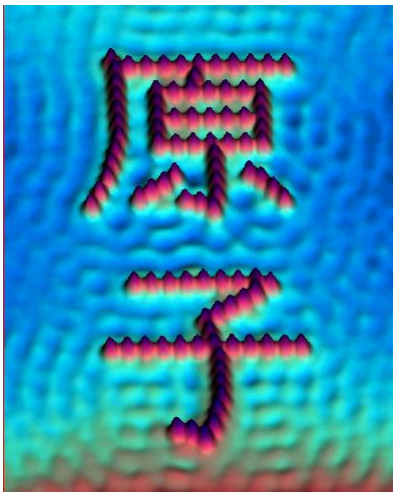
Integrated Chemistry



Chemistry 1:Organic Structure & Bonding
CHE2211 & CHE2211L
Summer 2015

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Office Hours: Class Days 8:30-9:00 and by appointment.

Description. Integrated Chemistry is a three-term sequence that covers General Chemistry and Organic Chemistry. It provides a rigorous introduction to chemical principles for those students preparing for more advanced study in chemistry or for those who need a strong background in the field to pursue related disciplines such as biology, geology, physics or environmental science. It will also provide an excellent foundation for students preparing for careers in medicine. The three courses are:

Chemistry 1: Organic Structure & Bonding
Chemistry 2: Physical Foundations and Equilibrium
Chemistry 3: Organic Reactions & Mechanisms

This class is the first in the sequence and will focus on introductory chemical principles, including molecular structure, organic functional groups, and the relationship between structure and properties.

Please note: because the structure of these classes does not coincide with traditional curricula, the manner in which we will use textbooks may seem disconcerting at first - we will be switching back and forth between the general and organic chemistry texts with alarming frequency! I will assign readings prior to classes and we will have lecture/discussion meetings at which we will cover the major concepts of your reading assignments. *Come prepared to ask questions and otherwise fully participate in these meetings.*

The course has a laboratory component, one aim of which will be to develop skills that are necessary to design your own experiments and critically analyze experimental data.

Assessment. The assessment of your performance in the class will be based on the following criteria:

attendance and class participation - participation in the lecture/discussions and labs is mandatory. If you will not be able to attend you need to let me know ahead of time and

make arrangements to make up the missed material

review assignments & response papers- there will be a review assignments covering the material discussed in class or in the assigned readings. These may be collected and may (but probably will not) be rigorously graded. They are intended to help you by reinforcing key concepts and to make you aware of topics that you may be struggling with. We will also have several outside readings on which you will be asked to write response papers; in these you will summarize the main ideas, explain particular points or otherwise analyze the material.

unit examinations, final exam - these will cover major points emphasized in class and may include essay questions or quantitative problems.

lab performance - completion of all labs is required, as is the maintenance of an acceptable laboratory notebook. Lab reports will not be required but substantive discussions need to be written in your lab notebooks for all experiments.

Textbooks & Materials:

Chemistry & Chemical Reactivity, 8th ed., Kotz, Treichel & Townsend; Thompson/Brooks Cole Publishers, 2012

Organic Chemistry, 4th ed., M. Jones, S. Fleming, Norton, 2010

Organic Model Kit - You will need access to a model kit. We have some you can use in class, but if you want your own, a good set is the *Prentice Hall Molecular Model Set for General and Organic Chemistry*; ISBN: 0139554440.

Scientific Calculator - you will need a calculator that is capable of scientific notation, logarithms, exponential functions, etc. While you don't need a graphing calculator, if you plan to take calculus it may be a good idea to get one. If not, a much cheaper calculator will suffice.

Laboratory Notebook - a dedicated notebook, preferably a bound composition notebook, is required in laboratory. We will talk more about the keeping the lab notebook at our first lab meeting.

Safety Goggles - these are required at all times in lab. We have a few available in lab but you are encouraged to buy your own pair (get a comfortable pair) and bring them with you.

Calendar. A *tentative* daily schedule is attached, but please note that preparing this was an exercise in creative writing – the timing of the topics listed will ~~probably~~ definitely change as necessary as we progress through the term.

Date	AM Lecture	PM Laboratory/Review/Quiz Sessions
June 11	Introduction to Molecular Structure	Steam Distillation of Clove Oil
June 12	Classical Bonding	Review Session*
June 15	Mass Relationships/Intro to NMR	Synthesis of Alum/NMR lab
June 16	More Classical Bonding	Review Session*
June 17	Molecular Geometry & Polarity	NMR lab/ Synthesis of Alum
June 18	Intermolecular Forces/Organic Functional Groups	Review Session*
June 19	Chemical Reactivity I	Quiz 1
June 22	Chemical Reactivity II	A Redox Titration
June 23	Stereochemistry	Review Session*
June 24	Stereochemistry II	Beer's Law: Iron Analysis
June 25	Cyclic Alkanes	Review Session*
June 26	Stereochem/Cycle mash-up	Quiz 2
June 29	Biology	
June 30	Electronic Structure of Atoms	Review Session*
July 1	Biology	
July 2	Biology	
July 3	Atomic & Hybrid Orbitals	Review Session*
July 6	Biology	
July 7	Alkenes & Their Reactions	Hydration of an Alkene
July 8	Biology	
July 9	Biology	
July 10	Final Exam	-

** All review sessions are optional – you do not need to attend if you feel confident with the relevant material*