Course Syllabus

Course Number: Chem 2425 Trimester Credit Hours: 4
Course Title: Organic Chemistry II Total Contact Hours Per Trimester: 90
Course Director: Dr. Carissa Manrique
Office Hours: M 9-10:50pm; T-R 1-1:50pm

COURSE DESCRIPTION:

Our mission is to provide students with core knowledge in basic sciences so they can become successful as Parker students, on board exams, in treating patients, and eventually becoming chiropractors and leaders in the field of wellness.

The topics covered that will be covered in Organic II are in depth studies of the main functional groups found in organic chemistry and your body. A list of topics includes: reaction synthesis and mechanisms for alcohols, epoxides, ethers, ketones, aldehydes, amides, carboxylic acids and acid derivatives. In addition, students will be proficient in spectroscopy techniques such as NMR, IR and MS

GENERAL APPROACH TO TEACHING:

As I learn more about the teaching process and tools and techniques for engaging students and improving classroom techniques, I hope to become a stronger teacher, and leave students with a better understanding of science. I employ several active learning techniques, in an attempt to keep students involved. To get students involved in the process of learning, I have found that giving varied assignments and multiple examples are effective techniques.

I teach because I have a passion to work with students and help them develop fundamental skills to have a successful life. I teach organic chemistry which is traditionally thought of as a "dreaded" course by students by challenging student's preconceived thoughts and show them that organic chemistry applies to every aspect of their lives and is nothing to be feared. I educate with a more relaxed style where students are welcome to chime in at any point in the lecture and ask questions. I measure the effectiveness of my class in several ways: First, the traditional exams, quizzes. Second, I have students build wiki pages over organic chemistry studies they find interesting online. The more involved and detailed these pages become the more I realize they are learning. Last, I can tell by informal means such as student's facial expressions and the quality of questions they are asking in class. There is nothing better than seeing a student who has an expression of full understanding of a challenging concept.

COURSE REQUIREMENTS

To succeed in this course I recommend studying approximately 1 hour each day over the new material learned in class. This class is accelerated and each day you will learn many new topics. It is vital that you keep up with the material and review

every day. I recommend using note cards for each organic concept and reaction in each chapter. When doing the online homework make sure you can understand all problems and can work them out by yourself. I do not mind if you work in groups to do the homework but remember you will only benefit if you can work them out independently. The lab reports are completed individually; you can get help from a peer but make sure you understand the material. All lab citations will be in APA format. All assignments MUST be turned in on time. No late assignments will be accepted.

ESTIMATE OF STUDENT WORKLOAD:

The estimated workload for this class is approximately 2 hr studying/1hr lecture

LEARNING OUTCOMES:

At the completion of this course, the student should:

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1. Apply the foundation of various chemistry bonding models to structure and bonding of organic molecules
2. Dissect and synthesis properties and structures of the main organic chemistry functional groups
3. Analyze and Interpret various IR, NMR and MS spectra
4. Evaluate and explain laboratory data.
5. Create an organic chemistry webpage based on application of organic chemistry classroom material

Weekly Learning Outcomes:

Week 1. Objectives Chapters 12 & 13 Wade

i) Recognize IR peaks
ii) Understand IR theory
iii) Read and interpret IR spectra
iv) Understand MS theory
v) Recognize MS base peaks
vi) Understand NMR theory
vii) Recognize NMR chemical shifts
viii) Interpret NMR signals and splitting

Week 2. Objectives Chapters 10 & 11 Wade

i) Interpret NMR spectra
ii) Classification of alcohols
iii) Nomenclature
iv) Properties and acidity
v) Alcohol synthesis

vi) Water In acidic solutions
vii) Oxymercuration demercuration
viii) Hydroboration
ix) Diols
x) Grinard
xi) Reduction of carbonyls
xii) Thiols

Week 3. Objectives Chapters 11 & 14 Wade

i) Oxidation of alcohols
ii) Tosylate elimination/substitution
iii) Reactions with HBr or HCl
iv) Reactions with $SOCl_2$; PBr_3
v) Esterification
vi) Williamson Ether
vii) Alkoxymercuration
viii) Ether Cleavage
ix) Thiols
x) Addition to Epoxides (acid and base)

Week 4. Objectives Chapters 16 & 17 Wade

i) Polygon Rule
ii) Aromatic
iii) Antiaromatic
iv) Nonaromatic
v) Basic Nitrogens
vi) Bromination of Benzene
vii) Nitration of Benzene
viii) Reduction of Nitro
ix) Sulfonation of Benzene
x) Friedel-Crafts Alkylation
xi) Friedel-Crafts Acylation

Week 5. Objectives Chapters 17 Wade

i) Ortho/Para directors
ii) Meta Directors
iii) Multiple substituents
iv) Nucleophilic Aromatic Subsitutions
v) Side Chain Oxidation
vi) Bromination with light
vii) Ketone and Aldehyde IUPAC
viii) Oxidation of alcohols
ix) Ozonolysis of alkenes
x) Friedel Crafts

xi) Hydration of alkenes
xii) Hydroboration of alkenes

Week 6. Objectives Chapters 18 & 19 Wade

i) Ketones from Carboxylic Acids
ii) Ketones from Nitriles
iii) Lithium with Acid Chlorides
iv) Aldehyde from Acid Chlorides
v) Hydration of ketone/aldehyde
vi) Protecting Group
vii) Wittig
viii) Immine formations
ix) Reductions
x) Amine nomenclature
xi) Hoffman
xii) Cope
xiii) Reductive Animation
xiv) Aniline protecting group

Week 7. Objectives Chapters 20 & 21 Wade

i) Carboxylic acid nomenclature
ii) Oxidation of alcohols
iii) Cleavage of Alkenes and Alkynes
iv) Benzene side chain oxidation
v) Carbon Dioxide and Grignard
vi) Hydrolysis of Nitriles
vii) Esterification
viii) Amides
ix) Reduction
x) Acid Chlorides
xi) Reactions of Acid Chlorides
xii) Reactions of Anhydrides
xiii) Reactions of Esters
xiv) Reactions of Amides

ASSESSMENT:

The student will be assessed through discussion questions, lecture exams, online homework and a wiki project detailed description is given below

PREREQUISITES:

Enrollment in Parker University, High School chemistry, College algebra, General chemistry I and II, Organic Chemistry I

REQUIRED TEXTBOOKS:

"Organic Chemistry" 7th ed L.G. Wade

RECOMMENDED ADDITIONAL TEXTBOOKS:

Organic Chemistry I as a Second Language: Translating the Basic Concepts by David Klein

SUPPLIES:

Access to a computer that is compatible with the My Parker website and can support the course resources, basic calculator with log functions, scantrons, pencils, Sapling online learning hw system, lab goggles, lab coat, latex gloves

GRADING SYSTEM:

Evaluation is an integral part of the educational process and is used as an educational tool to help students identify problem areas, to recognize and reward achievement, and to identify students who are unable to meet the rigors of the curriculum. Our class will be graded on a point system, so each assignment or exam is worth a designated amount of points that will be totaled for a final average. This will allow students not to focus on averages but instead have positive mindsets about the points they earned. Final course grades and their interpretation are listed below:

Grade	Numerical Value	Grade Point Average	Interpretation of Academic Achievement
A	89.5-100	4.0 (>1185 pts)	Excellent
B	79.5-89.49	3.0 (>1053 pts)	Above Average
C	69.5-79.49	2.0 (>921 pts	Satisfactory
D	69.49 or Below	0.0 (< 921 pts)	Unacceptable

This grading scale is strictly adhered to. There are NO exceptions.

Exams: (4)	38%	(100pts each)
Final Exam (1)	19%	(150 pts)
Labs Reports: (5)	7%	(20 pts each)
Lab Worksheets (10)		(15 pts each)
Lab Exams (2)		(100 pts each)
Project	8%	(55 pts)
Discussions: (7)	5%	(6 pts each)
Online HW (11)	23%	(20 pts each)
Total:	**100%**	**(1317 points)**

LABS:
Lab coat, Goggles, Latex Gloves

90/90 RULE:
Not applicable

EXTRA CREDIT:
Not applicable

My Parker Website: Description of Assessments

1. **Discussion postings**- the student will be expected to create one original discussion posting answering the question posed by the instructor. This must be posted no later than midnight on Monday in that week. The student is expected to make at least 2 substantive responses to discussion postings by other students by Monday at midnight. The discussions can be found on "week X" and clicking on "Forum Home". Examples below will help determine acceptable posts and replies:

Discussion Rubric

	0	1	2
References	No references	References but not APA	APA references
Posts	No Post	Basic post	Critical thinking/thought provoking post
Replies	No replies	Minimum need for reply	Critical thinking/thought provoking replies

Example of Average Post:

What is an aldehyde? How can I apply this to my chiropractic career?

Post: An aldehyde is an organic chemistry functional group; I need this class to get my degree

Posts: Type of carbonyl; Ill Probably need to know this for Biochemistry

Reply: I agree

Reply: An aldehyde is an organic chemistry functional group, good job

Critical Thinking Posts and Replies:

Posts: An aldehyde is an organic chemistry functional, specifically a carbonyl. A carbonyl is a carbon that is connected to oxygen through a double bond. An aldehyde is a carbonyl that has at least one hydrogen bonded to the carbonyl carbon. A functional group is the reactive portions of a hydrocarbon where the reaction will take place. The reactivity of the aldehyde is due to the electronegative oxygen that pulls the electron density towards itself giving the carbonyl carbon a partial positive charge.

I can apply this to my chiropractic career because aldehydes are found throughout the body. Aldehydes are oxidized in the body to carboxylic acids and secreted through he urine. Ethanol in the body is also oxidized, first to the aldehyde then to the carboxylic acid. A person on a detox diet promotes aldehyde oxidation so the body can be purified of any unwanted aldehyde compounds. Aldehydes are also converted to imines and hemiacetals through nucleophilc reactions to be further reacted in the body.

Reply: This is interesting! Do you see the same effect happen with ketones since they have similar connectivity? How are imines and hemiacetals found in the body? Is this how they detox patients of alcohol when they are consuming a lot? I had a friend…..

1. **Lecture Exams:** An exam covering the topics outlined found in the weekly learning outcomes. Typically 20 questions long that are approximately 50% multiple choice and 50% workout

2. **Final Exam:** A comprehensive exam. 50% comprehensive and 50% new material. The exam will be approximately 80% multiple choice and 20% workout

3. **Wiki Project**- Students are required to build a wiki page with their lab partner over a chosen topic by the professor. Each week there will be a project assignment, the schedule is found on My Parker under "Wiki Project" The wiki page should look professional and should be edited each week. I will grade your improvements and your adherence to the assignment **each** Monday by midnight. There is additional information, including rubric and project examples that will be handed out in class and can be also found on MyParker under "Wiki Project"

4. **Weekly Assignments page**- Each week you will find a page on the My Parker website. Each weekly page contains material for the weeks lecture. Lecture notes, handouts, lab materials, discussions link and an outline of lecture topics are found.

5. **Daily lecture vodcasts** are provided for students to have additional tools to study. If there is a concept in class that was covered too fast for you it is encouraged to review the vodcast for the day at your own speed. Historically, students that re-reviewed the vodcasts were highly successful in the classroom

6. **Lab Materials**- This section on MyParker contains a safety video that will be viewed before your first lab session. In addition, the lab rubric and lab rules are also found. Lab reports are done as a lab group. Each student will label each section he/she was responsible for. Each student will be graded on his/her section as well as the lab report as a whole. Every student MUST participate in writing the lab report and the lab activity. At the end of the semester students will review their lab partner, which will be part of the final lab grade.

7. **Lab Reports**: The lab reports will be uploaded each week on the weekly myparker site. There will be a dedicated forum for you to upload the assignment. The lab reports will be written between both lab partners so a common grade will be assigned. The grading rubric for the lab reports can be found on MyParker under "Lab Materials"

8. **Online HW system: Sapling Learning - Online Organic Chemistry Practice Problems**

The majority of organic problems involve structure drawing, and, depending on the question, stereochemistry or curved arrows must also be drawn. Some questions allow one to drag given structures/formulas to rank by a property (e.g., acidity) or sort into groups (e.g., alkene vs. alkyne). Nomenclature questions allow one to type in the name. There are also some multiple choice questions. Altogether, the online problems: 1) allow pretty much any question that is asked on paper to be performed on a computer; 2) enable one to draw their own structures, just as they will need to do on an exam; 3) grade instantly and provide feedback via tutor-like hints, allowing one to keep working with a question to arrive at the correct answer; 4) include detailed answer explanations.

1. Go to http://saplinglearning.com
2. a. If you already have a Sapling Learning account, log in, click "View Available Courses", then skip to step 3. b. If you have a Facebook account, you can use it to quickly create a SaplingLearning account. Click "create account" located under the username box, then click "Login with Facebook". The form will auto-fill with information from your Facebook account (you may need to log into Facebook in the popup window first). Choose a password and timezone, accept the site policy agreement, and click "Create my new account". You can then skip to step 3. c. Otherwise, click "create account" located under the username box. Supply the requested information and click "Create my new account". Check your email (and spam filter) for a message from Sapling

Learning and click on the link provided in that email.

3. Find your course in the list (listed by school, course, and instructor) and click the link.
4. Select your payment options and follow the remaining instructions.
    - Once you have registered and enrolled, you can log in at any time to complete or review your homework assignments.
    - During sign up - and throughout the term - if you have any technical problems or grading issues, send an email to support@saplinglearning.com explaining the issue. The Sapling support team is almost always more able (and faster) to resolve issues than your instructor and TAs.

COMMUNICATION WITH THE INSTRUCTOR**:**

The instructor will respond to E-mails posted through the course page within 24 hours during the week and within 48 hours on the weekend. In addition, notifications will also be posted on the My Parker website. If student needs additional help it is encouraged to come to my posted office hours.

A complete listing of all Academic policies is found on the https://my.parker.edu/ICS/Academics_-_Coursework/Academics/Common_Policies/:

Absences for Religious Holidays

Academic Dishonesty

Academic Promotion, Probation and Dismissal Policy

Altering Grades on Exams

Appeals

Assistance and Accommodations

Attendance Policy

Audio/Video Taping

Cell Phones and Electronic Devices in Class

Classroom Behavior

Communications

Computer Usage

Exam Review

Examinations (Make up Exams/Lab Practicals)

Excused Absences

Final Examinations

Grading System

Late Instructors to Lecture/Lab

Grade Appeals Process

Missed Exam Policy

Professional Decorum

Special Needs Consideration

Student Bereavement Policy

DISCLAIMER

The lecture outlines contained in the lecture booklet are NOT intended to represent the entire content of the course. A lecture outline is intended to be a guide to the lecture. The responsibility of the instructor is to follow the outline, expand the concepts and give explanation and illustrations to clarify content. The role of the student is to attend lecture and take notes over material presented by the lecturer that explains and illustrates the material listed in the outline. It is also the responsibility of the student to question the instructor if explanations and illustrations are not clearly presented or understood.

The instructors take no responsibility for the accuracy or completeness of old notes, quiz questions or exam questions that students may purchase, acquire from off of the internet or be given by previous students.

IMPORTANT NOTE:

The provisions contained in this syllabus do not constitute a binding contract between the student and the Parker University, College of Chiropractic. These provisions may be changed at any time and for any reason at the discretion of the Course Director. When it is necessary to make changes to this document, appropriate notice (at least one week, if at all possible) will be given to the student(s).