

CHEMISTRY 466

Bioinorganic chemistry

WELCOME TO CHE 466:

Chemistry 466 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 305C
Phone: 619-849-3278
Email: matthieurouffet@pointloma.edu

Office Hours:

WF 10:30 – 12:00 pm
and by appointment

LECTURE:

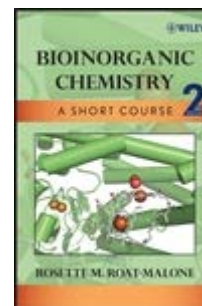
MWF 12:15 pm – 1:20 pm

Latter Hall 2



TEXTBOOK:

- Bioinorganic chemistry, by Rosette M. Roat-Malone, Wiley 2nd 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

If you have a diagnosed disability, please contact PLNU's Disability Resource Center (DRC) within the first two weeks of class to demonstrate need and to register for accommodation by phone at 619-849-2486 or by e-mail at DRC@pointloma.edu. See [Disability Resource Center](#) for additional information.

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: One (1) lecture exam and 2 short quizzes 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:

- Lecture Examination..... 20%
- Homework/take-home quiz..... 20%
- Quiz 20%
- 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:

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

CHEMISTRY 466 TENTATIVE CLASS SCHEDULE

WEEK	DATE	LECTURE TOPICS	READINGS
Week 1	Tue 01/09	Introduction/syllabus/course overview	////////////////////////////////////
	Wed 01/10	Chapter 1 metals in the body/ trace elements	Chapter 1
	Fri 01/12	Presentations metal deficiency	Chapter 1
Week 2	Mon 01/15	MLK day	////////////////////////////////////
	Wed 01/16	Chapter 1_part 1: hard and soft principle + part 2 electron configuration	Chapter 1
	Fri 01/19	Chapter 1_part 2: shape of d orbitals/splitting in a ligand field + chapter 2 (protein structure)	Chapter 1+2
Week 3	Mon 01/22	Chapter 2_2: analyzing several metalloenzymes	Chapter 2
	Wed 01/24	Presentation of the project on the different metalloenzymes + QUIZ 1	Chapter 2
	Fri 01/26	Chapter 2_part 2: protein sequencing	////////////////////////////////////
Week 4	Mon 01/29	Chapter 2_2: types of enzymes/ turnover number/ active site + chapter 2_3: DNA: cisplatin	Chapter 2
	Wed 01/31	Chapter2_3: DNA/G quadruplex/cisplatin	Chapter 2
	Fri 02/02	Chapter 2: zinc finger and hoogsten base pairs Chapter 3: NMR class (basic intro)	Chapter 3
	Mon 02/05	Chapter3: 2D NMR, NMR vs X-ray. EPR + group work	Chapter 3

Week 5	Wed 02/07	X-ray class. Dr Curtis Moore. UCSD	////////////////////////////////////
	Fri 02/09	Chapter 3: 2D NMR, NMR vs X-ray. Guest Dr. Jansma: 2D NMR	////////////////////////////////////
Week 6	Mon 02/12	EXAM 1	////////////////////////////////////
	Wed 02/14	PYMOL metalloenzyme project: overview of the studied metalloenzymes	////////////////////////////////////
	Fri 02/16	PYMOL: difference between high/low res. Inhibitor studies.	////////////////////////////////////
Week 7	Mon 02/19	Chapter ZBG: introduction of the different ZBG FDA approved	////////////////////////////////////
	Wed 02/21	Computational Chemistry methods+ papers on metalloenzymes	Chapter 4
	Fri 02/23	Group presentation chap 5 and 6	Chapter 5 and 6
Week 8	Mon 02/26	Group presentation chap 7	Chapter 7