

Point Loma Nazarene University  
Department of Chemistry

**CHE467 – Advanced Inorganic Chemistry Laboratory  
Spring Term, 2020**

Tuesday, 1:30 – 5:00 pm, Sator Hall 216

Dr. Laurance G. Beauvais  
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Office hours: MW, 12:30 – 2:00 pm; T, noon – 1:00 pm; F, 12:15 – 1:30 pm.

Sator 206  
(619) 849-3251

*Prerequisite*

Completion or enrollment in CHE4068 is required.

**Course Description**

The preparation, purification and characterization of main group and transition metal inorganic and organometallic compounds.

**Course Objectives**

At the completion of this course, students will be able to:

- synthesize inorganic compounds using literature procedures.
- characterize inorganic compounds using a range of techniques, including NMR, UV/vis, FT-IR, and magnetic susceptibility..
- communicate the results of experiments clearly and concisely using the journal format of the American Chemical Society.

*Prelabs*

Prelab write-ups of procedure are required before starting any lab. It should include a flow diagram of what you expect to accomplish during that lab period, brief procedures, waste handling, and safety considerations. Prelabs should be emailed to me the night before you wish to work in lab.

*Lab Notebooks*

Lab notebooks are an essential component of research. A handout will be provided with guidelines for proper notebook format and notebooks will be graded.

*Recommended texts*

There are no specific textbooks required for this course, but I recommend that you own at least one general inorganic text. Suitable books include,

“Inorganic Chemistry” Miessler and Tarr, any edition.

“Inorganic Chemistry” Shriver and Atkins, any edition.

“Concepts and Models of Inorganic Chemistry” Douglas, McDaniel, & Alexander, Wiley.

“Inorganic Chemistry” Huheey, Keiter, & Keiter, Harper Collins.

<i>Grading:</i>		<i>Grading Scale:</i>	
Notebook	10 %	A	90 – 100 %
Prelab	15 %	B	80 – 90 %
Product Yield and Purity	20 %	C	70 – 80 %
Lab Reports	55 %	D	60 – 70 %
		F	< 60 %

### **PLNU Mission**

#### **To Teach ~ To Shape ~ To Send**

Point Loma Nazarene University exists to provide higher education in a vital Christian community where minds are engaged and challenged, character is modeled and formed, and service is an expression of faith. Being of Wesleyan heritage, we strive to be a learning community where grace is foundational, truth is pursued, and holiness is a way of life.

### **FINAL EXAMINATION POLICY**

Successful completion of this class requires taking the final examination **on its scheduled day**. The final examination schedule is posted on the [Class Schedules](#) site. No requests for early examinations or alternative days will be approved.

### **PLNU COPYRIGHT POLICY**

Point Loma Nazarene University, as a non-profit educational institution, is entitled by law to use materials protected by the US Copyright Act for classroom education. Any use of those materials outside the class may violate the law.

### **PLNU ACADEMIC HONESTY POLICY**

Students should demonstrate academic honesty by doing original work and by giving appropriate credit to the ideas of others. Academic dishonesty is the act of presenting information, ideas, and/or concepts as one's own when in reality they are the results of another person's creativity and effort. A faculty member who believes a situation involving academic dishonesty has been detected may assign a failing grade for that assignment or examination, or, depending on the seriousness of the offense, for the course. Faculty should follow and students may appeal using the procedure in the university Catalog. See [Academic Policies](#) for definitions of kinds of academic dishonesty and for further policy information.

### **PLNU ACADEMIC ACCOMMODATIONS POLICY**

While all students are expected to meet the minimum standards for completion of this course as established by the instructor, students with disabilities may require academic adjustments, modifications or auxiliary aids/services. At Point Loma Nazarene University (PLNU), these students are requested to register with the Disability Resource Center (DRC), located in the Bond Academic Center. ([DRC@pointloma.edu](mailto:DRC@pointloma.edu) or 619-849-2486). The DRC's policies and procedures for assisting such students in the development of an appropriate academic adjustment plan (AP) allows PLNU to comply with Section 504 of the Rehabilitation Act and the Americans with Disabilities Act. Section 504 (a) prohibits discrimination against students with special needs and guarantees all qualified students equal access to and benefits of PLNU programs and activities. After the student files the required documentation, the DRC, in conjunction with the student, will develop an AP to meet that student's specific learning needs. The DRC will thereafter email the student's AP to all faculty who teach courses in which the student is enrolled each semester. The AP must be implemented in all such courses. If students do not wish to avail themselves of some or all of the elements of their AP in a particular course, it is the responsibility of those students to notify their professor in that course. PLNU highly recommends that DRC students speak with their professors during the first two weeks of each semester about the applicability of their AP in that particular course and/or if they do not desire to take advantage of some or all of the elements of their AP in that course.

### **PLNU ATTENDANCE AND PARTICIPATION POLICY**

Regular and punctual attendance at all classes is considered essential to optimum academic achievement. If the student is absent from more than 10 percent of class meetings, the faculty member can file a written report which may result in de-enrollment. If the absences exceed 20 percent, the student may be de-enrolled without notice until the university drop date or, after that date, receive the appropriate grade for their work and participation. See [Academic Policies](#) in the Undergraduate Academic Catalog.

## Lab Topics

Week	Date	Topic
1	1/14	<b>No lab</b>
2	1/21	<b>Lab Introduction and Safety Meeting</b>
3	1/28	<b>Synthesis of metal acac complexes I</b>
4	2/4	<b>Synthesis and purification of metal acac Complexes II</b>
5	2/11	<b>Electronic Spectroscopy of acac complexes</b> First draft of experimental section due.
6	2/18	<b>IR spectra and magnetic measurements of acac complexes</b>
7	2/25	<b>NMR spectroscopy of acac complexes</b> Second draft of experimental section due
8	3/3	<b>Final characterization of acac complexes (nmr, electrochem, ICP)</b>

### **Spring Break 3/9 – 3/14**

9	3/17	<b>Group Projects</b> Experimental Section due for acac complexes
10	3/24	<b>Group Projects</b>
11	3/31	<b>Group Projects</b>
12	4/7	<b>Group Projects</b>
13	4/14	<b>Group Projects</b>
14	4/21	<b>Group Projects</b> Draft of final lab report due
15	4/28	<b>Group Projects</b>

**Final Exam Week: Paper due by Wednesday, May 6, 4:30 pm.**