COURSE INFORMATION

COURSE TITLE:

CHE101 Introduction to Chemistry I with Lab: GT-SC1

COURSE DESCRIPTION:

Includes the study of measurements, atomic theory, chemical bonding, nomenclature, stoichiometry, solutions, acid and base, gas laws, and condensed states. Laboratory experiments demonstrate the above concepts qualitatively and quantitatively. Designed for non-science majors, students in occupational and health programs, or students with no chemistry background.

This course is one of the Statewide Guaranteed Transfer courses.

- gtPathways Requirement Course Information Page

CREDIT HOURS:

5

CCCOnline Course Policies

The CCCOnline Course Policies page contains information about the student's role in the classroom, grading policies, and rights and responsibilities.
COURSE MATERIALS

Your textbook is available online as an eText. You do not need to purchase any additional materials. For specific information on refund policies and the optional black and white textbook available for purchase please contact the CCCOnline bookstore.

MINIMUM COMPUTER REQUIREMENTS

To complete this course, you will need regular access to a computer from which you can get to the Internet and use email. In order to ensure that your course functions properly, you must run the System Check. This is a CRITICAL STEP, and taking the time to do it now will eliminate a tremendous amount of frustration for you later. To run the System Check, click Tools in the course NavBar and then click System Check.

REQUIRED ETEXT


DIGITAL MATERIALS ACCESS AND SETUP

This course uses MyLabsPlus which contains the eText in addition to interactive media content to help you remember what you learn.

- Visit the Pearson MyLabsPlus Course Start page for details on first access of the materials.

To make sure your computer is set up correctly to access the eText and other digital content, review the Pearson Technical Support page, also linked in the Technical Support Module.

REQUIRED LAB KIT

Your required lab kit will be shipped to you after the drop date for this semester. You do not need to purchase the lab kit separately. It is included in your course fees.

On the first day you access the course, submit your shipping address one of two ways:

1. Via a pop-up window that appears in your course for you to submit your shipping address. This must be done prior to the drop date.
   - Students who live abroad should complete this form by the third day of class.
   - The address you provide must be a physical address and not a PO Box. Lab kits are sent via FedEx, which is unable to deliver to a PO Box.

2. Via a link on your Course Homepage near the top right where you can fill in your address. This link will be available until the drop date for the semester.
You only need to submit your address one time. After the drop date for this course, the process for sending your kit to you will begin.

- Please allow 1-2 business days for processing and 7-10 business days for delivery.
- If you do not receive your lab kit by _______, contact me and I will work with you to adjust your lab due date that requires the kit.
- If you do not receive your lab kit due to not submitting your address or submitting an old or inaccurate mailing address, there will be no deadline extensions for lab assignments. CCCOnline is not responsible for delays or lost lab kits due to customs or APO processing.
- When the lab kit arrives, check the contents against the lab kit inventory.
  - The phone number and the name of the person who assembles the kit will be included in a postcard inside the lab kit.
  - If you are missing any items or have any broken items, contact Carolina Biological at 1-800-334-5551 ext: 4371. Any missing or broken items will be replaced for free.
  - It is essential that you check your kit at the beginning of the semester.

See the Lab Kit FAQs in the Lab Information Module for more information.

**LAB MATERIALS SUPPLIED BY THE STUDENT**

Please find the list of all materials that students must provide for their labs in this course. Please make sure to review the list and have the materials available at least a week before the due date of the lab. Additional lab information can be found in the Lab Information section in the Syllabus module.

**PHOTO AND CAMERA REQUIREMENTS**

This course requires access to a digital camera (cell phones cameras are acceptable). Students will be required to submit photos as part of specified assignments within this course. Photos submitted for assignments will be required to be .jpg, .tif or .bmp format. Assignments without required photos and proper formatting will result in a grade penalty.
COURSE COMPETENCIES AND OUTCOMES

STUDENT COMPETENCIES:

The competencies you will demonstrate in this course are as follows:

A. Apply significant figures correctly in measurements and calculations.
B. Use dimensional analysis to solve a variety of problems.
C. Use the periodic table to assist in explaining chemical bonding, polarity, and physical and chemical properties of elements.
D. Write and/or give orally the corresponding formula and name of a compound when given only the formula or name.
E. Calculate the mathematical relationship between variables after graphing the experimental data.
F. Apply knowledge of chemistry principles to real world situations.
G. Apply knowledge to solve mathematical problems related to chemistry principles.
H. Read, analyze and apply written material to new situations.
I. Write and speak clearly and logically in scientific presentations and/or essays.
J. Apply appropriate forms of technology to solve problems or compile information.

The module outcomes that will permit you to demonstrate course competencies are:

MODULE 1

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Competencies</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Describe the science of chemistry and chemical principles as it pertains to the world.</td>
<td>F</td>
</tr>
<tr>
<td>2 Devise a way to analyze new chemical principles in an efficient manner by creating a study plan.</td>
<td>H</td>
</tr>
<tr>
<td>3 Use the prefixes of the metric system to perform conversions within the metric system as well as to the English system.</td>
<td>B</td>
</tr>
<tr>
<td>4 Distinguish between exact and inexact numbers, and specify the number of significant digits resulting from a given measuring device.</td>
<td>A</td>
</tr>
<tr>
<td>5 Round a calculated answer to the correct number of significant digits and apply the principles of rounding and significant figures to mathematical operations.</td>
<td>A</td>
</tr>
<tr>
<td>6 Write and use conversion factors to interconvert between units and problem solve including in problems involving density and specific gravity.</td>
<td>B</td>
</tr>
<tr>
<td>7 Perform energy calculations for determining specific heat or calories.</td>
<td>G</td>
</tr>
<tr>
<td>8 Classify matter and define basic chemical terms.</td>
<td>F</td>
</tr>
</tbody>
</table>
Module 2

Outcomes
1. Given the name of an element, write its correct symbol. From its symbol, write the correct name.
2. Recognize the important subdivisions of the periodic table; periods, groups (families), metals, and nonmetals.
3. Describe the parts of the atom and how subatomic particles lead to the arrangement of the periodic table and properties of elements.
4. Describe isotopes and the basis for nuclear processes and reactions including half-lives and radioactive isotopes in medicine.
5. Use the periodic table to write electron configurations and determine energy levels, sublevels, and orbitals.
6. Utilize the periodic table and its predictive power to estimate the relative magnitudes of ionization energy and metallic character.

Competencies
D
C
C
F
C

Module 3

Outcomes
1. Given an element name, predict the ion it would form.
2. Use the periodic table to predict the formation of a covalent or ionic bond between elements and ions.
3. Write the formulas of compounds or polyatomic ions when provided with the name of the compounds or polyatomic ions and names when provided formulas.
4. Using the concepts of chemical bonding and polarity, be able to draw Lewis structures and resonance structures to be able to predict molecular geometry.
5. Based on polarity, be able to explain the different types of intermolecular forces.
6. Based on chemical properties, be able to classify, balance, and predict chemical reactions including combination, decomposition, replacement, combustion, and oxidation-reduction.
7. Use Avogadro’s number in calculations involving the mole, molar mass, and number of particles.
8. Determine the theoretical and percent yield as well as the limiting reactant of a reaction and describe the connection between the efficiency of a reaction and waste.

Competencies
D
C
D
C
F
B, G
B

Module 4

Outcomes
1. Describe the behavior of gases using gas law equations and the kinetic molecular theory of gases.
2. Apply stoichiometry to reactions involving gases.
3. Describe solutions qualitatively and quantitatively, in terms of solute, solvent, solution, and perform calculations to determine concentrations.
4. Calculate mass/volume percent, mass/mass percent, and molarity.
5. Perform dilution calculations.
6. Determine if a solution is saturated or unsaturated and if a salt is soluble or insoluble.

Competencies
B, C
F
A, B
B
B
C, H
**Module 5**

**Outcomes**

1. Calculate the equilibrium constant and use it to determine equilibrium concentrations of each component of a reaction.

2. Describe the dynamic nature of chemical equilibrium and predict how the reaction will shift from changes in reaction conditions.

3. Describe Arrhenius and Bronsted-Lowry acids and bases and identify them in chemical reactions.

4. Calculate the hydronium, \([\text{H}_3\text{O}^+]\), and hydroxide, \([\text{OH}^-]\), ion concentrations of an aqueous solution using the ion product constant of water, \(K_w\).

5. Describe what will influence the rate of a reaction.

**Competencies**

- B
- B, E
- C, D
- A, B, G
- F
GRADING AND EVALUATION

METHODS:

Evaluation includes a combination of discussion participation, assignments, and other evaluations. Rubrics are provided for assignments and discussions.

GRADING POLICIES:

Mark all Module due dates on your calendar for this class. You may submit assignments AHEAD of schedule.

No late work is accepted in this course (except in the case of documented extreme personal emergencies, e.g. a Doctor’s note, hospital papers, etc.). Due dates will be enforced.

- Due dates are outlined in your Schedule.
- If you have a technical problem of any kind ...your server goes down, your computer melts, etc. or if your online course gets bogged down (this happens very infrequently and only for a few hours at a time), you are still responsible for the work.
- Get your work done on time and well before the deadline.
- Plan ahead. Discussion postings are time-sensitive within each Module and cannot be made up.
- Quizzes, Homework and Labs will only be available during the assigned times as specified in the Schedule.
- Do not attempt to send labs through the D2L e-mail as attachments as they are larger than the E-mail capacity.

PLAGIARISM

Plagiarism is the act of using words and/or ideas from another person or source without acknowledgment or attribution of that person or source. Plagiarism, cheating, or helping someone else violate reasonable standards of academic behavior will not be tolerated.

- The instructor may, in any such instances, render a failing grade (zero) for any plagiarized assignment on the first offense and an F for the entire course on the second offense.
- ALL work submitted by a student should be in their own words. This includes Discussion Posts, Lab reports and Quiz answers.
- Any quotes or information used from an outside source must be clearly referenced. Self-plagiarism also falls under this category. Work from a previous semester may not be used.
Your instructor has the expectation that all work completed will be unique to the current semester.

- You may confer with other students about the labs or other assignments in this course, but all work submitted must be your own and unique. If you do work with a classmate on an assignment please alert your instructor before turning in your work.
  - See *Lab Success Without Plagiarism* in the Lab Information Module for more information.

**SUMMARY OF GRADING**

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Points</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discussions (10 @ 15 points each)</td>
<td>150</td>
<td>13%</td>
</tr>
<tr>
<td>Homework (Intro to Mastering Chemistry and 11 Chapters -points range from 8 to 14)</td>
<td>128</td>
<td>12%</td>
</tr>
<tr>
<td>Lab Reports (12 @ 28 points each)</td>
<td>336</td>
<td>30%</td>
</tr>
<tr>
<td>Lab Safety Form</td>
<td>10</td>
<td>1%</td>
</tr>
<tr>
<td>Reading Quizzes (11 @ 5 points each)</td>
<td>55</td>
<td>5%</td>
</tr>
<tr>
<td>Chapter Exams (11 @ 30 points each)</td>
<td>330</td>
<td>29%</td>
</tr>
<tr>
<td>Midterm (1 @ 60 points each)</td>
<td>60</td>
<td>5%</td>
</tr>
<tr>
<td>Comprehensive Final (1 @ 60 points each)</td>
<td>60</td>
<td>5%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>1129</td>
<td>100%</td>
</tr>
</tbody>
</table>

**Grading Scale**

A = 90 to 100%  B = 80 to 89%  C = 70 to 79%  D = 60 to 69%  F = 59% and below

**FINAL GRADES**

Final grades will be determined by the number of points you earn divided by the total number of points available x 100, as a percent.

**For example:**
If your total points are 873, your final grade will be determined from $873/1129 \times 100 = 77.3\%$, which will result in a "C" in this course.

- In order to receive an A in this course, your score needs to be 1011 or higher.
- The grades are final and non-negotiable. They are a measure of your own aptitude and effort. It is expected for you to accept your own performance as an integral part of yourself.

**DISCUSSIONS**

**Note:** Refer to the Course Schedule for Due Dates for Unit Discussions.
GENERAL INFORMATION

The discussion area is our classroom and your means of participating in the classroom interaction. For every module, there will be at least one graded discussion topic that will be posted for you to research, ponder and write about. You will be graded on your participation in this Discussion. Unlike Exams, Labs and MLP Assignments which you may wait until the deadline to submit, these discussions are not a self-paced activity. These discussions do not work if you are only posting a summary or initial response and not interacting with your classmates and myself. They also do not work if you are posting late in the discussion period (see below). Imagine going to a debate/discussion meeting after everyone has left and you are trying to deliver a speech to and get an interaction from an empty room.

Student evaluations of CCCOnline courses reflect the importance of the discussion area to successful online classes. Students tell us "I felt that the class discussions were interesting"; "kept all the students engaged"; and "I really liked the interaction between the people in the discussions. I thought that each person's input really helped give a broad perspective of the subject and helped me learn." Current research in online education has arrived at a similar conclusion. From Quality in Distance Education: Focus on Online Learning by Katrina Meyer: "Quality learning is largely the result of ample interaction with the faculty, other students, and content" (page vii). (Quality in Distance Education - Focus On Online Learning- ASHE Higher Education Report Volume 29, Number 4 (02) by Meyer, Katrina A [Paperback (2002)])

Expect to post numerous times throughout the time period that a Discussion Topic is open. Check under the Discussion tab for open/close dates on each Discussion, these are different from the due dates for your posts described below.

When a Topic opens plan to write 150 words minimum in your initial required post (called your "First Post"). Make sure to create a unique subject heading for your First Post that will distinguish your post from your classmates. All posts must also be unique. If someone has already posted on your topic be sure to make yours unique by taking a different approach to the idea. Make sure to read and follow the instructions for each topic carefully. You may write about something from the reading material, a relevant experience, or other appropriate topics that add to the knowledge of the class. This First Post must also include a minimum of one reference cited, even if it is only your textbook. Also, if you use outside material to help you formulate any of your posts then you must cite that source.

NOTE: Any facts or quotations obtained from any other source should be referenced and cited properly according to APA guidelines. See this helpful resource http://ccconline.libguides.com/APAToolkit

NOTE: Wikipedia is NOT considered a primary or secondary source. If you find information in Wikipedia, locate the sources used by the author and pull information from them, if they are primary (original documents) or secondary (peer-reviewed publications) sources.

In addition, any facts or quotations obtained from any other source should be referenced and cited properly. If you get your material from a web page please provide this as a hyperlink so that the site may be directly accessed along with your citation http://classroom.synonym.com/cite-apa-4555.html.

You are also expected to post to at least 2 other students' First Posts (called your "Response Posts"). These posts should always be substantive and meaningful posts that contribute to the discussion and further it. "I agree" is not a meaningful response; explain WHY you agree or disagree, for example, and perhaps add some additional information (always making sure to cite any information taken from another source). Encouragement of others is a good thing, but don't make that your only input to the discussion. As stated above, if you use outside material to help you formulate your post it must be referenced, otherwise, a reference is not needed for response posts.
There will be deadlines for posting your initial "First Post," as well as your "Response Posts". Make sure to check your Course Schedule for these deadlines and the points that will be lost if you don’t meet the stated deadlines.

You will be graded on answering all substantial posts posed to you under your First Post up until noon the day before the Topic closes (called your "Reaction Posts"). As long as a post is more than a "pat on the back" (adding information, asking a question, etc.) please expect to respond to these. Although there isn’t a stated deadline, 48 hours after a post is up is a good goal. This means, not waiting until the end of the Topic to respond.

Since this is an asynchronous activity, everyone will be "on" at different times, although we will be on the same timeline. For maximum benefit, post early to allow other students to read and respond. Check into the discussion area as often as possible to keep current with the discussions. You do not have to spend hours but spend quality time for both you and the other members of the group.

Do note that additional Discussion questions may be posted by the instructor from lectures, assigned readings, website readings, and other sources. It will greatly enhance your learning experience if you post answers to these discussion questions as well. References to relevant outside sources or real life that relate to the discussion questions may be included in your discussions. There will be, at a minimum, one graded discussion topic per Module. Points earned will be based on the Discussion Rubric found below or under the Module: Start Here. The Student Introductory discussion will not be graded.

See the Course Rubrics in the Syllabus section for more information.

ASSIGNMENTS

The MyLabsPlus assignments (Chapter Homework and Reading Quizzes) and the eText, are found by clicking the MyLabsPlus link on the Course Home page under External Links.

- The MyLabsPlus assignments should be done by the due date stated in the Schedule.
- Even if you have a paper textbook, it is highly recommended that you also go through the e-Text that covers the same chapter. There are links to interactive demonstrations that will help you to understand the material you are reading.
- Items that are assigned in MyLabsPlus count toward your course grade.
- All graded course assessments, activities, and MyLabPlus assignments are posted in D2L Grades.

LAB REPORTS

You will be performing labs using a lab kit. In order to write your informal and formal lab reports, see the Laboratory Instructions page in the Lab Information module for detailed information on photo requirements and report guidelines. Information on the due date for each report is provided in the Course Schedule.

- Instructions for conducting and completing your labs are provided in the lab section of each Module.
• All Laboratory work will be submitted in the assignment tab and will be checked by originality software.
  o Your typed assignment will not be graded unless an Originality report has been generated. (This excludes photos submitted as per assignment instructions.)

Begin working on your laboratories early. Some may be lengthy and require extended effort.

**QUIZZES / EXAMS**

Additional Tips on How to Study for This Course:

1. Please make use of the Instructor written Explorations that can be found in our D2L course under Content and within each Module folder.
   o Be sure to make use of the resources found on our eText site (MLP link on the course homepage). At the end of each chapter you will find helpful materials such as: A Chapter Review, Key Terms, Core Chemistry Skills, Understanding the Concepts, etc.
   o And there is also a Chemistry Primer that covers math skills and Chapter Tutorials under the MLP assignments. You can work through these and they won't count against or go towards your grade. Please look for any news announcements regarding additional resources added to the course.

2. Please also make use of the Discussion Topics: "Help, I don't understand the Content" and the "Virtual Cafe", where you can ask questions about Lab content and Homework problems.

**ADDITIONAL TIPS ON HOW TO STUDY FOR THIS COURSE:**

Please make use of the instructor written Explorations that can be found in our D2L course under Content and within each Module folder.

1. Be sure to make use of the resources found on our eText site. There is helpful overview information at the back of each Chapter. Your instructor might also set up practice tutorials or similar. Please look for any news announcements regarding additional resources added to the course.

2. Please also make use of the D2L Discussion Topics: “Help, I don’t understand the Content” and the “Virtual Café”, where you can ask questions about Lab content and Homework problems.

**EXTRA CREDIT**

There is no extra credit available in this course.
COURSE SCHEDULE

The Schedule is subject to change as needed.

This page summarizes all of the graded assignments, exams, and reading assignments for the course. If you want, you can print it out and post it somewhere handy.

All assignments are described in detail on the Module assignment pages. If you have questions check there and/or send me an e-mail.

This course is not self-paced and is not open-exit. All assignments, papers, quizzes, discussions, etc., are to be completed by no later than 11:59 pm MST/MDT of the due date.

PLEASE NOTE: On most all of the assignments, you can work ahead BEFORE the due date stated below. This allows you to cater to your own personal Schedule. Please take advantage of this. Also, be aware that this course will continue through any break you may have in your face2face courses and it is possible that a due date may fall on a holiday.

NOTE: Important CCCOnline semester dates (e.g., drop/withdraw/term end) appear on the CCCOnline calendar.

Module 1

**Reading/Assignments/Exams**

<table>
<thead>
<tr>
<th>Due Dates</th>
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Discuss: Student Introductions
Do: Introduction to Mastering Chemistry
Read/View: Chapter 1 of the eText
Discuss: Nature of Science (Initial Post)
Do: Chapter 1 Reading Quiz
Do: Chapter 1 Homework
Census/Drop Date alert: If you have not completed at least one of these assignments (MLP Intro, MLP Chap 1 Reading quiz, MLP Chap 1 Hmwk) for credit or have contacted me by email offering your extenuating circumstances, you will be dropped from this course.

Discuss: Nature of Science (Response Post)
Do:
- Lab 1: Safety (no kit needed)
- Chapter 1 Exam, Part 1 & Part 2
Read/View: Chapter 2 of the eText
Discuss: Chemistry Study Plan (Initial Post)
Do: Chapter 2 Reading Quiz
Do:
- Chapter 2 Homework
- Lab 2: Scientific Method (no kit needed)
Do: Chapter 2 Exam, Part 1 & Part 2
Read/View: Chapter 3 of the eText
Do:
- Chapter 3 Reading Quiz
- Lab 3: Measurement & Uncertainty (no kit needed)
Do: Chapter 3 Homework
Do: Chapter 3 Exam, Part 1 & Part 2
Discuss: Chemistry Study Plan (Response Post)
Module 2
Reading/Assignments/Exams
Do: Lab kit Authentic Assessment
• Submit proof of receipt of your lab kit. Alert your instructor if your tracking email says you won’t receive your kit before [INSERT date].

Read/View: Chapter 4 of the eText
Discuss: Manhattan Project (Initial Post)
Do: Chapter 4 Reading Quiz
Do:
• Chapter 4 Homework
• Lab 4: Exploring Physical and Chemical Changes
Do: Chapter 4 Exam, Part 1 & Part 2
Discuss: Manhattan Project (Response Post)
Read/View: Chapter 5 of the eText
Discuss: Elemental Discovery (Initial Post)
Do: Chapter 5 Reading Quiz
Do:
• Chapter 5 Homework
• Lab 5: Periodicity and the Periodic Table
Do: Chapter 5 Exam, Part 1 & Part 2
Discuss: Elemental Discovery (Response Post)
Do: Midterm Exam

MODULE 3

Reading/Assignments/Exams
Read/View: Chapter 6 of the eText
Discuss: What’s in a Name (Initial Post)
Do: Chapter 6 Reading Quiz
Do: Chapter 6 Homework
Do:
• Chapter 6 Exam, Part 1 & Part 2
• Lab 6: Molecular Models
  o Please SKIP Activity 5 of this lab & related post-lab questions dealing with Activity 5.
Discuss: What’s in a Name (Response Post)
Read/View: Chapter 7 of the eText
Discuss: Synthesis (Initial Post)
Do:
• Chapter 7 Reading Quiz
• Lab 7: Estimating Avogadro’s Number
  o Please SKIP Activity 2 of this lab & related post-lab questions dealing with Activity 2.
Do:
• Chapter 7 Homework
• Lab 8: Balancing Chemical Equations
Do: Chapter 7 Exam, Part 1 & Part 2
Discuss: Synthesis (Response Post)
MODULE 4

Reading/Assignments/Exams
Read/View: Chapter 8 of the eText
Discuss: Chemistry in World Around Us (Initial Post)
Do: Chapter 8 Reading Quiz
Do:
• Chapter 8 Homework
• Lab 9: Gas Laws
Do: Chapter 8 Exam, Part 1 & Part 2
Discuss: Chemistry in the World Around Us (Response Post)
Read/View: Chapter 9 of the eText
Discuss: Gas Laws or Solution Chemistry (Initial Post)
Do: Chapter 9 Reading Quiz
Do:
• Chapter 9 Homework
• Lab 10: Water Bonding and Properties
Do: Chapter 9 Exam, Part 1 & Part 2
Discuss: Gas Laws or Solution Chemistry (Response Post)

MODULE 5

Reading/Assignments/Exams
Read/View: Chapter 10 of the eText
Discuss: Kinetics, Equilibrium (Initial Post)
Do: Chapter 10 Reading Quiz
Do:
• Chapter 10 Homework
• Lab 11: Investigating Reaction Rates
Do:
• Chapter 10 Exam, Part 1 & Part 2
• Lab 12: Evaluating the Efficacy of Antacids
Discuss: Kinetics Equilibrium (Response Post)
Read/View: Chapter 11 of the eText
Discuss: Scientific Literacy (Initial Post)
Do: Chapter 11 Reading Quiz
Do:
• Chapter 11 Homework
• Lab 13: Chemistry of Life: pH and Buffers
Do: Chapter 11 Exam, Part 1 & Part 2
Discuss: Scientific Literacy (Response Post)
Do: Final Exam (Course ends on a Saturday)

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