# A suggested four-year program:

<table>
<thead>
<tr>
<th>Freshman</th>
<th>Fall Semester Classes</th>
<th>Units</th>
<th>Spring Semester Classes</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>SSI 1</td>
<td></td>
<td>1</td>
<td>SSI 2</td>
<td>1</td>
</tr>
<tr>
<td>BIOL 111/lab (NS core)</td>
<td></td>
<td>1</td>
<td>BIOL elective 1³ or Elective</td>
<td>1</td>
</tr>
<tr>
<td>CHEM 110/lab or CHEM 115/lab¹</td>
<td></td>
<td>1</td>
<td>CHEM 120/lab or CHEM 230/lab¹</td>
<td>1</td>
</tr>
<tr>
<td>FL (if needed) or MATH 180 or 181² (MA core)</td>
<td></td>
<td>1</td>
<td>FL (if needed) or MATH 181² or Elective</td>
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<tr>
<td>Sophomore</td>
<td></td>
<td></td>
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<tr>
<td>BIOL 212, 213, or BIOL elective 1³</td>
<td></td>
<td>1</td>
<td>BIOL 212, 213, or BIOL elective 1³</td>
<td>1</td>
</tr>
<tr>
<td>CHEM 250/lab</td>
<td></td>
<td>1</td>
<td>CHEM 251/lab</td>
<td>1</td>
</tr>
<tr>
<td>Approaches core</td>
<td></td>
<td>1</td>
<td>Elective or MATH 181²</td>
<td>1</td>
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<tr>
<td>Elective or MATH 180 or 181² (MA core)</td>
<td></td>
<td>1</td>
<td>Analyt. Sci. elective 1⁴ (BIOL 231 recommended) or Elective</td>
<td>0.5 - 1</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>CHEM 231 (if needed)⁴</td>
<td>0.5</td>
</tr>
<tr>
<td>Junior</td>
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<td></td>
</tr>
<tr>
<td>BIOL 212, 213, BIOL elective 1³ or Elective</td>
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<td>1</td>
<td>BIOL elective 2 (300+)³</td>
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<tr>
<td>CHEM 460/lab¹</td>
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<td>CHEM 461/lab</td>
<td>1</td>
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<tr>
<td>Approaches core</td>
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<tr>
<td>Elective</td>
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<td>Elective</td>
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<tr>
<td>Senior</td>
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<tr>
<td>Analyt. Sci. elective 1⁴ or Elective</td>
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<td>BIOL 404 or Analyt. Sci. elective 2⁴</td>
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<tr>
<td>BIOL 404 or Analyt. Sci. elective 2⁴</td>
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<td>1</td>
<td>CN core⁵ or Elective</td>
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<tr>
<td>CN core⁵ or Elective</td>
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<td>1</td>
<td>Elective</td>
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<tr>
<td>Elective</td>
<td></td>
<td>1</td>
<td>Elective</td>
<td>1</td>
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</table>

**NOTES:**

1) Chemistry should be taken in the first year. First-year Chemistry requirements: CHEM 110 and 120 or CHEM 115 and 230.
2) Math may be delayed for a year or two. Math 260 is STRONGLY ENCOURAGED AND may substitute for MATH 181. MATH 180, or its equivalent, is prerequisite for MATH 181.
3) Two additional units in Biology are required, one of which must be at the 300 or 400 level (excluding BIOL 398) and which can include one research credit (BIOL 390, 490, or 491). Students with an interest in evolutionary, environmental, or ecological applications should strongly consider BIOL 112 or 360 as their electives. BIOL 112 may be taken during the freshman year and is strongly encouraged. Students may not use BIOL 361 to satisfy this requirement.
4) Two units of analytical science from the following: BIOL 231; CHEM 231; PHYS 111/112 or PHYS 121/122; MATH 150+; CSCI 141+.
5) Students who satisfy the first-year Chemistry requirement with CHEM 110 and 120 must also complete CHEM 231 prior to enrolling in CHEM 460.
6) Of the three units of upper division coursework required outside the first major, the Connections course will count for one unless it is used to meet a major requirement.
## THE UNIVERSITY OF PUGET SOUND
### COURSE CHECKLIST
### BIOLOGY: MOLECULAR AND CELLULAR

### UNIVERSITY CORE

<table>
<thead>
<tr>
<th>UNIVERSITY CORE</th>
<th>CRS</th>
<th>TERM</th>
<th>GRADE</th>
</tr>
</thead>
<tbody>
<tr>
<td>SSI 1</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>SSI 2</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>AR</td>
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<tr>
<td>HM</td>
<td></td>
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<tr>
<td>MA (MATH 180, 181, 260)****</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>NS (BIOL 111, 112, CHEM 110)*</td>
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<tr>
<td>SL</td>
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<td>CN</td>
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### MAJOR REQUIREMENTS

<table>
<thead>
<tr>
<th>COURSE</th>
<th>UNITS</th>
<th>TERM</th>
<th>GRADE</th>
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</thead>
<tbody>
<tr>
<td>BIOL 111*</td>
<td></td>
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<tr>
<td>BIOL 212</td>
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<td>BIOL 213</td>
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<tr>
<td>BIOL 404</td>
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**Two additional Biology electives: **

1. Any level
2. 300+

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<thead>
<tr>
<th>COURSE</th>
<th>UNITS</th>
<th>TERM</th>
<th>GRADE</th>
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</thead>
<tbody>
<tr>
<td>CHEM 110*** or 115</td>
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<tr>
<td>CHEM 120*** or 230</td>
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<table>
<thead>
<tr>
<th>COURSE</th>
<th>UNITS</th>
<th>TERM</th>
<th>GRADE</th>
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</thead>
<tbody>
<tr>
<td>CHEM 250</td>
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<tr>
<td>CHEM 251</td>
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<tr>
<td>CHEM 460</td>
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<tr>
<td>CHEM 461</td>
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<tr>
<td>MATH 180****</td>
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<tr>
<td>MATH 181 or 260****</td>
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### KEY

SSI1= Seminar in Scholarly Inquiry1  MA= Mathematical Approaches
SSI2= Seminar in Scholarly Inquiry2  NS= Natural Scientific Approaches
AR= Artistic Approaches  SL= Social Scientific Approaches
HM= Humanistic Approaches  CN= Connections
FL= Foreign Language

### Foreign Language Requirement (circle one)

1) Two semesters at 101/102 level or One semester at 200+ level
2) Proficiency exam (3rd year high school level or 1st year college level)
3) AP foreign language score of 4 or 5
4) IB higher level foreign language score of 5, 6, or 7

### Upper Division Level Requirement

Three units at the upper division level outside the first major.

### KNOWledge, Identity, and Power Requirement

One course. See Bulletin for details. Courses may also fulfill other program or graduation requirements.

### NOTES

*These major requirements may be used to fulfill the Natural Scientific Approaches core.

**Two additional units in Biology are required, one of which must be at the 300 or 400 level (excluding BIOL 398) and which can include one research unit (BIOL 390, 490, or 491). One of these electives must be completed on the Puget Sound campus. Students with an interest in evolutionary, environmental, or ecological applications molecular biology should strongly consider BIOL 112 and 360 as their electives. BIOL 112 may be taken during the freshman year and is strongly encouraged. Students may not use BIOL 361 to satisfy this requirement.

***Students who satisfy the first-year Chemistry requirement with CHEM 110 and 120 must also complete CHEM 231 prior to enrolling in CHEM 460.

****These major requirements may be used to fill the Mathematical Approaches core.

The following courses do not satisfy major or minor requirements: BIOL 101, 102, 201, 205, 398, 498, or 499; INTN 497.

Two units of analytical science from the following: BIOL 231; CHEM 231; PHYS 111/112 or PHYS 121/122; MATH 150+; CSCI 141+.

Molecular and Cell Biology majors are encouraged to participate in the undergraduate research program, provided they consult with and gain approval from a biology faculty research advisor and submit a research proposal. Related courses include 290/390/490 (Directed research), and 491 (Senior Thesis). Students planning a senior thesis should enroll in BIOL 201 (Biology Colloquium), BIOL 392 (Introduction to Biological research) and either one unit of BIOL 491 or BIOL 490 and 491. One research unit or independent study (390, 490, and 491) may count as an advanced elective for the major.

This form is NOT an OFFICIAL GRADUATION ANALYSIS.

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# Biotechnology

- Core Curriculum
- Major Requirements
- Foreign Language Requirement
- Upper Division Level Requirement
- Knowledge, Identity, and Power Requirement
- Notes

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**FOSSILS**

- Incised notches and burins
- Denticulate and retouched blades
- Levallois technique

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**INFLUENCES OF HUMAN ACTIVITY**

- Cultural diversity
- Population evolution
- Agricultural practices

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**HUMAN EVOLUTION**

- Australopithecines
- Homo erectus
- Homo sapiens

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**PALAEOCLIMATE**

- Ice ages
- Glacial cycles
- Vegetation changes

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**Agricultural Revolution**

- Domestication of crops
- Domestication of animals
- Neolithic transition

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**ANCIENT CITIES AND URBANIZATION**

- Harappan Civilization
- Minoan Civilization
- Mayan Civilization

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**MEDIEVAL PERIOD**

- Feudalism
- Crusades
- Black Death

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**DIFFERENT CARAVAN ROUTES**

- Silk Road
- Spice Route
- Tea Route

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**TREASURES OF THE WORLD**

- The Parthenon
- The pyramids of Giza
- The Colosseum

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**ANCIENT TECHNOLOGY**

- Watermills
- Windmills
- Steam engines

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**THEATER OF ROME**

- Roman theater
- Amphitheater
- Colosseum

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**ANCIENT SCHOOLS**

- Plato's Academy
- Aristotle's Lyceum
- Stoic School

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**ANCIENT MUSIC**

- Greek music
- Byzantine music
- Roman music

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**ANCIENT ART**

- Egyptian art
- Greek art
- Roman art

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**ANCIENT BUILDINGS**

- pyramids
- temples
- theaters

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**ANCIENT MYTHS**

- Greek myths
- Roman myths
- Norse myths

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**ANCIENT PHILOSOPHY**

- Socrates
- Plato
- Aristotle

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**ANCIENT RELIGIONS**

- Hellenistic religions
- Roman religions
- Egyptian religions