# ANOKA-RAMSEY COMMUNITY COLLEGE
# COURSE SYLLABUS

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| **Course:** | **Chemistry 2061-30: Organic Chemistry I**. 5 credits, Fall 2009 |
| **Prerequisite:** | CHEM 1062 or equivalent |
| **Lecture:** | **T** 4:00 pm – 5:50 pm S145 |
| **Laboratory:** | **T** 6:30 pm – 10:00 pm S230 |
| **Instructor:** | Professor Andrew W. Aspaas (you may call me Andy), Office S209 |
| **E-mail:** | andrew.aspaas@anokaramsey.edu |
| **Phone/Voicemail:** | 763-433-1108 |
| **Course Webpages:** | http://webs.anokaramsey.edu/aspaas/2061/ (Notes, audio/video, links, announcements, practice worksheets)<br>http://www.cengage.com/owl/ (Online homework)<br>http://www.anokaramsey.edu/onlineProg (**D2L**: discussion boards, grades) |
| **Office Hours:** | Coon Rapids (S209): — Cambridge (E224):<br>**T** 2:00 pm – 3:50 pm — **M** 11:00 am – 1:20 pm<br>**F** 10:00 am – 12:00 pm — **W** 11:00 am – 12:00 pm<br>(additional office hours available by appointment) |
| **Lab Manager:** | David Stephan, Office S221, 763-433-1488, david.stephan@anokaramsey.edu |

**COURSE LEARNER OUTCOMES**

At the conclusion of the course, the student should be able to:

1. Demonstrate the ability to solve problems and demonstrate conceptual knowledge of concepts in the following areas:
    a. Structure and bonding
    b. Acids and bases
    c. Alkanes and cycloalkanes
    d. Reaction energetics
    e. Nucleophilic substitution and elimination reactions
    f. Alkenes
    g. Alkynes
    h. Nuclear Magnetic Resonance (NMR) spectroscopy
    i. Infrared (IR)
    j. Alcohols
    k. Introduction to short multistep synthesis sequences.
2. Demonstrate the following abilities as they relate to labs in the major areas of course content:
    a. Understanding and proficiency of basic organic chemistry laboratory techniques such as reflux, distillation, extraction, washing, filtration, recrystallization, and chromatography.
    b. Instrumental techniques such as melting point determination, gas chromatography, and IR spectroscopy.
    c. Recording, organizing, and analyzing data in tables and graphs.
    d. Interpreting the results of experiments relative to the objectives and the uncertainties of the data
    e. Individually and/or collaboratively prepare laboratory reports with proper scientific writing style
    f. Formulating and testing hypotheses through the use of inquiry-based experiments
    g. Laboratory and chemical safety and waste disposal
    h. Working effectively and cooperatively in groups

**REQUIRED MATERIALS**

Textbook: Organic Chemistry, 7th edition, John McMurry (Thomson Brooks/Cole)
Lecture Workbook: Organic Chemistry: A Guided Inquiry, 2nd edition, Andrei Straumanis (Thomson Brooks/Cole)
OWL Access: bookstore bundled with text or separately, also available at http://www.cengage.com/owl /
Lab Manual: Multiscale Operational Organic Chemistry, 2nd edition, John W. Lehman (Prentice Hall)
Scientific calculator
Bound lab notebook (composition book)
Outside-class access to an internet-connected computer at home **or** using the ARCC computer labs

Access to school-provided MetNet email address. Instructions at http://www.anokaramsey.edu/IT/emailmetnet.cfm

**ADDITIONAL OPTIONAL RESOURCES**

Study Guides and Solutions Manual (McMurry **highly recommended**, Straumanis optional)
Pushing Electrons, 3rd Edition, Daniel P. Weeks (Brooks/Cole)
Molecular model kit
Website Links: Available at http://webs.anokaramsey.edu/chemistry and http://webs.anokaramsey.edu/aspaas/
On-Campus Tutoring: Schedule will be posted at http://www.anokaramsey.edu/StudentServices/cr_chemistry.cfm
and at the Academic Support Center

**BE RESPECTFUL, BE RESPONSIBLE, RISE TO THE CHALLENGE**

By enrolling in this course, you have become a welcome member of a *community of learners*, an honor and a privilege for each one of us. Your membership in this community and your success in this course are dependent upon your ability to do the following:

***Be Respectful.*** Respect your instructor as an expert in his or her subject area and as the person responsible for facilitating a productive course for everyone. Respect each of your classmate's right to a valuable class experience, free of offensive language, intolerance, or harassment of any kind. Respect these facilities and our time together by eliminating all distractions, especially cell phones, iPods, and other gadgets, and by refraining from disruptions of any kind, including sleeping in class or talking when no formal class discussion is taking place. Finally, respect yourself by participating fully in each class session and making the most of this learning opportunity.

***Be Responsible.*** As a student in this college course, you are entirely responsible for your own success. You are responsible for reading and following the syllabus. It's expected that you arrive to each class session on-time, with assigned work completed, ready to participate fully. If you miss class, you are responsible for the consequences. You are also responsible for obtaining notes, assignments, and syllabus adjustments. Finally, you are responsible for being an active participant in this class rather than a passive observer.

***Rise to the Challenge.*** College-level courses are demanding. They require deeper thinking, more effective writing, and greater personal involvement than many students realize. In order to succeed at this level, you must be willing to accept the challenges presented by the course material, your instructors, and a rigorous schedule. One of the rewards of this challenge can be the discovery that you are capable of much more than you imagined. Therefore, expect great things from yourself, work hard to achieve them, and seek help when you need it. The other members of this community of learners are here to support you, but it's up to you to *rise to the challenge*.

While I do not take attendance, class attendance is expected by college policy. ***Students are responsible for all information and assignments given in class.*** The easiest way to fall behind and ultimately fail a class is to be absent multiple times. Material moves quickly in this course, so even one absence can put you behind. This is even more important for block and summer schedules, where missing one class is missing a whole week of the course!

**REDUCED SEAT TIME/WEB-ENHANCED LECTURE**

This course has 50% seat time compared to a totally in-person course with the same number of credits. Our lectures (100 min per week) will only cover the material that students typically have the most problems with. ***You must read ahead in the textbook in order to get the most out of lecture! Have the entire chapter read before it is covered in class!*** The rest of the material will be your responsibility to learn through the use of the textbook reading assignments, textbook problems, OWL online homework assignments, audio/video lectures made available online, practice worksheets, and D2L discussion boards. You should plan to spend a considerable amount of time each week independently studying and learning the material. If you are not a self-motivated learner or if you have problems with procrastination, perhaps a full-seat-time lecture section would be better for you.

Lecture will make extensive use of group work using the POGIL (process-oriented guided inquiry learning) method and the worksheets in the Straumanis textbook. More information on this will be given on the first day of lecture.

This is a recommended studying schedule that will help you keep up in this course:

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| **Wed-Thu:** | · **Review notes and worksheets** from Tuesday's lecture and complete any sections we didn't do in class. Check against posted completed notes and worksheets.<br>· **Re-read** any sections of chapter in the textbook that were unclear. Consult lecture videos as necessary.<br>· Complete the assigned end-of-chapter **practice problems** from the material covered in Monday's lecture. Check your answers with the back of the book.<br>· Begin the **post-lecture questions** in OWL. |
| **Fri-Sat:** | · Complete the **post-lecture questions** in OWL (due every Friday at 11:59 pm)<br>· **Print** next week's **blank lecture notes**. Follow along with them while you're reading and fill in whatever blanks you can.<br>· Read next week's **textbook chapter**. Consult expanded lecture videos for sections that are unclear.<br>· Watch or listen to the **audio/video lecture** for next week's chapter available on the webpage. Fill in the blank notes as you go along.<br>· Begin the assigned end-of-chapter **practice problems** as you are reading the sections. Check your answers with the back of the book.<br>· Begin next week's **pre-lecture questions** in OWL. |
| **Sun-Mon:** | · Complete the **pre-lecture questions** in OWL (due every Tuesday at 2:00 pm)<br>· Complete the **pre-lab assignment** in your lab notebook.<br>· Complete any **practice worksheets** for this material (posted on the webpage). |
| **Any days:** | · Post on **the D2L discussion boards** if you have any questions about the material. If you don't have questions, see if you can answer somebody else's questions. You are required to make at least one thoughtful post (question or comment) per week.<br>· Visit instructor **office hours** (M, T, W, or F at both campuses), or **tutoring center** (M-F) if you need help.<br>· Meet with a **study group.** |
| **Tuesday:** | · **Lecture and lab** |

**LABORATORY**

***Lab meets the first day! By registering for 2061-30, you have registered for both lecture and lab.*** Laboratory attendance is mandatory and experiments must be performed at the assigned time. If you must be absent, including for an illness, notify the instructor in advance. There is one week scheduled for make-up labs near the end of the semester. Make-up labs may also possibly be arranged during other scheduled lab periods ***that same week*** by consulting with the instructor as soon as possible. If you miss a lab or are unable to make it up, it will count as a ZERO. Students missing three labs will have their grade reduced by one full letter grade. Students missing four labs will have their grade reduced by two full letter grades. Students missing five or more labs will fail the course. The one lowest lab score will be dropped at the end of the semester.

Laboratory reports will be due at the beginning of your assigned lab period the following week. A portion of the total points will be deducted for each day a report is turned in late. Laboratory reports that are more than one week late will receive a ZERO. Prelaboratory assignments in your laboratory notebook must be completed by the beginning of the laboratory period in which the experiment will be performed. They may not be turned in late. Lab quizzes may be administered. Students will generally work in pairs. There will be no groups of three or more, unless assigned by the professor. You may choose your own lab partners, but you will be asked to switch partners and work with somebody different on at least 2 occasions throughout the semester.

You will receive There will also be 5 housekeeping points for the semester. Your housekeeping points may be deducted if you leave a mess behind at your lab station. These points may also be assigned for a specific cleanup task near the end of the semester.

**ASSIGNMENTS AND QUIZZES**

**Reading assignments** are given later in this syllabus. You must have each of the reading assignments completed *before* the class period where that material is covered.

Approximately six short **quizzes** will be administered at the start of class, and may be unannounced. Quizzes are generally worth 6 points each. The one lowest quiz score will be dropped.

**Textbook practice problems** will also be assigned. You should plan to work on these assignments around the time the related topics are covered in class. Practice is ***crucial*** for many of the skills and concepts learned in this class, These problems will ***not*** *be collected*. You have college-level expectations in this course, so therefore I will not "hold your hand" and collect and grade daily work each period. Students should take the initiative to keep up with their work in order to prepare themselves for quizzes and exams. Additional practice worksheets for certain concepts will be posted on the course webpage.

**Online homework problems** in OWL will be assigned for every chapter. There are two types of assignments: **pre-lecture questions** which will cover the material in the next lecture and will give you interactive feedback and hints as you attempt to solve the problems; and **post-lecture questions** which will resemble the end-of-chapter practice problems and will assess whether or not you understood the material in the previous lecture.

Your score on the pre-lecture questions will be scaled to 3 points per assignment, and your score on the post-lecture questions will be scaled to 4 points per assignment. The one lowest online pre-lecture and the one lowest post-lecture score will be dropped at the end of the semester.

OWL access can be purchased in the bookstore in a bundle with your textbook or separately. Access instructions will be emailed to your MetNet email address the first week of class. More information on these assignments will be given to you in the first week of class.

**Online participation** will be assessed through your informal participation on the D2L discussion boards, an online collaboration environment where you can converse with your classmates and the instructor by posting messages. I think you'll find this to be a very useful way to get clarifications or alternative explanations on difficult concepts presented in this class. The online message boards will be separated into forums for Exam 1, Exam 2, and Exam 3 material. For full credit on these participation points, ***you must contribute at least <u>one thoughtful post</u> (question, answers, or comments) <u>every week</u>.*** These will be counted every two weeks so if you miss one week you can post extra the next week, but you will lose points if you go two weeks without posting. Approximately 20 points will be awarded over the course of the semester for this participation. More information on this will be presented in class.

**EXAMS**

***There will be three midterm exams*** (100 points each) ***plus one comprehensive final exam*** (150 points). Topics covered in lecture, laboratory, the reading assignments, or the problem assignments may appear on the exams. Exams must be taken at the scheduled time. ***Make-up exams may be available in the case of documented school activities, illness, emergencies, or other serious situations (but <u>not</u> family vacations). Except in the case of documented emergencies, make-up exams are <u>only</u> available if you contact the instructor by email, phone, or voicemail <u>before the exam</u>. The make-up exam must be completed before the exams are returned to the class (usually 1 class period following the exam). Put the exam dates on your schedule now.*** The instructor has the right to refuse a make-up exam. Some exams may be arranged to be taken early, see the instructor as soon as possible if you may need this option. Make-ups may be allowed for excused absences from the final exam ***but only if the instructor has been consulted in advance***.

As an incentive to do well on the final exam, ***your lowest midterm exam score will be replaced by your final exam percentage score (if it is an improvement).*** If you miss one exam, its score will be replaced by your final exam percentage score. You should try your very best for each exam, since you never know when unplanned events may

prevent you from taking a future exam. In order to pass the course, you must take at least two of the three midterm exams, and you must take the final exam.

**ACCOMODATIONS**

Alternative testing situations can be arranged for those students with a documented learning disability. Contact the school's disability services office for more information. Please notify the instructor well in advance of the exam if you elect for this service. *The alternative exam time may not be later than the assigned exam time.*

Every effort will be made to provide accommodations for religious observations. Please notify the instructor as far in advance as possible.

Please notify the instructor if you have any issues with loud noises, small explosions, flames, or other concerns.

**EXTRA CREDIT**

There may be one or two opportunities for a small amount (~10 points) of extra credit in this semester. Only those opportunities announced to the entire class will be available for extra credit, and they must be completed by the announced due dates.

**ACADEMIC DISHONESTY**

Cheating or plagiarism of any kind will not be tolerated. Any incidents of cheating or plagiarism will be arbitrated through the school's administration and may result in the exam, quiz, or assignment in question to be given a grade of zero, which cannot be made up. Extreme cases may result in a grade of F for the course. Care will be taken to discuss proper formats for citing sources in written projects as needed throughout the semester. Many lab reports and group projects involve sharing of data and collaboration between several students; these instances do not constitute plagiarism as long as all contributors are listed on the assignment.

**STUDYING**

> *"By failing to prepare, you are preparing to fail."* -Benjamin Franklin

It is very important that you *discipline* yourself to become an organized, conscientious student who studies regularly. Set aside some time each day and devote it to studying chemistry. Last-minute cramming for cumulative exams usually results in poorer understanding of concepts and lower exam scores.

Read the assigned text ***before*** each chapter is covered in lecture. No matter how clearly the material is presented in lecture, you will not retain the information if that is the first time you see it. By reading the material carefully in advance, the lectures will become entirely more valuable by reinforcing and cementing your understanding of the concepts.

Organic chemistry is learned with a pencil and paper. Work the assigned practice problems by yourself, ***without resorting to the answer key!*** If you're stuck, re-read the relevant section of the text, come back to it later, or ask a friend, a tutor, or the instructor for a nudge in the right direction. The struggle to get a problem solved is an integral part of the learning process. Only ***after*** you've gotten an answer you're confident with should you check the answer key.

You should also form or join a study group as a ***supplement*** to your individual studying and practicing. Helping another student with a difficult problem is one of the best ways to reinforce your own learning.

Overall you should try to focus on ***underlying concepts, problem solving skills,*** and ***common themes*** more than simply memorizing facts. You should always view difficulty as a challenge to overcome.

**KEEPING TRACK OF YOUR PROGRESS IN THIS COURSE**

You should always, on your own, keep track of your scores for all work you do in this course. To determine where you stand in the course, divide the total of your points earned by the total number of points possible. Then multiply by 100. This will give you a percentage which you can use to determine your letter grade. All your recorded scores will appear in D2L. Check these regularly to ensure they were entered correctly.

**APPROXIMATE COURSE POINTS AND LETTER GRADES**

| | | |
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| ~14 **Labs** $\times$ 10 pts (1 lowest dropped) | ~130 | points |
| Lab notebook/housekeeping | 10 | points |
| **Prelab quizzes** $\times$ 5 pts | ~20-30 | points |
| ~20 **Homework** (1 lowest pre&post dropped) | ~70 | points |
| **Online discussion** participation | ~20 | points |
| ~6 **In-class quizzes** $\times$ 6 pts (1 lowest dropped) | ~30 | points |
| 3 **Midterm exams** $\times$ 100 pts (lowest midterm replaced by final exam % if improvement) | 300 | points |
| **Comprehensive final exam** $\times$ 180 pts | 180 | points |
| **Total** | approx. 760 | points |

The course grade will typically be based on a total point system with the following letter grades:

**A** 90.0 % and above
**B** 80.0 - 89.9 %
**C** 70.0 - 79.9 %
**D** 60.0 - 69.9 %
**F** below 60.0 %

No scores or grades will be curved in this class. Occasionally, the above letter grade percentages may be lowered, but will never be raised. In other words, if you earn greater than 90% of the points in the course (and haven't missed more than 2 labs), you are guaranteed an A. Your official course letter grade will only be calculated at the end of the semester.

**CHEMISTRY 2061 SCHEDULE AND ASSIGNMENTS**

In teaching this course, one thing that I've noticed that sets the successful students apart from the rest of the class is doing the reading and the assigned homework problems. The problems will not be collected, but a student serious about doing well in this course will do them **ALL**. In-text have answers in the back of the book, end-of-chapter problems have answers in the solutions manual available in the bookstore, answers to POGIL exercises will be posted to D2L – only consult the answer after you've given the problem your best attempt. Quiz and exam questions will be very similar to some of these assigned problems.

This sheet will be updated throughout the semester and posted on the class webpage, http://webs.anokaramsey.edu/aspaas/2061/.

| Week | Date | Text Chapter (read before class) | In-Class Activity | Homework Problems (work after class) | Laboratory |
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| 1 | 8/25 | Intro | Intro<br>CA 1 | **POGIL:** All CA 1 Exercises | **Intro/Safety**<br>**Exp 1** (pH) |
| 2 | 9/1 | Ch 1 | CA 2<br>CA 3 | **Ch 1:** All in-chapter problems, then 22 – 28, 29 ab, 30, 31, 33 – 35, 38- 40, 42, 43, 46, 48, 49, 54<br>**POGIL:** All CA 2 and CA 3 Exercises | **Exp 2**<br>(Extraction/ evaporation) |
| 3 | 9/8 | Ch 2 | CA 4<br>CA 5 | **Ch 2:** All in-chapter problems, then 24, 26, 27, 29, 30, 32 – 41, 43-46, 55<br>**POGIL:** All CA 4 and CA 5 Exercises | **Exp 3** (recrys.)<br>**Minilabs 2 & 15** |
| 4 | 9/15 | Ch 3 | CA 6<br>(Mod 1-7)<br>CA 7 | **Ch 3:** All in-chapter problems, then 21, 22, 24, 27, 29, 32, 34, 35, 37, 38, 42, 45, 48, 51<br>**POGIL:** NW 1, CA 6A, and CA 7 Exercises | **Exp 4**<br>(Reflux) |
| 5 | 9/22 | Ch 4 | CA 7 | **Ch 4:** All in-chapter probems, then 21-23, 25-28, 29-38, 42 | **Exp 15** (TLC)<br>**Minilab 1** |
| 6 | 9/29 | (Ch 1-4) | **EXAM 1** | | **Exp 5**<br>(Banana oil) |
| 7 | 10/6 | Ch 5 | CA 6 (8-13)<br>CA 8A | **Ch 5:** All in-chapter problems, then 19, 20, 21, 22, 23, 24, 29, 30, 31, 32, 33, 34, 35, 39, 40<br>**POGIL:** NW 2, CA 6B/C and CA 8A Excercises | **Exp 5**<br>(continued)<br>**Q&A** |
| 8 | 10/13 | Ch 6 | CA 8B<br>CA 9A | **Ch 6:** All in-chapter problems, then 23, 25, 26, 27, 28, 29, 30, 31, 33, 34, 37, 39, 40 41, 42, 43, 44, 47, 48, 49, 51, 53, 54, 56<br>**POGIL:** CA 8B and 9A exercises | **Exp 26A**<br>(Polymerization)<br>**Minilab 22** |
| 9 | 10/20 | Ch 7 | CA 9B<br>CA 10 | **Ch 7:** All in-chapter problems, then 24, 25, 26, 27, 31, 34, 36, 41, 42, 43, 46, 54, 55, 57, ~~58~~<br>**POGIL:** CA 9B and 10 exercises | **Exp 6**<br>(Frac distillation) |
| 10 | 10/27 | (Ch 5-8.3) | **EXAM 2** | | **Exp 7**<br>(Camphor) |
| 11 | 11/3 | Ch 8 | CA 11<br>CA 12A | **Ch 8:** All in-chapter problems, then 18, 19, 21, 22, 23, 25, 26, 28, 30, 31, 32, 33, 35, 41, 45<br>**POGIL**: CA 11 and 12A exercises | **Exp 18**<br>(Skip IR/GC reading) |
| 12 | 11/10 | Ch 9<br>(9.1-9.11 only) | CA 12B<br>Synthesis | **Ch 9:** In-chapter problems 1-22, then 31, 32, 35-41, 43-48, 50-53, 58, 74, 77, 80, 82<br>**POGIL:** CA 12B exercises | **Exp 9**<br>(Column chrom.) |
| 13 | 11/17 | Ch 10 | CA 15A<br>CA 13A | **Ch 10:** All in-chapter problems, then 17, 18, 20, 21, 22, 23, 24, 28, 29, 33, 34, 35, 36, 39, 40, 41<br>**POGIL:** CA 15A and 13A exercises | **Minilabs 16 & 26**<br>**Q&A** |
| 14 | 11/24 | Ch 11<br>(skip 11.6 and 11.11) | CA 13CD<br>CA 14 | **Ch 11:** All in-chapter problems, then 25-31, 35-37, 41, 42, 44, 48, 49, 51, 52, 57<br>**POGIL:** CA 13CD and 14 exercises | **Exp 10**<br>(Skip external distil. reading) |
| 15 | 12/1 | (Ch 8.4-11) | **EXAM 3** | **Ch 13:** All in-chapter problems (skip 9-11), then 24, 25, 26, 32, 33, 35, 38, 40, 41, 44, 50, 53, 54, 57, 58<br>**POGIL:** CA L3/L4 exercises | **POGIL CA L3/L4** |
| 16 | 12/8 | Ch 13 (Skip 13.6)<br>Ch 17 (17.1-3,6 only) | TBA | **Ch 17:** In-chapter 1-4, 5-6, 12-13, then 25, 37, 38, 63, 64<br>**POGIL:** CA 16 Models 4 and 8 | **Makeup/ cleanup/ Q&A** |
| 17 | 12/15 | Comprehensive | **FINAL EXAM** | **4:00-6:00 PM S245 (different room!)** | **No lab** |