

**Special Topic in Inorganic Chemistry:
Medicinal Inorganic Chemistry
CHEM 396/445
Spring 2023**

Course Description:

This is an upper level undergraduate or graduate course, and the goal is to provide students with a broad understanding of the roles of inorganic (coordination or organometallic) compounds as both therapeutic and diagnostic medicines. The focus is on general strategies and challenges of research and development of metallodrugs. The most widely used compounds that are currently approved in the U.S. and/or European Union will be discussed. In addition, promising novel compounds that are in clinical trials will be mentioned. The aim is to direct medicinal inorganic chemistry into a discipline of central importance in medicine and science.

Instructor: Wei-Tsung Lee, office FH 402A, telephone (773)508-3205.

Time and Location: Tuesday and Thursday, 6:00–7:15 pm, IC 230

Office Hours: Tuesday and Wednesday 4:00–5:00 pm or by appointment.

Prerequisites: CHEM 307, 340

Reference Materials:

No textbook is required for this course, however, handouts will be distributed as the course progresses. Lecture contents consist of journal articles and reviews.

Grading:

Grading will be based on 125 pts of homework assignments (25%), one 100 pts of midterm exam (20%), a 125 pts of final exam (25%) and a 150 pts of presentation (30%). On homework assignments, two or three randomly selected problems will be graded, but the solutions to all the problems will be posted after the assignment is due.

Grading Scale:

	A	> 87%	A-	83–87%	
B+	80–83%	B	77–80%	B-	73–77%
C+	70–73%	C	67–70%	C-	63–67%
D+	60–63%	D	57–60%	D-	53–57%
	F	< 53%			

Presentation/Hands-on Example:

Each student will give a 20–25 minute presentation on a coordination/organometallic compounds for medicinal purposes from the literature or a hands-on example. The presentation will include, for example, theory, ligand and metal complex synthesis, and ligand and metal complex design. The hands-on example can be one that is readily performed by you in your research projects.

Final Exam: The University sets the schedule for all final exams. The final will be held on: 05/02/2023 (Tuesday) at 7:00 pm. You will have exactly 2 hours to complete the exam. Additional time will not be granted, even if you arrive late. There will be no make-up final exams given under any circumstance, and the exam will not be given early, either. Instructors may not reschedule final exams for a class for another day and/or time during the final exam period. There can be no divergence from the posted schedule of dates for final exams. Individual students who have four (4) final examinations scheduled for the same date may request to have one of those exams rescheduled. If a student reports having four final examinations scheduled for the same date, students should be directed to e-mail a petition to Adam Patricoski, Assistant Dean for Student Academic Affairs, CAS Dean's Office (apatricoski@luc.edu).

Course Evaluation: Towards the end of the course, you will receive an email from the Office of Institutional Effectiveness to provide feedback on the course. You will receive consistent reminders throughout the period when the evaluation is open, and the reminders will stop once you have completed the evaluation. The evaluation is completely anonymous. When the results are released, instructors and departments will not be able to tell which student provided the individual feedback. Because it is anonymous and the results are not released to faculty or departments until after grades have been submitted, the feedback will not impact your grade. The feedback is important so that the instructor can gain insight into how to improve teaching and the department can learn how best to shape the curriculum.

Course Repeat Rule: Effective with the Fall 2017 semester, students are allowed only THREE attempts to pass Chemistry courses with a C– or better grade. The three attempts include withdrawals (W). After the second attempt, the student must secure approval for a third attempt. Students must come to the Chemistry Department, fill out a permission to register form or print it from the Department of Chemistry & Biochemistry website: <http://www.luc.edu/chemistry/forms/> and obtain a signature from the Undergraduate Program Director, Assistant Chairperson, or Chairperson in Chemistry. A copy of this form is then taken to your Academic Advisor in Sullivan to secure final permission for the attempt.

Pass/Fail Conversion Deadlines and Audit Policy: A student may request to convert a course into or out of the “Pass/No-Pass” or “Audit” status only within the first two weeks of the semester. For the Fall 2022 semester, students are able to convert a class to “Pass/No-Pass” or “Audit” through Monday, September 12th. Students must submit a request for Pass/No-Pass or Audit to their Academic Advisor.

Returning to Campus: Please be familiar with and adhere to all guidelines posted on the On-Campus Guidelines in Classroom Scenarios of the Return to Campus Guidelines site: (<https://www.luc.edu/returntocampus/classroomscenarios/>)

Student Accommodations The Student Accessibility Center (formerly known as Services for Students with Disabilities), Sullivan Center (773-508-3700), <http://www.luc.edu/sac>, has the mission “to serve students with documented disabilities by creating and fostering an accessible learning environment,” including “support[ing] faculty, staff, and administrators on matters such as ADA and Section 504 compliance, as it relates to individuals with disabilities.” Please direct all

questions concerning accommodations of disabilities to the Student Accessibility Center. Academic accommodations afforded to students require documentation and review. The Student Accessibility Center will issue accommodation letters for registered students to present to their instructors; accommodations are not active until students present these letters to their instructors. If students' accommodations involve attendance or deadlines, instructors and students will jointly complete and execute an Agreement Form articulating their terms. See <https://www.luc.edu/sac/faculty/facilitatingaccommodations/> for guidance about implementing various kinds of accommodations in a way that is appropriate to your class. The Student Accessibility Center stands ready to work with you.

Loyola University Absence Policy for Students in Co-Curricular Activities (including ROTC):

Students missing classes while representing Loyola University Chicago in an official capacity (e.g. intercollegiate athletics, debate team, model government organization) shall be allowed by the faculty member of record to make up any assignments and to receive notes or other written information distributed in the missed classes.

Students should discuss with faculty the potential consequences of missing lectures and the ways in which they can be remedied. Students must provide their instructors with proper documentation (develop standard form on web) describing the reason for and date of the absence.

This documentation must be signed by an appropriate faculty or staff member, and it must be provided as far in advance of the absence as possible. It is the responsibility of the student to make up any assignments. If the student misses an examination, the instructor is required to give the student the opportunity to take the examination at another time. (<https://www.luc.edu/athletheadvising/attendance.shtml>)

Accommodations for Religious Reasons: If you have observances of religious holidays that will cause you to miss class or otherwise effect your performance in the class you must alert the instructor within 10 calendar days of the first class meeting of the semester to request special accommodations, which will be handled on a case by case basis.

Academic Integrity: All students in this course are expected to have read and to abide by the demanding standard of personal honesty, drafted by the College of Arts & Sciences, which can be viewed at: <http://www.luc.edu/cas/advising/academicintegritystatement/>

A basic mission of a university is to search for and to communicate the truth as it is honestly perceived. A genuine learning community cannot exist unless this demanding standard is a fundamental tenet of the intellectual life of the community. Students of Loyola University Chicago are expected to know, to respect, and to practice this standard of personal honesty. Academic dishonesty can take several forms, including, but not limited to cheating, plagiarism, copying another student's work, and submitting false documents. The problem sets must be completed individually; it is not group work. Copying others work and presenting that work as one's own is an example of academic dishonesty. Any instance of dishonesty will be reported to The Chair of The Department of Chemistry & Biochemistry who will decide what the next steps may be. With a zero tolerance policy, punishment for cheating may range from receiving an F grade for the assignment to receiving an F for the course and possibly suspension and/or expulsion from the University.

Mask Policy: As a Departmental policy, even in the event the University relaxes its universal

requirement for indoor mask-wearing during the Fall 2021 semester, it will remain a principle of this class-section that, out of respect for the health of housemates and others in regular contact with members of our community, in this class we properly wear masks at all times (*e.g.* over nose and mouth)."

Privacy Statement: Assuring privacy among faculty and students engaged in online or face-to-face instructional activities helps promote open and robust conversations and mitigates concerns that comments made within the context of the class will be shared beyond the classroom. As such, recordings of instructional activities occurring in online or face-to-face classes may be used solely for internal class purposes by the faculty member and students registered for the course, and only during the period in which the course is offered. Students will be informed of such recordings by a statement in the syllabus for the course in which they will be recorded. Instructors who wish to make subsequent use of recordings that include student activity may do so *only* with informed written consent of the students involved or if all student activity is removed from the recording. Recordings including student activity that have been initiated by the instructor may be retained by the instructor only for individual use.

Returning to Campus. Please be familiar with and adhere to all guidelines posted on the Health, Safety, and Well-Being Update site: (<https://www.luc.edu/healthsafetyandwellbeing/>). This site relays important updates and protocols related to COVID-19 and other matters.

Topics and Approximate Schedule: (There will be some guest speakers in the course)

<i>Week (estimate)</i>	<i>Topics</i>
<i>1</i>	Introduction and Fundamental Coordination Chemistry and Organometallics
<i>2</i>	Fundamental Coordination Chemistry and Organometallics
<i>3</i>	Diagnosis: MRI Contrast Agents
<i>4</i>	Diagnosis: MRI Contrast Agents
<i>5</i>	Diagnosis: Nuclear Medicines
<i>6</i>	Diagnosis: Nuclear Medicines
<i>7</i>	Diagnosis: Other
<i>7</i>	Midterm Exam
<i>8</i>	Therapeutics: Anticancer Agents - Radiopharmaceuticals
<i>9</i>	Therapeutics: Anticancer Agents - Chemoagents
<i>10</i>	Therapeutics: Antidiabetic Metallodrugs
<i>11</i>	Therapeutics: Miscellaneous
<i>12</i>	Student Presentation
<i>13</i>	Student Presentation
<i>14</i>	Student Presentation
<i>15</i>	Student Presentation
<i>16</i>	Final Exam