

Syllabus

Chemical principles

Chem 122, Fall 2018

Modern molecular science is guided by chemical principles that inform and shape our understanding of nature while transforming it. We will examine these principles and use them to solve scientific problems. In the process, we will practice techniques for effective communication and structured collaboration. This combination of molecular insights and professional communication skills will prepare you to investigate and solve problems facing humanity in the years to come.

At a glance

Class meetings

MWF, 9:10a – 10:00a, Tomsich 103.

Instructor

Simon Garcia, Department of Chemistry, Tomsich 108, voice 740-427-5077, email: garcias@kenyon.edu.

Office hours

For appointments, check Gmail calendar for garcias@kenyon.edu for mutually available times. Create an event in your calendar and send me an invitation. If I accept it, the appointment will show in both my calendar and yours.

Drop-in office hours are every Wednesday, 10:00a – 12:00p and 1:00p – 4:00p.

Computational resources

Classroom discussions will often require access to network resources. Someone in your team should bring a computer to each class meeting. If you do not have one, you may use a laboratory computer from Tomsich 105 during class meetings. Google Drive services (Docs, Sheets, Slides) are necessary to complete most assignments in this course.

Course design

The selection and development of activities and assignments in this course was guided by several design principles, which are described below.

Course goals

This course is successful if it helps you achieve the following goals:

- Create and maintain a community that learns and works together.
- Advance your professional readiness for knowledge work.
- Use analytical thinking to make informed decisions in realistic scenarios.
- Construct shared knowledge and understandings of chemical concepts through research, analysis, and sharing.
- Adopt practices for effective collaboration.
- Apply molecular concepts and models to a variety of problems.
- Feel engaged with class activities and valued as a person.

The manifesto of active learning

Thorough, deep understanding of a subject's representative ideas *is equivalent to* knowing the entire subject; because it promotes comprehension of patterns, enables acquisition of further knowledge, and generates new questions for us to investigate.

Course outcomes

Through this educational experience, you should find yourself better positioned to advance your career. Of course you will do so by changing yourself: gaining knowledge, skills, and experience. But you will also build a portfolio of artifacts that document or demonstrate your learning and professional development:

- A **Journal** documenting your participation and progress in course activities.
- A **Prospectus** explaining your personal strengths and accomplishments in the course.
- A **Proposal** recommending action on a specific problem.

Journal

Throughout the course you will record responses to assigned activities in a shared document. Responses include preparation notes, descriptions of your role in discussion, research on topics, results of analyses, notes from consultations, and reflections on what you have learned through course activities. (If you prefer a different system for taking notes, you can copy and paste from another document or insert a photo of handwritten notes.) This journal will serve as a record of consistent, timely engagement in course activities. It should also be a helpful reference for updating your Prospectus. The entry for each activity in your Journal should have the following qualities:

- Is arranged chronologically.
- Is completed by 10:00p the night before the next class meeting.
- Describes information, ideas, analysis, insight, results relevant to activity.
- Reflects on how your mind changed through the activity.
- Is consistent with the instructor's observations in class.
- Contains between 200–500 words of your original thoughts (not excerpts)
- If excerpting material:*
 - Clearly distinguishes between excerpted material and personal response
 - Indicates source of excerpt (web link, citation, name of person)

Prospectus

Your prospectus is a personal, narrative document that highlights your abilities and experiences in a professional context. It provides a set of themes and anecdotes that help a potential employer imagine what you can accomplish for them. It will serve as base material for professional documents, such as cover letters, personal essays, resumes, and interviews. It should be specific to your experience in this course. An effective prospectus has the following qualities:

- Makes at least three claims about traits you demonstrated in class.
- Describes significant improvement of at least one other trait.
- Cites observable behavior and documented outcomes as evidence.
- Explains context for cited behavior.
- Describes accomplishments in enough detail that they are unique to you.
- Suggests plans for continued growth and improvement

Proposal recommending action

Identify a problem or issue that needs chemical insight when people make decisions about it. A convincing proposal has the following qualities:

- Describes who is or will be affected by the problem.
- Defines specific outcomes that are desired.
- Describes specific actions that should lead to these outcomes.
- Advances specific claims about why each action should lead to the outcomes.
- Presents evidence and reasoning to support each claim.
- Suggests which person, institution, or group should be responsible for each action, and justifies their ownership of the problem.
- Is less than 5000 words (not including excerpts or exhibits)
- Indicates sources of information, excerpts, and exhibits

Course conduct

Activities

Discussion preparation

For every class meeting you are expected to read any assigned documents and prepare 200–500 words of discussion-preparation notes (“discussion prep”) recorded in your Journal. In these notes, outline things you understand and state what they imply about the situation; outline things you *don't* understand, and phrase them as questions. At the beginning of a project, you will analyze an assigned document; as the project progresses, you will respond to questions or tasks developed by your team or by the class as a whole. Respond to any additional prompts assigned in class.

Structured group discussion

In class, you will share your discussion notes in a **structured group discussion**. Within a team of 3–5, compare ideas, discuss them, question their meaning, and build toward a consensus understanding of the situation and relevant theory. Formulate one or two specific questions to guide further research. Delegate one teammate to represent your team and share a 2-min summary of your findings and questions with the rest of class.

In some cases, your team representative will report a brief summary of your findings, questions, and discussion. In other cases, they will participate in a panel discussion with other representatives.

Continuous education

Each of us enters a professional space because we already possess knowledge and skills to contribute; but we continue to add and develop those abilities further while in that space. ALEKS is a knowledge-assessment service that assesses your knowledge of general chemistry, guides you through acquiring new knowledge, and monitors your long-term retention of what you learned. Using multivariate statistical inference, it builds an initial profile of the specific topics you have mastered, and updates this profile as you complete exercises. After the initial assessment, set aside about 5 hours per week for exercises. You are expected to add mastery of 90 topics throughout this course. The system provides an online textbook for reference; however, you are welcome to use any college-level textbook or other resource.

Expectations

Journal

Check the schedule of assignments frequently for the most up-to-date directions, and complete your entry before class begins. Each entry should be:

- Timely** (before the class meeting when the information is needed)
- Detailed** enough to be unique to your experience
- Consistent** with instructor's observations in class
- Relevant** to the topic of the assigned activity
- Coherent and legible**

Engagement

Most of the grade for this course certifies your experience in project-oriented, collaborative work. Full engagement involves attending class sessions, making progress on continuous education, and contributing to all in-class activities. Missing class, coming unprepared, refusing to contribute to discussions, failing to respect team members, and irresponsible laboratory practices all deprive fellow students of this experience, and will be interpreted as a lack of engagement in assessing your Journal.

Etiquette

Upon arriving in class, please greet the instructor and the students sitting near you. Silence any devices you have. Maintain a respectful presence in class, and avoid disrupting or distracting fellow classmates once class begins. When working on a computer or other device, please look up from it when the instructor addresses the class. If you require frequent trips to the restroom or need to monitor your phone for an important message, inform your classmates so they understand your needs. Keep in mind at all times how your actions affect the people around you.

Food

Food and gum introduce a risk of several accessibility problems to an inclusive learning environment, so please refrain from bringing them into the classroom. Drinks in covered containers are okay. We recognize that this policy may conflict with certain accessibility needs; if this is the case for you, please inform the instructor so they can find a reasonable accommodation for your needs.

Class Space

We will move quite a bit during class, so please keep unnecessary items off tables and laboratory benches. You only need paper, pencil/pen, computer, and calculator at the desk. Place bags and food in front of the first row of the classroom or on window sills at the back.

Attendance

Of course there are various reasons to miss class, such as illness, emotional distress, interviews, athletic competitions, and family or religious obligations. If you miss a class meeting or will be late, your most pressing obligation is to notify the instructor by email, as soon as you know you will be absent or as soon as you are well enough to take action. As a courtesy, please inform team members as well, especially if you were responsible for a particular task they depend on. Regardless of the reason for an absence, you are still expected to add full Journal entries for the class meeting you missed, either before class (if absence was anticipated) or as soon as you are well enough to do so.

Assessment

Engagement in the course includes completing a number of assessments — surveys, projects, and exams — to gauge different aspects of the learning process. Your assistance in completing these assessments is greatly appreciated and an important part of maintaining the high quality of Kenyon's curriculum.

Grading

For each individual student, a letter grade of “B+” will be assigned based only on engagement in the course, as evidenced by consistent entries in your Journal and completion of Journal, Prospectus, and Proposal up to the standards listed above. If a student is not providing sufficient evidence of engagement at any point in the course, the instructor is expected to file a progress report and the student is expected to consult with them.

For all students who meet the expectations above, the instructor may assign a higher grade based on the entire class’s achievement of the course objectives.

Examination

Your complete course portfolio is due by the scheduled date and time of the final exam, which is published under the Registrar’s Examination Schedule. It is your responsibility to check the Registrar’s schedule before you make travel plans for end of semester. *The College explicitly requires instructors to give the final exam at the time scheduled by the Registrar. The College explicitly forbids instructors from accepting course work after this time.*

College policies

Attendance. Any absence must be explained. Excessive, unexplained absences are grounds for dismissal from the course.

Changes to syllabus. The policies articulated in this Syllabus are subject to change in response to unusual situations. You will be notified of any changes at least 48 hours before they go into effect.

Academic honesty. Please note the College's principles and policies regarding academic honesty:

Kenyon College is, at the core, an intellectual community of scholars — students and faculty — engaged in the free and open exchange of ideas. Critical to this lively exchange and deep engagement with ideas is the academic integrity of our work, both inside and outside the classroom.

At Kenyon we expect all students, at all times, to submit work that represents these standards of academic integrity. It is the responsibility of each student to learn and practice the proper ways of documenting and acknowledging those whose ideas and words you have drawn upon (see *Academic Honesty and Questions of Plagiarism in the Course Catalog*). Ignorance and carelessness are not excuses for academic dishonesty. If you are uncertain about the expectations for academic honesty in a class, please ask your instructor for clarification.

Discrimination. Please note the College's principles and policies regarding sexual misconduct and other forms of discrimination and harassment:

Kenyon College does not discriminate in its educational programs and activities on the basis of race, color, national origin, ancestry, sex, gender, gender identity, gender expression, sexual orientation, disability, age, religion, medical condition, veteran status, marital status, genetic information, or any other characteristic protected by institutional policy or state, local, or federal law. The requirement of non-discrimination in educational programs and activities extends to employment and admission.

All employees, including faculty, are considered Responsible Employees and must notify the College's Civil Rights & Title IX Coordinator with any relevant information.

Sexual Misconduct & Harassment: Title IX, VAWA, Title VII:

<https://www.kenyon.edu/directories/offices-services/ocr/title-ix-vawa/kenyon-policies/title-ix-policy/>

Discrimination & Discriminatory Harassment Policy (non sex or gender):

<https://www.kenyon.edu/directories/offices-services/ocr/discrimination/>

ADA & Section 504:

<https://www.kenyon.edu/directories/offices-services/ocr/discrimination/504-ada-grievance/student-grievance-procedure-resolving-complaints-under-ada-section-504/>

Accommodations. Please note the College's principles and policies regarding accommodations:

Students who anticipate they may need accommodations in this course because of the impact of a learning, physical, or psychological disability are encouraged to meet with their instructor privately — early in the semester — to discuss their concerns. In addition, students must contact Erin Salva, Director of Student Accessibility and Support Services (740-427-5453 or salvae@kenyon.edu), as soon as possible, to verify their eligibility for reasonable academic accommodations. Early contact will help to avoid unnecessary inconvenience and delays.

Only the Director of Student Accessibility and Support Services is authorized to review your documentation and to recommend an accommodation. Discussions with the Director are *not shared* with the instructor. The Director will work with you to design an accommodation tailored to your exact situation. If your accommodation requires special conditions or services provided by the instructor, then you must inform the instructor *at least two weeks before the service is needed*.