

# 2023 Winter-Online Bridge Program

## College Chemistry (CH107) Syllabus

### 1 Basic Information

Term	<b>2023 Winter semester</b>	
Course Title	<b>College Chemistry</b>	<b>CH107</b>
Professor	<b>David G. Churchill</b>	
Department	<b>Department of Chemistry</b>	
Language	<b>English</b>	
Teaching Assistants	<b>Young Ho Kim (김영호)    sea05k@kaist.ac.kr</b> <b>Soo Yeon Lee (이수연)    1004syrhee@kaist.ac.kr</b>	
Students	<b>Applicants of the <u>Online</u> Bridge Program / College Chemistry at KAIST</b>	
Learning Period	<b>2024. 1. 3.(Tue) ~ 2024. 3. 11.(Mon) (10 weeks in total)</b> <b>4 Webinars are included.</b>	
Reviewing Period	<b>2024. 3. 12.(Tue) ~ 2024. 3. 22.(Fri) (1 week in total)</b>	
Final Exam Date	<b>2024. 3. 23.(Sat) <u>OFFLINE, in person at KAIST!</u></b>	

## 2 Course Details

<p>Course Description</p>	<p>CH107 prepares the beginning KAIST student for General Chemistry (CH 101) and may be appropriate for the student who was not exposed to a heavy science curriculum in High School.</p> <ul style="list-style-type: none"> <li>All basics of chemistry are covered simply and in English (<i>video series, distance learning, ppt slides</i>).</li> <li>Assignment (5) (15%) and attendance (webinars) (Discussion 10%) are taken seriously and will count significantly in grading.</li> <li>We will have a few informal webinars too through the semester where the students' presence, questions/discussion and good attitude will be important in helping form a sense of community.</li> <li>In addition to the outlined course contents below, which are web-based, we will ask students to memorize the periodic table (symbols).</li> <li>We welcome all motivated students, regardless of scientific exposure or educational background, etc.</li> </ul>					
<p>Textbook/References</p>	<p>The learning focuses on premade video lectures by Professor Churchill and CELT. Students shall watch a series of videos and make notes on the accompanying slides. The lecturer introduces and narrates the slides. The textbook is also necessary to purchase and most graphics originate from the text.</p> <p>Our text is:  <b>“Basic Chemistry” 9<sup>th</sup> edition (International Student Version) by Malone, Dolter, Gentemann.</b></p>					
<p>Evaluation</p>	<p>Attitude</p>	<p>Quizzes</p>	<p>Assignment**</p>	<p>Discussion/ Webinar Attendance /Others</p>	<p>Final Exam (in person!)</p>	<p>Total</p>
	<p><b>5%</b></p>	<p><b>5%</b></p>	<p><b>15%</b></p>	<p><b>10%</b></p>	<p><b>65%</b></p>	<p><b>100%</b></p>

Assignment questions will be taken from the end of the chapter questions.

**\*\*Students should upload the answer sheets (an image file-digital photograph or scan) of assignments to the Online KAIST website during the given period.**

**3** Weekly Schedule

<b>Week (Monday date)</b>	<b>Subject / Contents (see below for the time breakdown of recording) (Opinion of Level of Difficulty is listed)</b>	<b>Assignment and webinar schedule</b>
Week 1 (1 Jan. ---)	<b>Chapter 1:</b> Chemistry and Measurements ( <i>Easy</i> ) <b>Chapter 2:</b> Elements and Compounds ( <i>Easy</i> ) <b>Chapter 3:</b> The Properties of Matter and Energy ( <i>Medium</i> )	<b>Introductory Webinar on Jan 3 or 4; Time and Link are TBA</b>
Week 2 (8 Jan. ---)	<b>Chapter 4:</b> The Periodic Table and Chemical Nomenclature ( <i>Medium</i> ) <b>Chapter 5:</b> Quantities in Chemistry ( <i>Medium</i> ) <b>Chapter 6:</b> Chemical Reactions ( <i>Medium</i> )	<b>Assignment A: Ch. 1-3 Due Sunday 14 Jan (23:59)</b>
Week 3 (15 Jan. ---)	<b>Chapter 7:</b> Quantitative Relationships in Chemical Reactions ( <i>Medium</i> ) <b>Chapter 8:</b> Modern Atomic Theory ( <i>Difficult</i> ) <b>Chapter 9:</b> The Chemical Bond ( <i>Medium</i> )	<b>Assignment B: Ch. 4-6 Due Sunday 21 Jan (23:59)</b>
Week 4 (22 Jan. ---)	<b>Chapter 10:</b> The Gaseous State ( <i>Difficult</i> ) <b>Chapter 11:</b> The Solid and Liquid States ( <i>Medium</i> )	<b>Assignment C: Ch. 7-9 Due Sunday 28 Jan (23:59)</b>
Week 5 (29 Jan. ---)	<b>Chapter 12:</b> Aqueous Solutions ( <i>Difficult</i> )	<b>Webinar on Jan 31 or Feb 1; Time and Link are TBA (Short Quiz)</b>
Week 6 (5 Feb. ---)	<b>Chapter 12: continued.</b>	<b>Assignment D: 10- 12 Due Sunday 11 Feb (23:59)</b>
Week 7 (12 Feb. ---)	<b>Chapter 13:</b> Acids, Bases and Salts ( <i>Medium</i> )	
Week 8 (19 Feb. ---)	<b>Chapter 13: continued.</b>	<b>Webinar on Feb 21 or 22; Time and Link TBA (Short Quiz)</b>
Week 9 (26 Feb. ---)	<b>Chapter 14:</b> Oxidation-Reduction Reactions ( <i>Difficult</i> )	<b>Webinar on Feb 28 or Feb 29; Time and Link TBA (Short Quiz)</b>
Week 10 (4 Mar. ---)	<b>Chapter 14: continued.</b>	<b>Assignment E:Ch. 13-14 Due Sunday 10 March (23:59)</b>
Week 11 (11 Mar. ---)	<<<Student Exam Preparation (Study and Review) Period>>>	
Week 12 (18 Mar. ---)	<b>EXAM is on 2024. 03. 23.(Sat) <u>OFFLINE, in person at KAIST!</u></b>	<b>EXAM is on 2024. 03. 23.(Sat) <u>OFFLINE, in person at KAIST!</u></b>

Week 13 (25 Mar. ---)		
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#### 4 Lecture List (durations)

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Week 1 (~3hr 20min)

Ch1-1-1. Chemistry and Measurements Part A - The Numerical Value of a Measurement (33:46)

Ch1-1-2. Chemistry and Measurements Part A - Significant Figure in Calculation & Expressing Numbers (16:46)

Ch1-2. Chemistry and Measurements Part B – The Measurements Used in Chemistry (25:03)

Ch2-1. Elements and Compounds Part A (36:18)

Ch2-2. Elements and Compounds Part B (20:03)

Ch3-1-1. The Properties of Matter and Energy Part A – Physical & Chemical properties in matter (25:31)

Ch3-1-2. The Properties of Matter and Energy Part A – Density & Properties of mixtures (28:38)

Ch3-2. The Properties of Matter and Energy Part B - Energy (19:32)

Week 2 (~3hr)

Ch4-1. The Periodic Table and Chemical Nomenclature Part A (28:53)

Ch4-2. The Periodic Table and Chemical Nomenclature Part B (32:06)

Ch5-1. Quantities in Chemistry Part A (36:01)

Ch5-2. Quantities in Chemistry Part B (12:55)

Ch6-1. Chemical Reactions Part A (32:25)

Ch6-2-1. Chemical Reactions Part B – Ion & Activity (24:18)

Ch6-2-2. Chemical Reactions Part B – Precipitation & Neutralization (20:33)

Week 3 (~4hr)

Ch7-1. Quantitative Relationships in chemical Reactions Part A (36:04)

Ch7-2. Quantitative Relationships in chemical Reactions Part B (09:40)

Ch8-1-1. Modern Atomic Theory Part A – Emission spectra & Bohr's model (31:58)

Ch8-1-2. Modern Atomic Theory Part A -Modern atomic theory (24:26)

Ch8-2-1. Modern Atomic Theory Part B – Electronic configuration (24:45)

Ch8-2-2. Modern Atomic Theory Part B -Orbital diagram & Periodic trend (21:27)

Ch9-1. The Chemical Bond Part A (30:40)

Ch9-2-1. The Chemical Bond Part B (33:56)

Ch9-2-2. The Chemical Bond Part C (34:06)

Week 4 (~2hr)

Ch10-1. The Gaseous State Part A (34:09)

Ch10-2. The Gaseous State Part B (31:48)

Ch11-1. The Solid and Liquid States part A (39:34)

Ch11-2. The Solid and Liquid States part B (20:46)

Week 5,6 (~1hr)

Ch12-1. Aqueous Solutions Part A (41:28)

Ch12-2. Aqueous Solutions Part B (21:47)

Week 7,8 (~1hr 20min)

Ch13-1-1. Acids, Bases and Salts part A – Properties (19:49)

Ch13-1-2. Acids, Bases and Salts part A - Strength (20:03)

Ch13-2-1. Acids, Bases and Salts part B (17:15)

Ch13-2-2. Acids, Bases and Salts part C (28:28)

Week 9,10 (~1hr 20min)

Ch14-1. Oxidation-Reduction Reactions Part A (42:00)

Ch14-2. Oxidation-Reduction Reactions Part B (36:09)

**END**