

**SOUTHERN METHODIST UNIVERSITY**  
CHEM 1301: Chemistry for Liberal Arts  
Course Syllabus

**Course Information**

Course: CHEM 1301

Course Title: CHEMISTRY FOR LIBERAL ARTS

Credit Hours: 3

Semester: January Term 2019

**Instructor:** Helen Babbili

Office: Dedman Life Science Bldg. Room 339

Telephone: 214-768-1932

Email: [hbabbili@smu.edu](mailto:hbabbili@smu.edu)

**Class Meeting Time and Location**

(9:00 AM to NOON and 1:00 PM to 4:00 PM)

Lecture: TBA

Lab: FOSC 0025

**Required Materials:**

1. Text Book: *Chemistry in Context: Applying Chemistry to Society by American Chemical Society, 9<sup>th</sup> Edition, McGraw Hill*
2. Lab (will post the experiments on canvas)
3. Calculator: A simple scientific calculator
4. Safety glasses (will be provided)

**Pre Reading and Preparatory assignments:**

**1. Working Safely in the Laboratory**

Read the information posted on Canvas for laboratory safety. **A safety quiz will be given on the first day of classes.**

**2. Text Book readings - Pre read the following topics/ assigned work in order to prepare for the class.**

**CHAPTER 2: The Air We Breathe**

Why do we breathe?

What is in the air we breathe? How is it useful to us?

Exhaled air contains less oxygen and more carbon dioxide compared to inhaled air. What is the reason for these differences?

Can air be dangerous sometimes?

“Air quality directly affects our quality of life” Demonstrate the wisdom of this statement by taking an air pollutant of your choice.

**CHAPTER 3: Radiation from the Sun**

What is UV radiation?

What are the biological effects of UV radiation?

Understand how the atmosphere acts as a natural protection from these harmful rays.

What happens if this protection is lost?

**CHAPTER 4: Climate Change**

What is Greenhouse effect?

Warming by Greenhouse gases - Good, Bad, or a Little of Both?

**CHAPTER 5: Energy from Fossil Fuels**

What is the origin of Fossil fuels? Are they renewable?

Make a list of benefits and drawbacks of using coal, Petroleum, and Natural Gas.

**CHAPTER 8: Water – A most precious resource**

How much fresh water is present on the Earth surface?

How is water useful to us?

Water quality

Acid rain and its impact on the environment and waterbodies.

**CHAPTER 11: Nutrition**

Why do we eat?

Eating properly involves more than filling your stomach. Explain the difference between malnutrition and undernourishment.

**Class Schedule**

Date	Lecture Topic	Laboratory	Exams
Jan 7	Classification of Matter Atomic Structure and Chemical Bonding, Naming Compounds, Writing the formulas, Molecular Models	Safety Instruction	
Jan 8	The Air We Breathe Radiation from the Sun	Exp 8: Lewis Structures & Molecular Shapes	
Jan 9	Greenhouse Effect and Climate Change Energy from Combustion	Exp 1: Preparation & Properties of Gases in Our Breath	
Jan 10	Energy from Combustion Energy from Alternate Sources – Nuclear Energy Review for exam	Exp 11: Molar Ratios in Chemical Reactions	

Jan 11	Alternate Sources of Energy Continued Water – A Most Precious Resource		Exam 1 (Till Energy from Combustion)
	WEEKEND		
Jan 14	Water Acids and Bases Impact of Acid Rain	Exp 19: Impact of Acid rain on Common Substances	
Jan 15	Health and Nutrition Review for the exam		
Jan 16		Exp 28: Fats in Foods (Potato Chips)	Exam 2 (From Alternate sources of energy till Health & Nutrition)

*Note: The lecture and lab schedule listed above is tentative and is subject to change at the instructor's notice.*

### **Course Overview and objectives:**

This course is an introductory course in chemistry specifically designed for non-science majors. The course is intended to develop a scientific way of critical and analytical thinking and to help students understand how chemistry is relevant to their daily lives and the world they live in. The course reflects a variety of current societal and technological issues and the chemistry principles embedded in them. The Air We Breathe, Environmental pollution, The Chemistry of Global Climate Change, Water for Life, Impact of Acid Rain, Energy sources, and Nutrition are examples of such issues. Chemical concepts will be introduced and covered in sufficient depth to facilitate an understanding of the chemistry associated with these important issues.

In the laboratory, students will do experiments that are designed to illustrate the chemical principles learned in the lecture class. Hands-on experience with experimentation, data collection, analyzing the data, and drawing conclusions will allow students to summarize and consolidate what they have learned and /or to extend the results to new situations.

### **General Education Learning Outcomes:**

- Students will be able use both qualitative and quantitative methods to understand chemistry.

- Students will be able explain how the concepts and findings in chemistry are relevant to their lives and shape our world.

### **Student Learning Outcomes:**

Upon successful completion of this course, the students will be able to:

- Demonstrate basic facility with the methods and approaches of scientific inquiry and problem solving.
- Explain how the concepts and findings of science or technology in general or of chemistry in particular shape our world.
- Apply chemical principles with their application to the real world and to explore the many ways in which chemistry affects their lives.
- Acquaint themselves with scientific methods and scientific understanding, so that they will be able to read about science and technology with some degree of critical judgment. (This is especially important because many of the scientific problems discussed are complex and controversial)
- Use the chemical knowledge and critical thinking ability to understand the risk perception, to better assess the risks and benefits in choices that they, as informed citizens, will be making.
- Describe that through 'Green Chemistry' better, safer, and more environmentally friendly processes and products are being or can be developed.
- Demonstrate basic facility with the laboratory methods and techniques necessary for scientific inquiry and problem-solving in the areas covered by the material presented in lecture class.

### **Academic Integrity:**

As with all courses at Southern Methodist University, the Honor System is endorsed in this course. If you are in violation of the Honor Code, you will be punished accordingly as mentioned in the Student Code of Conduct.

**Disability Accommodations:** Students needing academic accommodations for a disability must first register with Disability Accommodations & Success Strategies (DASS). Students can call 214-768-1470 or visit <http://www.smu.edu/Provost/ALEC/DASS> to begin the process. Once registered, students should then schedule an appointment with the professor as early in the semester as possible, present a DASS Accommodation Letter, and make appropriate arrangements. Please note that accommodations are not retroactive and require advance notice to implement.

### **Attendance Policy:**

Attendance to all class sessions is required. It counts 5% toward your overall grade.

### **Class format:**

Due to the time-intensive format of Jan Term, several breaks will be scheduled during the day.

### **Office hours:**

No formal office hours are scheduled. Ample time will be provided during the day to address any questions. If extra help is needed consult with me to set up a time to meet.

### **Other Information:**

- Make-up exams will be given only under special circumstances. Social obligations or lack of preparation is not an acceptable excuse for missing an exam.
- If you miss an exam due to an illness, you will need to provide an Absence from class Form (see SMU policy below).
- If you miss an exam due to any other emergency, you will need to sign and submit a written note explaining the circumstances.
- If you know in advance that you will have to miss at least one day of class, *you should probably not sign up for this class.*
- All students are expected to abide by the SMU Honor Code.

### **Topics, Homework, Lecture Power points, Prelab assignments:**

Topics covered for each chapter along with homework/practice problems, Lecture power points, and Prelab homework will be posted under course documents on CANVAS.

You can print lecture notes and bring it to class.

Prelab HW is submitted at the beginning of each lab session.

The homework will not be collected or graded. However, doing homework is important to do well in this course.

**Extra credit:** is designed to show students that learning chemistry does not end in the classroom. You should find current topics related to this course from newspapers, science journals, or other sources. **Print/cut the article; write a brief summary of the article and how it is related to CHEM 1301 course.** You can submit one article per chapter along with the required information to receive up to 3 points per article. **Deadline: One lecture class period after completion of the chapter.**

### **Classroom policies:**

- Students are expected to attend all lecture and laboratory sessions.
- **Use of electronic devices (computers, cell phones, etc.) is prohibited.** You can print lecture notes and bring it to class.
- Silence cell phones or anything else that might disturb the class. Disruptive students will be asked to leave.
- The “Code of Student Conduct” as outlined in the college catalog concerning classroom behavior and cheating will be strictly enforced.
- **Failure to follow the rules in the class may result in expelling a student from classroom.**
- Grades are considered final at the end of the class period the papers are returned. The Instructor is not responsible for papers not picked up.
- No calculators will be provided or shared on the exam day. Cellphones cannot be used as calculators.

- If you feel your exam is being copied please ask to be moved. Should testing anomalies occur, all parties will receive a zero (0) on that exam.

### **Laboratory Policies**

- You are expected to be on time to lab and to complete the experiment (including clean-up) within the allotted time.
- You must follow all laboratory safety guidelines.
- You have to read through the experiment and complete the pre-lab assignment before coming to lab.
- **Pre lab** assignment for each experiment will be posted on CANVAS under laboratory. The questions are to be answered and submitted at the beginning of each lab session.
- Data sheets will be provided, but you must bring your lab manual.
- You are expected to take good care of all the equipment/materials provided to you in the lab. It is your responsibility to keep the work area clean.
- The “Code of Student Conduct” as outlined in the college catalog concerning classroom behavior and cheating will be strictly enforced. **Failure to follow the rules in the lab may result in expelling a student from lab.**
- Although you work with a partner in the lab, **each student must turn in an individual lab report.**
- **No Late work will be accepted**
- **Use of electronic devices (computers, cell phones, etc.) is prohibited.**
- Silence cell phones or anything else that might disturb the class. Disruptive students will be asked to leave.
- Grades are considered final at the end of the class period the graded labs are returned. The Instructor is not responsible for papers not picked up.

**Lab Reports:** are due on the next day in lecture class, except for the last one.

Lab reports consist of the following:

1. **Data sheets:** All the experiments have data tables or blank spaces for you to record data and/or observations. Enter your data directly on these pages and hand them in as part of your lab report. **Show calculations where required.**
2. **Answers to the questions at the end of the experiment.** Answers to post lab questions must be your own and not copied from another student.
3. **An explanation,** if necessary of anything that happened in the lab that may help you to explain why your data is different from expected.
4. All lab reports are to be well prepared and neat. Loose points for sloppy or poorly done work.

### **Evaluation and Grading:**

Attendance: 5%

Exams: 75%

Lab: 20%

Total: 100%