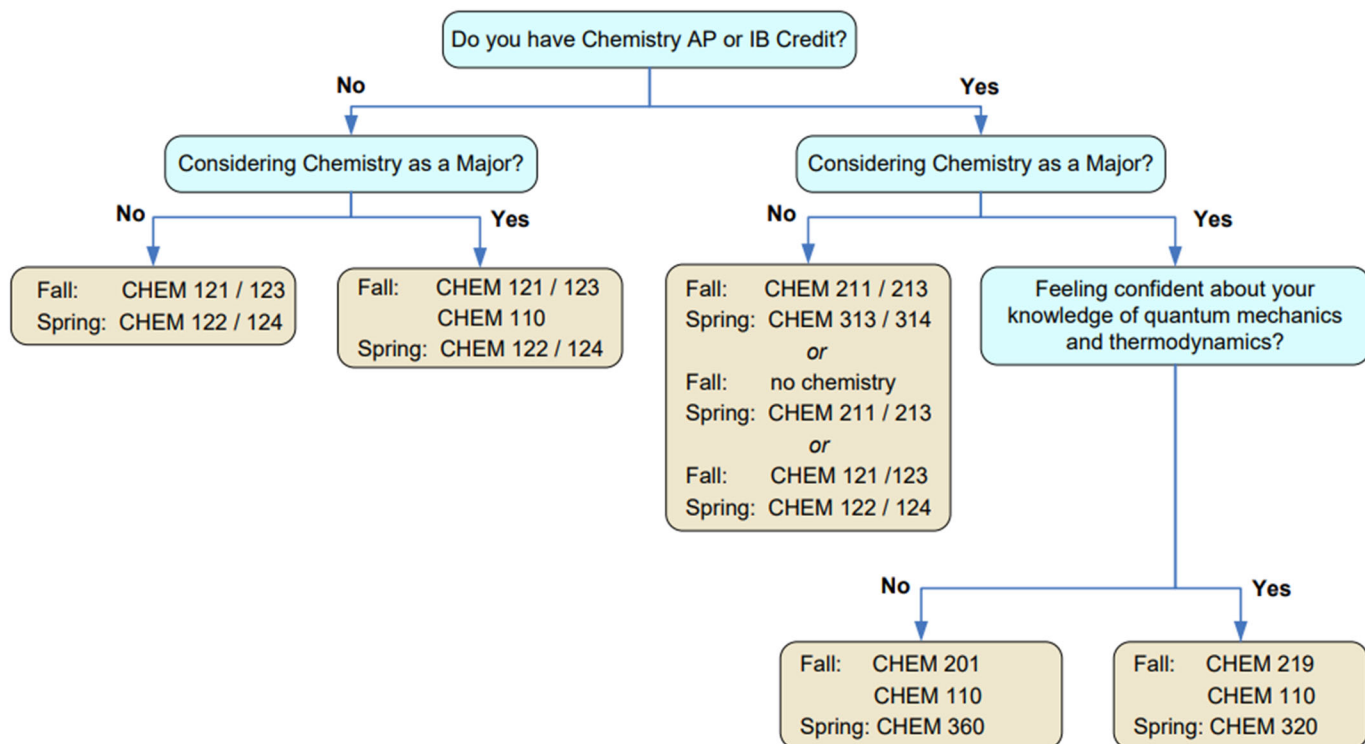


Freshmen Year: Which Class is Right for Me?

The Department of Chemistry offers several pathways for completing the core curriculum required for chemistry majors as well for the many students who need these courses for other majors and pre-med requirements. These paths are summarized in the flow-chart below. Students without AP/IB or equivalent credit should simply enroll in CHEM 121/123 in the Fall semester. Students considering a chemistry major should also enroll in CHEM 110, which is a one credit hour seminar that introduces students to research opportunities in chemistry. Students entering with AP credit or equivalent preparation have additional flexibility in course selection, as described below.



Option 1: Take none of your AP Chemistry credit

Fall: CHEM 121/123 - General Chemistry I and General Chemistry Lab I
Spring: CHEM 122/124 - General Chemistry II and General Chemistry Lab II

This is the standard introductory chemistry sequence and the classes that **most students** will take. If you took AP Chemistry but feel that you would benefit by further study of that course material, this is the best option for you. One advantage of this approach is that you will review many of the same topics that were covered in AP Chemistry and will have an opportunity to reinforce your existing knowledge. This course should therefore seem somewhat easier for new matriculates. The disadvantage is that you cannot receive credit for both your AP work and for CHEM 121/123.

Option 2: Take one semester of your AP Chemistry credit

Fall: CHEM 201 - Advanced Topics in General Chemistry
Spring: CHEM 360 - Inorganic Chemistry

This pathway is **strongly recommended** for students with AP or equivalent credit who are planning to major in chemistry (either BA or BS). CHEM 201 covers challenging fundamental topics from General Chemistry that are often not mastered by AP students. This course is designed to properly prepare chemistry students for their upper level classes such as the physical chemistry sequence. CHEM 201 is open only to those who have AP credit. CHEM 201 has no associated laboratory and is one semester long, as compared to the two semester CHEM 121/122/123/124 sequence. Taking CHEM 201 allows you to claim your AP credit for first semester general chemistry while it replaces your AP credit for second semester general chemistry. CHEM 201 satisfies the prerequisites for any course requiring CHEM 121/122/123/124. After completing this course, students intending to major in chemistry are advised to take CHEM 360 in the Spring semester.

Option 3: Take both semesters of your AP Chemistry credit

Fall: CHEM 211/213 or CHEM 219 - Organic Chemistry I

Spring: CHEM 313/314 or CHEM 320 - Organic Chemistry II

These are the Organic Chemistry I and II options, appropriate for students who are confident in their mastery of general chemistry. Such students who intend to major in chemistry should enroll in CHEM 219/320, while others should enroll in CHEM 211/313. Taking organic chemistry in the first year is only available to those with AP or equivalent credit for General Chemistry. The advantage of claiming the full year of Chemistry AP credit is that it reduces the number of required courses, making it easier to take additional upper level courses, pursue double majors, or reduce courseloads during the junior/senior years. The disadvantage is that the organic chemistry curriculum can be challenging for new matriculates. Students with AP or equivalent credit who do not intend to major in chemistry may also consider taking no chemistry course in the Fall semester and starting CHEM 211 in the Spring semester.

Two notes for students considering a chemistry major:

- 1.) CHEM 110 is recommended for chemistry majors to introduce them to research opportunities, but it is not required.
- 2.) While CHEM 201, CHEM 219, and CHEM 320 are courses designed for students intending to major in chemistry, CHEM 121/122/123/124 and CHEM 211/313/213/314 satisfy all the same requirements and prerequisites and provide an excellent basis for the upper-level courses required for the chemistry major.

Note about AP and equivalent credit:

Students with AP credit will receive credit for CHEM 111/112/113/114. These credits are the equivalent to CHEM 121/122/123/124 for any prerequisites, but they do not count towards the Group III distribution requirement.

Note for pre-medical:

Please consult with the Office of Academic Advising (OAA) for advice on which path is best for you, as some medical schools do not accept Chemistry AP credit.

For Current Chemistry Majors:

Should I take CHEM 211/313 or CHEM 219/320? In brief, chemistry majors should take CHEM 219/320. However, both CHEM 211/313 and CHEM 219/320 count toward the undergraduate chemistry degrees, and both are excellent sequences that have been well-liked by students in recent years. CHEM 211/313 is primarily taught as a large lecture course with smaller discussion groups, while CHEM 219/320 are much smaller courses —12 to 25 students — and are intended for students considering chemistry as a major and those in closely related fields with a strong interest in chemical research. Taught in small groups, CHEM 219/320 minimizes traditional lecture time, and significant course time is spent on small group problem-solving work and applying fundamental concepts to new applications, mechanism and arrow-pushing, and multistep synthesis. Memorization is de-emphasized. Both courses use the same textbook, though CHEM 219/320 may cover 1-2 additional chapters of material that are more important to chemists than a general audience. CHEM 320 also serves as an introduction to the department and to independent research in chemistry. Some class discussion is designed to help students find a research lab in chemistry and to work toward a career related to chemistry.

Can I pursue summer school, study abroad, and internship opportunities as a CHEM major? Chemistry course credit earned from summer school and study abroad programs is allowed. Interested students should refer to the Transfer Credit Policy found in this booklet and obtain approval from the transfer credit advisor in advance of enrolling in summer coursework. The Department encourages student participation in study abroad programs. Course substitutions completed through summer school and study abroad programs must be approved through the Office of the Registrar and the Department of Chemistry. Most students who want to do internships complete them in the summer, but academic-year internships are also possible. Please consult with the Study Abroad office and an academic advisor to design an academic plan that allows for study abroad and/or internship opportunities.

If I'm not doing well in one of my prerequisites, should I not be a CHEM major? You should be a Chemistry major if Chemistry is the field you want to study! Many successful chemists have struggled in undergraduate courses. There are many reasons why students might not perform at their best, and there are tremendous resources at Rice to help. However, it is the student's responsibility to take the initiative to seek assistance when they are struggling in a course. Do not wait too long before seeking academic assistance. Students should consult their professor for help with a specific course, utilize the Teaching Assistants in the course, go to the Drop-In Study Center to meet with Peer Educators, utilize their residential college's Academic Fellows/Mentor Society, and see an academic advisor to discuss options if they are struggling with multiple courses.

Can I Pass/Fail a chemistry course as a CHEM major? Courses taken as Pass/Fail cannot be used to meet major requirements. If required courses are taken pass/fail, the Registrar will replace the P with the letter grade earned during the final degree audit. If you have multiple courses that could be used to fulfill the same major requirement, address any potential problems with your major advisor prior to your final degree audit.

Can I earn credit for chemistry research? Yes, you may enroll in Research for Undergraduates (CHEM 391/491/492/493) to earn credit for independent research. B.S. students must complete 8 credit hours of chemistry research (corresponding research courses in other departments in Science and Engineering may only be used towards this requirement with prior departmental approval). CHEM 391 is the standard independent research course for first-time research students, while CHEM 491 is for continuing research students and is repeatable for credit. The Chemistry Honors Research Program, CHEM 492/493, offers students in their final year at Rice the opportunity to perform a two-semester, independent chemistry research project. These courses function as a pair and must be taken in the same academic year. Students must formally apply to CHEM 492/493 with the recommendation of their research professor. The course requires students to complete a research proposal, a public presentation of findings, and a formal report or thesis. For more information, refer to the Undergraduate Research Opportunities section.

How do I get involved in chemistry research? There are many ways to find research opportunities as a Rice undergraduate. The most common method to join a lab in the Chemistry Department is to contact the faculty member directly about working in their lab for course credit. CHEM 110 (Freshman Chemistry Seminar) and CHEM 320 (Organic Chemistry II) are both classes that actively help students find a suitable research lab. For more information and suggestions, please refer to the "How Do I Find a Research Opportunity?" section.

How do I find a teaching opportunity? Chemistry majors who are interested in gaining experience in teaching can often TA for an introductory course. Many find this experience to be exceptionally rewarding and it helps prepare students who are considering a future in all levels of academia. TA opportunities may be advertised on the Chemistry Undergraduate mailing list. However, interested students are also strongly encouraged to contact the course instructor directly to ask about TA opportunities in upcoming semesters.