CH 122 - GENERAL CHEMISTRY
Spring 2020 Syllabus, Section 401, CRN 60418
Credit hours: 5

Instructor Information

Session
3\30 to 6\5

Course Description
A general chemistry sequence intended for majors in fields other than the physical sciences. Lec/lab/rec. (CH 122 and 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
Competently discuss concepts and solve problems relating to: acid/base equilibria, buffers, acid/base titrations, solubility equilibria, principles of entropy and thermodynamics, electrochemistry, and nuclear chemistry.

Recognize and apply concepts and theories of basic physical or biological sciences.

Apply scientific methodology and demonstrate the ability to draw conclusions based on observation, analysis, and synthesis.

Demonstrate connections with other subject areas.

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 (15.18%)
Introductory Quiz
This quiz is over material in the Syllabus and in the Course Information module. 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 122 Pre-Assessment
You are not expected to study for the pre-assessment, but you are expected to put forth your best effort. You may use a calculator and the posted equation sheet. The pre-assessment is graded on completion. You will only be able to attempt the pre-assessment once, do not open the pre-assessment until you are ready to complete it.

Chapter 8 Quiz
This quiz is based on material in Chapter 8. You have one attempt, so please be sure you’re prepared before accessing this quiz.

Chapter 9 Quiz
This quiz is based on material in Chapter 9. You have one attempt, so please be sure you’re prepared before accessing this quiz.

Chapter 10 Quiz
This quiz is based on material in Chapter 10. You have one attempt, so please be sure you’re prepared before accessing this quiz.

Chapter 11 Quiz
This quiz is based on material in Chapter 11. You have one attempt, so please be sure you’re prepared before accessing this quiz.

Chapter 12 Quiz
This quiz is based on material in Chapter 17. You have one attempt, so please be sure you’re prepared before accessing this quiz.

Chapter 13 Quiz
This quiz is based on material in Chapter 13. You have one attempt, so please be sure you’re prepared before accessing this quiz.

Labs (13.39%)
Lab 1 - 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 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 - Metals and HCl
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 - Calorimetry
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 - TLC Elution
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 - Freezing Point Depression
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 - Osmotic Pressure
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 8 - Iodine Clock
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.

Homework Totals (17.86%)

Chapter 8 - Part 1 Homework
This assignment consists of the following homework segments:
• Gas Pressure (1 pt)
• The Kinetic Molecular Theory (2 pt)
These can all be accessed directly from the Chapter 8 module.

Chapter 8 - Part 2 Homework
This assignment consists of the following homework segments:
• Gas Laws: Pressure, Temp, Volume (2 pt)
• Gas Laws: Avogadro’s Law (2 pt)
• Gas Laws: Ideal Gas Laws (3 pt)
These can all be accessed directly from the Chapter 8 module.

Chapter 8 - Part 3 Homework
This assignment consists of the following homework segments:
• Gas Law Calculations (1.5 pt)
• Density and Molar Mass of a Gas (2 pt)
• Non-Ideal Gas Behavior (1 pt)
• Gas Stoichiometry (2.5 pt)
• Partial Pressure Calculations (2.5 pt)
• Kinetic Molecular Theory and Gas Laws (1.5 pt)
These can all be accessed directly from the Chapter 8 module.

Chapter 9 - Part 1 Homework
This assignment consists of the following homework segments:
• Energy Basics (2 pt)
• Heat and Heat Capacity (3 pt)
• Heat Transfer and Calorimetry (3.5 pt)
These can all be accessed directly from the Chapter 9 module.

Chapter 9 - Part 2 Homework
This assignment consists of the following homework segments:
• Enthalpy (3 pt)
• Standard Enthalpies of Formation (2.5 pt)
• Covalent Bond (2.5 pt)
These can all be accessed directly from the Chapter 9 module.

Chapter 10 Homework
This assignment consists of the following homework segments:
• Intermolecular and Intramolecular Forces (1 pt)
• Types of Intermolecular Forces (2 pt)
• Phase Transitions: Introduction (1 pt)
• Phase Transitions: Vaporization (2 pt)
• Phase Transitions: Sublimation and Melting (1 pt)
• Phase Transitions: Heat/Cooling Curves (2 pt)
• Phase Transitions: Interpretations (1.5 pt)
These can all be accessed directly from the Chapter 10 module.

Chapter 11 - Part 1 Homework
This assignment consists of the following homework segments:
• The Solution Process (1.5 pt)
• General Solubility (1.5 pt)
• Colligative Properties (1 pt)
• Colligative Properties: Concentration Units (2 pt)
These can all be accessed directly from the Chapter 11 module.

Chapter 11 - Part 2 Homework
This assignment consists of the following homework segments:
• Colligative Properties: Vapor Pressure Lowering (2 pt)
• Colligative Properties: Boiling Point Elevation (2 pt)
• Colligative Properties: Freezing Point Depression (1.5 pt)
• Colligative Properties: Osmotic Pressure (1.5 pt)
These can all be accessed directly from the Chapter 11 module.

Chapter 17 - Part 1 Homework
This assignment consists of the following homework segments:
• Theories of Chemical Kinetics (1.5 pt)
• Chemical Reaction Rates (2 pt)
• Chemical Reaction Rates: Experimental Data (2 pt)
These can all be accessed directly from the Chapter 17 module.

Chapter 17 - Part 2 Homework
This assignment consists of the following homework segments:
• Factors Affecting Reaction Rates (2 pt)
• Rate Laws: Definition (2 pt)
• Rate Laws: Reaction Order and... (3 pt)
• Integrated Rate Laws: First Order... (2 pt)
These can all be accessed directly from the Chapter 17 module.

Chapter 13 - Part 1 Homework
This assignment consists of the following homework segments:

• Chemical Equilibria (1.5 pt)
• Chemical Equilibria: Reaction Quotient (2 pt)
• Chemical Equilibria: Equilibrium Constants (2.5 pt)
• Chemical Equilibria: Homogenous &... (2 pt)
• Equil. Calc: Equilibrium Constants (2.5 pt)

These can all be accessed directly from the Chapter 13 module.

Chapter 13 - Part 2 Homework
This assignment consists of the following homework segments:

• Equil Calc: Equilibrium Concentrations: (3 pt)
• Equil Calc: Equilibrium Concentrations II: (3.5 pt)
• LeChatlier’s Principle: Conc. & Press. (2 pt)
• LeChatlier’s Principle: Temp & Catal. (2 pt)

These can all be accessed directly from the Chapter 13 module.

Exams (53.57%)

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.

Final Exam (S20)
This exam consists of 40 questions worth five points each, and one extra credit question.

You have 110 minutes (one hour and 50 minutes) to complete and submit the exam. The exam will autosubmit after 110 minutes.

Extra Credit (4.29%)

Course Introductions
Hello CH122 Students! We’re 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
Please answer the questions in the following survey honestly and completely.

Week 3 Extra Credit
Before starting this survey be sure that you’ve reviewed your Chapter Eight quiz (or have contacted the instructor if you missed this quiz), and have your work from that quiz available.

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 the information at the following webpage:


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 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 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.
# Schedule of Topics and Assignments

<table>
<thead>
<tr>
<th>Week of</th>
<th>Reading(s):</th>
<th>Agenda/Topic:</th>
<th>Due: (Pacific Time)</th>
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<tbody>
<tr>
<td>3/30</td>
<td>Begin Ch. 8: Sections 8.1-8.3, 8.3-8.5</td>
<td>Gases&lt;br&gt;*Register for Knewton Alta homework (through Canvas)&lt;br&gt;*Register for online labs site (through Canvas)&lt;br&gt;*Find an exam proctor &amp; sign-up through Ecampus Testing</td>
<td>Due 4/1 at 11:59pm:&lt;br&gt;Introductory Quiz (p. 1)&lt;br&gt;CH 122 Pre-Assessment (p. 1)&lt;br&gt;Chapter 8 - Part 1 Homework (p. 2)&lt;br&gt;Course Introductions (p. 3)&lt;br&gt;Due 4/3 at 11:59pm:&lt;br&gt;Lab 1 - Standard Deviations (p. 1)&lt;br&gt;Chapter 8 - Part 2 Homework (p. 2)&lt;br&gt;Due 4/5 at 11:59pm:&lt;br&gt;Week 1 Extra Credit (p. 3)</td>
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<tr>
<td>4/6</td>
<td>Finish Ch. 8: Sections 8.1-8.3, 8.5-8.6&lt;br&gt;Begin Ch. 9: Sections 9.1-9.4</td>
<td>Gases&lt;br&gt;Thermochemistry</td>
<td>Due 4/10 at 11:59pm:&lt;br&gt;Chapter 8 Quiz (p. 1)&lt;br&gt;Lab 2 - Linear Regression (p. 1)&lt;br&gt;Chapter 8 - Part 3 Homework (p. 2)&lt;br&gt;Due 4/12 at 11:59pm:&lt;br&gt;Week 2 Extra Credit (p. 3)</td>
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<td>4/13</td>
<td>Continue Ch. 9: Sections 9.1-9.4</td>
<td>Thermochemistry</td>
<td>Due 4/17 at 11:59pm:&lt;br&gt;Chapter 9 - Part 1 Homework (p. 2)&lt;br&gt;Due 4/19 at 11:59pm:&lt;br&gt;Week 3 Extra Credit (p. 3)</td>
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<td>4/20</td>
<td>Finish Ch. 9: Sections 9.1-9.4&lt;br&gt;Begin Ch. 10: Sections 10.1-10.4</td>
<td>Thermochemistry&lt;br&gt;Liquids &amp; Solids</td>
<td>Due 4/24 at 11:59pm:&lt;br&gt;Chapter 9 Quiz (p. 1)&lt;br&gt;Lab 3 - Metals and HCl (p. 1)&lt;br&gt;Chapter 9 - Part 2 Homework (p. 2)&lt;br&gt;Due 4/26 at 11:59pm:&lt;br&gt;Week 4 Extra Credit (p. 3)</td>
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<td>4/27</td>
<td>Finish Ch. 10: Sections 10.1-10.4</td>
<td>Liquids &amp; Solids</td>
<td>Due 5/1 at 11:59pm:&lt;br&gt;Chapter 10 Quiz (p. 1)&lt;br&gt;Lab 4 - Calorimetry (p. 1)&lt;br&gt;Chapter 10 Homework (p. 2)</td>
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<tr>
<td>5/4</td>
<td>Begin Ch. 11: Sections 11.1, 11.3-11.4</td>
<td>Physical Properties of Solutions&lt;br&gt;MIDTERM EXAM</td>
<td>Due 5/6 at 8pm:&lt;br&gt;Midterm Exam (S20) (p. 3)&lt;br&gt;Due 5/6 at 11:59pm:&lt;br&gt;Week 5 Extra Credit (p. 3)&lt;br&gt;Due 5/8 at 11:59pm:&lt;br&gt;Lab 5 - TLC Elution (p. 1)&lt;br&gt;Chapter 11 - Part 1 Homework (p. 2)</td>
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<tr>
<td>5/11</td>
<td>Finish Ch. 11: Sections 11.1, 11.3-11.4&lt;br&gt;Begin Ch. 17: Sections 17.1-17.7</td>
<td>Physical Properties of Solutions&lt;br&gt;Kinetics</td>
<td>Due 5/14 at 11:59pm:&lt;br&gt;Week 6 - Extra Credit - Midterm Exam Wrapper (p. 3)&lt;br&gt;Due 5/15 at 11:59pm:&lt;br&gt;Chapter 11 Quiz (p. 1)&lt;br&gt;Lab 6 - Freezing Point Depression (p. 2)&lt;br&gt;Chapter 11 - Part 2 Homework (p. 2)&lt;br&gt;Chapter 17 - Part 1 Homework (p. 2)&lt;br&gt;Due 5/17 at 11:59pm:&lt;br&gt;Week 7 Extra Credit (p. 3)</td>
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<td>5/18</td>
<td>Finish Ch. 17: Sections 17.1-17.7</td>
<td>Kinetics</td>
<td>Due 5/22 at 11:59pm:&lt;br&gt;Chapter 17 Quiz (p. 1)&lt;br&gt;Lab 7 - Osmotic Pressure (p. 2)&lt;br&gt;Chapter 17 - Part 2 Homework (p. 2)&lt;br&gt;Week 8 Extra Credit (p. 3)</td>
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5/25
Begin Ch. 13: Sections 13.1-13.4
Chemical Equilibrium
Due 5/29 at 11:59pm:
Lab 8 - Iodine Clock (p. 2)
Chapter 13 - Part 1 Homework (p. 3)

6/1
Finish Ch. 13: Sections 13.1-13.4
Chemical Equilibrium
Due 6/5 at 11:59pm:
Chapter 13 Quiz (p. 1)
Chapter 13 - Part 2 Homework (p. 3)

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

Grading Scale

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percent Range</th>
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<tbody>
<tr>
<td>A</td>
<td>92-100</td>
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<tr>
<td>A-</td>
<td>89-91</td>
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<td>B+</td>
<td>86-88</td>
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<td>B</td>
<td>82-85</td>
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<tr>
<td>B-</td>
<td>79-81</td>
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<td>C+</td>
<td>76-78</td>
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<td>C</td>
<td>72-75</td>
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<tr>
<td>C-</td>
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<td>D+</td>
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<td>D</td>
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<td>D-</td>
<td>60-61</td>
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<tr>
<td>F</td>
<td>&lt;60</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.