

Materials Science MASC 110L
Fall 2016
11:00 am Lecture

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Phone: 213 740-4426 This is my USC office phone and it does go to voice mail but I check my voice mail very infrequently and I advise that you do not leave me a voicemail.

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 your USC account. All e-mails sent by me to the class will be sent to your USC e-mail so you must be sure to check your USC e-mail account.

Office Hour: All meetings are by appointment. I have chosen Wednesday 12:45-1:45 pm as my "office hour" but you should still make an appointment. You must e-mail me to make an appointment even if you are coming during the office hour. If I do not receive any e-mails by noon on Wednesday I may not be in my office. If this time does not work you should e-mail me with times that are best for you. I am also generally available after the lecture for brief meetings.

Class Website: Log on to Blackboard at <https://blackboard.usc.edu> for the class website. Various class documents and grades will be posted on Blackboard including the syllabus. E-mails to the class will be 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 as the heading.

Course Syllabus

Topic	Reading in Masterton(optional)
1. Introduction	
2. Atoms and Molecules	Chapters 2 and 3
3. Electronic Structure and the Periodic Table	Chapter 6
4. Covalent Bonding	Chapter 7
5. Organic Compounds	Chapter 22
6. Materials Science - Polymers	Chapter 23
7. Gases	Chapter 5
8. Chemical reactions, equilibrium and kinetics	Chapters 11 and 12
9. Crystals , crystal defects and symmetry	Chapter 9
10. Materials Science – Metals	Chapter 20
11. Materials Science – Ceramics	
12. Thermodynamics	Chapters 8 and 16
13. Electrochemistry	Chapter 17
14. Water(Acid and Bases)	Chapters 13 and 14

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 ZHS 352. No lectures on September 5th, September 30th, November 4th, November 21st, 23rd and 25th. Attendance in lecture is required and you are responsible for all information presented in lecture.

Laboratories: Start the week of September 12th and end the week of November 14th. 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 29th. There will be OWL assignments based on the material presented in the discussion and the material present in the discussion will be on the exams.

First Midterm: September 28, 2016 Wednesday lecture time ZHS 352

Second Midterm: November 2, 2016 Wednesday lecture time ZHS 352

Final: December 7, 2016 Wednesday 11 am - 1 pm ZHS 352

Grading:

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

The university has policies with respect to grades and grading. Information in the catalog is available at: <http://catalogue.usc.edu/academic/standards/>

The faculty is also given instructions about grading and that information is online at:

https://arch.usc.edu/sites/default/files/info/faculty/grade_handbook_provost_approved.pdf

I will post on Blackboard information a separate document that deals with regrading of exams in this course. There will also be information on late OWL assignments. The lab TA and lab manual will provide information late lab reports.

Letter grade will be based on your numerical score that is based on the assignment scores with the weighting given above. The grades will not be curved. So if everyone in the class gets a numerical score of 90 or above then everyone will get an A.

Students often misunderstand what "curving the scores" mean and interpret it to mean if the average is low then the scores will be curved upwards to some designated average. If one were to curve the scores it means all scores will be curved to a given average and therefore if the scores are high they would be curved downwards which students strongly object to. Curving basically an adjustment where the average score will always get the average grade. Since students have always objected to

curving scores downwards I will not curve scores in this class. Basically if you demonstrate that you know the material you will get the appropriate grade.

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, 8th 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. If you purchase the textbook at the USC bookstore it comes bundle with an OWL access code which is needed for this class. Alternatively you can purchase OWL access online(see next paragraph) and you will be provide with an electronic version of text for the semester.

Online Web-Based Learning Version 2(OWLv2)

There will be OWL assignments assigned after every lecture and due at 11:00 am the next Monday which is before the next Monday lecture. The OWL assignments will provide tutorials and problems for the concepts covered in the lecture. I recommend that students do the OWL assignments as they are assigned after each lecture and right after the material was presented but you do have the option of doing the entire week of assignments on Sunday night. The OWL assignments are done online and you need to have an access code. The text in the bookstore is bundled with the access code.

You can also purchase an access code online at:

<https://www.cengagebrain.com/shop/search/9781305079373>

Click the “Related Products” tab and you can purchase a six month access code for \$99 which is all you need.

To register for OWLv2 go to:

<http://login.cengagebrain.com/course/E24YEUWQWMNZAA>

This is a site that has been setup specifically for the 11 am section of MASC 110L. I would recommend using your USC e-mail to register and for your name use the name that you are registered under at USC.

Laboratories

Determination of Avogadro's Number - week of September 12, 2016

Atomic Spectroscopy - week of September 19, 2016

Thermal Reduction of Copper Ore to Copper Metal - week of September 26, 2016

Polymers - week of October 3, 2016

Hardness - week of October 10, 2016

Phase Equilibria - week of October 17, 2016

Crystal Structures of Metals - week of October 24, 2016

Crystal Structures of Ionic Solids - week of October 31, 2016

Microstructure of Metals - week of November 7, 2016

Corrosion - week of November 14, 2016

Laboratory manual will be placed on Blackboard the week before the labs start and you should download it. You should either bring a printed copy or electronic copy(laptop computer) of the lab manual to the lab. Laboratory reports are due at the next week laboratory session.

Discussion Sections

You are responsible for the material covered in the discussion sections and there will be OWL assignments based on the material in the discussion section. Exam questions may also be based on material presented in the discussion section.

Week of August 22, 2016 no discussion sections

Week of August 29, 2016 Percent composition to empirical formula, Theoretical and percent yield

Week of September 5, 2016 no discussion sections

Week of September 12, 2016 Names of common ions, binary ionic compounds, binary covalent compound OWL

Week of September 19, 2016 Review for midterm I Wednesday and Thursday sections only

Week of September 26, 2016 Review for midterm I Monday and Tuesday sections only

Week of October 3, 2016 Return Midterm I and go over solutions

Week of October 10, 2016 Non-ideal gas law

Week of October 17, 2016 Half-life calculations

Week of October 24, 2016 Review Midterm II Wednesday and Thursday sections only

Week of October 31, 2016 Review Midterm II Monday and Tuesdays section only

Week of November 7, 2016 Return Midterm II and go over solution

Week of November 14, 2016 Bond enthalpy to calculate reaction enthalpy

Week of November 21, 2016 no discussion sections
Week of November 28, 2016 Review for final

Week by Week Breakdown

Week	Lecture	Relevant Chapter in Text	Discussion	Laboratory
August 22, 2016	Syllabus, Atoms and molecules	Chapters 2 and 3	none	none
August 29, 2016	Electronic structure and periodic table Atomic bonding	Chapter 6	Mass percent to empirical formula, theoretical yield, percentage yield	none
September 5, 2016	No lecture on Monday – Labor day holiday Covalent bonding	Chapters 7 and 5	none	none
September 12, 2016	Organic Compounds	Chapter 22	Naming ionic and covalent compound	Determination of Avogadro's Number
September 19, 2016	Organic Compounds	Chapter 22	Review for Midterm I – Wednesday only	Atomic Spectroscopy
September 26, 2016	Midterm I No lecture on Friday		Review for Midterm I – Tuesday only	Thermal Reduction of Copper Ore to Copper Metal
October 3, 2016	Polymers	Chapters 23	Return Midterm I and go over solutions	Polymers
October 10, 2016		Chapter 5	Non-ideal gas law	Hardness
October 17, 2016		Chapters 11 and 12	Half-life calculations	Phase Equilibria
October 24, 2016	Crystals Metals	Chapter 9 Chapter	Review for Midterm II – Wednesday only	Crystal Structures of Metals
October 31, 2016	Ceramics Midterm II No lecture on Friday		Review for Midterm II – Tuesday only	Crystal Structures of Ionic Solids
November 7, 2016	Thermodynamics	Chapters 8 and 16	Return Midterm II and go over solutions	Microstructure of Metals
November 14, 2016	Electrochemistry	Chapter 17	Bond enthalpy to calculate reaction enthalpy	Corrosion
November 21, 2016	Thanksgiving Break	Thanksgiving Break	none	none
November 28, 2016	Acid and bases	Chapters 13 and 14	Review for final	none

Statement on Academic Conduct and Support Systems

Academic Conduct

Plagiarism – presenting someone else's ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in *SCampus* in Section 11, *Behavior Violating University Standards* <https://scampus.usc.edu/1100-behavior-violating-university-standards-and-appropriate-sanctions/>.

Other forms of academic dishonesty are equally unacceptable. See additional information in *SCampus* and university policies on scientific misconduct, <http://policy.usc.edu/scientific-misconduct/>.

Discrimination, sexual assault, and harassment are not tolerated by the university. You are encouraged to report any incidents to the *Office of Equity and Diversity* <http://equity.usc.edu/> or to the *Department of Public Safety* <http://capsnet.usc.edu/departments/departments-public-safety/online-forms/contact-us>. This is important for the safety whole USC community. Another member of the university community – such as a friend, classmate, advisor, or faculty member – can help initiate the report, or can initiate the report on behalf of another person. *The Center for Women and Men* <http://www.usc.edu/student-affairs/cwm/> provides 24/7 confidential support, and the sexual assault resource center webpage sarc@usc.edu describes reporting options and other resources.

Support Systems

A number of USC's schools provide support for students who need help with scholarly writing. Check with your advisor or program staff to find out more. Students whose primary language is not English should check with the *American Language Institute* <http://dornsife.usc.edu/ali>, which sponsors courses and workshops specifically for international graduate students. *The Office of Disability Services and Programs* http://sait.usc.edu/academicsupport/centerprograms/dsp/home_index.html provides certification for students with disabilities and helps arrange the relevant accommodations. If an officially declared emergency makes travel to campus infeasible, *USC Emergency Information* <http://emergency.usc.edu/> will provide safety and other updates, including ways in which instruction will be continued by means of blackboard, teleconferencing, and other technology.