The College of New Jersey

Chemistry Department

Preregistration Newsletter
for Spring 2023 Registration

Hello Chemistry Majors!

The registration window for Spring 2023 begins November 1st. 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 for Spring 2023**
- **Looking Ahead to Options Courses for Fall 2023**
- **Meet the New Chemistry Faculty**
- **Chemistry Department Registration Planning Form**

Upcoming Dates to Remember

Mid-semester progress reports	October 10-25, 2022
Advising Window	October 17-November 9, 2022
Last Day to Withdraw (W)	November 1, 2022
Enrollment Period	November 1-11, 2022
Thanksgiving Break	November 23-25, 2022
Last Day of Classes	December 9, 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 and means of virtual communication for the 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 Spring 2023, and an unofficial transcript to your advisor prior to your meeting.

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

- **NEW THIS SEMESTER! Pre-registration for juniors and seniors:** In an effort to reduce some of the stress around registering for advanced chemistry courses, and to ensure equitable placement into these courses, we are implementing a pre-registration process for juniors and seniors this year. Please fill out this form by October 21, 2022 at 5 PM.

- **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, and CHE332 for Chemistry majors; see PAWS for sections. There are some seats reserved for Chemistry majors in BIO201 who are interested in the Biochemistry Specialization. Seats are spread out among all sections.

- **Course Delivery Mode**: All classes in chemistry are offered in person. A few classes that still need to be staffed (e.g., adjunct sections) may be listed as To Be Announced (TBA).

- **CHE 493 Independent Research:** The department is currently accepting applications for CHE 493 Independent Research for students hoping to start research in Spring 2023. This Research Placement Application is due Friday, November 4th by 11:59 pm. Students will be notified of the results by Friday, November 11th. 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 Spring 2023, all students participating in research will need to register for 493 during the Spring 2023 registration process.

- **Remember to sign up for Seminar!** Sophomore and Junior Seminar courses (CHE 316 and CHE 317) are held on Wednesday mornings.

- **Spring 2023 Advanced Option Chemistry Courses will be...**
  Dr. Baker's "Computational Chemistry" course (CHE 474) and
  Dr. Abourahma's "Materials from the Bottom Up" (CHE 478)
  See more information on page 7, especially for the prerequisites for the courses.

- **Looking ahead to Fall 2023...**
  The Advanced Options Chemistry course being proposed is Medicinal Chemistry with Dr. Hunt. This course is tentative. See more information on page 8.

- Summer 2023 registration will begin November 1. 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?

Use the Liberal Learning Course Search tool to explore possible liberal learning options.

Specializations in the Chemistry Department

The Chemistry Department offers two specializations that allow students to focus in an area of interest in their upper level courses. Students graduating with a B.S. in Chemistry will have an additional specialization in Material Science or Biochemistry.

Students may apply for a specialization at any time but are encouraged to do so in their sophomore year to facilitate planning and timely completion. To enroll in one of these specializations, students should use the Change of Major Form.

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 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.

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 explore the interconnectedness of these disciplines, gain insight into the interdisciplinary nature of chemistry, biology, and physics and have interdisciplinary postgraduate goals (i.e., in industry, medical, or graduate programs). The B.S. 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 additional 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.

Advanced Options for Spring 2023

CHE 478 Materials from the Bottom Up
Instructor: Dr. Heba Abourahma
Prerequisites: 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.
NOTE: Please ignore the PAWS prerequisites. Juniors and seniors may pre-register for this course using this form. If you have met the requirements, you will be pre-enrolled in the course prior to your registration period. If the class fills we will open a waitlist for the course.

CHE 474: Computational Chemistry
Instructor: Dr. Joseph Baker
Prerequisites: none
Text: TBD
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!
NOTE: Please ignore the PAWS prerequisites. Juniors and seniors may pre-register for this course using this form. If you have met the requirements, you will be pre-enrolled in the course prior to your registration period. If the class fills we will open a waitlist for the course.

Looking Ahead to Options Courses for Fall 2023?

Advanced Options will tentatively be:

- **Special Topics - Medicinal Chemistry (CHE 476) with Dr. Hunt**
  Prerequisites: Completion of CHE 332 with a grade of C or better
  Text: "An Introduction to Medicinal Chemistry, 6th ed." Graham L. Patrick
  Medicinal chemistry is the study of synthetic organic chemistry, pharmacology, and various other biological specialties involved with the design, synthesis, and development of pharmaceutical agents, or bio-active molecules. The strategy behind the design of drugs, along with the development of a chemist's toolbox, will be the focus of the class.

Meet the New Chemistry Faculty

Rayza Rodrigues, Lecturer of Chemistry

Rayza Rodrigues was born and raised in Vitória, Brazil, where she received her Lic. in Chemistry from Instituto Federal do Espírito Santo and her B.S. and M.S in Chemistry from Universidade Federal do Espírito Santo. She is currently working towards the completion of a Ph.D. degree at Drexel University, where she is investigating the correlation between the use of clickers in large classroom environments and course performance. Her academic journey led her to explore multiple areas of chemistry, such as food chemistry and petroleum chemistry, but she found her true passion is chemical education. She hopes to inspire all her students, and especially those who belong to minority groups, to pursue their dreams.

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	
First Year			
Sophomore Year			
Junior Year			
Senior Year			