

The College of New Jersey

Chemistry Department

Preregistration Newsletter
for Fall 2022 Registration

Hello Chemistry Majors!

The registration window for Fall 2022 begins April 5th. Here is some information that might be useful for planning your schedule:

- [Preparing for your Advising Meeting](#)
- [Important Notes and Changes](#)
- [Specializations in the Chemistry Department](#)
- [Advanced Options Courses](#)
- [Looking Ahead to Options Courses for Fall 2022?](#)
- [Chemistry Department Registration Planning Form](#)

Upcoming Dates to Remember

| | |
|---|-----------------------------|
| Mid-semester progress reports | March 7-21, 2022 |
| Spring Break | March 14-18, 2022 |
| Advising Window | March 21-April 5, 2022 |
| Last Day to Withdraw | March 28, 2022 |
| Enrollment Period | April 5-15, 2022 |
| Celebration of Student Achievement (COSA) | April 26, 2022 (no classes) |
| Last Day of Classes | May 6, 2022 |
| Spring Commencement | May 19-20, 2022 |

Preparing for Your Advising Meeting

You must meet with your advisor BEFORE you can register. Hold flags have been placed on your accounts that will be removed after your meeting.

Please remember to:

- Make an advising appointment via Google calendar with your advisor. Your advisor will send you an invitation. **Your advisor will indicate whether this session will occur in person or remotely.** Your advisor will be in contact with information about their advising appointments.
- Review the chemistry major requirements in the [Undergraduate Course Bulletin](#).
- Check out course offerings and requirements on PAWS. Use the Academic Requirements feature in PAWS to see the courses you need and to plan your course schedule. Fill your shopping cart with the courses you need, including alternate selections in the event of closed sections. **Create at least one backup plan!**
- Use the Validate feature on PAWS to make sure you have the correct pre-requisite courses.
- If you took any courses for Credit/No Credit in the Spring of 2020 or 2021 that is a prerequisite for another course, registration could be impacted if the cart is not validated! Those students who might encounter this issue have already been messaged by records and registration. If you have a validation error due to the credit/no credit option, contact the chair of the department of the class you want to take.
- Review [the goals of academic advising](#) before your meeting.
1st Year and Transfer Students! If you didn't do this previously, make sure to download, read, sign, and bring this Advising Agreement (linked above) to your academic advisor.
- Send copies of your [Chemistry Department Registration Planning form](#) (see page 9), your proposed course schedule(s) for Fall 2022, and an unofficial transcript to your advisor prior to your meeting.
- **First years, sophomores, and juniors** are now being advised using a cohort style for additional advising.

If you are unable to enroll in a Chemistry course because it has already reached capacity, please visit the course waitlist at chemistry.tcnj.edu/waitlists.

If you are unable to enroll in a course in another department, consult their departmental website (the Chemistry Department cannot enroll you in these courses).

The College [WAITLISTING PROCESS](#)

Important Notes and Changes

- **Declaring a Specialization:** Before you can complete the application ([change of major form](#)) to add a specialization, you will be required to complete a number of foundational courses. Because of this, the earliest you will be able to apply is the spring of your first year. Students typically apply to add a specialization in their sophomore year.
- **Required Prerequisite Grades:** The minimum required grade for course progression and retention in the major is now a C- for CHE 201/202, 310, and 331. Additionally, you must earn at least a 2.0 GPA in these courses by the end of the sophomore year.
- **Reserved Seats:** We have seats reserved in CHE201, CHE202, CHE331, CHE332, and CHE310 for Chemistry majors; see PAWS for sections.
- **Course Delivery Mode and Instructor Assignments:** All classes in chemistry are being offered in person. A few classes that still need to be staffed, typically adjunct sections, may be listed as To Be Announced (TBA).
- **CHE 493 Independent Research**
The department will soon begin accepting applications for CHE 493 Independent Research for students hoping to start research in Fall 2022. This [Research Placement Application](#) is due Monday, March 28th by 11:59 pm. Students will be notified of the results by Monday, April 4th. Check your email for more detailed information.
If you have any questions about this information or procedures for CHE 493 enrollment, please contact your advisor. Please note that while the application above is only for students beginning research in Fall 2022, all students participating in research will need to register for 493 during the Fall 2022 registration process.
- **Remember to sign up for Seminar!**
Sophomore and Junior Seminar courses (CHE 316 and CHE 317) are held on Wednesday mornings.
- **Fall 2022 Advanced Option Chemistry Course will be...**
Dr. Hunter's Bioanalytical Methods course (CHE 474)
See more information on [page 7](#), especially for any course prerequisites.
- **Looking ahead to Spring 2023...**
The Advanced Options Chemistry courses being proposed are Materials from the Bottom Up with Dr. Abourahma, and Computational Chemistry with Dr. Baker. These courses are tentative. See more information on [page 8](#).
- Summer 2022 registration began on November 2, 2021. Winter 2023 registration will continue through the first day of Winter 2023 classes.

Contemplating What Liberal Learning Courses to Take?

Some questions to guide you to the most beneficial Liberal Learning courses:

- Does a course provide you with skills and knowledge that support your major, career, or graduate/professional school?
- Could a course help you explore other potential majors or minors?
- Do you have interests outside your major that you would like to pursue but not necessarily major in?
- Would a course broaden your horizons or provide you with a new perspective?
- What courses might enhance a study-abroad experience or an internship?
- Which courses have topics you find interesting?

Liberal learning course listings can be found by searching courses in PAWS and setting the “Course Attribute” to Liberal Learning Domains, then setting the “Course Attribute Value” to one of the subdomains. You can also use the [liberal learning search tool](#) to search for currently offered courses that fulfill requirements.

Specializations in the Chemistry Department

Materials Science Specialization

The Materials Science Specialization is an interdisciplinary program open to chemistry and physics majors in the School of Science who have a strong interest in creating new organic, biological, or inorganic materials and/or exploring the properties and applications of these materials. Students should have a background in chemistry and physics and be comfortable with mathematics. Chemistry students are free to pursue research projects in either the Chemistry Department or Physics Department. Chemistry majors who successfully complete this program will graduate with a Bachelor of Science in Chemistry and a specialization in the Chemistry and Physics of Materials Science. Students will be prepared to pursue a wide variety of careers_or graduate study in chemistry, biophysics, or materials science.

To complete the Materials Science specialization, students must complete the following coursework:

- 1) PHY 306/Mathematical Physics or MAT 229/Multivariable Calculus;
- 2) PHY 311 – Analog and Digital Electronics or PHY 451 Advanced Lab or CHE 410/Instrumental Analysis; and
- 3) at least three of the following options courses: PHY 345/Physics of Clouds and Climate, PHY 436/Condensed Matter, CHE 451/Inorganic Chemistry structures and bonding, CHE 478/Special Topics in Condensed Matter (may be taken more than once), and PHY 478/ Photonics, Optics, and Materials. See course listings for additional details. Students must complete at least one options course with a PHY prefix and at least one with a CHE prefix.

Students may apply for the specialization at any time but are encouraged to do so in their sophomore year to facilitate planning and timely completion. To enroll in the program, students should use the [Change of Major Form](#).

Biochemistry Specialization

This specialization is meant for students who are interested in molecular biology, biochemistry, biophysics, bioanalytical, bioorganic, and/or bioinorganic chemistry. Students pursuing this specialization see the interconnectedness of these disciplines, will gain insight into the interdisciplinary nature of chemistry, biology and physics and wish to pursue interdisciplinary postgraduate goals (i.e. in industry, medical, or graduate programs). Students will graduate with a B.S. in Chemistry with a specialization in Biochemistry. The BS may be American Chemical Society (ACS) certified or non-ACS and can be with or without a research intensive focus. To complete the Biochemistry Specialization, students must take the standard chemistry core courses, with the option to take *either* CHE 371 (Quantum Chemistry) *or* CHE 372 (Chemical Thermodynamics). In addition, required Correlate Courses include the standard Math and Physics courses for a B.S. in Chemistry, as well as BIO 201 (Foundations in Biological Inquiry) and BIO 211 (Eukaryotic Cell).

Students are also required to take *either*:

- 1) two CHE 474 Advanced Topics in Biochemistry courses (including those that may be cross-listed from other CHE 47X) *or*
- 2) one CHE 474 (or cross-listed CHE 47X) and BIO 471 (Genomics and Bioinformatics) *or*
- 3) one CHE 474 (or cross-listed CHE 47X) and one BIO 470 Special Topics class from an approved list.

Depending on their degree track, Chemistry majors pursuing the Biochemistry Specialization would have the following options course requirements:

ACS w/Research: One option course at the 300 or 400 level and two units of CHE 493 Independent Research or three full units of CHE 493 Independent Research. **ACS:** One options course with a lab at the 300 or 400 level. **Non-ACS:** No additional options courses (beyond those listed above) are required.

Students may apply for the specialization at any time but are encouraged to do so earlier, such as in their sophomore year, to aid in planning for timely completion. To enroll in the program, students should formally apply for “Biochemistry” as their specialization using the [Change of Major Form](#).

Advanced Options for Fall 2022

CHE 474 Bioanalytical Methods

Instructor: Dr. Rebecca Hunter

Prerequisites: CHE 310

Text: TBD

This course will provide an introduction to modern approaches for the chemical analysis of biological systems. Analytical methods covered in both lecture and lab will include chromatography, spectroscopy, mass spectrometry, immunoassays, and biosensors. We will discuss how these methods work in addition to assessing the pros and cons of their use for measurements of complex biological samples. The course will involve lectures, discussions, case studies, and critical evaluation of recent primary literature in the field. The lab component of the course will provide hands-on experience with a variety of bioanalytical methods and include a research-style method development project.

Looking Ahead to Options Courses for Spring 2023?

Advanced Options will tentatively be:

- **Special Topics - Materials from the Bottom Up (CHE 478) with Dr. Abourahma**

Prerequisite: CHE 332

This writing-intensive, interdisciplinary course will cover the concepts of supramolecular chemistry and its application in crystal engineering. Students will gain an understanding and appreciation for non-covalent, intermolecular interactions and their effect on property and function of materials. Discussions will cover solution and solid state chemistry, with greater emphasis on the latter. The course will consist of lectures, lab, workshops, student presentations and discussion of the literature. A background in organic and some coordination chemistry is strongly recommended.

- **Special Topics - Computational Chemistry (CHE 478/474) with Dr. Baker**

Prerequisites: CHE 371 or permission of the instructor

Computational methods in chemistry are used to tackle a diverse array of problems, ranging from investigating chemical reactivity to predicting the folded structure of individual proteins to providing insight about the dynamics of large biomolecular complexes. This course will introduce students to modern computational methods that are used to understand the properties of molecules and molecular systems. Semiempirical, ab initio, and density functional calculations will be discussed, as well as classical molecular dynamics simulations and other special topics (e.g., coarse-grained modeling, machine learning, etc.). The theoretical determination of molecular structure, properties and dynamics, and their relationship to experimental methods will be examined. The course will provide a significant amount of active, hands-on application of computational methods and will familiarize students with modern simulation software, the use of both personal computing resources as well as high performance computing resources for carrying out simulations, data analysis techniques, and basic computer scripting/coding. No experience doing computational chemistry or coding is required!

Chemistry Department Registration Planning

Date: _____

Name: _____ Advisor: _____

List the courses you plan to take for each semester, paying special attention to the chemistry and correlate courses.

| Usual Fall Offerings | Usual Spring Offerings |
|--|---|
| General CHE201, CHE202 Organic CHE331, CHE332 Analytical CHE310 Thermodynamics CHE372 Inorganic CHE451 Advanced Option CHE47X/452/410 First year seminar CHE099 Sophomore Seminar CHE316 Junior Seminar CHE317 Research CHE493 (requires application) | General CHE202, CHE201 Organic CHE332, CHE331 Analytical CHE310 Quantum Chemistry CHE371 Biochemistry CHE430 Advanced Option CHE370 Advanced Option CHE47X/452/410 Sophomore Seminar CHE316 Junior Seminar CHE317 Research CHE493 (requires application) |

| FALL | | SPRING | |
|-----------------------|--|--------|--|
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| Sophomore Year | | | |
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| Junior Year | | | |
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