The Bachelor of Arts (B.A.) in Natural Sciences provides students more breadth than traditional science programs. Many exciting areas of scientific inquiry, such as the neurosciences, environmental sciences, and biophysical sciences, require general science backgrounds that encompass multiple science disciplines. The Bachelor of Arts degree helps students to explore both domestic and international culture through the foreign language and upper level liberal arts course requirements.

Students planning graduate study or technical careers in one of these interdisciplinary areas, as well as students preparing for careers in health sciences, legal professions, science education, science-related business, or social service might be well served by the B.A. in Natural Sciences. Students in this program can apply to our Professional Science Master’s (PSM) programs in the following areas: Forensic Chemistry and Scientific Writing. Students interested in these PSM programs can apply for admission to the 4+1 accelerated option for completion of the degree. PSM programs provide specific curricula and training for workforce entry or re-entry.

This program of study can prepare students for graduate study in a traditional science discipline and many Natural Sciences graduates have found employment in technical fields.

Dr. Susan Varnum, Program Director
Professor of Chemistry
Associate Dean for Science Education
College of Science and Technology
629 Gladfelter Hall
215-204-4073
susan.varnum@temple.edu

Bachelor of Arts

Summary of Requirements for the Degree

1. University Requirements (123 total s.h.)
   • MATH 0701 (4 s.h.) and/or ENG 0701 (4 s.h.), if required by placement testing.
   • All Temple students must take a minimum of two writing-intensive courses at Temple as part of their major. For Natural Sciences majors, the following courses will satisfy the writing-intensive requirement: SCTC 2396 and SCTC 4396.
   • Students must complete the General Education (GenEd) requirements.
     • See the General Education (http://bulletin.temple.edu/undergraduate/general-education) section of the Undergraduate Bulletin for the GenEd curriculum.
     • Students who complete CST majors typically receive a waiver for 2 Science & Technology (GS) and 1 Quantitative Literacy (GQ) GenEd courses.
     • Students must satisfy general Temple University residency requirements (http://bulletin.temple.edu/undergraduate/academic-policies/academic-residency-requirements).

2. College Requirements
   • 90 credits within the College of Science & Technology (CST) or the College of Liberal Arts (CLA).
   • 45 Upper-Level (2000+) credits within the College of Science & Technology (CST) or the College of Liberal Arts (CLA).
   • Two (2) Upper-Level (2000+) Liberal Art courses.
   • Second (2nd) Level of a Foreign Language (1002).

3. Major Requirements for Bachelor of Arts (60-69 s.h.)
   At least 7 courses required for the major must be completed at Temple. At least 2 courses in the chosen concentration must be completed at Temple.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>BIOL 1011</td>
<td>General Biology I (F)</td>
<td>4</td>
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<tr>
<td>BIOL 1111</td>
<td>Introduction to Organismal Biology</td>
<td></td>
</tr>
<tr>
<td>BIOL 1911</td>
<td>Honors Introduction to Organismal Biology (S)</td>
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</tr>
<tr>
<td>BIOL 1012</td>
<td>General Biology II (S)</td>
<td></td>
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<tr>
<td>BIOL 2112</td>
<td>Introduction to Cellular and Molecular Biology</td>
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<tr>
<td>Course</td>
<td>Description</td>
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</tr>
<tr>
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<td>Honors Introduction to Cellular and Molecular Biology (F)</td>
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**Chemistry**

Select one of the following:

- CHEM 1031 & CHEM 1033: General Chemistry I and General Chemistry Laboratory I
- CHEM 1951 & CHEM 1953: Honors General Chemical Science I and Honors Chemical Science Laboratory I (F)

Select one of the following:

- CHEM 1032 & CHEM 1034: General Chemistry II and General Chemistry Laboratory II
- CHEM 1952 & CHEM 1954: Honors General Chemical Science II and Honors Chemical Science Laboratory II (S)

**College of Science & Technology**

Select one of the following: 1

- SCTC 1501: STEM Challenge: The World Around Us
- SCTC 1502: STEM Challenge: The World Within
- SCTC 2396: Writing for Science and Technology
- SCTC 4396: Paradigms of Scientific Knowledge: Knowledge Discovery from Scientific Data

**Computer Programming/Physics**

Select one of the following:

- CIS 1051: Introduction to Problem Solving and Programming in Python
- CIS 1052: Introduction to Web Technology and Programming
- CIS 1053: Programming in Matlab
- PHYS 1004: Introduction to Astronomy (F)

**Earth & Environmental Science**

EES 2001: Physical Geology

**Mathematics**

Select one of the following:

- MATH 1031: Differential and Integral Calculus
- MATH 1041 & MATH 1044: Calculus I and Introduction to Probability and Statistics for the Life Sciences
- MATH 1041 & MATH 1042: Calculus I and Calculus II
- MATH 1941 & MATH 1942: Honors Calculus I and Honors Calculus II

**Philosophy/History**

Select one of the following:

- PHIL 2196: Perspectives on Science and Mathematics (WI)
- SCTC 3001: History of Science

**Physics**

Select one of the following:

- PHYS 1021: Introduction to General Physics I
- PHYS 1061: Elementary Classical Physics I
- PHYS 1961: Honors Elementary Classical Physics I (F)
- PHYS 2021: General Physics I
- PHYS 2921: Honors General Physics I (F)

Select one of the following:

- PHYS 1022: Introduction to General Physics II
- PHYS 1062: Elementary Classical Physics II
- PHYS 1962: Honors Elementary Classical Physics II (S)
- PHYS 2022: General Physics II
- PHYS 2922: Honors General Physics II (S)

**Science Electives**
Four Upper-Level (2000+) Science Electives \(^2\)  
Total Credit Hours  

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<tr>
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<td>(F) - Fall only course</td>
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<tr>
<td></td>
<td>(S) - Spring only course</td>
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</tbody>
</table>

1. It is recommended that SCTC 1501 or SCTC 1502 be completed before SCTC 4396.
2. The four science electives must be taken from the same department. The departments from which you can choose electives are: Biology, Chemistry, Earth & Environmental Science or Physics. In the circumstance where a laboratory course is the complement of a lecture course, both must be completed to fulfill the requirement for ONE science elective.

**Note:** A grade of C or higher in CHEM 1031 and CHEM 1032 is required to take BIOL 1111 and BIOL 2112. A grade of C or higher in BIOL 1111 and BIOL 2112 is required to take upper-level Biology courses, and a C- or higher is required unless otherwise specified in all other courses for the major, including course prerequisites.

**Calculation of Major GPA**

Courses listed under the major requirements for the degree will be included in the calculation of the major GPA. Courses that could not apply toward the major as an elective or required course would not be counted in the calculation of the major GPA. This would include MATH 1022, for example.

**Distinction in Major**

To graduate with a Distinction in Natural Sciences a student is required to achieve a 3.33 GPA or higher in all of the content area courses in the major.

**Suggested Academic Plan**

**Bachelor of Arts in Natural Sciences**

**Requirements for New Students starting in the 2018-2019 Academic Year**

**Year 1**

**Fall**

Select one of the following: \(^1\)

- SCTC 1501  STEM Challenge: The World Around Us
- SCTC 1502  STEM Challenge: The World Within

Select one of the following:

- CHEM 1031  General Chemistry I
- CHEM 1033  
- CHEM 1951  Honors General Chemical Science I (F)
- CHEM 1953  

Select one of the following:

- MATH 1031  Differential and Integral Calculus
- MATH 1041  Calculus I
- MATH 1941  Honors Calculus I (F)

General Education/Elective Credits  

| Term Credit Hours | 3 |

**Spring**

Select one of the following:

- CHEM 1032  General Chemistry II
- CHEM 1034  
- CHEM 1952  Honors General Chemical Science II (S)
- CHEM 1954  

Select one of the following: \(^2\)

- MATH 1044  Introduction to Probability and Statistics for the Life Sciences
- MATH 1042  Calculus II
- MATH 1942  Honors Calculus II
### Year 2

**Fall**

Select one of the following:
- **BIOL 1011** General Biology I (F)  
- **BIOL 1111** Introduction to Organismal Biology  
- **BIOL 1911** Honors Introduction to Organismal Biology (S)  
- **EES 2001** Physical Geology  4

**General Education/Elective Credits** 7

**Term Credit Hours** 15

**Spring**

Select one of the following:
- **BIOL 1012** General Biology II (S)  
- **BIOL 2112** Introduction to Cellular and Molecular Biology  
- **BIOL 2912** Honors Introduction to Cellular and Molecular Biology (F)  

**Science Elective (2000+)\(^3\)** 3-4

**General Education/Elective Credits** 9-8

**Term Credit Hours** 15

### Year 3

**Fall**

Select one of the following:
- **PHYS 1021** Introduction to General Physics I  
- **PHYS 1061** Elementary Classical Physics I  
- **PHYS 1961** Honors Elementary Classical Physics I (F)  
- **PHYS 2021** General Physics I  
- **PHYS 2921** Honors General Physics I (F)  

Select one of the following:
- **PHIL 2196** Perspectives on Science and Mathematics [WI]  
- **SCTC 3001** History of Science  

**Science Elective (2000+)\(^3\)** 3-4

**General Education/Elective Credits** 5-4

**Term Credit Hours** 15

**Spring**

Select one of the following:
- **PHYS 1022** Introduction to General Physics II  
- **PHYS 1062** Elementary Classical Physics II  
- **PHYS 1962** Honors Elementary Classical Physics II (S)  
- **PHYS 2022** General Physics II  
- **PHYS 2922** Honors General Physics II (S)  
- **SCTC 2396** Writing for Science and Technology [WI]  

**General Education/Elective Credits** 8

**Term Credit Hours** 15

### Year 4

**Fall**

**SCTC 4396** Paradigms of Scientific Knowledge: Knowledge Discovery from Scientific Data [WI] 3

Select one of the following:
- **CIS 1051** Introduction to Problem Solving and Programming in Python  
- **CIS 1052** Introduction to Web Technology and Programming  
- **CIS 1053** Programming in Matlab  
- **PHYS 1004** Introduction to Astronomy (F)  

**Science Elective (2000+)\(^3\)** 3-4
It is recommended that SCTC 1501 or SCTC 1502 be completed before SCTC 4396.
These courses are not required if MATH 1031 is completed.
The four science electives must be taken from the same department. The departments from which you can choose electives are: Biology, Chemistry, Earth & Environmental Science or Physics. In the circumstance where a laboratory course is the complement of a lecture course, both must be completed to fulfill the requirement for ONE science elective.

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