RICE
CHEMISTRY

Academic Year 2026-2027

Undergraduate Advising Information

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Introduction to the Rice Chemistry Undergraduate Program

Undergraduate students interested in studying chemistry benefit from Rice's renowned faculty members and a strong research program. The Department of Chemistry offers undergraduate chemistry majors a Bachelor of Science (B.S.) degree or a Bachelor of Arts (B.A.) degree. The Department also offers a Bachelor of Science degree in Chemical Physics.

The B.S. in Chemistry degree rigorously prepares students for a career in chemistry or a related discipline, and the degree requirements are consistent with the guidelines for certification by the American Chemical Society. This curriculum provides a broad and comprehensive introduction to core areas of chemistry while promoting depth of understanding in one or more specific fields. B.S. students complete a series of foundation courses in general chemistry, analytical chemistry, biological chemistry, inorganic chemistry, organic chemistry, and physical chemistry. Students then complete one or more specializations, or "tracks," consisting of in-depth courses both in and out of the specialization.

The B.A. in Chemistry degree is a more flexible program that provides a comprehensive overview of all areas of chemistry, including laboratory experiences, but can be coupled more easily with other majors or professional career paths.

The B.S. in Chemical Physics degree is offered in conjunction with the Department of Physics and Astronomy. Students take upper-level courses in both chemistry and physics, focusing on the applications of physics to chemical systems. For more information on this option, contact Prof. Bruce Weisman (Chemistry) or Prof. Stan Dodds (Physics).

Follow Rice Chemistry!

Chemistry Department Website
- Our website contains all information on the Undergraduate program, as well as the Graduate program, Alumni, departmental events and awards, and specific faculty research and news articles.

Chemistry Undergraduate Research Opportunities
- Canvas page is where we broadcast research opportunities relevant to our majors. You will have to enroll in the Chemistry Undergraduate Research Opportunities course once you sign in with you NetID.

Facebook
- Our Facebook page includes notifications of all seminars and Department events and news as well as all photos of Departmental events.

LinkedIn: *Search 'Groups' for 'Rice University Chemistry Department'*
- Our LinkedIn page is updated every time we receive news on job opportunities for those in the field of Chemistry.

Rice Chemistry Student Organizations

Owlchemy: The Rice Undergraduate Chemistry Society This club seeks to provide academic and career resources, serve as a liaison to the chemistry faculty and graduate students, and create a social network of support for Rice chemistry undergraduates. The club's mission is to improve the overall academic and social interactions of both incoming freshmen and upperclassmen while promoting the study of chemistry on campus and community-wide. This organization also is committed to education through local volunteering and demonstrations.

Fun with Chemistry: Fun with Chemistry is an outreach organization dedicated to inspiring and motivating K-12 students to develop an interest in and pursue careers in science fields. Our chapter at Rice consists of volunteers from a diverse range of both undergraduate and graduate students. We perform exciting chemistry shows in the Houston area and participate in community outreach events. One of our primary goals is to increase the number of girls and underrepresented minorities in science, as well as help K-12 students reimagine who can be a scientist.

Chemistry Major Advisors

The Chemistry Department has one faculty advisor for every residential college so that each student can form a consistent bond within the Department while completing their degree. Contact your Major Advisor with any questions or concerns you may have – they're here to help!

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Pursuing a Chemistry Degree

The guide below is designed to help you explore your academic interests in chemistry and ensure that you have appropriate preparation for employment or graduate school in chemistry or related fields. If you are interested in pursuing a health profession, please refer to the resources provided by the Office of Academic Advising (OAA).

First Year	Second Year
● Plan a tentative course of study with your Divisional Advisor and/or Major Advisor. ● Take at least one CHEM course, in addition to the required MATH and PHYS courses. ● Enroll in CHEM 110 (Freshman Seminar) to learn more about research in the department. ● Try to attend a departmental gathering, reception, or seminar to start meeting CHEM faculty and students. ● Visit the Center for Career Development to learn about the education and skills required for possible careers in Chemistry. ● Attend the Student Activities Fair. Join Owlchemy and/or Fun with Chemistry. ● Identify summer programs and job opportunities through the Chemistry website and the Rice Summer Opportunities Fair. ● Strongly consider making arrangements to conduct research during the next academic year.	● Use the tips below, the General Announcements, the OAA website, and the CHEM website to determine your degree plan with your Major Advisor: - Not all courses are offered every year. Plan ahead to have flexibility in your schedule. - Complete all lower-level CHEM requirements by the end of your 2nd year. - Complete as many laboratory course requirements as possible by the end of the second year, which provides useful training for independent research in future years. - Check that you will complete the minimum required hours (48) at the 300-level or higher. - If you have not yet enrolled in CHEM 391, make arrangements to conduct research next year (B.S. degree candidates are expected to complete CHEM 391 before the end of their third year.) ● Apply for summer programs, research opportunities, internships, and/or study abroad programs.
Third Year	**Fourth Year**
● Apply to attend a research conference or symposium and consider presenting your research. ● Consider post-graduation plans. Begin gathering information about graduate schools or employment sectors. ● Speak with faculty members, advisors, and other mentors about post-graduation plans. ● Begin preparing CV and personal statements. ● Register and prepare for relevant standardized tests. ● Look for scholarship and fellowship opportunities. ● Request letters of recommendation from faculty.	● Complete remaining degree requirements. ● Complete and submit employment and/or graduate applications. ● Request additional letters of recommendation, if necessary.

Frequently Asked Questions

What's the difference between Chemistry and Chemical Engineering? While there is much overlap between the disciplines, the major differences between chemistry and chemical engineering have to do with originality and scale. Chemists are more likely to invent fundamentally new chemicals, materials, or techniques, while chemical engineers are more likely to apply known materials or ideas to effectively solve real-world problems.

Is it better to get a B.S. rather than a B.A. in Chemistry? Neither degree is necessarily "better" — it depends on your career path. Your specific experiences, coursework, and achievements during your time at Rice are more important for job or graduate school applications than the type of degree you earn. With that said, the B.S. degree is designed to provide the experiences necessary for a career in chemistry, including pursuing graduate school or laboratory research jobs in chemistry-related fields. On the other hand, the B.A. degree is designed for students interested in a broad range of careers that value scientific knowledge, rigorous analytical skills, and quantitative abilities, but who are not as interested in laboratory research. Health professions and high school teaching are two examples of careers for which the B.A. degree is good preparation. Please seek advice from an academic advisor to determine which degree is best suited for your career path.

I want to major in both Chemistry and another major. Can I do it? Yes. Although it is demanding, many students do complete the requirements for two majors in disparate fields. Note that Rice offers two options in this case: a "double major" or a "dual degree." More information may be found in the General Announcements.

For Freshmen:

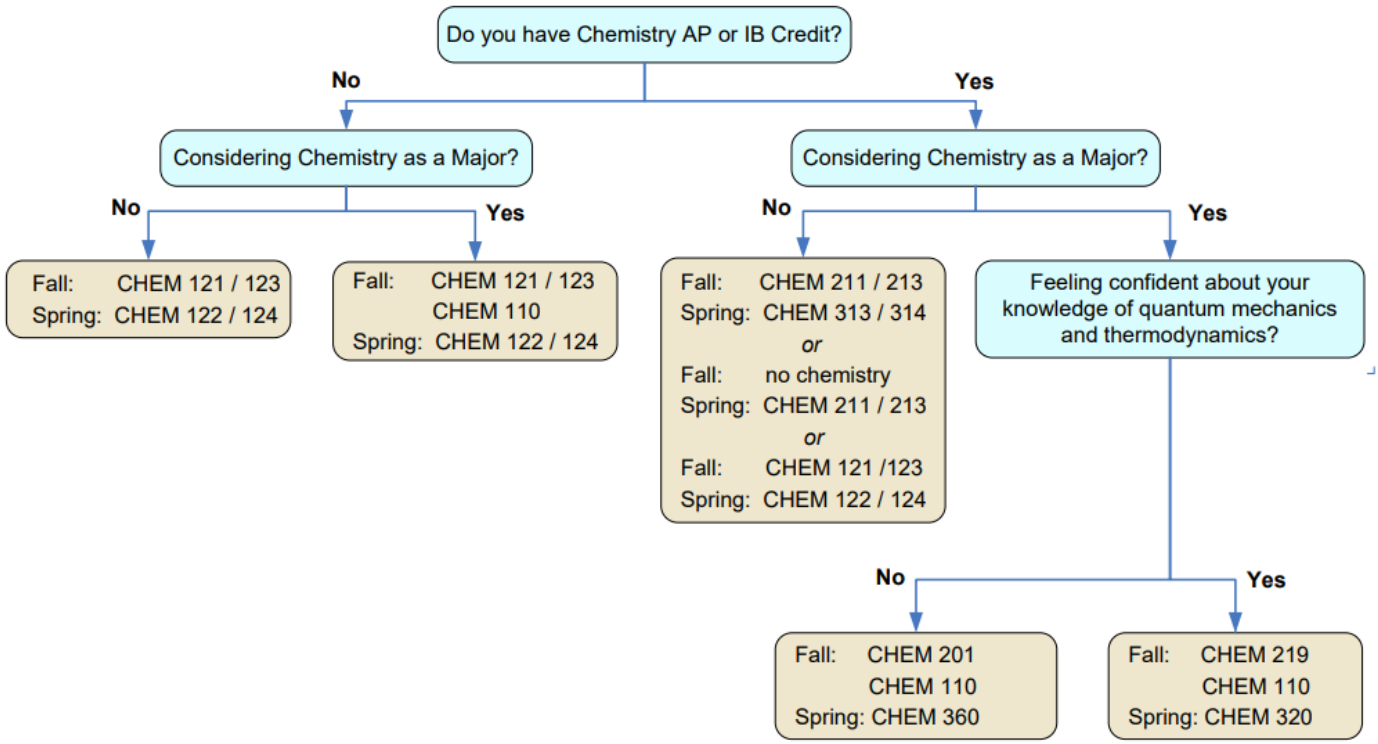
Should I take PHYS 101/102, PHYS 111/112, or PHYS 125/126? All three sequences fulfill the physics requirement for the B.A. and B.S. in Chemistry. PHYS 101/102 is intended for students majoring in engineering or the physical sciences, PHYS 125/126 for bioscience and premedical students, and PHYS 111/112 for particularly well-motivated students with a strong interest in the physical sciences. You may refer to the Office of Academic Advising (OAA) for more information on course placement.

Which Chemistry class should I take as a freshman? Most freshmen will take a full-year course in general chemistry (CHEM 121/122/123/124). However, there are other options depending on your background and plans. Students with AP/IB Chemistry credit and planning to major in Chemistry can 1) go directly into organic chemistry (CHEM 211 or 219) during their freshman year; 2) take CHEM 201, which provides the best preparation for upper-level chemistry courses, especially CHEM 301/302; or 3) forgo their AP/IB credit and take Chem 121/123 to review and strengthen their foundation. For more information, see the section "Which Chemistry Class is Right for Me?"

I have AP/IB Chemistry credit. Will this satisfy pre-health professions requirements? This is a question that must be answered on a case-by-case basis and is not determined by the Rice Chemistry Department. We understand that AP/IB credit will satisfy some pre-medical requirements for many, but not all, medical and other health professional schools. Students need to consult with the OAA or each school for their AP/IB policies.

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 as 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 more 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 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 the challenging fundamental topics from General Chemistry that are often not mastered by AP students. This course is designed to prepare chemistry students for their upper-level classes, especially the physical chemistry CHEM 301/302 sequence. CHEM 201 is open only to those with 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 available only 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 your 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 of this option is that the organic chemistry curriculum can be challenging for new matriculates, and you may also find that your AP class provided poor preparation for CHEM 301/302. 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 prererquisites and also provides excellent preparation for the upper-level chemistry major courses.

Note about AP and equivalent credit:
Students with AP credit will receive credit for CHEM 111/112/113/114. These credits are 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 students:
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 deemphasized. 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 discussions are 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.

Life After Rice:

What are some post-graduation options for me if I graduate with a CHEM degree (aside from medical school or graduate school)? You have many options, especially if you are not geographically limited. Often, these are jobs in chemical industry (including biotechnology) or science education. Other relevant career paths include conservation, science communication, science policy, scientific/medical illustration, forensic science, management consulting, and patent law. Please meet with your Chemistry major advisor and the Center for Career Development for more information.

Which graduate programs have recent CHEM undergraduates been accepted to? In the past five years, our recent Chemistry majors have gone on to graduate school (Harvard, MIT, Northwestern, Caltech, UC Berkeley, and more), as well as medical, pharmacy, and dental schools.

How important is my GPA for getting into graduate school? Admissions committees typically place considerable weight on the GPA, especially in math and science courses. The admission committee will also place heavy emphasis on undergraduate research experience and the recommendation of the student's research mentor. However, every part of each student's application is examined closely by the admissions committee, so there is no single element that would make or break a student's admission. Among other factors, students with a strong research record that includes publication in a peer-reviewed journal are looked upon especially favorably.

What are good resources for investigating my options and choosing graduate schools to apply to? First, examine the American Chemical Society website. Second, speak with your Chemistry major advisor and research advisor to find ideal graduate programs to which you should apply that best match your research interests and career path.

Degree Requirements for the B.S. in Chemistry

The B.S. in Chemistry requires at least 120 credit hours, including at least 69 credit hours of chemistry requirements (listed below in a checklist format).

Chemistry Core Requirements

Course	Title	Credits
CHEM 111 or 121	General Chemistry I	3
CHEM 112 or 122 or 201	General Chemistry II Advanced Topics in General Chemistry	3
CHEM 113 or 123	General Chemistry Lab I	1
CHEM 114 or 124	General Chemistry Lab II	1
CHEM 110*	Freshman Chemistry Seminar	1
CHEM 211 & 213 or CHEM 219	Organic Chemistry I *and* Organic Chemistry Discussion I *or* Organic Chemistry I Honors	3
CHEM 313 & 314 or CHEM 320	Organic Chemistry II and Organic Chemistry Discussion II *or* Organic Chemistry II Honors	3
CHEM 301**	Physical Chemistry I	3
CHEM 302**	Physical Chemistry II	3
CHEM 330	Analytical Chemistry	3
CHEM 360	Inorganic Chemistry	3
CHEM 365***	Organic Chemistry Lab	2
CHEM 340 or BIOS 301****	Biochemistry and Chemical Biology *or* Biochemistry I	3

*CHEM 110 is recommended (not required) for all B.S. majors prior to enrolling in CHEM 391.
**CHEM 301 and 302 have a prerequisite of PHYS 101/125/111 or AP/IB equivalent.
*** CHEM 365 must be completed successfully before enrolling in any advanced CHEM laboratory course.
****BIOS 201 is a prerequisite for BIOS 301, but the Biosciences Department confirmed that CHEM majors are waived from the BIOS 201 prerequisite. Students must contact the course instructor to special register for BIOS 301.

Mathematics*

Course	Title	Credits
MATH 101 or 105	Single Variable Calculus II *or* AP/OTH credit in Calculus I	3
MATH 102 or 106	Single Variable Calculus I *or* AP/OTH credit in Calculus II	3
MATH 211 or 220	Ordinary Differential Equations and Linear Algebra *or* Honors Ordinary Differential Equations	3

*The Dept. of Math. may, after consultation with a student concerning his/her previous math preparation, recommend that a student be placed into a higher-level math course than that for which the student has received official credit. The Dept. of Chem. will accept this waiver of the math classes upon a written confirmation of the waiver from the Dept. of Math. and upon the student's successful completion of the higher-level math course. Note: MATH 212 is encouraged for students interested in physical and theoretical chemistry or planning to pursue graduate studies.

Physics

Course	Title	Credits
PHYS 101 & 103 or 111 or 125	Mechanics (with lab) *and* Mechanics Discussion *or* Honors Mechanics (with lab) *or* General Physics (with lab)	4
PHYS 102 & 104 or 112 or 126	Electricity and Magnetism (with lab) *and* Discussion *or* Honors Electricity and Magnetism (with lab) *or* General Physics II (with lab)	4

Advanced Laboratories* (Complete 2 of 4)

Course	Title	Credits
CHEM 366	Inorganic Chemistry Lab	2
CHEM 367	Materials Chemistry Lab	2
CHEM 368	Chemical Measurement Lab	2
CHEM 369	Chemical Biology Lab	2
BIOS 311*	Experimental Biochemistry	2

Research (At Least Eight Credit Hours)

Course	Title	Credits
CHEM 391**	Research for Undergraduates	3
***		

*BIOS 311 has prerequisites of BIOS 211 and BIOS 301.
**Normally completed before the end of junior year. Enrollment in CHEM 391 requires advance permission. See course guide for details.
***Additional independent research or laboratory coursework in chemistry must be completed to total eight (8) credit hours (including CHEM 391). This requirement may be satisfied by taking one or more of the following: (i) CHEM 491, (ii) CHEM 492 and 493. Up to two (2) credits of CHEM 280 may be used toward this requirement.

Advanced Course Work (Nine Credit Hours)

- Nine (9) credit hours of additional advanced coursework in Chemistry. For purposes of this requirement, "advanced coursework" includes chemistry lecture courses at the 400-level or higher.
- BIOS 302 may be used to satisfy this requirement.
- Lecture courses in other departments with substantial chemistry content may count towards this requirement with the approval of the Director of Undergraduate Studies.

B.S. in Chemistry – Sample Degree Plan

FALL			SPRING		
FRESHMAN		**15 credits**	**FRESHMAN**		**15 credits**
CHEM 121	General Chemistry I	3	CHEM 122	General Chemistry II	3
CHEM 123	General Chemistry Laboratory I	1	CHEM 124	General Chemistry Laboratory II	1
MATH 101	Single Variable Calculus I	3	MATH 102	Single Variable Calculus II	3
PHYS 101	Mechanics (with lab)	4	PHYS 102	Electricity & Magnetism (with lab)	4
DIST/FWIS	FWIS/Distribution Course	3	DIST/FWIS	FWIS/Distribution Course	3
CHEM 110	Freshman Sem. in Chemistry	1	LPAP	Lifetime Phys. Activity Elective	1
SOPHOMORE		**14 credits**	**SOPHOMORE**		**14 credits**
CHEM 219	Organic Chemistry Honors I	3	CHEM 320	Organic Chemistry Honors II	3
DIST	Distribution Course	3	CHEM 360	Inorganic Chemistry	3
MATH 211	Ord. Differential Equations	3	CHEM 365	Organic Chemistry Lab	2
DIST	Distribution Course	3	DIST	Distribution Course	3
OPEN	Open Elective	3	OPEN	Open Elective	3
JUNIOR		**14 credits**	**JUNIOR**		**14 credits**
CHEM 340	Biochemistry and Chemical Biology	3	CHEM 302	Physical Chemistry II	3
CHEM 301	Physical Chemistry I	3	CHEM 4XX	Advanced Lecture Course	3
CHEM 391	Research for Undergraduates	3	CHEM 3XX	Advanced Laboratory Course	2
CHEM 3XX	Advanced Laboratory Course	2	CHEM 491	Research for Undergraduates	3
OPEN	Open Elective	3	DIST	Distribution Course	3
SENIOR		**17 credits**	**SENIOR**		**17 credits**
CHEM 492	Undergrad. Honors Research	5	CHEM 493	Undergrad. Honors Research	5
CHEM 330	Analytical Chemistry	3	CHEM 4XX	Advanced Lecture Course	3
CHEM 4XX	Advanced Lecture Course	3	OPEN	Open Elective	3
DIST	Distribution Course	3	OPEN	Open Elective	3
OPEN	Open Elective	3	OPEN	Open Elective	3

Total credit hour requirement is 120

Note: While the above sample degree plan suggests 16 credit hours of independent research, the B.S. degree requires only 8 credit hours. There is a lot of flexibility in the completion of advanced coursework. However, not all courses are taught every year – consult with your major advisor about your course plan.

B.S. in Chemistry – Sample Degree Plan with Chemistry AP Credit

FALL			SPRING		
FRESHMAN		**14 credits**	**FRESHMAN**		**14 credits**
CHEM 201	Advanced Topics in General Chemistry	3	CHEM 360	Inorganic Chemistry	3
MATH 101	Single Variable Calculus I	3	MATH 102	Single Variable Calculus II	3
PHYS 101	Mechanics (with lab)	4	PHYS 102	Electricity & Magnetism (with lab)	4
FWIS	First Year Writing Seminar	3	DIST	FWIS/Distribution Course	3
CHEM 110	Freshman Seminar in Chemistry	1	LPAP	Lifetime Phys. Activity Elective	1
SOPHOMORE		**14 credits**	**SOPHOMORE**		**14 credits**
CHEM 219	Organic Chemistry Honors I	3	CHEM 320	Organic Chemistry Honors II	3
DIST	Distribution Course	3	CHEM 365	Organic Chemistry Lab	2
MATH 211	Ord. Differential Equations	3	CHEM 391	Research for Undergraduates	3
DIST	Distribution Course	3	DIST	Distribution Course	3
OPEN	Open Elective	3	OPEN	Open Elective	3
JUNIOR		**14 credits**	**JUNIOR**		**14 credits**
BIOS 301	Biochemistry I	3	CHEM 302	Physical Chemistry II	3
CHEM 301	Physical Chemistry I	3	CHEM 491	Research for Undergraduates	3
CHEM 491	Research for Undergraduates	3	CHEM 3XX	Advanced Laboratory Course	2
CHEM 3XX	Advanced Laboratory Course	2	DIST	Distribution Course	3
OPEN	Open Elective	3	OPEN	Open Elective	3
SENIOR		**17 credits**	**SENIOR**		**14 credits**
CHEM 492	Undergrad. Honors Research	5	CHEM 493	Undergrad. Honors Research	5
CHEM 330	Analytical Chemistry	3	CHEM 4XX	Advanced Lecture Course	3
CHEM 4XX	Advanced Lecture Course	3	CHEM 4XX	Advanced Lecture Course	3
DIST	Distribution Course	3	OPEN	Open Elective	3
OPEN	Open Elective	3			

Total credit hour requirement is 120

Note: The above sample degree plan assumes that Chemistry AP credit was earned upon entering Rice, which would satisfy CHEM 111/113. While the above sample degree plan suggests 19 credit hours of independent research, the B.S. degree requires only 8 credit hours. There is a lot of flexibility in the completion of advanced coursework. However, not all courses are taught every year- consult with your major advisor about your course plan.

B.S. in Chemistry – Sample Degree Plan with Calculus 1 and Chemistry AP credit

FALL			SPRING		
FRESHMAN		**13 credits**	**FRESHMAN**		**15 credits**
CHEM 110	Freshman Chemistry Seminar	1	CHEM 320	Organic Chemistry Honors II	3
CHEM 219	Organic Chemistry Honors I	3	CHEM 365	Organic Chemistry Lab	2
DIST	Distribution Course	3	MATH 102	Single Variable Calculus II	3
PHYS 101	Mechanics (with lab)	4	PHYS 102	Electricity & Magnetism (with lab)	4
DIST	Distribution Course	3	FWIS	First Year Writing Seminar	3
SOPHOMORE		**15 credits**	**SOPHOMORE**		**14 credits**
CHEM 330	Analytical Chemistry	3	CHEM 360	Inorganic Chemistry	3
CHEM 3XX	Advanced Laboratory Course	2	CHEM 391	Research for Undergraduates	3
CHEM 340	Biochemistry and Chemical Biology	3	CHEM 3XX	Advanced Laboratory Course	2
MATH 211	Ord. Diff. Equations	3	DIST	Distribution Course	3
DIST	Distribution Course	3	OPEN	Open Elective	3
LPAP	Lifetime Phys. Activity Elec	1			
JUNIOR		**15 credits**	**JUNIOR**		**15 credits**
CHEM 301	Physical Chemistry I	3	CHEM 302	Physical Chemistry II	3
CHEM 491	Research for Undergraduates	3	CHEM 491	Research for Undergraduates	3
CHEM 4XX	Advanced Lecture Course	3	DIST	Distribution Course	3
DIST	Distribution Course	3	OPEN	Open Elective	3
OPEN	Open Elective	3	OPEN	Open Elective	3
SENIOR		**14 credits**	**SENIOR**		**14 credits**
CHEM 492	Undergrad. Honors Research	5	CHEM 493	Undergrad. Honors Research	5
CHEM 4XX	Advanced Lecture Course	3	CHEM 4XX	Advanced Lecture Course	3
DIST	Distribution Course	3	DIST	Distribution Course	3
OPEN	Open Elective	3	OPEN	Open Elective	3

Total credit hour requirement is 120

Note: The above sample degree plan assumes that Calculus AB and Chemistry AP credit were earned upon entering Rice, which would satisfy MATH 105 and CHEM 111/112/113/114, respectively. While the above sample degree plan suggests 19 credit hours of independent research, the B.S. degree requires only 8 credit hours. There is a lot of flexibility in the completion of advanced coursework. However, not all courses are taught every year – consult with your major advisor about your course plan.

Degree Requirements for the B.A. in Chemistry

The B.A. in Chemistry requires at least 120 credit hours, including at least 55 credit hours of chemistry requirements (listed below in a checklist format).

Chemistry Core Requirement

Course	Title	Credits
CHEM 111 or 121	General Chemistry I	3
CHEM 112 or 122 or 201	General Chemistry II *or* Advanced Topics in General Chemistry	3
CHEM 113 or 123	General Chemistry Lab I	1
CHEM 114 or 124	General Chemistry Lab II	1
CHEM 211 & 213 or CHEM 219	Organic Chemistry I *and* Organic Chemistry Discussion I *or* Organic Chemistry I Honors	3
CHEM 313 & 314 or CHEM 320	Organic Chemistry II and Organic Chemistry Discussion II *or* Organic Chemistry II Honors	3
Choose two: CHEM 301* or 302* or BIOS 352	Physical Chemistry I *or* Physical Chemistry II *or* Physical Chemistry for Biosciences	6
CHEM 330	Analytical Chemistry	3
CHEM 360	Inorganic Chemistry	3
CHEM 365 **	Organic Chemistry Laboratory	2
BIOS 301*** or CHEM 340	Biochemistry and Chemical Biology *or* Biochemistry I	3

*CHEM 301 and 302 have a prerequisite of PHYS 101/125/111 or AP/IB equivalent.
**CHEM 365 must be taken before enrolling in any advanced CHEM laboratory course.
***BIOS 201 is a prerequisite for BIOS 301, but the Biosciences Department confirmed that CHEM majors are waived from the BIOS 201 prerequisite. Students must contact the course instructor to special register for BIOS 301.

Mathematics*

Course	Title	Credits
MATH 101 or 105	Single Variable Calculus II *or* AP/OTH credit in Calculus I	3
MATH 102 or 106	Single Variable Calculus I *or* AP/OTH credit in Calculus II	3
MATH 211 or 220	Ordinary Differential Equations and Linear Algebra *or* Honors Ordinary Differential Equations	3

*The Department of Mathematics may, after consultation with a student concerning his/her previous math preparation, recommend that a student be placed into a higher-level math course than that for which the student has received official credit. The Department of Chemistry will accept this waiver of the math classes upon a written confirmation of the waiver from the Department of Mathematics and upon the student's successful completion of the higher-level math course. Note: MATH 211 is encouraged for students interested in physical and theoretical chemistry or planning to pursue graduate studies..

Physics

Course	Title	Credits
PHYS 101 or 111 or 125	Mechanics (with lab) *and* Mechanics Discussion *or* Honors Mechanics (with lab) *or* General Physics (with lab)	4
PHYS 102 or 112 or 126	Electricity and Magnetism (with lab) *and* Discussion *or* Honors Electricity and Magnetism (with lab) *or* General Physics II (with lab)	4

Advanced Laboratories* (Complete 2 of 4)

Course	Title	Credits
CHEM 366	Inorganic Chemistry Lab	2
CHEM 367	Materials Chemistry Lab	2
CHEM 368	Chemical Measurement Lab	2
CHEM 369	Chemical Biology Lab	2
BIOS 311**	Experimental Biochemistry	3

*CHEM 365 is a prerequisite to CHEM 366, 367, 368.
*BIOS 311 has prerequisites of BIOS 211 and BIOS 301.

Advanced Coursework (Six Credit Hours)

- Six (6) credit hours of additional advanced coursework in chemistry. For purposes of this requirement, "advanced coursework" includes chemistry lecture courses at the 400-level or higher.
- BIOS 302 may be used to satisfy this requirement.
- Lecture courses in other departments with substantial chemistry content may count toward this requirement with the approval of the Director of the Undergraduate Studies.

B.A. in Chemistry – Sample Degree Plan

FALL			SPRING		
FRESHMAN		**14 credits**	**FRESHMAN**		**15 credits**
CHEM 121	General Chemistry I	3	CHEM 122	General Chemistry II	3
CHEM 123	General Chemistry Laboratory I	1	CHEM 124	General Chemistry Laboratory II	1
MATH 101	Single Variable Calculus I	3	MATH 102	Single Variable Calculus II	3
PHYS 101	Mechanics (with lab)	4	PHYS 102	Electricity & Magnetism (with lab)	4
FWIS	First Year Writing Seminar	3	DIST	Distribution Course	3
			LPAP	Lifetime Phys. Activity Elective	1
SOPHOMORE		**15 credits**	**SOPHOMORE**		**14 credits**
CHEM 219	Organic Chemistry Honors I	3	CHEM 320	Organic Chemistry II	3
MATH 211	Ord. Differential Equations	3	CHEM 360	Inorganic Chemistry	3
DIST	Distribution Course	3	CHEM 365	Organic Chemistry Lab	2
OPEN	Open Elective	3	DIST	Distribution Course	3
OPEN	Open Elective	3	OPEN	Open Elective	3
JUNIOR		**17 credits**	**JUNIOR**		**17 credits**
CHEM 340	Biochemistry and Chemical Biology	3	CHEM 302	Physical Chemistry II	3
CHEM 301	Physical Chemistry I	3	CHEM 3XX	Advanced Laboratory Course	2
CHEM 3XX	Advanced Laboratory Course	2	CHEM 4XX	Advanced Lecture Course	3
DIST	Distribution Course	3	DIST	Distribution Course	3
OPEN	Open Elective	3	OPEN	Open Elective	3
OPEN	Open Elective	3	OPEN	Open Elective	3
SENIOR		**15 credits**	**SENIOR**		**15 credits**
CHEM 330	Analytical Chemistry	3	CHEM 4XX	Advanced Lecture Course	3
CHEM 4XX	Advanced Lecture Course	3	OPEN	Open Elective	3
DIST	Distribution Course	3	OPEN	Open Elective	3
OPEN	Open Elective	3	OPEN	Open Elective	3
OPEN	Open Elective	3	OPEN	Open Elective	3

Total credit hour requirement is 120

Note: There is a lot of flexibility in the completion of advanced coursework. However, not all courses are taught every year – consult with your major advisor about your course plan.

Degree Requirements for the B.S. in Chemical Physics

The B.S. in Chemical Physics requires at least 120 credit hours, including at least 73 credit hours of chemistry requirements (listed below in a checklist format).

General Chemistry

Course	Title	Credits
CHEM 121	General Chemistry I	3
CHEM 122*	General Chemistry II	3
CHEM 123	General Chemistry Laboratory I	1
CHEM 124*	General Chemistry Laboratory II	1

Chemistry Foundation

Course	Title	Credits
CHEM 211 and 213 or CHEM 219	Organic Chemistry I and Organic Chemistry Discussion I *or* Organic Chemistry I Honors	3
Choose one: CHEM 365 or 367 or 368	Advanced Organic Chemistry Lab *or* Materials Chemistry Lab *or* Chemical Measurement Lab	3
CHEM 301**	Physical Chemistry I	3
CHEM 302**	Physical Chemistry II	3

*CHEM 122 *and* CHEM 124 *or* CHEM 201
**CHEM 301 and 302 have a prerequisite of PHYS 101/125/111 or AP/IB equivalent.

Physics Foundation

Course	Title	Credits
PHYS 101 and 103 or PHYS 111	Mechanics (with lab) and Mechanics Discussion *or* Honors Mechanics (with lab)	3
PHYS 102 and 104 *or* PHYS 112	Electricity and Magnetism (with lab) and Discussion *or* Honors Electricity and Magnetism (with lab)	4
PHYS 201	Waves, Lights, and Heat	3
PHYS 202	Modern Physics	3
PHYS 231	Elementary Physics Lab	1
PHYS 301	Intermediate Mechanics	4
PHYS 302	Intermediate Electrodynamics	4

Mathematics Foundation

Course	Title	Credits
MATH 101 *or* 105	Single Variable Calculus I *or* AP/OTH credit in Calculus I	3
MATH 102 *or* 106	Single Variable Calculus II *or* AP/OTH credit in Calculus II	3
MATH 211 *or* 220, *or* MATH 221	Ordinary Differential Equations and Linear Algebra *or* Honors Ordinary Differential Equations *or* Honors Calculus III	3
MATH 212 *or* 222 *or* MATH 232	Multivariable Calculus *or* Honors Calculus IV *or* Honors Multivariable Calculus	3

Additional Lecture Courses – 9 Credit Hours

	Course
Select three from:	PHYS 311 – Introduction to Quantum Physics PHYS 312 *or* CHEM 430 – Intro to Quantum Physics II *or* Quantum Chemistry CHEM 360 – Inorganic Chemistry CHEM 415 *or* CHEM 420 *or* PHYS 425 – Chemical Kinetics and Dynamics *or* Classical and Statistical Thermodynamics *or* Statistical and Thermal Physics

Additional Laboratory Courses*– 4 Credit Hours

Course	Credits
Select two from:	CHEM 366* – Inorganic Chemistry Lab CHEM 367* – Materials Chemistry Lab CHEM 368* – Chemical Measurement Lab CHEM 491 or PHYS 461** – Research for Undergraduates *or* Independent Research (up to 2 hours) PHYS 332 – Junior Physics Lab II

*CHEM 365 is a prerequisite to CHEM 366, 367, 368.
Note: Up to two (2) hours of CHEM 391, CHEM 491, PHYS 461, or PHYS 462 may be counted toward this requirement.

Additional Mathematics Courses

Course	Credits
Select two from:	300 level or above MATH or CMOR course

B.S. in Chemical Physics - Sample Degree Plan

FALL			SPRING		
FRESHMAN		**16 credits**	**FRESHMAN**		**17 credits**
CHEM 121	General Chemistry I	3	CHEM 122	General Chemistry II	3
CHEM 123	General Chemistry Laboratory I	1	CHEM 124	General Chemistry Laboratory II	1
MATH 101	Single Variable Calculus I	3	MATH 102	Single Variable Calculus II	3
PHYS 101/103	Mechanics (with lab)	3	PHYS 102/104	Electricity & Magnetism (with lab)	4
FWIS	First Year Writing Seminar	3	DIST	Distribution Course	3
OPEN	Open Elective	3	OPEN	Open Elective	3
SOPHOMORE		**16 credits**	**SOPHOMORE**		**15 credits**
CHEM 211	Organic Chemistry I	3	CHEM 365	Organic Chemistry Lab	2
CHEM 213	Organic Chemistry Discussion	0	CHEM 360	Inorganic Chemistry	2
MATH 211	Ordinary Differential Equations	3	MATH 212	Multivariable Calculus	4
PHYS 201	Waves and Optics	3	PHYS 202	Modern Physics	3
PHYS 231	Elementary Physics Lab	1	DIST	Distribution Course	3
DIST	Distribution Course	3	LPAP	Lifetime Phys. Activity Elective	1
OPEN	Open Elective	3			
JUNIOR		**18 credits**	**JUNIOR**		**16 credits**
CHEM 301	Physical Chemistry I	3	CHEM 302	Physical Chemistry II	3
CHEM 391	Research for Undergraduates	3	CHEM 491	Research for Undergraduates	3
PHYS 301	Intermediate Mechanics	4	PHYS 302	Intermediate Electrodynamics	4
PHYS 331	Junior Physics Lab I	2	DIST	Distribution Course	3
DIST	Distribution Course	3	OPEN	Open Elective	3
OPEN	Open Elective	3			
SENIOR		**15 credits**	**SENIOR**		**15 credits**
CHEM 415	Chem. Kinetics & Dynamics	3	CMOR 3XX	Adv CMOR Lecture Course	3
CHEM 492	Undergrad. Honors Research	3	CHEM 493	Undergrad. Honors Research	3
PHYS 425	Statistical & Thermal Physics	3	MATH 3XX	Advanced MATH Lecture Course	3
DIST	Distribution Course	3	OPEN	Open Elective	3
OPEN	Open Elective	3	OPEN	Open Elective	3

Total = 135 credit hours

Note: While the above sample degree plan suggests 16 credit hours of independent research, the B.S. degree in Chemical Physics does not require any research credit. There is a lot of flexibility in the completion of advanced coursework. However, not all courses are taught every year – consult with your major advisor about your course plan.

B.S. in Chemical Physics - Sample Degree Plan with Calculus AB and Chemistry AP credit

FALL			SPRING		
FRESHMAN		**16 credits**	**FRESHMAN**		**15 credits**
CHEM 211	Organic Chemistry I	3	CHEM 215	Organic Chemistry Lab	2
CHEM 213	Organic Chemistry Discussion	0	MATH 102	Single Variable Calculus II	3
PHYS 101	Mechanics (with lab)	4	PHYS 102	Electricity & Magnetism (with lab)	4
FWIS	First Year Writing Seminar	3	DIST	Distribution Course	3
DIST	Distribution Course	3	OPEN	Open Elective	3
OPEN	Open Elective	3			
SOPHOMORE		**16 credits**	**SOPHOMORE**		**16 credits**
MATH 211	Ordinary Differential Equations	3	CHEM 360	Inorganic Chemistry	3
PHYS 201	Waves and Optics	3	CHEM 391	Research for Undergraduates	3
PHYS 231	Elementary Physics Lab	1	MATH 212	Multivariable Calculus	3
DIST	Distribution Course	3	PHYS 202	Modern Physics	3
OPEN	Open Elective	3	DIST	Distribution Course	3
OPEN	Open Elective	3	LPAP	Lifetime Phys. Activity Elective	1
JUNIOR		**15 credits**	**JUNIOR**		**15 credits**
CHEM 301	Physical Chemistry I	3	CHEM 302	Physical Chemistry II	3
CHEM 491	Research for Undergraduates	3	CHEM 491	Research for Undergraduates	3
PHYS 301	Intermediate Mechanics	4	PHYS 302	Intermediate Electrodynamics	4
PHYS 331	Junior Physics Lab I	2	PHYS 332	Junior Physics Lab II	2
DIST	Distribution Course	3	DIST	Distribution Course	3
SENIOR		**17 credits**	**SENIOR**		**17 credits**
CHEM 415	Chem. Kinetics & Dynamics	3	CMOR 3XX	Adv CMOR Lecture Course	3
CHEM 492	Undergrad. Honors Research	5	CHEM 493	Undergrad. Honors Research	5
MATH 3XX	Adv MATH Lecture Course	3	CHEM 420	Classical & Stat Thermodynamics	3
OPEN	Open Elective	3	OPEN	Open Elective	3
OPEN	Open Elective	3	OPEN	Open Elective	3

Total = 127 credit hours taken at Rice

Note: The above sample degree plan assumes that Calculus AB and Chemistry AP credit were earned upon entering Rice, which would satisfy MATH 105 and CHEM 121/122/123/124, respectively. Also note that there is a lot of flexibility in the completion of advanced coursework. However, not all courses are taught every year – consult with your major advisor about your course plan.

Policies

Transfer Credit Policy

The Department of Chemistry grants transfer credit for chemistry courses taken during the summer or during study abroad programs according to the rules and procedures established in the Rice University General Announcements and as administered by the Office of the Registrar.

In order to satisfy the Department's ruling on transfer credit, the course must be one that counts toward the chemistry degree at that school. Prior to registration, students should obtain pre-approval using the Undergraduate Request for Transfer Credit, which is available from the Office of the Registrar.

Transfer credit for courses at the 300-level or above is generally not permitted. Exceptions may be granted to students transferring to Rice from another institution or coursework carried out during an approved year abroad.

Courses for transfer credit after matriculation for General Chemistry (CHEM 121 and/or CHEM 122) and the laboratory (CHEM 123 and/or CHEM 124) must contain a laboratory component or must involve co-enrollment in associated lecture and laboratory courses. **Any student who has taken CHEM 121 and/or CHEM 122 at an alternate institution with a laboratory must receive instructor approval to take the lab credit on the Rice campus.**

NOTE: We do not transfer credit for laboratories that are conducted remotely or virtually, regardless of where the course is taken.

Students should follow these steps to obtain transfer credit approval:

1. The student should seek prior approval from the transfer credit advisor before registering for a course at another institution. A conversation in person or via email is strongly advised.
2. The student should obtain a copy of the syllabus for any course they plan to take so that the content can be assessed for equivalence at Rice. A syllabus from a recent offering of the course will suffice, since syllabi are often not released far in advance. The syllabus should include the format of the course, the start and end dates of the course, and the meeting times for the course.
3. In discussing plans with the transfer credit advisor, the student should explain why they wish to obtain transfer credit. Students are advised that Rice courses are always considered in priority over courses from other institutions. Study abroad is an excellent reason to take courses away from Rice. Illnesses, disabilities, and family situations will certainly be accommodated.
4. Once a course is agreed upon with the transfer credit advisor, the student must complete an Undergraduate Request for Transfer Credit form, which is available from the Office of the Registrar. This must be submitted to Anita Walker, Chemistry Course Administrator (aawalker@rice.edu). Questions concerning transfer credit should be directed to Ms. Walker at 713-348-4027 or aawalker@rice.edu.

The signed form will be delivered to you via email so that you may submit the form to the Registrar. Please allow one week for processing of the transfer credit request.

Course Load Policy

Students at Rice normally enroll in 15 to 17 credit hours each semester. For most students, this allows completion of graduation requirements in 8 semesters. In some instances, a student may feel the need to petition for a registration overload. Petitioning for a registration overload should be a last resort and only for students with truly extenuating circumstances that would necessitate a course overload. Guidelines can be found on the Academic Advising website. Students must secure permission in writing from the Office of Academic Advising.

Undergraduate Research Opportunities

Undergraduate students have a unique opportunity to perform research in one of our many interdisciplinary research labs. Most chemistry research students are chemistry majors. Chemistry majors seeking a B.S. degree are required to take at least eight credit hours of research through CHEM 391, 491, 492, and 493.

Course Summary:

- CHEM 391: First-time Chemistry researchers and those without substantial STEM research credit in other departments. This is a variable 1-5 credit course.
- CHEM 491: Returning Chemistry researchers, 1-5 credits per semester, repeatable
- CHEM 492/493: Honors Senior Thesis, a year-long course, 5 credits per semester

Although most Chemistry majors work with Rice Chemistry professors, we also encourage and support students doing chemistry-related research in other Rice departments or in the Texas Medical Center (TMC). To earn credit for your research, students must have an abstract for their research project approved by the CHEM 391/491 Course Instructor. To be approved for credit in the Chemistry Department, the research being performed must have a substantial and clear chemistry component or focus (defined broadly).

Students should expect to spend at least 3 hours per week (or at least 42 hours over the course of the semester) for each credit hour. In the first semester of independent research, students should enroll in CHEM 391 for at least 3 credit hours before the end of their junior year. Prior to enrollment, students must secure a position in a laboratory. In subsequent semesters, students should enroll in CHEM 491 for independent research (or CHEM 492/493 for honors thesis research) and may choose the appropriate number of credit hours with approval from their Research Advisor.

CHEM 491 is repeatable for credit and students wishing to pursue graduate school or other careers in research and applied science are encouraged to gain as much research experience as possible. Students are not limited to one lab and may choose another lab in subsequent semesters. However, a major advantage of continuing in one lab may include obtaining results to co-author a publication.

Undergraduate Honors Research, CHEM 492 (Fall) and CHEM 493 (Spring)

The Chemistry Honors Research Program, CHEM 492/493, offers students in their final year at Rice the opportunity to perform a two-semester, individual chemistry research project. These courses function as a pair and must be taken in the same academic year. Course requirements include (but are not limited to) completing a research proposal, a public presentation of findings, and a formal research report or thesis in the Spring term. Students must formally apply to CHEM 492/493 with the recommendation of their Research Advisor. If you are conducting research for a thesis outside the Chemistry Department, you must have an on-campus Chemistry Department secondary advisor. Applications must be submitted to the course instructor between February 1 - August 1 (early application submission is highly encouraged). Students who complete the Chemistry Honors Research Program are given primary consideration for "Distinction in Research and Creative Work," a university award for select undergraduates, chosen by the Department and granted at commencement, which appears on the transcript and diploma.

How do I Find a Research Opportunity

Where do I start?

To find out which faculty members are working in areas that you find intriguing, please refer to Appendix A, the Chemistry Department website, or the Chemistry Undergraduates Research page on Canvas. Please contact a CHEM 391/491 instructor to be added to the Chemistry Undergraduate Research Opportunities Canvas page.

There are many options for undergraduate research, but do not be overwhelmed by them! The key thing is to identify a lab with research that is interesting to you. To begin, please enroll in our Chemistry Undergraduate Research Opportunities Canvas page. You may contact a CHEM 391/491 course instructor to be added. This Canvas page includes various tabs that provide further information on Chemistry, Rice, and TMC research homes that may be of interest to you. Additionally, the CHEM 391/491 Course Instructors are happy to meet with you to make lab suggestions based on your interests. You can also use your connections with other students, TAs, or recent course instructors to help you widen your search. Positions are generally not advertised, so the best approach is simply to contact directly any faculty member whose research interests you. Once you've identified several faculty members of interest, you can contact them individually using the recommendations below.

How do I contact professors with whom I might want to work?

Read about each lab's research and consider speaking with current group members to get a feel for the personality and expectations of the faculty member. Remember that while you are trying to showcase that you will be a good fit for a specific research group, you should also find the right research group for you.

Be sure to write a personal email to the faculty member. Do not send a mass email to multiple faculty members or your email is likely to be considered spam and ignored. Your introductory email conveys an important first impression and can influence how easy it will be for you to find a lab home. In your email, tell the professor who you are (name, year at Rice), why you are looking for a position in a research lab, and why you are interested in their lab in particular. Describe any relevant coursework or prior research experience, even if it was in high school. You also may want to include whether you are looking for a short (1 semester) or longer experience, and how many hours per week you can commit to lab work. If you are considering graduate school after Rice, include this interest in the letter. As research professors receive a high volume of emails, remember to keep your message concise.

Note: All heads of research labs have either a Ph.D. or an M.D. degree and should be addressed with their professional salutations, such as "Prof." or "Dr." and not "Ms., Mrs., or Mr."

How many labs should I contact?

Getting into a lab is a fluid process, but the Undergraduate Research course instructors are excited to help you find a research home that fits your interests. Do not be discouraged if your first efforts are not successful! You should expect to contact multiple faculty members (at least 5-10) to find a position. If you know someone in a lab where you may wish to work, ask that person to put in a good word for you. If you are not successful after several attempts, you may wish to ask the CHEM 391/491 course instructor for feedback on your initial email, help making an introduction, or further support.

Are there prerequisite courses I must take before joining a research lab?

There are no specific courses required before you join a research lab; however, some principal investigators (PIs) may have their own preferences. Many students joining a lab have some background in general chemistry, inorganic chemistry (can be through general chemistry coursework), and/or organic chemistry. Your experience in some non-chemistry courses (such as physics, biology, or computer science) may help prepare you for research at the interfaces of those fields with chemistry. Importantly, research is very much "on the job" training, so do not feel that you need specific courses to be a suitable candidate.

Can I conduct research at the Texas Medical Center?

Many students, particularly those who intend to pursue medical school, are interested in research at the TMC. Chemistry majors may join a lab at the TMC. While students can find this a rewarding experience in medical research, there are several factors to consider when making a decision about off-campus research:

1) Lengthy security paperwork and safety training courses are required,
2) Travel time to and from campus may limit time for experimentation,
3) Some off-campus labs may not be teaching-focused or used to working with undergraduates, so additional levels of communication may be required to ensure a smooth transition.

A hybrid approach that has been successful in the past is to join a Rice lab that works closely with TMC faculty. Please see the CHEM 391/491 Course Instructor if you would like leads in these directions.

Are there paid research opportunities?

Most undergraduate research during the school year is done for credit. In many labs, paid positions during the school year are limited to lab maintenance or very routine work, and actual research will only be available for students working for credit during the academic year. However, many labs offer some paid positions over the summer. Some professors do try to set up paid research positions during the school year for students who are eligible for work-study.

Also, there are a number of competitive summer research fellowship opportunities within the Chemistry department, such as the Dr. Paul S. Engel Fellowship, the George Holmes Richter Memorial Fellowship and the Zevi & Bertha Salsburg Memorial Fellowship in Chemistry. See the Awards & Fellowships section for more information.

HOW DO I REGISTER FOR UNDERGRADUATE RESEARCH?

First, start planning far in advance. Before enrolling in CHEM 391/491/492/493, you must be accepted into a laboratory (see the “How Do I Find a Research Opportunity?” section above for more information.) The deadline for course enrollment is several weeks before the start of the semester or at the end of the prior semester. Some labs may have extensive training that must be completed before beginning work. Labs at the Texas Medical Center often have access control regulations that require filling out paperwork months in advance of starting in the lab.

Once you have secured a research position, you must fill out the online application found on the Chemistry Department website. The online application must be submitted by August 1st for the Fall term, December 1st for the Spring term, or April 1st for the Summer term to ensure enrollment in CHEM 391/491/492/493. **Once you have submitted the online application, the Course Instructor will verify your position and proposed research project with the Research Advisor before submitting a registration override via ESTHER.** No paper special registration form is required, and only the Course Instructor (not Research Advisors) is authorized to enroll students. If you have any questions about enrollment, please contact the Course Instructor.

Please note that requesting the course during Course Registration will not result in you being added to the course, as Course Instructors are unable to see who has requested a course. You must complete the application, which must be reviewed and approved by several parties before the Course Instructor will enter your override in ESTHER. Once the override is submitted in ESTHER, you must officially register and modify your credit hours.

Awards & Fellowships

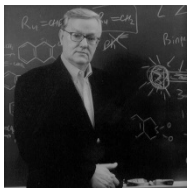
Undergraduate students have several opportunities to receive awards and summer research fellowships from the Department of Chemistry. Below is some background information on each award. Deadlines for summer fellowships are typically in February or March. Specific due dates will be sent out to the Chemistry Undergraduate listserv near the end of the fall semester. Note: students can join the listserv by emailing chemhelp@rice.edu

Paul S. Engel Fellowship
Awarded to a promising chemistry undergraduate in partial support of a chemistry summer research internship

Arthur L. Draper Award
Awarded in recognition of exceptional undergraduate performance in chemistry coursework

George Holmes Richter Memorial Fellowship
Awarded to a promising chemistry undergraduate in partial support of a chemistry summer research internship

Zevi & Bertha Salsburg Memorial Fellowship in Chemistry
Awarded to a promising chemistry undergraduate in partial support of a chemistry summer research internship



Ed Billups Fellowship
Awarded to a promising chemistry undergraduate in partial support of a chemistry summer research internship

ACS Travel Award
Awarded to a chemistry undergraduate to support attendance at the ACS National Meeting in the fall or spring semester

University Awards

The Distinction in Research and Creative Work is a University award for select undergraduates, granted at Commencement, which appears on the transcript and diploma. More specifically, in the Chemistry Department, this award recognizes Rice Chemistry Majors whose research discoveries will form a substantial component of an important publication. The submission and review processes are often not fast enough for researchers to see their work in print before graduation. Therefore, a formal pre-publication description of the research (e.g., a submission-ready manuscript or a CHEM 492/3 Honors Thesis or the equivalent) with a detailed accounting of the nominee's contribution and those of other authors is sufficient. Applicants must also be in good academic standing.

Required Application Materials:

1. Declaration of intention to apply for this distinction.
2. Documentation of research achievement in the form of published papers, theses, pre-publication manuscripts, electronic files of presentations (PowerPoint or poster) given off campus.
3. A supporting letter from the research advisor which should detail the student's research accomplishments and intellectual contributions.

Deadline for Final Submission of Materials: Last day of classes of the semester before graduation

Appendix A: Chemistry Research Faculty and their Research Interests

Our Department's faculty have a wide variety of research interests and hold joint appointments with Biosciences[1], Bioengineering[2], Chemical & Biomolecular Engineering[3], Computer Science[4], Earth, Environmental and Planetary Sciences[5], Electrical & Computer Engineering[6], Material Science & NanoEngineering[7], Physics & Astronomy[8], and Civil & Environmental Engineering[9].

CORE FACULTY:

Kushal Bagchi, Ph.D. (UW-Madison, 2020).
Experimental physical chemistry and materials science. Studying molecular packing and dynamics in functional organic materials for electronic, sustainability and healthcare applications.
kb122@rice.edu

Zachary Ball, Ph.D. (Stanford, 2004).
Chemical biology. Protein chemistry. Organic synthesis, bioinorganic, and medicinal chemistry.
zb1@rice.edu

Anna-Karin Gustavsson[1], Ph.D. (Univ. of Gothenburg, 2015).
Spectroscopy and Imaging. Development and application of 3D single-molecule tracking and super-resolution imaging throughout mammalian cells.
ag134@rice.edu

Jeffrey Hartgerink[2], Ph.D. (Scripps, 1999).
Self-assembly of nanostructured materials with a focus on molecular structures of proteins and peptide-based biomaterials for tissue regeneration, drug delivery and other biomedical applications.
jdh@rice.edu

John Hutchinson, Ph.D. (UT Austin, 1980).
Chemical education.
jshutch@rice.edu

Matthew Jones[7], Ph.D. (Northwestern, 2014).
Nanoparticle synthesis, surface chemistry, supramolecular chemistry, soft matter assembly, and liquid-phase electron microscopy.
mrj@rice.edu

Anatoly Kolomeisky[3,8], Ph.D. (Cornell, 1998).
Theoretical physical chemistry, biophysics and statistical mechanics. Modeling of biological transport systems and protein-DNA interactions, and investigation of nanocars and other artificial nanoscale devices.
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