

BIOLOGY BS AND MS DUAL DEGREE PROGRAM (B.S./M.S.)

The Department of Biological Sciences offers a 3+2 dual degree (BioBSMS) program leading to a Bachelor of Science in Biology and a Master of Science in Biology (B.S./M.S.). This is a five-year accelerated program, which offers an opportunity for students to study in both a liberal arts and a graduate level setting. BioBSMS dual degree students should consult with biology advisors and biology graduate advisors for BS/MS Dual Degree Programs for academic advising.

Admission Criteria

The dual degree BioBSMS program offers students an opportunity to begin the graduate phase of their graduate education in their senior year (see "Application Process" section below for further details). Consideration for admission to the MS program is open to applicants who successfully completed a high school college preparatory curriculum, including courses in the social sciences, biology, mathematics, physics, english, a foreign language, and chemistry. For consideration, students should have at minimum a 3.5 High School GPA and an SAT score of at least 1250 or ACT score of 25 and above. Students using the SHU test optional admission process must have a minimum high school GPA of 3.6 (on a 4.0 scale) for consideration. International students must submit Test of English as a Foreign Language (TOEFL) scores.

Transfer Policy

Students may apply to transfer into the undergraduate portion of the BioBSMS dual degree program no later than spring semester of their sophomore year. Applications that meet the undergraduate academic standards mentioned above will be evaluated on a case-by-case basis.

Academic Standards for Graduate Program Progression

Students must complete all of college core, University core and biology dual degree requirements in the first three years of their undergraduate curriculum with a cumulative and prerequisite GPA of 3.0 as described below:

Prerequisite Courses: Students are required to earn a grade of C or higher in all prerequisite courses listed above.

- Freshman Year: At the end of the freshman year, students must achieve cumulative and prerequisite GPAs of 3.0.
- Sophomore Year: At the end of the sophomore year, students must achieve cumulative and prerequisite GPAs of 3.0.
- Junior Year: At the end of the junior year, students must achieve and maintain cumulative and prerequisite GPAs of 3.0.

Failure to maintain the required cumulative and prerequisite GPAs will result in dismissal from the dual degree program. No exceptions will be made to any dual degree admission requirements. Students dismissed from the dual degree program will become biology majors automatically and are welcome to apply to the graduate programs as part of the general applicant pool. Requirements for application to the MS graduate program can be found in the Graduate Catalogue.

Application Process

Students who fulfill the criteria mentioned above and remain in good academic standing with the University are accepted for the graduate part of BioBSMS dual program. Also note that the Graduate Record Exam (GRE) is not required of these dual degree students. Students who have been found guilty of academic misconduct are subject to removal from the program per Seton Hall University's Academic Integrity Policy (<https://www.shu.edu/english/academic-integrity-policy.html>).

Application for Teaching Assistantship: All applicants are eligible to apply for a Teaching Assistantship.

Applications will be reviewed by the Department Chair and DGS. Note that an application is not equal to a guaranteed TAship. Students should submit three letters of recommendation from a faculty member who taught a prerequisite course within the dual degree to be considered for Teaching Assistantships.

Students should secure a faculty mentor by at least fall semester of their third year with earlier being preferable to maximize time spent developing the thesis project. It is up to each student to seek out and interview for acceptance into a research lab/track or library thesis lab/track.

Progression into the Graduate Phase

Students will transition into the graduate phase of the BioBSMS dual degree program after their junior year, when students complete all requirements, including the GPA requirements and all other course requirements within the Department of Biological Sciences, college core, and University core. Any offers of admission made prior to completion of the junior year are contingent upon the successful completion of all requirements for admission by the end of junior year. Students who are not eligible for admission into the graduate phase of the BioBSMS dual degree program may apply for the graduate program directly via the general applicant pool. Requirements for application to the graduate program can be found in the Graduate Catalogue.

The entire five-year curriculum for students in the dual degree program may be seen in the degree tracker. Additional information related to the graduate phase of the program, including course descriptions, can be found in the Graduate Catalogue. Dual degree students in their fourth/senior year (first year of graduate study) are subject to the graduate grading policies of the Department of Biological Sciences. Successful completion of each graduate course in the fourth/senior year with a cumulative GPA of 3.0 or higher. Any grade below this standard will result in academic probation. Students on academic probation will be given the following options:

1. Wait for the course to be offered again and repeat the course to earn a B or higher, while still maintaining the required cumulative GPA of 3.0 or higher.
2. Close out the undergraduate degree before entering the graduate program.

Prerequisite Undergraduate Coursework

To enter graduate study with a solid foundation, the prerequisite courses listed below must be completed no later than the end of spring semester of the junior year. These prerequisite courses must be completed with an overall GPA of 3.0 in the prerequisites:

| Code | Title | Hours |
|---|-------------------------------|-------|
| Prerequisite Undergraduate Coursework ¹ | | |
| BIOL 1211 | General Biology- Organisms | 3 |
| BIOL 1212 | General Biology-Organisms Lab | 1 |

| | | |
|--------------------|--------------------------|-----------|
| BIOL 1222 | General Biology-Cell | 3 |
| BIOL 1223 | General Biology-Cell Lab | 1 |
| CHEM 1123 | General Chemistry I | 3 |
| CHEM 1125 | General Chemistry Lab I | 1 |
| CHEM 1124 | General Chemistry II | 3 |
| CHEM 1126 | General Chemistry II Lab | 1 |
| MATH 1401 | Calculus I ² | 4 |
| BIOL 2221 | Genetics | 3 |
| BIOL 2222 | Genetics Lab | 1 |
| BIOL 2238 | Cell Biology | 3 |
| BIOL 2239 | Cell Biology Lab | 1 |
| Total Hours | | 28 |

¹ Advanced Placement (AP), International Baccalaureate (IB), and College Level Examination Program (CLEP) credits cannot substitute for any prerequisite course requirements for admission. Prerequisite courses taken at another institution prior to matriculation at Seton Hall University may be accepted, and those transfer grades will be calculated in the prerequisite GPA.

² Students with AP Calculus credit must either take MATH 1401 Calculus I here and forfeit their AP credit, or take MATH 2111 Statistics for Science Majors to satisfy this prerequisite requirement.

B.S. Degree Requirements

| Code | Title | Hours |
|---|--|-------|
| B.S. Degree Requirements | | |
| <i>The following courses must be completed:</i> | | |
| BIOL 1211 & BIOL 1212 | General Biology- Organisms and General Biology-Organisms Lab | 4 |
| BIOL 1222 & BIOL 1223 | General Biology-Cell and General Biology-Cell Lab | 4 |
| BIOL 2221 & BIOL 2222 | Genetics and Genetics Lab | 4 |
| BIOL 2238 & BIOL 2239 | Cell Biology and Cell Biology Lab | 4 |
| BIOL 4199 | Senior Biology Seminar | 3 |
| Biology Electives ¹ | | 14 |
| CHEM 1123 & CHEM 1124 | General Chemistry I and General Chemistry II | 6 |
| CHEM 1125 & CHEM 1126 | General Chemistry Lab I and General Chemistry II Lab | 2 |
| CHEM 2321 & CHEM 2322 | Organic Chemistry I and Organic Chemistry II | 6 |
| CHEM 2315 & CHEM 2316 | Organic Chemistry I-Lab and Organic Chemistry II-Lab | 2 |
| MATH 1401 | Calculus I | 4 |
| MATH 2111 | Statistics for Science Majors | 4 |
| PHYS 1701/1702 | General Physics I | 3 |
| PHYS 1811 & PHYS 1812 | Physics Laboratory I and Physics Laboratory II | 2 |
| BIOL 3233/6233 | Biochemistry of Metabolism | 3 |
| BIOL 3321/6326 | Vertebrate Physiology | 4 |
| BIOL 3241/6242 | Introduction to Immunology | 4 |

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|--------------------|--------------------|-----------|
| BIOL 3324/6431 | Microbial Genetics | 3 |
| Total Hours | | 76 |

A Model 5-Year Plan for the B.S.M.S. in Biology

| Course | Title | Hours |
|-------------------------------|--------------------------------|--------------|
| First Year | | |
| First Semester | | |
| BIOL 1211 | General Biology- Organisms | 3 |
| BIOL 1212 | General Biology-Organisms Lab | 1 |
| CHEM 1123 | General Chemistry I | 3 |
| CHEM 1125 | General Chemistry Lab I | 1 |
| CORE 1101 | Journey of Transformation | 3 |
| CORE 1001 | University Life | 1 |
| MATH 1401 | Calculus I | 4 |
| Hours | | 16 |
| Second Semester | | |
| BIOL 1222 | General Biology-Cell | 3 |
| BIOL 1223 | General Biology-Cell Lab | 1 |
| CHEM 1124 | General Chemistry II | 3 |
| CHEM 1126 | General Chemistry II Lab | 1 |
| MATH 2111 | Statistics for Science Majors | 4 |
| ENGL 1201 | Core English I | 3 |
| Diversity Course | | 3 |
| Hours | | 18 |
| Second Year | | |
| First Semester | | |
| BIOL 2221 | Genetics | 3 |
| BIOL 2222 | Genetics Lab | 1 |
| CHEM 2321 | Organic Chemistry I | 3 |
| CHEM 2315 | Organic Chemistry I-Lab | 1 |
| PSYC 1101 | Introduction to Psychology | 3 |
| ENGL 1202 | Core English II | 3 |
| A&S Core ¹ | | 3 |
| Hours | | 17 |
| Second Semester | | |
| BIOL 2238 | Cell Biology | 3 |
| BIOL 2239 | Cell Biology Lab | 1 |
| CHEM 2322 | Organic Chemistry II | 3 |
| CHEM 2316 | Organic Chemistry II-Lab | 1 |
| CORE 2101 | Christianity and Cult in Dial. | 3 |
| A&S Core ¹ | | 3 |
| Hours | | 14 |
| Third Year | | |
| First Semester | | |
| BIOL 4199 | Senior Biology Seminar | 3 |
| Biology Electives | | 3-4 |
| PHYS 1701 | General Physics I | 3 |
| PHYS 1811 | Physics Laboratory I | 1 |
| A&S Core ¹ | | 6 |
| Hours | | 16-17 |
| Second Semester | | |
| Biology Electives | | 3-4 |
| PHYS 1702 | General Physics II | 3 |
| PHYS 1812 | Physics Laboratory II | 1 |
| CORE 3XXX: Engaging the World | | 3 |
| A&S Core ¹ | | 6 |
| Hours | | 16-17 |

Fourth Year**First Semester**

| | |
|--------------------------------------|-----|
| Biology Electives | 3-4 |
| Biology Electives (Graduate Courses) | 3 |
| BIOL 6113 Biostatistics | 3 |
| A&S Core or Elective | 3 |
| A&S Core or Elective | 3 |

| | |
|--------------|--------------|
| Hours | 15-16 |
|--------------|--------------|

Second Semester

| | |
|--------------------------------------|---|
| Biology Electives (Graduate Courses) | 3 |
| Biology Graduate Course | 3 |
| A&S Core or UG Elective | 3 |
| A&S Core or UG Elective | 3 |

Note: Students must ensure all arts and science general elective credits are completed by the end of the 4th year in the program.

The Bachelor of Science degree is awarded upon successful completion of the fourth year of study.

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| Hours | 12 |
|--------------|-----------|

Fifth Year**First Semester**

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| BIOL 8201 Biology Sem for MS Students | 1 |
| Biology Graduate Course | 3-4 |
| Biology Graduate Course | 3-4 |
| BIOL 8601 Research for MS Thesis I | 3 |

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|--------------|--------------|
| Hours | 10-12 |
|--------------|--------------|

Second Semester

| | |
|--|-----|
| BIOL 8202 Biol Seminar for MS Student | 1 |
| Biology Graduate Course | 3-4 |
| Biology Graduate Course | 3-4 |
| BIOL 8602 Res for Master's Thesis II | 3 |

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|--------------|--------------|
| Hours | 10-12 |
|--------------|--------------|

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|--------------------|----------------|
| Total Hours | 144-151 |
|--------------------|----------------|

¹ Consult the College of Arts and Sciences Core Curriculum (<http://catalogue.shu.edu/undergraduate/college-arts-sciences/core-curriculum/#overviewtext>) for information regarding these courses