

Chemistry 401

Fall 2023

Course: Chemistry Methodology and Communication Textbook: See resources below
Lecture: Tuesday Thursday 4:15-5:30P
Location: Mundelein 308
Instructor: Prof. Jacob Ciszek
Flanner Hall 122 Website: Sakai (sakai.luc.edu)
E-mail: jciszek@luc.edu

Course Philosophy: Chemistry 401 is designed to be the common preparatory course providing all chemistry graduate students with the necessary skills to navigate towards their respective degrees and success post-degree. Too often, students have uneven beginnings to their graduate career based not on their book learning but, rather, the “hidden curriculum” that provided vastly different understandings of research methodology and science communication. Formal training in necessary lab protocol (notebooks, design of experiment, safety, etc.) and effective communication of science finally provide formal content for many parts of the “hidden curriculum” that chemistry students are expected to know both while at Loyola and when moving to industry. Course content is coupled with portfolio building that prepares the student for academic milestones and future employment.

Office Hours: Office hours will be held during the following time slots (3h total). They are held in FH 122. If you email me at least 1 hour before office hours and schedule a time during those slots, I can provide a link to communicate remotely; however, in person attendees have priority.

Tuesday 5:30-6:30P

Wednesday 2:30-4:30P – Not 9/13, 10/4

Academic Honesty & Discipline: Honesty is the foundation of the academic system and hence is of the utmost importance. All portfolio materials and examination responses should be exclusively your own work and no portions should be copied from any other sources. AI generated text/presentations is not allowable. In the unfortunate event that a student is caught cheating, 50 points will be deducted from your total grade, and you will be brought to the attention of the Department Chair and Dean of the College who will determine if further action should be taken.

Grading: Grading for the course can be broken down into 4 assessment categories described separately below.

Homework: Certain basic skills are assumed at the graduate level (and later at the professional level), but are sometimes lacking because of difference in backgrounds. This is often referred to as the “hidden curriculum”. Homework assignments consist of Skillport training modules (luc.skillport.com) aimed at bringing the incoming graduate class to a uniform level. These are graded based on completion and there are 3 and 2 modules, respectively, in the first and second homework. Certificates of completions should be uploaded to Sakai.

Quizzes – These are intended to be a sampling of recent material consisting of ~5-10 problems. It is *not* intended to be comprehensive examination of material; that is for the final. It also serves as an incentive for you to keep up on studies. The lowest quiz will be dropped. Up to two quizzes may be taken in a proctored form, though this is *strongly* discouraged.

Portfolio Components: These assignments require you to generate several products which you will (hopefully) continue to develop over your graduate career. They leverage lecture material which covers both the philosophical structure of the product, methodology for its construction (e.g. writing), as well as in-class work sessions. These differ in scope and effort and are assigned different point values:

- Referenced Introduction for Progress Committee Meeting (thesis/dissertation track), 50 pts
or
- Standard Operating Procedure (coursework track), 50 pts
- Presentation on SOP or Introduction, 20 pts
- CV, 10 pts
- Individual Development Plan, 10 pts

Final: The final is comprehensive covering all material and primarily reflects the portion of the class which has been previously covered via quizzes, rather than the portion dedicated towards portfolio building.

Grading scale:

Homework 5 x 2pts	10		A > 93%	A- > 90%
Quiz 4x 15 pts	60 (drop 1 of 5 quizzes)	B+ > 87%	B > 83%	B- > 80%
Portfolio Components	90	C+ > 77%	C > 73%,	C- > 70%
Final	<u>90</u>		D > 60%	
	250			

Resources:

Required “textbooks”:

Muse of Fire: Storytelling & the Art of Science Communication by Tim Miller, 2015

The Elements of Style by William Strunk Jr and E. B. White 2022

Introduction to the Responsible Conduct of Research by Nicholas H. Steneck, 2007.
Available via the US Department of Health and Human Services and Office of Research Integrity (ORI)

(pdf) <https://ori.hhs.gov/sites/default/files/2018-04/rcrintro.pdf>

(paper) <https://bookstore.gpo.gov/products/ori-introduction-responsible-conduct-research>

Prudent Practices in the Laboratory Handling and Management of Chemical Hazards.
Updated ed., National Academies Press, 2011.

(pdf) <https://nap.nationalacademies.org/catalog/12654/prudent-practices-in-the-laboratory-handling-and-management-of-chemical>

Supplemental Resources:

Kanare, Howard M. *Writing the Laboratory Notebook* 1985

<https://files.eric.ed.gov/fulltext/ED344734.pdf>

Institute of Medicine, National Academy of Science, and National Academy of Engineering.
Advisor, Teacher, Role Model, Friend, 1997

<https://nap.nationalacademies.org/read/5789/>

ACS- Safety in Academic Chemistry Laboratories 2017

<https://institute.acs.org/content/dam/pldp/center/lab-safety/publications/safety-in-academic-chemistry-laboratories-students.pdf>

ACS - Creating safety cultures in academic institutions **2012**

<https://www.acs.org/content/dam/acsorg/about/governance/committees/chemicalsafety/academic-safety-culture-report.pdf>

Institute of Medicine, National Academy of Science, and National Academy of Engineering.
On Being a Scientist, **2009**

<https://nap.nationalacademies.org/read/12192>

Calarco, Jessica M., *A Field Guide to Grad School: Uncovering the Hidden Curriculum*
2020

<https://muse.jhu.edu/book/89878> (available via LUC library)

Expected Schedule:

<i>The Basics</i>			
8/29	Basics: syllabus; university/department expectations and conduct; professional communication/scheduling	R1	
8/31	Your Role: faculty-student interaction; TA-student interaction; building collaboration; responsibilities as scientists	R2	HW1
<i>The Laboratory</i>			
9/5	Scientific Ethics: case studies; ethical grey zones; role of publication	R3	Quiz 1
9/7	Avoiding Misconduct: codified rules; proper conduct; reporting; safeguards	R4	
9/12	Research Records: notebooks; data management	R5	
9/14	Documentation of Science: accessing literature, patents, databases	R6	
9/19	Safety: culture; controls/protocols; reporting	R7	Quiz 2
9/21	Safety: rules/best practices	R8	
9/26	Safety: Loyola specific protocol as a case study	R9	
9/28	Scientific Hypotheses	R10	Quiz 3
10/3	Design of Experiments	R11	
<i>Communication of Science</i>			
10/5	Goals of Scientific Writing: purpose, case studies, limitations	R12	Quiz 4
10/10	Fall Break		
10/12	Scientific Writing: Deconstructing journal articles & writing effectively	R13	
10/17	Activity: scientific writing project and feedback (outline/text)	R14	
10/19	Scientific Reading: critical assessment of writing and findings	R15	
10/24	Activity: scientific writing project and feedback – (text/revisions)	R16	
10/26	Scientific Presentations: construction of presentation material	R17	
10/31	Scientific Presentations: effective speech	R18	
11/2	Activity: scientific presentation (three minute thesis style)	R19	Port present
11/7	Other Communication: supervisor/advisor; conferences; non-technical	R20	Port PCM/SOP
<i>Post-Graduation Guidance</i>			
11/9	CV Preparation, individual development plans	R21	
11/14	Round Table: networking, job searches, industry positions	R22	
11/16	Sampling Regulatory Requirements	R23	Port CV/IDP
11/21	Business of Chemistry: IP, product development, financials	R24	
11/23	Thanksgiving Break		
11/28	Understanding Bias, Harassment, Reporting; Diverse Work Conditions	R25	
11/30	Conflict Resolution	R25	
12/5	Responsibilities in Leadership/Supervisory Roles	R26	
12/7	Executive Skills & Professional Conduct	R27	Quiz 5, HW 2
12/12	Final (cumulative) 4:15-6:15 P		

Homework and portfolio assignments are due at the beginning of class on the day listed. Quizzes are at the beginning of class on the day listed.

Readings Expectations:

Readings are expected to be perused before class.

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 2023 semester, students can convert a class to “Pass/No-Pass” or “Audit” through Monday, September 11th. Students must submit a request for Pass/No-Pass or Audit to their Academic Advisor.

Final Exam

The University sets the schedule for all final exams. The final will be held on:

12/12 4:15-6:15

You will have exactly 2 hours to complete the exam. Additional time will not be granted, even if you start 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 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). The Department advises that it is preferable to complete a course with a grade of C or C-, and to demonstrate growth in future coursework, than to withdraw from a course.

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: <https://www.luc.edu/chemistry/forms/> and personally meet and obtain a signature from either 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.

Student Accommodations

Loyola University Chicago provides reasonable accommodations for students with disabilities. Any student requesting accommodations related to a disability or other condition is required to register with the Student Accessibility Center (SAC). Professors will receive an accommodation notification from SAC, preferably within the first two weeks of class. Students are encouraged to meet with their professor individually in order to discuss their accommodations. All information will remain confidential. Please note that in this class, software may be used to audio record class lectures in order to provide equitable access to students with disabilities. Students approved for this accommodation use recordings for their personal study only and recordings may not be shared with other people or used in any way against the faculty member, other lecturers, or students whose classroom comments are recorded as part of the class activity. Recordings are deleted at the end of the semester. For more information about registering with SAC or questions about accommodations, please contact SAC at 773-508-3700 or SAC@luc.edu.

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:

<https://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, submitting false documents, and deliberately disrupting the performance of other class members. Standards apply to both individual and group assignments.

Regarding the use of Artificial Intelligence: our Provost has expressed to “Let us all make sure we are learning and sharing best practices and not allowing AI to do the learning for us.” In this course, any work you submit for credit must represent your own ideas and understanding of the assigned material. If you are uncertain about any case where your use of AI may be in conflict

with University or course standards, please see me to discuss your concerns.

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 i.e., "[Athletic Competition & Travel Letter](#)" 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 to the professor in the first week of a semester. It is the responsibility of the student to make up any assignments. If the student misses an examination, the instructor is required to allow the student to take the examination at another time.

(<https://www.luc.edu/athletheadvising/attendance.shtml>)

Students who will miss class for an academic competition or conference must provide proper documentation to their instructor as early in the semester as possible.

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.

Universal Absence Accommodation Policy and Late/Missed Assignment Policy

The purpose of a universal absence accommodation policy is to account for emergency circumstances (e.g., serious illness, caring for a family member, car accident) that require you to be absent from class, while maintaining fairness in grading for students who attend and complete all in-class graded assignments. We believe that class attendance and participation are essential for your success in this class, and that your health is important to us and our shared community. Please use good judgement and stay home if necessary/prudent for your circumstances.

This is the universal accommodation policy for in-class graded assignments:

- Homework assignments are entirely virtual and are expected to be turned in on time. Late penalties will be assessed to for assignments turned in past the required time/date.
- The lowest quiz including absence can be dropped. Up to two quizzes can be accommodated via a proctored format. Missing further assignments past these is not allowable and will be counted as a zero.
- Portfolio components are generated over several weeks and should be turned in on time. Late assignments will be penalized.
- Missed portfolio presentations can be made up the following class period without penalty. Presentations later than that will receive a deduction.

Accommodating a quiz or portfolio presentation requires documentation justifying the absence. These accommodations are automatically available to all students.

Recording via Panopto

In this class software will be used to record live class discussions. As a student in this class, your participation in live class discussions will be recorded. These recordings will be made available only to students enrolled in the class, to assist those who cannot attend the live session or to serve as a resource for those who would like to review content that was presented. All recordings will become unavailable to students in the class when the Sakai course is unpublished (i.e., shortly after the course ends, per the [Sakai administrative schedule](#)).

Privacy Statement

Assuring privacy among faculty and students engaged in online and 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.