

**Major Course Requirements**

A minimum of 100 hours (52 upper-division hours)

► **Required Core Courses (40 hours):**

|                  |                                  |             |
|------------------|----------------------------------|-------------|
| BIOL 111+112+113 | Biological Foundations           | 5+5+5       |
| BIOL 222         | Introduction to Research Methods | 2           |
| BIOL 233         | Ecology                          | 4           |
| BIOL 320         | Cellular and Molecular Biology   | 4           |
| BIOL 348         | Systems Physiology               | 5           |
| BIOL 354         | Genetics                         | 4           |
| BIOL 396         | Seminar (4 quarters)             | .5+.5+.5+.5 |
| BIOL 450         | Philosophy of Origins            | 4           |

► **Required Core Electives (21 hours):**

At least 21 hours from the following: 21

|            |                                |
|------------|--------------------------------|
| BIOL 323   | Vertebrate Biology (4)         |
| BIOL 325   | Flowering Plants (3)           |
| BIOL 328   | Animal Behavior (4)            |
| BIOL 331   | Marine Science (4)             |
| BIOL 338   | Field Biology (3)              |
| BIOL 366   | Medical Microbiology (5)       |
| BIOL 412   | Research in Biology (1-3)      |
| BIOL 419   | Developmental Biology (3)      |
| BIOL 422   | Advanced Human Anatomy (4)     |
| BIOL 426   | Histology (5)                  |
| BIOL 430   | Neurobiology (4)               |
| BIOL 445   | Biotechnology (3))             |
| BIOL 469   | Immunology (4)                 |
| CHEM 481   | Biochemistry I (4)             |
| ENVR 360/L | Conservation Biology & Lab (4) |

► **Required Cognate Courses (39 hours):**

|                  |                   |       |
|------------------|-------------------|-------|
| CHEM 111+112+113 | General Chemistry | 5+5+5 |
| CHEM 371+372+373 | Organic Chemistry | 4+4+4 |
| PHYS 111+112+113 | General Physics   | 4+4+4 |

**Recommended Cognate Courses:**

|          |                    |
|----------|--------------------|
| CHEM 481 | Biochemistry I (4) |
| MATH 131 | Calculus I (4)     |

**Pre-medical and pre-dental students:**

The B.S. degree curriculum, including recommended cognates, exceeds all undergraduate science requirements for pre-medical and pre-dental students applying to Loma Linda University and many other schools.

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*This major fulfills the general education requirements in Math and Science.*

**Student Learning Outcomes**

**Students will:**

- Possess knowledge and understanding of general biological principles.
- Possess knowledge and understanding of the scientific process and techniques, especially as these apply to the biological sciences.
- Successfully communicate in both oral and written format.
- Possess knowledge and understanding of special creation and historical models of origins.
- Successfully prepare for entry into graduate/professional school and employment in the biological sciences.

**Occupational Information**

**What can I do with this major?**

- Graduates with a B.S. in Biology are prepared to:
- 1) Enter professional schools in medicine, dentistry, veterinary medicine, optometry, pharmacy and physical therapy.  
The Biology major is a strong and logical background for medicine and other biomedical professions. Our core requirements provide a solid foundation in the key areas of life science. Our elective courses allow students to strengthen those areas of greatest interest to them, and even create an emphasis which is custom designed for each individual's professional objectives and career goals.
  - 2) Enter graduate schools to pursue a masters or doctoral degree in one of the specialized areas of biology such as anatomy, botany, ecology, microbiology, zoology, or physiology, and in the field of Public Health.  
A Ph.D. degree is normally required to do research in the life sciences, and for teaching at the university and senior college level. A masters degree is sufficient for teaching science at the secondary level and in some community colleges. Public Health positions are available at the masters and Ph.D. levels.
  - 3) Seek employment in fields such as:
    - a. Biotechnology and genetic engineering.
    - b. Conservation and wildlife management
 Biotechnology companies need technicians with the solid foundation in molecular genetics available at PUC.

**Additional Education Required?**

Additional preparation in graduate or professional school is required for a majority of career opportunities.

**Public Sector vs. Denominational**

Jobs are available in the public sector and the denomination.

**Job Outlook**

Health care jobs such as biotechnology, medicine, and dentistry continue to show a high demand. Positions in the fields of conservation and wildlife are harder to find.

**General Education Requirements**

To view general education requirements for this major, please refer to page A-01, Summary of General Education Requirements: BS degree.

**How to Construct Your Own Program**

1. Counsel with your advisor.
2. Consider your aptitudes, interests, and available courses.
3. Schedule major courses and cognates first.
4. Fill the rest of your schedule with G.E. requirements.
5. For the freshman year include English, Religion, and PE courses. Also include Basic Algebra I+II unless waived by previous work.

**What the Degree Includes**

A total of 192 quarter hours including:

1. A minimum of 60 upper division hours.
2. General Education requirements.
3. Major requirements.
4. Minimum 2.0 GPA, overall and major.

**For More Information**

[www.puc.edu/academics/departments/biology/home](http://www.puc.edu/academics/departments/biology/home)

**Sample Four-Year Program**

This sample curriculum shows you how a program may be constructed, emphasizing the science components. Your program may differ, but be sure to consult your advisor.

| <b>First Year</b>           | <b>F</b> | <b>W</b> | <b>S</b> |
|-----------------------------|----------|----------|----------|
| Biological Foundations      | 5        | 5        | 5        |
| Calculus or Precalculus     | 4        | -        | -        |
| Introductory Chemistry*     | 4        | -        | -        |
| Religion                    | 3        | 3        | -        |
| College English             | -        | 4        | 4        |
| Exercise Science            | -        | 1        | -        |
| General Education/Electives | -        | 4        | 8        |
|                             | 16       | 17       | 17       |

| <b>Second Year</b>               | <b>F</b> | <b>W</b> | <b>S</b> |
|----------------------------------|----------|----------|----------|
| General Chemistry**              | 5        | 5        | 5        |
| Introduction to Statistics       | 4        | -        | -        |
| Ecology                          | 4        | -        | -        |
| Introduction to Research Methods | -        | 2        | -        |
| Biology Electives***             | -        | 4        | 5        |
| General Education/Electives      | 4        | 6        | 7        |
|                                  | 17       | 17       | 17       |

| <b>Third Year</b>           | <b>F</b> | <b>W</b> | <b>S</b> |
|-----------------------------|----------|----------|----------|
| General Physics****         | 4        | 4        | 4        |
| Organic Chemistry           | 4        | 4        | 4        |
| Systems Physiology          | 5        | -        | -        |
| Cell & Molecular Biology    | -        | 4        | -        |
| Genetics                    | -        | -        | 4        |
| Seminar (2 quarters)        | -        | .5       | .5       |
| General Education/Electives | 4        | 4        | 4        |
|                             | 17       | 16.5     | 16.5     |

| <b>Fourth Year</b>          | <b>F</b> | <b>W</b> | <b>S</b> |
|-----------------------------|----------|----------|----------|
| Seminar (2 quarters)        | .5       | .5       | -        |
| Philosophy of Origins       | -        | 4        | -        |
| Biology Electives***        | 4        | 4        | 4        |
| General Education/Electives | 12       | 8        | 12       |
|                             | 16.5     | 16.5     | 16       |

\* Needed only if High School chemistry is weak.

\*\* General Chemistry may be taken in year one by students who are well prepared, highly motivated, and very disciplined. It may also be taken in the summer between the first and second year.

\*\*\* Biology Electives, 21 hours - see the front of this sheet for the list of options.

\*\*\*\* May be taken in the summer between 2nd and 3rd year.