COURSE SYLLABI

Chemistry S-161 & S-165
Comprehensive General Chemistry
M,T,W,Th F 9:30-10:45

Chemistry S-134 & S-136
General Chemistry Laboratory
M & W 1:00-5:00

Summer 2018

Professor John A. Cramer
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General Information **Since the four courses listed above compress an academic year of general chemistry with laboratory into ten weeks, those students taking both lecture and laboratory are strongly advised not to take any other courses or to hold a summer job. The necessarily rapid pace of these courses requires an extensive and consistent commitment of time and effort. Since the material to be covered is cumulative in nature, failure to comprehend simpler subjects at the beginning will mean disaster with more complex topics later. The comprehension of each course concept, as it is presented, is essential.**

Chemistry S-161 and S-165

Text **"Chemistry & Chemical Reactivity" 10th Edition (2019) by John C. Kotz, Paul M. Treichel, John R. Townsend, and David A. Treichel; Cengage Learning (required). The required version of the text needs to be the hard cover version with end-of-chapter problems (ISBN 9781337399074). A "Student Solutions Manual" is available as an optional purchase.**

Office Hours **Professor Cramer will normally be available for help at noon Monday through Thursday. Students are strongly encouraged to make appointments for consultations at other mutually agreeable times as well. It is especially important that students seek help early in the term, if questions arise.**

Discussion Sections **M,W, & Th 10:55 - 11:45 AM An essential criterion for demonstrated mastery of general chemistry is the ability to work problems. Therefore, homework problems will be assigned from each chapter covered in the text. Homework problems should serve as a self-diagnostic for one's comprehension of the material presented in lecture.**

Grading **Course grades for Chemistry S-161 and S-165 will be based on 600 course points, which will be allocated as follows: highest three exams (100 points each), homework (100 points), and the final examination (200 points).**

Chemistry S-161 & S-165 **Summer 2018**

Course Schedule for Chemistry S-161 & S-165 The first five-week session will cover chapters 1 through 13 in the course text with hour examinations on June 1st, June 8th, June 15th, and June 22rd; the final examination is scheduled for June 29th. The second five-week session will cover the second half of the text with examinations on July 6th, July 13th, July 20th, and July 27th; the final examination will be on August 3rd. Only medical or acute personal problems will be accepted as valid reasons for not taking an examination on its scheduled date. Hour examinations are scheduled at 9:30 AM on Friday mornings.

Tentative Lecture Schedule for Chemistry S-161

Date	Chapter in K/T/W	Topic
5-28	1	Introduction
5-29	2	Atoms and Elements
5-30	2	Molecules & Compounds
5-31	3	Aqueous Reactions
6-01	3	Aqueous Reactions
6-04	4	Stoichiometry
6-05	5	Energy & Chemical Reactions
6-06	5	Energy & Chemical Reactions
6-07	6	Atomic Structure
6-08	7	Chemical Periodicity
6-11	8	Chemical Bonding
6-12	8	Molecular Structure
6-13	9	Valence Bond Theory
6-14	9	Valence Bond Theory
6-18	10	Properties of Gases
6-19	11	Intermolecular Forces
6-20	11	Intermolecular Forces
6-21	12	Properties of Solids
6-22	13	Properties of Solutions

Chemistry S-161 & S-165 **Summer 2018**

Date	Chapter in K/T	Topic
6-25	13	Properties of Solutions
6-26	13	Properties of Solutions
6-27	13	Properties of Solutions

Tentative Lecture Schedule for Chemistry S-165

7-02	14	Kinetics
7-03	14	Kinetics
7-04	15	Chemical Equilibria
7-05	15	Chemical Equilibria
7-06	16	Acid-Base Equilibria
7-09	16	Acid-Base Equilibria
7-10	17	Acid-Base Reactions
7-11	17	Acid-Base Reactions
7-12	17	Solubility Equilibria
7-13	18	Chemical Spontaneity
7-16	18	Chemical Spontaneity
7-17	18	Chemical Spontaneity
7-18	19	Electrochemistry
7-19	19	Electrochemistry
7-23	19	Electrochemistry
7-24	22	Transition Elements
7-25	22	Transition Elements
7-26	25	Nuclear Chemistry
7-27	25	Nuclear Chemistry
7-30	21	Group A Elements
7-31	21	Group A Elements
8-01	23	Organic Chemistry

Chemistry S-134 & S-136 **Summer 2018**

Grades for the laboratory courses (Chemistry S-134 & S-136) will be based upon written reports, a laboratory practical examination, quizzes, and a written examination. A preeminent consideration in determining laboratory report grades will be the demonstrated ability to collect relevant data and to succinctly discuss the interpretation and meaning of such data. A National laboratory notebook with alternating white and yellow pages may be purchased from the Yale Bookstore.

Chemistry S-134 (Tentative Schedule)

Date	Experiment
5-28	Basics of Measurements and Chemical Reactions
5-30	Stoichiometry of a Chemical Reaction
6-04	Calorimetry (Hess's Law)
6-06	Universal Gas Constant
6-11	Electrolysis and Avogadro's Number
6-13	Oxidation States of Vanadium
6-18	Analysis of Commercial Bleach
6-20	Practical Examination - Practice Run
6-25	Final Practical Examination
6-27	Written Examination

Chemistry S-136 (Tentative Schedule)

7-02	Preparation of an Iron Complex
7-04	Analysis of an Iron Complex
7-09	Kinetics: Effect of Concentration and Reaction Order
7-11	Kinetics: Effect of Temperature and Catalyst
7-16	Introduction to Chemical Equilibrium
7-18	Effect of Temperature on Chemical Equilibrium
7-23	Acids, Bases, and Buffers
7-25	Redox Reactions and Electrochemical Cells
7-30	Final Practical Examination
8-01	Written Examination