CHEMISTRY 333: ORGANIC CHEMISTRY LAB II
Spring 2015

COURSE INFORMATION
Instructor Dr. Marc J. Adler (mjadler@niu.edu)
Teaching Assistant Brian Muller
Lab Time W 2:00pm-4:50pm (Faraday 307)
TA Office Hours M 9:30am-10:30am, W 9:30am-10:30am (Faraday 337)
Required Text Gilbert, J.C. and Martin, S.F. Experimental Organic Chemistry, A Miniscale and Microscale

SAFETY
Safety is the number one priority in the organic laboratory, since all chemicals are toxic to varying degrees.
ALL STUDENTS MUST WEAR EYE PROTECTION AND CLOSED-TOE SHOES AT ALL TIMES
during the class. Leg coverings are also required. Goggles are available free of charge at the chemistry
stockroom, and they must be the type approved by the Chemistry Department. No food or drinks are
permitted in the laboratory. Waste chemicals must be properly disposed. Notify TA of any glassware
breakage, chemical spills, or emergencies immediately. Your lab area, lab equipment, etc. must be cleaned
prior to leaving the lab. Refer to the textbook for a more comprehensive discussion of safety. The
Department of Chemistry has a zero tolerance policy for safety violations, and points will be deducted for
violating the safety rules (see the section on grading). Pregnant students should consult with their doctors
regarding the risks of being enrolled in this and other laboratory-based classes.

CLASS ATTENDANCE AND GENERAL ADVICE
Regular attendance is essential for a successful and pleasant experience in organic chemistry laboratory. Lab
starts promptly at the appointed: do not be late. You must attend every lab session unless you have a
university-sanctioned excuse, of which you have to inform your TA in advance. If for some unforeseen
reason you will not be able to attend lab, please alert your TA and Dr. Adler as soon as possible. There will
be no make-up labs, and unexcused absence during a lab will result in a zero for that experiment. Note that
some labs may require multiple periods; you must attend all sessions to receive credit for the experiment.
The use of technology of any kind (e.g. phone, computer, tablet) in lab is prohibited unless previously
approved by the TA and Dr. Adler.

PRE-LAB PREPARATION
Read all the material in the textbook pertaining to the lab before showing up to class. Note for that for
several early experiments you are also required to read the corresponding technique section in Part VI of
the book (see schedule of experiments). There are no formal pre-lab questions to do for the laboratories, but
there are post-lab questions, which you are supposed to answer after you have completed the experiment.

LABORATORY AND REPORTS
During the laboratory, your data should be recorded into a laboratory notebook (in ink), and the data pages
must be signed by the TA prior to your departure from lab. Laboratory notebooks must be kept neat and
must have duplicate, numbered pages. Regular paper notebook pages or composition notebooks are not
acceptable. Lab reports should be in your own writing, and copied lab reports will receive a grade of zero.
Even though you may conduct your experiments in pairs, the lab reports, including all calculations and
answers to questions, should be prepared individually. The reports should be written neatly and legibly in
black or blue ink. Pencils, white out, or colored pens (other than black or blue) are not permitted or
acceptable for your notebooks. Lab reports are due at the beginning of the following lab period after an
experiment is completed (multiple-period labs will be due the next lab period after completion) as indicated in the schedule of experiments. The following information should be included:

To be prepared before lab
1) Name, Date, and Experiment Title (e.g. “Recrystallization of Sulfanilamide”).
2) Purpose. A brief summary of what you are trying to accomplish and/or learn from this experiment, (not just a restatement of the title). List methods, etc.
3) Data. Include all information pertinent to the experiment, including any and all safety hazards; MSDS sheets can be found at http://www.hazard.com/msds/index.php. For example, if you are recrystallizing sulfanilamide, you would want to draw the chemical structure, list important physical properties (such as melting point), and note any safety hazards associated with the compound. The mechanisms of any reactions must be shown. Include equations and quantities of materials needed.

To be recorded in lab
4) Procedure. The procedure performed during the lab on that day and observations, such as color changes, formation or disappearance of a precipitate, evolution of heat or gas, etc.
5) Results. Weights of the products, melting point ranges, etc. Theoretical and percent yields should be calculated if it pertains to the experiment. Obtain TA’s signature at this point.

To be written after lab
6) Conclusions. A brief, but informative conclusion to the lab stating the results obtained and discussing the possible reasons for those results. Mention possible errors, and how they could be avoided in the future. This may improve your techniques for later experiments.
7) Answers to post-lab questions. See schedule of experiments for the list of questions.

QUIZZES AND EXAMS
There will be five pre-lab quizzes (see the schedule of experiments), each mainly about the experiments performed since the previous quiz. Tardiness to a quiz will result in a zero for that quiz. There will be no make-up quizzes. Your lowest grade on a quiz will not factor into your final grade. During the last class period, there will be a written final exam consisting of multiple choice and short answer questions.

GRADING
Your grade in organic laboratory is largely based on the work done performing the assigned experiments and understanding the techniques/procedures. The lab reports will be graded based on the quality of your data, your presentation of the results, and your answers to post-lab questions. You must prepare your report individually, and violation of this rule will result in zero points for both laboratory partners. A penalty of up to 10 points/day will be deducted from late lab reports.

Following safety rules is an important part of any lab work, thus points may be deducted for violations:
- Goggles/shoes not being worn (at all times except pre-lab discussion) (20 points)
- Chemical spill not cleaned (near balance, at your work area, in fume hoods) (10 points)
- Food/drink in lab (5 points)
- Improper waste/glass disposal (10 points)

Points Calculation

<table>
<thead>
<tr>
<th>Points Calculation</th>
<th>Approximate Course Grading Scale</th>
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<tbody>
<tr>
<td>Lab Reports (10x80) = 800</td>
<td>A</td>
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<tr>
<td>Quizzes (4x25) = 100 points</td>
<td>900 – 1000 points</td>
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<td>Final Exam = 100 points</td>
<td>B</td>
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<td>Total Points = 1000</td>
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<td>800 – 899 points</td>
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<td>600 – 699 points</td>
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### SCHEDULE OF EXPERIMENTS

<table>
<thead>
<tr>
<th>Lab Date</th>
<th>Quiz</th>
<th>Experiment Number and Title</th>
<th>Post-Lab Questions</th>
<th>Due Date</th>
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<tbody>
<tr>
<td>W 01.14</td>
<td>Check In</td>
<td></td>
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<tr>
<td>W 01.21</td>
<td>No Class (Martin Luther King Jr. Day)</td>
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<tr>
<td>W 01.28</td>
<td>Experiment 15.5 Relative Rates of Aromatic Substitution</td>
<td>11, 12, 13</td>
<td>W 02.04</td>
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<tr>
<td>W 02.04</td>
<td>Experiment 16.2 Oxidation of Cyclododecanol to Cyclododecanone</td>
<td>2, 5, 7</td>
<td>W 02.11</td>
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<tr>
<td>W 02.11</td>
<td>#1 Experiment 17.4 Reduction of 9-Fluorenone</td>
<td>1, 2, 5</td>
<td>W 02.18</td>
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<tr>
<td>W 02.18</td>
<td>Experiment 18.2 The Wittig Reaction</td>
<td>1, 3, 4</td>
<td>W 02.25</td>
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<td>W 02.25</td>
<td>#2 Experiment 19.4 Reaction of Grignard Reagents</td>
<td>1, 5, 6</td>
<td>W 03.04</td>
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<tr>
<td>W 03.04</td>
<td>Synthesis of Aspirin*</td>
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<td>W 03.18</td>
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<tr>
<td>W 03.11</td>
<td>No Class (Spring Break)</td>
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<td>W 03.18</td>
<td>#3 Preparation of Isopentyl Acetate (Banana Oil)*</td>
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<td>W 03.25</td>
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<tr>
<td>W 03.25</td>
<td>Preparation of 3-Nitrobenzaldehyde (Aldol Condensation)*</td>
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<td>W 04.01</td>
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<td>W 04.01</td>
<td>#4 Preparation of Nylon (Polyamide)*</td>
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<td>W 04.08</td>
<td>Synthesis of Luminol*</td>
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<td>W 04.15</td>
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<td>W 04.15</td>
<td>#5 Check Out/Review</td>
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<td>W 04.22</td>
<td>FINAL EXAM</td>
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*These labs are not in your textbook and will be distributed as handouts and on Blackboard.