Fall 2026 CHEM 3111 Syllabus

CHEM 3111 – Inorganic Chemistry – 3 Credit Hours

Fall 2026, August 24th, 2026 to December 7th, 2026

Final Exam is TBD

Meeting times are MWF 8:25 am – 9:15 am in IC 211

Instructor Contact Information

Anthony J. Rojas, Ph.D. arojas9@gatech.edu

Office hours are Wednesday, 11 am – 12 pm and Friday 9:30 am – 10:30 am in Boggs/LDL 104B. Contact me for additional meetings. I can also meet you virtually at other times if you ask.

Course Description

In-depth study of concepts and theories of inorganic chemistry. Topics include atomic structure, bonding, coordination chemistry, reaction mechanisms, symmetry, nanomaterials, bioinorganic chemistry, and a general survey of descriptive inorganic chemistry.

Course Prerequisite/ Credit Hours

(Undergraduate Semester level CHEM 2312 Minimum Grade of D or Undergraduate Semester level CHEM 2313 Minimum Grade of D) and Undergraduate Semester level CHEM 1212K Minimum Grade of D

Course Materials/Requirements

Required text: *None.* If you would like a reference book, I suggest *Inorganic Chemistry* (any edition) by Gary Miessler, Paul Fischer, and Donald Tarr.

Here is a decent free General Chemistry book: https://openstax.org/books/chemistry-2e/pages/1-introduction

Here is a decent free Inorganic Chemistry book: http://www.t.soka.ac.jp/chem/iwanami/inorg/INO_0001.PDF (Links to an external site.)

- Calculator: Any one of the following:
  - Casio: All fx-115 and fx-991 models (“fx-115” or “fx-991” in its model name.)
  - Hewlett Packard: The HP 33s and HP 35s models, but no others
  - Texas Instruments: All TI-30X and TI-36X models (“TI-30X” or “TI-36X” in its model name.)

- **Access to a computer (**Windows: 10, 8, 7 • Mac: MacOS X 10.10 or higher) **with reliable, broadband internet connection,** If you cannot get a computer and reliable internet, you can use the ones on reserve in the library.

Course Requirements:

Assessment	Description	Value
ACS Final Exam	In-Person Final Exam	20%
Homework	Section Homework	10%
Daily Quests	Every day you will have a quest based on the pre-class reading and videos	10%
Elemental Graphic Art	Semester-long project about an element of your choice	15%
Section Exams	Three Section Exams @ 15%	45%
Total		100%

100%>A>89%, 90%>B>79%, 80%>C>69%, 70%>D>59%, F<%60

***If you email me about bumping your grade up at the end of the semester, I will bump it down instead.**

- **Withdraw:**

  October 31st is the last day to withdraw from a single course or from school with W grades for Fall Semester 2026 by 11:59 PM Eastern Time. Students must withdraw from all classes in order to receive a refund. Deadline to change grade mode from Letter/Grade to Pass/Fail (and vice versa). No changes to or from audit mode permitted after the last day of registration. Completed forms, including advisor signature, accepted October 25, 2026 by 11:59 PM Eastern Time

ACS Final Exam – The American Chemical Society provides a nationwide exam for inorganic chemistry classes. This exam will be administered during the Final Exam Schedule based on your class time. The exam is expansive and may include topics from previous chemistry courses or topics not discussed during this course.

Homework – Homework will be assigned almost every week and is due on Canvas **as a pdf** on the assigned date. If you submit your homework late, even by 15 seconds, you will be assessed a late penalty of 10% off per day. After 2 days, you will not receive any credit. After the due date for an assignment, I will go over the answers and you can revisit the problems to help you study. Please convert all your pages to pdf before submitting and it is your responsibility to ensure your answers are clear and legible.

Daily Quests – Quests will be given at the beginning of each class based on pre-class assignments and answered using Microsoft Forms. They will be short, straightforward, and likely be completed within 2 or 3 minutes. They are simply meant to ensure that you are doing the pre-class assignments, as this is integral to your success in the class. There are **NO** make-up quests, and I will drop **Three** of the lowest quest grades each semester.

Section Exams – Exams will be given during regular class periods. If you have a legitimate, documented reason for missing an exam you should notify me in advance to arrange a make-up. If you cannot give me advance notice, you should notify me within 24 hours of missing the exam to arrange a make-up. Students who cannot provide what I consider to be a valid reason and proper documentation will receive zeroes for

all missed exams. Exams may include material from the class, homework, pre-class assignments, textbook, and quests.

Elemental Graphic Art – Create a visually engaging and informative graphic or poster on an element from the periodic table, designed for a general audience. Your graphic should be inspired by the style of those found on compoundchem.com, capturing attention while conveying key information. Highlight the element's practical and everyday applications, providing context on its significance and uses. Ensure your design is clear, intriguing, and accessible to viewers without a background in chemistry. Use a combination of images, text, and design elements to effectively communicate the importance of your chosen element.

Course Learning Objectives:

Completion of inorganic chemistry course work ensures a background in Atomic Structure, Covalent Molecular Substances, Main Group Elements, Transition Elements and Coordination Chemistry, Organometallic Chemistry, Solid State Materials, Catalysis, Bioinorganic Chemistry, and Polymers & Supramolecular Chemistry. Students should leave feeling educated in the process of science, the molecular perspective of matter, and chemistry's relationship to other sciences, technology, and society. Learning objectives for each class day will be presented in class and serve as a guide for exams.

Formats and Procedures:

This course may proceed differently than any you've ever taken or might ever take again. We will use a variety of pedagogical techniques, which I believe have been incorporated to facilitate both your chemistry knowledge and development as students and human beings. I will ask you to work in groups, participate in discussion, learn material before coming to class, and really grapple with the material on your own. Almost every class will rely on your participation, with very little traditional lecturing by me. Rather than always relying on me to stand at the front of the class and throw words and pictures at you, you will have to work actively to develop the skills necessary to succeed in this course.

Before coming to each class, you will be expected to have done some pre-class activity, such as watching a video, reading material I assign, or working on problems beforehand. Once class begins and I have assessed your pre-class effort (via short quests described above), we will work together to reinforce important concepts or clear up misconceptions about the learning material. Afterwards, homework will be assigned to continue to reinforce your learning until you have developed a mastery of our topics.

Course Policies

Attendance:

Although formal attendance will not be taken in class, students are expected to attend class. Since most of the material covered on the exams will be discussed in class, attendance will work to the student's advantage. Additionally, short Quests based on pre-class assignments given at the beginning of every class cannot be made up or taken late. I know that emergencies and illness happen so I will gladly drop the 3 lowest pre-class Quest grades each semester to account for this.

Academic Integrity:

Georgia Tech aims to cultivate a community based on trust, academic integrity, and honor. Students are expected to act according to the highest ethical standards. For information on Georgia Tech's Academic Honor Code, please visit http://www.catalog.gatech.edu/policies/honor-code/ or http://www.catalog.gatech.edu/rules/18/.

Any student suspected of cheating or plagiarizing on a quiz, exam, or assignment will be reported to the Office of Student Integrity, who will investigate the incident and identify the appropriate penalty for violations.

- **disAbility:**

  If you are a student with learning needs that require special accommodation, contact the Office of Disability Services at (404)894-2563 or http://disabilityservices.gatech.edu/, as soon as possible, to make an appointment to discuss your special needs and to obtain an accommodations letter. Please also e-mail me as soon as possible in order to set up a time to discuss your learning needs.

- **Student-Faculty Expectations Agreement:**

  At Georgia Tech we believe that it is important to strive for an atmosphere of mutual respect, acknowledgement, and responsibility between faculty members and the student body. See http://www.catalog.gatech.edu/rules/22/ for an articulation of some basic expectation that you can have of me and that I have of you. In the end, simple respect for knowledge, hard work, and cordial interactions will help build the environment we seek. Therefore, I encourage you to remain committed to the ideals of Georgia Tech while in this class.

- **Changes:**

  The policies in this syllabus may change due to unforeseen circumstances. Any changes to the syllabus will be given in writing in-class and posted on the course website.

- **Life Happens Clause:**

  Life is complex and life happens. For one assignment this semester, you can tell me that you're invoking the "Life Happens" clause and receive a 48-hour extension of any assignment (excluding Exams and Extra Credit). You don't have to tell me any of your personal business, explain, or apologize. Life happens and if you need to use it, use it. Just let me know in a timely manner.

Course Calendar*

*Class dates for topics are tentative and may change without notice. However, any change in Exam dates will be announced and posted on canvas prior to the Exam date.

Final ACS Exam - Please check the final exam schedule at the registrar's website

Date	Topic
Weeks 1 & 2	Atomic Structure
Weeks 2 & 3	Symmetry / Group Theory
Week 3 & 4	Covalent Bonding

Weeks 5 & 6	Solid State / Ionic Bonding
Weeks 7 & 8	Acid-Base Chemistry
Weeks 9 - 12	Coordination Chemistry
Weeks 13 & 14	Organometallic Chemistry