

Syllabus – General Chemistry A

The purpose of this syllabus is to describe the course, resources, and policies. It is meant help all students understand the expectations and requirements for the course, and it should be used as a reference for questions about policies. When updates to the syllabus are made during the term, a new version will be posted electronically, and all students will be notified.

Course Information

Course: Chemistry 101 – General Chemistry A (3 credits: Lecture & Discussion)

Prerequisites: A satisfactory performance on the Loyola math diagnostic test, completion of Math 117 with a grade of C- or better, or the equivalent. A student missing a prerequisite may be withdrawn at any time.

Time Zone: This syllabus lists dates/times using Chicago local time (U.S. Central Time Zone)

Lecture & Discussion: **Wednesdays, 11:30-1 pm via Sakai Zoom Classroom, remaining is asynchronous.**

Course Coordinator: Dr. Sandra Helquist (shelquist@luc.edu)

Chemistry 101 is a multi-section lecture & discussion course with common content and common outcomes across all sections. The Course Coordinator is responsible for consultation and coordination with instructors regarding policies, exam writing, and grading. **Your Section Instructor is responsible for communicating with you regarding all course content and policies and is the first and primary person you should contact with questions about all aspects of the course.** As needed, all Section Instructors will consult with the Course Coordinator throughout the term.

Section Instructor: Patrick L. Daubenmire, Ph.D.

Instructor Contact Information

Office: FH 415 or Sakai Zoom Classroom **Email:** pdauben@luc.edu

Office Hours Schedule: by appointment. Please send request to pdauben@luc.edu

Required Course Materials

- Brown, LeMay, Bursten, Murphy, Woodward, Stoltzfus (2017). *Chemistry: The Central Science (with MasteringChemistry)*, 14th ed. Pearson Prentice Hall. ISBN 978-0134414232. The *MasteringChemistry* website will be used for homework, quizzes, and exams. The course ID for this course is: **CHEM101SUM2023DAUBENMIRE**
- Moog, R.S. & Farrell, J.J. (2017). *Chemistry: A Guided Inquiry, part 1, 8th Edition*. ISBN : 9781792490699. Digital or hard copy is acceptable.
- *Sakai Connection*, sakai.luc.edu – the course is CHEM 101 001 SU23. Group projects, individual assignments, and other useful information will be posted under the Resources section of Sakai. Voice threads with important content will be posted on Sakai as well. You will also submit your group work and projects using Sakai and will be able to have group discussions either synchronously or asynchronously using various formats in Sakai. The instructor will monitor your progress in order to ask questions or provide suggestions to make sure you are learning important concepts in chemistry.
- Access to the Zoom Classroom Space. Our weekly synchronous session will be held in a virtual classroom and can be accessed through our Sakai page via the Zoom tab.
- A computer with a quality, high speed internet connection or synchronous sessions and for access to online resources.
- Scientific Calculator (non-programmable, non-graphing, and independent of another device such as a phone or tablet)

- Additional web-based systems will be used for uploading your work and facilitating feedback and evaluation. Registration will be free but required. These may include [Gradescope](#) and other sites

Copyright/Intellectual Property reminder: Course materials provided by your instructors at Loyola, including my materials, may not be shared outside any course without the instructor's **written permission**. Content posted without permission will be in violation of Copyright/Intellectual Property laws.

Course Content & Learning Outcomes

This course is the first in a 2-term sequence of general chemistry. We will focus on building a conceptual understanding of fundamental chemical principles including properties of atoms, molecules, states of matter, and chemical reactions. Students will learn the language of chemistry and develop their skills in scientific problem solving and critical thinking. This will serve as a foundation for further study in chemistry, other sciences and related disciplines.

You will learn to:

- Differentiate types of matter based on their chemical and physical properties (for example, pure substances vs. mixtures, metals vs. nonmetals, ionic vs. covalent vs. metallic, electrolyte vs. nonelectrolyte).
- Use multiple perspectives of matter (macroscopic, particle, symbolic levels) to qualitatively describe and explain characteristics, properties, and relationships of the following: atomic structure, nuclear chemistry, periodicity, molecular structure, chemical bonding, chemical reactions, thermochemistry, aqueous solutions, gases.
- Quantify relationships between variables controlling chemical systems.
- Solve quantitative multistep problems combining multiple concepts within the systems.
- Differentiate among closely related factors, categorize problem types, and select appropriate tools to solve these problems.
- Apply chemical principles to explain natural phenomena

Summer Session Tutoring information

The Tutoring Center is excited to offer Peer Tutoring to help students reach their academic goals this summer! Summer A services start Monday, May 22, 2023.

- How do I access peer tutoring? There are 2 ways!

1) We offer drop-in tutoring hours via Zoom. Go to our online schedule at, luc.edu/tutoring, and click on the "Tutoring Session Schedule" in the top right corner. Select your course's Zoom link during the date/time of the tutoring session. That's it!

2) In addition, you can schedule 1-hour appointments on Navigate if you wish to ensure a set block of time is spent on the course content. Your tutor will send you a Zoom link within an hour of the appointment time. Appointments can range from 1-8 students depending who signs-up and need to be made at least 12 hours in advance. If you miss more than two appointments without letting your tutor/Tutoring Center staff know in advance, tutoring privileges may be revoked.

- How do I prepare for a tutoring session?

Bring your notes, textbook, and questions for your tutor. Be prepared that your tutor is not going to do the work for you (that would be cheating!) but they will help you get to the answer!

Norms of Course Proceedings

The online environment that is our classroom is to be a safe place to question and explore ideas. Student and teacher voices are important to this work. Collegial disagreement can be a healthy part of this process, but must always include respect for all members of the class.

Course activities will be designed to help students reach the goal of learning chemistry content and developing thinking skills. This will more often be driven by the use of data and reasoning to

discover concepts and solutions rather than the identification and exchange of facts and algorithms.

Email messages and other electronic communication among students in the course should be respectful, appropriate, and professional. One of the instructors will respond to emails and phone messages as quickly as possible and at a minimum within 24 hours except on weekends. Only emails from your Loyola University account will be accepted, and we will only send emails to your Loyola University account. Though concerted efforts will be made to respond as soon as possible, communications received after 3:00 pm on Friday or over a weekend will be answered on Monday morning at the latest.

If you require assistance either via the computer or in person, please email us to set up an appointment. We can communicate via Skype or our Zoom Classroom or can set up a time to meet on campus.

Completed course assignments must be submitted by 11:30 pm CDT on the due date. Please note that the due date may or may not be a date that the class meets synchronously. Late assignments will not be accepted without proper verification of reasons.

Please note enrollment conditions for CHEM 101 and 111. Students who drop the co-req lecture (CHEM 101) must be receiving a grade of D or better in the lecture in order to continue in the co-req lab (CHEM 111).

Instructional Format

This course will run mostly asynchronously, having both individual and group tasks and assignments. While there will be short recorded lectures available for viewing, the course will focus more on eliciting students' current ideas and thoughts about sets of data or presented models that are posted online or part of course activities. Then, through guided questions about the presented information, students, via small group interactions will discuss ideas and come to consensus about answers to questions. Ideas are further developed in questions that force application of the agreed upon concepts. The instructor(s) guide you on this journey, pointing out areas that are particularly relevant or that may need attention. This format is designed based on the idea that learning cannot be directly transmitted from one person to another. Knowledge must be built by the learner which results from interpretation and reflection on experiences in particular contexts, such as the chemistry classroom, when working with others and guided by a mentor.

In this context we include required, group online synchronous sessions for students to discuss ideas and ask questions in real time. You will be assigned into groups and to an assigned meeting times, shared earlier. Zoom meeting rooms will be assigned to you for this meeting time. You may also and are encouraged to submit questions or other discussion points prior to these sessions so that we can address your needs in a timely manner.

Student Accommodations

Loyola University provides reasonable accommodations for students with disabilities. Any student requesting accommodations related to a disability or other condition is required to register with Student Accessibility Center (SAC), located in Sullivan Center, Suite 117. Professors receive the accommodation notification from SAC via Accommodate. 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 record class lectures in order to provide equal 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.

Course Repeat Rule

Students are allowed only THREE attempts to pass a particular chemistry course with a C- or better grade. The three attempts include withdrawals (W). The Department advises to complete a course with a grade of C or C-, and to demonstrate growth in future coursework, rather 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.

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, and submitting false documents.

Any instance of dishonesty (including those detailed on the website provided above or in this syllabus) will be reported to The Chair of The Department of Chemistry & Biochemistry who will decide what the next steps may be. Evidence of cheating in this course will result in, at a minimum, a score of zero (which cannot be dropped from grade calculations) and penalty up to failure of the course. College policies include that instructors will report incidents of academic misconduct to their chairperson as well as to the Assistant Dean for Student Academic Affairs in the CAS Dean's Office. I will report incidents to the Chemistry & Biochemistry Department for further action(s).

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 term 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 4 calendar days of the first class meeting of the term** to request special accommodations, which will be handled on a case by case basis.

Other Items

- A link to the official Loyola calendar can be found here: <https://www.luc.edu/academics/schedules/>
- The Withdraw deadline for the term is on Friday, June 23, 2023.
- Loyola is using SmartEvals to provide instructor & course feedback. OIE will send emails near the end of the term.

Class Recording & Content Information

In general lecture, class sessions may be recorded. The following is a mandatory statement for all courses in the College of Arts & Sciences (CAS). We will discuss class norms and standards during the first week and continue the discussion as needed throughout the semester.

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.

Additional Content, Copyright & Intellectual Property Statement

By default, students may not share any course content outside the class without the informed written consent of the owner of that content. This includes any additional recordings posted by students, materials provided by the instructor, and publisher-provided materials. For example, lectures, quiz/exam questions, book figures/slides, and videos may not be shared online outside the class. In some cases, copyright/IP violations may overlap with breaches of academic integrity. Remember that obtaining consent to share materials is an active process.

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 Summer 2023 Session A, students are able to convert a class to "Pass/No-Pass" or "Audit" through Friday, May 26th. Students must submit a request for Pass/No-Pass or Audit to their Academic Advisor.

Health, Safety, and Well-Being On-Campus

Please be familiar with and adhere to all policies and protocols posted on the *Campus Info & Resources* site:

<https://www.luc.edu/healthsafetyandwellbeing/campusinforesources/>

Final Exam

The final exam for the course is given on the last day of the Summer Session A term: Friday June 30th. 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. Components of the cumulative and comprehensive CHEM 101 final exam will be common across all course sections by consultation among all Section Instructors and the Course Coordinator.

Universal Absence Accommodation 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:

- Given the asynchronous nature of this online course, assignments are made available with a start date and time and end date and time (deadline). This gives a range of time availability for completing these assignments and should accommodate most situations that could cause missing assignments. In the event of extended issues for the emergency circumstance, please contact the instructor.
- A missed in-class exam due to absence for any reason is already accommodated in the course grading system. Given that only the higher scores on in-class exams are included in this calculation, a missed exam would be the one not included in this calculation, as it would be the lowest score (0%) of the exams.

Course Grading System

The standards for each letter grade are listed here according to all required course components. Each student will receive a midterm grade via LOCUS prior to the Withdraw deadline for the term. Grades are only based on the criteria listed in the syllabus: no substitutions, and no additions.

Grading Scheme

Online participation and group responses	10%
Online homework sets and activities	15%
<u>Exams</u>	<u>75%*</u> (additional breakdown below)
Total score	100%

*the final exam is mandatory to earn a passing grade

To reward improvement and to accommodate an exam absence, your Exams contribution to your course grade will be automatically calculated to drop your lowest midterm score:

Average of highest 4 midterms	50%
<u>Final Exam</u>	<u>25%*</u>
Total exams contribution	75%

The final exam is **mandatory**: a student who does not take the final will not pass the course.

Letter Grade Cutoffs:

Grade	Percentage
A	93.0-100
A-	89.0-92.9
B+	85.0-88.9
B	81.0-84.9
B-	77.0-80.9
C+	73.0-76.9
C	69.0-72.9
C-	65.0-68.9
D	60.0-64.9
F	0-59.9

These grade cutoffs are firm at the end of the term. **No rounding or extra credit will be considered.** Grades are only based on the criteria listed in the syllabus: no substitutions, and no additions.

Participation, group responses, and reports will be an important part of the class. This work will be a combination of individual and group work. Participation involves completing assignments and using pertinent data to take part in group work, add to discussions, and make reasoned conclusions or decisions. This will include being able to ask questions of others and to evaluate arguments and conclusions made by others. This type of dialog will take place via shared answers on discussion boards or in other online assignment sharing.

Online Homework Sets & Activities using *MasteringChemistry* will be assigned each week. Submitted responses must be the result of your individual effort and synthesis and must be submitted by 10 pm on each Wednesday. While you can work with classmates on homework, you need to ensure that you understand how to do the assigned problems so that you are able to do them without help from others. Late assignments may not be accepted, and verification of reasons may be requested.

Online tests will be administered at two different points during the course. These will be administered using *MasteringChemistry*. Tests will be available during specific blocks of time and will be timed so that you have a specific amount of time once you have opened the test to complete it.

The *Final Exam* will be online and is designed to assess students comprehensive knowledge of concepts developed during the work of the entire semester. It will be administered using *MasteringChemistry*. The final exam will be available during a specific block of time and will be timed so that you have a specific amount of time once you have opened the exam to complete it.

Practices for Success

Supporting claims with evidence, making applications, solving and analyzing problems, and using scientific principles to explain phenomena are critical skills in the field of science. The development of these skills is not without some frustration, but it carries the reward of deepening one's ability to think critically and solve problems in any field. To do this, one may have to assess, evaluate, and possibly revise approaches to learning. The use of targeted, guiding questions, regularly scheduled work, and strategic study plans can greatly assist the learning of science. With such a focus, hopefully any frustration will quickly turn to appreciation and fascination for the relevance and connectedness of science in your life and the world around you. Solving and analyzing problems is the most important feature of this work. If, at any time, you need assistance framing such plans for your work in science, please do not hesitate to ask the instructor.

Changes to Syllabus

There may be changes to the syllabus during the semester. ***You are responsible for all syllabus changes made in class whether or not you attend. These updates will also be shared on the Sakai course page.***

Course Schedule, Topics and Assignments

Dates	Topics
Week 1: May 22-28	<i>Matter and Measurement</i> (BLBMWS, Chapter 1 - review) <i>Atoms</i> (Moog, CA 1, 2; BLBMWS, Chapter 2, Sections 1-4) Test 1: Friday May, 26, 2023 (This is a timed exam on masteringchemistry.com and must be completed by 11:30 pm CDT on Saturday, May 27, 2023)
Week 2: May 29-June 04	<i>The Shell Model of Atoms</i> (Moog, CA 4-6; BLBMWS, Chapter 2, Section 5; Chapter 7, Sections 1-4, 6-8); <i>Electron Behavior & Configurations</i> (Moog, CA 9-11; BLBMWS, Chapter 6, Sections 1-4 (for section 4, you will not need to do any mathematical calculations), 7 (only the "Orbitals and Their Energies" section), 8 (not "The Lanthanides and Actinides" section), 9; Chapter 7, Section 4 (electron configurations of ions)) Test 2: Friday, June 02 (This is a timed exam on masteringchemistry.com and must be completed by 11:30 pm CDT on Saturday, June 03, 2023)
Week 3: June 05-11	<i>Chemical Bonding & Lewis Structures</i> (Moog, CA 13-15; BLBMWS, Chapter 2, Sections 6, 8, 9 (only alkanes & alcohols); Chapter 8, Sections 1, 3, 5, 6, 8) <i>Resonance, Formal Charge & Extended Octets in Lewis Structures</i> (Moog, CA 16-17; BLBMWS, Chapter 8, Sections 6, 7) <i>Molecular Shape & Hybridization</i> (Moog, CA 18-19; BLBMWS, Chapter 9, Sections 1-6) Test 3: Friday, June 09 (This is a timed exam on masteringchemistry.com and must be completed by 11:30 pm CDT on Saturday, June 10, 2023)
Week 4: June 12-18	<i>Different Types of Bonds</i> (Moog, CA 22, 24, 25; BLBMWS, Chapter 2, Section 7; Chapter 8, Sections 2, 4; Chapter 12, Section 4 ("Electron-Sea Model" only)); <i>The Mole & Gases</i> (Moog, CA 28, 32, 33; BLBMWS Chapter 3, Section 4; Chapter 4, Sections 1, 5; Chapter 10, Sections 1-7, 9) Test 4: Friday, June 16 (This is a timed exam on masteringchemistry.com and must be completed by 11:30 pm CDT on Saturday, June 17, 2023)
Week 5: June 19-25	<i>Chemical Reactions and Stoichiometry</i> (Moog, CA 29 & 30; BLBMWS, Chapter 3, Sections 1-3, 6, 7) <i>Empirical Formulas, Reactions in Aqueous Solution</i> (Moog, CA 31; BLBMWS, Chapter 3, Section 5; Chapter 4, Sections 4 & 6) Test 5: Friday, June 23 (This is a timed exam on masteringchemistry.com and must be completed by 11:30 pm CDT on Saturday, June 24, 2023)
Week 6: June 26-July 02	<i>Thermochemistry</i> (Moog, CA 34, 35; BLBMWS, Chapter 5, Sections 1-4, 6 & 7) Final Exam – (Comprehensive over the entire semester), Friday, June 30 (This is a timed exam on masteringchemistry.com and must be completed by 11:30 pm CDT on Saturday, July 01, 2023)

