

CHEM 118-Syllabus

Principles of Chemistry, CHEM 118, Spring 2026

Instructor	Richard D. Sheardy	Phone	[Type your phone number here] rsheardy@twu.edu
Office Location	[Type your office location here]	Email	
Course Meeting Days and Time	T: 9:30 AM - 10:50 AM Lecture Th: 9:30 AM - 10:50 AM Lecture M: 10:50 AM - 12:15 PM Lab W: 10:50 AM - 12:15 PM Lab	Student Drop-In Office Hours	M - Th: 1:30 PM - 3:00 PM
Course Mode	Lecture with Laboratory		

Course Information

Catalog Description:

Covers principles of stoichiometry, chemical bonding and structure, thermochemistry, chemical equilibrium, and kinetics. Three hours lecture, two hours lab. Prerequisite: Two semesters of high school chemistry. Fall, Spring.

Credit Hour Policy Statement:

This class meets the federal credit hour policy through a combination of lecture + laboratory (or lecture + practicum) for a total of 45-75 hours of supervised learning activities for each credit." (Def 1 & 2)

General Education Requirements:

This course meets the General Education Requirements for Outcome 8: Scientific Literacy with a laboratory component

Course Learning Outcomes:

Natural Sciences Objectives:

1. To understand and apply method and appropriate technology to the study of natural sciences.
2. To recognize scientific and quantitative methods and the differences between these approaches and other methods of inquiry and to communicate findings, analyses, and interpretation both orally and in writing.
3. To identify and recognize the differences among competing scientific theories.
4. To demonstrate knowledge of the major issues and problems facing modern science, including issues that touch upon ethics, values, and public policies.
5. To demonstrate knowledge of the interdependence of science and technology and their influence on, and contribution to, modern culture.

Overall Course Objectives:

1. To understand atomic structure
2. To understand the periodic properties of the elements
3. To understand molecular bonding and structure
4. To understand the nature of chemical reactions
5. To understand thermochemistry and kinetics
6. To understand the relationship between structure and properties

Student Learning Outcomes: Upon successful completion of this course, students should be able to:

1. Describe the molecular properties of gases, solids and liquids
2. Relate physical properties of substances to non covalent interactions
3. Describe the properties of solutions
4. Link thermodynamics, kinetics and equilibria
5. Balance oxidation-reduction reactions

Required Materials:

Students should have a scientific calculator, capable of displaying numbers in scientific notation, and should know how to use it with ease. Since some calculator manufacturers (Casio, Texas Instruments, Hewlett-Packard, etc.) design keys, key labels, and keystrokes differently from other manufacturers' calculators, students should be thoroughly familiar with the instruction manuals that accompany their calculators. Students may not use programmable calculators on exams unless they can demonstrate that the memory functions have been cleared. Students using beaming devices, cell phone pictures, digital messages, calculators with stored formulae or text, etc are guilty of academic dishonesty and will be dealt with to the maximum penalty allowed. In addition to a calculator, students need a Lab Notebook and safety goggles.

Required Textbook: Burdge, J.; Overby, J. Chemistry, Atoms First, 4th edition; McGraw-Hill: New York, NY 2021.

Methods of Instructions

During class meeting, major concepts will be reinforced via lecture, discussion, problem solving worksheets, and activities. Laboratory experiments are designed to enhance, reinforce or supplement classroom material.

Withdrawal and Attendance policies:

Harlaxton College expects regular class attendance by all students. Students are considered sufficiently mature to appreciate the necessity of regular and punctual attendance, to accept this personal responsibility and to accept the consequences of failure to attend. When absences occur due to emergency or medical reasons, students are expected to notify their instructors of the absence prior to class or to seek the assistance of the College nurse or a member of the Student Experience Team for help in notifying instructors. Instructors have the authority to grant excused absences for medical, psychological, or personal reasons upon review of appropriate documentation and professional recommendation supporting such a request. In the event of long-term illness, reasonable accommodations will be made to allow a student to complete a course. In these cases, the Dean will need to approve the long term nature of the accommodation. The Dean of Harlaxton College has the authority to grant excused absences for medical, psychological, or personal reasons. Each instructor is expected to maintain an attendance policy in keeping with the nature of the Harlaxton program and may consider it in evaluating performance in their courses.

For Spring 2026 semester, the last day to withdraw from a class without a W is 1/15/2026 and the last date to withdraw from a class with a W is 4/9/2026

Grading Criteria:

Homework: Homework problems from the back of the chapters will be assigned. Working additional problems at the back of the chapters is highly recommended! There will be no due dates for individual homework sets but all are due at the end of the semester (04/28/2026). The homework will be extra credit and completion of all chapters will be a bonus of 50 points.

Work Sheets: These will be handed out in class problem sets. Some of the problems we'll go over, others will be done outside of class, but the work sheet is as announced. It is anticipated that we will have six work sheet at 25 points for a total of 150 possible points.

Quizzes: There will be three scheduled in class quizzes. Each quiz should take 25 minutes to complete and will be given at the beginning of class. No make-up quizzes will be given. If you are not in class at the time the quiz is given, that quiz cannot be made up. Each quiz is worth 25 points for a possible 75 points.

Quests: There will be two scheduled in class Quests. Each quest should take 50 minutes to complete and will be given at the beginning of class. No make-up quests will be given. If you are not in class at the time the quest is given, that quest cannot be made up. Each quest is worth 50 points for a possible 100 points.

Midterm Exam: Students are expected to be on time for the midterm exam. While there are instances when one may be unavoidably late, no overtime will be permitted in test taking. The exam must be handed in at the end of the scheduled testing time. No exams will be distributed to latecomers after the first person that finishes a test leaves the classroom. There will be one in class midterm exam which should take 60 minutes to complete and will be given at the beginning of class. This exam will be worth 100 points for a possible total of 100 points.

Final Exam: A final exam will be given at the end of the semester and will be cumulative. The final exam will be worth 125 points.

Make-up Exams: Make-up Exams may be given upon documentation of a valid excused absence as described in the university catalog (i.e., illness, death in the family, or university-sanctioned event). If you know you must miss a test, you may have the option of taking the test early.

Laboratory: Each scheduled experiment includes performing the experiment, recording data and observations in a laboratory notebook and submitting a formal lab report. Failure to submit a lab report will result in a zero for that lab. There will be 12 labs at 15 points a piece for 180 total points.

Grading:

Tentative Grading Scale:

90% = A; 80% = B; 70% = C; 60% = D; 60% = F

Grading:

Work Sheets	6 @ 25 pts	150 PTS
Quizzes:	3 @ 25 pts	75 PTS
Quests	2 @ 50 pts	100 PTS
Exams:	1 @ 100 pts	100 PTS
Laboratory	12 @ 15 pts	180 PTS
Final Exam:	1 @ 125 pts	125 PTS
TOTAL:		730 PTS

Learning Chemistry: Learning chemistry has been shown to be an effective method of developing and improving critical thinking and problem solving skills. This is a major objective of the core curriculum. Success is dependent on a student's ability to learn information and develop skills at applying that information. Lecture is only the start of the process. Students are expected to carefully work through the textbook, thoroughly reading the material, preparing detailed, written answers to questions, and solving example problems at the ends of chapters. Many exam questions and problems will require combining concepts learned in more than one set of homework problems (i.e. harder questions!). Memorizing how to do a certain type of problem will not be as useful as understanding the concept. Students can improve their chances to be successful if they allocate some study time to their Chemistry class each and every day. Successful students use lectures to direct and supplement their individual study and skill development. Students who use the lecture as their main source of information, and then try to develop skills at applying that information a day or two before an exam are usually not successful in Chemistry classes.

Conversations in Class: Conversations with fellow students during class are disruptive to others. Please respect others' rights to a classroom atmosphere that is conducive to learning by ending conversations with fellow students prior to class. Students who do not show respect for others by disrupting class will be asked to leave the class.

Discussions Online: Online discussions with fellow students are encouraged and will remain respectful. Please respect others' rights to an atmosphere that is conducive to learning by having conversations that apply to chemistry problems and chemical topics brought up in the notes or in Lecture.

Cell Phones and Texting: Use of these during class time is disruptive and will not be tolerated. Please turn these off or ignore them while in class. If you need to read unrelated material or send text messages, leave the classroom and return on the next class day.

Honor Code:

All students at the University of Evansville agree to the University honor code: *I will neither give nor receive unauthorized aid, nor will I tolerate an environment that condones the use of unauthorized aid.*

Honesty in completing assignments is essential to the mission of the University and to the development of the personal integrity of students. In submitting graded assignments, students affirm that they have neither given nor received unauthorized assistance, and that they have abided by all other provisions of the University Honor Code. Cheating, plagiarism, collusion, dual submission of a paper, or other kinds of academic dishonesty will not be tolerated and will result in appropriate sanctions that may include failing an assignment, failing the class, or other disciplinary actions.

Course AI Policy:

In this course, submission of any work that is not entirely your own is considered academic dishonesty unless otherwise specified. This means that the use of generative AI tools is prohibited, except for certain assignments for which you are given specific guidelines and examples of appropriate AI use. When permitted, you must clearly identify and cite the AI tools used. Submitting AI-generated work as your own constitutes a violation of academic integrity as an example of unauthorized aid.

Course Schedule:

Tentative Lecture Schedule:

Topic	Chapter
Stoichiometry	
Bonding and Structure	
Liquids and Solids	12
Solutions	13
Chemical Kinetics	14
Chemical Equilibrium	16
Acids and Bases	17
Aqueous Ionic Equilibrium	18
Thermochemistry	10
Free Energy and Thermodynamics	15
Electrochemistry	19
Biomolecules	

Tentative Quiz Schedule:

1/27, 3/24, 4/17

Tentative Quest Schedule:

2/10, 4/9

Tentative Midterm Exam Schedule:

2/24

Final Exam Schedule: 4/28

Laboratory Safety:

On occasion, you may be using chemicals in the laboratory activities that have been designated as hazardous chemicals. Your instructor will notify you when this will occur, the type of hazard the substance represents, instructions on the proper procedures to use, and proper disposal protocol. If you follow instructions, the laboratory activities are not hazardous.

Proper dress is essential for safety in the chemistry laboratory. It is important to protect your skin from contact with chemicals; therefore no bare midriffs or exposed legs/feet will be permitted in the lab. Wear sturdy clothing that covers your body. Wear closed-toe shoes. You may wish to purchase a laboratory apron to protect your skin and clothing.

Statement: Potential Hazards in Chemistry Courses

All chemicals have a certain degree of potential hazard. Therefore, working with chemicals (industrial, hazardous, or otherwise) is considered an inherently hazardous situation. This course provides for a safety training where students will learn how to minimize the risk of exposure by following proper procedures; however, such training does not eliminate the possibility of an incident. As part of this course, experiments with chemicals will be conducted and while these experiments are generally safe, should an accident occur students may become potentially exposed to hazardous chemicals. In addition to exposure to chemicals, there are other potentially hazardous situations in this course. These include, but are not necessarily limited to, cuts from glassware, burns from handling hot items or using heating devices, use of electrical devices, use of certain mechanical equipment, and exposure to non-ionizing radiation (e.g., lasers). Students who have disabilities, known allergies to, or conditions exacerbated or heightened by, working with chemicals or specific chemical exposure, who are pregnant, or considering becoming pregnant during this course, are advised to notify the faculty instructor and your health care provider, so an appropriate accommodation may be made or consideration may be given to taking another course.

SAFETY GOGGLES ARE REQUIRED AT ALL TIMES WHEN IN THE LAB. It is your responsibility to acquire them. **No one will be permitted in the laboratory without safety goggles.** Goggles may be purchased on Amazon for example.

Goals and Outcomes: At the completion of this course, the student should be able to:

- Describe and practice safety procedures in chemistry laboratories.
- Identify and be adept at using chemistry laboratory equipment and apparatuses.
- Measure physical properties of substances.
- Perform unit conversion calculations.
- Use the rules for significant figures in reporting results of laboratory experiments.
- Follow laboratory experiment instructions relatively independently.
- Demonstrate laboratory technique at a level that allows reproducibility of experimental results.
- Make complete observations of chemical reactions.
- Apply critical thinking and problem solving skills to interpret experimental data.
- Write detailed reports on observations made while performing chemical experiments.

Tentative Lab Experiments:

Paper Chromatography of Food Colors

Determination of Sugar using Density and Mass Percent

Empirical Formula of a Salt

Video Lab - TBA

Mole Ratio and Reaction Stoichiometry

Solubility of Salt in Water

Evaluating the Cost Effectiveness of Antacids

Video Lab - TBA

Molecular Mass of an Unknown by Dumas Method

Kinetics of Alka-Seltzer Reaction

Energy of a Peanut – Calorimetry

Beer's Law

Video Lab – TBA

The instructor reserves the right to determine and/or change the number of experiments or assignments assigned during the semester.

The instructor reserves the right to determine and/or change lesson topics and/or exams and calendar dates.

University Policy Statements

Disability Policy:

The University of Evansville is committed to providing an accessible and supportive environment for students with disabilities. It is the policy and practice of the University of Evansville to make reasonable accommodations for students with properly documented disabilities. Students should contact Disability Services at 812-488-2663 to seek services or accommodations for disabilities. Written notification to faculty from Disability Services is required for academic accommodations.

Institutional Equity and Title IX

UE is committed to fostering an atmosphere free from harassment and creating an inclusive campus for all members of the University community regardless of their sex, sexual orientation, gender identity, race, religion, ethnicity, country of origin, ability, or veteran status. All Faculty members are considered Responsible Employees and required to report instances of discrimination, harassment, or sexual violence to the Office of Institutional Equity

You may also choose to speak to a Confidential Resource about your experience. Confidential Resources at the University include:

Counseling Services: 812-488-2663, counselingservices@evansville.edu

Crayton E. and Ellen Mann Health Center: 812-488-2033, healthcenter@evansville.edu

Spiritual Formation Coordinator: 812- 488-5265, spiritualformation@evansville.edu

If you or someone you know has been harassed, assaulted, or discriminated against you can find the appropriate resources by contacting the Assistant Director of Institutional Equity and Title IX Coordinator: email titleix@evansville.edu ; phone (812) 488-5261. For more information visit <https://www.evansville.edu/offices/titleix/policy.cfm> .

Non-discrimination Statement

The University of Evansville expects all members of its community to treat each other with respect and civility. Harassing behaviors directed towards any member of our community will not be tolerated. As part of its commitment to non-discrimination, the University specifically prohibits harassment based on any other characteristics set forth in its nondiscrimination statement as follows: including race, color, gender, gender identity and expression, sexual orientation, creed or religion, national origin, age, disability, veteran status and all federally protected groups/classes. Any form of harassment undermines the mission of the University and negatively impacts the University community as a whole. For more information contact the [Center for Inclusive Excellence](#).

Campus Safety

All members of the UE community are automatically enrolled in the Ace Alerts Emergency Alert System. When the system is activated, emergency notification information is sent in the following manner: calls to campus IP phones,

text messages, emails, campus housing speaker system, active threat sirens (non-weather related), digital signage, and AlertUS desktop on campus-owned computers.

To contact the Office of Public Safety:

Emergencies: 812-488-6911

Non-emergencies: 812-488-2051

Complaints, Grievances, and Appeals

The University of Evansville seeks to resolve all student concerns in a timely and effective manner through policies and processes documented in the University [Course Catalog](#) and [Student Handbook](#).

Student Resources

Blackboard Guides: Blackboard is the University of Evansville's course management system for online courses. Guides on using Blackboard can be found within [MyUE](#).