CH 121 - GENERAL CHEMISTRY
Spring 2020 Syllabus, Section 401, CRN 56780
Credit hours: 5

Instructor Information
Marita Barth

Session
3\30 to 6\5

Course Description
A general chemistry sequence for students who have had no previous training in chemistry and for those whose college aptitude test scores indicate the need for a more elementary introduction to chemistry. Entering students are expected to have a working knowledge of high school algebra, logarithms, and scientific notation. Lec/lab/rec. (CH 122, CH 123 are Bacc Core Courses)

Course Credits
This course combines approximately 150 hours of instruction, online activities, and assignments for 5 credits.

Course Learning Outcomes
Students will be able to competently discuss concepts and solve problems relating to: matter and biomeasurement, the language of chemistry, atomic structure and electron configuration, bonding and molecular structure (including Lewis structures), solutions and concentration, and stoichiometry.

Communication
Please post all course-related questions in the Q&A Discussion Forum so that the whole class may benefit from our conversation. Please contact me privately for matters of a personal nature. I will reply to course-related questions within 24-48 hours. I will strive to return your assignments and grades for course activities to you within about five days of the due date.

Evaluation of Student Performance
Quizzes (16.51%)
Introductory Quiz
This quiz covers material in the Syllabus as well as in the Start Here, Course Information, and Proctoring Information modules. Please be sure you have reviewed these before attempting this quiz.

You may take this quiz as many times as necessary to earn full credit up until the due date/time. Please note that this is the ONLY quiz in this course that allows multiple attempts.

CH 121 Pre-Assessment
This quiz consists of questions taken from material throughout CH 121, as well as questions designed to gauge your thoughts with regard to studying chemistry.

You are not expected to study for the pre-assessment, but you are expected to put forth your best effort.

Chapter 1 Quiz
This quiz is based on material in Chapter 1. You have one attempt, so please be sure you're prepared before accessing this quiz.

Chapter 2 Quiz
This quiz is based on material in Chapter 2. You have one attempt, so please be sure you're prepared before accessing this quiz.

Chapter 3 Quiz
This quiz is based on material in Chapter 3. You have one attempt, so please be sure you're prepared before accessing this quiz.

Chapter 4 - Part 1 Quiz
This quiz is based on material in Part 1 of Chapter 4. You have one attempt, so please be sure you are prepared before taking this quiz.

Chapter 4 Part 2 and Chapter 5 Quiz
This quiz covers material in Part 2 of Chapter 4, and in all of Chapter 5. You have one attempt, so please be sure you're prepared before taking the quiz.

Chapter 6 Quiz
This quiz is based on material in Chapter 6. You have one attempt, so please be sure you're prepared before accessing this quiz.

Chapter 7 Quiz
This quiz is based on material in Chapter 7. You have one attempt, so please be sure you're prepared before accessing this quiz.

Homework Totals (18.35%)
Chapter 1 - Part 1
This assignment consists of the following homework segments:
- Matter, Mass, and Weight (1 pt)
- Atoms and Molecules (1 pt)
- Elements, Compounds, & Mixtures (1 pt)

These can all be accessed directly from the Chapter 1 module.

Chapter 1 - Part 2
This assignment consists of the following homework segments:
- Physical and Chemical Properties (1 pt)
- Extensive and Intensive Properties (1 pt)
- Measurements (1 pt)
- Calculations Using Measurement (2 pts)
- Measurement Uncertainty (1 pt)
- Significant Figures (1 pt)
- Dimensional Analysis (2 pts)

These can all be accessed directly from the Chapter 1 module.

Chapter 2
This assignment consists of the following homework segments:
- Classical Atomic Theory
- Modern Atomic Theory
- Atomic Structure
- Isotopes
• Chemical Symbols
• Chemical Formulas

These can all be accessed from the Chapter 2 Module.

Chapter 3 - Part 1
This assignment consists of the following homework segments:
• Classic Electromagnetic Theory...
• Bohr’s Atomic Theory
• Bohr’s Model: Energy Calculations
• Quantum Theory: Introduction
• Quantum Numbers
• Electron Configurations
• Orbital Diagrams
• Extensions of Electron Configurations

All of these segments can be accessed from the Chapter 3 Module.

Chapter 3 - Part 2
This assignment consists of the following homework segments:
• Variations in Element Properties: Covalent and Ionic Radii
• Variations in Elemental Properties: Ionization Energies and Electron Affinities
• Paradoxes within the Classic Electromagnetic Theory
• The Periodic Table
• The Periodic Table: Interpretation and Identification
• Ionic Compounds
• Molecular Compounds

These segments can all be accessed in the Chapter 3 Module.

Chapter 4 - Part 1
This assignment consists of the following homework segments:
• Ionic Bonding: Cations and Anions (2.5 pts)
• Covalent Bonding: Understand the... (1 pt)
• Covalent Bonding: Electronegativity (1 pt)
• Chemical Nomenclature: Ionic... (2 pts)
• Chemical Nomenclature: Molecular... (1.5 pts)
• Lewis Structures (2.5 pts)
• Lewis Structures: Octet Rules (2.5 pts)
• Formal Charges and Resonance (2 pts)

These segments can all be accessed in the Chapter 4 - Part 1 Module.

Chapter 4 - Part 2
This assignment consists of the following homework segments:
• VSEPR Theory (2 pts)
• Molecular Geometry and Polarity (1 pt)

These segments can all be accessed in the Chapter 4 - Part 2 Module.

Chapter 5
This assignment consists of the following homework segments:
• Valence Bond Theory (1 pt)
• Hybridization (2 pts)
• Orbital Overlap in Multiple Bonds (1 pt)

These segments can all be accessed in the Chapter 5 Module.

Chapter 6 - Part 1
This assignment consists of the following homework segments:
• Formula Mass (2.5 pts)
• The Mole: Definition and Use (1 pt)
• The Mole: Conversions to Grams (2 pts)
• The Mole: Conversions to Atoms (3 pts)
• Empirical Formula (4 pts)
• Molecular Formula (2.5 pts)

These segments can all be accessed in the Chapter 6 Module.

Chapter 6 - Part 2
This assignment consists of the following homework segments:
• Molarity: Definition and Calculations (2.5 pts)
• Molarity and Molar Calculations (3.5 pts)
• Dilutions: Determining Concentration (2 pts)
• Dilutions: Determining Volume (2 pts)

These segments can all be accessed in the Chapter 6 Module.

Chapter 7
This assignment consists of the following homework segments:
• Writing and Balancing Chemical Equations (2.5 pts)
• Reaction Stoichiometry: Moles (4 pts)
• Reaction Stoichiometry: Mass (2.5 pts)
• Limiting Reactant (3 pts)

These segments can all be accessed in the Chapter 7 Module.

Labs (10.09%)
Lab 1 - Lab Techniques
To complete this lab, please go to the Modules page and access the the Online Chem Labs link in the Online Labs module. Completing the lab at the labs site is sufficient - there is no separate submission step. Please note that your score on the lab will not update in the Canvas gradebook until after the due date for the lab.

Lab 2 - Linear Regression
To complete this lab, please go to the Modules page and access the the Online Chem Labs link in the Online Labs module. Completing the lab at the labs site is sufficient - there is no separate submission step. Please note that your score on the lab will not update in the Canvas gradebook until after the due date for the lab.

Lab 3 - Standard Deviations
To complete this lab, please go to the Modules page and access the the Online Chem Labs link in the Online Labs module. Completing the lab at the labs site is sufficient - there is no separate submission step. Please note that your score on the lab will not update in the Canvas gradebook until after the due date for the lab.
Lab 4 - Absorbance
To complete this lab, please go to the Modules page and access the the Online Chem Labs link in the Online Labs module. Completing the lab at the labs site is sufficient - there is no separate submission step. Please note that your score on the lab will not update in the Canvas gradebook until after the due date for the lab.

Lab 5 - NMR
To complete this lab, please go to the Modules page and access the the Online Chem Labs link in the Online Labs module. Completing the lab at the labs site is sufficient - there is no separate submission step. Please note that your score on the lab will not update in the Canvas gradebook until after the due date for the lab.

Lab 6 - Combustion
To complete this lab, please go to the Modules page and access the the Online Chem Labs link in the Online Labs module. Completing the lab at the labs site is sufficient - there is no separate submission step. Please note that your score on the lab will not update in the Canvas gradebook until after the due date for the lab.

Lab 7 - TLC and Synthesis
To complete this lab, please go to the Modules page and access the the Online Chem Labs link in the Online Labs module. Completing the lab at the labs site is sufficient - there is no separate submission step. Please note that your score on the lab will not update in the Canvas gradebook until after the due date for the lab.

Exams (55.05%)
Final Exam (S20)
This exam consists of 40 questions and one extra credit question. You have 110 minutes (one hour and fifty minutes) to complete and submit the exam.

Midterm Exam (S20)
This exam consists of 25 questions worth four points each, and one extra credit question.

You have 80 minutes (one hour and 20 minutes) to complete and submit the exam. The exam will autosubmit after 80 minutes.

Extra Credit (4.4%)
Course Introductions
Hello CH121 Students! I'm looking forward to working with everyone this term! For our first extra credit assignment, we're going to work on building a community of learners in this course. It's far too easy to feel alone and isolated in an online classroom, but it's not true! Not only are the TAs and Instructors here to help, but there are also a lot of other students in this class who care and are excited to learn with you, and you'll likely find there are a lot of other students you have things in common with.

Week 1 Extra Credit
Please be sure you've watched the video 'The 6 Habits of Highly Successful Students' before starting this extra credit survey.

Also, please be aware that while the points for this survey will be awarded automatically upon submission, these points may be reduced or removed upon review if you don't answer all of the questions in the survey. Please answer thoughtfully!

Week 2 Extra Credit
Before starting this survey, be sure that you've reviewed your Chapter One quiz (or have contacted the instructor if you missed this quiz), and have your work from that quiz available.

Week 3 Extra Credit
Please answer the questions in the following survey honestly and completely.

Week 4 Extra Credit
Please be sure to answer the questions on this survey honestly and completely.

Week 5 Extra Credit
Before starting this extra credit survey, please review this information about managing test anxiety (https://www.brown.edu/campus-life/support/counseling-and-psychological-services/index.php?q=managing-test-anxiety/).

Week 6 - Extra Credit - Midterm Exam Wrapper
This assignment is designed to give you a chance to reflect on your exam performance and, more importantly, on the effectiveness of your exam preparation. Please answer the questions sincerely.

Week 7 Extra Credit
Please answer the questions in this assignment honestly and completely.

Remember that your assignment is auto-scored, but your score may be reduced later if you leave questions blank or leave minimal answers.

Week 8 Extra Credit
Please answer the questions in this assignment honestly and completely.

Remember that your assignment is auto-scored, but your score may be reduced later if you leave questions blank or leave minimal answers.

Week 9 Extra Credit
Please answer these questions completely and honestly.

Remember that these extra credit surveys are auto-graded, but that points may be deducted later if you leave questions unanswered or with minimal answers.

Week 10 Extra Credit
For our final extra credit assignment, we're going to create a discussion board where people can discuss preparations for the final exam, and offer encouragement to each other. To earn full credit for this extra credit, please compose a post with 2-3 (at least!) sentence answers to each of the following questions:

1. What is one study strategy that you've used this term that has been helpful for you?
2. What do you use as a source of inspiration when you're feeling frustrated or discouraged?
3. What are some words of encouragement you have for your fellow classmates?
## Schedule of Topics and Assignments

<table>
<thead>
<tr>
<th>Week of</th>
<th>Reading(s):</th>
<th>Agenda/Topic:</th>
<th>Due:</th>
</tr>
</thead>
</table>
| 3/30    | Ch. 1, Pt. 1 & 2: Sections 1.1-1.6 | Essential Ideas  
*Register for Knewton Alta homework (through Canvas)  
*Register for online labs site (through Canvas)  
*Find an exam proctor & sign-up through Ecampus Testing | Due 4/1 at 11:59pm:  
Introductory Quiz (p. 1)  
CH 121 Pre-Assessment (p. 1)  
Course Introductions (p. 3)  
Due 4/3 at 11:59pm:  
Chapter 1 Quiz (p. 1)  
Chapter 1 - Part 2 (p. 1)  
Lab 1 - Lab Techniques (p. 2)  
Due 4/5 at 11:59pm:  
Week 1 Extra Credit (p. 3) |
| 4/6     | Ch. 2: Sections 2.1-2.4  
Begin Ch. 3, Pt. 1: Sections 3.1-3.4 | Atoms, Molecules, & Ions  
Electronic Structure & Periodic Properties of Elements | Due 4/10 at 11:59pm:  
Chapter 2 Quiz (p. 1)  
Chapter 2 (p. 1)  
Lab 2 - Linear Regression (p. 2)  
Due 4/12 at 11:59pm:  
Week 2 Extra Credit (p. 3) |
| 4/13    | Finish Ch. 3, Pt. 1: Sections 3.1-3.4  
Begin Ch. 3, Pt. 2: Sections 3.5-3.7 | Electronic Structure & Periodic Properties of Elements | Due 4/17 at 11:59pm:  
Chapter 3 - Part 1 (p. 2)  
Due 4/19 at 11:59pm:  
Week 3 Extra Credit (p. 3) |
| 4/20    | Finish Ch. 3, Pt. 2: Sections 3.5-3.7  
Begin Ch. 4, Pt. 1: Sections 4.1-4.5 | Electronic Structure & Periodic Properties of Elements  
Chemical Bonding & Molecular Geometry | Due 4/24 at 11:59pm:  
Chapter 3 Quiz (p. 1)  
Chapter 3 - Part 2 (p. 2)  
Lab 3 - Standard Deviations (p. 2)  
Due 4/26 at 11:59pm:  
Week 4 Extra Credit (p. 3) |
| 4/27    | Finish Ch. 4, Pt. 1: Sections 4.1-4.5 | Chemical Bonding & Molecular Geometry | Due 5/1 at 11:59pm:  
Chapter 4 - Part 1 Quiz (p. 1)  
Chapter 4 - Part 1 (p. 2)  
Lab 4 - Absorbance (p. 3)  
Due 5/3 at 11:59pm:  
Week 5 Extra Credit (p. 3) |
| 5/4     | Ch. 4, Pt. 2: Sections 4.1-4.6  
Begin Ch. 5: Sections 5.1-5.3 | Advanced Theories of Bonding  
MIDTERM EXAM | Due 5/6 at 8pm:  
Midterm Exam (S20) (p. 3)  
Due 5/8 at 11:59pm:  
Chapter 4 - Part 2 (p. 2) |
| 5/11    | Finish Ch. 5: Sections 5.1-5.3  
Begin Ch. 6, Pt. 1: Sections 6.1-6.2 | Composition of Substances & Structures | Due 5/14 at 11:59pm:  
Week 6 - Extra Credit - Midterm Exam Wrapper (p. 3)  
Due 5/15 at 11:59pm:  
Chapter 4 Part 2 and Chapter 5 Quiz (p. 1)  
Chapter 5 (p. 2)  
Lab 5 - NMR (p. 3)  
Due 5/17 at 11:59pm:  
Week 7 Extra Credit (p. 3) |
| 5/18    | Finish Ch. 6, Pt. 1: Sections 6.1-6.2  
Begin Ch. 6, Pt. 2: Section 6.3 | Composition of Substances & Structures | Due 5/22 at 11:59pm:  
Chapter 6 - Part 1 (p. 2)  
Week 8 Extra Credit (p. 3) |
5/25  |  Finish Ch. 6, Pt. 2: Section 6.3  
| Begin Ch. 7: Sections 7.1, 7.3-7.4  
| Composition of Substances & Structures  
| Stoichiometry of Chemical Equations  
| Due 5/29 at 11:59pm:  
| Chapter 6 Quiz (p. 1)  
| Chapter 6 - Part 2 (p. 2)  
| Lab 6 - Combustion (p. 3)  
| Week 9 Extra Credit (p. 3)

6/1  |  Finish Ch. 7: Sections 7.1, 7.3-7.4  
| Stoichiometry of Chemical Equations  
| Due 6/5 at 11:59pm:  
| Chapter 7 Quiz (p. 1)  
| Chapter 7 (p. 2)  
| Lab 7 - TLC and Synthesis (p. 3)  
| Week 10 Extra Credit (p. 3)

6/8  |  FINAL EXAM  
| Due 6/10 at 8pm:  
| Final Exam (S20) (p. 3)

**Grading Scale**

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<td>A-</td>
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**Please Note**

This syllabus is subject to change with notice from the instructor. For students registered in this section, there is additional content in the syllabus, which can be accessed through Canvas (http://oregonstate.instructure.com) at the start of term.