Lecture Syllabus

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Office: D-146 Science 715-346-3706
Lab: D-117 Science

My Schedule:

	Monday	Tuesday	Wednesday	Thursday	Friday
08:00	***Class Prep (unavailable)***	***Class Prep (unavailable)***	***Class Prep (unavailable)***	***Class Prep (unavailable)***	***Class Prep (unavailable)***
09:00	***Chem 299/399 D-117/D-119***	***Chem 106 Lecture, A-121***	***Class Prep (unavailable)***	***Chem 106 Lecture, A-121***	***Chem 106 Lecture, A-121***
10:00	***Chem 299/399 D-117/D-119***	***Office Hour***	***Class Prep (unavailable)***	***Office Hour***	***Chem 299/399 D-117/D-119***
11:00	***Chem 299/399 D-117/D-119***	***Chem 299/399 D-117/D-119***	***106 Dis 01D4 A-112***	***Office Hour***	***Chem 299/399 D-117/D-119***
12:00	***Class Prep (unavailable)***	***Chem 299/399 D-117/D-119***	***106 Dis 01D3 A-112***	***Chem 299/399 D-117/D-119***	***Class Prep (unavailable)***
13:00	***Chem 425 A-112***	***Chem 299/399 D-117/D-119***	***Chem 425 A-112***	***Chem 299/399 D-117/D-119***	***Chem 425 A-112***
14:00	***Chem 299/399 D-117/D-119***	***Chem 299/399 D-117/D-119***	***106 Dis 01D2 A-112***	***Chem 299/399 D-117/D-119***	***Chem 299/399 D-117/D-119***
15:00	***Chem 299/399 D-117/D-119***	***Chem 299/399 D-117/D-119***	***106 Dis 01D1 A-112***	***Chem 299/399 D-117/D-119***	***Chem 299/399 D-117/D-119***
16:00	***Chem 299/399 D-117/D-119***	***Chem 299/399 D-117/D-119***	***Chem 299/399 D-117/D-119***	***Chem 299/399 D-117/D-119***	***Chem 299/399 D-117/D-119***

Office hours: Tuesday (10:00-11:00 AM) and Thursday (10:00 AM-12:00 PM) in D-146

You are always welcome to come by my office/lab(except during class prep times) or schedule an appointment via e-mail.

Chem 425: *(3.0 Credits, Prereq. 326)*
Course Description/Learning Outcomes: Students will be able to solve complex problems by mastering advanced organic chemistry concepts, accessing chemical literature, and utilizing chemical database resources. Students will predict outcomes for chemical reactions based upon their knowledge of MO theory, coordination chemistry, intermediate stabilities, and general electronic concerns. Students will propose reaction mechanisms for organic and inorganic reactions, indicating stereochemical outcomes when appropriate.

Grade Assignments: Your final grade will be a culmination of the points you earn with assignments, a mid-term exam, and a final. Your grade will be calculated using both the Track 1 and Track 2 formulae shown below. The formula that gives you the best grade will be used for your final grade determination.

	Track 1	*multiplier*	*% of grade*	***Track 2***	*% counted*	*% of grade*
Assignments	150 pts	0.0667	10%	150 pts	0.3667	55%
Mid-Term	150 pts	0.30	45%	150 pts	0.15	22.5%
Final	150 pts	0.30	45%	150 pts	0.15	22.5%

To participate in Track 2, you must turn in every homework assignment (on-time), and each must be complete. If you have more than one incomplete/late assignment, your grade will be determined by Track 1, regardless of which Track would potentially result in a higher final grade for you.

Exam Dates:
Mid-Term: Wednesday, October 25, 2017 (Time to be determined)
Final: Tuesday, December 19, 2017 (12:30 – 2:30 PM)

Required Text:
None. We will use occasional excerpts from old textbooks (instructor provided), but mostly chemical literature.

Topics:

Applications of MO Theory to Reaction Mechanism
Review of molecular orbital predictions for simple systems
Electrocyclic reactions (Woodward Hoffman rules)
Cycloaddition and cycloreversion reactions (e.g. Diels-Alder reaction)
Sigmatropic rearrangements
Sharpless "Click" chemistry

Electronic and Steric Constraints in Organic Reactions
Review of kinetic and thermodynamic considerations
Hammett equation
Enolate chemistry
Neighboring group contributions

Reactive Intermediates
Review of reactive intermediates
Migrations in carbocations
Carbanion rearrangements
Free radical rearrangements
Carbene chemistry

Organometallic and Transition Metal Chemistry
Introduction to transition metal chemistry
Inorganic reaction mechanism
Organometallic reaction mechanism
Coordination driven stereo-control

Incorporation of Concepts into Natural Product Synthesis
Review of retrosynthetic analysis
Discussion of enantiomeric/diastereomeric excess