

Materials Science MASC 110L

Fall 2013

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Phone: 213 740-4426 I do not check my voice mail very often 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: Wednesday 12:00-2:00 pm by appointment. It is required that you e-mail me to make an appointment even if you are coming during office hours. I am also available to meet with students immediately after the lecture.

Class Website: Log on to Blackboard at <https://blackboard.usc.edu>

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 7
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 16
11. Electrochemistry	Chapter 17
12. Water(Acid and Bases)	Chapters 13 and 14
13. Organic Compounds	Chapter 22
14. Materials Science - Polymers	Chapter 23
15. Materials Science – Metals and Ceramics	Chapter 20
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 SLH 200. No lectures on September 2nd, October 4th, November 8th, November 25th, 27th and 29th.

Laboratories: Start the week of September 9, 2013 and end the week of November 11, 2013. 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 26, 2013.

First Midterm: October 2, 2013 Wednesday in class

Second Midterm: November 6, 2013 Wednesday in class

Final: December 11, 2013 Wednesday 11 am - 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 printed 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 printed 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 which 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 you can purchase the electronic version of the text and OWL access. 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

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*(use your USC e-mail). For department it will say “chemistry”.

Laboratory Manual

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

Laboratories

Determination of Avogadro's Number - week of September 9, 2013

Atomic Spectroscopy - week of September 16, 2013

Thermal Reduction of Copper Ore to Copper Metal - week of September 23, 2013

Crystal Structures of Metals - week of September 30, 2013

Phase Equilibria - week of October 7, 2013

Crystal Structures of Ionic Solids - week of October 14, 2013

Microstructure of Metals - week of October 21, 2013

Hardness - week of October 28, 2013

Corrosion - week of November 4, 2013

Polymers - week of November 11, 2013

Laboratory reports are due at the next week laboratory session.

Discussion Sections

Discussion sections start week of January 28, 2013 and there will be a discussion section every week except for week of spring break. You are responsible for the material covered in the discussion sections.

Week of August 26, 2013 Significant digits, dimensional analysis, naming chemical compounds ..
Week of September 2, 2013 No discussion section this week
Week of September 9, 2013 Stoichiometric problems, combustion reactions
Week of September 16, 2013 Non-ideal gas law
Week of September 23, 2013 Review for Midterm I
Week of September 30, 2013 No discussion section this week
Week of October 7, 2013 Return Midterm I and go over solutions
Week of October 14, 2013 Bond enthalpy to calculate reaction enthalpy
Week of October 21, 2013 Batteries and Fuel Cells
Week of October 28, 2013 Review for Midterm II
Week of November 4, 2013 No discussion section this week
Week of November 11, 2013 Return Midterm II and go over solution
Week of November 18, 2013 Titration
Week of November 25, 2013 No discussion section this week
Week of December 2, 2013 Review for final

Week by Week Breakdown

Week	Lecture	Reading	Discussion	Laboratory
August 26, 2013	Atoms and molecules	Chapters 2, 3, 18.1 and 18.2	Significant digits, dimensional analysis, naming chemical compounds	none
September 2, 2013	Electronic structure and periodic table	Chapter 6	none	none
September 9, 2013	Atomic bonding	Chapter 7	Stoichiometric problems, combustion reactions	Determination of Avogadro's Number
September 16, 2013	Gases	Chapter 5	Non-ideal gas law	Atomic Spectroscopy
September 23, 2013	Liquids and solids	Chapter 9	Review for Midterm I	Thermal Reduction of Copper Ore to Copper Metal
September 30, 2013	Solutions - midterm I	Chapter 10	none	Crystal Structures of Metals
October 7, 2013	Kinetics and equilibrium	Chapters 11 and 12	Return Midterm I and go over solutions	Phase Equilibria
October 14, 2013	Crystals	Chapter 9	Bond enthalpy to calculate reaction enthalpy	Crystal Structures of Ionic Solids
October 21, 2013	Thermodynamics	Chapters 8 and 16	Batteries and Fuel Cells	Microstructure of Metals
October 28, 2013	Electrochemistry	Chapters 17	Review for Midterm II	Hardness
November 4, 2013	Acids and bases - midterm II	Chapters 13 and 14	none	Corrosion
November 11, 2013	Acid and bases - Organic compounds	Chapter 22	Return Midterm II and go over solutions	Polymers
November 18, 2013	Organic compounds	Chapter 22	Titration	none
November 25, 2013	Thanksgiving	none	none	none
December 2, 2013	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/academic-support/centerprograms/dsp/home_index.html, (213) 740-0776 (Phone), (213) 740-6948 (TDD only), (213) 740-8216 (FAX) ability@usc.edu.

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.