# CHEM552 PHYSICAL ORGANIC CHEMISTRY

# Fall 2020

**Credits:** 3 credits

**Prerequisites: CHEM 302 & CHEM or** permission from the instructor.


**Instructors**:

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**Recommended Text:**
- Modern Physical Organic Chemistry by Anslyn and Dougherty (University Science Books)
- Electronic Lecture Hand-outs

**Topics:**
The course aims at developing a physical understanding of organic chemistry. We will emphasize learning concretely how to translate knowledge of structure–property relationships and reaction mechanisms into deep predictive insight into organic reactions.
We will see how structural and environmental factors affect the rates and equilibria of organic reactions and electronic properties of molecules and how these factors can be engineered. This knowledge will be applicable not only towards classical organic chemistry, but also towards biochemistry and organometallic chemistry.

Specific topics include:

*Revision of Molecular Structure and Bonding; Electronic and Conformational Properties; Solvent Effects; Acids and Bases, Kinetics and Thermodynamics; Catalysis and Enzymatic Reactions; Substituents Effect (Linear Free Energy Relationships); Mechanisms of Pericyclic Reactions; Organic Photochemistry and Photophysics; Electron and Charge Transfer.*

**Method of Delivery:**
The course will consist of a mixture of live lectures and recorded session.
The recorded sessions will be followed accompanied by live tutorials.

**Evaluation:**

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| **Course and Tutorials Participation** | **10%** |
| **Assignment 1** (tutorial problem solving) | **15%** |
| **Assignment 2** (presentation) | **25%** |
| **5 Quizzes** | **15%** |
| **Oral Exam** | **35%** |