



GENERAL CHEMISTRY PREP

CHEM& 139, Item 7042
Winter 2020

Instructor info

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Class session: M T W Th, 1:00 pm – 2:05 pm, room LSC - 101
Office Hours: M T W Th, 12:00 noon – 12:30 pm
Course Website: <https://pierce.instructure.com/> – Pierce College student user name/password required. Class announcements and course material will be delivered through Canvas. Make sure your account is set to receive the announcements ASAP. Check your Canvas and email accounts daily.

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Required material

- Textbook: "Introduction to Chemical Principles", 11th edition by Stephen Stoker, Pearson 2014, ISBN: 9780321814630
- A standard scientific calculator (non-programmable)
- Recommended: A WiFi-enabled mobile device (a laptop computer or a tablet). Knowledge of computer applications such as MS Office and/or Google Apps is expected.

Prerequisite

MATH 098 with a GPA of 2.0 or better within the last two years or a placement test score.

Course description

This 5-credit course is designed to introduce the science major student to mathematical and chemical principles needed for a successful experience in their science studies. Includes problem solving, graphs, calculator use, atomic structure, periodic properties, inorganic nomenclature, the mole, balancing equations and stoichiometry. Chemistry is fun. Learning college level chemistry in this course is like playing games. This course focuses on the following topics:

- Scientific notation
- Significant figures
- Metric system
- Dimensional analysis
- Graphing
- Calculator use
- Basic atomic structure
- Periodic properties
- Inorganic nomenclature
- The mole
- Balancing equations
- Stoichiometry

Mode of instruction

This course is a standard introductory chemistry course but offered in an active-learning mode. This means that students should read the topics (and watch applicable videos) and work out Pre-Lecture Problems (PLP) on Canvas and additional problems on textbook chapters before meeting in classroom each class. I will briefly go over the important concepts for each chapter, and then you will be engaged in collaborative in-class work to solve problems based on your prior reading and my explanation of concepts through In-Class Exercise (ICE) assignments. You will learn deeper to strengthen your understanding of the concepts and gain mastery of the subject through solving problems. Therefore, it is your responsibility to read the chapters ahead of class and work out additional textbook problems on your own. You must also read the text again after attending each class session and complete required homework problems. Tentatively, one chapter per week is an ideal tempo; chapters 1–10 and parts of chapter 11 from the text will be covered during the quarter. Material coverage will run as per the schedule given near the end of the syllabus.

Focus

Learning is the ability to register what you are seeing, hearing and reading (in a class/session), put it in your long-term memory and then be able to recall it at a later time when needed (like solving a puzzle). To achieve this, mindfulness essential as it increases your working memory. Multitasking is a myth. Brain does not do things in parallel, but it switches focus rapidly between multiple things. This rapid switching of focus between multiple things diminishes the power of concentration. Focus your attention. You can only pay attention to one thing at a time. Practice cognitive control whenever you get a chance: A two-minute breathing exercise (meditation) is a good place to start learning to focus.

Why are you here?

You are here to learn the subject of chemistry. By learning chemical principles and mastering the concepts, you will become an even better learner in your next course and even better employee at your workplace. It prepares you to think clearly and logically in a structured manner and trains you in solving problems better than any other subject.

Why am I here?

I am here to facilitate your learning. I am not here to lecture. I am here to enable honing your problem-solving skills. I'm not a sage on the stage but a coach on the sideline. I will train you hard and test you hard, so you can gain the mastery of the subject and learn to solve problems. I am teaching for your mastery of the subject. I am not teaching for your familiarity of the subject. Therefore, it is important that you learn to work with me and with the rest of the class.

Policies

Grading: The grade breakdown among the various assignments is given below:

Assignment	%
Quizzes	15
Midterm Exams	50
Final Exam	20
Homework	10
PLP	05
Total	100

The numerical course grade (4.0 scale GPA) will be computed using the following linear scale. Below 65% is an F and receives 0.0.

Overall Percentage (%)	Course Grade (GPA)
>95	4.0
90 – 94	3.5 – 3.9
85 – 89	3.0 – 3.4
80 – 84	2.5 – 2.9
75 – 79	2.0 – 2.4
70 – 74	1.5 – 1.9
65 – 69	1.0 – 1.4
<65	0

Attendance

Your attendance will be taken every class period. Students that don't show up for the class during the first week will be dropped from class. Students will be assigned a group # for each unit and will be required to work within the group on assigned classroom activities and assignments. You must be present in class and take part in the assigned activity to earn a grade for the group activities category. It is very rare that you can do well in a course by attending few or no class sessions. I will not go to extraordinary lengths to help you if you are irregular and disregard the system. You learn best from taking part in the classroom activities which include, taking notes, solving problems by working with the instructor, collaborating with other students and taking quizzes in classroom. No class notes, or PowerPoint slides, will be made available as they do not substitute attending each class session and actively taking part in the classroom activities. It is important that you learn to take notes while in classroom and when you study the material. While your attendance will be marked on Canvas as to your presence or absence, it will not impact your grade.

Classroom etiquette

By enrolling in this course, you, the student, and I, the instructor, have entered a contract. As your instructor I will, to the best of my ability, act to facilitate a productive learning environment and it is expected that you will, to the best of your ability, help maintain this environment and master the principles of the discipline presented in this course. To this end, we will receive each other's ideas with respect. Rudeness, tardiness, chatter during class and disrespect make learning difficult and will not be tolerated. Out of respect for your class, please arrive into classroom on time and be seated quietly before the start of the session. If you arrive late for any reason, please enter quietly and take the seat nearest to the room entrance. If you must leave early during the class period, please inform me ahead of time and take a seat close to the exit so you can leave without distracting me or the class. Do not talk with your neighbors during the class session, except when you are told to engage in group discussions, or begin to pack up your books or leave before the class is over. If you are found chatting frequently in classroom disturbing me and the rest of class, you will be asked to leave the classroom, so the learning is uninterrupted for the rest of the students in the class.

Mobile Device Usage

This is a tech-intense course. Use of mobile electronic devices such as tablet/laptop computers and smartphones in classroom is encouraged for referring to the electronic textbook, taking electronic notes, and for playing instructor-directed chemistry games and in-class activities. No phone calls and texts should be made/received during the class period. Writing down notes manually into your notebook (or into a note-taking app on your device) helps ingrain the subject in your mind. Taking pictures of the white board/screen using smartphones makes the subject only stay in the memory of the phone/camera and not in your mind. Hand-to-eye coordination is an integral part of

cognitive process that enables you to learn. Taking a picture curtails the cognitive process.

For the reason explained above under the heading Focus, it is important that you put away all electronic devices unless you are using it to take notes or playing games or work out problems in groups as directed by me in class. As the instructor of this course I have the right to check what you are doing on your device while the class is in session. If you are spotted using your device for class-unrelated activities such as social media, web browsing, texting etc., you will be summarily asked to leave the classroom. You may carry out such activities outside the classroom, so you will not distract me and the rest of the class.

Exams, Quizzes, Pre-Lecture Problems and Homework

There will be three (3) intra-term exams and one (1) comprehensive final exam. Intra-term exams will be held (60 minutes) within the regular class period per schedule. These intra-term exams will have problems from the topics covered between the exams. The final exam (120 minutes) will be cumulative and will cover all topics covered throughout the course. These exams will not have problem taken directly from the text. Exams will be given in electronic format on Canvas (as are quizzes and homework). Exam problems in general will be more challenging due to their nature in that they are timed, unlike the Quiz and Homework problems which are not timed. No study guides will be posted. Therefore, it is a good idea to practice as many problems as you can to sharpen your skills. The exams are designed to test your understanding of the subject through your ability to solve problems. Practice is key. You will naturally get to remember things from your frequent practice. Final exam answers will not be published on Canvas. There will be no extra-credit work given in this class. No form of assignment administered on Canvas/Google docs shall be published in any format as there are copyrights involved.

Graded group-quizzes will be administered in class on Canvas, unannounced, at least once per week. A second attempt is allowed so you can take a quiz at home if necessary, and the highest score will be taken for grading; but exams may be taken only once.

There will be no makeup exams or rescheduled exams for any reason. It is your responsibility to make sure not to have any schedule conflict. In the event of a valid, unavoidable absence, the reason for the absence will need to be approved by me. Report your absence from an exam in advance in person or within 36 hours of the emergency. If you cannot do so, please have someone contact me in a timely manner. Proof of the extenuating situation causing your absence will be required. Please meet with me as soon as you can for further steps regarding the situation. If you miss the final exam for an excusable reason, you will receive an 'I' (incomplete). You will then need to meet with me to document steps to complete the course. If your absence is excused for an exam, then the other exams will be weighted heavier. Unexcused absence will entail the award of a '0' (zero) grade for the mid-term exams, final exam and for the course.

Pre-Lecture Problems and Homework problems will be available on Canvas and must be completed by due date on Canvas. No extension will be given. Keep track of your progress following closely the Canvas calendar and “To Do” list on Canvas homepage.

The best way to perform well in this course is to attend all classes with focus and take notes without fail, go to classroom well prepared, solve problems with the instructor, take active part in the classroom activities and work out related problems separately as you study the text at home. Memorization is integral part of learning. Do not try to learn by rote. Memorization by rote plays little part in your learning. You should not rely on rote memorization to perform well in this course as you will struggle when confronted with slightly changed version of problems or answer choices from what you memorized by rote from the course material. Make use of office hours and do not hesitate to contact/meet with me to clarify any questions you may have. Additionally, make use of the Learning Center. [See <http://www.pierce.ctc.edu/tutoring> (or under “Tutoring Center” under “Student Resources” on the main web page) or go to the Tutoring Center in CTR 170 for more information], and study in collaboration with your classmates. If you have a significant other in your household (like a boyfriend/girlfriend/spouse/cat/dog/beta fish), teach them what you are learning.

Communication

I will be more than happy to respond to your questions, submitted either in person or electronically, as long as the question pertains to the subject matter that you learn in the class and any personal emergency related questions. I will not respond to frivolous questions like, “Will there be any extra credit?” “Will you curve the grades?” “I need certain grade in this class and I’m willing to do anything to achieve that so please tell me what I should do.” “Where is your office?” “When are your office hours?” “Will you post a study guide?” “Will you post a practice exam?” Etc. You should look into the syllabus to get answers to such questions.

Academic ethics

Original work performed in good faith is assumed on all assignments and course components. The Student Code of Conduct (see <https://www.pierce.ctc.edu/policy-student-code-conduct>) and Washington State Administrative Code [WAC 132K-070](#) outlines the following forms of academic misconduct: Intentional misrepresentation of credentials, Falsification of data and Plagiarism. Failure to adhere to this code of ethics will result in referral for possible disciplinary sanctions as described in the Student Conduct Code. In short, if you have not done something yourself, do not attempt to pass it off as your own original and independent work. If you have questions about what might cross the line, please do not hesitate to ask me. In this course, it is presumed that the responses you write on the exams are a result of your own independent effort, that you did not receive help from anyone else including copying from a student sitting next to you.

Student grievance procedure

In the case of a complaint about a course, students are encouraged to speak with their instructor first, and if the matter is not resolved, students should then contact the division chair. For more detail see the procedure: <http://www.pierce.ctc.edu/about/policy/grievance>

Emergency preparation

Please take a few moments to review the emergency evacuation plan and be familiar with campus emergency plans.

Equity, diversity and inclusion (EDI)

Your experience in this class is important to me, and it is my policy and practice to create inclusive and accessible learning environment for all students regardless of disability, color, faith, race, marital status, gender and sexual orientation consistent with federal and state law. In an ideal world, science would be objective. However, much of science is subjective and is historically built on a small subset of privileged voices. In this class, we will try to read material originally written by a diverse group of scientists but limits still exist on this diversity. I acknowledge that it is possible that there may be both overt and covert biases in the material due to the lens through which it was seen and written, even though the material is primarily of a scientific nature. Integrating a diverse set of experiences is important for a more comprehensive understanding of science. Feel free to contact me (in person or electronically) or submit anonymous feedback if you have any suggestions to improve the quality of the course materials.

If you have a name and/or set of pronouns that differ from those that appear in your official college records, please let me know! If you feel like your performance in the class is being impacted by your experiences outside of class, please don't hesitate to come and speak with me. I want to be a resource for you. Remember that you can also submit feedback which will lead to me making a general announcement to the class, if necessary to address your concerns. If you prefer to speak with someone outside of the course, the EDI office of the College is an excellent resource: Contact Shelby Winters 253-912-2235 SWinters@pierce.ctc.edu. (<https://www.pierce.ctc.edu/edi>) I, like many others, am still in the process of learning about diverse perspectives and identities. If something was said in class by anyone that made you feel uncomfortable, please talk to me about it. As a participant in course discussions, you should also strive to honor the diversity of your classmates and the instructor. If you experience barriers based on a disability or temporary health condition, please seek a meeting with Access and Disability Services office to discuss and address them.

Access and accommodation

Pierce College values diversity and inclusion; we are committed to fostering mutual respect and full participation for all students. My goal is to create a learning environment that is equitable, inclusive, and welcoming. If you have or think you may have a disability that may affect your work in this class and feel you need accommodations, contact Access and Disability Services at ADS@pierce.ctc.edu or (253) 964-6468 to see if you are eligible to receive services. If you are already approved for accommodations through the ADS, have requested your accommodations for this quarter and would like to use your accommodations in my class please connect with me outside of class time to discuss your needs.

Reasonable Accommodations for Faith/Conscience: Students who will be absent from or endure significant hardship in course activities due to reasons of faith or conscience may seek reasonable accommodations so that grades are not impacted. Such requests must be made in writing within the first two weeks of the beginning of the course. Students should review the Accommodations for Faith/Conscience Policy and follow the procedures: <https://www.pierce.ctc.edu/policy-faith-conscience>.

Sexual harassment is defined as the use of one's authority or power, either explicitly or implicitly, to coerce another into unwanted sexual relations or to punish another for his or her refusal, or as the creation by a member of the College community of an intimidating, hostile, or offensive working or educational environment through verbal or physical conduct of a sexual nature.

If you believe that you are being harassed, seek help — the earlier the better. You may speak with your instructor, a unit administrator, and security. Student complaints regarding possible sexually harassing conduct should be taken to the office of the Vice President for Human Resources 253-964-6519; <http://www.pierce.ctc.edu/title-ix>
Department of Education Title IX: <http://www2.ed.gov/about/offices/list/ocr/docs/title-ix-rights-201104.pdf>
NCES Title IX info: <https://nces.ed.gov/fastfacts/display.asp?id=93>

Learning outcomes

After successful completion of this course, students will be able to do the following:

1. Exhibit proficiency using a scientific calculator.
2. Express and manipulate numbers using scientific notation and significant figures.
3. Recognize the importance of significant figures in measurements.
4. Apply significant figures to measurements.
5. Solve problems using units and dimensional analysis including cubed units such as m^3 to cm^3 and density.
6. Generate and use conversion factors from available information.
7. Construct and interpret graphs.
8. Describe the fundamental organization of the Periodic Table.
9. Describe the fundamental differences between the states of matter.

10. Describe the basic structure of an atom.
11. Use inorganic nomenclature system including a discussion of the properties of common acids and bases and their pH.
12. Predict when an ionic or covalent bond will form.
13. Relate the mass of a substance to the concept of the mole and Avogadro's number.
14. Write and balance chemical equations.
15. Perform mole-mole, gram-gram, percent and theoretical yield calculations from a balanced equation.

TENTATIVE SCHEDULE

Week	Dates	Class Topics	Exam (Topics)
Week 1	01/06 – 01/09	Ch 1, 2	
Week 2	01/13 – 04/16	Ch 3	
Week 3	01/21 – 01/23	Ch 4	
Week 4	01/27 – 01/29	Ch 11, Review	
Week 5	02/03 – 02/06	Exam 1, Ch 5	Exam 1, 02/03 (Ch 2, 3, 4, 11)
Week 6	02/10 – 02/13	Ch 6	
Week 7	02/18 – 02/20	Ch 7	
Week 8	02/24 – 02/27	Review, Exam 2, Ch 8	Exam 2, 02/25 (Ch 5, 6, 7)
Week 9	03/02 – 03/05	Ch 8, 9	
Week 10	03/09 – 03/12	Ch 9, 10	
Week 11	03/16 – 03/19	Ch 10, Review, Exam 3	Exam 3, 03/19 (Ch 8, 9, 10)
Week 12	03/23	Final Exam	Final, 03/23 (Cumulative)

Holidays and last day of instruction

- Mon, Jan 20th – MLK Jr. Day – no class
- Thu, Jan 30th – Faculty Assessment Day – no class
- Fri, Jan 31st – All District In-Service Day – no class
- Mon, Feb 17th – Presidents' Day – No class
- Last day of instruction for this class: Thu, Mar 19th

Final Exam: Mon, Mar 23rd 12:05 pm – 2:05 pm

Disclaimer

Course content may vary from this outline to meet the occasional needs of the course.