Class Syllabus
Spring 2019
CHE 332-001
Introductory Chemistry I Laboratory

Sections: CHEM 332-001, Classrooms: M-130
Instructor: Matibur Zamadar, Ph.D. Class Time: 10:00—10:50am
MWF
Department: Chemistry and Biochemistry
Office: Math 112
Email: zamadarmr@sfasu.edu
Office Hours: T (Recitation CHE 332) 12.30 pm-1.20 pm, W 11 am-12.30 pm, R
10.00 am-12.10 pm, F 11 am-12.30 pm
Phone: (936) 468-2243
Other times by appointment

IT IS STRONGLY RECOMMENDED THAT YOU READ AND UNDERSTAND
THE POLICIES OUTLINED IN THIS SYLLABUS. IF YOU SHOULD HAVE
QUESTIONS ABOUT ANYTHING CONTAINED HEREIN, PLEASE CONTACT
ME AS SOON AS POSSIBLE!

Catalog Description:
Organic Chemistry II – Continuation of CHE 331.

Prerequisites:
A grade of C CHE 331 & CHE 331L (or their equivalents). Corequisite:
CHE 332L

Required Texts and Other Materials:
  By William H. Brown, Brent L. Iverson, Eric V. Anslyn, Christopher S. Foote
• Notebook paper & pencils
• A quiet place to study regularly

Supplementary Readings:
• Handouts will be posted on D2L after each lecture session. You are free to download
  these and/or print them out for your study.
• A solutions manual for the main lecture text is also available for purchase. It is not
  required, and it makes no difference to me whether you purchase it or not. I do have a
  solutions manual in my office that you are welcome to use during my office hours.

Student Learning Outcomes: Upon completion of CHE 332, students will be able to:
1. Identify the various organic functional groups present in the structure of an organic
molecule.
2. Give the correct name of an organic compound when provided the structure of the
compound, and give the correct structure of a compound when provided the name.
3. Illustrate basic concepts of structure and bonding in organic compounds, including constitutional isomerism, stereoisomerism, conformational analysis, and structural effects on the physical and chemical properties of organic compounds.

4. Apply fundamental chemical principles including: thermodynamics, kinetics, and acid-base behavior to explain the chemical behavior and reactivity of organic compounds.

5. Illustrate basic concepts relating to reactivity of organic compounds, including: substitution, addition, elimination, oxidation-reduction, free radical, and pericyclic reactions and the mechanisms for these reactions.

6. Predict the product(s) of an organic reaction(s) consisting of one or several steps, correctly taking into account aspects of stereo-, regio-, and chemoselectivity.

7. Formulate a reasonable multi-step synthesis of an organic compound from a specified starting material.

8. Analyze spectroscopic data (IR, MS, and 1H-NMR) in order to elucidate the correct structure of a molecule, including being able to assign correctly various spectral attributes and features to a particular portion of a molecule’s structure.

**Course Requirements:**

Your grade in this course will be determined by your performance on four major exams, and the comprehensive final exam. Dates & times for the exams are given below. More specific information about each type of activity is given in subsequent sections of this syllabus.

**Method of Evaluation:**

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<thead>
<tr>
<th>Activity</th>
<th>points</th>
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<tr>
<td>Exam 1</td>
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<td>Exam 2</td>
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<td>Exam 3</td>
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<td>Exam 4</td>
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<tr>
<td>Final Exam</td>
<td>100</td>
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<tr>
<td>Quizzes</td>
<td>100</td>
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<td><strong>Total</strong></td>
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*Grading scale (Based on total of 700 points possible)*

> 540 = A; > 480 = B; > 420 = C; > 360 = D; < 360 = F

- Quizzes (100 points total) - Quizzes (10 pts each) will be given periodically in class, usually at the beginning of class. Announced or pop-quizzes are possible. No make up quizzes will be given. (100 points)
• Quizzes will cover material discussed during class, assigned readings, and assigned homework problems. You will be given more specific info for each quiz in class.
• The points you earn on a quiz might not seem like much when you consider them individually, but do keep in mind, that the SUM of the quiz grades carries as much weight as the final exam grade. In other words, you need to take these quizzes seriously as they can have quite an impact on your grade (positively or negatively)

Major Exams:

• Four major exams will be given on the dates listed in the table on the previous page.
• Exams will include organic nomenclature, definitions, short answer/discussion type questions, mechanism problems, reaction problems, synthesis problems, and jigsaw puzzle problems.
• All exams will be held on the dates and times listed above.
• Material for exams will come from assigned readings in the text, lecture notes, the course packet, and homework problems in the text. Some problems on exams might be similar to assigned problems from the homework.
• My exams are thorough and challenging. You need to be well-prepared.
• You are required to write neatly and legibly on all parts of exams. This includes written responses as well as any diagrams, molecular structures, or reaction mechanisms. If you do not do this, you will incur a substantial penalty.
• Exams must be taken in PENCIL. Exams taken in ink will receive a substantial penalty for not following directions. You are allowed to bring an eraser and/or a ruler to exams to help you write more neatly. You are welcome to use a template for drawing structures if you have one (although these are hard to find these days).
• Students arriving more than 15 minutes after an exam has begun will not be allowed to take the exam, unless an arrangement has been made with me prior to the exam.
• Do NOT bring cell phones to exams. If, for some reason, you must bring your cell phone to the exam, turn it OFF completely. It doesn’t mean to set your phone to vibrate. That means OFF. Off. Cell phones ringing during an exam are exceedingly annoying. For this reason, I reserve the right to assess a 5 point penalty—per ring—on the exam grade of anyone whose cell phone rings during an exam.
• There will not be any in-class or out-of-class review sessions for the exams. If you have questions or need help preparing for exams, please come by my office and talk to me. I do not go over exams after they are returned to you. Exam keys will be posted on D2L after exams have been returned. You are urged to review the key once you get your exam paper back so that you can learn where to improve on future exams. If you have questions about how your exam was graded or about the solution for any of the problems, please come and talk to me.

Final Exam:

• The final exam will be held in M-130, i.e. the room where we normally have lecture.
• YOU MUST TAKE THE FINAL EXAM IN ORDER TO PASS THE CLASS. IF YOU DO NOT TAKE THE FINAL, YOU WILL BE ASSIGNED A GRADE OF F IN
THE COURSE, REGARDLESS OF YOUR STANDING IN THE CLASS PRIOR TO THE FINAL EXAM.

Recitation Period:

• A recitation/study session for this class will be held on Tuesday from 12:30-1:20 pm.
• Recitation sessions will be held in Scie 139.
• Attendance at these sessions is MANDATORY for EVERYONE enrolled in the class.
• This period will be used to give the weekly quizzes, work examples, and improve your abilities in solving problems
• I will give priority attention to subject matter that is known from experience to cause students difficulty
• Expectations of student conduct & behavior during recitation are the same as for lecture. You are expected to be on time, prepared, participate, and ask questions during recitation.

Please take note of the following:

• You are adults and I will treat you like adults. This course and what you do in it is 100% your responsibility. It is your responsibility to come to class, read the assigned sections in the text before class, take good notes in class, do the homework, and get help if you are having trouble. I am more than willing to help you if you have trouble, but YOU need to take the initiative to seek help.
• Grades will NOT be “curved” in this course. If you aspire to make a certain grade, please make sure that you have acquired the minimum number of points for that grade by the end of the semester.
• The laboratory and lecture sections of this course are entirely independent of one another. What you do in lab has no effect on your lecture grade; what you do in lecture has no effect on your lab grade. The lecture portion of this course counts for GPA purposes as 3 credit hours; the lab counts as 1 credit hour.
• You are advised to look over quizzes and exams promptly after they have been returned to you.
• Keys for quizzes & exams will be posted on D2L. You may consult these at your convenience, and are encouraged to do so regularly.
• If you have a question about how a quiz or an exam was graded, you have three (3) class days after the paper is returned to bring the paper to my office to discuss it. Grades will NOT be changed after three class days.
• If you are absent from class when an assignment is returned, it is your responsibility to come to my office to pick up the paper; the 3-day policy begins when I hand out the paper in class, whether you were present that day or not. Exam grades will NOT be posted on D2L until you come to get your exam paper.
• If you happen to be absent when exams are returned, I WILL NOT post your exam grade on D2L. It is your responsibility to come by my office and pick up your exam as soon as possible. Only after you have picked up your exam paper will I post the grade on D2L.
Grades will be posted on D2L. This constitutes the official grade record for the course. I will use this data at the end of the semester to calculate the final grade. It is YOUR RESPONSIBILITY to check your grades on D2L. If the grade listed on your paper does not agree with the grade listed on D2L, you need to bring it to my attention as soon as possible.

In order to protect your privacy, I do not discuss grades before, during, or immediately after class. If you have any sort of grade question, please come by during office hours or make an appointment to meet with me to discuss the matter privately.

It is YOUR RESPONSIBILITY to keep all graded papers throughout the semester. Do not throw anything away until the semester is over. If there is a problem or question regarding the grade on a specific assignment (e.g. the grade listed for you on D2L is different from the grade listed on the paper), then I will require you to bring the paper to my office before I will change the grade.

Make-up Policy:

Missed exams: If you miss an exam, it is your responsibility to contact me within 24 hours of the exam date. Make-up exams will only be allowed when an absence is documented and verified as being excused under the provisions of the SFA Policies and Procedures Manual. I reserve the right to give a comprehensive exam with essay questions for a make-up. I also reserve the right to give make-up exams during dead week.

I reserve the right to change any items contained in this syllabus. This includes, but is not limited to: course content, scheduled dates, grade cutoffs, and fraction(s) of final grade assigned to individual components of the course. If I need to make such changes, I will inform you of the changes in writing. This syllabus in no way constitutes a legally-binding contract on my part.

Attendance Policy:

You are expected to be in class EVERYDAY. This is an extremely fast-paced course. You do not want to be absent unless it is ABSOLUTELY NECESSARY.

You are free to sit where you please.

I will take attendance by passing around a sign-in sheet at the beginning of each class period. I monitor attendance for my own records and DO NOT use it directly in the determination of your grade. You will not be directly rewarded for coming to class; nor will you be directly penalized for missing a class.

Absence will SEVERELY impede your chances of completing the course successfully.

I have learned this lesson the hard way as a student, and I have seen it in my experience as a professor.

Students who earn a grade of A in my courses typically have fewer than three absences during a semester. Students who earn a grade of F in my courses typically have five absences or more during a semester.

You are adults; attendance is 100% your responsibility.

If you should miss a day, regardless of the reason, you are expected to consult with your classmates and get the notes and get caught up with the material.

You DO NOT need to bring me a doctor’s note if you are absent.
• If you should need to be absent for an extended period, or if there are extenuating circumstances regarding attendance, please inform me as soon as possible. I am more than happy to work with students in cases of severe illness, hospitalization, etc.

• Again, attendance of class is mandatory. Nine (9) or more absences will result in an ‘F’ for the course. Absences may be assigned to anyone that disrupts class, sleeps in class, or consistently comes in late or leaves early. **Six points** will be added to the point total of anyone that has **zero absences**. **Four points** will be added to the point total of anyone that has only **one absence**. **Two points** will be added to the point total of anyone that has only **two absences**. Anyone with **zero absence** will have the option of the percentage of their final exam grade replacing their **lowest exam grade**. {For the purpose of the bonus attendance points there is no distinction between excused and unexcused absences.} For a proven, excused absence for an exam during the semester, a comprehensive make up exam will be given a week before the final. Anyone who disrupts class, sleeps in class, or consistently comes in late or leaves early will be denied for all bonus points given to the class.

**Tardiness:**

• This class begins at the specified time. I will begin class promptly at the specified time. Be here BEFORE the specified time.
• Chronic tardiness is a particular pet peeve of mine. It is discourteous to me and to the other students in the class who did take the trouble to arrive at class on time. You are expected to be in class and be ready when class begins. If you have trouble getting up and getting out of bed to go to class, buy an alarm clock and/or consume a beverage containing a high concentration of 1,3,7-trimethylxanthine.
• If you happen to arrive after I have begun class, you should enter the class quietly and discretely, without disrupting the class. **UNDER NO CIRCUMSTANCES SHOULD YOU WALK IN FRONT OF ME ONCE I HAVE BEGUN CLASS!!!** This is exceedingly rude, and will earn a stern rebuke from me if you do it. Don’t do it.
• I will close the door to the classroom when class has begun. If you arrive late and find the door closed, **DO NOT KNOCK ON THE DOOR**. You have missed class for the day. You are responsible for getting the notes from a classmate. Try to be on time in the future.
• If you need to leave class early for any reason, you should do so quietly and discretely, without causing a disruption to me or to the other students in the class.

**Academic Integrity Policy:**

All students are urged to acquaint themselves with the University's codes, policies, and procedures involving academic misconduct, grievances, sexual and ethnic harassment, and discrimination based on disability. Copies of the SFA Policies and Procedures Manual can be obtained in print or online from the Office of Academic Affairs (http://www.sfasu.edu/upp/pap/academic_affairs.html).
It is 100% YOUR responsibility to abstain from engaging (or even appearing to be engaging) in academic misconduct. If you see others engaged in academic misconduct, please report it to me as soon as possible. Students engaging in any type of academic misconduct (including, but not limited to: cheating, plagiarism, or any other action that can improperly affect my evaluation of your performance) will be subject to sanctions in accordance with SFA Academic Integrity Policies. Please note: The usage of electronic devices (including, but not limited to: cell phones, PDAs, mp3 players, etc.) while a quiz or exam is being given will be treated as academic misconduct. DO NOT HAVE THESE DEVICES OUT DURING A QUIZ OR AN EXAM! I will recommend a grade of "F" for the course and expulsion from the University for any such violations. You are allowed to use graphing calculators on quizzes and exams; however, I reserve the right to erase the memory of such calculators prior to any quiz or exam.

Semester Withdrawals:
Please note: The last day to drop this course without receiving a WP or WF on your transcript is Wednesday, Mar. 27th.

Academic Disabilities Policy:
Stephen F. Austin State University is committed to providing reasonable accommodations for all students with disabilities. Students with disabilities who require accommodations in this course are requested to speak with me as early in the semester as possible. Students with disabilities must be registered with the Office of Disability Services prior to receiving accommodations in this course. The Office of Disability Services is located in the Human Services Bldg., Room 325, (936) 468-3004 or (936) 468-1004 (TDD).

Classroom Behavior Policy:
• Again, you are adults. I will treat you like adults, and will expect you to behave in a mature and responsible manner while in class.
• Students are expected to conduct themselves as responsible scholars while in class.
• I use a system similar to that used in Association Football (Soccer) matches to insure proper classroom behavior. Minor infractions will result in the person(s) involved being issued a YELLOW CARD. If a person earns two yellow cards in a class period, he/she will be dismissed from class for that day. Major infractions will result in the person(s) being issued a RED CARD. When a person earns a red card, he/she is immediately dismissed from class for that day.
• I encourage you to ask questions if you do not understand something, however, chatting with a classmate during lecture is not allowed (this is a yellow card offense).
• TURN OFF YOUR CELL PHONES WHEN YOU COME TO CLASS! I WILL NOT TOLERATE RINGING CELL PHONES OR TEXT MESSAGING IN CLASS. If I see you using a cell phone in class, this is a red card offense.
• IN CASE IT WASN’T CLEAR THE FIRST TIME. I DO NOT WANT TO SEE CELL PHONES OUT IN CLASS! I DON’T CARE WHAT THE REASON IS. PUT THEM AWAY. You won’t have time to engage in this sort of tomfoolery anyway.
• You are also not allowed to read other materials (e.g. newspapers) or study for another course while in class. If I see you doing this, I will issue a red card.
• If you bring anything to class with you (food/drink/etc.), please throw it away or take it with you when you leave.
• You are NOT allowed to use tobacco products of any kind in class (SFA official policy).
• You are not allowed to sleep in class. This is a red card offense. If you have trouble staying awake in class, you should drink a beverage containing high concentrations of 1,3,7-trimethylxanthine before coming to class.

Email:
• Email has been designated an official method of communication by the University.
• All students have an “official” SFA email address; classwide email announcements will be sent to this address
• It is YOUR RESPONSIBILITY to check your SFA email account on a regular basis
• If you have your SFA email forwarded to another account (e.g. Yahoo, Hotmail, etc.) it is your responsibility to ensure that class emails are not treated as “spam” and automatically routed into your “junkmail” folder. “I didn’t get the email about that” is NOT a valid excuse!
• You are welcome to email me with questions. Please DO NOT email me from D2L & expect a prompt response from me. If you want me to respond to your email, the best thing to do is to email me directly at zamadarmr@sfasu.edu.
• IF YOU EMAIL ME, PLEASE PUT “CHE 332” IN THE SUBJECT LINE. ALSO INCLUDE YOUR NAME in the body of the email (especially if your name is different from your email address)

Desire to Learn (D2L):

• All SFA students are able to log onto D2L, which will be used to manage the course
• You can access D2L thru MySFA (https://d2l.sfasu.edu/)
• You will need your official SFA username and PIN to be able to log onto D2L
• D2L will be used to post course announcements, handouts, info for quizzes & exams, and (most importantly for you) your grades
• Documents will be posted as pdf files. You will need Adobe Acrobat Reader on the computer you are using to be able to open these files.
• You can download Acrobat Reader free of charge at http://www.adobe.com
• If you have MySFA or Blackboard technical questions, please contact IT at 468—HELP

A few philosophical musings on organic chemistry after having taught the subject for more than ten years:
Organic chemistry is a cumulative course; more so than any other course that you will probably take as an undergraduate. You cannot afford to forget the material once an exam is over. We will use skills and concepts from the material presented on the first days of the course over the entire semester. This course is not one that you should undertake half-heartedly. You must immerse yourself in the course if you wish to succeed. You cannot expect to simply come to class and succeed. You cannot be merely involved in the course. You have to be committed to mastering the material in order to succeed. The difference between “being involved” and “being committed” can be
illustrated with a simple breakfast of eggs and bacon. The chicken was involved. The pig was committed. That’s the type of commitment that you will need to be successful in this course. Don’t be afraid to come and get help. You can get behind very easily, without even realizing it, in this course. Come and get help before exams. I can’t do much to help you after the exam. For those wishing to go on to medical, dental, or pharmacy school in the future, O-Chem is as much of a test of character, resolve, and determination as it is a test of your knowledge and skill in the chemistry of carbon compounds.

“I’m having trouble in class. Where can I get help?”

• Paying a private tutor is many times NOT what students need if they are having trouble in the class. There are a number of resources that you have already paid for available to you on campus. I strongly recommend that you take advantage of these resources before paying additional money to a private tutor.

Some of these resources are:

Your instructor:
• Come see me during office hours or email me to make an appointment. I should be your first line of defense. I know what material is being taught, what material will be on exams, and what material you need to know (after all, I am the one who writes the quizzes & exams). You’ve already paid for me when you paid your course tuition. Don’t hesitate to come for help. I want to see you improve and do well. Don’t think that your question is unimportant or that you are wasting my time. I have office hours to help you. That’s why they are there. Even if you are behind, come get help.

The AARC
• You can get one-on-one tutoring at the AARC. Contact the AARC for more specific information on how to get a one-on-one tutor. You need to do this quickly, as only a limited number of slots are available and they fill up rapidly.
• There is also a Chemistry walk-in table at the AARC. Check with the AARC for more information.
• There will not be an SI group for this class

Make sure you are equipped for success:

• All you need to do well in this class are the texts, pencils, and paper. A good model kit might not be a bad idea. If you have a friend in the class, you might one to buy one together and share the cost. Please see me if you want me to recommend a good kit.
• A good 3-ring notebook to keep your lecture notes and handouts. The ability to be organized is an important skill in this class. It will save you from wasting your precious study time looking for stuff.
• Plenty of pencils and paper for working problems
• A quiet place to study regularly

Be careful with the solutions manual:
• I have mixed feelings, pedagogically, regarding the use of student solutions manuals. I don’t require that you purchase the solutions manual; however, you might find it helpful.
I have one in my office that you can look at if you need to. If you have a friend in the class, I would suggest that you go in together on a solutions manual and share it.

- If you do decide to purchase the solutions manual, I would advise that you use it with some caution. Many times in my experience as a teacher, I have found that students will work through the homework problems and have the solutions manual open. When they have difficulty on a problem, they immediately go to the manual and look at the answer. Don’t do this! The gains or benefits you get out of looking at the solutions manual right away are minimal, at best. The information tends to go in one ear and out the other. Remember: there’s a reason why newspapers don’t publish the answers to the crossword puzzle until the following day. If you have trouble on a problem, I would suggest that you do as much of it as you can and then go on to another problem and so on. Don’t check the manual to see if your answers are correct until later that day, or even better, the following day. Former students of mine (some of whom are now in med school) have told me that they derived much more benefit from this type of approach.

- Remember that you won’t have a solutions manual available when you take exams

I think that some of the main reasons that students have trouble in Organic Chemistry are:

- Not going to class Don’t fall into the trap of skipping class. It gets you into a cycle of not coming to class, and this can be hard to break. Trust me; I learned this lesson the hard way when I was a freshman! Look upon the times that your classes are scheduled as being completely inflexible. Don’t schedule other appointments, etc. when you have class. Make your extracurricular schedule fit around your class schedule (not the other way around). Even though I don’t directly use attendance as a part of your grade does not mean that I don’t want you to come to class, nor does it mean that I don’t think attendance is unimportant. My feelings are exactly the opposite. I want you to come in class, and I do think that class attendance is highly important. You are old enough now where you need to be able to motivate yourself to get up and come to class. This is a lesson that I learned the hard way when I was a student at SFA. Don’t make the same mistakes that I did. Is it a drag to have to get up and come to class? Sure it is. Sometimes I don’t want to have to get up and come teach. I’d love to be able to sit around my house all day, but part of being an adult is taking responsibility and doing things that you might not want to do. I can tell you that in my classes, there is normally a very strong correlation between attendance and performance. Students who have earned “A”s in my organic classes tended to have fewer than three absences during the semester, whereas students who earned “Ds” or “F”s in my classes tended to have five absences or more. Attendance does not necessarily guarantee that you will make an “A”, but it usually helps.

- Not staying caught up with the course Often times this is associated with not coming to class. This class will be fast-paced and cover a lot of material. We’ll start out at a fast pace and will increase the pace over the course of the semester. YOU HAVE TO STAY CAUGHT UP WITH THE COURSE. I don’t think that there’s any way I can possibly overemphasize this point. This means that the “average” student will need to spend about 20 hours per week studying FOR THIS CLASS (that means lecture and lab) in order to master the material so that he/she can earn an “A” or “B”. I would advise that you spread your study time out throughout the week. O-Chem is not a subject that lends itself very well to cramming, particularly for the kind of exam that I give. My exams are challenging. You won’t be able to “B.S.” your way through them. I can usually quickly
tell if a person has been studying or not. CRAMMING FOR MY EXAMS IS USUALLY A RECIPE FOR DISASTER. DON’T DO IT. I would recommend that you spend 2-3 hours five or six times during the week studying chemistry. This way, if you have trouble, you can get help as you go along. Believe me, it’s a lot easier to do it this way. Avoid the temptation of putting off studying.

• Not having good study habits Remember. I EXPECT YOU TO DEVELOP A MASTERY OF THE COURSE MATERIAL. Plain and simple. You need to establish good study habits right from the beginning. At first some of the material might seem familiar. We will cover some things you have seen in General Chemistry. You will think, “I already know this stuff, so I don’t have to work hard.” You can get by the first exam with this approach. We will soon be into things that you haven’t seen before. If you haven’t established good study habits, you’ll get yourself into a very deep hole very quickly. This hole is one that is very hard to dig yourself out of.

• Not studying effectively You need to learn to get the most out of the time you spend studying. You need to develop an active approach to studying. This does NOT mean sitting and looking at the text and saying, “OK, that makes sense...” You benefit a lot more by writing, working problems, explaining things to your classmates. Get one or two classmates and study together once or twice a week. Don’t do this until you have studied individually. Explain things to each other. Make sample tests & quizzes for each other. You need to immerse yourself in the world of O-Chem for the next year if you want to be successful. You should spend about 1/2 to 1/3 of your study time STUDYING ACTIVELY, i.e. working problems. Don’t just sit and stare at the text and think that you will be able to solve the problems on the exams successfully.

• There are three main tools you should use in your studies. Each of these tools is important. Ideally they should complement one another.

1. Course Handouts/Lecture Notes: I have put a lot of work into developing these handouts over the past ten years. I do it because I want to clarify and supplement what is covered in the text and in class. These handouts are NOT a copy of the lecture notes. A lot of blank space is left for you to take notes and fill in material as it is covered in class. Take good notes and then study them. If you don’t understand a topic, go to the lecture text for help or come by and ask me. A good tip is to mark places where you are having trouble with sticky notes. This way, when you come by my office, we can go from item to item and you can get your questions answered quickly and efficiently.

2. Homework Problems: I’ve already said my opinion on working homework problems. This applies to problems in the Brown text as well as problems & questions given in the handouts. You should be able to work through the assigned problems quickly, without having to refer to the text, lecture notes, handouts, or other materials. Remember, you won’t have access to these things on quizzes & exams. This means you’ll probably need to work through all of the problems two or three times to master them.

3. Lecture text: I expect you to read the topics in the Brown text. You’ll probably need to read them two or three times to master the material. Read the assigned pages as well as handout BEFORE you come to class, that way you will have a better idea of what is to be covered during that class.
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<tr>
<td>1/23</td>
<td>E1 and E2, organic synthesis</td>
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<td><strong>Ethers, epoxides, and sulfides:</strong> Structure, Nomenclature, and physical properties of ethers.</td>
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<td>synthesis of ethers</td>
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<td>reactions of ethers and synthesis of epoxides</td>
<td>chapter 11</td>
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<td>Ring-opening of epoxides reactions, synthesis.</td>
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<td><strong>An introduction of organometallic compounds:</strong> Types of OM compounds, Synthesis of organo lithium and Grignard reagents</td>
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<td>reaction of GR with epoxides and aldehyde</td>
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<td>reaction of GR with CO₂ and ester</td>
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<td>coupling by Gilman reaction, Carbene, Simon smith reaction, synthesis</td>
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<td>2/20</td>
<td><strong>Aldehydes and ketones:</strong> Structure, Nomenclature, and physical properties</td>
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<td>Synthesis of carbonyls: alcohol oxidation, ozonolysis, hydration of alkyne,</td>
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<td><strong>Exam 1 (Math 130; 5-7 pm)</strong></td>
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<td>Synthesis of carbonyls: orgalo lithium with carboxylic acid, GR with nitriles, Fridel Craft reaction, DIBAL with ester,</td>
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<td>Reaction of carbonyls with alcohols, thiols, amine, cyanide,</td>
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<td>Reduction of carbonyls, NaBH₄, LiAlH₄, Clemmenson and Wolf-Kishner reduction, Witting reaction</td>
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<td><strong>Carboxylic acid:</strong> Structure, Nomenclature, and physical properties, Acidity, reaction with base, Synthesis of carboxylic</td>
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<td>Acid, GR with CO₂, alcohol oxidation, side chain oxidation of an alkyl aromatic, oxidative cleavage of alkene</td>
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<td>nitrile hydrolysis, reduction with LAH, decarboxylation, Hunsdiecker decarboxylation</td>
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<td><strong>Carboxylic acid derivatives: Structure, Nomenclature, synthesis of carboxylic acid derivatives from carboxylic acid: acid chlorides.</strong></td>
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<td><strong>Synthesis of acid anhydrides, ester, and amides,</strong> chapter 17</td>
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<td><strong>Reaction of acid chlorides, ester, and amides</strong></td>
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<td>Chemistry of nitriles, synthesis of nitriles, reaction of nitriles</td>
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<td><strong>Enolates and Enamines:</strong> enol and enolates, α-halogenation, α-alkylation, LDA vs enamine, aldol, mix aldol</td>
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<td>LDA vs enamine, aldol, mix aldol, chapter 19</td>
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<td><strong>Aromatic Compounds:</strong> Structure, Nomenclature, heat of hydrogenation</td>
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<td><strong>Aromatic Compounds:</strong> Structure, Nomenclature, heat of hydrogenation</td>
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<td>Nomenclature, heat of hydrogenation, Aromatic compounds</td>
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<td><strong>Huckel rule, Aromatic compounds</strong></td>
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<td>Non aromatic compounds, effect of aromaticity on pKa, aromaticity influence chemical reactivity</td>
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<td>4/17</td>
<td>Reactions of Benzene and its derivatives: Bromination, nitration, sulfonation, desulfonation</td>
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<td><strong>Reactions of Benzene and its derivatives:</strong> Friedel Craft, side-chain oxidation, benzylic bromination, reduction of nitrogroup, Alkali Fusion,</td>
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<td>Nucleophilic aromatic substitution, Benzyne.</td>
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<td>Amines: Structure, Nomenclature, basicity, physical properties, synthesis of amines, Gabriel synthesis, chapter 23</td>
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<td>reduction of azides and nitriles, Hofmann Rearrangement, reductive amination chapter 23</td>
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<td>Diazonium salt formation and its reactions, Hofmann elimination, Cope elimination chapter 23</td>
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<td><strong>Polymer chemistry:</strong> definition, natural and synthetic polymers, thermoplastic and thermosetting polymers, plastic, elastomers, fibers and liquids chapter 29</td>
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<td>5/3-5/6</td>
<td>Nomenclature, polymer synthesis chapter 29</td>
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<td>5-8-5/10</td>
<td>Addition polymerization and step-growth polymerization, Radical, cationic, and anionic addition polymerization, chapter 29</td>
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<td>Synthesis of Nylone 6,6, polyester, polyamides, poly – urethan, chapter 29</td>
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<td>Ring opening metathesis polymerization, Molecular weight, polymer microstructure chapter 29</td>
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<td>13-May</td>
<td>Final Exams, Room Math 130 at 10:30.00-12.30 am</td>
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