



**Southeastern Louisiana University**  
**Department of Biological Sciences**

The Department of Biological Sciences offers a four-year curriculum in Biological Sciences with concentrations in Microbiology/Molecular Biology, Ecology/ Environmental/Evolutionary Biology, and Organismal/Integrated Biology. A major in Horticulture Science is also offered. Pre-professional programs in medicine, dentistry, physical therapy, veterinary medicines, optometry, and pharmacy are also offered.

Students in Medicine and Dentistry are urged to complete the requirements for the degree before entering a medical or dentistry school. Those who do not plan to obtain a degree before seeking admission to a School of Medicine, Dentistry, or Pharmacy should confer with the Department Head or their advisors before scheduling their coursework.

In the event that a student is accepted to professional school prior to receiving the baccalaureate degree, the student may still become a candidate for the Bachelor of Science degree at Southeastern Louisiana University by completing the following requirements. The student must: 1) complete 90 hours (the last 30 hours in residence), 2) follow in general the curriculum outlined for a concentration in Organismal/Integrated Biology as determined by the Department Head of Biological Sciences, 3) satisfactorily complete all Board of Regents requirements for the degree, and 4) satisfactorily complete a course of study at a professional school. At the beginning of the final year of professional school the student must: 1) request that the Medical Evaluation Committee recommend her/him for graduation to the department head of Biological Sciences, 2) secure application for graduation instructions from the academic dean's office, and 3) pay the diploma fee to the Controller's Office.

### **MAJOR IN BIOLOGICAL SCIENCES**

Students wishing to major in Biological Sciences must complete 41 semester hours of biology. The required courses are listed within the various concentration options.

### **HONORS DIPLOMA IN BIOLOGICAL SCIENCES**

For the Honors Diploma in Biological Sciences, majors must complete the following requirements:

English 121H <sup>1</sup> .....	3 hours
English 122H <sup>2</sup> .....	3 hours
History 101H <sup>3</sup> .....	3 hours
History 102H <sup>4</sup> .....	3 hours
English 291H, English 292H, History 201H, History 202H, Economics 201H, Mathematics 161H, Honors 191, Honors 311, Honors 312, Honors 313, or Honors 314 <sup>5</sup> .....	3 hours
GBIO 151H, 153H, 200 <sup>6</sup> , 312 <sup>6</sup> .....	9 hours
GBIO 450 <sup>6</sup> .....	3 hours
Honors 300 Senior Thesis <sup>7</sup> .....	1 hour

<sup>1</sup>English 121H can be substituted for English 101.

<sup>2</sup>English 122H can be substituted for English 102.

<sup>3</sup>History 101H can be substituted for History 101 or 201.

<sup>4</sup>History 102H can be substituted for History 102 or 202.

<sup>5</sup>Any of English 291H, English 292H, History 201H, History 202H, Econ 201H, Math 161H, Honors 191, Honors 311, Honors 312, Honors 313, or Honors 314 can be substituted for similar major requirements with the approval of the Department Head.

<sup>6</sup>These hours must be completed as an H-Option.

<sup>7</sup>The domain in which the student will complete the thesis project or internship will be determined during the student's enrollment in GBIO 450<sup>6</sup>.

### **MINOR**

Eighteen semester hours are required for a minor. These must include GBIO 151-BIOL 152, GBIO 153-BIOL 154, and MIC 205-207 or MIC 223-224.

### **ELECTIVES**

The curricula leading to the bachelor's degree provide a sufficient number of electives to permit a student to elect a minor in any one of several fields. He should confer with his faculty adviser so that together they may consider courses that will benefit the student most in his specialized field.

**CURRICULUM IN BIOLOGICAL SCIENCES**  
**LEADING TO THE DEGREE OF BACHELOR OF SCIENCE**

FIRST YEAR			
FIRST SEMESTER	S.H.	SECOND SEMESTER	S.H.
†General Biology 151 .....	3	Chemistry 121 .....	3
†General Biology Lab 152 .....	1	Chemistry Laboratory 123 .....	1
English 101 .....	3	English 102 or 122 .....	3
Library Science 102 .....	1	Mathematics 162 .....	3
Mathematics 161 <sup>1</sup> .....	3	†General Biology 153.....	3
Orientation 101 .....	0-1	†General Biology Lab 154.....	1
Arts Elective <sup>4</sup> .....	3	Foreign Language 102 .....	3
Foreign Language 101.....	<u>3</u>		
	17-18		<u>17</u>

SECOND YEAR			
Chemistry 122 .....	3	Communication 211 .....	3
Chemistry Laboratory 124 .....	1	Chemistry 265/267 <sup>7</sup> or 261/263 .....	4
†Microbiology 205 .....	3	Elective <sup>3</sup> .....	1-3
†Microbiology Laboratory 207 .....	1	†General Biology 241 .....	1
English 230, 231, or 232 .....	3	Foreign Language 202 .....	3
Foreign Language 201 .....	3	†General Biology 200.....	3
Math 163 <sup>1</sup> .....	<u>3</u>		
	17		<u>15-17</u>

THIRD YEAR			
†Concentration Elective <sup>2</sup> .....	4	†Concentration Elective <sup>2</sup> .....	8
English 322 .....	3	Electives <sup>3</sup> .....	0-2
†General Biology 312 .....	3	†General Biology 341 .....	1
Chemistry 266/268 <sup>7</sup> or 281/283 ..	4	Chemistry 481/485 <sup>8</sup> .....	4
History.....	<u>3</u>		
	17		<u>13-15</u>

FOURTH YEAR			
Social Science Elective <sup>5</sup> .....	3	†Concentration Elective <sup>2</sup> .....	4
†Concentration Elective <sup>2</sup> .....	4	Elective.....	0-2
Elective <sup>3</sup> .....	0-3	Social Science Elective <sup>5</sup> .....	3
Physics 191 .....	3	Physics 192 .....	3
Physics Laboratory 193 .....	1	Physics Laboratory 194 .....	1
	<u>11-14</u>	†General Biology 441 ....	<u>1</u>
			12-14

Total Minimum Semester Hours Required	121-122 <sup>6</sup>
Total Minimum Semester Hours Required in Major	41

Orientation 101 is not required of transfer or readmitted Southeastern students with 30 hours or more.

Computer literacy is required prior to graduation; students are to contact their advisor for requirements.

<sup>1</sup>Mathematics 200 may be substituted for Mathematics 161 and 163.

<sup>2</sup>Elective or concentration elective depends on area of concentration chosen.

<sup>3</sup>At least six hours of electives must be in non-Biology courses.

<sup>4</sup>Courses can be taken in music, art, dance, or theatre.

<sup>5</sup>Courses can be selected in economics, geography, anthropology, political science, psychology, or sociology.

<sup>6</sup>Extended Option: Secondary Education Certification. See College of Education section, this catalogue.

<sup>7</sup>Students following the microbiology/molecular concentration and students planning on attending medical, dental, veterinary, or graduate school must take Chemistry 265/267 and Chemistry 266/268.

<sup>8</sup>Students following the microbiology/molecular concentration and students planning on attending graduate school must take Chemistry 481/485.

†Indicates courses required in major. These courses must be taken until a grade of "C" or better is obtained if they are courses in Biological Sciences.

## CONCENTRATION ELECTIVES

### CONCENTRATION IN MICROBIOLOGY/MOLECULAR BIOLOGY

#### I. Core Courses: 21 credits

- II. Concentration Emphasis in Microbiology and Molecular Biology (20 credits) from the following groups as determined in consultation with advisor.
- A. Growth Kinetics and Metabolism (both courses are required)
    - MIC 325 Advanced General Microbiology ..... (4)
    - MIC 461 Bacterial Metabolism..... (4)
  - B. Molecular/Cellular Biology (select one course)
    - MIC 303 Immunology ..... (4)
    - MIC 465 Recombinant DNA Techniques ..... (4)
    - MIC 463 Virology ..... (4)
  - C. Applied, Environmental or Ecology (select one or two courses)
    - MIC 313 Microbial Ecology ..... (3)
    - MIC 336 Pathogenic Microbiology ..... (4)
    - MIC 338 Soil Microbiology ..... (4)
    - MIC 457 Dairy and Food Microbiology ..... (4)
    - MIC 423 Environmental Microbiology ..... (4)
  - D. Special Topics and Research Problems
 

GBIO 493, Special Topics and GBIO 450, Research Problems may be counted toward any of the above categories, but the student's advisor must approve the category for credit.
  - E. Concentration Electives
 

Any of the courses listed above may be taken as a concentration elective to fulfill the 20 hr requirement.

### **CONCENTRATION IN ECOLOGY, ENVIRONMENTAL, AND EVOLUTIONARY BIOLOGY**

- I. Core Courses: 21 credits
- II. Concentration Emphasis in Ecology, Environmental, and Evolutionary Biology (20 credits)
  - A. Fundamental courses in ecology, environmental, and evolutionary biology (select two courses)
    - BOT 481, Plant Ecology ..... (3)
    - GBIO 281, Environmental Awareness ..... (3)
    - GBIO 377, Biostatistics ..... (4)
    - GBIO 395, General Ecology ..... (3)
    - GBIO 405, Evolutionary Biology ..... (4)
    - GBIO 485, Conservation Biology..... (4)
  - B. Form and Function (select one or two courses)
    - BOT 426, Plant Physiology..... (4)
    - ZOO 302, Comparative Anatomy of the Vertebrates ..... (4)
    - ZOO 392, General Physiology ..... (4)
  - C. Advanced Courses in Ecology, Environmental, and Evolutionary Biology (select one or two courses)
    - BOT 347, Vascular Plant Systematics ..... (4)
    - BOT 427, Plant Stress Ecophysiology ..... (4)
    - GBIO 406, Wetland Ecology ..... (4)
    - GBIO 442, Marine Biology ..... (4)
    - GBIO 481, Biogeography ..... (3)
    - MIC 313 Microbial Ecology ..... (3)
    - ZOO 301, Invertebrate Zoology ..... (4)
    - ZOO 352, Field Zoology ..... (4)
    - ZOO 453, Ecological Parasitology ..... (4)
    - ZOO 456, Ichthyology..... (4)
    - ZOO 457, Invertebrate Ecology ..... (4)
    - ZOO 470, Ornithology ..... (4)
  - D. Special Topics and Research and Research Problems
 

GBIO 493, Special Topics and GBIO 450, Research Problems may be counted toward any of the above categories, but the student's advisor must approve the category for credit.
  - E. Concentration Electives
 

Any of the courses listed above may be taken as a concentration elective to fulfill the 20 hr requirement

### **CONCENTRATION IN ORGANISMAL AND INTEGRATED BIOLOGY**

- I. Core Courses: 21 credits

## II. Concentration Emphasis in Organismal Biology (20 credits)

- A. Form and Function (select three or four courses)
- ZOO 302 Comparative Anatomy ..... (4)
  - ZOO 392 Animal Physiology ..... (4)
  - ZOO 331 Elementary Embryology ..... (4)
  - ZOO 332 Animal Histology ..... (4)
  - ZOO 465 Animal Development..... (4)
  - ZOO 488 Cytology ..... (3)
  - BOT 401 Plant Pathology ..... (4)
  - BOT 427 Plant Stress Ecophysiology ..... (4)
  - BOT 482 Plant Anatomy ..... (4)
  - MIC 303 Immunology ..... (3)
  - GBIO 314 Genetics Laboratory ..... (2)
  - GBIO 495 Biological Electron Microscopy ..... (4)
  - GBIO 377 Applied Biostatistics ..... (4)
- B. Biodiversity (select one or two courses)
- ZOO 301 Invertebrate Zoology ..... (4)
  - ZOO 309 General Entomology ..... (4)
  - ZOO 455 Medical Parasitology ..... (4)
  - ZOO 456 Ichthyology..... (4)
  - ZOO 470 Ornithology ..... (4)
  - GBIO 442 Marine Biology ..... (4)
  - BOT 205 Advanced General Botany\* ..... (4)
  - BOT 347 Vascular Plant Systematics ..... (4)
  - BOT 433 Phycology..... (4)
  - BOT 458 General Mycology ..... (3)
- C. Ecology and Evolutionary Biology (select one or two courses)
- GBIO 281 Environmental Awareness ..... (3)
  - GBIO 395 General Ecology ..... (3)
  - GBIO 405 Evolutionary Biology ..... (4)
  - GBIO 404 Ecological Methods..... (3)
  - GBIO 406 Wetland Ecology..... (4)
  - GBIO 439 Introduction to Fresh Water & Estuarine Biology ..... (4)
  - GBIO 481 Biogeography ..... (3)
  - GBIO 485 Conservative Biology ..... (4)
  - ZOO 352 Field Zoology ..... (4)
  - ZOO 457 Invertebrate Ecology ..... (4)
  - ZOO 453 Ecological Parasitology..... (4)
  - BOT 481 Plant Ecology ..... (3)
- D. Special Topics and Research Problems
- GBIO 493 Special Topics and GBIO 450 Research Problems may be counted toward any of the four categories, but the category for credit must be approved by the student's advisor.
- E. Concentration Electives
- Any of the courses listed above may be taken as a concentration elective to fulfill the 20 hr requirement.

## MAJOR IN HORTICULTURE

Students wishing to major in Horticulture Sciences must complete 33 semester hours of Horticulture. Students must attain a C or better in each Horticulture and Biology course.

## MINOR

Eighteen semester hours are required for a minor in Horticulture Science. These must include HORT 232, HORT 328, HORT 315, and HORT 320.

**CURRICULUM IN HORTICULTURE  
LEADING TO THE DEGREE OF BACHELOR OF SCIENCE**

FIRST YEAR			
FIRST SEMESTER	S.H.	SECOND SEMESTER	S.H.
GBIO 151 .....	3	History 201 or 202 .....	3
BIOL 152 .....	1	GBIO 153 .....	3
English 101 .....	3	BIOL 154 .....	1
Math 161 .....	3	English 102 .....	3
Social Science Elective .....	3	Math 162 .....	3
Orientation 101.....	1	Arts Elective (Art, Music, Dance, Theatre) .....	<u>3</u>
	<u>13-14</u>		<u>16</u>

SECOND YEAR			
†Horticulture 232 .....	3	†Horticulture 328 .....	3
Chemistry 101/121 .....	3	Accounting 200 .....	3
Chemistry Lab 103/123 .....	1	Communication 211 .....	3
Microbiology 205 .....	3	Chemistry 102/122 .....	3
Microbiology Lab 207 .....	1	Chemistry Lab 104/124 .....	1
Math 241 or		English 230, 231, or 232 .....	3
Management 261 .....	<u>3</u>		<u>16</u>
	<u>14</u>		

THIRD YEAR			
†Horticulture 301 .....	4	†Horticulture 320 .....	4
Management 351 .....	3	Botany 426 .....	4
Chemistry 261/265 .....	3	Botany 401 .....	4
Chemistry Lab 263/267 .....	1	Elective <sup>1</sup> .....	3
Horticulture 315 .....	3	Social Science Elective.....	3
Zoology 309 .....	<u>4</u>		<u>18</u>
	<u>18</u>		

FOURTH YEAR			
FIRST SEMESTER	S.H.	SECOND SEMESTER	S.H.
†Horticulture 300/400 level ....	9	†Horticulture 495.....	1
Marketing 303 .....	3	†Horticulture 300/400 level ...	6
Elective <sup>1</sup> .....	<u>3</u>	Elective .....	<u>6</u>
	<u>15</u>		<u>13</u>

Total semester hours required	123-124
Total semester hours required in major	33

Orientation 101 is not required of transfer or readmitted Southeastern students with 30 hours or more.

Computer literacy required prior to graduation; students are to contact their advisor for requirements.

<sup>1</sup>Non-Horticulture elective may not be taken in the College of Business and Technology.  
†Major course: grade of "C" or better required.