

# The College of New Jersey

## Chemistry Department

Preregistration Newsletter  
for Fall 2021 Registration

### Hello Chemistry Majors!

The enrollment window for Fall 2021 begins April 6th. Here is some information that will 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 Spring 2022?](#)
- [Chemistry Department Registration Planning Form](#)

### Upcoming Dates to Remember

Spring MiniBreaks	March 18, 2021; March 30, 2021 (check with instructor)
Advising Window	March 22-April 9, 2021
Enrollment Period	April 6-16, 2021
Commencement	May 20-21, 2021

## Preparing for Your Advising Meeting

You must meet remotely with your advisor BEFORE you can register. Hold flags are already placed on your accounts and they will be removed after your virtual meeting with your advisor.

*Please remember to:*

- Make an advising appointment via [Google calendar](#) with your advisor. Your advisor will send you an invitation. **Advising will occur remotely.** Your advisor will be in contact with information about their advising appointments and means of virtual communication for the advising appointments.
- Check out the 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 prerequisite courses.
- If you took any courses for Credit/No Credit that is a prerequisite for another course, registration could be impacted if the cart is not validated! 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 in the [Academic Advising Agreement for Undergraduate Students](#) **1<sup>st</sup> Year and Transfer Students!** If you didn't do this previously, make sure to download, read, sign, and bring this Advising Agreement to your academic advisor.
- Send copies of your *Chemistry Department Registration Planning* form (see page 9), your proposed course schedule(s) for Fall 2021, and an unofficial transcript ready to your advisor for prior to your virtual meeting via Zoom, Google hangout, or whatever communication forum your advisor is using.
- **First years and sophomores** are now being advised using a cohort style for additional advising.
- **Sophomores** your advisor may have changed due to the shift to cohort advising check PAWS to see who to sign up with for an individual appointment.

**If you are unable to enroll in a Chemistry course because it has already reached capacity, please visit the [Chemistry course waitlist](#).**

The College [WAITLISTING PROCESS](#)

# Important Notes and Changes

## Course Scheduling

The following changes may impact which courses you can or should schedule:

- **Ungraded option might be available**

TCNJ has a proposal to have an ungraded option for Spring 2021. The governance process is almost done. Please watch your email soon if this will be available. The current proposal will allow all students regardless of credits earned to take one (1) course as ungraded. The decision must be made by April 16 (students cannot wait until the end of the semester). A list of classes that will not qualify for an ungraded option was being collected. For classes that have a minimum grade requirement, students opting for the ungraded option still will need to meet the minimum grade requirement. In our department, this would affect CHE201, 202, 331 where a C- grade or higher is required to move onto the next course. You must also discuss with your advisor if you will select the ungraded option. *This is still unofficial, please wait for the announcement if this will be available.*

- **Fall teaching mode and lab skill development**

We are planning for a fully in person fall semester. If we need to pivot due to the pandemic, we will do our best to adapt. The Chemistry Department is carefully thinking about your training and our remote laboratories. We will be designing all our course labs carefully for the 2021-2022 year so that we can ensure that all our students are prepared to learn new lab skills, without assuming that you have already learned the activities in prior courses. We will also do creative course designs like Dr. Sen's advanced option, which will have two large blocks of time that will be lab intensive mixed in with lectures.

- **Seat holds for majors**

To help you register for classes, we will have seats held in the following sections: CHE202A, 310A, 332A, 331A, 331B, 331I

- **CHE 493 Independent Research**

The department is currently accepting applications for CHE 493 Independent Research for students hoping to start research Fall 2021. Given our remote format, the usual paper-based application has been changed to a google form. This [Research Placement Application](#) is due Friday March 19, 2021. Students will be notified of the results by Monday, March 29, 2021. Check your email from March 5 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 Fall 2021, all students participating in research will need to register for 493 during the Fall 2021 registration process.

- **Attention First-year and Sophomore CHMT majors!**

New Secondary Education requirements for minimum GPA are in effect and may impact your course/career decisions. Ask your advisor for more information.

- **Fall 2021 Advanced Option Chemistry course will be Dr. Sen's Protein Chemistry**  
This course will be an intensive lab course with two large flexible blocks of time to work on both lecture and lab activities.
- **Looking ahead to Spring 2022**  
The Advanced Options Chemistry courses are proposed to be CHE478 Sustainable Chemistry in the modern world and CHE474 Bioinorganic Chemistry. These courses are tentative. See more information on page 8.
- **Remember to sign up for Seminar!**  
Sophomore and Junior Seminar courses (CHE316 and CHE 317) are held on Wednesday mornings at 10 AM.
- Check out the Material Science Specialization and Biochemistry Specialization (See the descriptions on page 5 and 6)
- Summer 2021 and Winter 2022 registration will be available during the April 6-16 window. Winter 2022 registration will continue through the first day of Winter 2022 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. A full list of Liberal Learning courses can be found [here](#).

The image shows a search filter interface with four dropdown menus on the left and a list of options on the right. The dropdowns are labeled: Campus, Location, Course Attribute, and Course Attribute Value. The Course Attribute dropdown is currently set to "Liberal Learning Domains". The Course Attribute Value dropdown is open, showing a list of subdomains with a checkmark next to the first one: Behavioral, Social or Cultural; Literary, Visual & Perform Arts; Natural Science; Natural Science with Lab; and Quantitative Reasoning. A "CLEAR" button is visible on the right side of the interface.

# 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

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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, strongly recommended). 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 options 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 options courses 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 2021

## CHE 474 Protein Chemistry

**Instructor:** Dr. Stephanie Sen

**Prerequisites:** CHE430, or permission of the instructor (contact Dr. Sen before your registration slot)

**Texts:** TBD

**Integrated Lecture and Lab:** M 9:30-12:20, Lab A01 R 9:30-12:20

This course will focus on the theory and application of biochemical and genetic methods for studying protein function. An overview of protein synthesis, protein structure and folding, protein function and cooperativity, enzyme kinetics and mechanisms, production and purification of proteins, and current characterization methods for proteins will be presented. The laboratory will focus on the expression, purification, and characterization of soluble and membrane-associated proteins, using specialized methods, including site-directed mutagenesis, chromatographic methods, enzyme activity assays, immunochemistry, and computer modeling.

If the class fills up, we will open a second section, timing tbd based on interest. Please sign up on the [Chemistry Department Waitlists](#).

## Looking Ahead to Options Courses for Spring 2022?

**Tentative Advanced Options will be:**

- CHE 478, Dr. O'Connor

## CHE 478 Sustainable Chemistry in the modern world: A look at catalysis, energy storage, and industrial applications

**Instructor:** Dr. Abby O'Connor

**Prerequisites:** CHE 332

**Texts:** None

This course will focus on chemistry topics relevant to society and intersect the areas of materials, inorganic, organic, and analytical chemistry. The overarching theme will be on sustainability and green chemistry principles. The first focus will be on different renewable and non-renewable energy sources, including petroleum, solar, hydrogen, biomass, and others. We will spend time evaluating each and identifying pros and cons, along with issues in implementing these energy sources given our current infrastructure. The course will also cover the topic of energy storage, including different battery types, chemical and thermal methods and challenges in this field. This is timely with the Nobel Prize in chemistry being awarded to lithium ion batteries. The second half of the course will dive into different catalysis methods - photocatalysis, chemical catalysis, and electrocatalysis - and their role in industry and academia. The course will involve lectures, external speakers, discussions, reading and evaluating literature articles, student presentations, and a lab. The lab portion of the course will involve a research style project to encompass the theme of energy and catalysis. No prior inorganic chemistry coursework is necessary for this course.

## **CHE 474 Bioinorganic Chemistry**

**Instructor:** Dr. Levi Ekanger

**Prerequisites:** CHE 332

**Text:** Lippard and Berg, *Principles of Bioinorganic Chemistry*. University Science Books, 1994 (ISBN-13: 978-0935702736)

Bioinorganic chemistry is a field of study at the intersection of biochemistry and inorganic chemistry. This course will focus on the structure, function, and mechanism of metalloproteins and relevant metal complexes. Fundamental concepts from biochemistry and inorganic chemistry will be covered at the outset of this course. The course aims to equip students with a skillset to interpret and critically evaluate current literature in this field. Accordingly, the course will contain lectures, literature discussions and presentations, and a laboratory portion. The laboratory portion of this course will include experiments characterizing metalloproteins, the synthesis and characterization of inorganic coordination complexes intended to model metalloprotein active sites, and computational modeling and analysis on the TCNJ ELSA high-performance computing cluster.

**Please sign up [here](#) if you plan to take either CHE 478 or 474 in Spring, 2022. These sign up sheets will help us determine if these courses will run.**

# 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 Organic CHE331, CHE332 Analytical CHE310 Thermodynamics CHE372 Inorganic CHE451 Advanced Option CHE47X First year seminar CHE099 Sophomore Seminar CHE316 Junior Seminar CHE317 Research CHE493 (requires application)	General CHE202 Organic CHE332, CHE331 Analytical CHE310 Quantum Chemistry CHE371 Biochemistry CHE430 Instrumental Analysis CHE410 Advanced Option CHE47X Advanced Option CHE47X Research CHE493 (requires application) Sophomore Seminar CHE316 Junior Seminar CHE317

FALL		SPRING	
<b>First Year</b>			
<b>Sophomore Year</b>			
<b>Junior Year</b>			
<b>Senior Year</b>			