

**CHEMISTRY 520A SYLLABUS**  
**ADVANCED INORGANIC CHEMISTRY**  
**Fall 2020**

MWF 10:00-10:50 AM  
GMCS N/A

Instructor: Dr. Carl Carrano

Office Hours: MWF 11:00-11:50 AM via ZOOM  
<https://SDSU.zoom.us/j/98708911436>

General: This is going to be a difficult semester both for you as students and myself as instructor. Since all lectures have to be online only there are bound to be unforeseen problems both pedagogical and technical. We will have to try work through these and patience on both sides will be needed. I will do my best to make this as painless as possible but there are no guarantees as this is uncharted territory. The procedure will be as follows: I will be uploading video captured lectures on a regular basis and these will be automatically posted to Blackboard. My only communication with you all is through Blackboard so it is imperative that you check on it every day for new lectures, announcements etc. When exam time comes the exams will also be posted on blackboard and you will have a set number of hours to complete it and return to me via email.

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. However any general advanced Inorganic textbook can be used as the text is purely optional and a supplement to my lectures. Everything you need to know will be presented in lecture. A book is only for reinforcement and alternative ways of explaining certain concepts.

Also optional but highly recommended is “Molecular Symmetry and Group Theory” by Alan Vincent

Topics to be covered and relevant chapters using Housecroft as an example:

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 & III: Bonding and Spectroscopy
	Coordination Chemistry IV Magnetism

## 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 midterm exams in this course *tentatively* scheduled for October 9th and November 13th with a COMPREHENSIVE final TBA.

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

## Other useful (possibly) information:

1. Since a prerequisite for this course is Chem 410A (the Quantum part of 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 failed; therefore the p-chem prerequisite is strictly enforced!**
2. You will find that I do not lecture directly out of any text. It is just one of the varieties of source materials that I use. Thus, the exams are not based on specific textual materials, i.e. **everything you are expected to know is presented in lecture** thus your notes are the most important, read them! It should also be obvious that actually viewing and reviewing the uploaded lectures 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!
4. Due to the changed nature of the course delivery necessitated by the COVID-19 pandemic, exams will be on the honor system. You will have 8 hrs after the exam is posted to return it to me via Email. You are expected to do your own work. If I find evidence to the contrary I will report it to the office of Students Rights and Responsibilities for possible action.
5. And Finally: May Heaven help us!