

Biological Sciences Student Guide 2021-2022



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Facebook Group: DePaulBio



Twitter and Instagram: @depaulbiodept



LinkedIn Group: DePaul University Department of Biological Sciences

~For more information, please visit: <http://go.depaul.edu/biology~>

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Welcome to the Biological Sciences Student Guide! This guide is intended to aid Biology students (both majors and minors) to successfully carry out their programs. We have tried to include a lot of the information students would find useful in scheduling their courses, understanding their requirements, knowing what resources exist to help in their academics, and beyond! Since there are always ongoing changes and last-minute substitutions, we apologize in advance for any errors or mistakes that are in the booklet. Please let us know of any errors you find, as well as any additional types of information you would like us to include. Our goal is to make sure every student has access to all of the information needed to complete our program and to help students succeed in their academic careers.

Contacting Us

Main Office: McGowan North, room 118

Phone: 773-325-7595

Hours: Monday-Friday, 9-5pm

Academic Advising

Be sure to meet with your academic advisor at least once a quarter to ensure you are on track for completing the Biology major or minor at your desired graduation time. If you do not know who your academic advisor is, please check your BlueStar account through Campus Connect. Declared Biological Sciences majors will meet with the Departmental Academic Advisor, Jaimie Engle (except for Pathways Honors Students.) **Pathways Honors Students** will meet with Pathways Advisors, Lindsey Burdick or Lauren Paez in the CSH Advising Office. Appointments can be made through BlueStar, by visiting the office, or by contacting CSHAdvising@depaul.edu or (773) 325-8490.

For BIO or NEU Advising Appointments for current students (that are not Pathways Honors students):

Schedule through [BlueStar](#), or by calling the BIO Department Office at 773-325-7595

[Click here](#) for step-by-step BlueStar scheduling instructions for BIO/NEU students specifically.

Advising for new or exploring students: Contact [the Office for Academic Advising Support \(OAAS\)](#)

Students also have assigned **BIO faculty advisors**, and are encouraged to meet with Career Advisors as well. Your assigned faculty advisor appears in your BlueStar Student Success Network. Please contact Jaimie at jengle@depaul.edu if you do not have a faculty advisor assigned, or would like to request a certain faculty advisor. **Please see the Advising Umbrella** on page 23 at the end of this document to better understand how each of your advisors can help you!

Career Advising: DePaul's Career Center has a Health Care & Science Career Community! Start working with the career center early on for assistance exploring and preparing for your post-grad endeavors: <https://resources.depaul.edu/career-center/career-advising/communities/health-care-science/Pages/default.aspx>.

Pre-Health Advising: Interested in a health related career? There are many forms of Pre-Health Advising at DePaul. There is the Pre-health Advising Committee (PAC), which is comprised of an interdisciplinary body of faculty and staff whose primary function is the academic advising of students intending to pursue a career in one of the health professions. We also have a dedicated Pre-Health staff advisor in addition to the Biology staff advisor. To learn more about the PAC and our Pre-Health Advisor, Lindsey Burdick (lburdick@depaul.edu), and to obtain information about upcoming events and speakers that the PAC organizes, we encourage you to visit their website and register for their services at: <http://csh.depaul.edu/student-resources/advising-student-services/pre-health-advising>

See the final page of this document for the BIO Advising Umbrella! It provides clarification about how different advisors can help you!



Cover Photo Captions

(Top Left): BIO Students attend Midwest Ecology & Evolution Conference (MEEC). Read about their research below!

Jonathan Allen (BIO: with Kenshu Shimada). A marine bonebed of the Upper Cretaceous Niobrara Chalk, western Kansas.

Jessica Barton (BIO: with Kattie Morris, Dennis Merritt, Seth Magle, and Jalene LaMontagne). Does urbanization influence population trends of European starlings and their relationships with cavity-nesting birds?

Isaac Bruns (BIO: with Timothy Sparkes). Host-specificity of *Posthodiplostomum* parasites in sympatry and potential spillover effects.

Roberto Cucalon (BIO: with Windsor Aguirre and Jalene LaMontagne). Is white spruce population genetic structure related to mast seeding?

Cristian Corona (BIO: with Abigail Leeper and Jalene LaMontagne). Eastern spruce budworm defoliation of white spruce over balsam fir in northern Wisconsin.

Timothy Cronin (BIO: with Timothy Sparkes). Parasite infection, host predation, and transmission in a complex habitat.

Daniela Garza (BIO: with Bruce Schumacher and Kenshu Shimada). Fossil marine vertebrates from the Juana Lopez Member of the Upper Cretaceous Carlile Shale in southeastern Colorado

Riley Hacker (BIO: with Kenshu Shimada). An ichthyodectiform fish (Osteichthyes: Actinopterygii) from the Arlington Member (mid-Cenomanian) of the Upper Cretaceous Woodbine Formation in Texas.

Dana Hundrieser (BIO: with Kenshu Shimada). Marine vertebrate fauna of the Upper Cretaceous Fairport Chalk in Russell County, Kansas.

Alexandra Krak (BIO: with Kenshu Shimada). On the dentition of the extinct megamouth shark, *Megachasma applegatei*, from the late Oligocene-early Miocene of southern California, U.S.A.

Andres Lafuente S. (BIO: with Kenshu Shimada). Pectoral fin radials in lamniform sharks (Elasmobranchii: Lamniformes) with special reference to their segmentation patterns in lamnid taxa.

Abigail Leeper (BIO: with Jalene LaMontagne). Mast seeding and a spruce budworm outbreak: a lesson in peer pressure.

Maria Jazmin Rios (BIO: with Seth Magle and Jalene LaMontagne). The rat wins the race? Spatio-temporal patterns of brown rat populations in the Chicago.

Kristin Staub (BIO: with Windsor Aguirre). Correlation between altitude and morphological variation of fishes in Andean mountain streams.

Myles Walsh (BIO: with Kenshu Shimada). Examination of torso morphology in extant terrestrial amniotes to infer the body morphology of quadrupedal non-avian dinosaurs.

(Top Middle): A photograph of the RNA lab for Dr. Kipp's lab research. Research in the Kipp laboratory spotlights hormone signaling and gene regulation in the regulation of ovary development in the mouse.

(Top Right): Dr. Shimada photographed with the tooth of the extinct shark, *Otodus megalodon*. Dr. Shimada recently appeared in journals and news articles discussing the enormous tooth size of the shark. Dr. Shimada is a paleobiologist, with a specialty in a group of sharks known as lamniforms.

Faculty and Staff Contact Information

| <u>Name</u> | <u>McGowan Office</u> | <u>Extension</u> | <u>E-mail</u> |
|---|-----------------------|------------------|--|
| Dr. Windsor Aguirre (<i>Evolutionary Biology</i>) (<i>Graduate Program Director</i>) | McGSo 221A | x58005 | waguirre@depaul.edu |
| Ms. Rima Barkauskas (<i>Senior Instructor</i>) | McG 116 | x51891 | rbarkaus@depaul.edu |
| Dr. Margaret Bell (<i>Neuroendocrinologist</i>) | McG 122 | x57066 | margaret.bell@depaul.edu |
| Dr. Joanna Brooke (<i>Microbiologist</i>) | McG 203 | x51161 | jbrooke@depaul.edu |
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| Dr. John Dean (<i>Plant Physiology</i>) | McG 209 | x52188 | jdean@depaul.edu |
| Dr. Phillip Funk (<i>Immunology</i>) | McGSo 403J | x58479 | pfunk@depaul.edu |
| Dr. William Gilliland (<i>Genetics</i>) | McGSo 219A | x57464 | wgillila@depaul.edu |
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| Dr. Dorothy Kozlowski (<i>Neurobiologist</i>) | McG 106 | x52191 | dkozlows@depaul.edu |
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| Dr. Carolyn Martineau (<i>Senior Instructor</i>) | McG 114 | x57198 | cmart107@depaul.edu |
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| Dr. Talitha Rajah (<i>Cancer Biology</i>) | McGSo 223A | x58006 | trajah@depaul.edu |
| Dr. Megan Schrementi (<i>Laboratorian</i>) | McG 113 | x52184 | mschreme@depaul.edu |
| Dr. Kenshu Shimada (<i>Paleobiology</i>) (<i>Joint-appointment with Env. Science</i>) | McGSo 203 | x53697 | kshimada@depaul.edu |
| Dr. Margaret Silliker (<i>Molecular Biology</i>) | McG 239 | x52194 | msillike@depaul.edu |
| Dr. Timothy Sparkes (<i>Aquatic Biology</i>) (<i>Department Chair</i>) | McG 115 & McG 236 | x54749 | tsparkes@depaul.edu |

Adjunct Faculty

| | | | |
|---------------------------|------------|--------|--|
| Mrs. Claire Behrens, M.S. | McG 111 | x51557 | cbehen1@depaul.edu |
| Dr. Terry Fitzpatrick | McGSo 412G | x58486 | tfitzpat@depaul.edu |
| Dr. Richard Hudson | McG 111 | x54787 | rhudson5@depaul.edu |
| Dr. Sean Austin Lim | McG 131 | x54937 | slim21@depaul.edu |
| Dr. Jessica Pamment | McG 111 | x57272 | jpamment@depaul.edu |
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| Dr. Kate Soderstrom | McG 243 | x57692 | ksoderst@depaul.edu |
| Dr. Timothy Sosa | McG 213 | x57597 | tsosa@depaul.edu |

Department Staff

| | | | |
|--|---------|--------|--|
| Ms. Jaimie Engle, M.S. (Academic Advisor) | McG 121 | x57595 | jengle@depaul.edu |
| Mr. Damien J. Rodriguez (Department Assistant) | McG 118 | x57595 | drodri97@depaul.edu |

Table I. Comparison of current BS and BA programs in Biology (differences highlighted in grey)

| Program Requirements BS Integrative Concentration | Quarter Hours | Program Requirements BA | Quarter Hours |
|--|----------------------|--|----------------------|
| Liberal Studies Requirements, 19courses Chicago Quarter (4) Focal Point Seminar (4) First-Year Writing (8) Multiculturalism Seminar (4) Experiential Learning (4) Capstone Seminar (4) [i.e. BIO 395] Arts & Literature (12) Philosophical Inquiry (8) Social, Cultural, and Behavior Inquiry (12) Religious Dimensions (8) Historical Inquiry (8) Waived: Scientific Inquiry (8) Statistical Reasoning (4) Quantitative Reasoning (4) Computational Reasoning (4) | 76 | Liberal Studies Requirements, 21courses Chicago Quarter (4) Focal Point Seminar (4) First-Year Writing (8) Computational Reasoning (4) Multiculturalism Seminar (4) Experiential Learning (4) Capstone Seminar (4) [i.e. BIO 395] Arts & Literature (12) Philosophical Inquiry (8) Social, Cultural, and Behavior Inquiry (12) Religious Dimensions (8) Historical Inquiry (8) Waived: Quantitative Reasoning (4) Scientific Inquiry (8) Statistical Reasoning (4) | 80 |
| Major Requirements, 16 courses BIO 191-193 (Gen Bio sequence: 12) CHE 130-135 (Gen Chem sequence: 12) CHE 230-233 (Org 1 & 2) PHY 150-152 (12) MAT 150-151 (calculus 8) BIO 206 Biostatistics (4) BIO 260 Genetics (4) Concentration Requirements, 3 courses BIO 215 or 235 Ecology or Evolution (4) BIO 307 Animal Physiology, or BIO 308 Human Physiology, or BIO 309 Plant Physiology (4) BIO 250 Cell Biology (4) | 72 | Major Requirements, 11 courses BIO 191-193 (Gen Bio sequence: 12) CHE 130-135 (Gen Chem sequence: 12) BIO 206 Biostatistics (4) BIO 250 Cell Biology (4) BIO 260 Genetics (4) BIO 215 or 235 Ecology or Evolution (4) BIO 307 Animal Physiology, or BIO 308 Human Physiology, or BIO 309 Plant Physiology (4) | 44 |
| Major Advanced Electives, 6 courses Six additional Biology courses. At least two of the Six must have a lab component and at least two of the five must be 300-level courses | 24 | Major Advanced Electives, 3 courses Three additional Biology courses. Two of which must be 300 level (3) | 12 |
| Open Electives, 5 courses | 20 | Open Electives, 14 courses BA students are required to complete the Modern Language Requirement | 56 |
| Total hours required | 192 | Total hours required | 192 |

Students must earn a C- or better in all major coursework.

BIO Senior Capstone: Students with a primary major in Biology are required to complete the Capstone offered by the Biology department. Students double majoring or pursuing dual degrees with the primary major or primary degree in Biology are required to complete the Capstone offered by the Biology department. Biology students in the University Honors Program shall take the University Honors Capstone. They are not expected to take both the Honors Capstone and the primary major or primary degree Capstone.

University Honors Students and Liberal Studies Requirements: Liberal Studies Requirements differ for students in the Honors Program. Please meet with the CSH Honors Advisor, Nancy Grossman, for specific Honors Program inquiries. Nancy Grossman can be reached at ngrossma@depaul.edu.

Additional Graduation Requirements

- No grade lower than a C– is acceptable in a student’s major, minor or allied field.
- Students must have a minimum of 2.000 cumulative grade point average.
- Students must have a minimum of 2.000 cumulative grade point average in the major, minor or allied field.
- Students must abide by the university residency requirement. The student must have completed the following work at DePaul University: the final 60 quarter hours of credit; one-half of the credit earned in the major area of concentration; one-half of the credit earned in the minor if applicable; all courses in the senior year.

Bachelor of Science

As a Biological Sciences BS major, you will take one year of introductory biology and chemistry followed by a core program in ecology, genetics and cell biology. You will also take 2 quarters of calculus, at least 2 quarters of organic chemistry, and a year of physics. Professors work directly with you in each lab section to develop and enhance your laboratory skills.

After you have gained a strong foundation of knowledge in biological science theories and practices, you may take electives in the following areas:

- ecological or evolutionary biology
- developmental biology
- molecular and cellular biology
- physiology
- neurobiology
- anatomy

Most faculty members direct their own research programs, giving you an opportunity to work on multiple research projects. Biological Sciences majors are encouraged to attend seminars and complete internships.

If you are interested in pursuing a career in education, the Department of Biological Sciences also partners with the College of Education to award teaching degrees.

We also offer a combined bachelor’s and master’s degree program in Biological Sciences as well as a combined bachelor’s and master’s in Biological Sciences and Secondary Education Biological Sciences. Both of these combined degree programs allow you to complete a bachelor’s degree and a graduate degree in as few as five years.

Bachelor of Arts

The Liberal Studies Requirements for the BA are standard, with the exceptions of no Quantitative Reasoning or Scientific Inquiry courses and the Statistical Reasoning requirement being met by BIO 206 Biostatistics.

The General Biology sequence BIO 191-193, Biostatistics BIO 206, and Genetics BIO 260, comprises a core set of courses also required of all BS Biology majors. When joined with the additional requirements of a year of General Chemistry, Cell Biology BIO 250, Physiology (Plant or Animal), and Ecology or Evolution, the BA Major Requirements will ensure that a BA Biology major will have knowledge of all the major branches of biology supported by a foundational understanding of chemistry. Three additional upper level Biology courses will provide additional development of biological thinking and practices, and the opportunity to fulfill some professional school requirements. The Biology Capstone course will allow for integration of this scientific knowledge with the student’s Liberal Studies courses.

The 14 open electives in the BA will allow students to pursue one or two minors, since minors typically require 5-7 courses. Some possibilities include minors in business (5 courses), journalism (6 courses), data science (7 courses), marketing (5 courses), public policy studies (6 courses), public health studies (6 courses), and many more options complementary to a background in biology that will prepare graduates for interdisciplinary careers.

All students admitted to the College of Science and Health will be welcome to select the BA in biology major.

Experiential Learning

***Experiential Learning** is a LSP requirement that can be filled in several ways. A description of this requirement is found at <https://catalog.depaul.edu/undergraduate-core/liberal-studies-program/liberal-studies-common-core/experiential-learning/>. The important thing to remember is that you must be doing the experience (typically something meaningful outside the classroom, such as an internship, research, job, study abroad, etc.) while you're enrolled in the corresponding Experiential Learning course in order to actually receive credit for the EL requirement.

1. **UIP 250 Navigating the Workplace:** <https://resources.depaul.edu/career-center/services-resources/career-courses/Pages/Work-and-Learn-Courses.aspx>. Complete the course application to see if your job or internship (doesn't have to be related to the field) is eligible for UIP 250. You'll work with uip@depaul.edu to get enrolled and with any other questions. This is the University Internship Program, which is part of the Career Center, so they can also help you find jobs and internships.
2. **Research:** If you get a research opportunity in a DePaul professor's lab, you'll work with the professor and their department to get enrolled in the appropriate independent study and/or research course. For BIO, for example, that's BIO 397 Mentored Research Experience in Field Biology. For NEU, there currently isn't an EL-approved research course, so NEU students either enroll in NEU 399 Independent Study if working with a NEU prof, but many work with PSY or BIO profs, or other majors altogether, and therefore enroll in their departments EL research courses.
 - a. If you get a research opportunity outside of DePaul, it's treated like a job or internship and you would therefore refer back to bullet 1 and see if you can earn credit through UIP 250.
3. **Study Abroad:** <https://offices.depaul.edu/global-engagement/student-resources/study-abroad/Pages/default.aspx>.
4. **Service-Learning Courses:** These are DePaul courses that have some sort-of community service project/volunteer hours assigned, so unlike the options above, the experience and course are all rolled into one. You enroll, attend class, and fulfill your assigned role or hours. These can be tricky to find because they're listed among all other EL courses, which include many that are restricted upperclassmen in certain majors. So options like Internship in Accounting, or Field Work in , for example, are not service-learning courses. So when browsing the list, you want to look for titles with words and phrases like "community engagement," "social justice," "making a difference," etc. Those appropriate service-learning courses that are open to all students will typically have a clear community service, social justice, and/or multicultural theme to them.

BIO Department Experiential Learning* Courses

We currently have the following courses specifically for Biological Sciences students:

- **BIO 302 Student Laboratory Instruction** – Completion of course requires student to serve as teaching assistant for biology laboratory course in the following quarter.
- **BIO 303 Intro to Scientific Research** – Course requires that student has had (or currently having) experience in scientific research.
- **BIO 318 Field Studies in Marine and Estuarine Biology** (aka unofficially "the South Carolina trip course.") This course is designed for science majors with an interest in marine and estuarine biology and will examine this subject from an ecological perspective. The primary objectives of the course are: 1) to explore the diversity of marine and estuarine life; 2) to understand the manner in which physical and biological factors influence biological diversity in marine systems; 3) to understand the role that humans play in shaping these dynamics; and 4) to develop professional connections and gain real-life experiences in marine science. *Reach out to Dr. Sparkes (tsparkes@depaul.edu) with questions about joining this course. Offered in December Sessions.*
- **BIO 369 Stem Peer Mentoring** – This course is designed for undergraduates who will be mentoring students in the College of Science and Health. The purpose of the course is to prepare mentors to welcome STEM students into the culture of the scientific community at DePaul. Mentors will encourage their peers to use tools and resources designed to help them build a sense of belonging and achieve academic success. The course will include readings, presentations, and activities, which will support the student's development as a peer mentor. Students will reflect on their experiences to inform their efforts in creating a supportive learning environment for their peers. *By approval – contact Erin Berkowitz (eberkowi@depaul.edu.)*

- **BIO 388 Research Methods In Biology** – **Please note this course is not currently pre-approved for Experiential Learning Credit, so students work with CSHExceptions@depaul.edu to get EL credit for this.* Research Methods in Biology is a methods-based course designed for science majors that will focus on learning a variety of cutting edge methods used by biologists to carry out research. Throughout the course, students will develop an in-depth understanding and appreciation for one or two research methods which are associated with projects they will undertake as part of BIO 389 (Research in Field Biology). Biology is a very broad field, so your chosen method(s) may end up being based in any of a variety of sub-fields including cell biology, physiology, biochemistry, molecular biology, ecology or evolution. In order to utilize methods to collect biological data you will need to 'become an expert'. In this course you will learn that being an expert means more than just 'following a recipe'. An expert will also understand the theory behind how their method works and appreciate the history of how the method was developed over time (and by whom). An expert will also understand the specifics of how all of the required equipment works (including how it is properly maintained and calibrated) and how to properly collect or prepare any samples/chemicals needed to carry out the process. Finally you will learn how to analyze the data you collect and how to interpret it while acknowledging what limitations may be associated with your data. Research Methods in Biology is a hands-on course. You will learn your method(s), you will practice and you will become an expert. To test whether you are an expert, you will be challenged to teach the method to your peers and produce a detailed methods handout which others can use to carry out the method on their own. This means you will also be taught the methods selected by your peers. Finally, you will collect data utilizing your method to complete your chosen research project in BIO 389.
- **BIO 389 Research in Field Biology** (study abroad course) is a research-intensive course designed for science majors and graduate students that will focus on developing skills of collaborative field-based research. Throughout the course, students (working in groups of 2 or 3) will utilize the scientific method to develop and carry out an original research project. Students will utilize the primary literature to learn the current state of research in an area that interests them, then use that knowledge to develop a novel question they can test with a field-based experiment. Data collected will be analyzed and results compiled into a publication quality paper. Students will then present their study to their peers in the form of an oral or poster presentation. **Please note this course is not currently pre-approved for Experiential Learning Credit, so students work with CSHExceptions@depaul.edu to get EL credit for this.*
- **BIO 397 Mentored Research in Field Biology:** *For students participating in research with a faculty member and wishing to receive Experiential Learning credit, you can complete the Course Application for BIO 397: Mentored Research Experience in Biology.* The faculty research mentor and student will work together to formulate a research question based on current biological knowledge and the scientific literature. They will develop hypotheses to guide designing and conducting experiments to test the hypotheses. Under faculty supervision, the student will analyze their data and propose follow up experiments. The results and conclusions will be reported in a final project which may be a poster or oral presentation, or research manuscript. In addition, the student will reflect on how the project activities and experiences have contributed to their personal growth as a scientist and their future career plans. Relevant safety and ethical training will be based on the specific proposed research.



Basic Timeline for Entering Students in BS

(Most Applicable for Integrative Concentrations)

| | <u>Autumn Quarter</u> | <u>Winter Quarter</u> | <u>Spring Quarter</u> |
|--------|--|---|--|
| YEAR 1 | BIO 191 CHE 130/131 WRD 103 LSP 110/111 Explore/Discover Chicago | BIO 192 CHE 132/133 WRD 104 LSP 112 Focal Point | BIO 193 CHE 134/135 Learning Domain LD or Math Pre-requisite |
| YEAR 2 | BIO 206 Statistics CHE 230/231 BIO 215 or 235 Learning Domain | BIO 250 Cell Bio CHE 232/233 Learning Domain LSP 200 Sem Multicultural | BIO 260 Genetics BIO Elective (CHE 234/235 if needed) Learning Domain Learning Domain |
| YEAR 3 | BIO Elective PHY 150* Calculus I Learning Domain | BIO Elective PHY 151 Calculus II Experiential Learning | BIO Elective PHY 152 Learning Domain Open Elective |
| YEAR 4 | BIO Elective Learning Domain Learning Domain Open Elective | BIO Elective BIO Elective Learning Domain Open Elective | BIO Elective Learning Domain Open Elective BIO 395 Senior Capstone |

*Students who wish to enter medical school directly after graduation should take physics during sophomore year. This timeline may not be applicable to other concentrations. See your advisor to create a long-term plan specific to your academic needs and career goals.

Basic Timeline for Entering Students in BA

| | <u>Autumn Quarter</u> | <u>Winter Quarter</u> | <u>Spring Quarter</u> |
|--------|--|---|--|
| YEAR 1 | BIO 191 CHE 130/131 WRD 103 LSP 110/111 Explore/Discover Chicago | BIO 192 CHE 132/133 WRD 104 LSP 112 Focal Point | BIO 193 CHE 134/135 Learning Domain Learning Domain |
| YEAR 2 | BIO 206 Statistics BIO 215 or 235 Computational Reasoning Learning Domain | BIO 250 Cell Bio Learning Domain LSP 200 Sem Multicultural Open Elective | BIO 260 Genetics BIO 308* Learning Domain Open Elective |
| YEAR 3 | BIO Elective** Learning Domain Open Elective Open Elective | BIO Elective** Learning Domain Experiential Learning Open Elective | BIO Elective** Learning Domain Open Elective Open Elective |
| YEAR 4 | Learning Domain Learning Domain Open Elective Open Elective | Learning Domain Open Elective Open Elective Open Elective | BIO 395 Senior Capstone Learning Domain Open Elective Open Elective |

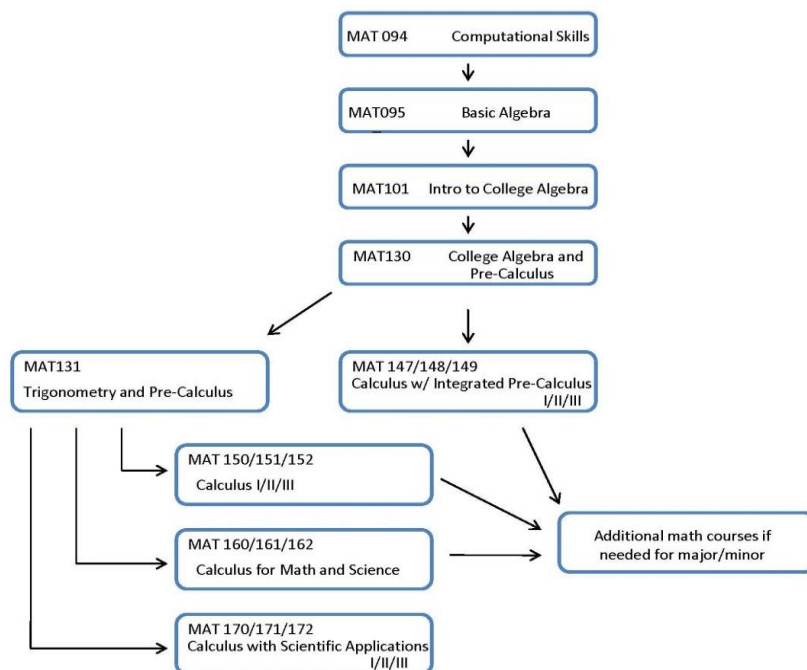
*Students may take either BIO 307, 308, or 309 to complete BIO Physiology requirement. 308 is listed in this plan simply because BIO 250 is the pre-req for all 3 of these options, so spring of 2nd year would be the soonest you can take a Phys class as long as BIO 250 is done by then. But you can instead take BIO 307 in autumn or 309 in the following winter, depending on your interests.

**Remember that 2 of your 3 upper level BIO electives must be at the 300-level. Use your DPR to see eligible options.

Math Placement for B.S.*

Below is a math path that is useful in determining your math placement. Some pre-requisite notes:

- **MAT 130** is the pre-requisite for General Biology I and General Chemistry I
- **MAT 131** is the pre-requisite for Calculus I and Physics I
- **MAT 147/148/149** – Calculus with integrated pre-calculus. MAT 131 is not needed before taking this sequence. MAT 147 is only offered in the fall quarter; MAT 148 is only offered in the winter quarter; MAT 149 is only offered in the spring quarter. Note: some graduate programs will not take this sequence as the calculus pre-requisite.
- Students only need to complete two calculus courses (i.e. MAT 150/151) to complete the math requirement for the biology major. If students choose to take MAT 147, they must complete 148 and 149.
- **MAT 150/151**– Standard calculus. MAT 150/151 are each offered every quarter
- The **MAT 160/170** sequences are offered infrequently.



***BA Students do not need Calculus**
(unless required for any post-grad plans)

Everything You Need to Know About Enrollment

The biggest enrollment mistake you can make, is waiting to enroll! Do not wait till enrollment opens to begin looking at classes or trying to meet with your advisor. Look at the classes as soon as Course Carts open, and put those you think you need in your course cart, and schedule a meeting right away with your advisor if you need to meet. Do this at least a week before your enrollment opens since advisors schedules always book up quickly and pretty far in advance during enrollment seasons. You should have the classes confirmed and in your course cart ready to enroll the minute your enrollment opens.

Registering for Classes: <https://offices.depaul.edu/depaul-central/regISTRATION/Pages/add-drop-swap.aspx>.

Waitlists are automatic within our system. If you are on the waitlist for a class, you will need to wait until the appropriate amount of people drop from the class to which then our system will automatically add you to the class from the waitlist. You must ensure there are no time conflicts, and that you're not already at the maximum credit hours allowed in a term, or else the waitlist process will skip you and enroll the next student in line, and that will continue to happen each time a seat opens until you resolve that conflict. (See below about using the **Swap Function** to avoid this problem!) There is little to nothing your advisor or the professor can do to get you into a class you are waitlisted for, especially lab based classes. This is due to space and safety issues.

Swap Function: If you are enrolled in a class that has a time conflict with a waitlisted course, or if you are already enrolled in the maximum amount of hours, the automatic waitlist process will skip over you until the conflict is resolved. Therefore, you are advised to use the "Swap" function any time you add yourself to a waitlist. First, enroll in the "backup" course. Then choose "Swap Classes" from the menu on the left within Manage Classes. You'll go through and find the class that you want to waitlist for, and will initiate a Swap between that and the "backup" course. Then, if a seat opens up and you are next on the waitlist, you will be dropped from the "backup" course and added to the waitlist. The Swap function can also be used any time you are dropping and adding classes – not just for wait listing. Please contact your academic advisor with any questions or for assistance with this.

Help Videos and Documents for enrollment, waitlist, swapping classes, and more, can be found at <https://offices.depaul.edu/depaul-central/student-resources/learning-center/Pages/default.aspx>.

Chemistry Enrollment Instructions: Please note that Chemistry lists their lectures and lab separately, but require they be taken together. They're what we call **co-requisites** for each other. This means you cannot enroll in one without the other. So for all Chemistry classes, you must put both the lecture and lab in your course cart first, so that you can then enroll at the exact same time from there. In this case, 120 and 131 are the lecture and lab you would enroll in (unless you retest and place into CHE 130.) Chemistry also has pre-requisites. The pre-requisites for CHE 120 and 130 are placement via the Chemistry placement exam. This means you must take that exam before you'll be allowed to register for CHE 120 or 130 and the corresponding 131 lab co-requisite. Then, each Chem lecture and lab is a pre-requisite for the next in the sequence. You need only have the pre-requisite enrolled/in-progress, to be eligible to enroll in the next Chemistry class for the following term. You do not have to wait until you finish the pre-requisite before you can enroll. Then, if by chance you do not pass that pre-req, you will need to drop the next course or you will be dropped from it when the university runs the pre-requisite check (aka PERC) just before the start of each term.

Transfer Students with Chem Credit: You will most likely need a requisite override the first time you enroll in a DePaul Chemistry course, if you transferred in a Chemistry pre-requisite. This is because most transfer credits come in as just 1 course, whereas DePaul's Chemistry lists lecture and lab separately, though they must be taken together. So while your Chem transfer credit is applied to your DPR, the system has a hard time recognizing it as counting for both the lecture and the lab pre-requisite. So this simply means that you'll need to contact your assigned academic advisor, providing the specific section or class numbers for the Chemistry lecture and lab you want, so that a requisite override can be entered in order for you to enroll. This will only be required for the first Chemistry class you as a transfer student take at DePaul. After you complete a Chem class here, the pre-requisites will correctly register in the system, and you'll be able to enroll in any additional Chem classes on your own (as long as you remember the correct way to enroll in them at the same time from your course cart, as instructed above.)

CHE 120 v. 130: CHE 120 is a slower paced lecture designed for students that do not have a solid Chem knowledge base right now. It spends more time on mastering concepts and problem-solving skills, which means it's a 5 credit hours class that meets about 2 more hours/week than do the other lectures which are 3 credit hour classes. CHE 130 goes at a regular pace and is for students that are assumed to have some knowledge of Chem, and have passed a high school or college Chem class in the past 2 years. So based on that, you should have an idea of which Chem sounds more appropriate for you, but can ultimately let the placement exam confirm for us. Chemistry labs will always be 1 credit. So if taking CHE 120 and 131, that will be 6 total credit hours, but all other Chem lectures and labs after that will be 4 total credit hours.

Enrolling in Classes with Pre-Requisites: You do not need to fully complete a pre-req before you can enroll in the next class. The system recognizes your pre-req as in progress and lets you enroll in the next class. So if you're getting a missing requisite error message and have the pre-req in progress, that means you are probably missing a co-requisite or different pre-req.

- **This info is important for Chem, and for any summer enrollment.** This is because students often mistake the "missing requisites" error message in Chem to mean pre-req, even though they're in the pre-req. The full message also mentions co-reqs, which for Chem are lecture and lab. So if you have the pre-req in progress, but are trying to enroll in either lecture or lab without the other, it is the co-requisite you're missing.
- **Taking pre-reqs over summer for autumn:** This is relevant for summer because many students try to enroll in autumn classes that might require pre-reqs they intend to take over summer. You must first enroll in the summer classes, which will then show as in progress, and can then enroll in autumn classes

Instructor, Department, or other Special Permissions: Whether you're trying to enroll in a full class, or a class for which you don't have the pre-requisite met or in-progress, or any other special permission, it can only come from the instructor of the course. You must email the instructor directly asking for this permission, and if they approve, either you or the instructor should then CC your assigned academic advisor to process the permission. I (Jaimie) will always enter the override so that you can enroll, which means it will still be your responsibility to enroll once that permission is entered.

Textbooks & I-Clickers

You can locate, buy and rent the textbooks you need through the DePaul Bookstore's Website or visit in person. You can also check at the DePaul library, or the library's Textbook I-sharing program, to see if books are available there to rent out, free of charge. <https://library.depaul.edu/Pages/default.aspx>

I-Clickers are needed for the General Biology sequence, as well as some of the upper level biology courses, so do not get rid of them!

2021-2022 Biology Course Offerings by Quarter

(**NOTE:** Only those courses offered consistently in specific quarters -- doesn't include less-frequently offered electives or allied field courses.)

| AUTUMN QUARTER | WINTER QUARTER | SPRING QUARTER |
|--|--|--|
| BIO 191 General Biology I | BIO 191 General Biology I | BIO 192 General Biology II |
| BIO 193 General Biology III | BIO 192 General Biology II | BIO 193 General Biology III |
| BIO 206 Biostatistics** | BIO 206 Biostatistics** | BIO 201 Human Anatomy |
| BIO 210 Microbiology | BIO 210 Microbiology | BIO 206 Biostatistics** |
| BIO 215 Ecology | BIO 220 Prin. of Biotechnology | BIO 210 Microbiology |
| BIO 235 Evolution | BIO 225 Physiology of Poverty | BIO 215 Ecology |
| BIO 250 Cell Biology | BIO 250 Cell Biology | BIO 250 Cell Biology |
| BIO 307 Animal Physiology | BIO 260 Genetics | BIO 260 Genetics |
| BIO 315/415 Topics in Ecology, offered in even years | BIO 306/406 Research Methods & Appl. Biostats. | BIO 308 Human Physiology |
| BIO 319/419 Topics in Behavioral Parasitology in odd years | BIO 309/409 Plant Physiology | BIO 335/435 Concepts in Evolution |
| BIO 339/439 Cellular Neurobiology | BIO 340/440 Behavioral Neuroscience | BIO 340/440 Behavioral Neuroscience |
| BIO 342/442 Cognitive Neuroscience | BIO 360/460 Molecular Biology | BIO 342/442 Cognitive Neuroscience |
| BIO 385/485 Mammalian Reproduction | BIO 390/490 Immunobiology (no lab) | BIO 349/449 Topics in Microbiology & Biotechnology |
| BIO 395 Capstone Seminar | BIO 380/480 Cancer Biology | BIO 352/452 Advanced Comparative Physiology |
| | BIO 395 Capstone Seminar | BIO 375/475 Pharmacology |
| *All course offerings are subject to change. Please see your advisor to confirm how these courses will apply to your degree. | | BIO 381/481 Topics in Cancer |
| **BIO 206 fulfills the statistics requirement, but is not applicable as a Biology elective for the BIO major or minor. | | BIO 395 Capstone Seminar |
| 400-level indicates the graduate level section of each course. | | |
| <i>This list is not comprehensive but for the purpose of longterm planning, simply shows those BIO courses that are offered consistently in specific quarters. There are many other courses that can also be applied to the degree that are not offered in a consistent pattern.</i> | | |

Biology Minors

To earn a minor in Biology, students must take:

- BIO 191, 192, and 193
- Three courses designed for Biology majors
- Courses that will **not** apply to the Biology Minor:
 - SI courses that are designed for non-science majors (e.g. BIO 115, BIO 126, BIO 155, BIO 162, etc.)
 - BIO 206 – Biostatistics, will not apply to the Biology minor. The selection of the three elective courses is up to the student and their academic advisor, based on their interests and career goals. Students are free to contact the Biology academic advisor, Jaimie Engle at jengle@depaul.edu on any questions or suggestions for courses they should take to fulfill the Biology minor requirements.



Required BS Biology Courses by Concentration (36 hours each)

(does not include core major requirements; only for BS)

| Integrative | Cell & Molecular | Ecology & Evolution | Medicine & Health* | Microbiology & Biotechnology | Neuroscience | Physiology |
|--|---|--|---|---|---|--|
| <u>Required Concentration Courses (12 hours):</u> | <u>Required Concentration Courses (12 hours):</u> | <u>Required Concentration Courses (8 hours):</u> | <u>Required Concentration Courses (4 hours):</u> | <u>Required Concentration Courses (16 hours):</u> | <u>Required Concentration Courses (16 hours):</u> | <u>Required Concentration Courses (8 hours):</u> |
| BIO 215 Ecology or BIO 235 Evolution | BIO 210 Microbiology | BIO 215 Ecology | BIO 250 Cell Biology | BIO 210 Microbiology | BIO 250 Cell Biology | BIO 250 Cell Biology |
| BIO 250 Cell Biology | BIO 250 Cell Biology | BIO 325 Evolution | | BIO 220 Prin. Of Biotechnology | BIO 339 Cellular Neurobiology | BIO 307 Animal Phys. or BIO 308 Human Phys. |
| BIO 307 Animal Phys. or BIO 308 Human Phys. | BIO 360 Molecular Biology | | | BIO 250 Cell Biology | BIO 307 Animal Phys. or BIO 308 Human Phys. | BIO 309 Plant Physiology |
| BIO 309 Plant Physiology | | | | BIO 349 Topics/Microbio. & Biotech. | BIO 340 Behavioral Neuroscience | |
| <u>Six Additional Major Level Courses (24 hours):</u> | <u>One Advanced Topics Course (4 hours):</u> | <u>Three Upper Level Courses From</u> | <u>Two Courses From Approved List (8 hours):</u> | <u>Two Course From Approved List (8 hours):</u> | <u>One Course From Approved List (4 hours):</u> | <u>Three Upper Level Courses From</u> |
| Any Six of approved Biology courses. | BIO 315 Topics in Ecology | <u>Approved List (12 hours). One Must Be A Lab.</u> | BIO 201 Human Anatomy* | <u>One Must Be A Lab.</u> | BIO 341 Topics in Neurobiology | <u>Approved List (12 hours). One Must Be A Lab.</u> |
| Two must have labs and two must be at least 300-level. | BIO 319 Topics in Behavioral Parasitology | BIO 270 Comparative Vert Anatomy | BIO 210 Microbiology | BIO 235 Evolution | BIO 342 Cognitive Neuroscience | BIO 201 Human Anatomy or BIO 270 |
| See note 1 for additional approved courses. | BIO 335 Concepts in Evolution | BIO 301 Animal Behavior | CHE 340/341 BioChem & Exp BioCh | BIO 320 Advanced Microbiology | BIO 360 Molecular Biology | Comparative Vertebrate Anatomy |
| | BIO 341 Topics in Neurobiology | BIO 304 Field Methods for Biologists | BIO 307 Animal Phys. or BIO 308 Human Phys.* | BIO 321 Molecular Methods/Eco/Evo | BIO 375 Intro to Pharmacology | BIO 307 Animal Phys. or BIO 308 Human Phys. |
| | BIO 345 Topics in Paleobiology | BIO 306 Research Methods & Applied Biostats | CHE 342/343 BioChem II | BIO 347 Topics/Med. Bacteriology | BIO 386 Intro to Endocrinology | BIO 309 Plant Physiology |
| | BIO 349 Topics in Microbiology & Biotech | BIO 315 Topics in Ecology | <u>Three Upper Level Courses From</u> | BIO 348 The Biology of Infection | <u>Four Upper Level Biology Courses (16 hours).</u> | BIO 312 Topics in Exercise Physiology |
| | BIO 347 Topics in Medical Bacteriology | BIO 318 Field Studies in Marine Biology | <u>Approved List (12 hours). One Must Be A Lab.</u> | BIO 360 Molecular Biology | <u>2/5 BIO Electives Must Be A Lab.</u> | BIO 339 Cellular Neurobiology |
| | BIO 361 Topics in Molecular Biology | BIO 319 Topics in Behavioral Parasitology | BIO 201 Human Anatomy | BIO 362 Bioinformatics/Bench Sci. | See note 1 for additional approved courses. | BIO 352 Advanced Comp. Physiology |
| | BIO 390 Special Topics (as appropriate) | BIO 321 Molec. Methods in Eco & Evo | BIO 210 Microbiology | BIO 370 Immunobiology | | BIO 360 Molecular Biology |
| | <u>Two Upper Level Electives From Approved</u> | BIO 325 Paleobiology | BIO 220 Prin. Of Biotechnology | BIO 375 Intro to Pharmacology | | BIO 385 Mammalian Reproduction |
| | <u>List (8 hours). One Must Be A Lab.</u> | BIO 332 Population Ecology | BIO 270 Compar. Vert. Anatomy | CHE 340/341 Biochemistry I | | BIO 386 Intro to Endocrinology |
| | BIO 309 Plant Physiology | BIO 335 Concepts in Evolution | BIO 307 Animal Phys. or BIO 308 Human Phys. | CHE 342/343 Biochemistry II | | CHE 340/341 Biochemistry I |
| | BIO 315 Topics in Ecology | BIO 345 Topics in Paelobiology | BIO 311 Histology | HLTH 320 Molecular Virology | | 4 Additional Majors-Level Biology Courses (16 hours) |
| | BIO 321 Molecular Methods in Eco & Evo | BIO 389 Research in Field Biology | BIO 330 Developmental Biology | BIO 390 Special Topics | | <u>One Must Be A Lab.</u> |
| | BIO 330 Developmental Biology | BIO 390 Special Topics | BIO 339 Cellular Biology | <u>Three Additional Major Level Courses (12 hours).</u> | | See note 1 for additional approved courses. |
| | BIO 335 Concepts in Evolution | <u>Four Additional Majors-Level Courses (16 hours.)</u> | BIO 340 Behavioral Neuroscience | Any three Approved Bio Major Level Courses. | | |
| | BIO 339 Cellular Neurobiology | <u>Two of the seven total electives must have a lab.</u> | BIO 341 Topics in Neurobiology | See note 1 for additional approved courses. | | |
| | BIO 341 Topics in Neurobiology | See note 1 for additional approved courses. | BIO 342 Cognitive Neuroscience | | | |
| | BIO 345 Topics in Paleobiology | | BIO 347 Topics/Med. Bacteriology | | | |
| | BIO 347 Topics in Medical Bacteriology | | BIO 348 The Biology Of Infection | | | |
| | BIO 348 The Biology of Infection | | BIO 349 Topics/Microbio. & Biotech. | | | |
| | BIO 355 Genetic Toxicology | | BIO 352 Advanced Comp. Physiol. | | | |
| | BIO 361 Topics in Molecular Biology | | BIO 360 Molecular Biology | | | |
| | BIO 362 Bioinformatics/Bench Sci. | | BIO 362 Bioinformatics/Bench Sci. | | | |
| | BIO 365 Principles of Toxicology | | BIO 370 Immunobiology | | | |
| | BIO 370 Immunobiology | | BIO 375 Intro to Pharmacology | | | |
| | BIO 375 Intro to Pharmacology | | BIO 380 Cancer Biology | | | |
| | BIO 380 Cancer Biology | | BIO 381 Topics in Cancer | | | |
| | BIO 381 Topics in Cancer | | BIO 385 Mammalian Reproduction | | | |
| | BIO 385/485 Mammalian Reproduction | | BIO 386 Intro to Endocrinology | | | |
| | BIO 386 Intro to Endocrinology | | CHE 340/341 Biochemistry I | | | |
| | CHE 340/341 Biochemistry I | | CHE 342/343 Biochemistry II | | | |
| | BIO 390 Special Topics | | BIO 390 Special Topics | | | |
| | <u>Three Additional Major Level Courses (12 hours):</u> | | <u>Three Additional Major Level Courses (12 hours):</u> | | | |
| | Any three approved Biology courses. See note 1 for additional approved courses. | | Any three approved Biology courses. See note 1 for additional approved courses. | | | |
| | One must be a lab course. | | One must be a lab course. | | | |
| | At least 2 of the 5 total biology electives must have a lab. | | See note 3 regarding the requirements for different health programs. | | | |

*Students may substitute HLTH 301 AND HLTH 302 for BIO 201 AND BIO 307 or BIO 201 AND BIO 308. Students who opt to take HLTH 301 AND HLTH 302 cannot receive credit for any of the following courses: BIO 201, BIO 307, and BIO 308. BIO 201 and 307 or BIO 308 do not need to be taken as a combination.

1. CHE 234 & 235, 340 & 341, 346, HLTH 301, 302, 320, and NEU 201 also fulfills this requirement.

2. Students can request permission from the department to have a BIO 390 class count for one of the requirements if appropriate.

3. Each professional program in health requires different courses from the list provided. Please consult with an academic advisor to help you select the ones that will support your applications. Requirements for different fields are found at <https://csh.depaul.edu/student-resources/advising-student-services/pre-health-advising/health-careers/Pages/default.aspx>.

4. Biology courses that fulfill the Scientific Inquiry Domain requirements, other than the General Biology sequence, do not generate credit toward the major or minor.

All BIO Courses, Pre-Requisites, and whether they have Labs. Major Courses Require C- or Better.

| 100 Level Courses | | Pre Requisites | | Notes |
|-------------------|-------------|---|--|--|
| Lab | BIO 191 | General Biology I for Science Majors | MAT 130 | General Biology courses can also count as SI |
| Lab | BIO 192 | General Biology II for Science Majors | BIO 191 | General Biology courses can also count as SI |
| Lab | BIO 193 | General Biology III for Science Majors | BIO 192 | General Biology courses can also count as SI |
| Lab | BIO 201 | Human Anatomy | Sophomore standing | |
| 200 Level Courses | | Pre Requisites | | Notes |
| | NEU 201 | Introduction to Neuroscience | BIO 191 | |
| | BIO 201 | Human Anatomy | Sophomore standing | |
| | BIO 202 | Human Physiology | Sophomore standing | Cannot receive credit for both 202 & 134 |
| | BIO 206 | Biostatistics | BIO 191/192/193 | Counts as statistics credit- will not apply as a Biology major or minor elective |
| Lab | BIO 209 | Plant Biology | BIO 191/192/193 | |
| Lab | BIO 210 | Microbiology | BIO 191/192/193 | |
| Lab | BIO 215 | Ecology | BIO 191/192/193 | |
| Lab | BIO 220 | Principles of Biotechnology | BIO 210 and BIO 250 | |
| | BIO 225 | Physiology of Poverty | BIO 193, and Junior standing | |
| | BIO 230 | Epidemiology | BIO 206 | |
| Lab | BIO 235 | Evolution | BIO 191/192/193 | |
| Lab | BIO 250 | Cell Biology | General BIO sequence and CHE 134 or 138 | |
| Lab | BIO 260 | Genetics | BIO 191/192/193 | |
| Lab | BIO 270 | Comparative Vertebrate Anatomy | BIO 191/192/193 | |
| | BIO 290 | Topics in Biology | Sophomore standing | Offered occasionally, 2 - 4 hours |
| 300 Level Courses | | Pre Requisites | | Notes |
| Lab | BIO 301 | Animal Behavior | Gen BIO Seq, BIO 206, and BIO 215 or BIO 235 | |
| Lab | BIO 304 | Field Methods for Biologists | Junior standing or above | |
| Lab | BIO 306 | Research Methods and Applied Biostatistics | BIO 206 | |
| Lab | BIO 307 | Animal Physiology | BIO 250 | Can't receive credit if already taken BIO 310 or 308 |
| Lab | BIO 308 | Human Physiology | BIO 250 | Can't receive credit if already taken BIO 310 or 307 |
| Lab | BIO 309 | Plant Physiology | BIO 250 | Cross-listed with BIO 409 |
| Lab | BIO 311 | Histology | BIO 250 | |
| | BIO 312 | Topics in Exercise Physiology | BIO 250 | Cross-listed with BIO 412 |
| | BIO 315 | Topics in Ecology | BIO 191/192/193 and BIO 215 | Cross-listed with BIO 415 |
| Lab | BIO 316 | Phycology | BIO 191/192/193 | Cross-listed with BIO 416 |
| Lab | BIO 317 | Aquatic Biology | BIO 191/192/193 and BIO 215 | Cross-listed with BIO 417 |
| Lab | BIO 318 | Field Studies in Marine and Estuarine Biology | BIO 191/192/193 and BIO 215 or 235 | Trip to South Carolina in Dec Session |
| | BIO 319 | Topics in Behavioral Parasitology | BIO 191/192/193 and BIO 215 or 235 | Cross-listed with BIO 419 |
| Lab | BIO 320 | Advanced Microbiology | BIO 210 and junior standing | Cross-listed with BIO 420 |
| Lab | HLTH 320 | Molecular Virology | BIO 210 or BIO 250 | |
| Lab | BIO 321 | Molecular Methods in Ecology and Evolution | BIO 215 and BIO 235 | Cross-listed with BIO 421 |
| Lab | BIO 325 | Paleobiology | BIO 191/192/193 and BIO 215 or 335 | |
| Lab | BIO 330 | Developmental Biology | BIO 250 and BIO 260 | Cross-listed with BIO 430 |
| | BIO 331 | Topics in Developmental Biology | BIO 250 and BIO 260 | Cross-listed with BIO 431 |
| | BIO 332 | Population Ecology | BIO 215 or ENV 250 | |
| | BIO 335 | Concepts in Evolution | BIO 235 or 215 and BIO 260 | Cross-listed with BIO 435 |
| | BIO 339 | Cellular Neurobiology | BIO 250 or PSY 377 or HLTH 301 | Cross-listed with BIO 439 |
| Lab | BIO 340 | Behavioral Neuroscience | NEU 201, BIO 339, BIO 310, or PSY 377 | |
| Lab | CHE 340/341 | Biochemistry I | CHE 234/235 or CHE 238/239 | |
| Lab | CHE 342/343 | Biochemistry II | CHE 340/341 | |
| | BIO 341 | Topics in Neurobiology | BIO 340 or BIO 339 or PSY 377 | Cross-listed with BIO 441 |
| | BIO 342 | Cognitive Neuroscience | NEU 201 or BIO 339, 340, or 341, or PSY 377 | |
| | BIO 345 | Topics in Paleobiology | Gen BIO sequence and BIO 215 or 235 | Cross-listed with BIO 445 |
| | CHE 346 | Principles of Biochemistry | CHE 232 or CHE 238 | |
| | BIO 347 | Topics in Medical Bacteriology | BIO 210 or 250 & Junior Standing | Cross-listed with BIO 447 |
| | BIO 348 | Biology of Infection | BIO 210 and 370 | Cross-listed with BIO 448 |
| | BIO 349 | Topics in Microbiology and Biotechnology | BIO 210 or BIO 220 | |
| | BIO 352 | Advanced Comparative Physiology | BIO 250 | Cross-listed with BIO 452 |
| Lab | BIO 355 | Genetic Toxicology | BIO 260 | Cross-listed with BIO 455 |
| Lab | BIO 360 | Molecular Biology | BIO 250 and BIO 260 | Cross-listed with BIO 460 |
| | BIO 361 | Topics in Molecular Biology | BIO 360 | Cross-listed with BIO 361 |
| | BIO 362 | Bioinformatics for Bench Scientists | Gen BIO sequence and Bio 260 | Cross-listed with BIO 462 |
| | BIO 365 | Principles of Toxicology | BIO 193 and CHE 234 or 238 | Cross-listed with BIO 465 |
| | BIO 369 | Intro to Stem Peer Mentoring | Instructor consent | |
| Lab | BIO 370 | Immunology | BIO 250 or 260 | Cross-listed with BIO 471 |
| | BIO 375 | Introduction to Pharmacology | BIO 250 & BIO 307 or 308* | Cross-listed with BIO 475 |
| | BIO 380 | Cancer Biology | BIO 250 and BIO 260 | Cross-listed with BIO 481 |
| | BIO 381 | Topics in Cancer Biology | BIO 250 | Cross-listed with BIO 481 |
| | BIO 385 | Mammalian Reproduction | BIO 250 & BIO 307 or 308* | Cross-listed with BIO 485 |
| | BIO 386 | Introduction to Endocrinology | BIO 250 & BIO 307 or 308* | Cross-listed with BIO 486 |
| | BIO 388 | Research Methods in Biology | Gen Bio Sequence, 1 BIO Elec** From List | Corequisite for BIO 389 |
| | BIO 389 | Research in Field Biology | Instructor consent | Corequisite for BIO 388 |
| | BIO 390 | Special Topics | Junior or senior standing | Offered occasionally |
| | BIO 395 | Biology Capstone Seminar | Senior standing | |
| | BIO 397 | Mentored Research Experience in Biology | BIO 397 course application | worked out through individual faculty |
| | BIO 399 | Independent Study | | Worked out through individual faculty |

*can substitute HLTH 301 AND 302 for either BIO 307 or 308. Please note must complete both HLTH 301 AND 302 -- just one will not suffice.

**BIO 388 Pre-Req: One from BIO 206, BIO 215, BIO 235, BIO 250, BIO 260, BIO 307, BIO 308, BIO 309, BIO 310.

Research

How to Get Started

Getting started with research as an undergrad can be overwhelming and intimidating to say the least. This will serve as your guide to navigating the initial stages of getting involved with a lab on campus!

Identify Research Interest

Before even beginning to look at potential labs, it's important to consider what research topics will align with your academic and future career goals. Begin to ask yourself questions like:

- What classes/topics most interest you?
- What kind of skills do you have? What skills are you hoping to gain from research?
- Are you planning on continuing this research in grad school?

Your faculty advisor can help guide you through some of these questions and especially help pinpoint what classes/topics you may be interested in early on.

Explore Lab Options

Once you have some direction with what type of research you want to get involved with you can begin looking into specific labs and faculty members. Check out DePaul's Faculty Bio Page to find out what professors align with your research interests. On this page you can find some biographical info, descriptions of their research, and even recent publications!

It again may be a good idea to talk to your academic advisor about this step as well, they may have helpful insight about the specific work faculty does, for example what type of lab work might be better for someone who plans to apply to medical school or who might be a better fit if you have more of an interest in math.

You can also reach out to TAs, other faculty members, or students involved in research to ask questions or learn more about professors or labs.

Reach Out

Now comes the hard part: reaching out! One of the best ways to get in contact with professors is simply by sending an email. Keep in mind that the professor can be very busy so be patient when awaiting email responses.

One tip that many undergrads involved in research recommend is to find out when a professor has office hours or free time and just stop in to introduce yourself!

When contacting a faculty member about research whether via email or in person introduce yourself and ask them if they can set aside some time to sit and talk with you about their lab. Come prepared with questions you may have about any part of the research process.

Advice from Current Students

"Sometimes profs can be hard to pin down over email, but don't give up! Send follow up emails if you don't hear back, emails get buried and many of them appreciate the reminder!"

"Make sure you talk with the professor and get to know them and their research to make sure it's a good fit for everyone before committing."

"Don't be afraid if you have zero experience or you haven't taken a ton of science classes yet, they're here to help you learn and they were once undergraduates with no experience too!"

Research Opportunities

Faculty within the Biological Sciences Department often have positions available for undergraduates seeking research experience. We encourage students to contact faculty and explore the opportunity for research here at DePaul:

- Visit our website and read through faculty profiles to see the current research projects of our faculty members: <https://csh.depaul.edu/academics/biological-sciences/Pages/faculty-staff.aspx>
- This link lists out some of the internal and external opportunities we have: <http://go.depaul.edu/cshstudentresearch>
- Handshake is our online hub for all things college to career - jobs, internships, career fairs, events, mentors and more. Goal in mind: to help connect students to their dream career: <https://depaul.joinhandshake.com/>
- If you land a research opportunity, be sure to check with your advisor to see how the research could apply to your experiential learning requirement. **See the Experiential Learning section earlier in this guide to learn about research courses for credit.**

Getting Involved

Student Groups

There are many science-related student groups available for students wishing to get involved in leadership opportunities on campus. Many of those can be found at <https://csh.depaul.edu/academics/biological-sciences/student-resources/Pages/student-orgs.aspx>. But please also visit the Student Involvement website to join and to learn more about all of the below student organizations: <http://studentaffairs.depaul.edu/involvement>.

A few examples are listed here:

- Pre-Dental Club: depaulpredental@gmail.com
- Animology Club (formerly known as Pre-Vet Club): depaulprevetclub@gmail.com
- DePaul Neuroscience Club: depaulneuroscience@gmail.com
- DeSACNAS: desacnas@gmail.com
- DePaul Ecology, Evolution, & Physiology (DEEP): deep.depaul@gmail.com
- Red Cross Club: depaulredcrossclub@gmail.com
- Global Brigades: depaulgbpresidents@gmail.com
- O-STEM: depaulostem@gmail.com
- DePaul Chapter of Doctors Without Borders: syeda.bajeel@gmail.com
- Biomedical Sciences Journal Club: jbodne7@gmail.com
- Doctors Without Borders: syeda.bajeel@gmail.com
- MEDLife: <https://bit.ly/DePaulMEDLife>
- DePaul Public Health Association club: Firyalmahak@gmail.com

...and many more!

Contact jungle@depaul.edu if any of this info is inaccurate and in need of updates, or if you want your student org added to this list!

Department Newsletter: The Niche

The Niche is the DePaul Department of Biological Sciences newsletter. We hope to present you with information about our future plans and programs, our faculty, students, staff, alumni, and all the activities that make our department such an exciting community to be a part of. We are anxious to share news with you and we hope you find our newsletter both useful and informative. You can find our newsletter here: <https://csh.depaul.edu/academics/biological-sciences/about/Pages/niche-newsletter.aspx>

Career Center

When is the best time to start using the Career Center? Right away! There's even a dedicated Health Care & Science Career Community! Start using their many resources early on to gain experiences, learn how to market yourself, and overall prepare for your post-grad endeavors:

<https://resources.depaul.edu/career-center/career-advising/communities/health-care-science/Pages/default.aspx>

Transferring Credits at DePaul University

Transfer Students

We are aware that many of our Biology students have transferred in credits from other colleges and universities. Many have transferred from majors other than Biology. Because the number and type of courses transferred varies considerably, **we strongly urge transfer students to see your staff academic advisor (Jaimie Engle, jengle@depaul.edu) as soon as possible.** We want to make sure you are on track to take the proper courses and to establish an appropriate timeline for graduating from the program.

Students transferring from another major, or from backgrounds with little or no science coursework, should realize it might take longer to complete the degree than expected due to the required sequencing of courses. In talking with your advisor, make sure you both understand and are comfortable with any outlined timeline for completion of the Biology program. Especially if transferring any of your required science or math sequences from a semester-system institution, keep in mind these do not match up perfectly with DePaul's quarter-system sequences. For example, if you transferred in Biology 121 from Harold Washington College, it would cover all of BIO 191 at DePaul and part of the content covered in BIO 192 at DePaul. But you would still have to take BIO 192 at DePaul before you could finish the sequence with BIO 193. You would have to take both BIO 121 and 122 at Harold Washington to cover BIO 191, 192, and 193 at DePaul.

Transferring Courses into DePaul

As a DePaul student, if you are considering taking a course outside of the university and transferring in the credits, you should be aware of the policies and guidelines regarding transfer credit. (<https://csh.depaul.edu/student-resources/advising-student-services/undergraduate-advising/Forms/Documents/SupplementalTransferCreditEditableForm80613.pdf>) Please be sure to read these policies carefully. **STUDENTS MUST FILL OUT THE TRANSFER CREDIT APPROVAL FORM PRIOR TO TAKING ANY COURSES AT AN OUTSIDE INSTITUTION.** The College of Science and Health will notify you if your request has been approved or denied.

The Transfer Course List tool is helpful in determining how transfer credit will be applied to a DePaul degree: <https://www.depaul.edu/admission-and-aid/types-of-admission/transfer-student/transferring-your-courses/Pages/course-lists.aspx>.

NOTE: Last 60 credits must be taken at DePaul University.

Be sure to see your advisor if you have questions about transferring credit into DePaul.

AP Credit from High School

Currently, students get academic credit for AP test scores as follows:

- Score of 3 = BIO 191 (an AP score of 3 is a weak score. Students should take BIO 191)
- Score of 4 = BIO 191 and 192
- Score of 5 = BIO 191, 192, and 193

Many professional school programs do not accept AP credit for science courses. Students who are considering applying to professional programs (e.g. medical, dental, pharmacy, optometry, etc.) should take BIO 191, 192, and 193 at DePaul. For a full list of accepted AP credit, visit this link: <https://www.depaul.edu/admission-and-aid/test-credit-and-placement/credit-given-by-exam/Pages/ap.aspx>. To clarify, DePaul does accept AP credit for eligible AP scores. Even if credit is not used to substitute for major coursework, the credit can still count toward graduation in the Open Electives requirement.

2021-22 Course Modalities

A course modality is the way in which a course will be taught by an instructor. For many years, the two main course modalities offered at DePaul were on-campus instruction and asynchronous online instruction. Due to the COVID-19 pandemic and the need to practice social distancing, DePaul has added additional course modalities to facilitate effective online learning. The 2021-22 academic school year will operate under a variety of course modalities, dependent on the course and instructor. Some courses will continue to be held on-campus, ensuring that they adhere to social distancing protocols.

For more information about course modalities, please visit <https://resources.depaul.edu/teaching-commons/teaching-guides/course-design/Pages/course-modalities.aspx>.

Modality Matrix

| Modality | Assigned Room on Campus | Requires Synchronous Meetings | Uses D2L | Number of Sections |
|----------------------------|-------------------------|--|---------------------|--|
| On-Campus | Yes | Yes | Strongly Encouraged | 1 |
| On-Campus Hybrid | Yes | Yes | Yes | 1 |
| Online Hybrid | No | Yes | Yes | 1 |
| Online Asynchronous | No | No | Yes | 1 |
| Online Synchronous | No | Yes | Strongly Encouraged | 1 |
| Flex (Bimodal) | Yes, Zoom-enabled | Yes | Strongly Encouraged | 1 (Students can float between on campus & Zoom) |
| Flex Plus Zoom | Yes, Zoom-enabled | Yes | Yes | 2 (1 Flex + 1 Zoom only) |
| On-Campus Plus Zoom | Yes, Zoom-enabled | Yes | Yes | 2 (1 on campus + 1 Zoom only) |
| HyFlex (Trimodal) | Yes, Zoom-enabled | Yes for the on-campus section. No for the asynch section. | Yes | 2 (1 Flex or on campus + 1 online asynchronous) |

You can view the modality of your classes in Campus Connect. Campus Connect > Manage Classes > View My Classes > Select the course you wish to view > Class Details > here you will find the section titled “Instruction Mode”, and the course modality will be listed beneath this.

Academic Support Resources

Supplemental Instruction, Tutoring, Office Hours, Academic Success Coaching, Counseling, and So. Much. More!

I (Jaimie) have created a “resource grid” wherein I’m collecting all DePaul student support resources I’m aware of, and indicating for which matters, which student groups, etc., they’re helpful. Please notify me if anything on this grid needs updated, or if you have any additions, as this is an ongoing project! **DePaul Student Resources Grid: [Click here!](#)**

Instructor Office Hours: This might be one of the most under-utilized and important resources! Your professors want you to come see them! We mean it! Students are encouraged to attend both their Instructors Office hours, and their Teaching Assistant’s office hours for assistance outside of class. This information should be in your course syllabus.

Supplemental Instruction (SI) lessons are a great way to review material learned in the classroom. Supplemental Instruction (SI) is a free program operating out of the Office for Teaching, Learning, and Assessment. Students who are enrolled in SI-supported courses are highly encouraged to attend peer-assisted review sessions led by SI Leaders. SI Leaders are students selected by the faculty to help review class material who successfully completed the course themselves. Sessions are typically held in the Richardson Library in Lincoln Park. For the SI Schedule, click here: <https://resources.depaul.edu/supplemental-instruction/session-schedule/Pages/default.aspx>

Tutoring by Subject: Visit the Student Success webpages to find Tutoring by Subject, and other support resources: <https://resources.depaul.edu/student-success/tutoring/Pages/default.aspx>.

The Academic Success Center offers various resources for student support, including personalized academic success coaching. Success coaches can help you identify current obstacles to your academic success, and strategies for overcoming those obstacles and improving in other areas. Students can set up a one-on-one meeting with a success coach by emailing ASC@depaul.edu. Please include your email and phone number and one of our staff members will contact you to set up a meeting time. We will meet with you weekly through Zoom with opportunities for communication via email between sessions. You may choose to meet only once or twice or continue throughout the quarter depending on your needs and desires.

Online Learning Support: With the University’s recent transition to mostly online education, Academic Success Center is particularly focused on helping students prepare to be successful in online learning. The following webpage has some strategies for being successful in online courses: <https://resources.depaul.edu/student-success/success-strategies/Pages/default.aspx>. Or, visit the Academic Success Center webpages for a more comprehensive look at the resources and services they offer: <https://education.depaul.edu/student-resources/academic-success-center/Pages/default.aspx>. You can also refer to the info about to schedule a meeting with a success coach to discuss online learning strategies in particular.

University Counseling Services: Your mental wellbeing is a critical part of your academic success. It is not uncommon for students to place their mental health on the backburner while trying to keep up with all the demands of school, work, and your personal life. But you owe it to yourself to take time to ensure your mental wellbeing.

University Counseling Services helps remove barriers to learning by providing accessible psychological and psychiatric assessment, short-term psychotherapy, medication management, consultation and crisis intervention, community referrals, workshops and psychoeducational programming to currently enrolled students.

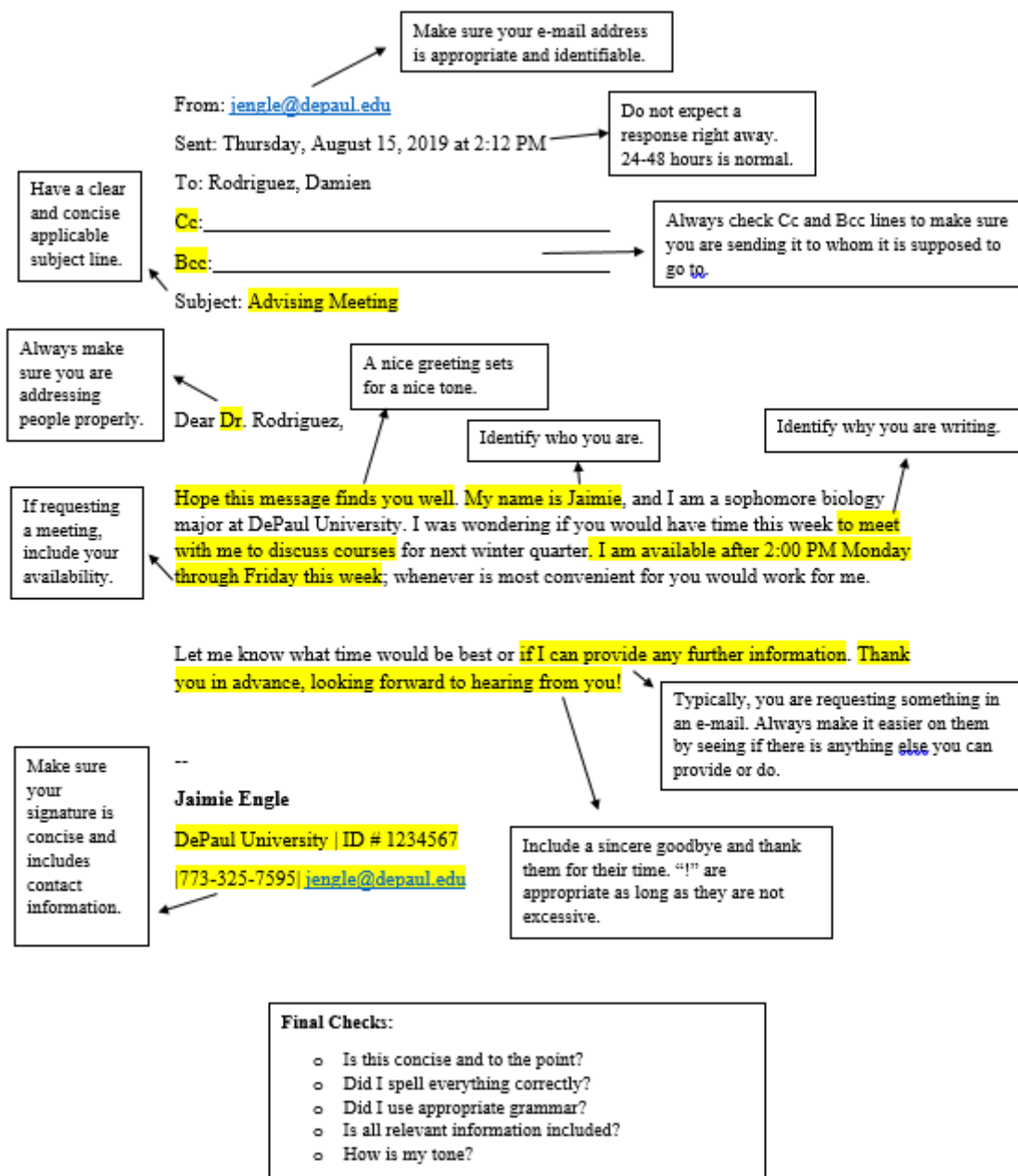
We are committed to a student centered, developmental approach, and assist students in defining and accomplishing personal and academic goals, thus maximizing their potential to benefit from the academic environment and experience. You can find info about University Counseling Services at <https://offices.depaul.edu/student-affairs/about/departments/Pages/ucs.aspx>, and can contact them using the info below.

Lincoln Park
2250 N. Sheffield
Student Center, Suite 350
Chicago, IL 60614
(773) 325-7779

Loop
25 E. Jackson Blvd
Lewis Center, Suite 1465
Chicago, IL 60604
(312) 362-6923

You should begin honing your professional written communication skills in college. Emails are a representation of you! Make a good impression with them, and also make the most of yours and others time, by including all pertinent info the first time. See below for tips!

Email Etiquette 101



NOTE: This page provides suggestions for professional email communication, but should not be confused as instructions for how to request an academic advising appointment within the Biological Sciences department. Instructions for scheduling/requesting a Biology Advising appointment can be found on page 3 of this guide.

THE SENIOR “TO DO” LIST FOR GRADUATION- 2021/2022



Congratulations on making it this far! The DePaul Commencement website will have all of the information you need to participate in the Commencement Ceremony. Keep in mind that you need to apply for degree conferral in order to receive your diploma. Visit the Commencement website here: <https://resources.depaul.edu/commencement/Pages/default.aspx>
If you want to graduate in a timely manner, follow these steps:

1. **Meet with your Staff Academic Advisor, for your mandatory degree conferral appointment** to make sure you are on track to graduate. You can find your advisor assignment in BlueStar, and can schedule an appointment with them through their listed contact information.
2. **All students must graduate with a minimum of 192 credit hours, at least a 2.0 cumulative GPA and have finished all the requirements for their degree.** <https://www.depaul.edu/university-catalog/degree-requirements/undergraduate/csh/biological-sciences-bs/Pages/default.aspx>
3. **Apply for Degree Conferral on Campus Connect.** Submitting this application lets the university know that you plan to finish your degree in a specific term. You cannot obtain a degree from DePaul without applying for degree conferral (it is a really quick process). Follow this path in Campus Connect:
“Main Menu” → “Self Service” → “Degree Process/Graduation” → “Apply for Graduation.”
Deadlines for applying for Degree Conferral:
Fall Quarter (October 1st), Winter Quarter (January 15th), Spring Quarter (February 1st), Summer Session (July 15th)
4. **Order your Cap and Gown in April.** Ordering your cap and gown serves as your RSVP to the Commencement ceremony in June. Without a cap and gown order, you cannot participate. You will need a cap and gown in order to walk across the stage during the commencement ceremony.
<https://resources.depaul.edu/commencement/preparation/Pages/cap-and-gown.aspx>
5. **Pick up your Cap and Gown in the Lincoln Park Student Center room 120 A/B. Date/time TBA (usually in June).** If you do not pick up your cap and gown (and tickets) during cap and gown pick-up. You will receive emails with information about cap and gown pick-up, but you should also check the Commencement website in the spring.
6. **Take out loans to finance school?** Schedule an appointment with an Advisor in our Financial Fitness Office to learn about loan consolidation and repayment plan options: <http://financialfitness.depaul.edu>.
7. **Need to make plans for after graduation?** Visit the Career Center and meet one-on-one with a career advisor: <https://resources.depaul.edu/career-center/Pages/default.aspx>

***For questions regarding resume building, writing a cover letter, and career opportunities, please make an appointment with a Career Center Advisor in Schmitt Academic Center room 192. The Career Center staff can also be reached by phone at (773) 325-7431 and by e-mail at career_center@depaul.edu. Lots of resources can also be found on the Career Center website: <https://resources.depaul.edu/career-center/Pages/default.aspx>.**

What does the Biology Staff Advisor do in appointments?

Assists with course scheduling and long-term planning

Addresses Academic probation and the needs of struggling students, emotional, and/or stressed students

Helps you stay on track towards graduation

Refers to other helpful DePaul Resources of here at DePaul

Addresses Transfer Credit concerns

Explains CSH Exceptions Process

Discusses how to change major/concentration/minor

Adding, Dropping, Swapping, Withdrawing



What does a Career Center Advisor do in appointments?

Helps students explore their passions, interests, skills, and values

Discusses possible career paths and exploring various career options

Provides resources and insight about how to gain experience and build skills

Provides resources and guidance on finding and applying to jobs, internships, and other opportunities

Reviews and discusses resumes and cover letters

Provides resources about graduate school

Provides resources about connecting and networking with professionals and DePaul alums



Types of Advising: What's the Difference?

**Biology Staff
Advisor**

**Career Center
Advisor**

**Faculty
Advisor**

**PRE-HEALTH
ADVISOR**



What does the Faculty Advisor do in appointments:

Provides mentorship

Discusses different fields within biology and how these relate to the student's interests

Provides upper level course suggestions

Encourages students to think of other possible career opportunities or different routes to get to where they want to go

Provides guidance on finding jobs, internships, and other opportunities in their field

Offers advice on pursuing graduate training—program selection and applications



WHAT DOES THE PRE-HEALTH ADVISOR DO IN APPOINTMENTS?

Outlines the academic requirements necessary for pre-health and pre-medicine programs

Helps develop a timeline for completing requirements

Explains additional graduate program expectations

Advises on opportunities for internships, volunteering, shadowing and student research

Provides information on application processes and standardized exams

Supports interacting with the Pre-health Advising Committee's (PAC)





BIOLOGY SEMINAR SERIES

Fridays at 2pm in McGowan S104



| | |
|-------------------------|---|
| September 24 | Biological Sciences Meet & Greet |
| October 15 | <i>Journeys:</i> Dr. Tim Sparkes, Biology |
| November 12 | TBA |
| January 14 or 21 | TBA |
| February 11 | Darwin Day (TBA) |
| March 11 | <i>Journeys:</i> Ramiah Jacks, UM/DePaul alum |
| April 22 | Earth Day: Dr. Christie Klimas, Env Science |
| May 13 | <i>Journeys:</i> Dr. Jesus Pando, Physics |
| June 3 | Biological Sciences Senior Symposium |

