

# CHEM 0960

## General Chemistry for Engineers 1

Fall 2023

**\*\*Special thanks to Dr. Xinfeng (Kevin) Quan's and Dr. Jiabei Zhou  
for their invaluable support for this course\*\***

### Instructor and TA information

- **Lecturer:** Dr. Wenwen Xu
- **Office:** Rm 226, Zone 4, SCUPI
- **Office hour:**

8:15-11:00 Monday (Section 1); 8:15-11:00 Tuesday (section 2);

8:15-11:00 Wednesday (Section 3); 8:15-11:00 Thursday (Section 4)

Or by appointment

- **TA:** Zhenrui Bai (Monday); Zhengyang Jin (Tuesday); Yuxin Huang (Wednesday); Haojin Zhang (Thursday)
- **TA office hour:** by appointment
- **Email:** wenwen.xu@scupi.cn

### Catalog Description

Chem 0960 is the first part of the introductory-level chemistry class to help students build a solid foundation with this diverse, complex and yet critical discipline. Important topics covered in this course include, but are not limited to, scientific method, atomic structure, periodic trends of elements, quantum theory, molecular geometry and bonding theories, stoichiometry, chemical reaction in aqueous solutions. No prerequisites are needed.

Credit hours: 3.0

### Course Objective

Fundamental concepts and principles of chemistry are important to engineers. Knowledge on chemistry will help engineers to communicate with chemists, and more importantly, to understand the properties of working objects. To gain such knowledge, this two-semester course (including Chem 0960) covers a relatively broad yet important range of topics. Learning objectives related to specific topics will be listed in the lecture slides as each chapter goes. Upon successful completion of this course, you should gain “global” skills as follows:

- Be able to communicate chemistry using basic chemistry vocabulary.

- Predict material properties using basic concepts and principles of chemistry.
- Explain scientific methods e.g., how theory is constructed and tested via experimental efforts, particularly in chemistry.
- Demonstrate both qualitative and quantitative problem-solving skills using knowledge on structural chemistry, stoichiometry, thermochemistry, chemical equilibrium, and reaction kinetics.

### Applicable ABET Outcome

- Students are able to have a fundamental understanding of the principles and concepts of general chemistry.
- Students are able to have the critical thinking to apply chemistry knowledge to real world problems.
- Students are able to have scientific communication skills in English and prepare them for advanced studies.

### Required Textbook

- Chemistry: Atoms First, 4th edition by Julia Burdge and Jason Overby.
- Online system: blackboard (BB), where you can find the class announcements, handouts, assignments as well as grades.

### Grades

Exams 1 & 2	200 pts
Final Exam	150 pts
Homework	60 pts
Attendance	20 pts
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Total	430 pts

- Please expect two midterm-exam after lecture **4** and lecture **8**. Each midterm exam will last 2 hour covering all content after the previous exam.
- The final exam is 2.5 hours long and will cover content thought out the course.

### Homework

- Homework is due the **BEGINNING** of the class (**1:50 PM**) in the week after. **5 pts** will be deducted from your homework scores for late homework submission. Short answer to the homework will be posted usually on Friday noon. **Late homework will not be graded after the homework solution is posted.**
- Please submit your homework in **PDF format** through **BB** via **computer**. Refer to the 'how-to' folder for instructions on PDF conversion as well as online submission. **AVOID** use cell phone app to submit homework. **Do not use cellphone** since glitches frequently happened on cell phone APP and we cannot receive your homework!

- Name the PDF file as section #-your name since it is extremely important for us to archive your performance. If you repeating this error, beginning from the third time, 2 pts will be deducted for each time.
- Homework grades are released within one week after submission. If you have any questions for any of your grades, contact your TA first. If problems cannot be resolved, please contact Prof. Xu to make the final decision. Any homework grading requests will be denied five-day after the grade is released.

### **Final Grade**

Your final grade will be calculated based on the above grade breakdown at the end of the semester. Grades will be curved at the end of the semester if the class average is low.

NOTE I will not curve the grade for every exam.

However, curving is not guaranteed. You should only rely on your performance in all the assignments and exams.

### **Attendance and Make-up exam**

TAs will take attendance at irregular intervals. If you cannot attend class for unavoidable circumstances, please submit a leave note with your student counselor's signature on it.

In principle, any absence in exams is not allowed except for irresistible reasons (diseases, accidents, etc.). You must contact me in advance. Make-up exams may not be guaranteed.

### **Failure of the Course**

If you unfortunately failed the course, you can either retake the course or pass a make-up exam at the beginning of the next semester. Based on your performance in the make-up exam, a "D" or an "F" should be expected as the final grade.

### **Copyrights**

If not specifically pointed out, all materials used in this course are copyrighted, meaning that without my explicit permission you do not have the right to copy any of the materials for any purpose other than your own personal academic use. The copyrighted materials used in this course include but do not limit to syllabi, exams, class slides, problem sets, and other handouts.

### **Academic Integrity**

Upon accepting admission to SCUPI, you immediately assume to follow the SCUPI academic integrity guidelines. See a staff in the administrative office if you are not aware of it. The guidelines should be followed in homework, examinations, and other academic work. Violations of these guidelines may result in zero points for an exam or failure of the course.

### **Study Tips**

- Do your homework ON YOUR OWN!!! You can discuss with a friend, but do it independently. Make sure you can solve similar problems after completion.
- Come to classes and take notes. Even if you have learned some of the topics in high school, you may find it quite different in this course. Every year there are students losing points in the exam because of this.

- Consult a text book in Chinese if you have trouble understanding the required text book. However, make sure you learn all the terminology in English. The exam is in English!
- Study your notes every day. Memorizing basic laws, facts, terms, and principles is a must. Chemistry is a subject based on workings of this objective world!
- Use office hours and let me know any trouble you might have.

### **Course Schedule**

<b>Week</b>	<b>Topics</b>
<b>3</b>	Chapter 1
<b>4</b>	Chapter 2
<b>5</b>	National Day (In-class Q&A, online study via blackboard)
<b>6</b>	Chapter 3
<b>7</b>	Chapter 4
<b>8</b>	Mock exam & Exam1
<b>9</b>	Chapter 5
<b>10</b>	Chapter 6
<b>11</b>	Chapter 7-1
<b>12</b>	Chapter 7-2 (Chapter 8 online study)
<b>13</b>	Mock exam & Exam2
<b>14</b>	Chapter 9
<b>15</b>	Chapter 10
<b>16</b>	Chapter 11
<b>17</b>	Chapter 12
<b>18</b>	In-class Q&A & Final exam

\* Schedule might be slightly changed based on class performance.