CHEM 1307: Introductory Chemistry II
Instructor Kwiatkowski (Ms. K)
Section: 500 Online

<table>
<thead>
<tr>
<th>Name</th>
<th>Department</th>
<th>Email</th>
<th>Phone</th>
<th>Office</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Chemistry &amp; Biochemistry</td>
<td><a href="mailto:kwiatkowc@sfasu.edu">kwiatkowc@sfasu.edu</a></td>
<td>936-468-2175</td>
<td>Bush Bldg (Math Bldg) Room 110</td>
</tr>
</tbody>
</table>

Student Hours
- **Mornings:** Monday, Wednesday, Friday 10:00-11:00
- Tuesday, Thursday 9:30-10:30
- **Afternoons:** Wednesday, Friday 1-2:30
- Tuesday 1:00-3:00

**COURSE DESCRIPTION:**
Introductory Chemistry II. Introduction to the principles and concepts of chemical thought. Co-requisite: CHE 1107. This course is intended for non-chemistry majors.

This course is for 3 credits and should typically take 5 hours a week for 8 weeks. Students have websites to study, videos to watch, and homework assignments involving critical thinking and quantitative reasoning. Students are tested over the material via quizzes and several exams during the semester including a comprehensive final exam. These activities average at a minimum 12 hours of work each week to prepare outside of classroom hours.

After a few fundamental basics for student who have not yet had CHEM 1305, the first part of this course will cover characteristics of chemical reactions. The second part of the course will include Organic Chemistry, Biochemistry, and Environmental Science, three topics that may be closely related to your chosen career. Speaking of your chosen career... you'll have one special project, due April 1st. Your topic must be related to your future career/current major and must involve chemistry, so start thinking about it now.

The format of the course is simple: for every module, you have to do a homework assignment, at least one page of notes, and a quiz.

The homework is with the Pearson Mylab Homework system. The link to sign up and access this is on the D2L course homepage and will cost $60.00. If you took CHEM 1305 last semester, the account is still good and you won't have to pay.

The notes should be submitted to the dropbox. I only want one page or one document per module. There are a total of 10 modules, so 10 submissions of notes are expected, and your grade will be posted at the very end of the semester. If you want to focus on just answering the objectives at the beginning of the module, you'll have a wonderful study guide for the quiz.

There are no big tests. There are only the quizzes at the end of the modules. Some may be as short as 10 questions, others are 50 questions. These are located under Course Tools, Quizzes.

Start the course by signing up for the Pearson Homework system (see the widget on the bottom right corner of this page?) and by selecting **Content.** Do not use the calendar, as I didn't associate dates with many things, and...
I wouldn't want you to miss something! Start with *Module 1: Introductory Material: Important*, and then sign and submit the Honor statement today.

Occasionally a module is divided into sections, and if you press the arrow on the last page, it'll bring you to the top of the module. Remember to scroll down and finish up with the module's quiz.

If you have any questions on either content or the course, please feel free to contact me at kwiatkowc@sfasue.edu or the D2L email. I look at both equally. I hope you find this course meaningful and important to your future. Let me know along the way how it's going. And if you find any errors in the course, please let me know.

**TEXT AND MATERIALS:**

*REQUIRED: Mastering Chemistry Homework Account (It comes automatically with ebook.)*

Access your Mastering Chemistry homework account through the Pearson MyLab on the D2L course homepage under Content.

*PLEASE HAVE YOUR MASTERING CHEMISTRY ACCOUNT AVAILABLE DURING THE FIRST WEEK OF THE COURSE AND BEGIN YOUR FIRST HOMEWORK ASSIGNMENT. YOU HAVE A FREE TRIAL FOR TWO WEEKS TO GIVE YOU TIME TO FIND $$.*

**Method of Evaluation:**

*Quizzes - D2L Quizzes will be assigned at the end of every module. Lowest quiz will be dropped.*

*Project – There will be one project assigned in which a research paper or 5-10 minute video on a relevant chemistry topic related to your field is created.*

*On-line homework – Students are required to get access to a Pearson MyLab Homework account. The access code is acquired with purchase of a book or can be purchased online with or without an ebook. Instructions on how to navigate the Mastering Chemistry web site are provided at the website and on D2L. In the gradebook, the average from Mastering Chemistry will be updated every two weeks. Individual chapter homework assignments will not be posted in D2L gradebook. Online homework will be 90% of your homework grade.*

*Notes – Students should upload at least one document or one page of notes per module for a total of 10 modules (100 points). The grade will be assigned once all the notes are complete. Notes will be 10% of your homework grade.*

*The quiz average, homework average, and project are weighted in the gradebook as follows:*

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>Homework Average (includes Organic worksheets and Notes)</td>
<td>40%</td>
</tr>
<tr>
<td>Quiz Average</td>
<td>50%</td>
</tr>
<tr>
<td>Project</td>
<td>10%</td>
</tr>
</tbody>
</table>
Grades are kept in D2L and are always available for students to see. Announcements are always being posted, so please check D2L frequently. The objectives at the beginning of each module should serve as a study guide for the quiz at the end of the module.

**Late Policy:**
Homework – if submitted after the due date, it will register as a 0 until you do it. Then you’ll receive full credit. Homework will be transferred over to D2L gradebook twice before March 14 and twice before April 5th.

Quizzes – Follow the suggested schedule. Hard deadline of March 14th for quizzes 1-5, then they can no longer be made up. Hard deadline for quizzes 6-10 is on April 5th, then they can no longer be made up.

You must be caught up on quizzes and homework at the end of Spring Break and at the end of the semester. These are hard deadlines and items become unavailable afterwards.

**Academic Integrity (A-9.1):**
Academic integrity is a responsibility of all university faculty and students. Faculty members promote academic integrity in multiple ways including instruction on the components of academic honesty, as well as abiding by university policy on penalties for cheating and plagiarism.

**Definition of Academic Dishonesty**
Academic dishonesty includes both cheating and plagiarism. Cheating includes but is not limited to (1) using or attempting to use unauthorized materials to aid in achieving a better grade on a component of a class; (2) the falsification or invention of any information, including citations, on an assigned exercise; and/or (3) helping or attempting to help another in an act of cheating or plagiarism. Plagiarism is presenting the words or ideas of another person as if they were your own. Examples of plagiarism are (1) submitting an assignment as if it were one's own work when, in fact, it is at least partly the work of another; (2) submitting a work that has been purchased or otherwise obtained from an Internet source or another source; and (3) incorporating the words or ideas of an author into one's paper without giving the author due credit.

Please read the complete policy at [http://www.sfasu.edu/policies/4.1-student-academic-dishonesty.pdf](http://www.sfasu.edu/policies/4.1-student-academic-dishonesty.pdf)

Any student found cheating will be subject to the penalties as stated in the Student Code of Conduct handbook; including but not limited to a score of zero on exam, expulsion from the class or expulsion from the University.

**Withheld Grades Semester Grades Policy (A-54):**
Ordinarily, at the discretion of the instructor of record and with the approval of the academic chair/director, a grade of WH will be assigned only if the student cannot complete the course work because of unavoidable circumstances. Students must complete the work within one calendar year from the end of the semester in which they receive a WH, or the grade automatically becomes an F. If students register for the same course in future terms the WH will
automatically become an F and will be counted as a repeated course for the purpose of computing the grade point average.

The circumstances precipitating the request must have occurred after the last day in which a student could withdraw from a course. Students requesting a WH must be passing the course with a minimum projected grade of C.

**STUDENTS WITH DISABILITIES:**

I am committed to making our class a place in which every student can learn. Due to the visual nature of chemical diagrams, some portions of the course content may require thoughtful interaction between visually-impaired students, the instructor, and Disability Services to create the best learning experience possible. Please contact me to discuss this in greater detail.

To obtain disability related accommodations, alternate formats and/or auxiliary aids, students with disabilities must contact the Office of Disability Services (ODS), Human Services Building, and Room 325, 468-3004 / 468-1004 (TDD) as early as possible in the semester. Once verified, ODS will notify the course instructor and outline the accommodation and/or auxiliary aids to be provided. Failure to request services in a timely manner may delay your accommodations. For additional information, go to [http://www.sfasu.edu/disabilityservices/](http://www.sfasu.edu/disabilityservices/).

**BEHAVIOR POLICY:**


**CORE OBJECTIVES AND RESOURCES**

General Education Core Curriculum Objectives: The Texas Higher Education Coordinating Board has identified six core learning objectives: Critical Thinking Skills, Communication Skills, Empirical and Quantitative Skills, Teamwork, Personal Responsibility, and Social Responsibility. SFA is committed to the improvement of its general education core curriculum by regular assessment of student performance on these six objectives. Although this chemistry course develops the first four core-learning objectives, it only submits assessment assignments to the University Core Assessment Committee every even Spring for the Teamwork general education core curriculum requirement. If this is an even spring semester, another, “shell” course has been created to collect student artifacts to meet this state requirement. You will see this course on your D2L list.

During the even spring semester, you will receive an assignment in the laboratory portion of the course that fulfills both the requirements of the lab and the needs of Stephen F. Austin State University’s Core Curriculum Assessment Plan with the Texas Higher Education Coordinating Board. When you complete this one assignment, you need to upload the assignment to both the Chemistry dropbox and the Teamwork dropbox. Please note that this only applies to the specific teamwork assignment given in the lab section of this course. All other assignments should be submitted according to regular class operations. If you have any questions, please see your instructor or contact the University Assessment Specialist at (936) 468-1267 or jstringfield@sfasu.edu.

Below is a description of each Core Objective, followed by a chart that shows the topics covered in this course with their corresponding core objectives.

*Core Objective 1: Critical Thinking: to include creative thinking, innovation, inquiry and analysis, evaluation and synthesis of information.*
Definition of **CRITICAL THINKING**: disciplined thinking that is clear, rational, open-minded, and informed by evidence.


**Critical thinking** involves the use of a group of interconnected skills. The skills needed can be broken down into six steps.

**Six Steps of CRITICAL THINKING**

1. **Knowledge** means a student must have basic knowledge about the subject.

2. **Comprehension** requires understanding of the subject. Students that comprehend the new knowledge are able to relate the new knowledge to what they already know. Comprehending goes beyond simply parroting material back.

3. **Application** requires both knowledge and comprehension. Students must be able to carry out a task or apply their knowledge and comprehension to an assigned task.

4. **Analysis** involves breaking the knowledge down into smaller parts so it become clear how the smaller parts are related to other ideas.

5. **Synthesis** involves the ability to put together the parts you analyzed with other information to create something original.

6. **Evaluation** occurs once we have understood and analyzed what is said or written and the reasons offered to support it. Then we can appraise this information in order to decide whether you can give or withhold belief, and whether or not to take a particular action.

Adapted from: http://www.mhhe.com/socsicience/philosophy/reichenbach/m1_chap02studyguide.html (accessed May 23, 2013)

**Core Objective 2: Communication Skills: to include effective development, interpretation and expression of ideas through written, oral, and visual communication.**

**COMMUNICATION SKILLS in the sciences**

For an excellent resource in scientific communication from a highly reputable source see the information provided on the Nature website link shown below.

http://www.nature.com/scitable/topic/scientific-communication-14121566 (accessed May 31.2013)

Three especially informative links within the link shown above are:

- Effective Communication
Core Objective 3: Empirical and Quantitative Skills: to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions.

EMPIRICAL AND QUANTITATIVE SKILLS

Chemists rely on observations to explain the nature of the substances they study. There are two types of observations exist: qualitative and quantitative. A **qualitative observation** is an observation made with the senses and is usually expressed using words instead of numbers. Qualitative observations about a person sick in the hospital might include that the person is breathing rapidly, has a high temperature, and is very thin.

A **quantitative observation** is an observation that requires a numerical measurement and describes something in terms of "how much". The quantitative observation that a person has a temperature of 103.6 °F is much more useful information than just knowing that the person has a fever. Quantitative observations are preferred by scientists. Often quantitative data is acquired in lab.

One or more measurement is always a part of any quantitative observation. A **measurement** determines the dimensions, capacity, quantity, or extent of something. The most common types of measurements made in chemical laboratories are those of mass, volume, length, temperature, pressure, and concentration. Measurements always consist of two parts: a **number**, which tells the amount of the quantity measured, and a **unit**, which tells the nature or kind of quantity measured. A measured number without a unit is meaningless.

Once quantitative data is obtained, chemists then mathematically manipulate and analyze data.

Adapted from saplinglearning.com; accessed May 31, 2013

Core Objective 4: Teamwork: to include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal.

Definition of **TEAMWORK**: work done by several associates with each doing a part but all subordinating personal prominence to the efficiency of the whole.


TEAMWORK General Rules

Each team member needs:

- all ideas evaluated critically;
- treat others in the group with respect
- everyone needs to pull their weight, meet deadlines, and contribute equally;
- actions need to be followed through;
- reporting needs to be accurate and comprehensive;
- problems with under-performing team members need to be discussed openly and resolved quickly; and
- peer assessment should be given fairly

Summary:

| Core Objective 1: Critical Thinking Skills | To include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information. |
Core Objective 2: Communication Skills
To include effective development, interpretation and expression of ideas though written, oral, and visual communication.

Core Objective 3: Empirical and Quantitative Skills
To include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions.

Core Objective 4: Teamwork
To include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal.
*This Core Objective is Emphasized in Lab.*

**Student Learning Outcomes:** Upon completion of this course, the students are expected to

- apply chemistry concepts using critical thinking skills and the scientific method to analyze and evaluate information to reach conclusions within problem sets and lab experiments. (COs 1 & 3)
- use communication skills to demonstrate their interpretation and analysis of scientific data. (CO 2)
- apply logic, quantitative reasoning, and pattern recognition to analyze and evaluate numerical data/observable facts to reach conclusions within problem sets and lab experiments. (COs 1 & 3)
- demonstrate the ability to cooperate within groups to gather results of an experiment, analyze data, and draw conclusions using communication skills. (COs 2 & 4)

**Course Topics:**

<table>
<thead>
<tr>
<th>Chp</th>
<th>Topic</th>
<th>Core Objective</th>
<th>Specifics…</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>Equilibrium</td>
<td>1, 3</td>
<td>Solving equilibrium problems,</td>
</tr>
<tr>
<td>14</td>
<td>Acids and Bases</td>
<td>1-3</td>
<td>pH problems</td>
</tr>
<tr>
<td>15</td>
<td>Rate Law</td>
<td>1-3</td>
<td>Composing rate laws by analyzing experimental data</td>
</tr>
<tr>
<td>12</td>
<td>Thermodynamics</td>
<td>1-3</td>
<td>Gibbs Free Energy Problems; Enthalpy and Entropy analysis</td>
</tr>
<tr>
<td>16</td>
<td>Electrochemistry</td>
<td>1-3</td>
<td>Analyzing voltage of various batteries</td>
</tr>
<tr>
<td>12</td>
<td>Inter- and Intramolecular Forces; (hybridization)</td>
<td>1-3</td>
<td>Understand how forces between molecules influence properties, and know the difference between single, double, and triple covalent bonds.</td>
</tr>
<tr>
<td>Module</td>
<td>Lessons and Quizzes</td>
<td></td>
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<td></td>
</tr>
<tr>
<td><strong>Organic Chemistry: Nomenclature, Properties; reactions</strong></td>
<td>1-4</td>
<td>Analyze isomers and enantiomers, R and S, and how to name organic compounds</td>
<td></td>
</tr>
<tr>
<td><strong>Biochemistry: The Cell, the four macromolecules</strong></td>
<td>1-3</td>
<td>Understand the relationship between form and function.</td>
<td></td>
</tr>
<tr>
<td><strong>Nuclear Chemistry</strong></td>
<td>1-3</td>
<td>Learn the basics of nuclear chemistry and its applications.</td>
<td></td>
</tr>
<tr>
<td>Environmental Chemistry: Climate Change</td>
<td>1-4</td>
<td>Explore evidence with regards to climate change.</td>
<td></td>
</tr>
<tr>
<td>Everyday Chemistry Issues: pesticides, herbicides, fertilizers, etc.</td>
<td>1-4</td>
<td>Reach conclusions on the effectiveness and hazards of the everyday use of chemicals.</td>
<td></td>
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</tbody>
</table>

**Calendar:** All due dates times are 11:59 pm. Deadlines are Suggestions to keep pace, except for March 14th and April 5th. If I see you’re falling behind, I’ll be checking on you.

<table>
<thead>
<tr>
<th>Module</th>
<th>Lessons and Quizzes</th>
</tr>
</thead>
</table>
| **Syllabus with Calendar** | • About the Instructor  
• Chem 1307 Kwiatkowski Syllabus  
• CHEM 1307 Calendar  
• Notes Requirement |

**Honor Statement (dropbox – Due Jan 22)**

| **Research Project** | • Research Paper Rubric  
• Video Rubric  
• Citation Chart  
• Discussion for Video Project: Connect with a Partner |
| **5 minute video (1-2 students)** -or- **5 page paper (individually)** | Due Apr 1 |

| **Matter** | • Matter and the History of the Atom Introduction and Objectives  
• Element Names to Memorize  
• Matter’s Definition and Characteristics  
• Organizing Matter  
• Physical and Chemical Properties and Changes  
• History of the Atom and Some Important Terms |

**The Periodic Table and Reactivity**

| • Periodic Table and Reactivity Introduction and Objectives  
• Group Number = Valence Electrons |
- Everyone wants to be Nobility
- Ions in Your Body
- Basic Organization of the Periodic Table
- Characteristics of Some Important Groups
- Radon Gas: Caution
- Ionic Bonds
- Covalent Bonds
- Between Black and White is Gray
- Summary of Bonds
- Intermolecular Attraction
- Solid, Liquid, or Gas?

### Quiz 1 Matter and the Atoms in the Periodic Table

*(Due Jan 31)*

- *Homework also due.*

Matter and the Atoms in the Periodic Table Checklist

Matter and the Atoms of the Periodic Table Conclusion

<table>
<thead>
<tr>
<th>Writing and Naming Compounds</th>
<th>Writing and Naming Compounds: Introduction and Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>(Complete by Feb 9)</em></td>
<td>Polyatomic Ions to Start Memorizing</td>
</tr>
<tr>
<td></td>
<td>Writing and Naming Ionic Compounds</td>
</tr>
<tr>
<td></td>
<td>Ionic Compounds with Polyatomic Ions</td>
</tr>
<tr>
<td></td>
<td>Naming Covalent Molecules</td>
</tr>
<tr>
<td></td>
<td>A&amp;Q (instead of Q&amp;A)</td>
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<tr>
<td></td>
<td>A&amp;Q</td>
</tr>
<tr>
<td></td>
<td>Answers</td>
</tr>
<tr>
<td></td>
<td>Naming Acids</td>
</tr>
<tr>
<td></td>
<td>Special Common Names</td>
</tr>
<tr>
<td></td>
<td>Review Video: Crash Course</td>
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</tbody>
</table>

### Quiz 2 Writing and Naming Compounds (Due Feb 9)

- *Homework also due.*

Writing and Naming Compounds Checklist

Writing and Naming Compounds Conclusion

<table>
<thead>
<tr>
<th>Reactions</th>
<th>Reactions Introduction and Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Chemical Reactions</td>
</tr>
</tbody>
</table>
| (Complete by Feb 16) | • Law of Conservation of Mass  
• Answers to Balancing Equations  
• The Mole  
• Stoichiometry  
• Answers to Stoichiometry Problem  
• Types of Reactions: Combustion, Synthesis, and Decomposition  
• Types of Reactions: Single Replacement  
• Types of Reactions: Double Replacement  
• Harmful Chemicals Used in Making our Products  
• Reactions to Avoid  

**Quiz 3 Reactions (Due Feb 16)**  
- Homework also due.  

Reactions Checklist  
Reactions Conclusion  

| Thermodynamics | Thermodynamics Introduction and Objectives  
(Complete by Feb 28)  

| Enthalpy | • Definition and Types of Energy  
• Endothermic Reactions  
• Exothermic Reactions  
• Your Refrigerator  
• Specific Heat Capacity  
• Water’s Specific Heat Capacity  
• Heat of Vaporization and Heat of Fusion  
• Practice Problems  
• Check Your Answers  
• Hess’s Law  
• One More Hess’s Law Example  

| Entropy and Gibbs Free Energy | • Entropy  
• Spontaneous Processes  
• Gibbs Free Energy  

**Quiz 4 Thermodynamics Quiz (Feb 28)**  
- Homework also due.  

Thermodynamics Checklist  
Thermodynamics Conclusion
<table>
<thead>
<tr>
<th>Equilibrium and Rate</th>
<th>Equilibrium and Rate Introduction and Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Complete by March 8)</td>
<td>Acids, Strong and Weak</td>
</tr>
<tr>
<td></td>
<td>Bases, Strong and Weak</td>
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<tr>
<td></td>
<td>Concentration</td>
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<tr>
<td></td>
<td>Equilibrium</td>
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<tr>
<td></td>
<td>The Equilibrium Constant</td>
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<tr>
<td></td>
<td>The Meaning of K</td>
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<td></td>
<td>Ka and Kb</td>
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<td></td>
<td>‘Q’</td>
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<td></td>
<td>Le Chatelier’s Principle</td>
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<tr>
<td></td>
<td>The Rate of a Reaction</td>
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</tbody>
</table>

**Quiz 5 Equilibrium and Rate (Due March 8)**

- Homework also due.

Equilibrium and Rate Checklist

Equilibrium and Rate Conclusion

<table>
<thead>
<tr>
<th>March 14</th>
<th>All homework, quizzes, and notes through Equilibrium Module are due.</th>
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<table>
<thead>
<tr>
<th>The Shape of Biological Molecules</th>
<th>Introduction and Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Complete by March 27)</td>
<td>Lewis Dot Structures</td>
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<tr>
<td></td>
<td>Lewis Dot Structures of Ionic Compounds</td>
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<td></td>
<td>Lewis Dot Structures of Molecules</td>
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<td></td>
<td>Working Some Out</td>
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<td></td>
<td>VSEPR Theory Helps Determine Shape</td>
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<td></td>
<td>Polar and Nonpolar</td>
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<td>Enzymes and Inhibitors</td>
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<td>Caffeine</td>
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<td></td>
<td>Artificial Sweeteners</td>
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<td></td>
<td>A Protease Inhibitor – Indinavir</td>
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<td></td>
<td>Our Immune system</td>
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<tr>
<td></td>
<td>Penicillin</td>
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<td></td>
<td>Xenoestrogens</td>
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</tbody>
</table>

**Quiz 6 The Shape of Biological Molecules (March 27)**

- Homework also due.

The Shape of Biological Molecules Checklist

The Shape of Biological Molecules Conclusion
<table>
<thead>
<tr>
<th>Research Project Due April 1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Organic Chemistry</strong></td>
</tr>
<tr>
<td><em>(Complete by April 5)</em></td>
</tr>
<tr>
<td>Introduction and Objectives</td>
</tr>
</tbody>
</table>

**Organic Chemistry I**
- Hydrocarbons and Alkanes
- Alkenes and Alkynes
- Bond Hybridization
- Bond-Line Structures
- Bond Line Structure Answers
- Isomers and Chirality
- Isomer/Chiral Answer
- R and S Enantiomers
- Naming Alkanes with Alkyl Groups
- Naming Alkenes and Alkynes
- Hydrocarbon Reactions

**Organic Chemistry II**
- Functional Groups
- Naming Aromatic Hydrocarbons
- Alcohols and Ethers
- Aldehydes and Ketones
- Carboxylic Aids and Esters
- Amines
- Polymers

**Quiz 7 Organic Chemistry (April 5)**

-Homework also due.

Organic Chemistry Checklist

Organic Chemistry Conclusion

<table>
<thead>
<tr>
<th>Biochemistry I</th>
</tr>
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<tbody>
<tr>
<td><em>(Complete by April 19)</em></td>
</tr>
<tr>
<td>Biochemistry Introduction and Objectives: Cell, Nucleic Acids, Proteins</td>
</tr>
<tr>
<td>- The Cell</td>
</tr>
<tr>
<td>- Nucleic Acids</td>
</tr>
<tr>
<td>- Nucleic Acids: Lecture</td>
</tr>
<tr>
<td>- Proteins</td>
</tr>
<tr>
<td>- Proteins: Lecture</td>
</tr>
</tbody>
</table>

**Quiz 8 Biochemistry: The Cell, Nucleic acids, Proteins (April 19)**
### Biochemistry II

**Introduction and Objectives: Carbohydrates and Lipids**
- Carbohydrates
- Carbohydrates: Lecture
- Lipids (Fats)
- Lipids: Lecture

**Biochemistry II Introduction and Objectives: Carbohydrates and Lipids (April 26)**

**Homework also due.**

**Quiz 9 Biochemistry: Carbohydrates and Lipids (April 26)**

**Homework also due.**

Biochemistry I and II Checklist

Biochemistry Conclusion

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### Environmental Chemistry

**Introduction and Objectives**

**Solutions**
- Buffers
- Colligative Properties

**Chemicals that are Sprayed**
- Fertilizers
- Pesticides
- Herbicides

**Air Pollution**
- Air Pollution
- Controlling Air Pollution
- Ozone

**Climate Change**
- Too Much Carbon Dioxide
- What Constitutes a Greenhouse Gas?
- What’s Happening to our Earth?

**Alternative Energy**
- Solar Power
- Wind Power
- Water Power
- Biomass Energy
- Nuclear Energy

**Quiz 10 Environmental Chemistry (Due May 3)**

Environmental Chemistry Checklist