SUMMER_2020_CHEM 161_Syllabus_B1-B9

All readings and assignments are in "*Chemistry: Structure and Properties*" by Nivaldo J. Tro, Custom edition for Rutgers University General Chemistry.

Online teaching information

Technology Requirements

Course will be taught remote synchronous. You are required to have access to high speed internet, computer with camera and microphone.

I: Lectures:

Lectures will be given during regular lecture timings using Rutgers WebEx site.
https://rutgers.webex.com/webappng/sites/rutgers/dashboard/home
Session will continue even after the finish of lecture, for students who have any questions

II: Lecture Notes

Lecture note will be posted on Sakai under resources

III: Narrated power points

Each lecture is divided into smaller units and narrated power points are posted in Sakai under resources/Lecture ppt with narration. Link is given below

https://sakai.rutgers.edu/portal/site/229e8dca-c9f4-4aaf-b485-dc8a94bad2e3/tool/f1f48cdf-3ebd-451b-9b0e-5f1e41c17d1f?panel=Main

IV: Video links to Narrated power points All the narrated power points are converted to videos and posted in You Tube. Link to the website and video link is given below. The links are also posted in sakai under Resources/Lecture notes Video link

https://sakai.rutgers.edu/portal/site/229e8dca-c9f4-4aaf-b485-dc8a94bad2e3/tool/f1f48cdf-3ebd-451b-9b0e-5f1e41c17d1f?panel=Main

a: Website link is given below. Need to enable flash before you open the site

http://nirmalashankar.wix.com/chemistrycanbefun6#!__youtube-videos

V: Office hours

Office hours will be conducted over WebEx on
Monday: 8:10 AM to 8:45 AM
Tuesday: 8:10 AM to 8:45 AM
Wednesday: 8:10 AM to 8:45 AM
Thursday: 8:10 AM to 8:45 AM ; 11:00 AM to 11:45 AM

VI: Lecture quizzes

Lecture quiz (2 points each) will be given during lecture. Students will be asked to upload their work to "drop Box" on Sakai. Lecture quizzes will always be a surprise quiz. You will be given points for attempting will not be penalized for wrong answers.

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Date	**Reading**	**Topic**	**Questions** for recitation and to practice
5/26/ T	**E1 – E9**	Measurement, accuracy, precision, significant figures, SI units, unit conversion, density, energy, mole concept, Problem solving strategies, dimensional analysis	Ch E: Review
5/27/ W	1.1–1.10	Classification of matter, law of conservation of mass, law of definite and multiple proportions, model of the atom, isotopes, ions	Ch 1: Review
5/28/ Th	2.1–2.4	Quantum mechanical model of the atom: nature of light, photoelectric effect, atomic spectra, Bohr model of the atom	
6/1/ M	2.5–2.9	Wave-particle duality, quantum numbers, orbitals, electron configurations	Ch 2: Review
6/2/T	3.1-3.4	Periodic properties of the element: Periodic table, periodic trends-atomic radius, periodic trends: ionization energy, electron affinity	Ch 3: Review
6/3/ W	3.5–3.8	Periodic properties of the element: Periodic table, periodic trends-atomic radius, periodic trends: ionization energy, electron affinity	Ch 3: Review
6/4/ Th	4.1–4.9	Molecules and compounds: ionic and covalent bonding, Lewis symbol, lattice energy, ionic compounds: formulas and names, polyatomic ions, molecular compounds: formulas and names, mole concept, molar mass	
6/8/ M	4.10 – 4.12	Composition of compounds, chemical formula and percent composition, mass-mole-molecules conversion, chemical formula from experimental data, combustion analysis,	Exam Review
6/9/T		**Review during recitation and Lecture**	**EXAM I (E and Chapter 1-4.10)**
6/10/ W	5.1–5.6	Electronegativity, bond polarity, Lewis structures, formal charge, Resonance, exceptions to octet rule, bond energy, bond length	Ch 5: Review
6/11/ Th	5.7– 5.10 6.1–6.3	VSEPR, Molecular shape and polarity, Hybridization, sigma and pi bonds	
6/15/ M	7.1–7.6	Chemical equations, stoichiometry, limiting reactant, percent yield, examples of chemical reactions	Ch 6,7: Review
6/16/ T	8.1–8.9	Solutions, electrolytes, molarity, dilution problems, molecular, ionic, and net ionic equations, precipitation reactions, acid-base reactions, redox reactions	Ch 8: Review

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6/17/ W	9.1-9.8	Energy, energy transfer, first law of thermodynamics, calorimetry, enthalpy, Hess's law	Ch 8: Review
6/18/ Th	9.9–9.11	Bond energies, heats of formation, enthalpies of reactions, Born-Haber cycle	
6/22/ M	10.1– 10.6	Nature of gases, gas pressure, gas laws, ideal gas equation, molar mass, density, mixture of gases, partial pressure	Exam Review
6/23/ T		**Review during recitation and lecture**	**EXAM II (Chapter 5 – 9.8)**
6/24/ W	10.7– 10.11	Kinetic molecular theory of gases, molecular, velocities, effusion-diffusion, gas stoichiometry	**Ch 10**: Review
6/25/ Th	11.1– 11.7	States of matter, nature of intermolecular forces, surface tension, vapor pressure, heating curves, phase diagrams	***Extra Recitation by NS before and after class***
6/29/ M	12.1– 12.7	Phase diagrams, unit cells, type of solids	Review
6/30/ T		Review	**Review**
7/1/ W		**FINAL EXAM (Chapter 1–12) and E**	

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Quiz dates and chapters covered

	Day and time	Topic
Quiz 1	Friday May 29 4:00 PM to Sunday May 31 6:00 PM	Ch E and Ch 1
Quiz 2	Friday June 5 4:00 PM to Sunday June 7 6:00 PM	Ch 2 and Ch 3
Quiz 3	Friday June 12 4:00 PM to Sunday June 14 6:00 PM	Ch 5 and Ch 6
Quiz 4	Friday June 19 4:00 PM to Sunday June 21 6:00 PM	Ch 7 and Ch 8
Quiz 5	Friday June 26 4:00 PM to Sunday June 28 6:00 PM	Ch 10, and Ch 11

Exam dates and Chapters covered

Date	**Exam**	**Material covered**
9 June	Exam I	E and Chapter 1 -4
23 June	Exam II	5 – 9.8
1 July	Final	1–12

Grading Scheme

Total points that can be accumulated in this course is distributed approximately as follows:

NO	Topic	Points	% that will used toward final grades
1	Exam 1	100	15
2	Exam 2	100	15
3	Final Exam	200	30
4	Quizzes	5 x 15 =75	20
5	Home work	3x 10 =30	15
6	Lecture Quizzes	2 x 10 =20	5