CHEM 227-200: Organic Chemistry 1 Honors†

Rm 2121, 9:35 – 10:50 am, TR, Fall 2018
Professor: Kevin Burgess, room 2161 ILSB
Assistant: Andrea Scott, room 2161 ILSB, ascott@chem.tamu.edu Mon - Fri 12:15 – 4:15 pm
Prerequisite: CHEM

A. Book

I recommend Angela Duckworth's *Grit: The Power of Passion and Perseverance* (in print, or as an audiobook). We will not be using this book directly and you are not required to buy it, but anyone faced with a challenging goal, of any kind, would benefit from this book.

The reading text for this class is *Organic Chemistry 2e PA w/Ebook Folder & SW5 + Study Guide and SSM*, by Joel Karty. It is being provided by the publisher, Dr. Burgess will have copies.

To access your online homework, SmartWork5, always click the link in eCampus. This will ensure that your instructor receives your grades. When you first click on SmartWork5 in eCampus, a window will pop up prompting you to register. Once the window pops up, follow the below instructions:

(i) Select "No, I need to register, purchase, or sign up for trial access." Click the green button to continue.

(ii) Fill out the form with your full name, your school email address and your password. DO NOT register for Smartwork5 with a personal email address. Doing so will make it difficult for your instructor to track your grades.

(iii) Determine how you would like to access Smartwork5:

Select "I want to purchase access." Then, click the "Show Purchasing Options" button. SmartWork5 is free for your class in Fall 2018/Spring 2019, so select the "Free Beta Access to SmartWork5 for Organic Chemistry" link and then the green "Get Free Item".

(iv) Access your assignments and remember to always enter SmartWork5 through the eCampus link (otherwise your grades won't show up in the gradebook)

For any questions about SmartWork5, file a help desk ticket/live chat with a specialist at http://books.wwnorton.com/books/support/.

If you'd like to see more detailed written instructions and FAQ about SmartWork5, go to http://wwnorton.knowledgeowl.com/help/smartwork5.

If you'd like to watch a video about how to register for SmartWork5, go to http://wwnorton.knowledgeowl.com/help/fdoc#how-to-register-for-smartwork5-with-blackboard.

In class, I will be using primarily: *Sophomore Organic Chemistry 1 By Inquisition, by Kevin Burgess, from http://www.byinquisition.org*. Bring this book to every class; without it you will not be able to follow the lecture well.

Americans with Disabilities Act (ADA) Policy Statement: The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact Disability Services, Student Services @ White Creek, Budling 0062, or call 845-1637. For additional information visit http://disability.tamu.edu

B. Other Resources

Internet

The course website is at ecampus.tamu.edu; sign in requires NetID and password. Course material will be posted at this website. It is students' responsibility to check email and the ecampus website for class-related information, but the primary mode of communication will be in lectures.

Molecular Models

Molecular models are highly recommended because these models help visualization of molecular shape and structure. However, these models are *not* allowed in exams. Darling Models, Molecular Visions Molecular Model Kit, TAMU Edition, may be purchased from the Student Affiliate Chapter of the American Chemical Society in Room 104, Chemistry.

Study Groups

I will form in-class study groups, and recommend that you meet in study groups outside class too. You *may* discuss problems on the lecture handouts with this each other, and with your SI leader.

Seating

Seating will be assigned in some classes to facilitate group quizes, and in exams. Room 2121 seats more people than we have in class. Please do not sit near the back of the room because that makes it harder to teach an interactive class.

C. Course Description

Organic Chemistry I (CHEM 227), is a foundation in structure of organic compounds, their reactions, and underlying reaction mechanisms. It covers essential information for many other disciplines including biology, biochemistry, chemical engineering, physiology, pharmacology, health sciences, and polymer science.

To master 227 and 228, learn the concepts, then to practice drawing answers in the graphical language that organic chemists use. Students who do not understand the basic concepts find organic chemistry very hard. Conversely, students have to understand certain concepts in organic to begin to "speak it". Understanding concepts, though, *is not enough*. It is also necessary to be able to apply them by drawing solutions to problems clearly and accurately. The exams require structures, reaction mechanisms, and synthetic sequences to be *understood* then *drawn*. Could you learn how to write Chinese characters by reading about them for a semester, without drawing them yourself? Could you do this even if you already spoke a Chinese dialect, but not how to write Chinese? Success in the class correlates with purposeful practice: (i) identifying key concepts they do not understand; (ii) understanding them by reading, web research, and discussion; and, (iii) applying these concepts while practicing drawing chemical structures and mechanisms.

I teach a flipped class from my books: *Sophomore Organic Chemistry By Inquisition*. Each chapter contains more problems than will be solved in class and students should solve the rest in their own time. The quizzes, exams and final tend to consist of problems very similar to those in the book.

The intended study strategy for my class is to: (i) work the rest of the problems in *By Inquisition* after the lecture, using the textbook for clarification; (ii) complete the online assignments for that lecture; and, (iii) read the textbook (Karty) on the chapter I am about to cover in *By Inquisiton*. Students who do steps (i) – (iii) for each lecture, before the next, will tend to do well.

D. Opportunities For Meeting Me

If students email me (burgess@tamu.edu) with chemical problems, I strip away personal information and send the question and response to the whole class. Students can make an appointment for office hours via email to Andrea Scott. I have two rules about office hours: (i) meetings in my office are to talk about *science* not grades; and, (ii) I will not solve the exact problems set in *Sophomore Organic Chemistry By Inquisition*. Rule (i) is because it is my job to teach chemistry not second-guess how hard students will study. Rule (ii) is because I set exams and quizzes based on the class handouts; it would not be fair to go through those examples with select students. You can, however, figure them out with people you study with, and all the answers for *Sophomore Organic Chemistry By Inquisition* are online (www.byinquisition.org).

Students who can tell me the issues they do not grasp tend to use meetings with me effectively. Superior scholars collect problems where they disagree with, or do not understand, the answer. *To master any subject it is important to first identify what you do not understand.* Sometimes students to come to me late in the course and say, "I don't get it", meaning organic chemistry as a whole. Tell me specifically what you have tried to understand and failed, then I can help.

If groups of students request it, I can make informal appointments to meet a set of students.

E. In-class Quizzes and/or OWL Assignments

In class quizzes will be given almost every lecture. Seven of these, selected at random, will be graded (1 pt each), and *the best five scores* will be used. Almost invariably my quizzes will be one question, with a straightforward answer, worth one point. A quiz answer that is mostly right earns a point, and one that is mostly wrong does not.

Students who miss no more than two of the graded quizzes will have five others that may score. This is an "advance make-up system" wherein students "bank" good attendance in case they run into difficulties. Anyone who misses a quiz need not tell me, not even if they have a heart-wrenching excuse; *the fact that I only record seven grades and this advance make-up system is the cushion for missing a quiz for excused absences*. There will be no other make-ups on quizzes.

There will be 10 SmartWork5 assignments per lecture: please try to complete them before the next lecture. Ideally, students read the relevant chapter in Karty before the lecture, work the problems with me in *By Inquisiton* that I go over in class, and complete the rest of the *By Inquisiton* questions and the SmartWork5 assignments for that chapter before the next lecture. Students who keep to this routine will score well in the in class quizzes. Students who make the informal deadline, *ie* complete the online assignments for each lecture immediately after the lecture, will automatically make the formal deadline.

Generally, the formal deadline for completing the online homeworks is before the exam covering that material. It is the student's responsibility to keep track of these deadlines *and they are immovable*. Do not leave these assignments until the last minute in case an emergency arises; do them after each lecture.

All online assignments will be graded and scores will be adjusted to a round number of points (see below).

FAQ About Quizzes, Owl Assignments, Or Exams

Q. I had to miss this class, can I take a quiz make-up.

A. No. Seven quizzes are graded and only the best five are counted, therefore students can miss two.

Q. I am going to miss this class because I am on the Uni ??? Club, do you want to see my excuse letter?

A. No.

Q. Would you please extend my SmartWorks deadline because I had a last-minute emergency?

A. No. The deadlines lag where we are in class, and it is the student's responsibility to get the online problems done well in advance of the formal deadlines. These deadlines are *immovable*.

Q. I am going to miss this exam; do you want to see my excuse letter?

A. Yes. Email it to Andrea Scott, and cc me. If you have not done this within two working days of the absence then no points will be awarded for that Exam. No points will be awarded if the excuse is not approved.

Q. I am going to miss / have missed, the final. Do you want to see my excuse letter?

A. Hell Yes. Email it to Andrea Scott, and cc me. If you have not done this within two working days of the absence then no points will be awarded for the Final. No points will be awarded if the excuse is not approved. I have been teaching for 26 years at TAMU, and in that time I can only recall one instance of a student missing my final.

F. Grading Structure

	pts	%
5 graded in-class quizzes	5	5
normalized online assignments	5	5
3 x 70 min exams	3 x 20	60
final	30	30
total	**100**	**100**

To remain impartial and objective, I decide grade cut-offs at the end of class by looking at the curve alone and never at who made what score.

Students taking the exams/final must bring ID; anyone who cannot identify him/herself may be awarded no credit. Books and models are not permitted in the final, exams or quizzes. Seating in the exams and final will be *assigned*; please note your seat assignment when this is announced in class.

Nearly always there will be 10 questions on each exam, and each question will be worth 2 pts each. Usually, answers to exam questions that are completely or mostly right, about half right, and mostly or completely wrong; these correspond to 2, 1, and 0 points, respectively. A similar format will be followed in the final, but the questions are for 3 points each.

I do not set graded assignments (*eg* end of chapter problems) because students lose sight of the most important things to study, and tend to focus on the easiest material. My course is straightforward: nothing matters more than learning how to solve problems like those in *Sophomore Organic Chemistry By Inquisition*.

G. Make-up Exams

If a student has to miss an exam because of an excused absence as designated in the official *Texas A&M University Regulations* he/she should follow the following procedure:

(i) Before the exam, contact Ms Scott, (Ascott@mail.chem.tamu.edu, 845-9165 am, 845-1847 pm, or leave message) with the reason. Ms Scott will document such emails/calls. Students who can anticipate an excusable absence should provide notification before the day of the exam. Notifications should be received no later than two working days after the exam, and then only in cases of extreme hardship.

(ii) Written explanations must then be submitted to Ms Scott at the earliest possible time, with supporting documentation. *Written requests not received within two working days of the absence will usually be denied* (see University Rules).

There will be no formal make-up exams. Students who miss an exam, *but only for an excused absence with appropriate notification*,[1] will be graded using the following system:

	pts	**%**
5 in-class quizzes	10	10
online problems	10	10
2 x 70 min exams	2 x 20	40
final exam	40	40
total	**100**	**100**

If a student misses the final exam, *for an excused absence with appropriate notification*, then:

	pts	**%**
5 in-class quizzes	5	5
online problems	5	5
3 x 70 min exams	3 x 30	3 x 30
total	**100**	**100**

Aggies who lie about an excused absence are disrespectful this academic institution. When a student tells me of a serious problem (*eg* death in family) I need to be able to believe without hesitation. If even a few students present sham excuses then I risk becoming unsympathetic to someone who has a real issue.

Regrades

Students who have cause for a regrade, please see Dr Burgess as soon as your exam is returned in class. After that, Ms Scott is usually available in 2161 of the ILSB from 12:15 – 4:15 pm weekdays). *Do not submit regrade requests to Dr Burgess*. Regrades are complete: scores may increase or decrease. Verbal information tends to be forgotten or lost therefore *requests must be made in writing* to Ms Scott within two University class days of the exam return date. Failure to collect an exam is an unacceptable excuse for having it regraded later. Regrade requests must be signed and contain the following statement, "*No changes have been made to this material since the exam.*" They should describe the suspected error, and given to Ms Scott. Altering graded exams for regrade is a serious breach of the honor code at A & M.[2]

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[1] Absences of less than three days due to injury or illness will require that you provide either a physician's note affirming the date and time of visit related to the absence or the TAMU Explanatory Statement for Absence from Class form available at: http://shs.tamu.edu/forms.htm. You may use this form to document excused absences of less than three days. However, if you do not have a physician's note, please keep in mind that the information will be verified. Any misinformation included on the form or an inability to verify the information will lead to sanctions under the Aggie Code of Honor. Absences of three or more days due to illness or injury will definitely require a physician's note or other acceptable documentation. Appropriate documentation will be required for other excused absences. The University's policy has an absolute deadline (by the end of the second working day after the absence) by which you must notify the professor of any excused absence. Delays in notification usually raise some doubts about the validity of the excuse. Do not take this admonition lightly since some people receive zeros on exams each semester for failure to follow this University regulation. It is your responsibility of a student requesting an excused absence to contact the Prof, not his/hers to contact them, so e-mailing asking me to contact you is unacceptable. You must keep trying to contact me or Andrea to talk with me either in person or on the phone until you are successful. Please see http://student-rules.tamu.edu/rule07 for more information on University policies for absences.

[2] ***"An Aggie does not lie, cheat, or steal or tolerate those who do."*** All TAMU students commit to uphold the Honor Code, to accept responsibility for learning, and to follow the philosophy and rules of the Honor System. Students will be required to state their commitment on examinations, research papers, and other academic work. Ignorance of the rules does not exclude any member of the TAMU community from the requirements or the processes of the Honor System. http://aggiehonor.tamu.edu/

H. Tentative Schedule

Exams 1 – 3 are currently scheduled for *September 25*, *October 11*, and *November 13* (*dates may change).*

The Final will be on Friday, December 7, 12:30 – 2:30 pm.

date	Karty (chapter)	By Inquisition Chapter	exam content
Aug 28	1 + 3	1 Hybrization	
30	4	2 Saturated Acyclic Hydrocarbons	
		(August 31, add/drop deadline)	
Sept 4	1	3 Fragments And Functional Groups	
6	4	4 Conformations Of Cyclic Hydrocarbons	
11	7	5 Curly Arrows And Electron Flow	
13	6	6 Acids And Bases	
18	2	7 Resonance: Practicing Curly Arrows	
20	5	8 Stereochemistry	
25		Exam 1, first formal online hw deadline for Exam 1 material	on lectures 1 - 6
25	8	9 S_N1 Displacement At sp^3 Centers	
27	9	10 S_N2 Displacement At sp^3 Centers	
Oct 2	10	11 Elimination Reactions To Form Alkenes	
4	11	12 Reactions Of Alkenes Via Protonation	
9	12	13 Oxidation States, Hydrogenation, And Hydrogenolysis	
11		Exam 2, second formal online hw (Exam 2 material)	on lectures 7 - 12
16	-	14 Halogenation Of Alkenes	
		MIDTERM Grades Due 10/15	
18	12	15 Epoxidation Of Alkenes, And Epoxides	
23	24	16 Cycloadditions To Alkenes And Alkynes	
25	14	17 Benzene And Aromaticity	
30	22 + 23	18 Electrophilic Attack On Benzene	
Nov 1	15	19 Ultraviolet And Fluorescence Spectroscopy	
6	15	20 Infrared (IR) Spectroscopy	
8	16	21 ^{13}C NMR Spectroscopy	
13		Exam 3, third formal online hw deadline	On lectures 13 - 18
15	16	22 ^{1}H NMR Spectroscopy	
		November 16, Q-drop deadline	
20	16	23 Mass Spectrometry (MS)	
22		**THANKSGIVING No Class**	
27	-	24 Spectroscopy Practice	
29	-	25 Spectroscopy Practice	
Dec 4	-	26 Spectroscopy Practice **LAST DAY OF CLASS**	
December 7	**Final Exam.**	Last hw deadline (no extensions) 12:30 – 2:30 pm	mostly on lectures 19 - 26

I. SI Leaders

We will probably have help from an SI leader. Even if we do not have one specifically for our class, you can find a good SI leader meeting at a convenient time for you, and attend when you can. Schedules will be posted on: http://successcenter.tamu.edu/Supplemental-Instruction/SI-Leaders. It is allowed to ask him/her about answers to the problems in my text/handouts (but cannot be 100% sure the answer is right!).

J. Teaching Philosophy

Observations

- students learn organic structures, concepts and mechanisms by drawing them;
- drawing organic structures and mechanisms currently cannot be effectively taught via web based systems, particularly multiple choice formats;
- asking students to draw structures/mechanisms in lectures is more valuable to them than writing words;
- students are, and should be, unsatisfied by lectures they can understand immediately by reading the book;
- PowerPoint presentations in lectures have value for images that cannot be drawn easily (*eg* spectra and proteins), but their excessive use is impersonal, boring, and overwhelming;
- students do *not* come to class to be lectured on material they will not be tested on;
- students should read organic textbooks to help them understand concepts and memorize facts;
- reading the book in advance of each lecture is valuable;
- students should be free to study from *any* good, appropriate textbook;
- do not grade on scales that involve lots of points, or give point fractions, because it is *impossible* to consistently and reliably differentiate between answers that are partly wrong in many different ways;
- publishers charge too much for textbooks and deliberately suppress their re-sale value by introducing new editions;
- it is easy for students to spend too much time on trivia in a textbook (*eg* who did what and when, chemistry in society) and not enough on the key concepts;
- students do *not* read books to learn material they will not be tested on;
- students, like professors, are busy, so it is better for them to have all they have to learn concentrated in one document, and to be graded via a clear and simple system;
- fundamental *chemistries* of amino acids, peptides, proteins, carbohydrates, nucleosides, and nucleotides are at the end of the syllabus and are often not covered due to lack of time;
- it is important that majors in subjects like chemistry, biology, biochemistry, genetics (and aspiring pre-meds, vets, dentists, nurses *etc*) know about fundamental *chemistries* of amino acids, peptides, proteins, carbohydrates, nucleosides, and nucleotides;
- on the other hand, there is no time to teach “biochemistry-light”, the emphasis must be on the *chemistry* of the topics listed above; and,
- ignore negative, non-productive criticism, but consider all constructive suggestions from any student

My Book Is To

- require students to draw structures and mechanisms;
- break down difficult concepts into small deductive steps;
- provide lots of examples to practice these concepts;
- be *extremely* similar to the quizzes and exams that will be set;
- avoid material that is straightforward and clearly described in the book;
- provide nearly all the text necessary; and,
- contain *more* problems than could be solved in class, to give motivated students relevant material to study.

I Try To

- make lectures genuinely worth attending by stressing concepts and drawing structures/mechanisms;
- draw facing the students using minimal ppts;
- encourage thinking and dialog by asking lots of question, calling on students by name, but not humiliating people who cannot answer;
- make it clear what students should learn;
- make it possible for students to use any edition of the recommended text, and other appropriate books;
- include fundamental *chemistries* of amino acids, peptides, proteins, carbohydrates, nucleosides, and nucleotides;
- avoid “clutter and fluff”;
- augment the notes with relevant videos;
- direct students to online resources that may assist their understanding
- grade fairly by using a straightforward, unambiguous system; and, most importantly,
- enable students to enjoy the class.

K. Learning Objectives

At the end of this course students will be able to understand:

(i) how routine spectroscopic techniques are applied to identify organic compounds;
(ii) electron flow as it relates to the mechanisms of organic reactions, and depict this with accurate curly arrows;
(iii) fundamental chemistry of functional groups including aromatics, amines, and carbonyl compounds; and,
(iv) how these functional groups influence the chemistry of essential biomolecules including carbohydrates, amino acids, peptides, proteins, DNA and RNA.

Permission To Post Grades Form

Please fill in the following data.

name in BLOCK CAPITALS: _____

email address IN BLOCK CAPITALS: _____

Please define a personal, secret "nickname" that will be uses to post grades (physically or via email). Students who do not give permission cannot access their grades until they are officially released at the end of the semester.

By defining a suitable personal secret password you are giving permission to post grades. The personal secret password must *START WITH A LETTER* (not a number, because the grades will be posted alphabetically) and consist of 5 – 10 characters.

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Are you the person in the class who is going to forget your password? It will cost you time if you do. If you do forget then email: ascott@mail.chem.tamu.edu and try to find out from her what it is, or go to her and fill in another form.

FOLD THIS FORM SO THAT NO ONE READS YOUR NICKNAME, AND PASS THE FOLDED FORM TO THE END OF THE ROW AT YOUR RIGHT FOR COLLECTION