CHEM 2325-001, Organic Chemistry II
Meets MWF 11:00a-11:50a; Location: STC127
COURSE SYLLABUS: Spring Semester, 2020

INSTRUCTOR INFORMATION

Instructor: Allan D. Headley, Professor
Office Location: Science Building, 337
Office Hours: Mondays, 9:00 am – 11:00 am; Wednesdays and Fridays, 10:00 a.m. – 11:00 a.m.; Tuesdays and Thursdays, 1:00 p.m. – 2:00 p.m.
Office Phone: (903) 468-8106
Office Fax: (903) 468-6020
University Email Address: allan.headley@tamuc.edu
Preferred Form of Communication: email
Communication Response Time: within one day

COURSE INFORMATION

A chemistry model set is highly recommended. Model sets can be purchased at https://duluthlabs.com/

Course Description
In this course, reactions of organic compounds that have different functional groups will be studied. Various reaction types will be introduced and mechanisms will be proposed to give a rationale for various reaction outcomes. In addition, various spectroscopic techniques will be used in this course, but the basics are covered extensively in lab. A letter grade earned in this class not only reflects the student's knowledge of organic chemistry, but also reflects the student's ability to solve scientific problems based on available information and to become a better scientist.
Prerequisite: CHEM 2323, CHEM 1412 with grade of “C” or better or consent of the instructor. Corequisite: CHEM 202. Note: Credit will not be given for both CHEM 201 and 2323.

Student Learning Outcomes
1. Students should be able to utilize different reactions and strategies to synthesize various target molecules.

The syllabus/schedule are subject to change.
2. Students should be able to develop successful strategies for the synthesis of large organic compounds from smaller ones.
3. Students should be able to apply the basic concepts of organic chemistry that are discussed to mechanistic and synthetic organic chemistry problems.
4. This course is designed to develop and improve the student's ability to think critically and analytically about various problems.
5. Students’ ability to think critically and solve problems should be improved.

COURSE REQUIREMENTS

Minimal Technical Skills Needed
Basic knowledge of internet and how to interface with D2L to download various problem sets and other important information that will be posted.

Instructional Methods
This course will be face-to-face delivery.

Student Responsibilities or Tips for Success in the Course
It is assumed that the good student will be able to work all the problems in the textbook (even the study problems in each chapter). You must work lots of problems, even from other textbooks and study guides to be sure you understand and can use the concepts studied to determine possible solutions for problems. It is not a good idea to try to memorize solutions to problems, since identical problems will not be used again. You should always critically analyze your work to ensure that you have applied reasonable steps to deduce your solution. Also, ask yourself how a problem might be rearranged as a possible test item. Remember that there is typically more than one possible solution to a problem! Be precise with your answers. You will find this helpful in preparing for exams. Always try to discuss possible solutions with other students. Remember that there is typically more than one possible solution to a problem! Be precise with your answers. On your exams, you will be graded on what you write, not what you meant to write, or thought you wrote. If your solutions to problems are difficult for your classmates to understand, then your solutions to questions on the exam will be very difficult to grade.

GRADING

First Exam: Monday, February 17, 2020
Second Exam: Monday, March 23, 2020
Third Exam: Monday, April 20, 2020
Final Exam: Week of May 4, 2020 (see examination schedule: http://appsprod.tamuc.edu/Schedule/Schedule.aspx)

Your course grade will be based on your midterm exams, quizzes and a final exam. Each course midterm exam is worth 100 points (22.5% of your final grade), quizzes are worth 22.5% and a course comprehensive final American Chemical Society (ACS) final exam is worth 10% of your final grade. The key and score distribution will be posted on D2L. All exams will be closed books; pens, pencils and erasers are the only items that

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may be used during each exam. Each midterm exam is cumulative, but will emphasize the material covered since the previous midterm exam.

Assessments
Your grade will be computed based on the class average, for example if the class average is around 77% with a standard deviation of approximately 15 the grade cutoffs is: A = 90%-100%; B = 80%-89%; C = 70%-79%; D = 60%-69%; F = 59% or below. If the class average is lower, the cutoffs will be adjusted and students informed of the grade cutoffs after each exam and before the final exam.

TECHNOLOGY REQUIREMENTS

LMS
All course sections offered by Texas A&M University-Commerce have a corresponding course shell in the myLeo Online Learning Management System (LMS). Below are technical requirements
LMS Requirements:
https://community.brightspace.com/s/article/Brightspace-Platform-Requirements
LMS Browser Support:
https://documentation.brightspace.com/EN/brightspace/requirements/all/browser_support.htm
YouSeeU Virtual Classroom Requirements:
https://support.youseeu.com/hc/en-us/articles/115007031107-Basic-System-Requirements

ACCESS AND NAVIGATION
You will need your campus-wide ID (CWID) and password to log into the course. If you do not know your CWID or have forgotten your password, contact the Center for IT Excellence (CITE) at 903.468.6000 or helpdesk@tamuc.edu.

Note: Personal computer and internet connection problems do not excuse the requirement to complete all course work in a timely and satisfactory manner. Each student needs to have a backup method to deal with these inevitable problems. These methods might include the availability of a backup PC at home or work, the temporary use of a computer at a friend's home, the local library, office service companies, Starbucks, a TAMUC campus open computer lab, etc.

COMMUNICATION AND SUPPORT
If you have any questions or are having difficulties with the course material, please contact your Instructor.

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Technical Support
If you are having technical difficulty with any part of Brightspace, please contact Brightspace Technical Support at 1-877-325-7778. Other support options can be found here:

https://community.brightspace.com/support/s/contactsupport

Interaction with Instructor Statement
The preferred mode of communication is via e-mail and a response time of one day is typical.

COURSE AND UNIVERSITY PROCEDURES/POLICIES

Course Specific Procedures/Policies
NO make-up exams will be offered. If you miss a midterm for a reason beyond your control, you may request in writing to be excused from that exam providing you have valid written documentation supporting your reason.

When you review your graded exams, be sure NOT TO WRITE anything on your exam in the case you discover that a grading error was made. Exam grading will be reviewed if you think an ERROR has been made, but ONLY if the following procedure is followed:

1. Write a very concise note explaining what you think the error in grading was. This must be specific as to the mistake, typically no more than two sentences.
2. SIGN a statement on the note that you attest that you have made NO CHANGES at all on the exam since it was returned to you.
3. Attach the note to the test and hand it in to the instructor NO LATER THAN ONE WEEK after the graded exam was returned.

The entire exam will be regraded and returned approximately one week after you handed it back in. Please note that photocopies may be made of the exams. These will be compared with exams turned in for regrade to assure that changes have not been made. You are allowed only one regrade for each midterm exam. There are no regrades for the final exam.

Syllabus Change Policy
The syllabus is a guide. Circumstances and events, such as student progress, may make it necessary for the instructor to modify the syllabus during the semester. Any changes made to the syllabus will be announced in advance.

University Specific Procedures

Student Conduct
All students enrolled at the University shall follow the tenets of common decency and acceptable behavior conducive to a positive learning environment. The Code of Student Conduct is described in detail in the Student Guidebook.

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Students should also consult the Rules of Netiquette for more information regarding how to interact with students in an online forum:
https://www.britannica.com/topic/netiquette

TAMUC Attendance
For more information about the attendance policy please visit the Attendance webpage and Procedure 13.99.99.R0.01.
http://www.tamuc.edu/admissions/registrar/generalInformation/attendance.aspx

http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/academic/13.99.99.R0.01.pdf

Academic Integrity
Students at Texas A&M University-Commerce are expected to maintain high standards of integrity and honesty in all of their scholastic work. For more details and the definition of academic dishonesty see the following procedures:

Undergraduate Academic Dishonesty 13.99.99.R0.03

Graduate Student Academic Dishonesty 13.99.99.R0.10
http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/graduate/13.99.99.R0.10GraduateStudentAcademicDishonesty.pdf

Students with Disabilities-- ADA 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 have a disability requiring an accommodation, please contact:

Office of Student Disability Resources and Services
Texas A&M University-Commerce
Gee Library- Room 162
Phone (903) 886-5150 or (903) 886-5835
Fax (903) 468-8148
Email: studentdisabilityservices@tamuc.edu
Website: Office of Student Disability Resources and Services
http://www.tamuc.edu/campusLife/campusServices/studentDisabilityResourcesAndServices/

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Nondiscrimination Notice
Texas A&M University-Commerce will comply in the classroom, and in online courses, with all federal and state laws prohibiting discrimination and related retaliation on the basis of race, color, religion, sex, national origin, disability, age, genetic information or veteran status. Further, an environment free from discrimination on the basis of sexual orientation, gender identity, or gender expression will be maintained.

Campus Concealed Carry Statement
Texas Senate Bill - 11 (Government Code 411.2031, et al.) authorizes the carrying of a concealed handgun in Texas A&M University-Commerce buildings only by persons who have been issued and are in possession of a Texas License to Carry a Handgun. Qualified law enforcement officers or those who are otherwise authorized to carry a concealed handgun in the State of Texas are also permitted to do so. Pursuant to Penal Code (PC) 46.035 and A&M-Commerce Rule 34.06.02.R1, license holders may not carry a concealed handgun in restricted locations.

For a list of locations, please refer to the Carrying Concealed Handguns On Campus document and/or consult your event organizer.

Web url: http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/34SafetyOfEmployeesAndStudents/34.06.02.R1.pdf

Pursuant to PC 46.035, the open carrying of handguns is prohibited on all A&M-Commerce campuses. Report violations to the University Police Department at 903-886-5868 or 9-1-1.

COURSE OUTLINE / CALENDAR
TENTATIVE SYLLABUS

<table>
<thead>
<tr>
<th>Week of</th>
<th>TOPICS TO BE COVERED</th>
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<tbody>
<tr>
<td>Jan 14</td>
<td>Introductions; oxidation of alcohols &amp; aldehydes; oxidation of alkenes without bond cleavage;</td>
</tr>
<tr>
<td>Jan 21</td>
<td>Oxidation of alkenes with bond cleavage; applications of oxidation of alkenes; oxidation of alkynes;</td>
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<tr>
<td>Jan 28</td>
<td>Oxidation of aromatic compounds; autooxidation of ethers; applications of oxidation reactions to synthesis</td>
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<tr>
<td>Feb 4</td>
<td>Mechanisms of elimination reactions; elimination of hydrogen and halide (dehydrohalogenation); elimination of water (dehydration); applications of elimination reactions – synthesis;</td>
</tr>
<tr>
<td>Feb 11</td>
<td>Types of alkanes and alkyl halides; chlorination of alkanes; bromination of alkanes; reactions of alkyl halides; nucleophilic substitution reactions; bimolecular substitution reaction mechanism (SN2 mechanism); applications of bimolecular substitution reactions;</td>
</tr>
<tr>
<td>Feb 18</td>
<td>Unimolecular substitution reaction mechanism (SN1 mechanism); applications of unimolecular substitution reactions; substitution reactions</td>
</tr>
</tbody>
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involving alcohols; applications of nucleophilic substitution reactions - synthesis

Feb 25  Mechanism for acyl substitution; substitution reactions involving acid chlorides; substitution reactions involving anhydrides; substitution reactions involving esters; substitution reactions involving amides; substitution reactions involving carboxylic acids

Mar 4  Structure and properties of benzene; nomenclature of substituted benzene; stability of benzene; features of aromatic compounds; electrophilic aromatic substitution reactions of benzene; electrophilic aromatic substitution reactions of disubstituted benzene; electrophilic substitution reactions of polycyclic aromatic compounds

Mar 11  Electrophilic substitution reactions of pyrrole; electrophilic substitution reactions of pyridine; nucleophilic aromatic substitution of substituted benzenes; nucleophilic aromatic substitution of substituted of pyridine

Mar 18  Spring break

Mar 25  Cycloaddition reactions; electrocyclic reactions; sigmatropic reactions

Apr 1  Non-transition metals in coupling Reactions; palladium catalyzed coupling reactions

Apr 8  Cationic polymerization of alkenes; anionic polymerization of alkenes; free radical polymerization of alkenes

Apr 15  Acid-Base Properties of amino Acids; synthesis of amino acids; reactions of amino acids; structure and properties of peptides; peptide synthesis; primary structure of proteins; secondary structure of proteins

Apr 22  Monosaccharides; disaccharides and polysaccharides; N-glycosides

Apr 29  Lipids; properties and reactions of waxes; properties and reactions of simple lipids; properties and reactions of phospholipids; complex Lipids

May 4*  **FINAL EXAMINATION**

*Check examination schedule for specific date and time of final examination: http://appsprod.tamuc.edu/Schedule/Schedule.aspx

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