

Chemistry 212: Organic Chemistry II

Spring 2016 Syllabus



Instructor Information

Instructor: Dr. Michael A. Bertucci (bertuccim@moravian.edu) Office: Collier Hall of Science 222 Office Hours: M 10:00 am – 12:00 pm, W 1:00 pm – 3:00 pm, R 10:00 am – 11:00 am or by appointment

CHEM 212 Course Description

This course is an exploration of elementary concepts of organic chemistry and their application to the study of structure, reactivity and synthesis of organic compounds. An emphasis will be placed on the correlation of the structures of molecules with their functions and the explanation of these correlations on fundamental scientific principles. The laboratory course uses exploratory approach for learning fundamental laboratory techniques, as well as providing experience with classical synthesis and qualitative organic analysis including MS, FTIR, and FTNMR spectroscopic techniques. Prerequisite: Chemistry 114, Chemistry 211.

CHEM 212 Lecture & Problem Session Information

Lecture: MWF 8:55 am – 9:45 am Problem Session: PA \rightarrow T 8:55 am – 9:45 am PB \rightarrow T 10:20 am – 11:10 am Room: PPHAC 201 Room: Memorial 202 Room: Memorial 202

Textbook: **Organic Chemistry**, **2**nd **Ed**. By Clayden, Greeves, Warren - *required* (ISBN-13: 978-0-19-927029-3); **Solutions Manual to Accompany Organic Chemistry**, **2**nd **Ed**. By Clayden & Warren – *recommended* (ISBN-13: 978-0-19-966334-7)

Model Kits: **Maruzen HGS 1013A Organic Chemistry Set for Students** is *highly recommended;* other model kits will be considered for use by the instructor, but a model kit is *required* for the course

Online Resources: **Blackboard** will be the main interface by which all lectures, videos, problem session worksheets, and other study materials are posted. Thus, it will be your responsibility to periodically check Blackboard for updates. Grades and class related communications will also be maintained on Blackboard.

The lecture and problem session portion of the course will be problem-based in which the time spent lecturing on course content is minimized to encourage active-learning during the class period. SO EXPECT TO BE INVOLVED!!! Recent studies have shown that moving away from passive instruction enhances student attentiveness and learning in organic chemistry.¹ This also mandates that students take responsibility for preparing for class before arriving by completing all assigned readings, videos, and problems. Though they may not be graded, they will impact your quiz and test grades.

Learning Outcomes

At the completion of the lecture course, you will be able to:

• Determine the structure of an unknown compound by analyzing major chemical spectral techniques such as NMR spectroscopy, IR spectroscopy, and mass spectrometry

¹Moog, R. S. and Spencer, J. N. **Process-Oriented Guided Inquiry Learning (POGIL)**. *American Chemical Society*, (2008).

- Draw curved arrows to represent the flow of electrons in a reaction mechanism
- Predict the required conditions and products formed in fundamental organic transformations such as electrophilic additions, oxidation/reduction reactions, aromatic substitution, enol alkylation and condensation, and radical reactions
- Understand the stereochemical and regiochemical properties of learned transformations
- Combine multiple reactions in a synthetic sequence to yield complex organic products

Assessment

Quarterly Exams: **Four (4) full-period exams** will be given during the semester to assess your comprehension of the content covered during the class period and in course assignments. The exams will consist of multiple choice, fill in the blank, and free-response questions.

Quizzes: Short quizzes will be handed out at random at the beginning of the class period to assess your preparedness for the material to be covered that day. Completing all pre-class assignments will correlate to better performance on the quizzes. The **highest twelve (12) grades** will be counted towards your final grade. Make-up quizzes will not be issued unless in extreme circumstances with prior approval.

Problem Sets: Guided problem sets will be posted every Wednesday before and are to be completed before the problem session the following Tuesday. They will be used to practice material that has been presented in lecture that week and will be reviewed during the problem session. **Problem sets must be handed in at the beginning of the problem session period as a paper copy for credit.** Late problem sets will be accepted up to **forty-eight (48) hours after the due date** for a maximum of half credit.

Final Exam: A summative and integrated assessment of the concepts covered in the course. The exam given will be the American Chemical Society standardized final exam for organic chemistry to allow for the evaluation of our class relative to classes in other colleges and universities across the country.

Grading Policy:

First Class Assignment	= 5 points
Exams: 4 x 100 points each	= 400 points
Quizzes: 12 x 10 points each	= 120 points
Problem Sets: 12 x 10 points each	= 120 points
Final Exam: 1 x 150 points	= 150 points
Teacher Evaluations: 1 x 5 points	= 5 points
	Total: 800 points

Tentative Course Outline:

Date	Book Chapter
M 1/18	
W 1/20	Ch. 3
F 1/22	Ch. 3
M 1/25	Ch. 3
W 1/27	Ch. 13
F 1/29	Ch. 13/Ch. 18
M 2/1	Ch. 3/Ch. 18
W 2/3	Ch. 19
F 2/5	Ch. 19

M 2/8	Ch. 19
W 2/10	EXAM 1 (Ch. 3, 13, 18, 19)
F 2/12	Ch. 9
M 2/15	Ch. 9
W 2/17	Ch. 9/Ch. 23
F 2/19	Ch. 23
M 2/22	Ch. 23*
W 2/24	Ch. 20
F 2/26	Ch. 20
M 2/29	Ch. 20
W 3/2	EXAM 2 (Ch. 9, 23, 20)
F 3/4	Ch. 21
M 3/7	NO CLASS (SPRING BREAK)
W 3/9	NO CLASS (SPRING BREAK)
F 3/11	NO CLASS (SPRING BREAK)
M 3/14	Ch. 21
W 3/16	Ch. 21
F 3/18	Ch. 22
M 3/21	Ch. 22/Ch. 25
W 3/23	Ch. 22
F 3/25	NO CLASS (EASTER BREAK)
M 3/28	Ch. 22
W 3/30	Ch. 34
F 4/1	Ch. 34
M 4/4	EXAM 3 (Ch. 21, 22, & 34)
W 4/6	Ch. 25
F 4/8	Ch. 25
M 4/11	Ch. 26
W 4/13	Ch. 26
F 4/15	Ch. 26
M 4/18	Ch. 37
W 4/20	Ch. 37
F 4/22	Brown Ch. 29
M 4/25	Brown Ch. 29
W 4/27	EXAM 4 (Ch. 25, 26, 37 & Brown 29)
F 4/29 (LDOC!)	REVIEW

Academic Honesty: Students are required to complete and submit all exams, quizzes and out of class assignments individually unless notified otherwise by the instructor. Group work is to be completed in a collaborative fashion in which each group member makes an equal contribution to completion of the assignment. For further details on the policies and sanctions regarding academic honesty in this course, please consult the *Moravian College Student Handbook* (http://www.moravian.edu/studentLife/handbook/academic/academic2.html).

Disability Policy: Students who wish to request accommodations in this class for a disability should contact the Academic Support Center, located in the lower level of Monocacy Hall, or by calling <u>610-861-1401</u>. Accommodations cannot be provided until authorization is received from the Academic Support Center. If you would like to work with a Greyhound Tutor to boost your academic success, please request a tutor through <u>http://bit.ly/NeedTutorMC</u> (case-sensitive). Please email Dana Wilson (<u>wilsond@moravian.edu</u>), Tutor Coordinator, for more information.