# Biology Registration Newsletter for Spring 2022 Courses

This newsletter contains the information most relevant for registration for Spring 2022 courses. A detailed description of policies, graduation requirements, *etc*. can be found in the Biology Student Handbook: https://biology.tcnj.edu/resources-for/current-students/biology-student-handbook/

## I. Registration Logistics

**A.** **Registration period.** Registration windows are open Nov 2 - Nov 12, 2021. The opening of your specific window, both date and time, can be found in PAWS and is based on earned course units. The last day to register for Spring 2022 is the end of the first week of classes of Spring 2022, though many courses will be closed long before then (see C., below).

**B.** **"Meet" with your advisor, as possible.** You will be prevented from registering until a "registration hold" is removed from your PAWS account. This semester, faculty members will be advising students in the way that works best for their situation and their students' situations. Be patient.

**C.** **Closed courses.** If you are unable to register for a course section because it is full or the seats are reserved for other students, you may put your name on the wait list. Wait list protocols vary by department and are summarized here: https://recreg.tcnj.edu/regandroll/

Biology wait lists are being handled as described here: https://biology.tcnj.edu/waitlists/

***You cannot submit a wait list form until your registration window has opened.*** Do not ask to be signed into a course above the cap unless there are exceptional circumstances (*e.g.*, you will not graduate on time), and note that Chemistry and Physics courses cannot accept anyone above the cap.

**D.** **Math courses.** Biology-oriented sections of Statistical Inference (STA 215-03, STA 215-04) will be offered in Spring 2022. If taking this course, you are encouraged to enroll in one of these sections, but you are not required to do so.

**E.** **Off-campus study.** Off-campus study (*e.g.*, a summer course) at a NJ county college is regulated by NJ Transfer (njtransfer.org). Off-campus study at a non-NJ community college or a domestic four-year college must be approved by the chair of the department in which the course(s) would be offered at TCNJ. Any Biology major interested in studying abroad should contact the Office of Global Engagement and speak to their advisor well before they wish to travel abroad. Any course to be taken abroad for biology option credit must receive approval of Dr. Pecor before you enroll in the abroad course. Domestic or abroad, consult with Dr. Pecor regarding online (distance learning) laboratory courses.

**F.** **Holding seats.** Registering in a course section in order to hold a seat for another student is a violation of TCNJ's Academic Integrity Policy for both the student holding the seat and the student taking the held seat. Course registration will be monitored by the chair for anomalies suggestive of seat holding.

**G.** **PAWS ID.** Please include your PAWS ID number in any correspondence that concerns registration, enrollment, graduation requirements, or problems with your transcript.

**H.** **Independent Study.** If you know that you will be conducting research with a TCNJ faculty member for credit (BIO 393/493/494/495/496) in Spring 2022, you are asked to submit your Independent Study form via email to Dr. Pecor at any time starting Nov 2nd. This is especially relevant if you only plan to take three courses in Spring 2022. **DO NOT** enroll in a course that you have no intention of taking. The form is located here: https://recreg.tcnj.edu/wp-content/uploads/sites/166/2019/10/Independent-Study.pdf

Confirm your enrollment with your mentor in terms of course number and course units, and send the completed form to Dr. Pecor via email: pecor@tcnj.edu

## II. Courses Offered

**A. Spring 2022 (OE** = organisms & evolution**)**

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| BIO 201 | Foundations of Biological Inquiry |
| BIO 211 | Cell Biology and Biochemistry |
| BIO 221 | Ecology and Field Biology |
| BIO 231 | Genetics |
| BIO 300 | Course Assistant in Biology |
| BIO 302 | Human Anatomy and Physiology II* |
| BIO 332 | Biology of the Vertebrates (OE) |
| BIO 343 | General Entomology (OE) |
| BIO 360 | Oceanography |
| BIO 399 | Biology Research Internship |
| BIO 393 | Independent Research in Biology I |
| BIO 434 | Molecular Biology of Gene Expression |
| BIO 455 | Ecological Developmental Biology |
| BIO 461 | Advanced Evolution |
| BIO 470A | Topics in Biology: Bacterial Signal Transduction |
| BIO 470B | Topics in Biology: Plant Biochemistry |
| BIO 470C | Topics in Biology: Animal Behavior |
| BIO 471 | Genomics and Informatics |
| BIO 480 | Neurobiology |
| BIO 490 | Student Teaching Biology |
| BIO 493/494 | Independent Research in Biology II/Honors |
| BIO 495/496 | Independent Research in Biology Capstone/Honors |
| BIO 498 | Biology Seminar |

* Not available as a major option for most Biology students.

**B. Summer 2022***

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|---|---|
| BIO 201 | Foundations of Biological Inquiry** |
| BIO 363 | Introduction to Marine Biology** |

* Additional courses may be offered, and these will be advertised if and when they are added to PAWS.

** The offering of this course is contingent upon both minimum enrollment and availability of an instructor.
*** Taught at the New Jersey Sea Grant Consortium (NJSGC, Sandy Hook, NJ), a student must first apply to NJSGC; the application is available here: http://njseagrant.org/education/college-programs/ The student must then enroll through PAWS. BIO 363 counts as a Biology options course. Note that BIO 362, Introduction to Marine Science, is also offered by NJSGC but does not count at a Biology option course. See Dr. Dickinson for more information

**C. Fall 2022 options courses likely to be offered (not exhaustive or guaranteed)**
**(OE** = organisms & evolution**)**

| | |
|---|---|
| BIO 301 | Human Anatomy and Physiology I* |
| BIO 312 | Microbiology |
| BIO 342 | Biology of the Invertebrates (OE) |
| BIO 444 | Molecular Immunology |
| BIO 445 | Cancer Genetics |
| BIO 451 | Developmental Biology |
| BIO 470 | Topics: Comparative Transcriptomics and Metabolomics |

* Not available as a major option for most Biology students.

## III. Notes on Selected Courses

This is a brief reference for courses that are either new or have special attributes. Be sure to refer to PAWS for descriptions of all courses.

**A. BIO 300 Course Assistant in Biology.** There will be opportunities for students to serve as Course Assistants in Spring 2022. Being a course assistant provides advanced students with experience mentoring students in introductory and options courses. Course Assistants earn either 0.25 or 0.5 course units of elective credit, depending upon the expectations for the course with which they are affiliated. The courses needing assistants will be advertised later in the Fall 2021 semester.

**B. BIO 301 & 302 Human Anatomy and Physiology I & II.** Students who plan to pursue Physical / Occupational Therapy or Physicians' Assistant programs, or are in an education program, may count one of these two courses as a Biology major option with the chair's approval. These courses cannot serve as an option for most students and are not recommended for medical school preparation.

**C. BIO 393 Independent Research in Biology I.** This course offers students an opportunity to learn about techniques used for biology research. It is taken typically during the sophomore year. Under the direct supervision of a faculty member, students engage in original research experiments, generating new knowledge in the laboratory and/or field. This course is designed to give the student an opportunity to explore research methods and experimental techniques needed to develop an independent research project. Students are permitted to repeat the course one time, if more exploration is needed, or they may proceed directly to BIO 493 to develop an independent project, in collaboration with the faculty mentor. Interested students should contact individual faculty members with whom they are interested in working in order to register for Independent Research.

**D. BIO 470A: Topics in Biology: Bacterial Signal Transduction.** In this class, we will study the signal transduction pathways used by bacteria to detect and respond to changes in their environment. We will describe the major signal transduction systems used by bacteria and discuss how these systems are used in various signal transduction processes that regulate bacterial adaptability. In the lab, students will investigate the roles of different signal transduction pathways in bacterial adaptability.

**E. BIO 470B: Topics in Biology: Plant Biochemistry.** Plants are among the most successful organisms on the planet inhabiting nearly all types of environments and dealing with all sorts of challenges. Broadly, the success of plants could be attributed to their diverse biochemistry. Plants are not only the major autotrophic organisms that produce the major macromolecules that nearly all other forms of life depend on, but they also produce a staggering number of specialized metabolites. Overall, the plant kingdom is estimated to produce more than 300,000 metabolites, exceeding the numbers of metabolites found in mammals (~60,000) and microbes (~100,000). These metabolites, in addition to mediating the interactions of plants with other organisms and their environment, have important pharmaceutical, agricultural and culinary advantages. In this course, we will explore the fundamental principles of biochemistry common to all organisms and delve into the world of plant biochemistry to understand how plants generate diverse types of metabolites from relatively few biochemical pathways. We will discuss the scientific approaches, techniques and tools used in studying plant biochemical pathways, explore the evolution of biochemical pathways in different families of plants and study the applications of selected plant metabolite groups in medicine and agriculture.

**F. BIO 470C: Topics in Biology: Animal Behavior.** In this course, students will investigate the genetic, neural, and endocrine bases of behavior, and how selection for individual behavioral decisions can result in the evolution of broad-scale variation in behavior across species. The course is not human-focused, but includes examination of human behavior from an evolutionary perspective. Lecture sessions will include student-led discussions of the literature. The lab portion of the course will engage students in the defining practices of animal behavior research, and includes a multi-week, student-designed project.

**G. BIO 493/494 Independent Research in Biology II.** This course involves laboratory or field research under the direction of a faculty member at TCNJ and can be taken for up to 1 course unit/semester (a two-semester project is recommended). Typically, juniors and seniors enroll in Independent Research II. Interested students should contact individual faculty members with whom they are interested in working in order to register for Independent Research.

**H. BIO 495/496 Independent Research in Biology Capstone.** This course may substitute for BIO 498 Biological Seminar as the capstone course, but not as a biology option course. Students who wish to take BIO 495 Independent Research in Biology Capstone or BIO 496 Honors Independent Research in Biology Capstone should enroll in these classes during their ***final*** semester of independent research. This course involves pursuit of an original research project under the direction of a supervising professor. Results and conclusions serve as the basis of an oral or poster presentation to faculty and students as well as a written paper that has gone through multiple drafts and submitted to the faculty mentor and archived by the Department of Biology. Prerequisites: Completion of at least one course unit of BIO 493 or BIO 494 under the same instructor and a minimum overall GPA of 2.5.

**I. BIO 498A Biology Seminar**. Protistology. "Protist" is a descriptive term lumping together all the eukaryotes that aren't plants, animals, or fungi. It's a term of convenience rather than

taxonomy that undersells the vast diversity of organisms it describes. Protists include algae, Amoebozoa, flagellates, ciliates, diatoms, etc. etc. etc. Many serve major ecological roles that support systems as primary producers or plankton, others produce toxins that can poison entire lakes. Many are free living, some are parasites, others are endosymbionts and mutualists. Some are familiar, but many defy expectations and make their own rules. In this seminar, students will dive into the diverse and beguiling world of protists through researching the unique biology, ecology and evolution of this medley of mostly microbial organisms.

**J. BIO 498B Biology Seminar.** Instructor and topic TBD.