CHEM 101 (3 credits): Introductory Chemistry. Selected principles and applications of chemistry. Students may receive General Education credit.

Overview

CHEM 101 is an introductory chemistry course that incorporates lectures, readings, problem-solving and laboratory experiments in developing an understanding of chemical concepts and practices. Prior study of chemistry is not assumed, but you should have taken at least one class in algebra before taking CHEM 101. For some students, CHEM 101 provides the chemistry required by their major area of study. For other students, CHEM 101 provides review and preparation for subsequent Chemistry classes such as CHEM 110 (Chemical Principles I) and CHEM 202 (Fundamentals of Organic Chemistry).

The goals for this course are that you (1) understand the nature of science using chemistry as an example, (2) understand the basic principles of chemistry, (3) are able to perform standard laboratory procedures in a safe and accurate manner, and (4) are able to apply the basic principles of chemistry through real world problem solving.

To achieve these goals, you will study chemistry at an introductory level, using some basic mathematics and algebra for problem solving. You will also perform home-scaled chemical experiments to get direct experience with chemical phenomena. The course covers the following topics:

- The vocabulary of chemistry
- Matter and measurements
- Molecules and molecular compounds
- Ions and ionic compounds
- Chemical bonding
- Chemical reactions
- The periodic table
- States of matter and properties of materials
- Mole ratios
- Nomenclature
- Molecular geometry
- The basics of acids and bases

Course Objectives

When you successfully complete this course, you will be able to:

- Describe the structure and behavior of atoms
- Extract data and information from the periodic table of the elements
- Predict the properties and behavior of elements based on their position in the periodic table
- Understand the process of chemical bonding and predict what type of bonds will form between different substances
- Determine when chemical reactions will take place between substances, the ratio in which the substances will combine, what new products will be formed in the reaction, and the amount of product formed from a given amount of starting materials
- Correctly name chemical substances based on the ratio of the elements in the compound and the type of bonding between the atoms
- Identify the intramolecular forces that can exist between atoms within a chemical compound or molecule and the intermolecular forces that occur between molecules
- Describe and compare the properties of gases, liquids and solids

Course Materials

Required

1. Textbook: *Introductory Chemistry: A Foundation by Steven Zumdahl and Donald Decoste, 7th Edition, 2011, Houghton Mifflin Company publishers. ISBN: 978-0538736398 Editions 8th and 9th may also be used.*
2. *CHEM 101 General Tool Kit and CHEM 101 Lab Kit*

For kit pricing and ordering information, please see the MBS Direct Web site, located at http://bookstore.mbsdirect.net/psude.htm (Links to an external site.)Links to an external site.. MBS Direct can also be contacted at 1-800-325-3252.

Materials will be available at MBS Direct approximately three weeks before the course begins. It is very important that you purchase the correct materials.

3. *A suitable scientific calculator (with scientific notation and log functions) is essential. Calculators with text-storage capabilities will not be permitted for use on exams. Note that MBS is not carrying this for the course.*

Additional Materials

In addition to the kits, you will also need the following materials to perform the experiments; these can be purchased from a local store:

- Isopropyl alcohol (rubbing alcohol) 50%, 70%, or 91%
- Clear white vinegar
- Granulated sugar
- Salt
- Bottled or distilled water
- A ruler that is at least 6" in length. Must be marked in cm's with at least 10 divisions in between the cm's
- Measuring spoon set
- Scissors
- Stapler and staples
- Matches
- 2 regular ceramic mugs
- 1 clear plastic or glass container
- A heat resistant plate
- Disposable plastic teaspoon
- Cotton swabs similar to Q-tips
- Toothpicks
- Paper towels
- Pen and pencil

Technical Specifications

World Campus Technical Requirements

Operating System: Windows 2000/XP, Vista, or Windows 7; Mac OS X 10.3 or higher (10.4 or higher recommended)

Processor: 1 GHz or higher

Memory: 256 MB of RAM

Hard Drive Space: 500 MB free disk space

Browser: We recommend the latest Canvas-supported version of Firefox or Internet Explorer.

To determine if your browser fits this criteria and for advice on downloading a supported version, please refer to the following ITS knowledgebase article: http://kb.its.psu.edu/cms/article/6 (Links to an external site.)Links to an external site.

Note: Cookies, Java, and JavaScript must be enabled. Pop-up blockers should be configured to permit new windows from Penn State web sites.

Due to nonstandard handling of CSS, JavaScript and caching, older versions of Internet Explorer (such as IE 6 or earlier) do not work with our courses.

Plug-ins

- Adobe Reader [Download from Adobe (Links to an external site.)Links to an external site.]
- Flash Player (v7.0 or later) [Download from Adobe (Links to an external site.)Links to an external site.]

Additional Software

- Microsoft Office (2003 or later)
- iTunes/Quicktime [Download from Apple (Links to an external site.)Links to an external site.]

Internet: Broadband (cable or DSL) connection required

Printer: Access to graphics-capable printer

DVD-ROM: Required

Sound Card, Microphone, and Speakers:

- Required
- USB Headset (headphones with attached microphone)

Monitor: Capable of at least 1024 x 768 resolution

Note: If you need technical assistance at any point during the course, please contact the World Campus Helpdesk (Links to an external site.)Links to an external site..

Requirements and Grading Scale

Lesson Assignments (20%)

Each lesson will conclude with a few homework assignments. The format of each assignment will vary and may include fill-in-the blank, short essay, and multiple choice questions. Each assignment will be due at the end of each lesson before beginning the next lesson. The lowest assignment grade will be dropped, and all of the others will be weighted equally.

Video Demonstration Summaries (5%)

There will be multiple video demonstrations for some of the lessons. A short online submission (one page or less in length) will be required for five of the demonstrations. Each submission will go into a separate dropbox and must include a description of the demonstration, the concept being presented, your observations, and any suggestions you may have to change or expand the demonstration. Watch all the videos, but please only submit summaries for 5 of the videos.

Lab Experiment Reports (25%)

There will be three lab experiments performed individually by the student. Each experiment will have an online report submitted consisting of experimental data, observations and short answers to interpretive questions. The laboratory is an integral component of Chem 101, and completion of the lab reports is mandatory in order to successfully pass this course. Missing one or more laboratory experiments may result in an F in the course.

Mid-Term Exams (50%)

The three midterm exams will have multiple choice questions and will have a 90-minute time limit. Only one attempt is allowed.

Course Grading Scale

(Based upon Department Guidelines)

Grade	**Percentage**
A	92.0-100%
A-	89.5-91.9%
B+	85.5-89.4%
B	79.5-85.4%
B-	78.5-79.4%
C+	75.5-78.4%
C	68.5-75.4%
D	56.5-68.4%
F	56.4 and

lower

Please refer to the University Grading Policy for Undergraduate Courses (Links to an external site.)Links to an external site. for additional information about University grading policies. If you are prevented from completing this course for reasons beyond your control, you have the option of requesting a deferred grade from your instructor. For more information, please see "Deferred Grades" on the Student Policies Web Site (Links to an external site.)Links to an external site..

Accommodating Disabilities

Penn State welcomes students with disabilities into the University's educational programs. If you have a disability-related need for reasonable academic adjustments in this course, contact the Office for Disability Services (ODS) at 814-863-1807 (V/TTY). For further information regarding ODS, please visit the Office for Disability Services (Links to an external site.)Links to an external site. Web site.

In order to receive consideration for course accommodations, you must contact ODS and provide documentation (see the documentation guidelines (Links to an external site.)Links to an external site.). If the documentation supports the need for academic adjustments, ODS will provide a letter identifying appropriate academic adjustments. Please share this letter and discuss the adjustments with your instructor as early in the course as possible. You must contact ODS and request academic adjustment letters at the beginning of each semester.

Netiquette

“Netiquette”, or network etiquette, is a set of guidelines meant to help us keep our online interactions with others from being misunderstood. Often times, in online communications, such as email and instant messaging, the main point of a message can be lost because we do not have the ability to interpret the other person’s tone of voice, facial expressions, and body language along with their words. Something that may be understood to be a friendly joke in face-to-face contact may be interpreted to be offensive in an email, even though the intent was the same.

Because this is an online course, the vast majority of the communications between instructors and students will occur via email. Following the best-practices listed below will help us to keep all of our communications professional and positive.

For a more thorough explanation of netiquette, you may wish to view this online resource:http://www.albion.com/netiquette/corerules.html (Links to an external site.)Links to an external site.

CHEM 101 Best-Practices for E-mail Interactions:

1. You should communicate with your instructor using the canvas course mail tool. We receive many emails every day from students, and this will ensure that emails do not get filtered to the spam folders in our regular email boxes.
2. Make sure to proof-read emails for spelling and grammar errors. It can be difficult to understand exactly what you are trying to ask when an email rambles on and has many spelling errors.
3. Remember the human. Sometimes it is easy to get upset over a grade that is lower than expected or a technical error that occurred while you were in the middle of an assignment. It is important to remember, though, that your instructors are people, too. So before you send a ranting email, it's best to ask yourself, "Would I say this to someone's face?" If the answer is no, then take some time to try to express yourself more calmly and professionally. It is much easier for us to respond to a calm email that clearly explains the problem that you are having than to a rambling, angry email.
4. Be patient. If we don't email you back immediately, don't panic! Our goal is to respond to student communications within 24 hours (it's usually less) Monday-Friday. On weekends and over holidays, it may take us a little longer to respond to your e-mails. If it has been more than 24 hours, first check your Canvas email account, often that is where our replies will go (sometimes Canvas forwarding does not work). If you have not received a response within 48 hours, please send another email with CHEM 101 in the subject line (this will ensure that it does not get sent to our spam folders).
5. Be forgiving of other people's mistakes. Believe it or not, your instructors make mistakes too! If you see that we have made a mistake somewhere, especially on the course material, please point it out to us. However, this situation is best handled in a private email to the instructor. We appreciate when students are able to help us improve the course, and if you are able to catch a mistake we have made, we know that you are paying attention!
6. Be sure that you're sending a message to the correct recipient. Questions about Chemistry and assignments should be sent to your instructor. Questions about computer access and kit delivery should be sent to World Campus student services.

Additional Policies

For information about additional policies regarding items such as Penn State Access Accounts; credit by examination; course tuition, fees, and refund schedules; and drops and withdrawals please see the World Campus Student Policies (Links to an external site.)Links to an external site.Web site.

Academic Integrity

Academic integrity—scholarship free of fraud and deception—is an important educational objective of Penn State. Academic dishonesty can lead to a failing grade or referral to the Office of Student Conduct (Links to an external site.)Links to an external site..

Academic dishonesty includes, but is not limited to:

- cheating
- plagiarism
- fabrication of information or citations
- facilitating acts of academic dishonesty by others
- unauthorized prior possession of examinations
- submitting the work of another person or work previously used without informing the instructor and securing written approval
- tampering with the academic work of other students

How Academic Integrity Violations Are Handled

In cases where academic integrity is questioned, procedure requires an instructor to notify a student (Links to an external site.)Links to an external site. of suspected dishonesty before filing a charge and recommended sanction with the college. Procedures allow a student to accept or contest a charge. If a student chooses to contest a charge, the case will then be managed by the respective college or campus Academic Integrity Committee. If a disciplinary sanction also is recommended, the case will be referred to the contact us (Links to an external site.)Links to an external site..

Additionally, World Campus students are expected to act with civility and personal integrity; respect other students' dignity, rights, and property; and help create and maintain an environment in which all can succeed through the fruits of their own efforts. An environment of academic integrity is requisite to respect for oneself and others, and a civil community.

For More Information on Academic Integrity at Penn State

Please see the Academic Integrity Chart (Links to an external site.)Links to an external site. for specific college contact information or visit one of the following URLs:

- Penn State Senate Policy on Academic Integrity (Links to an external site.)Links to an external site.
- Turnitin (Links to an external site.)Links to an external site. a web-based plagiarism detection and prevention system

Course Summary:

Date	Details
Sun Sep 2, 2018	Assign 1.1 due by 11:59pm
	Assign 1.2 due by 11:59pm
	Document Submission Practice due by 11:59pm
	Introductory Information and Syllabus Quiz due by 11:59pm
	Introductory Survey due by 11:59pm
Sun Sep 9, 2018	Assign 2.1 due by 11:59pm
	Meet Your Classmates! due by 11:59pm
Sun Sep 16, 2018	Assign 3.1 due by 11:59pm
	General Safety Manual Quiz due by 11:59pm
	L3 Lab Report Submission due by 11:59pm
	Lab 3 Prelab Quiz due by 11:59pm
	Lab and Tool Kit Check-In due by 11:59pm
Sun Sep 23, 2018	Assign 4.1 due by 11:59pm
	Assign 4.2 due by 11:59pm
	Assign 4.3 due by 11:59pm
	Assign 4.4 due by 11:59pm
Sun Sep 30, 2018	Assign 5.1 due by 11:59pm
	Assign 5.2 due by 11:59pm
	L5 Lab Report Submission due by 11:59pm
	Lab 5 Prelab Quiz due by 11:59pm
Sun Oct 7, 2018	Midterm One due by 11:59pm
Sun Oct 14, 2018	Assign 6.1 due by 11:59pm
Sun Oct 21, 2018	Assign 7.1 due by 11:59pm
	Assign 7.2 due by 11:59pm
Sun Oct 28, 2018	Assign 8.1 due by 11:59pm
Sun Nov 4, 2018	Assign 9.1 due by 11:59pm
Sun Nov 11, 2018	Assign 10.1 due by 11:59pm
Sun Nov 18, 2018	Midterm Two due by 11:59pm
Sun Dec 2, 2018	Assign 11.1 due by 11:59pm
	Assign 11.2 due by 11:59pm
	Assign 11.3 due by 11:59pm
	Video Demonstration Summary #1 due by 11:59pm
	Video Demonstration Summary #2 due by 11:59pm

Date	Details
	Video Demonstration Summary #3 due by 11:59pm
	Video Demonstration Summary #4 due by 11:59pm
	Video Demonstration Summary #5 due by 11:59pm
Sun Dec 9, 2018	Assign 12.1 due by 11:59pm
	Assign 12.2 due by 11:59pm
	L12 Lab Report Submission due by 11:59pm
	Lab 12 Prelab Quiz due by 11:59pm
Wed Dec 12, 2018	Midterm Three due by 11:59pm