

# Chemistry 6226

## Advanced Synthetic Organic Chemistry

Spring 2022

*Instructor:* Daniel Seidel, CCB 406-G, 352-294-7991, seidel@chem.ufl.edu

*Lectures:* Mondays, Wednesdays, and Fridays 12:50 – 1:40 p.m.

In person, Flint 109

*Office Hours:* By appointment as needed

*Required Texts:* *Classics in Stereoselective Synthesis*  
by Erick M. Carreira and Lisbet Kvaerno ISBN 9783527299669

*Advanced Organic Chemistry, Part B: Reactions and Synthesis, 5<sup>th</sup> Ed.*

by Francis A. Carey and Richard J. Sundberg, ISBN 9780387683546

Available for free to UF students as an eBook:

<https://link.springer.com/book/10.1007%2F978-0-387-71481-3>

*Reference Texts:* *Strategic Applications of Named Reactions in Organic Synthesis*  
by László Kürti and Barbara Czakó

*Modern Organic Synthesis, An Introduction, 2<sup>nd</sup> Edition*

by George Zweifel, Michael Nantz, and Peter Somfai

*Modern Methods of Organic Synthesis, 4<sup>th</sup> Edition*

by William Carruthers and Iain Coldham

*Modern Organic Synthesis*

Dale L. Boger, TSRI press

*Organic Synthesis, The Disconnection Approach*

by Stuart Warren and Paul Wyatt

*Organic Synthesis, Strategy and Control*

by Paul Wyatt and Stuart Warren

*Encyclopedia of Reagents for Organic Synthesis*

Available in the Science Library Reference Section and online

*Comprehensive Asymmetric Catalysis*

by Jacobsen, Pfaltz, and Yamamoto eds.

*Course Objective and Content:* This course is intended to provide an overview of synthetic organic chemistry with an emphasis on carbon-carbon bond forming reactions. Understanding issues of chemo-, regio-, and stereoselectivity are central to developing synthetic strategies and therefore will be highlighted throughout. Portions of the course material were adopted from the classic Chem 206 course by Professor David A. Evans of Harvard University. The course consists of lectures and practice problems taken from the current literature when possible.

### *Tentative Course Outline:*

#### 1. Functional Group Interconversion

- Oxidation
- Reduction
- Protecting Groups
- Alkene Functionalization
- Miscellaneous

#### 2. Structure and Reactivity

- Stereoelectronic Effects
- Conformational Analysis
- Acid-Base Properties

#### 3. C-C and C-X Bond Forming Reactions

- Pericyclic Reactions
- Cycloaddition Reactions
- Enolates, formation/alkylation/aldol reactions
- Acyclic Stereocontrol
- Olefination
- Carbocations
- Carbenes
- Cross-coupling
- Intro Asymmetric Organocatalysis
- Intro Photoredox Chemistry

*Grading:*

Exam 1.....	100 pts
Exam 2.....	100 pts
Exam 3.....	100 pts
Homework .....	100 pts

*Exam Dates:*

Exam 1.....	February 11, 2022
Exam 2.....	March 16, 2022
Exam 3.....	April 20, 2022

**Exams are scheduled 7:30–9:30 pm in CCB 221**

---

Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the instructor when requesting accommodation.

Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at: <https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>

Information on current UF grading policies for assigning grade points:  
<https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at <https://evaluations.ufl.edu>. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at <https://evaluations.ufl.edu/results/>

Regrade requests must occur within 1 week of when the exam is returned. Note that grading for the entire exam will be checked for accuracy.

Grade disputes must be submitted within 3 weeks of the end of the semester.

**Please note that you may not share any of the course materials with anyone.**

*Tentative Course Outline:*

1. Functional Group Interconversion

- Oxidation
- Reduction
- Protecting Groups
- Alkene Functionalization
- Miscellaneous

2. Structure and Reactivity

- Stereoelectronic Effects
- Conformational Analysis
- Acid-Base Properties

3. C–C and C–X Bond Forming Reactions

- Pericyclic Reactions
- Cycloaddition Reactions
- Enolates, formation/alkylation/aldol reactions
- Acyclic Stereocontrol
- Olefination
- Carbocations
- Carbenes
- Cross-coupling
- Intro Asymmetric Organocatalysis
- Intro Photoredox Chemistry

Monday	Wednesday	Friday
	1/5-	1/7-
1/10-	1/12-	1/14-
1/17- <b>No Class</b>	1/19-	1/21-
1/24-	1/26-	1/28-
1/31-	2/2-	2/4-
2/7-	2/9- <b>No Class</b>	2/11- <b>Exam 1</b>
2/14-	2/16-	2/18-
2/21-	2/23-	2/25-
2/28-	3/2-	3/4-
3/7- <b>No Class</b>	3/9- <b>No Class</b>	3/11- <b>No Class</b>
3/14-	3/16- <b>Exam 2</b>	3/18-
3/21-	3/23-	3/25-
3/28-	3/30-	4/1-
4/4-	4/6-	4/8-
4/11-	4/13-	4/15-
4/18-	4/20- <b>Exam 3</b>	