



# Syllabus



## What's in this syllabus? Chemistry 138.01

- Contact information
- Your prof's office hours and contact information
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## CHM 138 General Chemistry I (3 hr)

Lecture location CFS 121 or CFS103 (in the Chemistry/Forensic Science building)

Dr. Tom Chasteen 294-1533 [chm\\_tgc@shsu.edu](mailto:chm_tgc@shsu.edu) Office Chemistry Forensic Science CFS 317e

Office hrs. 10:00am - 11:00am MWF; 9:00am-noon Tuesday and Thursday; E-mail Office hours **almost anytime**

**Required text: Chemistry: The Central Science by Brown, Lemay, and Bursten 10<sup>th</sup> edition**

Laboratory Text: *General Chemistry Laboratory Manual for Chemistry 118* (for those taking the lab also)

**CHM118 Laboratory starts the week of February 4** (if you are taking that lab course simultaneously). Check online for your laboratory's classroom in the CFS building (usually either CFS107 or CFS111).

The **chapters** that will be covered in this course include **1** (all), **2** (all), **3** (all), **4** (excluding 142.5 to 144.75), **5** (167-191.5) **6** (pages 240 to end), **7**(all), **8** (beginning to end at 328.75), **9** (345-373).

A University Schedule is [available on line](#).

There will be three approximately 50 minute long tests and a two hour final:

- First test date is Friday, February 8, 2008.
- Second test date is Friday March 7, 2008.
- Third test date is Friday, April 11, 2008.

(The scheduled test dates are not negotiable but may be changed by the instructor.)

- This Course's final is on May 12, 2008; 8 am to 10 am.

It is also important to remember that a **grade of C** in this course is the minimum requirement to be able to enroll in **Chemistry 139**, the second freshman chemistry course.

The grading in this course will be based as follows: 3 Tests 60 % + 1 Final 25 % + **15% for Assigned on-line quizzes and qualifying exams**

Grades are assigned in the following way based on a total percentage in the course:

- A = > 89.5%
- B = 79.6 to 89.5%
- C = 69.6 to 79.5%
- D = 59.6 to 69.5%
- F = <59.6%

The Course Home Page for this CHM138 section can be reached via: [blackboard.shsu.edu](http://blackboard.shsu.edu)

Login with your university username (example stdabc13) and your network login as password.

**Note that the online quizzes are required in this course.** Students who make 100% on all in-class texts and take no online quizzes have a maximum possible grade of 85% (100%-15%), a final grade of B. The online quizzes are meant to help the average student keep up and master the material assigned each day and covered in class. If you don't feel that you're up to the online assignments, then drop this section and take another. Other instructors in this department approach this course differently.



### Course Description

CHM 138 GENERAL CHEMISTRY I: LECTURE. [CHEM 1311] The following topics are studied: chemical changes and laws governing them; the gas laws; reactions involving oxygen, hydrogen, acids, bases, and salts; ionization; metathesis; the periodic classification, and the atomic structure. This course is for chemistry and other science majors. Fall, Spring, Summer. Prerequisites: Minimum grade of C in MTH 163, MTH 170, MTH 184 or MTH 199 (or equivalent), or a minimum Math score of 250 on the THEA (or equivalent). The THEA equivalent is 43 on ASSET, 75 on ACCUPLACER, 55 on COMPASS, 21 on ACT and 520 on SAT.

Credit 3.



### Purpose of This Course

The purpose of this chemistry course is to provide a fundamental introduction to the chemical sciences. The material covered in this course will prepare science majors for subsequent courses in chemistry, biology, environmental science, and forensics. The lab-based component of General Chemistry I is a separate lab course CHM118.



### Learning Objectives

- Gain factual knowledge (terminology, classification, methods, and trends) in chemistry
- Learn to *apply* course material (to improve thinking, problem solving, and use of logic) in chemistry
- Learn how to find and use resources for answering questions and solving problems in chemistry



### Attendance Policy

Students will be allowed 3 class absences without penalty. Any absences over 3 classes will result in final grade reductions.



### Missed Tests

There are no make-ups for unexcused absences on tests or the final. If you miss an exam for an unexcused absence then your grade on that exam is zero.

Excused absences included sickness that involves a doctor or health clinic visit, death in the immediate family, and emergency situations like fires or automobile accidents.

If you have an excused absence and can't attend a test, when you supply documentation for your absence a make-up exam will be scheduled. It is your responsibility to contact me as soon as possible after the missed test to begin this process. If you do not supply that documentation before the next scheduled test then the missed test grade becomes zero. In other words, excused absences require documentation.

If you miss a test or are going to miss a test it is in your best interest to contact me by phone (936) 294-1553 or e-mail as soon as you can.



### Qualifying Exams required BEFORE taking a test

In order to be allowed to take the tests and final, an online qualifying exam must be submitted first before each of those in-class exams. The Qualifying exams can be found via Blackboard's Assignments|Qualifying Exams folder.

**Qualifying Exams** will normally be scheduled for COMPLETION on the Monday before our Friday tests.

Only submitted the Qualifying Exam is required; **no score or cutoff is required, just submission**. However, you should use your score on the qualifying exam as a means of deciding how well you're prepared for the in-class test. If it doesn't go well you're probably not prepared, and you need more preparation before the in-class text. Qualifying exams can't be retaken. Like the assigned quizzes you only get one attempt.



### Material Required for This Course

[The assigned textbook for this course](#) is Chemistry: The Central Science 10<sup>th</sup> Edition by Brown, Lemay, and Bursten. It is published by Prentice Hall.

The work in this course is centered on (math-based) problem solving to a very large degree. The text's authors have included a large number of problems at the end of each chapter that **strongly require your attention**. Many of these problems are answered in the back of the text (see paragraph under the words "The Importance of Practice" on **page 29** of that text), but you should go to those solutions (answers) only as a last resort. Don't cheat yourself of the learning by looking up the answer before you have really tried the problem. You will not have the text to turn to during any of your tests. The surprise that you may experience during a test in the classroom without your text book will be a useful learning tool; but since no test grades will be dropped in this course you do not want the surprise to be too stupendous.

It is extremely important that you spend as much time as you can afford working the problem examples and exercises in the text of each chapter and the problems at the end of each chapter that illustrate the concepts introduced in the online lessons. Sample and practice problems in each chapter and at each chapter's end are assigned at the end of each online lesson. The Student Guide for this text (ISBN 0-13-578295-3) has been recommended by my students but is not required. It will definitely be useful as you take this course.



### Required Calculator

One other thing that **is required**: a **scientific calculator**. The word scientific in this context means that the calculator must be able to use scientific notation when entering, storing, and displaying numbers. Scientific notation involves the use of exponents as in the number  $6.022 \times 10^{23}$ . **To limit the use** of memory-intensive calculators that can store text, formulae, and chemical nomenclature, you are required to use a Texas Instruments TI30 model calculator in this course **during in-class tests**. There are multiple different TI30 models and all of them will work but **I suggest the TI30Xa**. TI models such as TI34 or TI36 are not TI30 series calculators by this definition.

Having your calculator batteries give out during a test will probably land one of my less familiar calculators in your hands and then you will have to struggle to learn that calculator's functions on the fly: possible but no fun! So check your calculator's batteries **before every test**.

You may not use your cell phone during your tests.



### When do CHM118 Labs begin?

The companion course for CHM 138 is the lab CHM 118. The CHM 118 laboratories don't begin the same week as the CHM 138 lecture course does, but in general about two or three weeks later (except in the summer). Look for signs in the halls of the Chemistry Forensic Science building that will specify the exact dates the CHM118 labs start each semester. You'll need the CHM118 laboratory manual and lab goggles at your first lab.



### E-mail Communication Primer

A primer is an introduction to a subject, something that covers the basics. This [e-mail primer](#) will give you the necessities for communicating with me via e-mail about this distance learning course.

## DO:

- Keep a copy of messages that you e-mail to me. Using your browser's e-mail utility will make this easy.
- Put the following characters in EVERY e-mail to me ---> **CHM138**
- Be as specific as possible in your e-mail communication. I can't help unless I know exactly what the problem is. Try to be as clear as possible and **check your e-mail to see if I respond. If you send me an e-mail I'll respond.** Read my response.
- Anytime you want to--or if e-mail fails--use the telephone and call me. While our computer server may be down sometimes, my voice mail almost always works: 936) 294-1533.

## DON'T:

- Don't expect instantaneous replies unless you e-mail during my office hours (see **Announcements** on the course home page).
- Don't e-mail large file attachments (graphics, word processor files, especially joke lists, etc.) to me unless you and I agree ahead of time.
- Look very carefully at the on-line material BEFORE you e-mail with questions. That's the fastest way to get answers to common questions.

If you'd like to use an off campus e-mail address (for instance, Hotmail or Lycos) that's fine but you must have your student-address e-mail forwarded automatically because my general e-mail announcements automatically go to your student (stdabxxx@shsu.edu) account. E-mail forwarding can be easily configured here: [ww2.shsu.edu/mail03wp/](http://ww2.shsu.edu/mail03wp/) You'll be required to log-in again.



### On-Line Quizzes and Example Test

Note that the online quizzes are required in this course. Students who make 100% on all in-class tests--and take no online quizzes--have a maximum possible course grade of 85% (100%-15%), a final course grade of B. The online quizzes are meant to help the average student keep up and master the material assigned each day and covered in class. If you don't feel that you're up to the online assignments, then drop this section and take another.

These quizzes are automatically graded as you take them (the results appear on your computer screen immediately after you complete the quiz and can also be view in Blackboard via **Blackboard Student Tools|Grades**). **Your score on these quizzes will contribute to your total course points by the percentage specified above**, and the quizzes specifically are designed to help you to learn the material in this course.

Initially just taking the quizzes will get you full credit but for quizzes assigned later in the course, a specific percentage of the total points on a quiz must be achieved to get credit for the quiz. (See the Assignments page for these specified percentages for each quiz; they'll vary from quiz to quiz depending on the number of questions, etc.) For instance, initially just taking the assigned quiz by the specified date and time--for instance, next Monday at 5 PM--will get you credit for that quiz towards your final course grade. But later you'll need to score, say a minimum of 80% on an assigned quiz to get credit for the quiz. At that point, each quiz is recorded all or none; either you meet the required percentage or not; in other words, each quiz counts one point or zero points.

This means that taking the computer-graded quizzes is the **last** thing you should do in your study plan because you won't be able to successful score the needed percentage on the assigned quizzes without working in-chapter and end-of-chapter problems first in preparation.

Over the entire semester, there will be approximately 15 to 40 quizzes assigned.

So, for example, if 15 quizzes are assigned during the entire semester and the on-line quizzes count for 15% of your final grade (see above) then each quiz is worth 1% of the

course grade.

Also available via the Blackboard assignment icon are example tests. Use these tests to get an idea of the format of the examinations in this course.

Note that the online quizzes are required in this course. Students who make 100% on all in-class texts and take no online quizzes have a maximum possible grade of 85% (100%-15%), a final grade of B. The online quizzes are meant to help the average student keep up and master the material assigned each day and covered in class. If you don't feel that you're up to the online assignments, then drop this section and take another section of CHM138.

Finally, note that the Blackboard server is routinely backed up in the middle of the night. When this occurs, Blackboard will not be available to you for as long as 1.5 hours. The time of the backup is somewhere around 3 am but may change. Before you arrange your schedule to routinely complete your assigned quizzes in these wee hours, e-mail the SHSU help desk ([helpdesk@shsu.edu](mailto:helpdesk@shsu.edu)) and ask them specifically "At what time is the Blackboard server NOT AVAILABLE because of maintenance or backup procedures?" then make your plans accordingly.



**All Quizzes are under Blackboard's Assignments Icon**



### **Web Links**

[Department of Chemistry at Sam Houston State University](#)

[Chasteen's home page](#)

[Teaching animations](#)



### **Academic Honesty**

The University expects all students to engage in all academic pursuits in a manner that is above reproach. Students are expected to maintain complete honesty and integrity in the academic experiences both in and out of the classroom. Any student found guilty of dishonesty in any phase of academic work will be subject to disciplinary action. Furthermore, the University and its official representatives may initiate disciplinary proceedings against a student accused of any form of academic dishonesty including, but not limited to, cheating on an examination or other academic work which is to be submitted, plagiarism, collusion and the abuse of resource materials.



### **Student Absences on Religious Holidays**

Section 51.911 of the Texas Education Code requires that an institution of higher education shall allow a student who is absent from class for the observance of a religious holy day to take an examination or complete an assignment scheduled for that day within a reasonable time after the absence. The student, not later than the 15th calendar day after the first day of the semester, or the 7th calendar day after the first day of a summer session, must notify the instructor of each scheduled class that he/she would be absent for a religious holy day. Refer to the Academic Calendar for the deadline date for notification by students to the faculty members of the student's intent to be absent on religious holy days.



### **Students with Disabilities**

Services to Students with Disabilities

It is the policy of Sam Houston State University that no otherwise qualified disabled individual shall, solely by reason of his/her disability, be excluded from the participation in, be denied the benefits of, or be subjected to discrimination under any academic, Student Life program or activity. Students with disabilities may request academic assistance when needed from a Committee for Continuing Academic Assistance for Disabled Students by visiting the director of the Counseling Center, located in the annex of the Lee Drain Building across the sidewalk from the Farrington Building, or call (936) 294-1720 (for additional information see the University Catalog). For assistance other than academic, the student with disabilities should contact the department from which assistance is needed, such as University Police for

parking, the Registrar's Office for registration, etc. If problems are not resolved on the departmental level, contact the Interim Coordinator, Americans with Disabilities Act, or call (936) 294-1015. Students with disabilities may benefit by using CCTV's and voice-activated reading machines available in the Counseling Center. Hours of operation are Monday - Friday, 8:00 a.m. to 5:00 p.m. For further information, contact the Counseling Center staff at (936) 294-1720. CCTV and a voice-activated reading machine are also available in the library.

#### Americans with Disabilities Act

SHSU adheres to all applicable federal, state, and local laws, regulations, and guidelines with respect to providing reasonable accommodations for students with disabilities. If you have a disability that may affect adversely your work in this class, then I encourage you to register with the SHSU Counseling Center and to talk with me about how I can best help you. All disclosures of disabilities will be kept strictly confidential. NOTE: no accommodation can be made until you register with the Counseling Center.

 **On-Line Lessons**

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**L 1: Dimensional Analysis**

- How to make dimensional analysis work for you.
- How to carry out temperature conversions.

**L 2: Atomic Structure**

- Subatomic particles
- Radioactivity (GIF animation)

**L 3: Atomic Isotopes**

- What makes an isotope?

**L 4: Ions**

- Ionic charges
- Using the periodic table to determine ionic charges for common cations and anions
- Building chemical formulae using ionic charges

**L 5: Nomenclature for Freshman Chemists**

- Here you will learn how to name chemicals.
- Elemental forms of these elements are diatomic:  $\text{Br}_2\text{I}_2\text{N}_2\text{Cl}_2\text{H}_2\text{O}_2\text{F}_2$
- Naming compounds from formulae
- Writing down formulae from compound names
- Acid nomenclature
- Binary molecular compound naming

**L 6: Writing Chemical Equations**

- Describing what reactants and products are
- Learning what stoichiometry numbers are
- Here's where you learn how to balance equations.
- Balancing equations by inspection takes practice.

**L 7: The Mass of Atoms**

- Atomic mass units and the periodic table
- Here's where you learn to calculate formula weights.
- Formula weights and molecular weights
- Percent composition

**L 8: The Mole Part 1**

- The mole is a name for a number.
- An Avagado numbers of things, any things
- The mass of a mole of things
- How many parts in a mole of something with parts?
- A mole of skateboards

**L 9: The Mole Part 2**


- The mass of a mole of something is sum of the mass of its parts.
- The number of tires in a mole of 1958 Cadillacs
- The mass of a mole of a compound whose formula you know

**L10: Empirical Formulae**

- What do the parts of a formula really mean?
- Ratio of mass of tires to mass of a 1958 Cadillac
- Empirical formula from elemental %
- Empirical formula for a dental amalgam

**L11: Molecular Formula Versus Empirical Formula**

- After you've determined the empirical formula

- 
- What is absolutely required to determine the molecular formula?



### **L12: Calculating Products and Reactants**

- What a Balanced Equation Can Do for You
- Mole to moles
- Grams to moles
- Grams to grams
- Mass balance
- Theoretical yield



### **L13: Limiting Reagents Part A**

- The hamburger limiting reagent problem
- Your second limiting reagent problem



### **L14: Limiting Reagents Part B**

- Your third limiting reagent quiz
- More on mass balance



### **L15: Molarity, Dilutions, and Solutions**

- The major unit of concentration in chemistry is molarity.
- Molarity and the 10,000 Liter Tank
- Making One Solution from Another: Dilution
- Dilution quick formula



### **L16: Atoms, Ion, and Molecules in Solution**

- Aqueous solutions: What water does when things dissolve
- Dissolving one mole of  $\text{CaCl}_2$  yields three moles of ions
- Dissociation of weak acid, well, poor dissociation
- Base dissociation
- Acid/Base neutralization



### **L17: Ionic Equations and Movers and Shakers**

- What is an ionic equation?
- What do ionic equation for acid/base neutralization look like? Water as a mover and shaker
- Precipitation as mover and shaker
- Gas formation as a mover and shaker



### **L18: Oxidation/Reduction Reactions**

- The last mover and shaker is oxidation/reduction
- Determining oxidation numbers
- Oxidation Is Loss Reduction Is Gain



### **L19: Titrations**

- What is a burette for in a titration?
- An indicator's job is to signal the equivalence point
- One to one stoichiometry
- Two to one stoichiometry



### **L19.5: Thermochemistry**

- Internal energy, heat, work, and enthalpy
- Enthalpies of reactions
- $\Delta H_{\text{reaction}} = \Delta H_{\text{products}} - \Delta H_{\text{reactants}}$
- So how much heat is released by burning 100.0 grams of  $\text{CH}_4$ ?



### **L19.6: Calorimetry**

- Enthalpy calculations: mass, heat capacity, and  $\Delta$ Temperature
- Changes in Enthalpies of a Chemical Reaction
- $\Delta H = q = s \times m \times \Delta T$





### **L19.7: Hess's Law**

- You can add enthalpies of reactions together to "carry out" a reaction you can't carry out!  
What?



### **L20: Light's Interaction with Matter**

- Light and sound are waves. So what's the difference?
- How do I use the light equations?
- How do light and matter interact?
- How do I detect light in a laboratory?
- Why a colored copper amine complex is colored



### **L21: Electronic Configuration and Quantum Numbers**

- How do I write electronic configurations?
- Why are valence electrons so important?
- How do I write down a quantum number set?



### **L22: The Periodic Table**

- What information can I get from the periodic table quickly?
- Atomic radii
- Ionization energies and electron affinities
- Periodic trends by group, family, and categories



### **L23: Lewis Dot Structures**

- What in the world is the **Octet Rule**?
- Ionic compounds versus covalent compounds
- How to write down Lewis dot structures
- Single bonds in Lewis dot structures
- Multiple bonds in Lewis dot structures
- Formal charges
- Lewis dot resonance charges
- Exceptions to the Octet Rule



### **L24: Molecular Shapes and VSEPR**

- What are bonding domains?
- Electron-domain geometry
- Molecular shapes are controlled by the atoms geometry.



### **L25: Molecular Polarity and Net Dipole Moments**

- Why is molecular polarity important?
- What controls molecular polarity?
- Structural isomers



### **L26: Valance Bond Theory and Hybrid Orbitals**

- What is a hybrid orbital?
- What goes in those hybrid orbitals?
- Double bonds
- Pi bonds and delocalization



### **L27: Molecular Orbitals**

- Molecular orbitals of the hydrogen molecule
- Molecular orbitals of the helium molecule
- Molecular orbitals of second-row diatomic molecules
- Interaction of 2s and 2p orbitals



## Podcasts



### Podcasts for Lessons 1 through 27

There are podcasts available for each of the lessons supporting this course. The podcasts vary in length but in all, there are about 8 hours (275 MB) of audio distributed among 30 separate lessons. **These podcasts contain no video.**

If you want to download the .mp3 file to your hard drive then [click here and then select the Lesson you're interested in](#) (for example, L1.mp3 is Lesson 1, Dimensional Analysis), right click on it and download it to your hard drive. If your browser is suitably configured you may be able to click on any lesson's .mp3 file in your browser window and play the audio file directly in your browser. That same list of lessons is shown below on this page.

[www.shsu.edu/~chm\\_tgc/rss/138pod.xml](http://www.shsu.edu/~chm_tgc/rss/138pod.xml)

Above you'll find the URL that links to the podcasts for all the on-line lessons in this course.

The files are available in .mp3 format and will play directly on networked computers and your iPod or .mp3 player.

If the sound quality bothers you, like too much sibilance--high frequency "sss" with words that end in s--then adjust the sound using your sound application's graphic equalizer. In Media Player this is found under View|Full Mode. In iTunes use Window|Equalizer.

If you use iTunes then **copy** the link's URL and subscribe to it in iTunes (Advanced/Subscribe to Podcast...).

You can also subscribe to these podcast using a desktop RSS reader or a web browser like Firefox with a good RSS plug-in. **Internet Explorer versions < 7.xx don't do RSS.**

An alternative method of subscribing to these podcasts in iTunes if you are using the Macintosh Safari browser (> version 2.0.3) is to click on the above link, a new browser window will open and then simply just click the link that says "Subscribe in iTunes."



**An excellent place to start is with the podcast called Success with Podcasts**



### Lists of podcasts

<u>File Name</u>	<u>Lesson Topic</u>	<u>File Size</u>
<a href="#">Success.mp3</a>	Success with podcasts: How to use these podcasts to make higher grades	1.2 MB
<a href="#">L1.mp3</a>	Dimensional Analysis	11 MB
<a href="#">L2.mp3</a>	Atomic Structure	4.9 MB
<a href="#">L3.mp3</a>	Atomic Isotopes	3.5 MB
<a href="#">L4.mp3</a>	Ions	7.8 MB
<a href="#">L5.mp3</a>	Nomenclature for Freshman Chemists	13 MB
<a href="#">L6.mp3</a>	Writing Chemical Equations	4.0 MB
<a href="#">L7.mp3</a>	The Mass of Atoms	5.6 MB
<a href="#">L8.mp3</a>	The Mole Part 1	3.6 MB
<a href="#">L9.mp3</a>	The Mole Part 2	6.0 MB
<a href="#">L10.mp3</a>	Empirical Formulae	12 MB
<a href="#">L11.mp3</a>	Molecular Formula Versus Empirical Formula	5.7 MB
<a href="#">L12.mp3</a>	Calculating Products and Reactants	7.3 MB
<a href="#">L13.mp3</a>	Limiting Reagents Part A	5.4 MB
<a href="#">L14.mp3</a>	Limiting Reagents Part B	6.0 MB
<a href="#">L15.mp3</a>	Molarity, Dilutions, and Solutions	12 MB
<a href="#">L16.mp3</a>	Atoms, Ion, and Molecules in Solution	15 MB
<a href="#">L17.mp3</a>	Ionic Equations and Movers and Shakers	7.1 MB
<a href="#">L18.mp3</a>	Oxidation/Reduction Reactions	10 MB
<a href="#">L19.5.mp3</a>	Titration	11 MB
<a href="#">L19.6.mp3</a>	Thermochemistry	4.3 MB
<a href="#">L19.7.mp3</a>	Calorimetry	3.3 MB
<a href="#">L19.mp3</a>	Hess's Law	9.5 MB

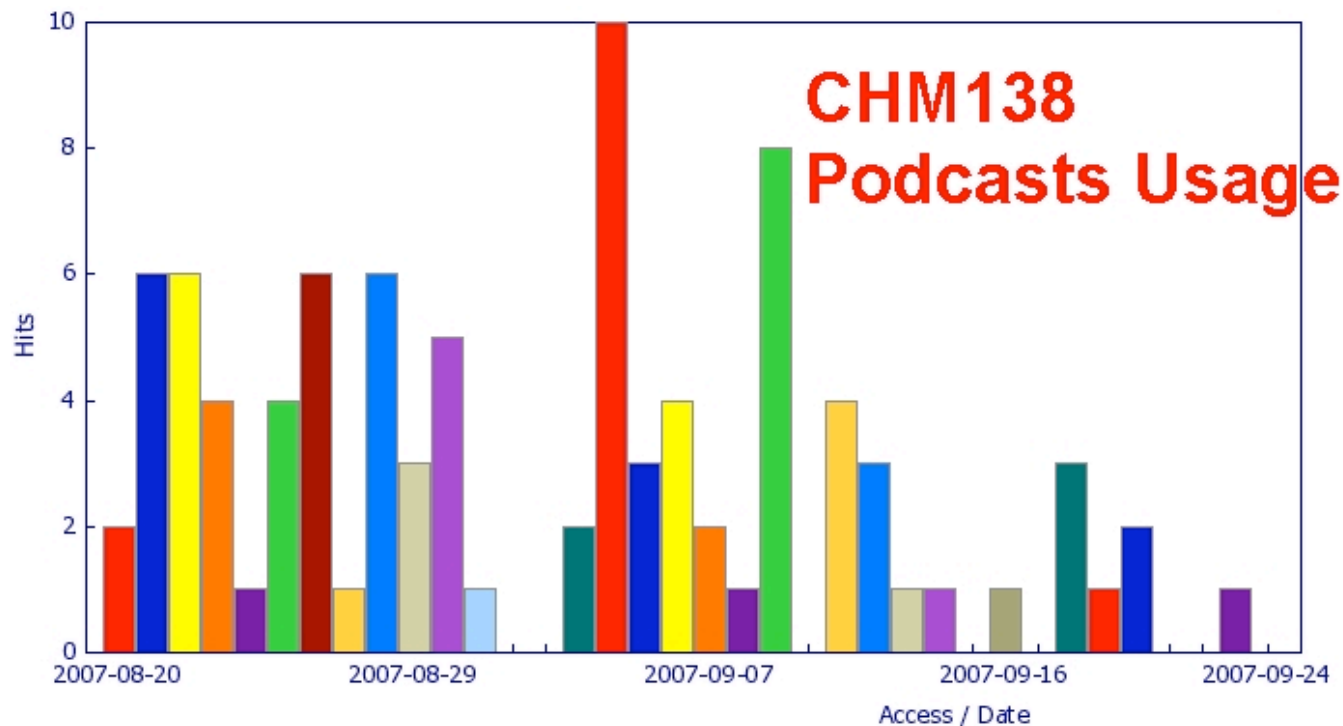
[L20.mp3](#)  
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[L26.mp3](#)  
[L27.mp3](#)

Light's Interaction with Matter  
Electronic Configuration and Quantum Numbers  
The Periodic Table  
Lewis Dot Structures  
Molecular Shapes and VSEPR  
Molecular Polarity and Net Dipole Moments  
Valance Bond Theory and Hybrid Orbitals  
Molecular Orbitals

9.6 MB  
19 MB  
9.5 MB  
25 MB  
6.6 MB  
7.1 MB  
14 MB  
14 MB  
274 MB total



### 8-20-2007 to 9-24-2007 podcast usage



OK

 **External Links**

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**Molecular Structures**

These are the ones we've seen in class.

**Molecular Structures**

Here are lots of Chime-compatible molecule structures.

**Atomic orbitals**

Here are manipulatable images of all the atomic orbitals described in on-line Lesson 21.

**All the atomic orbitals you could imagine**

Here find drawings of atomic orbital from 1s through the 7 p orbitals of elements which have already been discovered, but also through n=10 elements yet to be discovered but whose electronic structure is still predictable.

**Dissolution Animation**

Here is what a crystal of sodium chloride dissolving in water looks like on the microscopic level.

**Quantum Number Primer**

Use this interactive animation to practice electron configurations and quantum numbers.

**Conductivity Animation**

Which of the example solution conduct electricity?

**QuickTime Chemistry TV****On-line Unit Conversion****Another On-line converter****Rutherford's Gold Foil Experiment**

This is a 780 K QuickTime movie with sound. It requires QuickTime 3.0 or beyond. [Here](#) is the AVI version of this movie.

**Radioactive Emissions**

This is a GIF animation detailing three common radioactive particle emissions.

**Dimensional Analysis Equation with a Few Tricks**

This is a GIF animation to help you learn the process of cancelling units and converting quantities.

**Balanced Relationships**



This is a GIF animation detailing what balanced equations **will** and **won't** do for you.



### **Extensive Support for Your Online Chemistry Endeavors**

Dr. Steve Lower at the Department of Chemistry at Simon Fraser University has done **a lot** of work for you.



### **Copper Amine Solution Dilution**

This is a QuickTime Movie (5.1MB; QuickTime 3.0) detailing the making of a dilute  $[\text{Cu}(\text{NH}_3)_4(\text{H}_2\text{O})_2]^{2+}$  solution. Here's the same movie [in AVI format](#). There's no sound.



### **Nomenclature Help**

This color intensive document, by Dr. Benny Arney here at SHSU, helps you with the ins and outs of chemical nomenclature.



### **Here is a movie showing how a cathode ray tube responds to a magnetic field.**

Both QuickTime and AVI versions available.



### **Prentice Hall's Site for This Course**

Click on the above link and then select the link for this text.



### **Introduction to Atomic Orbitals**

Requires Shockwave



### **Titration Movie**

Assume that the sulfuric acid used here has a concentration 0.07500 M. If the base titrated is sodium hydroxide, what is its concentration?



### **TI30X IIS Quick Guide**

This .pdf document shows how to use many of the TI30X IIS' functions.



### **TI30Xa Quick Guide**

This .pdf document shows how to use many of the TI30Xa's functions.