COURSE INTRODUCTION, GROUND RULES, AND GENERAL INFORMATION

YOU ARE RESPONSIBLE FOR READING AND UNDERSTANDING THE MATERIAL IN THIS HANDBOOK

***This syllabus is for the classroom part of the course. There is a separate syllabus for the laboratory.***

**Instructors and Teaching Assistants**

**Instructors:**
- Professor Marc Loudon
  - Room 112C RPH
  - (Through double doors at southeast corner of 1st floor)
  - Phone (49)4-1462  
  - Email: loudonm@purdue.edu

- Professor David Colby
  - Room 412 RPH  
  - Email: dcolby@purdue.edu

**Teaching Assistants:**
- All of the following TAs are to be consulted for classwork only (not laboratory). Office hours for all TAs will be announced.
  - Graduate TA: Christina Marian, cmarian@purdue.edu, Office Phone 4-0038
  - Graduate TA: Mark Rioski, mrrioski@purdue.edu, Office Phone 4-1666.

**Course Objectives**

In MOMP 204 you will learn the fundamentals of organic chemistry with an emphasis on principles that will help you to understand the reactions of the pharmaceutically important classes of compounds. Although learning the subject matter is an important objective in this course, it is not the only objective. Because this course is the first of a series of very intense, time-consuming science courses in the pharmacy curriculum, and because it is important for you to have a reasonable extracurricular campus life, you will be under significant time pressure. For that reason, we want you to learn how to deal with a large body of material efficiently. Toward that goal, we will try to help you learn certain study skills and learning approaches that should serve you well in both this course and future courses. There is a great temptation to memorize in a course like this, and many of you are probably pretty good memorizers. We want you to learn instead how to approach the subject by applying principles and solving problems. Finally, because the pharmacist of the future will work in teams, we'll require you to work in teams in this course. To summarize, then, the course objectives are for you—

1. to learn the basic principles of organic chemistry;
2. to develop study techniques that will help you learn maximally and work efficiently;
3. to learn problem-solving skills and to rely less on memorization;
4. to learn to work in teams.

**About the Instructors**

This course is staffed by a number of experienced instructors and teaching assistants.

*Professor Marc Loudon* is in charge of the classroom part of the course. He is the author of your text, which is used nationally at more than 50 institutions. He has 40 years’ experience teaching organic chemistry (33 years at Purdue). Dr. Loudon received his undergraduate B.S. in Chemistry from LSU, and his Ph. D. from the University of California, Berkeley. After postdoctoral study in biochemistry, also at Berkeley, Dr. Loudon taught for 7 years at Cornell University. Dr. Loudon served as Associate Dean of the School of Pharmacy from 1988–2006. Dr. Loudon is interested in organic chemistry at the biology interface, and carries out research in cooperative learning methods.

*Professor David Colby* is the assisting instructor. Dr. Colby is a Pharm.D. (Iowa, 2001). He completed a Ph. D. at the University of California Irvine (2006) and postdoctoral training (2008) at the Scripps Research Institute in La Jolla,
PLEASE NOTE CAREFULLY. Under Laboratory you will find the week’s experiment. This will be done on whatever day you have laboratory scheduled. Please see the laboratory syllabus for more detailed information about the laboratory.

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<tr>
<th>Period # / Date</th>
<th>Topic(s) Covered (Q = short quiz)</th>
<th>Laboratory</th>
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<tbody>
<tr>
<td>1 Aug 23</td>
<td>Course Introduction Structure and Bonding; Alkanes; Acids and Bases (Chapters 1–3)</td>
<td>CHECK IN Begin Molecular Models 1</td>
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<td>2 Aug 25</td>
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<td>3 Aug 27</td>
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<td>4 Aug 30</td>
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<td>Molecular Modeling 1</td>
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<td>5 Sept 1</td>
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<td>6 Sept 3</td>
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<td>Q1</td>
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<td>7 Sept 6</td>
<td>NO CLASS: LABOR DAY HOLIDAY</td>
<td>NO LABORATORY (Exam 1 makeup)</td>
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<td>8 Sept 10</td>
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<td>9 Sept 13</td>
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<td>Melting Points</td>
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<tr>
<td>10 Sept 15</td>
<td>Alkenes and Additions (Chapters 4–5)</td>
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<td>11 Sept 17</td>
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<td>Q2</td>
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<td>12 Sept 20</td>
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<td>Ex Sept 21</td>
<td>EXAMINATION 1 8:00–10:00 PM, Tuesday, Sept. 21 PHYS 112, MTHW 210 (Room assignments to be announced)</td>
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<td>14 Sept 24</td>
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<td>15</td>
<td>Sept 27</td>
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| 16 | Sept 29 | **Stereochemistry and Cyclic Compounds**  
(Chapters 6–7) | Molecular Models 2: Chirality |
| 17 | Oct 1 | | $Q_3$ |
| 18 | Oct 4 | | |
| 19 | Oct 6 | | |
| 20 | Oct 8 | | $Q_4$ |
| | Oct 11 | **NO CLASS – OCTOBERBREAK** | **NO LABORATORY**  
(Fall Break) |
| 21 | Oct 13 | | |
| 22 | Oct 15 | **Nomenclature and Properties of Alkyl Halides, Alcohols, and Ethers**  
(Chapter 8) | |
| | Oct 18 | **NO CLASS – EXAM 2 MAKEUP** | Separation and Analysis of Drug Components |
| Ex | | **EXAMINATION 2**  
8:00–10:00 PM, Wednesday, Oct. 20  
WTHR 200, SC 108 | |
| 23 | Oct 20 | | |
| 24 | Oct 22 | | |
| 25 | Oct 25 | **IR and NMR Spectroscopy**  
(Chapters 12–13)  
(Use “IR Tutor” in Instructional Computing Labs on your own) | (Complete Separation and Analysis of Drug Components) |
| 26 | Oct 27 | | $Q_5$ |
| 27 | Oct 29 | | |

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<td>29 Nov 3</td>
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<tr>
<td>30 Nov 5</td>
<td>Chemistry of Alkyl Halides, Alcohols, and Ethers (Chapters 9–11)</td>
<td>Stereochemistry of Halogen Addition to Carbon–Carbon Double Bonds</td>
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<td>31 Nov 8</td>
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<td>Interpretation of Infrared Spectra</td>
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<td>32 Nov 10</td>
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<td>33 Nov 12</td>
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<td>Q7</td>
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<td>34 Nov 15</td>
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<td>Structure Elucidation by NMR Spectroscopy</td>
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<td>35 Nov 17</td>
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<td>36 Nov 19</td>
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<td>Nov 24</td>
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<td>Nov 26</td>
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<td>38 Nov 29</td>
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<td>Dec 1</td>
<td>NO CLASS – Exam 3 Makeup</td>
<td>Dehydration of Alcohols to Generate Alkenes</td>
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<td>Wednesday, Dec. 1, 8:00–10:00 PM</td>
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<td>PHYS 112, PHYS 114</td>
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<td>39 Dec 3</td>
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<td>40 Dec 6</td>
<td>Alkynes and Dienes; Conjugate Addition (Chapter 14 and part of Chapter 15)</td>
<td>Silver Nitrate Test — Understanding Nucleophilic Substitution</td>
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<td>41 Dec 8</td>
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<td>CHECK OUT</td>
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**FINAL EXAMINATION (Week of Dec. 13)**

*(To Be Announced)*
California. Dr. Colby’s research blends the science of medicinal chemistry and synthetic organic chemistry through the use of natural-product synthesis, the design of structurally related analogues for structure—activity investigations, and the development of new synthetic methodologies.

The following Graduate TAs will be assisting with the course. They will attend class, run evening help sessions, and will be available for individual assistance. Please consult them for help with the classroom part of the course only.

Christina Marian is a fourth-year graduate student in the MCMP Department. She came to Purdue from Malone College in Canton, Ohio, where she was a biology major. She is working with Prof. Rick Borch on cancer prodrugs—molecules that have groups attached that allow them to enter cells and, following cellular entry, are unmasked by cellular enzymes to give active drugs. Christina was a TA for MCMP 204 in Fall 2009.

Mark Riofski is a third-year graduate student in the MCMP Department working with Prof. David Colby on unique methodology to be used in the chemical synthesis of biologically active compounds. Mark received his B. S. in Chemistry with honors from the University of Iowa. Mark has two years’ experience as a lab TA in MCMP 204 and was the TA last Spring for MCMAP 205 lecture.

You will have an opportunity to evaluate the course and its staff at the end of the semester.

Study Groups

Your section of MCMP 204 will be taught in a format that is likely to be quite different from that of your previous university courses. In this class there will be much less formal lecturing. You will be expected to read the assignments in advance and come to class prepared to discuss them. “Discuss” can mean that you might ask a question about something you don’t understand, or it can mean that you might be asked to work a problem in a group and then show what your group came up with. It might mean that you will be asked to summarize your understanding of a particular topic. Because of the problem-solving format, we will typically cover in class only a small portion of the day’s assignment. The rest will be your responsibility. You may find yourself initially uncomfortable with this format, because it is not the format usually used in university classes. Your discomfort should disappear quickly if you participate and do your best.

You will be organized into study groups of five students each (a few may have three or four students). You are expected to work with your assigned group. You may not change groups or sections without my permission.

A seating and group organization chart will be posted on the course web site in the “Resources” section before Monday of the second week. This chart specifies where you are to sit; you will be assigned seats with your study group. Please make a note of your seat number and study-group number, as you will need to know them.

What happens in a study group? Here are the ways that study groups should function.

1. **In class.** On the seating assignments we will additionally designate members of your group as R, S, or Meso. A typical group of five will have two Rs, two Ss, and one Meso. In class we will use a technique called “Think, Pair, Share” to work problems. If you are an R, identify the nearest S and pair with him or her. If you are a Meso, join the nearest R, S pair. If an R or S is missing, the Meso assumes the role of the missing member for the day. When we give an in-class problem, we will designate a “Pair Leader” and a “Pair Guide.” For example, if R serves as the leader, he or she will solve an in-class problem and explain to his or her partners what he or she is doing. But the S (and Meso) will serve as guides to ask leading questions, make corrections, and help guide R to the right answer. In a subsequent problem, the roles will be changed. We will call on leaders for answers. The leader will give either the answer or will ask a question about where he or she had trouble. The pair leader gets points for in-class participation.

2. **Outside of class.** You are expected to read the assignments and attempt to work most of the in-text problems—the problems that occur within the reading assignments—individually. Your study group should meet regularly and work mostly on the end-of-chapter problem assignments. Ideally, you should meet two times per week, but you should not meet less than once per week. What should you do in these sessions? Ultimately, that is up to you, but I suggest the following:

   a. First, discuss aspects of the assignment that any member of the group finds confusing. If you need help, the benefits are obvious. You should expect other group members to help you provided that you have done your part by reading the assignment and trying to work the problems. But what if you
find that you are explaining things most of the time? In this case, you should realize that teaching is one of the best ways to learn. You should expect to help your fellow group members provided that they have made the effort to complete the assignment they are asking you to explain.

b. Next, conduct a quick reaction or fact drill. Keep a set of flash cards in which each contains a single reaction with the reactants on the front, the products on the back, and the reagents and conditions on both sides. (See pp. 70–74 in the Study Guide–Solutions Manual.) The “drill sergeant” should show one side and group members should complete the other. Work on about three assignments’ worth of reactions at a time; it won’t take very long. Then have a longer drill before the hour exam. You can also drill on important definitions and terms. Take turns being the “drill sergeant.” You can also use a similar method to be sure you understand key terms. A list of terms for each chapter is given on the first page of the corresponding chapter in the Study Guide.

c. Spend most of your time working on the problems. In this edition of the text, answers are provided for about two-thirds of the problems (the ones with numbers or parts designated with bold-face blue type). A really good use of study group time is to work the problems that are not answered in the Solutions Manual. Discuss and work the problems in the Sapling online homework assignments (see below).

d. Three times during the semester, you will be asked to turn in, as a group, your solutions to Study Group Exercises, which are additional problems that I will give out. The entire group will hand in one paper, and each member of the group is expected to work on every problem in the assignment. These are for extra credit. (For a summary of extra-credit opportunities, see the last page of this handout.)

e. Work old examinations. Set up a situation in your group much like the situation you’ll face on an actual exam (see Item 3 that follows); plot your strategy in the group for thirty minutes and then work the exam on your own. Then consult the answers.

3. On examinations. Examinations will consist of an individual part and a study-group part. At the beginning of the examination period, each study group will be given a copy of study-group part of the exam—typically the more difficult questions—and the group will be allowed to discuss this part of the examination openly for about thirty minutes. This is not enough time to work this part of the examination fully. One strategy is to outline a general mode of attack on the more challenging problems. After thirty minutes, all written work will be collected, and then each of you will work the entire examination individually. It follows that the study groups that function effectively before the examinations will function most effectively during the examinations. Examination periods of two hours, from 8:00–10:00 PM, have been reserved to accommodate the study-group examination format. Only the hour examinations will follow the group format. Daily quizzes and the final examination will not involve a discussion period. Consequently, you should make sure you use the study-group process to learn as much as possible so that you are as well prepared as possible for the final. (As discussed under “Grading,” the final examination grade can replace any or all of your other grades.)

Although study groups are used in the course, your examination and quiz grades will be determined by your individual performance. This grade will not be based on a “curve,” but rather on an absolute scale provided elsewhere (p. 13) in this document. You are competing against no one but yourself. But your group can earn extra points over and above the points you earn yourself.

You might initially be uncomfortable to be in a group with people whom you do not know. This attitude is understandable, but you must work through it. You must realize that you don’t have to be friends with the members of your group; you don’t have to socialize with them outside of class-related activities; you don’t even have to like them. What you must do is try for a good working relationship. Courtesy, consideration, and full participation in group activities to the best of your ability are qualities that will lead to a good working relationship. At the end of the class, I will ask you to assess your group performance; this will include an assessment of the relative contributions of both yourself and other group members. (A copy of this assessment is on the web in the “Resources” section of the web site; have a look at it early on so you can see the standard to which you will be held.) If there are problems within your group that you cannot solve, contact me as soon as possible.
Why the study-group format? In the real world, people work together. Science, contrary to much popular opinion, is a
group effort. Business is a group effort. The professions of medicine and pharmacy as they will be practiced in the
future will require increasing cooperation within and among teams of professionals. When a group operates effectively,
individuals can develop strengths that they otherwise might not obtain as individuals. However, this can only happen if
each member of the group participates to the best of his or her ability.

I have found in my research on cooperative learning that group members who report that their group functioned well
enjoyed an advantage in their final grade that equaled on the average about 0.4 letter grade; furthermore, this advantage
was independent of their grades in general chemistry.

This class is organized to empower you to the greatest extent possible to learn how to learn. It is this quality—the
ability to take responsibility for one’s own learning—that differentiates a true professional from others.

If you have questions about the way the course will be conducted, please do not hesitate to contact me.

**Course Materials on the Internet ("World Wide Web")**

It is assumed that you know how to navigate the world-wide web (WWW). In addition to e-mail, we will use one
method of communication with you on the internet: the Course Home Page. (Note that we do NOT use Blackboard!) An
electronic homework resource will also be used. These two resources are now described.

**The Course Home Page**

The course home page is located at `https://courses.pnhs.purdue.edu/mcmp204/` (Note that this is a secure web site.) If
you forget this link, start at the Pharmacy web site (`http://www.pharmacy.purdue.edu`) and navigate the path
Departments and Staff ➔ Dept. of Medicinal Chemistry and Molecular Pharmacology ➔ Courses ➔ MCM204.

You will need a login id and password to gain access to the course home page. If you are registered in the course you
should use your career account. The login page gives you three choices for password. Be sure to select the “Career
Account” button before logging in. If you have trouble, please let me know.

**NOTE CAREFULLY ABOUT E-MAIL:** After a successful login, you will be prompted for an e-mail address. In many
cases, your e-mail address will be filled in already (from Purdue records). Check to be sure this is the address at which
you would prefer to receive mail. If it is not, provide another. You should enter the site and set up your e-mail address
within 24 hours. If the address you enter is not valid, you will not be able to receive e-mails from me or the TAs about
important course-related matters such as assignments, last-minute notices about exams, corrections, etc. You may
change your address at any time. It is YOUR responsibility to provide us with an accurate e-mail address and to read the
e-mails we send you. We don’t “SPAM”—we will not bother you with e-mails unless we need to convey essential course
information.

The course home page contains the following information:

1. **Course Announcements.** Please check these regularly. Urgent announcements will have red headers.
2. **Course Instructors.** This will lead you to pictures of the course staff and to their e-mail addresses.
3. **Course Resources.** Besides course announcements, this is the most important part of the site. This is
   organized with important links first, then documents.

**Links**

a. **Recorded Lectures.** This is a link to audio/video recordings of the classes, which you can retrieve
   from BoilerCast.

b. **Text and Study-Guide Errors.** Please mark these in your text and study guide/solutions manual to
   avoid confusion. If you think you have found a new error, please let me know. A new error reported to
   me (other than trivial spelling errors, grammar errors, etc.) earns you 5 points of extra credit to a
   maximum of 15 points. (This counts toward your maximum extra-credit allotment.)

c. **Animations.** The animations link on the course site provides access to some animations in a format
   that can be played directly over the web. These animations provide convenient video lessons on many

*Course Introduction, Page 4*
of the course topics. To view these you will need a “Shockwave” plug-in for your browser. Instructions for obtaining this (for free) are included in the link.

c. **Periodic Table.** This is a link to the famous Tom Lehrer song, just for fun…A real periodic table is on the inside back cover of your text.

d. **Interviewing Skills Presentation.** Many of you will be interviewing for Pharmacy School or for jobs. This presentation, by one of our outstanding Pharm.D.s, Marintha Meckley, provides some helpful guidance about interviewing skills. This link is a RealPlayer streaming audio version of Marintha’s actual presentation. Her PowerPoint slides are provided as a separate document below.

**Documents:** All course documents are in PDF (Portable Document Format). To read them, you need a free utility, Adobe Reader. You can download this utility from

http://www.adobe.com/products/reader/

The PDF format allows you to view and print documents exactly as I created them, even though the fonts and images used might not be resident on your computer.

All handouts will be e-mailed to you and/or downloaded from the web site. It is your responsibility to have available, to understand, and to utilize the appropriate technology and to READ AND UNDERSTAND ALL HANDOUTS.

a. **Course Administration.** This area contains PDF images of the syllabus (this document) and the course schedule, as well as laboratory attire requirements.

b. **TA Office Hours.** These will be announced as they become available. These are hours for the class (not lab) TAs only. See the laboratory (204L) website for information about lab TAs.

c. **Seat and Study Group Assignments.** Your assignment to seats and study groups was discussed earlier on this document. These assignments will be posted between the first and second classes.

d. **Examinations from the Previous Year.** These are provided as examination study aids. At first they are posted without answers. A few days before each examination, they will be re-posted with answers. These will not substitute for working problems in the text, but they will give you a good idea of examination style. It is suggested that you work these with your group using the time limitations discussed in the earlier “Study Group” section of this syllabus. Note that we do not repeat examinations in this course. Note also that coverage on the exams may differ from previous years!

f. **Reading and Problem Assignments.** These are the day-by-day schedules of assigned readings and problems plus end-of-chapter problems.

g. **This Semester’s Examinations.** Complete, worked-out answers to the hour examinations and final examination are posted as soon as possible after the exam period is over.

h. **Quizzes (Past and Present).** This category starts with all of last year’s quizzes, with answers. Each quiz is subsequently replaced by this year’s version, with answers, after it is given.

i. **Study-Group Exercises.** These are the exercises to be worked by your group. Answers to each exercise will be posted after it is turned in.

j. **Interesting Molecules.** These are vignettes about organic compounds with interesting backgrounds and histories.

k. **Assessment Forms.** These are the group- and self-assessment forms that will be used to determine group extra-credit.

l. **Interviewing Skills.** This is the collection of PowerPoint slides used by Marintha Meckley. For her full presentation, see “Links” above.

4. **Gradebook.** The “Gradebook” feature of the site is NOT used because our grading algorithm has not been implemented.
The laboratory portion of this course has a separate home page: https://courses.pnhs.purdue.edu/mcmp204L/
Please visit the laboratory website for lab-related information—handouts, grades, etc.

Electronic Homework Resource from Sapling Learning

You will be invited to create an account at http://saplinglearning.com/. Access costs $24.99 per year, and you only need to create an account to use this resource.

You can earn up to 50 extra-credit points from the Sapling homework. The total credit you earn will scale with the amount of the material you complete and the overall grade you get on the material. (For example, if you complete half of the exercises with a grade of 75%, you get (50)(0.50)(0.75) = 19 extra points.) If you complete all of the material and obtain high scores, you can achieve an increase in grade points that can push you past the borderline level into solid A/B territory (and that’s not even considering what the extra practice and motivation to keep up with your reading and chapters will do for your base grade!)

In Fall 2009, we studied the effect of Sapling homework on students’ course grades. Students who completed more than 80% of the Sapling homework had a better course grade by an average of 1.3 LETTER GRADE! The homework itself contributed 0.3 letter-grade maximum. Therefore, Sapling appears to have elevated performance on exams and quizzes by 1.0 LETTER GRADE!

The Sapling system provides problems that you will have to work by a certain deadline, and on-line tutorial assistance is available if you need help.

Here are the instructions for signing up:

1. Go to http://saplinglearning.com
2. In the "Login" box there is a link, "Forgot your password?" Click on it.
3. Enter your university email address in the "Email address" box, and click OK.
4. You will receive an email from "Sapling Learning <support@saplinglearning.com>". Make sure your spam filter is set to let this through! Click the link in the email to confirm that you want to request a password. Check your spam filter if this e-mail doesn’t show up. (Email support@saplinglearning.com from your university email address if you do not receive it.) Be sure the e-mail you provide is the same as the one in the University records.
5. Check your email again for another email from "Sapling Learning <support@saplinglearning.com>". This email will contain your login information. Note your username and password, and click the link in the email.
6. After you log in, visit http://www.saplinglearning.com/ibiscms/login/change_password.php if you would like to change your password to something easier to remember.
7. Find your course in the list (listed by school and instructor) and click the link. (Note: Other Purdue courses may be using this system. Be sure you choose the link to your course with the proper instructors!)
8. Click the button that says "Send payment via PayPal or Credit Card" and follow the remaining instructions.
9. Once you have registered and enrolled, you can log in at any time to complete or review your homework assignments.
10. If you have any problems, send an email to support@saplinglearning.com.

Ground Rules:

You can discuss these problems in your Study Group. You will have a limited number of tries on each problem, so be sure you reach consensus on the answer before submitting it.

Even if you do not subscribe, you can certainly discuss the problems in your group if someone else in your group is logged on.

We hope it is obvious that you may not log on for someone else. You also may not copy someone else’s answers directly.

A Final Note:

Professors Loudon and Colby have no financial interest in Sapling Systems whatsoever. We use this solely because we think it is an excellent learning tool.
**Textbook and Course Materials**

You will need the following materials for the course. All items will be used both semesters.

1. You should purchase a textbook as well as a Study Guide and Solutions Manual for the course. The text for the course is “Organic Chemistry”, 5th Edition, by Marc Loudon, published by Roberts and Company. The Study Guide and Solutions Manual is “Study Guide & Solutions Manual for Organic Chemistry”, 5th Edition, by Marc Loudon and Joseph G. Stowell, also published by Roberts and Company. (The 4th Edition is not used.) Lists of errors in both text and study guide (“Errata”) are available at the course web site. *Make a note of these errors before you read each chapter.* As other errors are detected, these Errata will be updated. If you find an error that has not been listed, by all means let me know. A new error reported to me (other than trivial spelling errors, grammar errors, etc.) earns you 5 points of extra credit to a maximum of 15 points. (This counts toward your 50-point maximum extra-credit allotment.)

2. The laboratory exercises should be purchased from the Boiler CopyMaker in the Union. Ask for the MCMP 204 lab packet. The laboratory syllabus will be handed out in lecture on the first day of class. It will also be posted on the laboratory course website (https://courses.phhs.purdue.edu/mcmp204L/). (Login is required).

3. You should purchase a set of HGS molecular models. (You can use any set, but only the HGS set is supported in the lab manual.) The Pharmacy Student Council will be selling these models after the first and second classes in the hallway outside of CL 50. This set is less expensive than the sets you will find in the bookstore, and the profits go towards financing student activities. Try to purchase these before your first lab section.

4. “IR Tutor” is a computer-assisted tutorial, developed at Columbia University, which will help you to learn the theory and practice of infrared spectroscopy. This is available in the Instructional Computing Laboratories in RHPH and JNSN (Windows), and LAEB (Macintosh and Windows). Note that this can be used on either a Macintosh or a PC platform. To gain access to “IR Tutor” on a Windows instructional laboratory machine, starting on your desktop, take the following path through hierarchical menus: Start ➔ All Programs ➔ Course Software ➔ Pharmacy & Pharmacal Sciences ➔ phrm ➔ IR Tutor 1.1.

5. Animations are available in the “Resources” section of the course web site. All animations have been converted into web versions, so you can access them from any computer.

You will receive no more hard copies of handouts! A copy of the course schedule as well as the first reading and problem assignment is attached to this syllabus. ALL future assignments should be viewed at the course website on the web. We will tell you in class and by a class e-mail notice when each assignment is available. I will attach each assignment to your e-mail. You can, of course, download and print them from the web site as well.

**Seating**

Your section will be organized into study groups of five students (a few may have three or four students) and into R,S pairs and one Meso (See p. 2.) The seating chart will be posted on the web under “Resources” and outside CL50 224 prior to the second week, and it will specify where you are to sit; you will be assigned seats with your study group. Please make a note of your seat number AND STUDY GROUP NUMBER, because you will need to know them. You are expected to sit in your assigned seat. Note that assignments and examinations will be returned according to the class seating plan.

**Recording of Classes**

All of the audio as well as everything written on the overhead will be recorded and posted on the BoilerCast web site after the class is over. (Posting generally takes about two hours.) Any computer images used in class, including animations, are also captured.

To view the course recordings, you must have I-Tunes installed on your computer. I-Tunes software is typically used for downloading MP3 or MP4 files to your computer and then (if you wish) to a video I-Pod. To access the course recording files, go to http://www.itap.purdue.edu/ltl/BoilerCast. (A direct link to this site will be found on the course
web site under “Course Recordings.”) Select the menu item “BoilerCast file access.” After you log in, I-Tunes will open, and you will be directed to the “I-Tunes Store.” (All recordings are free.) Then select “Pharmacy and Pharmaceutical Sciences” → “Medicinal Chemistry and Molecular Pharmacology” → “MCMP204” for this semester. A list of available recordings will come up, most recent first. Scroll to the far right of the listing for the recording you want and select the button “Get” This will download the recording into your I-Tunes Library. You can use I-Tunes Preferences (Advanced) to select a particular storage location on your computer. Note that if you click on “Get Tracks” at the top of the screen, all recordings will be downloaded.

The course recordings allow you to replay any class, or part of a class, at any time. Please be aware that equipment failures occasionally occur and, for this reason, this service cannot be guaranteed.

Read This Only if You Want to Do Well in This Course

You will receive daily reading and problem assignments. The first set of these is included with this packet. You are expected to complete the reading and in-text problems before the class period for which they are assigned. If you have not completed the day's assignment, you are behind! Your study group should be no more than one week in arrears on the end-of-chapter problems. Some students make the mistake of ignoring the end-of-chapter problems. Note that many of the examination questions are like the end-of-chapter problems.

Expect to review older material, including material from General Chemistry. It is normal to forget newly learned material. The human mind learns from continued reinforcement. Many students suffer from adherence to the “Immunization Theory of Learning,” which says, “If I’ve seen it once, I should never have to see it again.” (This is also sometimes called the “hurdle mentality.”) Don’t fall into this trap. Review older material repeatedly as needed. Organic chemistry relies on relatively few fundamental ideas. If you review these until they are solid, a strange thing happens: you begin to need less and less review, and you learn new material much more quickly! Just as an athlete or musician who is solid on the fundamentals learns new skills more quickly, a student who is solid on fundamentals learns new material more easily.

You are expected unconditionally to keep up with your assignments. This means that you must keep up even if you have an examination in this course, in Physics, in Anatomy & Physiology, or in any other course. Similarly, you should keep up with those courses regardless of what is going on in this course. This requires that you be organized, efficient, and disciplined. One way to do this is to use periods of relative inactivity to get ahead, so that if you have to spend extra time on something else, you have built up some “sweat equity” in this course. For example, laboratory is canceled during the week of Octoberbreak. Use this extra time to read and work problems a period ahead. Note in the schedule that you have periods off in class and in laboratory to compensate for the evening examinations and the lab examination. Make efficient use of these periods.

This may well be the busiest semester of your life. This course and Anatomy & Physiology will require significant time commitments. For this reason, you will have to become efficient learners. I strongly suggest that you eliminate “busywork” during your study sessions and concentrate on the things that matter. You should read the chapters. You should work as many problems as possible. (Repeat this last statement five times!) Work the problems with the Solutions Manual closed. You should work old examinations without benefit of answers, but do not think that this will provide an adequate examination review unless you have been working problems as well. You should not outline the chapter or mark up the text with a colored marker with the idea that this makes you an active learner. An active learner, in contrast, reads with a pencil and scratch paper in hand, rewriting equations with different examples, making review sheets, making his/her own sheet of definitions and, above all, working problems. Use the Reaction Summaries in the Study Guide and Solutions Manual to provide a quick overview of the reactions in each chapter. The biggest mistake you can make in this course is to fall behind! The study of Organic Chemistry, like the study of Mathematics, is cumulative; that is, each idea builds on the next. Thus, failure to learn early in the course undermines learning later in the course. In the past, I have asked students to tell me on their course evaluations, “What advice would you give to students in next year’s class?” The overwhelming response I get is, “Don’t get behind.” Let me urge you to resolve that you will take this advice and try to keep up with each day’s assignments, not only in MCMP 204, but also in all your other classes. Studying often in smaller increments rather than putting off for a few huge “cram” sessions is a key to good studying. Try not to get caught in the “examination crisis cycle.” A student caught in the examination crisis cycle stops studying in all courses except the one in which there is an imminent examination. The semester thus
degenerates into a series of catch-up/cram study sessions. When you study properly each day, you don’t have to cram for exams, because you maintain yourself in a constant “ready” state. Hence, an exam in one course does not throw you off of your study schedule for another. It’s really a question of personal discipline, and the situation is not unlike an athletic or performance activity. Does Coach Painter ask his team to practice once a week for eight hours on the day and night before a game, or does he have them practice every day for a shorter interval, and then taper off before a game? Does a musician perform well by practicing one or two hours per day, or by waiting until right before the big performance and cramming in a single ten-hour practice? Studying is exactly like these other activities. I suggest that you arrange at least one study-group session per week in which you conduct drills, hash out problems and work old examinations. If you have done your reading and have worked the in-text problems, you shouldn’t have to do more than this. Studying regularly and working in groups will help keep you out of the “exam crisis cycle.” Because studying this way is more efficient, it allows you more time for extracurricular activities, not less! The secret of learning organic chemistry is not personal brilliance! Very few—perhaps only a handful—of our students have not been capable of doing well in this subject. The secret is to be disciplined, perseverant, and efficient in your use of time.

Try the same suggestions in your other courses. Organize your own study groups.

Course Schedule

The Course Schedule accompanies this handout. It contains the class schedule, the laboratory schedule, and the examination schedule. This schedule is posted on the course web site. You can consult it there at any time.

Assistants and Assistance

1 (Prof. Loudon) hold an office hour immediately after class in one of the small meeting rooms in CL50 (11:30 MWF). Prior appointment is not necessary, but would be appreciated. If no one is waiting after class 1 will return to my office. Prof. Colby holds office hours by appointment; you may phone us, e-mail us, or catch us after class for an appointment if necessary. If you cannot make a scheduled office hour, by all means e-mail for an appointment and tell us several times that you are available. We try to answer such e-mails the same day (during the week) and try to set up appointments as soon as possible. E-mail is the best way to reach us. The class TAs will attend all classes, and will be available for questions. They will hold office hours by appointment. The class graduate TAs will run evening help sessions at times to be announced shortly. However, you need not wait for a help session or office hour to ask for assistance from the instructors or the TAs.

If you need help, please feel free to ask an instructor or class TA after class, during office hours, or at other times. Because class participation will be an integral part of the way this section is conducted, in-class questions are of course strongly encouraged.

Academic and Professional Integrity

The methods used in this course presuppose that students will uphold the highest standards of professional and academic integrity. The expectations are as follows.

1. When group work is allowed (for example, the advance discussion period on examinations and group problem sets) you may collaborate freely with other members of your group.

2. All written work on examinations, quizzes, laboratory quizzes, and laboratory notebooks must be your own. You may not copy anything, or allow anything to be copied, by any other students, whether members of your group or not.

3. You may discuss the take-home laboratory question sheets freely with other students. However, you must work them on your own. Outright copying of these sheets or allowing them to be copied is a violation of academic integrity.

4. Any calculator brought into the examination room is subject to scrutiny by the instructor or TAs at any time.

5. No notes, cribs, or texts will be allowed on any hour examination, quiz, or final examination, unless specifically noted by the instructor.
6. Turning in an altered examination paper for regrade (unless the alterations are clearly disclosed in writing) is a violation of academic integrity.

7. Falsifying an excuse for a missed examination is considered a violation of academic integrity. Likewise, asking or allowing your study group to present their work as your own when you did not contribute is a violation. Intentionally over-representing your contribution to a group is also a violation.

8. Failure to report violations of academic integrity makes you an accomplice, just as failure to report misuse or abuse of drugs would violate your ethical standards as a pharmacist.

It is the policy of the Department of Medicinal Chemistry and Molecular Pharmacology that the first violation of academic integrity will result in an “F” grade for the entire course. This policy will be enforced. That having been said, it is expected that violations will not occur. If you wonder whether a course of action is a violation of academic integrity, simply ask in advance!

Examinations, Quizzes, etc.

A. Examinations. There will be four major examinations: three evening examinations and a final examination. The three evening examinations will be given from 8:00–10:00 PM on the dates and in the locations following.

<table>
<thead>
<tr>
<th>Examination</th>
<th>Date</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exam 1</td>
<td>Tuesday, September 21</td>
<td>PHYS 112, MTHW 210</td>
</tr>
<tr>
<td>Exam 2</td>
<td>Wednesday, October 20</td>
<td>WTHR 200, SC 108</td>
</tr>
<tr>
<td>Exam 3</td>
<td>Wednesday, December 1</td>
<td>PHYS 112, PHYS 114</td>
</tr>
</tbody>
</table>

Each exam is held in two or more different rooms; your room assignment will be given before each exam. The format of the hour examinations is as follows. An abbreviated copy of the examination containing only the group-discussion questions will be handed out first. This section can be discussed openly within your group for about 30 minutes. All papers are then turned in, and a complete copy of each examination is given to each person. One and one-half hours allowed for each person to complete the examination individually with no further discussion. (See also Item 3 under “Study Groups.”)

A week of lab is cancelled as a makeup for Exam 1. Two classes, October 18 and December 1, are cancelled as makeups for the other two evening exams. (See the Course Schedule.)

The final examination is an individual examination with no discussion.

Graded examinations are returned in class on the Monday following the examination. The papers will be returned under the assumption that you are sitting in your assigned seat. If you are absent when examinations are returned, please pick up your examination from me in Room 112C RHPH.

B. Quizzes. There will be eight short quizzes worth 15 points each. These will be held in class, and they are denoted on the class schedule as “Qn,” where n is the number of the quiz. The total of the eight quizzes is multiplied by 150/120 (that is, 1.25) to give them a final maximum point value of 150 points. Thus, the eight quizzes are worth as much as 1½ exams. We hope this provides some motivation to keep up.

Grading and Missed Examinations

A. Classroom. Please note the following points carefully:

1. The point values for the examinations are as follows: Exam 1, 100 points; Exam 2, 100 points; Exam 3, 100 points; Final Exam, 150 points.

2. Quizzes are worth 15 points each and the total (120) is multiplied by 150/120 (1.25) to make them worth 150. (This multiplier in effect makes each quiz worth almost 19 points.)

3. The total of your exams and quizzes will be multiplied by 1.500 to convert the classwork points to the proper point ratio to lab work.

4. Extra credit of up to 60 points will be given for group work, in-class, and help session participation as noted above. Your group grade will depend both on your group’s overall performance and on how your group assesses your individual performance as a group member. This will be added to your course total
after the multiplications described above. Note that you can earn extra points for in-class participation and for participation in help sessions. (Participation means active participation, not just attendance.) The TAs and I keep active records of who is participating.

5. You can receive up to 50 additional extra credit points from the Sapling exercises. However, you can receive a maximum of 90 extra-credit points from all sources: that’s 10% of the course grade. That’s enough to raise your grade from a mid-level B to an A–.

6. No examination or quiz scores will be dropped.

7. The Resurrection Grading System (RGS) will apply.

“What,” you ask, “is the Resurrection Grading System?” In this system, if you have a bad performance on any examination, your score on the individual item will be replaced by your final examination grade (suitably corrected for total points) if your percentage score on the final is higher. Suppose, for example, that you obtain a grade of 57 on Exam 1. Suppose also that you obtain a grade of 100/150 on the Final Examination (67%). You are then given a grade of 67 for Exam 1. Thus, you will have “resurrected” a weaker performance on Exam 1 with a better performance on the Final Examination. (If the percentage grade on Exam 1 is better than that on the final, the Exam 1 score will not be changed.) Any number of exams, as well as your total quiz score, can be changed in this manner. This system acknowledges that a student can “put everything together” late in the course and demonstrate a mastery of the course even with poor performances on the individual examinations. It also means that if you make an “A” on the final, you make an “A” in the classwork part of the course. This system is most likely to help the hard-working student who has a rocky start but shows steady improvement throughout the course. BUT WATCH OUT! If you use this system as an excuse for procrastination you will probably not succeed in this course. You MUST study regularly, because time for review prior to the final examination is very short! NOTE ALSO that neither the final examination nor the quizzes employ the study-group discussion format. Our research has shown that the largest “resurrection effects” are obtained by students whose “non-resurrected” grade is A or B.

Another aspect of the RGS is that if you are ill or if you must be unexpectedly absent for an examination, your grade for that examination will be determined by your grade on the final.

Our makeup policy is that late makeup examinations are not given. If you miss a quiz unexpectedly because of illness, please see Dr. Loudon. Early makeup on examinations and quizzes can be arranged for suitable cause; see Prof. Loudon well in advance of the examination or quiz. For examinations, your study group must take the early examination at the same time you do.

A grading summary for the course is found on p. 13.

To see how you are doing in the classwork part of the course, simply calculate your total points from this summary and take the percentage of the total possible. Note that the Gradebook function of the course web site is not active and is not used!

This, of course, does not take into account your group grade, which can only increase your point total. (Because of the extra points for group work, it is theoretically possible to get more than 1200 points, i.e., more than 100%. A few students actually do receive >100% each semester.)

What would happen if everyone in the class were to get more points than needed for an “A” (1020 points)? Then everyone would get an “A”? There are no quotas for any grade. Hence there is absolutely no reason that you should not work together as much as possible, help each other out, and do everything possible to learn together.

**Important Disclaimer**

Purdue University requires us to post the following notice. The reason for this is concern over the possibility of a flu epidemic.

**Disclaimer**: In the event of a major campus emergency, the requirements, deadlines and grading policies described herein are subject to changes that may be required by a revised semester calendar. Any such changes in this course will be posted, once the course resumes, on the course website or can be obtained by contacting the instructor via email or phone.
If you have flu-like symptoms, stay home! You are not penalized for not attending class, ever. Use the course recordings to stay caught up. Let us know if you have to miss a quiz for illness.

**Frequently Heard Rumors About MCMP 204–205**

“This is the weed-out course; the Professors try to flunk out as many students as possible.” FALSE! There are no set quotas for any letter grade. Ideally, there should be no low grades. Our desire is to present the admissions committee with as many highly qualified students as possible. We love to make this committee’s job harder.

“Don’t bother the professors; they are too busy to see you.” FALSE! Only if you come see us do we know when something is not getting across. We are particularly anxious to know what isn’t clear so it can be corrected. Furthermore, one-on-one help is one of the best ways for us to get to know each other. It is helpful if you can make an appointment to come in, but drop in if you wish. Don’t hesitate to use e-mail to make appointments. The professor’s office IS an appropriate place to display your ignorance. All we ask is that you make a good-faith effort to master the material before asking us to help you.

“Organic Chemistry is a memory course. All you have to do is memorize all the reactions.” FALSE! Certainly, there facts to learn, but our objective is to try to get you to see why reactions occur—why they are reasonable. The problems are designed to make you think as well as test your knowledge of facts. A great deal of material in your subsequent courses will be easier if you master the principles of organic chemistry instead of simply memorizing the facts.

“You have to be brilliant to succeed in organic chemistry.” FALSE! You do have to be organized, industrious, systematic, and fundamentally interested in the subject.

“I shouldn’t ask questions or participate in class.” FALSE! People who participate in class are smart. They know that such participation keeps them alert and helps them to learn. It also can earn them extra credit. It may be a cliché, but it is really true—if you have a question, it is likely that others have the same question as well.

“Prof. Loudon is a tennis fanatic.” TRUE! I’m ready for a match about any time (except MWF 10:30 of course).

-Marc Loudon
Grading Summary

<table>
<thead>
<tr>
<th>Item</th>
<th>Maximum points possible</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. <strong>Classwork:</strong></td>
<td></td>
</tr>
<tr>
<td>Three hour examinations (resurrected if necessary) @ 100 points each</td>
<td>300</td>
</tr>
<tr>
<td>Final examination</td>
<td>150</td>
</tr>
<tr>
<td>Eight quizzes (120 points x 150/120, resurrected if necessary)</td>
<td>150</td>
</tr>
<tr>
<td>Add and multiply the result by 900/600 = 1.500</td>
<td></td>
</tr>
<tr>
<td><em>Classwork subtotal</em></td>
<td>900</td>
</tr>
<tr>
<td>(To this add up to 50 extra-credit points for Sapling homework and up to 60 extra points from other sources of extra credit, but no more than 90 points total)*</td>
<td></td>
</tr>
<tr>
<td>B. <strong>Laboratory subtotal</strong> (see Laboratory syllabus for details):</td>
<td>300</td>
</tr>
<tr>
<td><strong>COURSE TOTAL</strong></td>
<td>1200</td>
</tr>
</tbody>
</table>

Final grades will be assigned from the following standards. *We do use +/- grading. Note that fractional percentages are not rounded up. We reserve the right to modify these percentages downward (in your favor).*

- A course grade of “A” is given for $\geq 1020$ points (85%).
- A course grade of “A−” is given for 996–1019 points (83% – <85%).
- A course grade of “B+” is given for 960–995 points (80% – <83%).
- A course grade of “B” is given for 840–959 points (70% – <80%).
- A course grade of “B−” is given for 804–839 points (67% – <70%).
- A course grade of “C+” is given for 780–803 points (65% – <67%).
- A course grade of “C” is given for 648–779 points (54% – <65%).
- A course grade of “C−” is given for 624–647 points (52% – <54%).
- A course grade of “D” is given for 600–623 points (50% – <52%).
- A course grade of “F” is given for fewer than 600 points (<50%).

*Summary of Extra-Credit Opportunities*

A maximum of 60 points from the sum of:

1. In-class participation and help-session participation (20 pts maximum)
2. Correction of substantive textbook errors (15 points maximum)
3. Study-group exercises (will vary, but typically 25–40 points multiplied by a percentage based on your study-group evaluation).
4. Completion of the end-of-course surveys (6 pts)

A maximum of 50 points from the on-line Sapling Learning exercises.

A grand maximum extra credit of 90 points (10% of the class total of 900 points) is allowed.