

## SYLLABUS

**Department Name: Natural Sciences**

**Course Title: Organic Chemistry II**

**Course Number: Chem 3900**

**Units: 3 units**

**Semester Offered: Summer**

**Course Modality:**

Hybrid - self paced

[YouTube](https://www.youtube.com/) instructional video tutorials

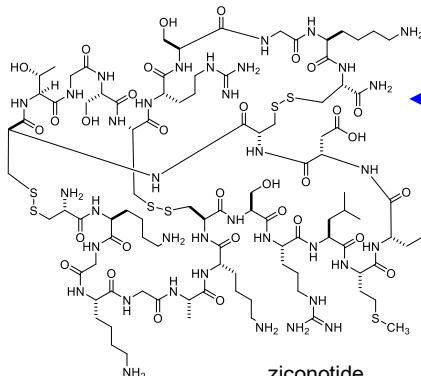
**Course Meeting Time:** 10am-11:15pm

**In person - exam days only:**  
(7/14, 7/20, 7/24, 7/31)  
(see schedule p. 5-6)

**Course Meeting Place:** Meadowlands 106

**Prerequisites:** Chem 3800/3805

**Co-requisite:** Chem 3905 (Organic Laboratory)



Derived from Cone snail: **Conus magus**



**ziconotide (Prialt®)**

FDA approved **(2004)**

disease target: severe pain

Developed by:

Elan pharmaceuticals

### Instructor Information:

Name: Tyler Johnson, PhD

Phone: 415-482-1983

e-mail: [tyler.johnson@dominican.edu](mailto:tyler.johnson@dominican.edu)

office hours: M W F 12-1pm – Zoom (annotated screen)

web: <https://thejohnsonlab.wixsite.com/johnson-chem3900>

**Teaching Assistant (TA) / Tutor:** Matthew Nickel - [Matthew.Nickel@dominican.edu](mailto:Matthew.Nickel@dominican.edu)

If anything is unclear to you - please Reach out – we're all here to HELP STUDENTS 😊

## DESCRIPTION OF SYLLABUS CONTENTS

### **1. Course Description: General Content of the Course**

Course Description – Chem 3900 is the second quarter of organic chemistry and builds on the structural and reactivity conventions of organic compounds learned in Chem 3800. Students gain the ability to distinguish between nucleophiles and electrophiles to understand instead of memorize synthetic organic reactions, including those of aromatic compounds, alcohols, and carbonyl compounds as they relate to selected publications in Bioorganic and Medicinal Chemistry. This lays the foundation for understanding the reactivity of more complex biomolecules such as carbohydrates, proteins and lipids (fats) involved in applied biochemistry.

### **2. General Education or Major Requirements Satisfied by the Course:**

This course satisfies the requirements for a biology and chemistry degree.

### 3. Learning Outcomes.

This course satisfies the following Student Learning Outcomes (SLO) that include:

SLO 1. Comprehension and integration of fundamental scientific concepts in the biological and physical sciences.

SLO 2. Objectivity in scientific investigations by suspending preliminary judgments, drawing conclusions only from observable and testable data, and attempting to exclude cultural assumptions and biases.

SLO 3. Understanding of a spectrum of chemical principles and knowledge in all major areas of bioorganic chemistry.

SLO 4. Skills in chemical analysis and synthesis essential to establish and rigorously test hypotheses.

SLO 5. Understanding of the importance of chemistry in society, involving health, medicine, biomedical research, the chemical industry and the environment.

SLO 6. The skills necessary to pursue employment or further education in chemistry & biochemistry and or interdisciplinary areas involving biomedical research, environmental chemistry, health science and medicine.

This course satisfies the following Chemistry & Biochemistry Program Learning Outcomes (PLO) that include:

PLO 1. Students will comprehend and integrate the fundamental scientific concepts and laboratory skills in the chemical and physical sciences.

PLO 2. Students will develop the skills and knowledge to become ethical practitioners of science.

PLO 5. Students will demonstrate readiness for further study or employment in discipline related areas.

This course will also allow students to acquire the following institutional learning outcomes (ILO) that include:

ILO 1. Exploration and Acquisition of Knowledge

ILO 2. Development of Intellectual, Professional, and Artistic Skills

**4. Texts and Resources:** Text: **Organic Chemistry 9<sup>th</sup> edition McMurray.** ISBN-13: 978-1305080485

Study guide with **Solutions manual:** **Organic Chemistry 9<sup>th</sup> edition McMurray.** ISBN-13: 978-1305082144

Molecular Model Set (Optional but Highly Recommended): If you have one, you use can use it on the exam(s).

Prentice Hall Molecular Model Set for General and Organic Chemistry. 1998. ISBN-13: 9780139554445.

**5. Library Support:** Library Liaison: Amy Gilber, [amy.gilbert@dominican.edu](mailto:amy.gilbert@dominican.edu), 415-257-1329

**6. Online Components – course website:** <https://thejohnsonlab.wixsite.com/johnson-chem3900>

Lectures will be provided on our course webpage as  YouTube instructional video tutorials.

**7. Academic Honesty Honor Code.** Students are expected to adhere to the Academic Honesty Honor Code stated in the [Catalog](#). Students should practice academic integrity in all of its forms, including abstaining from plagiarism, cheating, and other forms of academic misconduct. The University reserves the right to determine in any given instance what action constitutes a violation of academic honesty and integrity.

Our course policy on **cheating** involves the following guidelines which include:

1) Any student caught using a: a) graphing calculator, b) smart phone, c) smart watch or d) Unauthorized supplementary device during an exam will receive a 0.

2) Students are encouraged to use the restroom prior to each 70 minute exam. Students may not be allowed to use the restroom during a 70 minute exam. Professional notes from a physician will be an exception.

3) **No make up exams will be provided**, unless there is: a legitimate scheduling conflict or real Emergency and or the **instructor is given one week notice by email** to make up the exam. Students missing an exam can take the weighted average score of their scores from two of the three exams given if they miss an examination. **If more than one exam is missed by a student, they may be advised to withdraw from the course.**

Students must complete the final exam to pass the course. Make up exams will be proctored by a faculty or staff member and if one is not available the student will take the make up exam under video surveillance.

Individual circumstances will be evaluated at the instructor and the NSM department chair's discretion.

The above guidelines have been set in place to create democracy and equity for everyone in the classroom. Please do not take them personally, just take them seriously.

## 8. Diversity

Dominican University of California is committed to promoting diversity. In recognition of our diverse backgrounds, the inclusion of diverse thought is encouraged in our course in our classroom interactions. In addition, an effort will be made to provide a learning environment which is conducive for all students.

## 9. Assignments

Students are expected to read ahead in the textbook based on the tentative schedule. Assignments include homework and in-class worksheets. In-class exams will also be administered.

**Problem sets:** Textbook problems will be assigned (weekly in lecture) to help master the course material. The textbook homework will not be graded for points. It is the responsibility of the student to complete the assigned homework for the course on time in line with the proposed outlined schedule on page 4.

### **IMPORTANT NOTE:**

**Working problems is essential to learning organic chemistry.** It'll be difficult for you to solve problems on quizzes or exams if you do not **PRACTICE** working similar problems while you are studying. It's to your advantage to use the solutions manual to check your answers. Keeping all of your worked-out problems in an organized folder provides the foundation for review material involving our exams and the final exam.

## 10. Grading:

Lecture (CHEM 3900) and Lab (CHEM 3905) will be graded separately. A separate grade will be reported for both courses to assess your strengths or weaknesses involving the lecture material and or a laboratory setting. Final grades will be given on a curve based on each students total points acquired versus those of their peers.

Exam 1	200 pts
Exam 2	200 pts
Exam 3	200 pts
Exam 4	200 pts
<b>Total</b>	<b>800 pts</b>

93-100%	A
90-92%	A-
87-89%	B+
83-86%	B
80-82%	B-
77-79%	C+
73-76	C
70-72	C-
60-69%	D
0-59%	F

**NOTE:** We structured this course to simulate preparative courses that prepare students for the: a) Optometry Admissions Test (OAT), b) Dental Admissions Test (DAT) or c) Medical College Admissions Test (MCAT). After taking these entrance exams (a-c), students are not provided their exams or a able to view which question(s) they missed. They are provided their percentile score overall out of 100%. Similarly, our exams will not be passed back to students. Exam scores will be emailed to each student. Students can view the question(s) they missed on our exams during office hours in person with their instructor. Exams questions will be drawn from approximately 85% 1) Worksheets and 2) HW questions with ~15% drawn from new but related material based on 1-2.

## 11. Expectations for Students

Please turn off cell phones during class and practice respect for your fellow students and the instructor. Texting during class can be distracting to your fellow students and instructor. Materials posted to the course web site are only for class use and may not be duplicated and distributed or sold. Students may download and print information for personal use as a student in the class. This is consistent with Fair Use under intellectual property protection. Expect to spend a minimum of three hours outside of class for every one hour of class. Teamwork is essential and encouraged on class assignments 😊, however completing assignments is the responsibility of each student.

We do not field questions on our lectures, worksheets, homework or practice exams by email. Organic Chemistry involves structures, graphics, and reactions/mechanisms with visual/spatial awareness - so email is not a proper venue to answer questions here. Students are encouraged to ask questions in office hours 😊. Here the instructor can annotate on screen directly to deconvolute any confusion related to course material.

**PRIOR TO EACH LECTURE – PLEASE READ THE OUTLINED SECTIONS IN OUR TEXT (see page 5).**

## **12. Students Who Require Accommodations:**

Dominican University of California is committed to equal access for all students in accordance with the American's with Disabilities Act of 1990. Students who feels they may need accommodations based on the impact of a disability should contact the Office of Accessibility and Disability Services at 415-257-1388 as soon as possible to discuss specific accommodations. Please submit the paperwork to the instructor right away.

## **13. Course Evaluations**

Dominican University of California is committed to an ongoing evaluation of its programs and courses through a culture of constructive dialogue and feedback. It is expected that students will complete the course evaluation either in class or outside of class. The instructor will determine time for the course evaluation to be completed. A link to the course evaluation will be sent to all the students enrolled in the class by the IT Department. The evaluation may be completed on a laptop, tablet, or mobile device. A laptop can be checked out from the library if needed.

## **14. Title IX**

As instructors, one of our responsibilities is to help create a safe learning environment for our students and for the campus as a whole. As part of our commitment to students' well being, we have the responsibility to report any instances of sexual harassment, sexual violence, relationship violence, or stalking to our Title IX Coordinator, so they can inform students about their reporting options and the various support resources available. Student privacy is a priority for us and will be maintained to the extent permissible by law and policy. For more information about your rights and reporting options, including confidential and anonymous reporting, please visit [dominican.edu/titleix](http://dominican.edu/titleix).

## **15. Disclaimer**

This syllabus is subject to modification. The instructor will inform students of any changes.

## **16. Dominican Scholarly & Creative Works Conference**

<https://sites.google.com/dominican.edu/scw/home?authuser=0>

## **17. Homework – Organic Chemistry (McMurray) 9<sup>th</sup> edition (**Updates - to be presented in lecture**)**

### **Chapter: Questions**

Ch 15: 1, 3, 7, 9, 10, 11, 12, 18, 25, 42, 43

Ch 16: 1, 3, 7, 8, 9, 13, 14, 49 (skip c, d, g)

Ch 17: 2, 4, 6a,c, 7, 8b,c, 10a-c, 13 a,c,e, 14a,c,\* 37 a-c, 41, 42 a,c,e, 59,

Ch 18: 3a,c,d, 5a-b, 7, 12b, 14a,c, 23,\*\* 27a,c; 28a,c; 50 a-c

Ch 19: 2, 3 (skip d)\*\*\*, 4b,c, 5, 7, 10, 11,13a,b, 14, 16a,c,e, 17, 43, 54b,c,d,g, 56a-c, 64 g (only), 78

Ch 20: 2acf, 6, 9, 10a, 13, 14

Ch 21: 2ac, 3,4, 5bcd, 7ab, 9ac, 12-13, 17,19, 20 ac, 21, 48 ace, 73

Ch 22: 1a-e, 2, 4-6, 37-39\*\*\*\*, 41, 42 cd, 58 abe

Ch 23: 1, 3, 4, 16, 17

Ch 24: 2, 4, 6, 8, 11, 17

Ch 25: 2, 3, 4, 6, 7, 8, 9, 13-15

Ch 26: 1, 2, 3, 4, 8, 9, 12, 15a, 32, 34, 35,

### **NOTES:**

\*Solutions manual typo: use Dess Martin Periodinane/CH<sub>2</sub>Cl<sub>2</sub> reagent vs CrO<sub>3</sub>/H<sub>3</sub>O<sup>+</sup>

\*\*Solutions manual typo: “..Each mechanism involves protonation followed by a SN<sub>2</sub> (not SN<sub>1</sub>) displacement...”

\*\*\*Solutions manual typo: Swap the answers of 19c for 19d.

\*\*\*\*Solutions manual typo: HW 22.39c. Missing O-CH<sub>3</sub> on the 3 structures & the (-) designation on alkoxide ion

# Chemistry 3900 – Organic Chemistry II

**16. Tentative Lecture Class Schedule – We reserve the right to adjust accordingly.**

Dates	Lecture	Topic	Sections	Chapter	HW complete
July 9	1	Introduction, UV visible spectroscopy & brief review	14.7, 14.9	14	No HW
July 9	2	Benzenes & Aromatics	15.1 - 15.6	15	
July 10	3	Chemistry of Benzenes & Aromatics	16.1 - 16.3	16	HW-15
July 10	4	Chemistry of Benzenes & Aromatics	16.4 - 16.5	16	
July 11	5	Alcohols & Phenols	17.1 - 17.4	17	HW-16
July 11	6	Reactions of Alcohols	17.5 - 17.7	17	
July 13		<b>Review practice Exam 1</b>			HW-17
July 14		<b>Exam 1 (Chap 14-17)</b>			
July 15	7	Ethers & Epoxides: Thiols & Sulfides	18.1, 18.3, 18.5, 18.6, 18.8	18	
July 15	8	Aldehydes & Ketones	19.1-19.5, 19.8,	19	HW-18
July 16	9	Aldehydes & Ketones	19.10, 19.11	19	
July 16	10	Carboxylic acids & Nitriles	20.1 - 20.7	20	HW-19
July 17		<b>Review practice Exam 2</b>			
July 18	11	Carboxylic acids derivatives: Nucleophilic acyl substitution reactions (not on Exam 2)	21.1 - 21.3	21	
July 18	12	Carboxylic acids derivatives: Nucleophilic acyl substitution reactions (not on Exam 2)	21.3 - 21.4 21.6 - 21.8	21	HW-20
July 20		<b>Exam 2 (Chap 18-20)</b>			
July 21	13	Carbonyl Alpha-substitution reactions	22.1 - 22.6	22	HW-21
July 21	14	Carbonyl Condensation reactions	23.1 - 23.3, 23.5 - 23.9	23	HW-22
July 22	15	Amines	24.1 - 24.4	24	HW-23
July 22	16	Amines	24.5 - 24.6 24.8	24	
July 23		<b>Review practice Exam 3</b>			HW-24
July 24		<b>Exam 3 (Chap 21-24)</b>			
July 25	17	Carbohydrates	25.1 - 25.2	25	
July 25	18	Carbohydrates	25.3	25	
July 27	19	Carbohydrates	25.5 - 25.11	25	
July 27	20	Amino acids, Peptides & Proteins	26.1	26	HW-25
July 28	21	Amino acids, Peptides & Proteins	26.5-26.7 26.9	26	
July 28	22	Amino acids, Peptides & Proteins	26.5-26.7 26.9	26	
July 29	23	Amino acids & Lipids	27.6	26/27	
July 29	24	Lipids	27.6	27	HW-26
July 30		<b>Review Lectures 17-24 &amp; HW</b>			
July 31		<b>Exam 4</b>			

# JULY 2026

SUN	MON	TUE	WED	THU	FRI	SAT
28	29	30	1	2	3	4
5	6	7	8	9 Lect 1 Lect 2  Lab 1	10 Lect 3 Lect 4  O.H. 12-1pm	11 Lect 5 Lect 6
12	13 Review Practice Exam I O.H. 12-1pm	14 Exam 1 (Lec 1-6) Lab 2	15 Lect 7 Lect 8  O.H. 12-1pm	16 Lect 9 Lect 10  Lab 3	17 Review practice Exam II O.H. 12-1pm	18 Lect 11 Lect 12
19	20 Exam 2 (Lec 7-10) O.H. 12-1pm	21 Lect 13 Lect 14  Lab 4	22 Lect 15 Lect 16  O.H. 12-1pm	23 Review practice Exam III	24 Exam 3 (Lec 11-16) O.H. 12-1pm	25 Lect 17 Lect 18
26	27 Lect 19 Lect 20  O.H. 12-1pm	28 Lect 21 Lect 22  Lab 6	29 Lect 23 Lect 24  O.H. 12-1pm	30 Review Lect 17-24 & HW	31 Exam 4 (Lec 17-24) O.H. 12-1pm	1

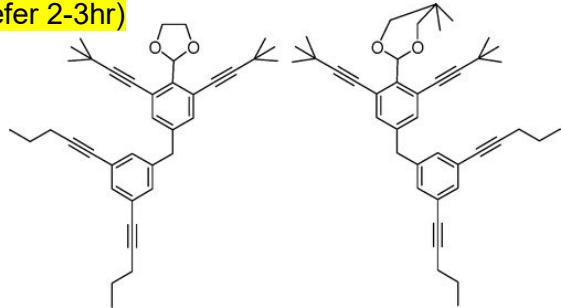
## Study Tips and Requirements for O-Chem

What “they” say about organic chemistry is true - it is difficult and there is an incredible amount of material to learn in a short amount of time. If done right, however, this class can be fun! An easy way to make this a more pleasurable experience is to **establish good study habits early** and stick to them. The learning process is fluid and changes often need to be made based on other commitments. Many of these changes can be anticipated by staying organized so that you can compensate for lost time. Avoid comparing yourself to others and do your best.

In brief, follow these points and you can expect to excel in organic chemistry:

**Make a schedule each week for WHEN you will study/day (min. 1hr, prefer 2-3hr)**

- **DO NOT FALL BEHIND - NOT EVEN ONE DAY.**
- Maintain a positive attitude
- Do the reading assignment
- Take lecture notes and participate
- Review your notes and start HW assignments soon after lecture
- Actively prepare for and participate in CLASS
- Re-do HW problems without “cheating” to study for tests **ON YOUR OWN**
- Keep an organized, working record of concepts/problems that are difficult for **YOU**



### Study Tips (just a few more...)

*Stay organized.* Be a nerd about this. Seriously.

#### *Studying for exams:*

Studying with groups is great, but it has to be in addition to studying alone. Your classmates cannot help you during the exam. Reading your notes and re-doing problems we do as a class is key.

**Re-do as many homework problems as you can, as many times as you can. Don't just look at a problem and say, “I know how to do that.” Actually write it out again (a dry erase board can be useful for repetition without wasting paper).**

### Other Tips for Success and/or Maintaining Sanity

#### *Patience.*

Some things will not make full sense right away. Letting this bother you only slows your progress. Instead, accept it and enjoy the process. Your career is for the long haul, after all. Also keep in mind that no two students are the same. You can expect to learn at a different pace than your classmates. **College is actually about figuring out how You learn.**

#### *Breathe and Get Out.*

When feeling frustrated, take three deep breaths and start again fresh. Stress and frustration can also be alleviated with physical activity. Students tend to get caught up with classes, labs, studying, partying, eating, etc. and exercise falls by the wayside. If you are feeling particularly overwhelmed or otherwise stuck, get up and go for a walk, run, or a bike ride. Try a yoga class or pick a sport and go do it! Sometimes when you just want comfort food, you'd be better off getting some exercise or at least some fresh air.

Don't forget to **SLEEP!!!** I recommend  $\geq 8$ hrs / night if you can for this sort of course.

And last but not least ~ enjoy the journey ~ have some fun with it ☺