Table of Contents

Introduction to Biology Department and Degree 4
Bachelor of Science Biology Degree Plan 6
Biology Approved Electives 8
Biology Notes for Degree Plan 10
Biology Concentrations 12
Introduction to Environmental Science 13
Bachelor of Science Environmental Science Degree Plan 14
Environmental Science Notes for Degree Plan 16
Approved Core Curriculum 17
Pre-Professional Programs 21
Department of Biology
Location: 101 Hayes Building,
Phone: (409) 880-8262
Chair: Paul F. Nicoletto

Degree Advisors

BS Biology
Dr. Paul F. Nicoletto
Professor of Biology
Hayes 101A
pfnicolletto@my.lamar.edu
(409) 880-8262

BS Environmental Science
Dr. James Armacost
Associate Professor of Biology
Hayes 205-15
jamarcost@my.lamar.edu
(409) 880-1756

MS Biology
Dr. Ana B. Christensen
Associate Professor of Biology
Hayes 205-2
christenab@my.lamar.edu
(409) 880-8260
**Biology Mission Statement:**

The Biology Department has three missions

- To produce graduates with a broad-based knowledge of biology and the capacity applying and critically evaluating emerging scientific knowledge.

- To provide research opportunities for undergraduate, graduate students, and faculty.

- To provide courses for the degree plans of other majors and for the core curriculum.
Bachelor of Science – Biology

As the study of life, Biology requires a thorough understanding of the hierarchy life from the underlying chemical and physical principles governing all life processes to the levels of the organism and ecosystem. Therefore the degree offers seven concentrations which enable a student to design their own areas of specialization. Lamar students graduating in Biology are well equipped to enter graduate or professional schools, medical professions, environmentally or biotechnology related careers in various governmental agencies, private companies, or academia. Those interested in teaching in secondary education are able to earn a B.S. in Biology with teaching certificate.
Bachelor of Science Biology Degree Plan

Core Curriculum (44 hours)
ENGL 1301, Composition I
ENGL 1302, Composition II
Communication Pg. 16
Language, Philosophy, and Culture Pg.16
MATH 2312, Pre-Calculus
PSYC, 2317 Introduction to Stat Methods
BIOL 1406, General Biology I
BIOL 1407, General Biology II
HIST 1301, U.S. History I
HIST 1302, U.S. History II
POLS 2301, American Government I
POLS 2302, American Government II
Social and Behavioral Science Pg. 18
Creative Arts Pg.19

Supporting Courses (24 hours)
CHEM 1311, 1111, General Chemistry I
CHEM 1312, 1112, General Chemistry II
CHEM 3311, 1111, Organic Chemistry I
CHEM 3312, 3112, Organic Chemistry II
PHYS 1401, College Physics I
PHYS 1402, College Physics II

University Free Elective (3 hours)
3000-4000 Level Courses
Bachelor of Science Biology Degree Plan

Biology Core Course (27 hours)
BIOL 2420, Microbiology
BIOL 3450, Botany
BIOL 3470, Genetics
BIOL 4434, Development Biological Thought

Invertebrate Course
BIOL 3460 Invertebrate Zoology OR 4410 Parasitology

Vertebrate Course
BIOL 3428 Comparative Anatomy, 4408 Mammaology, 4409 Ornithology, 4431 Ichthyology, 4440 Vertebrate Natural History OR 4445 Herpetology

Cell/Molecular
BIOL 4470 Cell Biology/Histology OR 4404 Molecular Biology

Biology Electives 3000-4000 (22 hours) Pg. 8

Note: After you have fulfilled the requirements for Invertebrate, Vertebrate, and Cell/Molecular the remaining courses in those categories can also be used for Biology Electives.

*One 4000—Level Biology course must be an Scientific Report Writing Intensive.
Biology Approved Electives

BIOL 3420 Embryology
BIOL 3428 Comparative Anatomy
BIOL 3440 Advanced Physiology*
BIOL 3460 Invertebrate Zoology
BIOL 4302 Conservation Biology
BIOL 4305 Systematic & Evolutionary Biology
BIOL 4306 Evolutionary Ecology
BIOL 4307 Life in the Extreme
BIOL 4345 Experimental Design
BIOL 4403 Field Botany
BIOL 4404 Molecular Biology*
BIOL 4405 Immunology
BIOL 4406 Epidemiology*
BIOL 4407 Animal Behavior*
BIOL 4408 Mammalogy
BIOL 4409 Ornithology
BIOL 4410 Parasitology
BIOL 4412 Medical Entomology
BIOL 4416 Field Parasitology
BIOL 4430 Limnology
BIOL 4431 Ichthyology*
BIOL 4435 Environmental Toxicology
BIOL 4440 Vertebrate Natural History
BIOL 4445 Herpetology
BIOL 4450 Marine Biology
BIOL 4451 Marine Invertebrate Biology
BIOL 4460 Ecology*
BIOL 4470 Cell Biology/Histology
BIOL 4471 Ecology of Polluted Water
BIOL 4480 Aquatic Entomology
BIOL 4487 Desert Field Mammalogy
BIOL 4488 Desert Field Biology
BIOL 4490 Comparative Physiology

*Scientific Report Writing Intensive
### B.S. Biology Concentrations

**Aquatic Biology**  
- Aquatic Entomology  
- Marine Biology  
- Limnology  
- Ichthyology Tropical Biology  
- Field Parasitology  
- Invertebrate Zoology  
- Oceanography  

**Cell and Molecular Biology**  
- Molecular Biology  
- Cell Biology  
- Immunology  
- Biotech Applications  
- Embryology  
- Environmental Microbiology  
- Biochemistry  

**Ecology**  
- Evolutionary Ecology  
- Ecology  
- Conservation Biology  
- Environmental Microbiology  
- Tropical Biology  
- Field Botany  
- Animal Behavior  

**Invertebrate Zoology**  
- Invertebrate Zoology  
- Parasitology  
- Field Parasitology  
- Tropical Biology  

**Pre-Heath Professional**  
- Advanced Physiology  
- Parasitology  
- Field Parasitology  
- Tropical Biology  
- Marine Invertebrate Zoology  

**Pre-Medical Technology**  
- Advanced Physiology  
- Parasitology  
- Molecular Biology  
- Cell Biology  
- Immunology  
- Molecular Biology  
- Comparative Vert. Anatomy  

**Vertebrate Zoology**  
- Mammalogy  
- Ornithology  
- Ichthyology  
- Herpetology  
- Vertebrate Natural History  
- Comparative Vert. Anatomy  
- Field Parasitology  
- Desert Field Mammalogy  
- Embryology  

**Note:**  
Tropical Biology can count for a maximum of 4 credits towards a concentration.
Biology Notes:

The degree of Bachelor of Science in Biology will be awarded upon the completion of the following requirements:

1. At least 120 semester hours are required for a B.S. degree in Biology.

2. The university core is 42 credit hours. Two additional credit hours are added to the university core by required Biology courses Biol 1406 and 1407.

3. Students must complete the Freshman Composition sequence (or its equivalent, ENGL1301 and 1302) requirements with no less than a "C". Students must continually be enrolled in an English Composition course until this requirement is met.

4. Students must complete 6 hours of mathematics/statistics and continually be enrolled in a Mathematics course until this requirement is met.

5. Students must complete all departmentally required courses required in their major and minor with at least a grade of "C."

6. Students must complete all prerequisite courses with a grade of "C" or better before taking any more advanced biology course.

7. Biology Courses: Biology Core courses: BIOL 1406, 1407, 2420, 3450, 3470, one invertebrate biology course (BIOL 3460 or 4410), one vertebrate biology course (BIOL 3428, 4408, 4409, 4431, 4440, or 4445), one molecular-cellular biology course: (BIOL 4404 or BIOL 4470), and the capstone course BIOL 4344, which requires students to pass the ETS Major Field Exam in Biology. Biology Electives: any additional 22 semester hours of BIOL at the 3000-4000 level.
Biology Notes:

8. The BS Biology degree offers seven possible concentrations. A concentration requires a minimum of 15 credits over and above courses required and claimed in the Biology core curriculum.

9. Concentrations do not include credits from any of the following courses: BIOL1406, BIOL1407, BIOL2420, BIOL3450, BIOL3470, BIOL4344, a course used to fulfill the invertebrate, vertebrate, or Cell/Molecular core requirements, or any of the supporting courses in chemistry or physics listed on the biology degree plan. A list of Biology concentrations is provided on the Biology Web page or page 8 of this pamphlet.

10. It is the student’s responsibility to declare a concentration in writing to the Biology Department Administrative Assistant.

11. Students must take one 4000-level Biology course that is designated as "Scientific Report Writing Intensive". These courses include: Experimental Design, Environmental Microbiology, Ecology, Advanced Physiology, Animal Behavior, Molecular Biology, Epidemiology.

12. Supporting Sciences: General Chemistry - eight semester hours (CHEM 1311, 1111 and 1312 and 1112); Organic Chemistry - eight semester hours CHEM 3311, 3111 and 3312, 3112); General Physics - eight semester hours (PHYS 1401 and 1402); Statistics - four semester hours (PSYC 2317, fulfills 3 credits of Mathematical Science core).

13. Free Electives: Sufficient advanced (3000-4000 level) elective credits to complete a total of 120 semester hours; typically 4 credits.

14. MATH 1314 (College Algebra Non-Calculus Track) or MATH 1414 (College Algebra Calculus Track) and MATH 1316 (Trigonometry) may be substituted for MATH 2312 (Pre-Calculus/Elementary Functions) in the Biology BS degree plan.
The Major in Environmental Science is an interdisciplinary program concerned with protecting, monitoring, managing, and improving the environment. The degree program combines study in biology, chemistry, geology, engineering and political science in preparing the student for a career with regulatory agencies, industry, consulting firms, or academia. This degree program combines fundamental training in the basic sciences with broad training across several of the traditional disciplines to prepare students for employment or graduate study.


Lamar University
Bachelor of Science Environmental Science
Degree Plan

Core Curriculum (44 hours)
ENGL 1301, Composition I
ENGL 1302, Composition II
Communication Pg. 16
Language, Philosophy, and Culture Pg. 16
MATH 2312, Pre-Calculus
PSYC, 2317 Introduction to Stat Methods
BIOL 1406, General Biology I
BIOL 1407, General Biology II
HIST 1301, U.S. History I
HIST 1302, U.S. History II
POLS 2301, American Government I
POLS 2302, American Government II
Social and Behavioral Science Pg. 18
Creative Arts Pg. 19

Supporting Courses (20 hours)
CHEM 1311, 1111, General Chemistry I
CHEM 1312, 1112, General Chemistry II
CHEM 3311, 1111, Organic Chemistry I
CHEM 3401, Quantitative Analysis
CHEM 4481, Environmental Analysis

University Free Elective (7 hours)
BULW 3330, Environ Law
3000-4000 Level Courses
Biology Core Course (22 hours)
BIOL 2420, Microbiology
BIOL 4430, Limnology
BIOL 4435, Toxicology
BIOL 4460, Ecology
BIOL 4300, Internship
BIOL 4302, Conservation Biology

Science and Math Courses (27 hours)
PHYS 1401, College Physics I
PHYS 1402, College Physics II
COSC 1371, Microcomputers
GEOL 1403, Physical Geology
GEOL 3390, Environmental Geology
GEOL 4370, Meteorology
GEOL 4301, Principles of GIS or Hydrogeology
CVEN 3310, Water Chem. For Environ Eng.
Notes:

1. 120 semester hours are required for a B.S. degree in Environmental Science.
2. The university core is 42 credit hours. Hours above the minimum of 3 are added to required Environmental Science courses.
3. Students must complete the Freshman Composition sequence (or its equivalent, ENGL1301 and 1302) requirements with no less than a "C". Students must continually be enrolled in an English Composition course until this requirement is met.
4. Students must complete 6 hours of mathematics/statistics and continually be enrolled in a Mathematics course until this requirement is met.
5. Students must complete all courses required in their major and minor with at least a grade of "C."
6. Students must complete all prerequisite courses with a grade of "C" or better before taking any more advanced biology course.
7. The four credits of free electives must be at the 3000 to 4000 level and approved by Environmental Science advisor.
8. MATH 2312, Pre-calculus is a required course for the Environmental Science degree. If a student that is University core complete enters the Environmental Science program that student must complete MATH 2312, Pre-calculus before taking any course required by the degree.
# 2014 Approved Core Curriculum

## Communication:
- **COMM 1315**   Public Speaking I
- **COMM 1321**   Business and Prof Speech
- **DSDE 1371**   ASL I
- **ENGL 1301**   Composition I
- **FREN 1311**   Beginning French I
- **SPAN 1311**   Beginning Spanish I

## Language, Philosophy and Culture
- **ENGL 2300**   Close Reading II
- **ENGL 2310**   Brit Lit Before 1800
- **ENGL 2320**   Brit Lit After 1800
- **ENGL 2322**   British Lit
- **ENGL 2326**   American Lit
- **ENGL 2331**   World Lit
- **ENGL 2371**   Masterworks of Asian Lit
- **ENGL 2376**   African-American Lit
- **PHIL 1370**   Phil of Knowledge
- **PHIL 2306**   Intro to Ethics

## American History
- **HIST 1301**   U.S. History I
- **HIST 1302**   U.S. History II
- **HIST 2301**   Texas History
## Life and Physical Sciences

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 1308</td>
<td>General Biology</td>
</tr>
<tr>
<td>BIOL 1315</td>
<td>Plants &amp; Human Soc</td>
</tr>
<tr>
<td>BIOL 1406</td>
<td>General Biology I (Majors)</td>
</tr>
<tr>
<td>BIOL 1407</td>
<td>General Biology II (Majors)</td>
</tr>
<tr>
<td>BIOL 2306</td>
<td>Environmental Science</td>
</tr>
<tr>
<td>BIOL 2401</td>
<td>Anatomy &amp; Phys I</td>
</tr>
<tr>
<td>BIOL 2402</td>
<td>Anatomy &amp; Phys II</td>
</tr>
<tr>
<td>CHEM 1306</td>
<td>Chemistry for Allied Hlth Sci</td>
</tr>
<tr>
<td>CHEM 1308</td>
<td>BioChem for Allied Hlth Sc</td>
</tr>
<tr>
<td>CHEM 1311</td>
<td>General Chemistry</td>
</tr>
<tr>
<td>CHEM 1312</td>
<td>General Chemistry II</td>
</tr>
<tr>
<td>GEOL 1390</td>
<td>Intro to Environ &amp; Phy Geo</td>
</tr>
<tr>
<td>GEOL 1403</td>
<td>General Geology I</td>
</tr>
<tr>
<td>GEOL 1404</td>
<td>General Geology II</td>
</tr>
<tr>
<td>PHYS 1305</td>
<td>Elementary Physics I Lecture</td>
</tr>
<tr>
<td>PHYS 1307</td>
<td>Elementary Physics II Lecture</td>
</tr>
<tr>
<td>PHYS 1311</td>
<td>Intro to Astronomy Lec</td>
</tr>
<tr>
<td>PHYS 1401</td>
<td>College Physics I</td>
</tr>
<tr>
<td>PHYS 1402</td>
<td>College Physics II</td>
</tr>
<tr>
<td>PHYS 1405</td>
<td>Elem Physics I</td>
</tr>
<tr>
<td>PHYS 1407</td>
<td>Elem Physics II</td>
</tr>
<tr>
<td>PHYS 1411</td>
<td>Intro to Astronomy</td>
</tr>
<tr>
<td>PHYS 2425</td>
<td>Univ Physics I</td>
</tr>
<tr>
<td>PHYS 2426</td>
<td>Univ Physics II</td>
</tr>
<tr>
<td>SPSC 1301</td>
<td>Space Exploration</td>
</tr>
<tr>
<td>SPSC 1401</td>
<td>Space Science</td>
</tr>
<tr>
<td>Course Code</td>
<td>Course Name</td>
</tr>
<tr>
<td>-------------</td>
<td>--------------------------------------------</td>
</tr>
<tr>
<td>MATH 1314</td>
<td>College Algebra (Non-Cal Track)</td>
</tr>
<tr>
<td>MATH 1316</td>
<td>Plane Trig</td>
</tr>
<tr>
<td>MATH 1325</td>
<td>Business Calculus</td>
</tr>
<tr>
<td>MATH 1342</td>
<td>Statistics</td>
</tr>
<tr>
<td>MATH 1350</td>
<td>Math for Elem/Middle Sch Teach</td>
</tr>
<tr>
<td>MATH 1414</td>
<td>College Algebra (Cal Track)</td>
</tr>
<tr>
<td>MATH 2305</td>
<td>Discrete Math</td>
</tr>
<tr>
<td>MATH 2310</td>
<td>Math Modeling I</td>
</tr>
<tr>
<td>MATH 2312</td>
<td>Pre Cal/Elem Func</td>
</tr>
<tr>
<td>MATH 2313</td>
<td>Calculus &amp; Analy Geom I</td>
</tr>
<tr>
<td>MATH 2414</td>
<td>Calculus &amp; Analy Geom II</td>
</tr>
<tr>
<td>MATH 3370</td>
<td>Intro Theory Statistical Infer</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>POLS 2301</td>
<td>American Govt I</td>
</tr>
<tr>
<td>POLS 2302</td>
<td>American Govt II</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>BULW 1370</td>
<td>Bus Env &amp; Pub Pol</td>
</tr>
<tr>
<td>ECON 1301</td>
<td>Principles and Policies</td>
</tr>
<tr>
<td>ECON 2301</td>
<td>Prin of Economics I (Maro)</td>
</tr>
<tr>
<td>ECON 2302</td>
<td>Prin of Economics II (Micro)</td>
</tr>
<tr>
<td>INEN 2373</td>
<td>Engineering Economics</td>
</tr>
<tr>
<td>PSYC 2301</td>
<td>General Psychology</td>
</tr>
<tr>
<td>SOCI 1301</td>
<td>Intro to Sociology</td>
</tr>
</tbody>
</table>
## Creative Arts

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARTS 1301</td>
<td>Arts Appreciation</td>
</tr>
<tr>
<td>ARTS 1303</td>
<td>Art History I</td>
</tr>
<tr>
<td>COMM 1375</td>
<td>Film Appreciation</td>
</tr>
<tr>
<td>DANC 2304</td>
<td>Dance Appreciation</td>
</tr>
<tr>
<td>MUSI 1306</td>
<td>Music Appreciation</td>
</tr>
<tr>
<td>PHIL 1330</td>
<td>Arts and Ideas</td>
</tr>
</tbody>
</table>

## Component Area Option

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUAL 2310</td>
<td>Business Analysis and Computing</td>
</tr>
<tr>
<td>ENGL 1302</td>
<td>Composition II</td>
</tr>
<tr>
<td>ENGL 1374</td>
<td>Composition</td>
</tr>
<tr>
<td>HNRS 2160</td>
<td>Scholars Development</td>
</tr>
<tr>
<td>INEN 2301</td>
<td>Applications of Quant Mtds</td>
</tr>
<tr>
<td>LIBR 1101</td>
<td>Intro to Lib Research</td>
</tr>
<tr>
<td>LMAR 1101</td>
<td>University Success Seminar</td>
</tr>
<tr>
<td>PSYC 2317</td>
<td>Intro to Stat Methods</td>
</tr>
</tbody>
</table>
A Bachelor of Science in Biology is an excellent way to prepare for medically oriented professional schools. If you have declared yourself as one of the following from the below please consult the College of Arts and Sciences section of the Lamar University catalog for information on the Pre-Professional Programs.

Students in the pre-professional program will receive initial advising through the Pre-Professional Office. In their sophomore year those pursuing a BS Biology degree will be assigned to a Biology Faculty member on the Pre-Professional Committee. Students are encouraged to contact the Pre-professional Advisor, Ms. Lara Jagneaux (Parker 106, llbrisco@lamar.edu, (409) 880-8534) for information and assistance.

Pre-Professional Programs:
*Pre-Professional Programs cannot be declared as a major.

- Pre-Medicine
- Pre-Dentistry
- Pre-Optometry
- Pre-Physical Therapy
- Pre-Occupational Therapy
- Pre-Physician Assistant
- Pre-Veterinary Medicine
- Pre-Pharmacy
Biology Faculty

Dr. James Armacost—EVS Director
(409) 880-1756
jarmacost@my.lamar.edu
Office - 205-14
Expertise: Conservation Biology & Ornithology

Dr. Ana Christensen - Graduate Advisor
(409) 880-8260
christenab@my.lamar.edu
Office - 205-02
Expertise: Invertebrate Physiology, Marine Biology, Tropical Biology & Invertebrate Zoology

Dr. Michael Haiduk
(409) 880-8265
mhaiduk@my.lamar.edu
Office - SA
Expertise: Genetics, Herpetology & Mammology

Dr. Matthew Hoch
(409) 880-8264
Math.hoch@lamar.edu
Office - 205-12
Expertise: Environmental Microbiology, Environmental Toxicology, & Tropical Biology

Dr. Ashwini Kucknoor
(409) 880-7383
ashwini.kucknoor@lamar.edu
Office - 205-16
Expertise: Medical Microbiology
Biology Faculty

Dr. Ian Lian
(409) 880-8259
ilain@lamar.edu
Office - 205-04
Expertise: Cytogenetics & Biotechnology

Dr. Paul Nicoletto - Chair
(409) 880-8262
pfnicolotto@my.lamar.edu
Office 101-A
Expertise: Animal Behavior & Ichthyology

Ms. Amanda Posey
(409) 880-1755
alposey@my.lamar.edu
Office - 205-09
Expertise: Animal Behavior

Dr. Matthew Pyne
Office - 205-11
Expertise: Ecology & Limnology

Dr. Randall Terry
(409) 880-7975
rgterry@my.lamar.edu
Office - 205-08
Expertise: Botany & Molecular Phylogenetics and Systematics

Dr. Randal Yoder
(409) 880-1826
hryoder@my.lamar.edu
Office - 205-06
Expertise: Invertebrate Zoology & Parasitology
Biology Staff

Mrs. Tracy Boudreaux  
(408) 880-8262  
tracy.boudreaux@lamar.edu  
Office - 101

Mrs. Jan Callarman  
(409) 880-8263  
jcallarman@my.lamar.edu  
Office - 100-A  
Expertise: Parasitology

Mr. Michael Clanahan  
mdclanahan@my.lamar.edu  
Office - 205-05  
Expertise: Parasitology

Dr. Robert Corbett  
(409) 880-8254  
rwcorbett@my.lamar.edu  
Office - 205-15  
Expertise: Plant Physiology & Ethnobotany
Notes: