

**CHEMISTRY 520A SYLLABUS**  
**ADVANCED INORGANIC CHEMISTRY**  
**Fall 2017**

MWF 10:00-10:50 AM  
GMCS 314

Instructor: Dr. Carl Carrano  
Office: GMCS 213D  
Office Hours: MWF 11:00-11:50 AM

Text: Optional "Inorganic Chemistry," Housecroft and Sharpe  
Website: [www.pearsoned.co.uk/housecroft](http://www.pearsoned.co.uk/housecroft) Features multiple choice questions and rotatable 3D molecular structures  
Also optional "Molecular Symmetry and Group Theory", Vincent

Topics to be covered and relevant chapters in Housecroft:

|                 |   |
|-----------------|---|
| Chap. 1 & 20.6  | Review of Quantum Mechanics   |
| Chap. 2         | Simple Bonding Approaches and Molecular Orbital Theory                                    |
| Chap. 3         | Symmetry and Applications of Group Theory   |
| Chap 5          | Bonding in Polyatomic Molecules   |
| Chap. 7.11 & 19 | Coordination Chemistry I: Structures  |
| Chap. 20        | Coordination Chemistry II & 3: Bonding and Spectroscopy                                   |
| Chap. 6         | The Solid State   |
| TBA             | General Principles of Bioinorganic Chemistry/Reaction Mechanisms/Organometallic Chemistry |

Expected Student Learning Outcomes:

- a) To be able to predict using the appropriate theories, the bonding, spectroscopic, and magnetic properties of inorganic complexes.
- b) To be able to determine the symmetry of molecules and to utilize the chemical applications of Group Theory.
- c) To understand and be able to predict the behavior of elements from their position in the periodic table.
- d) To understand and be able to predict the unique properties of transition metal complexes.

There will be two in-class exams in this course *tentatively* scheduled for October 9th and

November 13th with a final on Friday December 15th, 10:30-12:30 AM.

The hour exams count 25% each and the final 50%.

Other useful (possibly) information:

1. Since a prerequisite for this course is Chem 410A (P-Chem) I expect that you will know this material. Chapters 1 and 2 in your text are examples of material you should be familiar with and which I will not go over explicitly. If you are unfamiliar with, or have forgotten this knowledge, I recommend you read Chap. 1 and 2 and/or your P-Chem text. Other areas, which I expect you will at least be partially familiar with, are the chapters on covalent bonding and M.O. Theory. Note also that while previous catalogs stated "credit or concurrent registration in Chemistry 410A" as a prerequisite for this course, concurrent registration is in fact no longer sufficient. **You must have COMPLETED Chemistry 410A with a passing grade. Over 80% of those taking this class and 410A concurrently fail; therefore the p-chem prerequisite is strictly enforced!**
2. You will find that I do not lecture directly out of your text. It is just one of the varieties of source materials that I use. Thus, the exams will not necessarily be based on only textual materials, i.e. your notes are important, read them! It should also be obvious that regular attendance in class will be important, although I do not take role of any kind. It is your money! You may find it helpful to do the problems at the end of each chapter; however, I will not assign or collect these. Copies of old exams will be distributed to you prior to examination dates to give you an idea of what to expect (to be forewarned is to be forearmed).
3. Chemistry 520A is truly a senior chemistry capstone class, since, although we concentrate on inorganic compounds, we bring in advanced material from analytical, physical and organic as well. Most students find this class one of the two most challenging of their career at SDSU (the other being P-Chem). Therefore do not get behind or you will never catch up. We cover lots of material and move rapidly at times. GOOD LUCK!