CHM223L – Organic Chemistry Lab II
Fall 2006

Instructor: Dr. Angela King
Office: 206 Salem Hall (758-5511)
Web Page: http://www.wfu.edu/~kingag/223L

E-mail: kingag@wfu.edu
Office Hours: By appointment
Lab Room: Salem 8 (prelab lecture) Tuesday 2-6PM

Required: Laboratory Notebook with duplicate, carbonless pages

Grading Scheme:

<table>
<thead>
<tr>
<th></th>
<th>Due Date (Tentative)</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lab Quiz 1</td>
<td>Oct. 3</td>
<td>150</td>
</tr>
<tr>
<td>Lab Quiz 2</td>
<td>Nov. 28</td>
<td>150</td>
</tr>
<tr>
<td>Unknown 1</td>
<td>Sept. 19</td>
<td>100</td>
</tr>
<tr>
<td>Unknown 2</td>
<td>Oct. 31</td>
<td>100</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th>Experiments</th>
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<tbody>
<tr>
<td>Nitrotyrosine</td>
<td>Sept. 12</td>
<td>100 points</td>
</tr>
<tr>
<td>Biodiesel</td>
<td>Sept. 19</td>
<td>100 points</td>
</tr>
<tr>
<td>Moonshine</td>
<td>Sept 26</td>
<td>150 points</td>
</tr>
<tr>
<td>Reductive Amination/NMR</td>
<td>Oct. 3</td>
<td>150 points</td>
</tr>
<tr>
<td>Sodium Borohydride Reduction</td>
<td>Oct 17</td>
<td>150 points</td>
</tr>
<tr>
<td>Synthesis of Fragrance Ethers</td>
<td>Oct 31</td>
<td>150 points</td>
</tr>
<tr>
<td>Glucose Pentaacetate</td>
<td>Nov. 7</td>
<td>100 points</td>
</tr>
<tr>
<td>Malachite Green and Crystal Violet</td>
<td>Nov 14</td>
<td>100 points</td>
</tr>
<tr>
<td>Azo Dyes</td>
<td>Nov. 21 (to TA by 5PM)</td>
<td>100 points</td>
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</table>

Letter grades will be assigned according to an approximate 10 point scale generated at the end of the semester. Experiment grades will be adjusted (up or down) to account for differences between T.A. sections. Late lab reports are assessed a penalty of 20%/day. No excuses will be accepted. Don't forget to turn them in at the START of lab!

Lab Quizzes are designed to test understanding of concepts and techniques taught and used in the lab. For instance, how would adding half of the desired amount of a starting material or not drying your glassware affect your results? Can you calculate percent yield and locate safety equipment? Can you predict products for reactions that are very similar to reactions carried out in the lab? Lab quizzes may not be made up, even for excused absences.

Safety: Material Safety Data Sheets and handouts received during check in can be found online at http://www.wfu.edu/~kingag/223L. Students should be familiar with the basic safety practices.

- Never work in the laboratory alone or perform unauthorized experiments.
- Learn the location of the nearest fire extinguisher, eye-wash, safety shower, and exits.
- Wear safety glasses at all times in the laboratory. (5 pt penalty if you are caught without them.)
- Do not eat, drink, or smoke in lab; or wear sandals or shorts.
- Handle all chemicals with care, avoid contact with skin and clothing, avoid inhalation.
- Dispose of chemical waste properly.
- Report accidents immediately to the TA or instructor.
- Keep book bags and personal items off the floor of the lab room.

Attendance at pre-lab lecture is mandatory! Safety issues will be discussed in the pre-lab lecture. You cannot participate in the lab if you do not attend the pre-lab. If you know you will miss a lab, inform your instructor and your teaching assistant. You will not be allowed to make up any experiments. For excused
absences from lab, your lab grade will be based on fewer points. You will still be responsible for the material you missed on lab quizzes.

Laboratory Notebooks:
- Each student is required to have a laboratory notebook with duplicate pages. The duplicate pages of the notebook should be torn from the notebook and given to the TA once a write-up for an experiment is completely finished. See the chart under Lab Reports for due dates. You may use a notebook from another lab provided it includes:
  - Name, Class, Teaching Assistant, Instructor (inside front cover)
  - Table of Contents: Leave two blank pages at the front of the book for a TOC if one is not included by the notebook publisher. Keep a running (and up-to-date) TOC that includes the experiment title and notebook page number. Your teaching assistant will occasionally check TOC entries.
- Notebook entries must be neat, organized, clearly written in **ink**. Unintelligible scrawl will not be graded.

For each experiment include:

Pre-Lab
1. Date Experiment Is Performed
2. Experiment Title
3. Purpose or Objective (one or two sentences should suffice)
(*Include steps 4-6 for experiments in which chemical reactions are carried out.*)
4. Balanced Equations for Reactions Performed (Including Structures), if applicable
5. Amounts of All Reagents used including amount in grams or mLs, molar mass, and number of moles. Use a table format.
6. Calculation of Theoretical Yield
7. Experimental Procedure: Read laboratory procedure before lab and prepare an abbreviated procedure (*see textbook page 24*). Avoid the use of the first person. Leave room in your notebook to record actual experimental observations or changes in planned procedure. **You should be able to do the experiment from your notebook and without the lab text. If you do not prepare for lab, you will experience more difficulties. You are still required to exit the lab at the end of your 4 hour period.** For any Spartan computer labs, you should refer to the handouts rather than rewriting the entire procedure in your notebook. You may bring printouts from web material on Basic Lab Skills and Special Equipment information which can be found on the course website.
8. Describe any particular safety hazards and the planned disposal of chemical wastes.

NOTE: If your notebook isn’t accurately prepared you will not be allowed to conduct the experiment and will receive a grade of zero.

During Lab
Record all procedures and observations in **ink** in your notebook. It is impossible to write this section before the lab and difficult to completely write it afterwards. Indicate any experimental observations in this section (color change, gas evolution, heat produced, increase or decrease in reagents, etc.)

After Lab (sometimes completed in lab the next week)
1. Calculate Percent Yield of the desired product, if applicable
2. Organize Physical Data for desired product (mp, bp, TLC, GC retention time, …)
3. Discussion/Conclusions: Comment briefly on experiment. Were the objectives of the experiment met? Comments should be made on errors and/or suggested improvements.
4. Answer any assigned post-lab questions. (typed & submitted separately)
The teaching assistant will use 10 pts from each report grade to distinguish the most prepared, safety conscious students from those who are careless or less prepared lab. To earn high performance points, you should read the experiment before lab, complete the pre-lab notebook entries prior to lab, wear appropriate lab attire (including safety glasses) at all times, and keep the lab clean. You should work efficiently in lab and ask intelligent questions of your TA when necessary. You will automatically receive deductions for safety violations and bad lab techniques, such as leaving caps off bottles, writing on scrap paper, possibly contaminating reagent bottles, or improper waste disposal. There may also be penalties applied to all students in a lab if the room is messy at the end.