

University of Rhode Island  
CHM 521: Advanced Organic Chemistry 1  
Department of Chemistry  
Spring 2014  
MWF 9-9:50 am, Pastore 122

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| Course Instructor    | Matt Kiesewetter; <a href="mailto:mkiesewetter@chm.uri.edu">mkiesewetter@chm.uri.edu</a><br>258 Pastore Hall   |
| Office Hours         | RF 2:30-3:30 pm and by appointment   |
| Textbook             | (suggested) Anslyn and Dougherty; <i>Modern Physical Organic Chemistry</i> (ISBN 978-1-891389-31-3)<br>(oft-cited tomes) 1. Espenson; <i>Chemical Kinetics and Reaction Mechanisms</i> , any edition<br>2. Carrington and MacLachlan; <i>Introduction to Magnetic Resonance</i> , good luck<br>3. Claridge; <i>High-Resolution NMR Techniques in Organic Chemistry</i> , (0-08-042798-7)   |
| Course Description   | CHM 521 is a survey of <i>physical organic chemistry</i> with an emphasis on experimental applications. Physical organic chemistry is the study of structure and reactivity. This field has experienced almost constant renaissance in the form of bioorganic, organometallic, materials, supramolecular chemistry, catalysis and MANY more sub-disciplines that all have their roots in physical organic chemistry. There is virtually no aspect of modern chemistry that is not touched by the various facets of this field. This is not a history course but rather a survey of classic physical organic chemistry geared to the contemporary research laboratory.  |
| Topics               | All the material that fits: 1. <i>Chemical Kinetics, Reaction Mechanism and Catalysis</i> (multi-order kinetics, approach to equilibrium, Hammond Postulate, Curtin-Hammett, experimental considerations and reaction mechanism); 2. <i>Thermodynamics</i> (Van't Hoff equation, isotope effects, Hammett Plots and LFERs); 3. <i>Non-Covalent Interactions</i> ( $\pi$ effects, induced dipoles, H-bonding); 4. <i>Polymers</i> (polymer issues, mechanisms); 5. <i>Magnetic Resonance</i> (NMR, EPR, DNP); 6. <i>Aromaticity</i>   |
| Policies and Grading | Daily attendance will not be taken but is strongly encouraged. A missed exam will be scored as zero, no exceptions. Graded work should be that of the student only; cheating and plagiarism will result in a zero on any given assignment and possible referral to the Dean and a failing grade in the course. Students are expected to follow the University policy of ACADEMIC HONESTY and all other University policies. Student grades will be based on 2 in-class exams (100 pts each), a final exam (100 pts) and a research proposal (100 pts). The lowest <i>exam</i> score will automatically be dropped. Final grades will be determined by a scale no stricter than >90% A, >80% B, >70% C, >60% D. Students have 2 weeks to contest the grade on any evaluation. |
| Due Dates            | Exam 1 2/28/14; Proposal 3/28/14; Exam 2 4/18/14; Final 5/5/14 8:00-11:00am.   |