometric Analysis (<i>Experiment 18</i>)		O
Exp9	Molar Solubility; Common-Ion Effect (<i>Experiment 22</i>)	O	
Exp10	Galvanic Cells, the Nernst Equation (<i>Experiment 32</i>)		O

*non-real time online lab class: Experimental video watching at klms.kaist.ac.kr and report submission at www.turnitin.com

We are going to run a hybrid lab class for this course (off-line lab class for 6 experiments and online lab class for 4 experiments out of 10 experiments). Exceptionally, students cannot attend classes in person (vaccination, confirmed- or self-quarantine case) or international students facing entry restrictions due to Covid-19 are able to complete their experiments online at klms.kaist.ac.kr only for that period.

Class classification: G1 Classes: A, D, G, J, M, P, S, V, AA / G2 Classes: B, E, H, K, N, Q, T, W, Y, AB/
G3 Classes: C, F, L, O, R, U, X, Z

Period	Experiment #					Notes (Exp#/Lab#/Class Group)	
	Mon	Tue	Wed	Thu	Fri	One Half of student in each class (Exp#/Lab in E6-5)/Group of classes)	The other half (Exp#/Lab in E6-5)/Group of classes)
	2/28 ~3/1~ 3/4	Expo	Expo	Expo	Expo	Expo	Online (klms.kaist.ac.kr)
3/7 ~3/9~ 3/11	Exp1, Exp4, Exp5	Exp1, Exp4, Exp5	Exp1, Exp4, Exp5	Exp1, Exp4, Exp5	Exp1, Exp4, Exp5	Exp1/402/G1, Exp4/406/G2, Exp5/704/G3	[Exp3] Online at klms.ac.kr
3/14 ~ 3/18	Exp1, Exp4, Exp5	Exp1, Exp4, Exp5	Exp1, Exp4, Exp5	Exp1, Exp4, Exp5	Exp1, Exp4, Exp5	Exp1/402/G3, Exp4/406/G1, Exp5/704/G2	[Exp2] Online at klms.ac.kr
3/21 ~ 3/25	Exp1, Exp4, Exp5	Exp1, Exp4, Exp5	Exp1, Exp4, Exp5	Exp1, Exp4, Exp5	Exp1, Exp4, Exp5	Exp1/402/G2, Exp4/406/G3, Exp5/704/G1	
3/28 ~ 4/1	Exp1, Exp4, Exp5	Exp1, Exp4, Exp5	Exp1, Exp4, Exp5	Exp1, Exp4, Exp5	Exp1, Exp4, Exp5	[Exp3] Online at klms.ac.kr	Exp1/402/G1, Exp4/406/G2, Exp5/704/G3
4/4 ~ 4/8	Exp1, Exp4, Exp5	Exp1, Exp4, Exp5	Exp1, Exp4, Exp5	Exp1, Exp4, Exp5	Exp1, Exp4, Exp5	[Exp2] Online at klms.ac.kr	Exp1/402/G3, Exp4/406/G1, Exp5/704/G2
4/11 ~ 4/15	Exp1, Exp4, Exp5	Exp1, Exp4, Exp5	Exp1, Exp4, Exp5	Exp1, Exp4, Exp5	Exp1, Exp4, Exp5		Exp1/402/G2, Exp4/406/G3, Exp5/704/G1
4/18 ~ 4/22							
4/25 ~ 4/29	Exp7, Exp8, Exp10	Exp7, Exp8, Exp10	Exp7, Exp8, Exp10	Exp7, Exp8, Exp10	Exp7, Exp8, Exp10	Exp7/402/G1, Exp8/406/G2, Exp10/704/G3	[Exp6] Online at klms.ac.kr
5/2 ~5/5~ 5/6	Exp7, Exp8, Exp10	Exp7, Exp8, Exp10	Exp7, Exp8, Exp10		Exp7, Exp8, Exp10	Exp7/402/G3, Exp8/406/G1, Exp10/704/G2	[Exp9] Online at klms.ac.kr
5/9 ~ 5/13	Exp7, Exp8, Exp10	Exp7, Exp8, Exp10	Exp7, Exp8, Exp10	Exp7, Exp8, Exp10	Exp7, Exp8, Exp10	Exp7/402/G2, Exp8/406/G3, Exp10/704/G1	
5/16 ~ 5/20	Exp7, Exp8, Exp10	Exp7, Exp8, Exp10	Exp7, Exp8, Exp10	Exp7, Exp8, Exp10	Exp7, Exp8, Exp10	[Exp6] Online at klms.ac.kr	Exp7/402/G1, Exp8/406/G2, Exp10/704/G3
5/23 ~ 5/27	Exp7, Exp8, Exp10	Exp7, Exp8, Exp10	Exp7, Exp8, Exp10	Exp7, Exp8, Exp10	Exp7, Exp8, Exp10	[Exp9] Online at klms.ac.kr	Exp7/402/G3, Exp8/406/G1, Exp10/704/G2
5/30 ~6/1~ 6/3	Exp7, Exp8, Exp10	Exp7, Exp8, Exp10		Exp7, Exp8, Exp10	Exp7, Exp8, Exp10		Exp7/402/G2, Exp8/406/G3, Exp10/704/G1
6/6 ~ 6/10			Exp7, Exp8, Exp10	Exp7, Exp8, Exp10			
6/13 ~ 6/17							

Methods of Evaluation

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

One Experiment = 100 points

10 experiments X 100 points = 1000 points in total

The assignment description of an experiment consists of four parts; Pre-lab Assignment, Attitude, Lab Report, and Post-Lab Assignment. Points distribution is as follows.

- 1) Pre-Lab Assignment (30 points)
 - (a) Introduction (Theory) and Procedure Summary (5 pts in each)
 - (b) Question (20 pts)

- 2) Attitude (10 points)
 - (a) lateness, lab safety or cleanup (5 pts),
 - (b) Concentration or comprehension (5 pts)

- 3) Laboratory Reports (40 points)
 - (a) Result
 - (b) Discussion
 - o Summary
 - o Assessing the results
 - o Conclusions
 - (c) Reference

- 4) Post-Lab Questions (20 pts)

Grading: Total 10 Experiments (100 pts) = 1000 pts

A (45-50%), B (45-50%), C-D (5%)

(Two unexcused absences = automatic F for this course)

Examination Information: No examination.

Lists	Section	Penalty /Bonus Points	Explanations														
Pre-lab assignment (30 pts)	summary		Introduction and procedure summary on the lab manual														
	Question		Solving assigned questions from Laboratory Question(s) or Lab report														
Attitude (10 points)	Attendance: late coming	-5	When you arrive at the lab before TA calls your name, you get a full score, 5 pts. If you arrive 10 min late after the beginning of the lab, you get 3 pts. When you arrive between 10 min and 20 min, you will get the score, 0 pts. For being 20 minutes late, you can't participate in the lab experiment. (No chance any more.)														
	Attendance: absence without notice	0	If you are absent 3 times without any notices, F credit will be recorded. *The lab experiment is ONLY permitted in registered class. *Only valid excuses are illness (with a valid doctor's excuse) or unusual circumstance beyond your control (death in family), etc. * The student must submit written verification of them for an excused absence.														
	Lab safety & Cleanup	-5	Personal Protective Equipment: Safety glasses, Attire (lab coat) Wear approved eye protection at all times while in the laboratory. The penalty is -5 pts for this. Care of balance: Anyone found to be leaving spilled chemicals in the balance area or bench will lose 5 pts for each violation. Any chemicals spilled on the benchtop or the balance pan during transfer are to be cleaned up immediately by the student. Cleanup of Lab Bench: The students are responsible for cleaning up their immediate lab bench area before leaving lab. This means wiping up any spills and disposing of any paper towels from the benchtop and sink. Failure to do this result in a deduction of -5 pts. Sink Disposal of chemicals: DO NOT discard any chemicals down the laboratory sink. The penalty is -5 pts for this.														
	Concentration & Comprehension	-5	Check list - playing with gossiping - cell phone (touching, ringing, chatting), and so on - Repeated failure of the same experiment														
Laboratory Report (40 points)			<p>o Report Format</p> <table border="1"> <tr> <td>Date</td> <td></td> </tr> <tr> <td>Name</td> <td></td> </tr> <tr> <td>Co-worker</td> <td></td> </tr> <tr> <td>Introduction (~10 lines)</td> <td>Summary of introduction on the lab manual.</td> </tr> <tr> <td>Results</td> <td>o Data or Analysis o Calculations (with units) o Graphs o Tables</td> </tr> <tr> <td>Discussion (20 ~ 40 lines)</td> <td>o Summary o Assessing the results (Analysis) o Conclusions</td> </tr> <tr> <td>Reference</td> <td></td> </tr> </table> <p>* Student must submit Result Summary to TA before leaving lab. *Lab partner will share data, however separate lab report must be written by each student. *Duplicate reports will be given a zero. *Allowing someone to submit or resubmit your work as theirs will result in a zero for both parties.</p>	Date		Name		Co-worker		Introduction (~10 lines)	Summary of introduction on the lab manual.	Results	o Data or Analysis o Calculations (with units) o Graphs o Tables	Discussion (20 ~ 40 lines)	o Summary o Assessing the results (Analysis) o Conclusions	Reference	
Date																	
Name																	
Co-worker																	
Introduction (~10 lines)	Summary of introduction on the lab manual.																
Results	o Data or Analysis o Calculations (with units) o Graphs o Tables																
Discussion (20 ~ 40 lines)	o Summary o Assessing the results (Analysis) o Conclusions																
Reference																	
Laboratory Questions (20 points)			You should solve the questions and submit them in lab class to your TA. *Identical question answers will receive a zero.														

Laboratory Makeup Policy

- Make-ups are only for those who missed labs for a legitimate reason and got TA's permission to make up lab. (Give a written documentation to your lab TA during the next lab or bring it to his lab and ask permission to make up the missed lab)
- Missed labs without a valid excuse, shall count as zero (0) and the student will not be allowed to make up this missed lab.
- Students are not allowed to make up late lab reports or to make up more than two experiments during the scheduled lab make-up time. Re-doing labs is not possible.
- Missed scheduled make-ups will be counted as zero and will not be rescheduled unless exceptional circumstances exist.
- If more than three labs are missed with or without valid excused student shall fail the course.
- Your lab TA will let you know the make-up schedule and the due dates for make-up reports.

Assignment Submission and Feedback

- Online Submission: www.turnitin.com
 - Create your account. Enter Class ID and Password (provided by TA).
 - Enter your name in Korean or English.
- Submission Due: Within 7 days
- Posting Grade: Within 3 days from the due date
- Claim Period: Within 2 days after the period of grading and feedback

[Example]

Wed	Thu	Fri	Sat	Sun	Mon	Tue
	[Exp1]	Due: Within 7 days				
	Period for Grading and Feedback of the Assignment			Claim period		

Policy for Late Lab Report

You should submit your assignment by due date on Turnitin. You are entirely responsible for both **upload of the assignment file within due date** and **confirmation of the successful upload** to Turnitin. *Warning!* We will not accept any excuses or compromise in case that you deduct any points below due to your late report submission. If you miss last chance, you don't need to submit it.

- ✓ Within 24 hours (last chance): -20 points
- ✓ More than 24 hours: -100 points

Our Guidelines to check Plagiarism Using the Turnitin Software

Reports having similarity ranges from 24% to 100% or the following common sources will be regarded as plagiarism that results in zero for all reports involved (determined by chief TA and instructor).

Example 1. Text matching

- Overall Similarity index: **Should not exceed 24%** (24% and below gives the color code-Green, in Turnitin, indicating that it within the acceptable).
- Single source similarity index: Should not exceed 2%
- Acceptable number of words in unbroken string (phrase or sentence): **Should not exceed 15 words**

The color of the report icon indicates the similarity score of the report, based on the amount of matching or similar text that was uncovered. The percentage range is 0% to 100%. The possible similarity ranges are:

- **Blue:** No matching text
- **Green:** One word to 24% matching text
- **Yellow:** 25-49% matching text
- **Orange:** 50-74% matching text
- **Red:** 75-100% matching text

TITLE	SIMILARITY
Submission	0% 
Submission	6% 
Submission	43% 
Submission	58% 
Submission	80% 

If you get an orange 52% similarity percentage, that means that 52% of your paper is exactly the same as other sources found by Turnitin. Even in case of 15% similarity, if the matching text is one continuous block of borrowed material (should not exceed 15 words), it will be considered as plagiarized text of significant concern.

Example 2. Cut/ Copy and Paste material from the Web, textbooks or online manual, data (lifting phrases, sentence and paragraphs of someone's work beyond an acceptable number of words)

Example 3. Copying the work of another student

Counting Attendance for Online Lab Class

Students are required to complete both of **video watching** and **assignment submission** per one experiment. That is to say, to be counted for one attendance of online lab class, student must watch total running time of the laboratory videos uploaded on the KLMS and submit the assignment to the Turnitin per one experiment.