

## CHEMISTRY 4066

### Bioinorganic chemistry

#### WELCOME TO CHE 4066:

Chemistry 4066 is an advanced course that will introduce some important concepts of a growing field in chemistry: bioinorganic chemistry. I'm glad you are here and I look forward to helping you discover the importance of this subject.

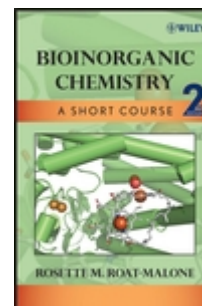
**INSTRUCTOR:** Dr. Matthieu Rouffet  
Office: Rohr Science 340  
Phone: 619-849-3278  
Email: matthieurouffet@pointloma.edu

**Office Hours:**  
WF 10:30 – 12:00 pm  
and by appointment

**LECTURE:** MWF 12:15 pm – 1:20 pm                      Latter 102



**TEXTBOOK:** ➤ Bioinorganic chemistry, by Rosette M. Roat-Malone, Wiley 2<sup>nd</sup> Edition, **2007**.  
(ISBN: 978-0-471-76113-6)  
*Required.*



#### COURSE GOALS and LEARNING OUTCOMES:

At the end of the course you will be able to:

- Explain the behavior of transition metal in biological environment
- Define the make-up and the properties of proteins, DNA/RNA and zinc fingers
- Describe the different instrumental methods used to identify bioinorganic systems
- Discover several computer based methods
- Explore and present several important bioinorganic systems
- Identify how to inhibit metalloenzymes

## 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 becomes an expression of faith. Being of Wesleyan heritage, we aspire to be a learning community where grace is foundational, truth is pursued, and holiness is a way of life.

## ACADEMIC HONESTY

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.

## ACADEMIC ACCOMMODATIONS

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.

## FINAL EXAMINATION POLICY

Successful completion of this class requires taking the final examination (in form of oral presentations) **on its scheduled days**. 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.

**ATTENDANCE AND PARTICIPATION**

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.

**ADMINISTRATION:**

Exams and Quizzes: Two quizzes and 3 homework sets will be given during the semester. Make-up exams will be arranged only if the instructor is contacted prior to the scheduled exam time and then only if you present an institutionally valid excuse. There will be no make-up quizzes.

**EVALUATION:**

The activities described above will contribute to your total course grade according to the following:

- |                             |     |
|-----------------------------|-----|
| ➤ Homework                  | 30% |
| ➤ Quizzes (x2)              | 30% |
| ➤ Oral presentation/project | 40% |

Letter grades will be assigned at the end of the course based on your percentage of total possible points, according to the following scale:

<b>A<sup>-</sup></b> 90 – 92.9 %	<b>A</b> 93 – 100 %	<b>B<sup>+</sup></b> 87 – 89.9 %
<b>B<sup>-</sup></b> 80 – 82.9 %	<b>B</b> 83 – 86.9 %	<b>C<sup>+</sup></b> 77 – 79.9 %
<b>C<sup>-</sup></b> 70 – 72.9 %	<b>C</b> 73 – 76.9 %	<b>D<sup>+</sup></b> 67 – 69.9 %
<b>D<sup>-</sup></b> 60 – 62.9 %	<b>D</b> 63 – 66.9 %	
<b>F</b> < 59.9 %		

**CHEMISTRY 4066 TENTATIVE CLASS SCHEDULE**

WEEK	DATE	LECTURE TOPICS	READINGS
Week 1 (Remote)	Tuesday 01/11	Introduction/syllabus/course overview	////////////////////////////////////
	Wed 01/12	Chapter 1 metals in the body/ trace elements	Chapter 1
	Fri 01/14	Presentations metal deficiency	Chapter 1
Week 2	Mon 01/17	MLK Day	////////////////////////////////////
	Wed 01/19	Iron case study Chapter 1_part 1: hard and soft principle + Electron configuration + <b>Homework 1</b>	Chapter 1
	Fri 01/21	Chapter 1_part 2: shape of d orbitals/splitting in a ligand field + chapter 2 (protein structure)	Chapter 2
Week 3	Mon 01/24	Chapter 2_2: analyzing several metalloenzymes	Chapter 2
	Wed 01/26	Presentation of the project on the different metalloenzymes + <b>QUIZ 1</b>	Chapter 2
	Fri 01/28	Chapter 2_part 2: protein sequencing + chapter 2_3: DNA: cisplatin	Chapter 2
Week 4	Mon 01/31	Proteomics: Dr. Allegra Aron, UCSD	////////////////////////////////////
	Wed 02/02	Chapter2_3: DNA/G quadruplex/cisplatin + <b>Homework 2</b>	Chapter 2
	Fri 02/04	Chapter 2: zinc finger and hoogsten base pairs Chapter 3: NMR class (basic intro)	Chapter 3
Week 5	Mon 02/07	Chapter3: 2D NMR, NMR vs X-ray. EPR + group work	////////////////////////////////////
	Wed 02/09	X-ray class. Dr. Jacob Milligan. Pfizer	////////////////////////////////////
	Fri 02/11	Chapter 3: 2D NMR, NMR vs X-ray.	Chapter 3
Week 6	Mon 02/14	Chapter 3: 2D NMR, NMR vs X-ray. Assign paper presentations	Chapter 3
	Wed 02/16	<b>QUIZ 2</b>	////////////////////////////////////
	Fri 02/18	PYMOL + Inhibitor studies. + <b>Homework 3</b>	////////////////////////////////////
Week 7	Mon 02/21	Chapter ZBG: introduction of the different ZBG FDA approved drugs	////////////////////////////////////
	Wed 02/23	Group Presentations 1	
	Fri 02/25	Group Presentations 2	
Week 8	Mon 02/28	Group presentations 3	