

Materials Science MASC 110L

Fall 2014

Edward Goo
602 VHE

Phone: 213 740-4426 I generally check my voice mail at most once a day and only when I am on campus so this is not the best method for contacting me for a quick response.

E-mail: ekgoo@usc.edu E-mail is the preferred method of communication. Please put "MASC 110L" in the subject of the e-mail or I may mistake it for junk e-mail. It is also best to use your USC e-mail account to send e-mail to me since I will read all e-mails from an USC account. Request for confidential information such as grades must be from USC account.

Office Hours: Monday 3:30-4:30 pm and Wednesday 9:30-10:30 am and always by appointment. You must e-mail me to make an appointment even if you are coming during office hours. If these times do not work you should e-mail me to schedule a meeting.

Class Website: Log on to Blackboard at <https://blackboard.usc.edu> for the class website. Various class documents will be posted on Blackboard including the syllabus. E-mails to the class will sent via Blackboard and sent to your USC e-mail account. Therefore it is important that you read the e-mails in your USC account regularly and that you periodically delete old e-mails so it does not exceed the storage limits. E-mails sent to the entire class will always start with the heading " MASC 110 class" vs e-mail to a specific student which will have the student's name.

Course Syllabus

Topic	Reading in Masterton
1. Introduction	
2. Atoms and Molecules	Chapters 2, 3, and 18.1 and 18.2
3. Electronic Structure and Periodic Table	Chapter 6
4. Atomic bonds	Chapter 6
5. Gases	Chapter 5
6. Liquids and Solids	Chapter 9
7. Solutions	Chapter 10
8. Chemical reactions, equilibrium and kinetics	Chapters 11 and 12
9. Crystals , crystal defects and symmetry	Chapter 9
10. Thermodynamics	Chapter 8 and 17
11. Electrochemistry	Chapter 18
12. Water(Acid and Bases)	Chapters 13 and 14
13. Organic Compounds	Chapter 22
14. Materials Science - Polymers	Chapter 23
15. Materials Science – Metals, Ceramics and Semiconductors	
16. Materials Science - Biopolymers	Chapter 23

The reading in Masterton is recommended but not required. You are only responsible for what is covered in the lectures and discussion sections.

Course Mechanics

Lectures: MWF 11:00 - 11:50 am Location ZHS 159. No lectures on September 1st, October 3rd, October 6th, November 7th, November 24th, November 26th and November 28th. While attendance is not taken the student is responsible for all material presented in lectures.

Laboratories: Start the week of September 8, 2014 and end the week of November 10, 2014. Location of all labs is PCE 103. Be sure you go to PCE building and not the HED building which is right next door and has a common entrance. PCE 103 has a sign on the door which says "MASC 110L Laboratory". HED 103 is a regular classroom.

Discussion Sections: Start the week of August 25, 2014.

First Midterm: October 1, 2014 Wednesday in class

Second Midterm: November 5, 2014 Wednesday in class

Final: December 10, 2014 Wednesday 11-1 pm

Grading:

- OWL assignments 15% (based on percent of assignments completed)
- Laboratory reports 15% (drop the lowest grade)
- First midterm 20%
- Second midterm 20%
- Final 30%

There is a grading policy posted on Blackboard that deals with missing and late assignments.

Numerical Score	Letter Grade
90-100	A
87-90	A-
84-87	B+
82-84	B
80-82	B-
78-80	C+
74-78	C
70-74	C-
66-70	D+
62-66	D
58-62	D-
0-58	F

Course Text

Chemistry: Principles and Reactions, 7th Edition by Masterton and Hurley. **The text is not required for the class.** You will have access to the electronic version of the text through OWL so you would need to purchase the text only if you want a hard copy of the text.

Online Web-Based Learning (OWL)

There will be OWL assignments assigned after every lecture and due before the next Monday lecture. The OWL assignments will provide tutorials and problems for the concepts covered in the lecture. The OWL assignments are done online and you need to have an access code. You need to purchase the access code online for \$109 and includes access to the OWL assignments and the electronic version of the text. The electronic text and access code is valid for six months. Go to the website <http://www.cengage.com/owl> to purchase access code and register.

Cengage does offer a two week free trial. If you create an account using the free trial, you must remember to purchase an access code and enter the exact same information when you created the free account or else a second account will be created and all the work done in the first account will be lost. For this reason I do not recommend using the free trial.

To purchase access code

1. Select *General Chemistry* and choose *purchase access code*
2. Select textbook – *purchase access code for six months*

To register

1. Select *General Chemistry* and choose *register*
2. Select textbook
3. Select the university
4. Select *student registration and use access code to register*(I advise that you use your USC e-mail). For department it will say “chemistry”.

To login

1. Select *General Chemistry* and choose *login*. I recommend that you bookmark this page.

Laboratory Manual

It will be placed on Blackboard and you should download it. You should either bring a printed copy or electronic copy(laptop computer) of the lab manual to the lab.

Laboratories

Determination of Avogadro's Number - week of September 8, 2014

Atomic Spectroscopy - week of September 15, 2014

Thermal Reduction of Copper Ore to Copper Metal - week of September 22, 2014

Hardness - week of September 29, 2014

Phase Equilibria - week of October 6, 2014

Crystal Structures of Metals - week of October 13, 2014

Crystal Structures of Ionic Solids - week of October 20, 2014

Microstructure of Metals - week of October 27, 2014

Corrosion - week of November 3, 2014

Polymers - week of November 10, 2014

Laboratory reports are due at the next week laboratory session.

Discussion Sections

Discussion sections start week of August 25, 2014 and there will be a discussion section every week except for weeks with the Labor Day holiday and Thanksgiving holiday. You are responsible for the material covered in the discussion sections.

Week of August 25, 2014 Significant figures, naming chemical compounds, common ions

Week of September 8, 2014 Mass percent, theoretical yield, percentage yield

Week of September 15, 2014 Non-ideal gas law

Week of September 22, 2014 Review for midterm I Wednesday and Thursday sections only

Week of September 29, 2014 Review for midterm I Monday and Tuesday sections only

Week of October 6, 2014 Return Midterm I and go over solutions

Week of October 13, 2014 Binary phase diagrams

Week of October 20, 2014 Bond enthalpy to calculate reaction enthalpy

Week of October 27, 2014 Review Midterm II Wednesday and Thursday sections only

Week of November 3, 2014 Review Midterm II Monday and Tuesday sections only

Week of November 10, 2014 Return Midterm II and go over solution

Week of November 17, 2014 Titration

Week of December 1, 2014 Review for final

Week by Week Breakdown

Week	Lecture	Reading	Discussion	Laboratory
August 25, 2014	Atoms and molecules	Chapters 2, 3, 18.1 and 18.2	Significant digits, dimensional analysis, naming chemical compounds	none
September 3, 2014	Electronic structure and periodic table	Chapter 6	none	none
September 8, 2014	Atomic bonding	Chapter 7	Stoichiometric problems, combustion reactions	Determination of Avogadro's Number
September 15, 2014	Gases	Chapter 5	Non-ideal gas law	Atomic Spectroscopy
September 22 2014	Liquids and solids	Chapter 9	Review for Midterm I – Wednesday and Thursday only	Thermal Reduction of Copper Ore to Copper Metal
September 29, 2014	Solutions - midterm I No lecture on Friday	Chapter 10	Review for Midterm I – Monday and Tuesday only	Hardness
October 6, 2014	Kinetics and equilibrium	Chapters 11 and 12	Return Midterm I and go over solutions	Phase Equilibria
October 13, 2014	Crystals	Chapter 9	Binary Phase Diagram	Crystal Structures of Metals
October 20, 2014	Thermodynamics	Chapters 8 and 16	Bond enthalpy to calculate reaction enthalpy	Crystal Structures of Ionic Solids
October 27, 2014	Electrochemistry	Chapters 17	Review for Midterm II – Wednesday and Thursday only	Microstructure of Metals
November 3, 2014	Acids and bases – midterm II No lecture on Friday	Chapters 13 and 14	Review for Midterm II – Monday and Tuesday only	Corrosion
November 10, 2014	Acid and bases – Organic compounds	Chapter 22	Return Midterm II and go over solutions	Polymers
November 17,	Organic	Chapter 22	Titration	none

2014	compounds			
December 1, 2014	Polymers	Chapter 23	Review for final	none

Statement for Students with Disabilities

Any student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to me (or to TA) as early in the semester as possible. DSP is located in STU 301 and is open 8:30 a.m.–5:00 p.m., Monday through Friday. Website and contact information for DSP:
http://sait.usc.edu/academicsupport/centerprograms/dsp/home_index.html, (213) 740-0776 (Phone), (213) 740-6948 (TDD only), (213) 740-8216 (FAX) ability@usc.edu.

Any accommodation request must be made at least two weeks prior to the date of the accommodation. The accommodation request must contain all the relevant information such as date and time when the request is made.

Statement on Academic Integrity

USC seeks to maintain an optimal learning environment. General principles of academic honesty include the concept of respect for the intellectual property of others, the expectation that individual work will be submitted unless otherwise allowed by an instructor, and the obligations both to protect one's own academic work from misuse by others as well as to avoid using another's work as one's own. All students are expected to understand and abide by these principles. SCampus, the Student Guidebook, (www.usc.edu/scampus or <http://scampus.usc.edu>) contains the University Student Conduct Code (see University Governance, Section 11.00), while the recommended sanctions are located in Appendix A.

Emergency Preparedness/Course Continuity in a Crisis

In case of a declared emergency if travel to campus is not feasible, USC executive leadership will announce an electronic way for instructors to teach students in their residence halls or homes using a combination of Blackboard, teleconferencing, and other technologies.