

BACHELOR OF SCIENCE IN CHEMISTRY MAJOR PLANNER

Requirements for chemistry majors include the course requirements of the Department of Chemistry and Biochemistry and the Brooklyn College Residency Requirements. Requirements for the BS degrees are presented. This form is yours to keep. Please bring it with you when you come to see the departmental advisor. You should meet with the advisor at least once every other semester to review your progress.

All of the following courses are required – {F} = Fall offerings; {S} = Spring offerings; * = Writing Intensive

Chem 1200 – General Chemistry I Lecture (or Chem 1050 & Chem 2050 – General Chemistry IA&IB)
Chem 1201 – General Chemistry I Laboratory
Chem 2200/2201 – General Chemistry II Lecture/Laboratory
Chem 2110 – Principles of Chemical Reactivity
Chem 3415W* – Writing Intensive Analytical Chemistry
Chem 3511/3512 – Organic Chemistry I Lecture/Laboratory
Chem 3521/3522 – Organic Chemistry II Lecture/Laboratory
Chem 3900 (S) – Professional Readiness for Chemists
Chem 4610{F} – Physical Chemistry I
Chem 4620 {S} – Physical Chemistry II
Phys 1150 – General Physics I (or Phys 1100 – General Physics I)
Phys 2150 – General Physics II (or Phys 2100 – General Physics II)
Math 1201 – Calculus I
Math 1206 – Calculus II
Math 2201 – Multivariable Calculus

9 Credits from the following list of Advanced Courses are required – {F} = Fall offerings; {S} = Spring offerings

Chem 2700 {F} – Introduction to Inorganic Chemistry (3 credits)
Chem 3420 {F} – Instrumental Analysis (5 credits)
Chem 4530 {S} – Advanced Organic Lab Techniques (5 credits)
Chem 4550 {S} – Advanced Organic Chemistry (3 credits)
Chem 4570 {F} – Biochemistry I (5 credits)
Chem 4571 – Biochemistry I Lecture (3 credits)
Chem 4572 {F} – Biochemistry Laboratory (2 credit)
Chem 4581 {S} – Biochemistry II Lectures (3 credits)
Chem 4640 {F} – Quantum Chemistry (3 credits)
Chem 4760 {S} – Inorganic Chemistry (5 credits) (or Chem 4761 {S} – Inorganic Chemistry (3 credits))
Chem 4780 {F} – Environmental Chemistry (3 credits)

Elective Courses

Chem 5010, 5020, 5030 – Independent Research
Chem 5110, 5120, 5130 – Independent Research (Honors)
Chem 5210, 5220, 5230 – Seminar
Chem 5400 – Industrial Internship in Chemistry

Writing Intensive Requirement

Chemistry majors must take a writing intensive course (denoted by *) in an area relevant to the major

Residency Requirement

24 credits in advanced Chemistry course must be earned with a grade of C- or better at Brooklyn College

American Chemical Society Certification

Chemistry majors that complete Chem 3420 Instrumental Analysis, Chem 4571 Biochemistry I Lecture (or Chem 4570 Biochemistry I), and Chem 4760 Inorganic Chemistry have earned the optional ACS Certified Bachelor's of Science degree in Chemistry.

PLANNED SCHEDULE FOR CHEMISTRY COURSES

Given below is one schedule for completion of the chemistry courses in the Bachelor of Science degree in Chemistry in four years

FALL	CHEM 1200 / 1201 General Chemistry I Lecture/Laboratory MATH 1011 or 1012 Pre-Calculus without or with recitation
SPRING	CHEM 2200 / CHEM 2021 General Chemistry II Lecture/Laboratory CHEM 2110 Principles of Chemical Reactivity MATH 1201 Calculus I
FALL	CHEM 3511 / CHEM 3512 Organic Chemistry I Lecture/Laboratory MATH 1206 Calculus II
SPRING	CHEM 3521 / CHEM 3522 Organic Chemistry II Lecture/Laboratory PHYS 1150 General Physics I (taking CHEM 3521/3522 with PHYS 2150 is not advised)
FALL	CHEM 3415W Writing Intensive Analytical Chemistry PHYS 2150 General Physics II ADVANCED ELECTIVE CHEM 4571 Biochemistry I Lectures CHEM 4572 Biochemistry I Laboratory RESEARCH COURSE CHEM 5010 or CHEM 5110
SPRING	CHEM 3900 Professional Readiness for Chemists MATH 2201 Multivariable Calculus ADVANCED ELECTIVE CHEM 4571 Biochemistry I Lectures (laboratory not offered in Spring) CHEM 4761 Advanced Inorganic Chemistry CHEM 4780 Environmental Chemistry RESEARCH COURSE CHEM 5020 or CHEM 5120 SEMINAR COURSE CHEM 5210
FALL	CHEM 4610 Physical Chemistry I ADVANCED ELECTIVE CHEM 3420 Instrumental Analysis CHEM 4610 Physical Chemistry I CHEM 4571 Biochemistry I Lectures CHEM 4572 Biochemistry I Laboratory RESEARCH COURSE CHEM 5030 or CHEM 5130 SEMINAR COURSE CHEM 5220 INDUSTRIAL INTERNSHIP IN CHEMISTRY CHEM 5400
SPRING	CHEM 4610 Physical Chemistry II ADVANCED ELECTIVE CHEM 4571 Biochemistry I Lectures (laboratory not offered in Spring) CHEM 4761 Advanced Inorganic Chemistry CHEM 4780 Environmental Chemistry RESEARCH COURSE CHEM 5030 or CHEM 5130 SEMINAR COURSE CHEM 5230 INDUSTRIAL INTERNSHIP IN CHEMISTRY CHEM 5400

Chemistry Advisement: Contact the Department of Chemistry and Biochemistry to get the name of the current undergraduate advisor, and send an e-mail to the advisor to schedule an appointment. You should meet individually with the advisor as early in your studies as possible to plan your course schedule and discuss career goals. The American Chemical Society provides excellent resources for career opportunities in chemistry, professional development activities, and job-hunting tips.

Courses of Study: The Bachelor of Science degree is generally recommended for students planning to make a career as a chemist, including going on to graduate school. Students considering graduate studies in chemistry or biochemistry are advised to earn the ACS Certification of their BS degree. Students interested in medical or other professional careers are generally advised to take the Bachelor of Arts degree due to the need to fit in non-chemistry coursework.

Online Coursework: The Department of Chemistry and Biochemistry no longer accepts online coursework credits taken at other institutions and does not approve ePermits involving online courses.

Pre-Health Professions Advisement: The campus Director of Pre-Health Profession Service is Mr. Benjamin Stewart (Benjamin.Stewart@brooklyn.cuny.edu, Room 2231 Boylan). Students interested in medical or other health profession schools are strongly urged to speak to him as soon as possible to plan their course of study.

The Importance of Research: Ask any employer what they are looking for in a potential employee and they will answer with some form of 'a world-class problem solver who works well in groups'. An authentic research experience provides an excellent way to address these two issues. Students that engage in research learn disciplinary problem-solving skills, and experience professional development within the context of a research group working towards a common goal. Students may obtain research work in any laboratory that agrees to host them, and may begin at any time. Students are encouraged to look for mentors on campus and at the many medical and research institutions around New York City. The Brooklyn College Department of Chemistry and Biochemistry offers courses in Research (Chem 5010–5030 and Chem 5110–5130) and in Industrial Internship (Chem 5400) and maintains a list of external opportunities for summer research experiences including paid summer research experiences, e.g. the National Science Foundation Research Experience for Undergraduates program (applications usually due in Jan-Feb). The [American Chemical Society](#) also provides an extensive list of research/internship/fellowship/scholarship opportunities for undergraduates.

Research for Academic Credit: Students seeking academic credit for research within the Department of Chemistry and Biochemistry should register either for the Chem 5010 – 5030 (2 credits) or Chem 5110 – 5130 series (3 credits, Honors). Chem 5110 - 5130 require a GPA of 3.2 or better within the major to register. Students seeking to register for these courses must work with a department faculty member; those working with faculty outside the department should register for an independent study course within that department. The format for Chem 5010 and 5110 is very much the same. Prospective students should find a faculty member whose work interests them; a list of faculty and their research interests is available on the Brooklyn College website. Once students have found a mentor, they should contact the faculty member to discuss possibilities. If the student and mentor agree on a project and a set of expectations, the mentor will grant the student permission to register for the course. Research requires time, and students should be sure they can follow through on their commitment before registering for credit. Students may choose to work in a lab without registering for a course, provided the mentor allows it. However, a student working in that position is still obligated to meet the mentor's expectations, and should communicate openly about possible scheduling issues and work with the mentor to resolve them.

Residency Requirement: Only Chemistry and Biochemistry courses taken at Brooklyn College can be used to meet the 24 credit residency requirement. Course taken elsewhere or in other departments cannot be used to satisfy this requirement.

Degree Audit: At the end of their junior year, students should go to the Registrar's office and request an official Degree Audit. This represents a list of all requirements the student must fulfill to graduate and commits the college to confer the degree once the specified work is completed. This is far superior to DegreeWorks (WebSIMS).

Departmental Honors: Students who graduate with a GPA of 3.50 or better within the Chemistry Department, and have completed 3 or more credits in honors courses in Chemistry, are eligible for departmental honors. Honors courses in Chemistry include Chem 5110, 5120, and 5130. Students who believe they may be eligible for honors and/or ACS Certification should contact the departmental advisor during their senior year.

Graduating: Throughout your college career, come to see your undergraduate advisor at least once a year, and more often if you have questions. Bring this schedule with you to save time.

At the end of your junior year: Request a Degree Audit (see above) to insure a timely graduation.

Do not leave INC or ABS grades sitting: If you receive an ABS or an INC grade, work with the appropriate department to resolve it quickly. Check your transcript periodically to make sure it is cleared. Your graduation can be delayed by pending INC/ABS grades.

Job Hunting: Good opportunities exist for chemists, both at the bachelors level and for those with higher degrees, as shown by the biannual [ACS Salary and Employment Status Surveys](#). There are links to job-hunting resources on the Department of Chemistry and Biochemistry website and at [ACS Careers](#) where you will find links to the [ChemIDP](#), a useful self-assessment tool. Students should also go to the Magner Center for advice on job-seeking and other issues, such as resumé writing and dressing for success.

Graduate School: Students completing the BS in Chemistry and wishing to study further should consider either a Masters or a PhD in Chemistry or the related disciplines such as Biochemistry, Materials Science and Forensic Science. Research experience is a critical prerequisite for graduate school, and students should commit as much time to it as possible. This not only provides students with useful skills, it make it possible for a research advisor to write a strong letter of recommendation. Those interested in graduate school should review the ACS's [Graduate School Reality Check](#) begin the application process in the summer after their junior year. This should include identifying programs of interest and acquiring information about applications (including deadlines!). Students should also plan to take the GRE during the summer of their junior year to insure the scores are on file in time to support their application. Applicants may need both the subject area GRE (Chemistry, Biochemistry, etc.) and the general exam. Students should not attempt to do both on the same day, as this is grueling and can lead to poor performance.