CHE153: GENERAL CHEMISTRY II SYLLABUS

Spring 2016

INSTRUCTORS:

Dr. Laurance Beauvais
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Office Hours: MW 1:15 – 3:00 pm
R 1:30 – 2:30 pm
and by appointment

Dr. Ken Martin
Office: Rohr Science 305D
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Office Hours: MWF 1:30 - 3:30 pm
TR 1:30 – 3:30 pm
and by appointment

LAB COORDINATOR:

Dr. Tracey Schalnat
Email: traceyschalnat@pointloma.edu

LECTURE:

Section 1 (LA2) MWF 8:30–9:35 am
Section 2 (LA1) MWF 11:00 am–12:05 pm
Section 3 (LA1) MWF 8:30–9:35 am

LAB: (ST209)

Section 1 M 2:45 – 6:15 pm
Section 2 T 8:00 – 11:30 am
Section 3 T 1:30 – 5:00 pm
Section 4 T 6:00 – 9:30 pm
Section 5 W 2:45 – 6:15 pm
Section 6 W 6:30–10:00 pm
Section 7 R 8:00 – 11:30 am
Section 8 R 1:30 – 5:00 pm
Section 9 R 6:00 – 9:30 pm

REQUIRED BOOKS AND COURSE MATERIALS*:

1. *Textbook:* Tro, Chemistry: A Molecular Approach Plus MasteringChemistry, Prentice Hall, 3rd Edition 2014, ISBN-13: 9780321804716.
2. *Laboratory Manual:* Postma, Roberts and Hollenberg, Chemistry in the Laboratory, W. H. Freeman and Company, 7th Edition 2011, ISBN-13: 9781429219549.
3. *Online Homework:* MasteringChemistry www.masteringchemistry.com (bundled with text or purchased separately)
4. *Course Website:* canvas.pointloma.edu
5. *Scientific Calculator:* Non-graphing, non-programmable calculator required for exams.
6. *Clicker:* I-Clicker 2, ISBN-13: 9781429280471
7. *Laboratory Safety Glasses and Lab Coat*: Sold in lab.

Optional Materials*:*

1. Tro and Shanoski, Study Guide for Chemistry: A Molecular Approach, Prentice Hall, 3rd Edition 2014, ISBN-13: 9780321813626.
2. Tro, Saginaw and Kramer, Student Solutions Manual for Chemistry: A Molecular Approach, Prentice Hall, 3rd Edition 2014, ISBN-13: 9780321813640.

* These materials are used for both semesters of the General Chemistry. No new materials are required for the second semester (CHE153) if you took CHE152 last semester.

OBJECTIVES:
This is the second course in a two-semester sequence studying the general principles of Chemistry. The course is designed to teach chemical facts and theories; to provide a conceptual framework of modern chemistry; and to develop laboratory skills in the practice of chemical science. Topics covered include solutions, reaction rates, chemical equilibrium (including acid-base equilibria and solubility equilibria), thermodynamics, electrochemistry, and descriptive chemistry of both non-metals and metals (including transition metals).

LEARNING OUTCOMES:
An understanding of chemistry is a necessary part of an education in the basic and applied sciences, engineering, and medical professions and provides valuable insight for comprehending current events and formulating policies.
Specifically, upon completion of this course, students will be able to:

- Demonstrate a foundational knowledge of the general principles of chemistry including the behavior of solutions, the characteristics of equilibrium (including acid/base equilibrium), the significance of free energy, the properties of electrochemistry, and structures of transition metal and their compounds.
- Solve problems related to describing basic chemical kinetics, characterizing reaction equilibrium, predicting the direction of spontaneous change, calculation electrochemical cell potentials and write chemical equations for selected chemical reactions.
- Perform basic chemical laboratory techniques related to the topics listed above.

PREREQUISITES:
Chemistry Prerequisite: Successful completion of General Chemistry I (CHE 152), or the equivalent.
Mathematical Expectations: Math skills equivalent to those taught in pre-calculus.

EVALUATION:
The activities described below will contribute to your total course grade according to the following:

Hour Examinations (4)	40%
Laboratory Work	25%
Homework	10%
Quizzes and In-Class Activities	10%
Final Examination	15%

Letter grades will be assigned at the end of the course based on your percentage of total possible points, according to the following APPROXIMATE scale:

A	90 – 100%
B	80 – 90%
C	70 – 80%
D	60 – 70%
F	< 60%

(+) and (–) grades will be assigned within each bracket. There is no A+ grade.

ADMINISTRATION:

1. **Attendance** -- Class attendance is expected and will be monitored. Missing even one class meeting is detrimental. However, you will be allowed a maximum of four absences (excused or unexcused) during the semester without a grade penalty. Each absence after the fourth will result in a six-point reduction in one of your hour exams. Absences in excess of 20% of the total number of class meetings may result in de-enrollment from the course as described in the PLNU Catalog (see additional details on the next page). A lab absence will result in a zero on that lab report and lab quiz. The use of portable electronic devices (phones, laptops, iPods, etc.) not related to the course is not permitted in the classroom or lab.

2. **Homework** – Homework assignments will be made on a regular basis. Successful completion of the homework is essential to mastering the course material. Pencil and Paper Homework will be assigned periodically and collected on the due dates. Online Homework: will also be assigned when appropriate through MasteringChemistry (www.masteringchemistry.com course **ID CHE153SPRING2016)**. All homework will count toward your course grade. Late assignments will not be accepted

3. **Quizzes and In-Class Activities** – Short unannounced lecture quizzes will be given periodically throughout the semester. These are designed to test understanding, between hour exams. In-Class activities will be assigned and collected periodically during class. Quizzes and In-Class Activities cannot be made up; however, the lowest score in each category of activity will be discarded when final grades are computed. **iclickers will be used regularly to record in-class participation.**

4. **Exams** – Four (4) hour exams and a comprehensive final will be given during the semester. Make-up exams will be arranged only if the instructor is contacted PRIOR TO THE SCHEDULED EXAM TIME and then only if you present an institutionally valid excuse. Only non-graphing and non-programmable calculators may be used on exams

5. **Laboratories** – Laboratory sections will meet on a weekly basis. Attendance is mandatory at all laboratory sessions. If you must miss a lab for a valid reason, you should make PRIOR arrangements with the laboratory coordinator to see if it is possible to switch into another section that week. No unauthorized shifts in lab schedules will be permitted. There will be no opportunity to make up missed labs. Furthermore, you are responsible for all the material covered in the lab even if you did not attend. Some experiments will be done individually, while others are best worked in pairs. Your lab instructor will specify when you work in pairs. In either case, individual lab reports will be submitted at the end of each period. A quiz, given at the beginning of each lab period, is designed to test individual understanding of the current and previous experiments.

OTHER MATTERS:

Student Privacy

Point Loma Nazarene University adheres to the provisions of the student privacy act. Following FERPA guidelines, grades in this class will be communicated to students on an individual basis. However, exams will be returned in class in such a way that scores are not visible. All other graded works will be returned in your lab section. If you are not comfortable with this procedure, please see the instructor to make special arrangements. This request must be made during the first two weeks of the course.

ACADEMIC HONESTY⊛

Students should demonstrate academic honesty by doing original work and by giving appropriate credit to the ideas of others. Academic dishonesty is the act of presenting information, ideas, and/or concepts as one's own when in reality they are the results of another person's creativity and effort. A faculty member who believes a situation involving academic dishonesty has been detected may assign a failing grade for that assignment or examination, or, depending on the seriousness of the offense, for the course. Faculty should follow and students may appeal using the procedure in the university Catalog. See Academic Policies for definitions of kinds of academic dishonesty and for further policy information.

ACADEMIC ACCOMMODATIONS⊛

If you have a diagnosed disability, please contact PLNU's Disability Resource Center (DRC) within the first two weeks of class to demonstrate need and to register for accommodation by phone at 619-849-2486 or by e-mail at DRC@pointloma.edu. See Disability Resource Center for additional information.

ATTENDANCE AND PARTICIPATION⊛

Regular and punctual attendance at all classes is considered essential to optimum academic achievement. If the student is absent from more than 10 percent of class meetings, the faculty member can file a written report which may result in de-enrollment. If the absences exceed 20 percent, the student may be de-enrolled without notice until the university drop date or, after that date, receive the appropriate grade for their work and participation. See Academic Policies in the Undergraduate Academic Catalog.

GENERAL CHEMISTRY II (CHE 153)
SPRING 2016 CLASS SCHEDULE

DATE	TOPIC	READING ASSIGNMENT
Jan 12 (T)	Properties of Solutions	Chapter 12.1 – 12.3
Jan 13 (W)	Factors Affecting Solubility	Chapter 12.4
Jan 15 (F)	Expressing Solution Concentration	Chapter 12.5
Jan 18 (M)	*Martin Luther King Holiday*	
Jan 20 (W)	Colligative Properties	Chapter 12.6 – 12.8
Jan 22 (F)	Reaction Rates	Chapter 13.1 – 13.3
Jan 25 (M)	Integrated Rate Law and Effect of Temperature	Chapter 13.4 – 13.5
Jan 27 (W)	Collision Theory and Reaction Mechanisms	Chapter 13.5 – 13.6
Jan 29 (F)	Catalysis	Chapter 13.7
Feb 1 (M)	Principles of Chemical Equilibrium	Chapter 14.1 – 14.5
Feb 3 (W)	Equilibrium Calculations (I)	Chapter 14.6 – 14.7
Feb 5 (F)	Equilibrium Calculations (II)	Chapter 14.8
Feb 8 (M)	**EXAM 1 (Chapter 12, 13, and 14a)**	
Feb 10 (W)	Le Chatelier's Principle	Chapter 14.9
Feb 12 (F)	Nature of Acid and Base	Chapter 15.1 – 15.4
Feb 15 (M)	pH Calculations and Acid/Base Strength	Chapter 15.5 – 15.6
Feb 17 (W)	Bases, Salts, and Polyprotic Acids	Chapter 15.7– 15.9
Feb 19 (F)	Acids Strength and Molecular Structure	Chapter 15.10 – 15.12
Feb 22 (M)	Common Ions and Buffers	Chapter 16.1 – 16.3
Feb 24 (W)	Titration Principles	Chapter 16.4
Feb 26 (F)	pH Curves and Indicators	Chapter 16.4
Feb 29 (M)	Solubility Equilibria	Chapter 16.5 – 16.6
Mar 2 (W)	Complex Ion Equilibria	Chapter 16.7 – 16.8
Mar 4 (F)	**EXAM 2 (Chapters 14b, 15, and 16)**	

DATE	**TOPIC**	**READING ASSIGNMENT**
Mar 7 – 11	*Spring Mid-Term Break*	
Mar 14 (M)	Spontaneity, Entropy, and 2nd Law	Chapter 17.1 – 17.3
Mar 16 (W)	Free Energy – The Concept	Chapter 17.4 – 17.5
Mar 18 (F)	Free Energy and Chemical Reactions	Chapter 17.6 – 17.7
Mar 21 (M)	Free Energy and the Equilibrium Constant	Chapter 17.8 – 17.9
Mar 23 (W)	Free Energy and the Equilibrium Constant	Chapter 17.8 – 17.9
Mar 25 (F)	*Easter Break*	
Mar 28 (M)	*Easter Break*	
Mar 30 (W)	Half Reactions and Galvanic Cells	Chapter 18.1 – 18.3
Apr 1 (F)	Cell Potential and Free Energy	Chapter 18.4 – 18.5
Apr 4 (M)	Cell Potential and Concentration Effects	Chapter 18.6 – 18.7
Apr 6 (W)	Electrolysis and Corrosion	Chapter 18.8 – 18.9
Apr 8 (F)	Electrolysis and Corrosion	Chapter 18.8 – 18.9
Apr 11 (M)	**EXAM 3 (Chapters 17 and 18)**	
Apr 13 (W)	Properties of the Main Group Elements	Chapter 22.1 – 22.4
Apr 15 (F)	Carbon Compounds and the Nitrogen Family	Chapter 22.5 – 22.6
Apr 18 (M)	Oxygen Family and the Halogen Compounds	Chapter 22.7 – 22.9
Apr 20 (W)	Metals and Metallurgy	Chapter 23.1 – 23.4
Apr 22 (F)	Coordination Compounds and Isomers	Chapter 24.1 – 24.4
Apr 25 (M)	Metal-Ligand Bonding and "d" Orbitals	Chapter 24.5 – 24.6
Apr 27 (W)	Metal-Ligand Bonding and "d" Orbitals	Chapter 24.5 – 24.6
Apr 29 (F)	**EXAM 4 (Chapters 22, 23, and 24)**	

May 5 **ACS COMPREHENSIVE FINAL EXAM**
(7:30-10:00 am) **(COVERS ALL TOPICS IN CHE 152 & 153)**
(Note: Time is different than the published university Final Exam Schedule)

GENERAL CHEMISTRY II (CHE 153)
Spring 2016
Laboratory Schedule

SESSION	DATES (M,T,W,R)	EXPERIMENTS
1	Jan 18 – 21*	Colligative Properties (Exp't 22)
2	Jan 25 – 28	Chemical Kinetics (Handout)
3	Feb 1 – 4	Gas Phase Equilibrium (Handout)
4	Feb 8 – 11	LeChatelier's Principle (Exp't 23)
5	Feb 15 –18	Dissociation Constant of a Weak Acid (Exp't 28)
6	Feb 22 – 25	Weak Acids and Hydrolysis (Handout)
7	Feb 29 – Mar 3	The Solubility Product Constant (Exp't 30)
8	***Mar 7 – 10***	***Spring Mid-Term Break – No Lab***
9	Mar 14 –17	Qualitative Analysis Ag, Pb, Hg (Handout)
10/11	Mar 21 – 31**	Equilibrium, Free Energy and Entropy (Handout)
12	Apr 4 – 7	Electrochemical Cells and Electrolysis (Handout)
13	Apr 11 – 14	Qualitative Analysis Fe, Al, Zn (Handout)
14	Apr 18 – 21	Qualitative Analysis, Alkaline Metals & Earths (Handout)
15	Apr 25 – 28	Qualitative Analysis – General Unknown (Handout)

*Monday lab section meets on Friday this week

**Monday and Tuesday sections will meet the first week, Wednesday and Thursday sections meet the second week

MasteringChemistry®

You will be using MasteringChemistry®, an online tutorial and homework program that accompanies your textbook in CHE153.

What You Need:

- ✓ **A valid email address**
- ✓ **A student access code** (Comes in the Student Access Code Card/Kit that may have been packaged with your new textbook. Otherwise, you can purchase access online at www.masteringchemistry.com.)
- ✓ **School ZIP code:** 92106
- ✓ **Course ID:** CHE153SPRING2016

1. Register

- Go to www.masteringchemistry.com and click **Students** under **Register**.
- To register using the student access code inside the MasteringChemistry Student Access Code Card/Kit, select **Yes, I have an access code**. Click **Continue**.
  –OR– *Purchase access online*: Select **No, I need to purchase access online now**. Select your textbook, whether you want access to the eText, and click **Continue**. Follow the on-screen instructions to purchase access using a credit card. The purchase path includes registration, but the process is a bit different from the steps printed here.
- **License Agreement and Privacy Policy:** Click **I Accept** to indicate that you have read and agree to the license agreement and privacy policy.
- Select the appropriate option under "Do you have a Pearson Education account?" Continue to give the requested information until you complete the process. The **Confirmation & Summary** page confirms your registration. This information will also be emailed to you for your records. You can either click **Log In Now** or return to www.masteringchemistry.com later.

2. Log In

- Go to www.masteringchemistry.com.
- Enter your Login Name and Password that you specified during registration and click **Log In**.

3. Join Your Instructor's Online Course and/or Open Self-Study Resources

Upon first login, you'll be asked to do one or more of the following:

- **Join a Course** by entering the **MasteringChemistry Course ID** provided by your instructor (CHE153SPRING2014).
- **Explore the Study Area** or **Launch Your eText**, if these resources are available for your textbook.

To Access MasteringChemistry Again Later

Simply go to www.masteringchemistry.com, enter your Login Name and Password, and click **Log In**. A*fter you have joined a course:* You can open any assignments from the **Assignments Due Soon** area or from the **Assignments** page. For self-study, click **eText** or **Study Area**, if these options are available.

Support

Access Customer Support at http://www.masteringchemistry.com/support, where you will find:

- System Requirements
- Answers to Frequently Asked Questions
- Registration Tips & Tricks video
- Additional contact information for Customer Support, including Live Chat