

**CHEM 105 General Chemistry I**  
**Summer, 2020**  
**Class Times:** Anytime  
**Class Location:** Anywhere

**Instructor:** William Bare  
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### **COURSE OBJECTIVES:**

This course is the first semester of General Chemistry and will introduce many of the fundamental principles of chemical sciences. The course is a standard college-level general chemistry course designed for STEM majors including those in Chemistry, Physics, Engineering, or Pre-Medical tracks. Topics to be covered this semester include Measurement and Dimensional Analysis, Atomic Structure, Chemical Nomenclature, Stoichiometry, Thermochemistry, Light, Atomic Energy Levels, Electron Configurations, Periodic Trends, and Basic Chemical Bonding and Lewis Structures.

### **CLASS MATERIALS**

#### **Textbooks:**

You may use either (or both) of two textbooks for this course.

The first text is a free on-line textbook available from OpenStax. The book is *OpenStax Chemistry, 2<sup>nd</sup> Edition*, and it is available for online reading or for free download at the following link:

<https://openstax.org/details/books/chemistry-2e>

The second (optional) text for this course is *Chemistry: The Central Science, 10<sup>th</sup> edition*, by Brown, LeMay, and Bursten, Prentice Hall Pub., 2006. Many studies have shown that reading from a printed textbook is more conducive to learning than reading on line. If you want a good printed textbook you should be able to find a copy of this one for purchase on-line for less than \$20.

#### **Calculator:**

A scientific calculator is required. An inexpensive scientific calculator with scientific notation, square root, trigonometric, exponential, and logarithmic functions can be purchased for less than \$20, and will be sufficient for the needs of this course. You are expected to bring your calculator to all class meetings, quizzes and exams. Graphing calculators are permitted but are not required.

### **ASSIGNMENTS AND ASSESSMENT**

Grades for this course are assigned as a weighted average of two components: Homework and Exams.

At the end of each week, you will be asked to submit evidence of self-study work (homework) and will complete an exam on the material covered in that week.

#### **Homework:**

Each topic will have an accompanying Study Guide which includes a long list of problems to be used for self-study. Answers to the problems are provided in the Study Guide Solution Manual, or in the appendices of the textbooks. You will be free to choose which problems you complete as part of your study. At the end of the week, you will submit your self-study problems for homework credit.

#### **Exams:**

There will be an exam at the end of each week. The exams will be posted in Moodle on Friday and will be due by noon on the following Monday (except the last week, in which case it will be due on the last day of class). Exams will be posted as pdf files. You are asked to complete the exam as you would a normal in-class exam, scan your exam and submit the electronic copy of your scanned exam. If you do not have access to a scanner, let me know, and we can work out an alternative submission route.

Exam due dates will be:

- Exam 1: Noon, Monday June 1
- Exam 2: Noon, Monday June 8
- Exam 3: Noon, Monday June 15
- Exam 4: Noon, Monday June 22
- Exam 5: Midnight, Wednesday July 1

**Assignment of Grades:**

Final grades will be assigned based on the scheme shown below.

Homework: 20%  
Exams (5): 80%

Over the past several years, I have found the following scale to be appropriate in the assignment of final course grades:

> 92	90 - 92	88 - 90	82 - 88	80 - 82	78 - 80	72 - 78	70 - 72	etc...
A	A-	B+	B	B-	C+	C	C-	

**CONTACT INFORMATION:**

**Office Hours:**

Virtual office hours will be conducted using Zoom, a web-based video conferencing app. Zoom is free, although you will need to download it to your computer or phone in order to participate in video conferencing. During office hours, you can access the video feed by using the following link:

<https://zoom.us/j/5860640629>

Office hours are currently scheduled for 3:00 – 4:00 PM (EST) on Monday, Wednesday, and Friday, and 7:00 – 8:00 PM (EST) on Tuesdays and Thursdays. If you are working or have scheduling conflicts that make these times impossible for you, we can arrange to meet online at another time.

**Phone and Email:**

You will be able to reach me most easily by e-mail, which I check at least once a day. I will assume that I can reach you by e-mail also and that you check it daily. I will use your Randolph College account for transmission of important class information, and you will be expected to read those messages at least daily.

My office phone number is 434-947-8494. Email is my preferred method of communication, unless the message is important and an immediate response is needed.

**HONOR CODE:**

*“I pledge absolute honesty in my academic work and in all personal relationships at Randolph College. I will maintain the integrity of my word and I will respect the rights of others. Realizing that these standards are an integral part of life at Randolph College, I assume my obligation to uphold this honor pledge. If at any time I fail to live up to my obligation to this pledge, I will report myself to the Chairperson of the Judiciary Committee. I will also ask others to report themselves for any infraction of this pledge.”*

The Honor Code at Randolph College is not just a set of rules for academic work; it is a pledge about character that allows us all to be able to work together from a position of mutual respect, both in and out of class. Teaching a class (or **taking** a class) in which one is able to assume that all participants are acting honorably at all times creates an atmosphere that is much more conducive to our mutual success than one which is clouded by anxiety or suspicion. For this reason, the Honor Code is absolutely essential to the proper functioning of this class. Any violation of the Honor Code in this class will be referred to the Judiciary Committee.

All work (tests, quizzes, homework, lab reports, etc...) are to be considered as pledged work under the Honor Code. You may (and in fact are encouraged to) study with friends or classmates, and (unless specifically stated) you may

also discuss homework assignments. However, any work that you submit must be yours and yours alone. If you are not sure about how the Honor Code applies to any work in this class, please ask me.

**ACADEMIC SERVICES CENTER:**

The Academic Services Center (ASC) provides free subject tutoring for students who are having difficulty in courses, or for those who simply want to use all of their available resources to perform to the best of their ability. We will have a summer tutor available for free on-line tutoring associated with this class. For more information, visit the Academic Services Center online at <http://www.randolphcollege.edu/academicervices/>

**DISABILITY SERVICES:**

Randolph College is committed to providing learning experiences that are accessible for all students, and will make reasonable accommodations for individuals with documented disabilities. If you have a learning difference or a disability – mental health, medical, or physical impairment – please contact Diane Roy, Coordinator of Access Services, in the Academic Services Center, 4<sup>th</sup> floor, Lipscomb Library; at (434) 947-8132; or at [droy@randolphcollege.edu](mailto:droy@randolphcollege.edu).

**COURSE SCHEDULE:**

The course schedule is not set in stone. We will cover as much of the material below as possible without sacrificing thoughtfulness.

<b>Week of:</b>	<b>Topic:</b>	<b>Exam Due Dates</b>
May 25	Dimensional Analysis, Measurement, and Structure of Matter	June 1
June 1	Chemical Nomenclature, Stoichiometry	June 8
June 8	Thermochemistry, Light	June 15
June 15	Atomic Spectroscopy and Electronic Structure	June 22
June 22	Periodic Properties and Bonding	
June 29	Molecular Geometry	July 1