

BACHELOR OF SCIENCE, MAJOR IN BIOMEDICAL SCIENCE

Major in Biomedical Sciences

The Biomedical Sciences degree offered by the Department of Biological Sciences provides a robust, yet flexible curriculum with an emphasis on studying the biological basis of health and disease. It is designed to thoroughly prepare students for entrance into medical, dental, pharmacy, physician assistant, and other professional schools, as well as graduate study in the biomedical sciences and employment as a laboratory research assistant. No minor is required for this degree.

Required Courses for the Major

The Biomedical Science Major must complete the following courses:

Course Requirements

| | | |
|------------------------------|--------------------------------|-------|
| BIOL 1411 | General Botany | 4 |
| BIOL 1413 | General Zoology | 4 |
| BIOL 2440 | Introductory Cell Biology | 4 |
| BIOL 3450 | Introductory Genetics | 4 |
| BIOL 3470 | General Microbiology | 4 |
| BIOL 4361 | Introductory Evolutionary Bio | 3 |
| CHEM 1411 | General Chemistry I | 4 |
| CHEM 1412 | General Chemistry II | 4 |
| CHEM 2323 | Organic Chemistry I: Lecture | 3 |
| CHEM 2123 | Organic Chemistry I Lab | 1 |
| CHEM 2325 | Organic Chemistry II: Lecture | 3 |
| CHEM 2125 | Organic Chemistry II: Lab | 1 |
| CHEM 3438 | Biochemistry I | 4 |
| PHYS 1301 | General Phy-Mechanics & Heat | 3 |
| PHYS 1101 | General Physics Laboratory I | 1 |
| PHYS 1302 | Gen Phy-Snd,Lght, Elec, & Mag | 3 |
| PHYS 1102 | General Physics Laboratory II | 1 |
| MATH 1420 | Calculus I | 4 |
| Select one of the following: | | 3-4 |
| MATH 1430 | Calculus II | |
| MATH 3379 | Statistical Mthods In Practice | |
| BIOL 4374 | Biostatistics | |
| Biomedical Sciences Elective | | 21-28 |
| Total Hours | | 79-87 |

Bachelor of Science, Major in Biomedical Science

Core Curriculum (catalog.shsu.edu/undergraduate/academic-policies-procedures/degree-requirements-academic-guidelines/core-curriculum)

| | |
|---|---|
| Component Area I (Communication) | 6 |
| Component Area II (Mathematics) | 3 |
| Component Area III (Life and Physical Science) (Courses for Science Majors) | 8 |
| Component Area IV (Language, Philosophy, and Culture) | 3 |
| Component Area V (Creative Arts) | 3 |
| Component Area VI (U.S. History) | 6 |
| Component Area VII (Political Science/Government) | 6 |
| Component Area VIII (Social and Behavioral Sciences) | 3 |
| Component Area IX (Component Area Option) | 4 |

Degree Specific Requirements

| | | |
|-----------|---------------------------|---|
| CHEM 1411 | General Chemistry I | 4 |
| CHEM 1412 | General Chemistry II | 4 |
| CHEM 2123 | Organic Chemistry I Lab | 1 |
| CHEM 2125 | Organic Chemistry II: Lab | 1 |

| | | |
|---|---|-------|
| CHEM 2323 | Organic Chemistry I: Lecture | 3 |
| CHEM 2325 | Organic Chemistry II: Lecture | 3 |
| CHEM 3438 | Biochemistry I | 4 |
| Select one of the following: | | 4 |
| MATH 1430 | Calculus II | |
| MATH 3379 | Statistical Methods In Practice | |
| STAT 3379 | Statistical Methods In Practice | |
| MATH 1420 | Calculus I | 4 |
| PHYS 1301 | General Phy-Mechanics & Heat | 3 |
| PHYS 1101 | General Physics Laboratory I | 1 |
| PHYS 1302 | Gen Phy-Snd,Lght, Elec, & Mag | 3 |
| PHYS 1102 | General Physics Laboratory II | 1 |
| Major Core | | |
| BIOL 1411 | General Botany | 4 |
| BIOL 1413 | General Zoology | 4 |
| BIOL 2440 | Introductory Cell Biology | 4 |
| BIOL 3450 | Introductory Genetics | 4 |
| BIOL 3470 | General Microbiology | 4 |
| BIOL 4361 | Introductory Evolutionary Bio | 3 |
| Major Electives | | |
| Select 31-32 SCH of the Biomedical Electives: | | 31-32 |
| ANSC 3373 | Animal Nutrition | |
| BIOL 3409 | General Ecology | |
| BIOL 3420 | Comparative Vertebrate Anatomy | |
| BIOL 3440 | General Physiology | |
| BIOL 3460 | Pathophysiology | |
| BIOL 3480 | Developmental Biology | |
| BIOL 3490 | Histology | |
| BIOL 4095 | Undergrad Rsrch Tpcs-Biology | |
| BIOL 4410 | General Entomology | |
| BIOL 4350 | Immunology | |
| BIOL 4360 | Genetic Anlys of Human Disease | |
| BIOL 4363 | Genomics and Bioinformatics | |
| BIOL 4380 | Medical Microbiology | |
| BIOL 4460 | Parasitology | |
| BIOL 4480 | Molecular Biology | |
| BIOL 4490 | Cell Biology | |
| BIOL 4493 | Endocrinology | |
| CHEM 2401 | Quantitative Analysis | |
| CHEM 3339 | Biochemistry II | |
| COMS 2382 | Comm. for Bus. & Professions ¹ | |
| ENGL 3330 | Intro To Technical Writing ¹ | |
| HLTH 2372 | Health & Medical Terminology ¹ | |
| PSYC 3331 | Abnormal Psychology ¹ | |
| PSYC 3374 | Development Psychology ¹ | |

Total Hours

120-121

¹ No more than two of these courses may be applied toward the Biomedical Sciences degree. Students should consult with an academic advisor in the Biological Sciences early in their degree program regarding appropriate choices for their electives.

Note

This total reflects MATH 1420 satisfying Component Area II and one hour of Component Area IX, and BIOL 1411 and BIOL 1413 satisfying Component Area III.

Teacher Certification in the Life Sciences

Biology & Biomedical Sciences Majors

Students may receive teacher certification in the Life Sciences for grades 8-12 by pairing a major in Biology (BS only as outlined above) with a Secondary Teacher Certification from the Department of Curriculum and Instruction. Students pursuing this degree combination should include BIOL 3492 as one of their advanced biology electives.

For students seeking a Secondary Teacher Certification in the Life Sciences, no grade below C in the science coursework in BIOL is accepted. The required education courses are:

| Code | Title | Hours |
|---|--|--------------|
| Course Requirements | | |
| CISE 3384 | The Teaching Profession | 3 |
| CISE 4364 | Mth Tch Secondary Schools | 3 |
| CISE 4378 | Content Literacy | 3 |
| CISE 4380 | Respon Of Pro Educator | 3 |
| CISE 4394 | Creatng Env For Lrng-Secondary | 3 |
| CISE 4396 | Std Tch Secondary Classroom | 3 |
| CISE 4397 | Std Tch Secondary Classroom | 3 |
| Total Hours | | 21 |
| First Year | | |
| Fall | Hours Spring | Hours |
| Component Area IV (catalog.shsu.edu/undergraduate/academic-policies-procedures/degree-requirements-academic-guidelines/core-curriculum/#componentareiv) | 3 BIOL 1411 or 1413 ¹ | 4 |
| BIOL 1411 or 1413 ¹ | 4 CHEM 1412 | 4 |
| CHEM 1411 | 4 ENGL 1302 ² | 3 |
| ENGL 1301 ² | 3 MATH 1420 ³ | 4 |
| 14 | | 15 |
| Second Year | | |
| Fall | Hours Spring | Hours |
| Component Area V (catalog.shsu.edu/undergraduate/academic-policies-procedures/degree-requirements-academic-guidelines/core-curriculum/#componentareav) | 3 Component Area IX (catalog.shsu.edu/undergraduate/academic-policies-procedures/degree-requirements-academic-guidelines/core-curriculum/#componentareaix) | 3 |
| BIOL 2440 | 4 BIOL 3450 or 3470 | 4 |
| CHEM 2323 & CHEM 2123 | 4 CHEM 2325 & CHEM 2125 | 4 |
| HIST 1301 ⁴ | 3 HIST 1302 ⁴ | 3 |
| MATH 1430, 3379, or STAT 3379 | 4 POLS 2305 ⁵ | 3 |
| 18 | | 17 |
| Third Year | | |
| Fall | Hours Spring | Hours |
| BIOL 3450 or 3470 | 4 Component Area VIII (catalog.shsu.edu/undergraduate/academic-policies-procedures/degree-requirements-academic-guidelines/core-curriculum/#componentareaviii) | 3 |
| CHEM 3438 | 4 BIOL 4361 | 3 |
| PHYS 1301 & PHYS 1101 | 4 Biomedical Electve ⁶ | 4 |
| POLS 2306 ⁵ | 3 PHYS 1302 & PHYS 1102 | 4 |
| 15 | | 14 |

Fourth Year

| Fall | Hours Spring | Hours |
|-----------------------------------|---|--------------|
| Biomedical Electives ⁶ | 13-14 Biomedical Electives ⁶ | 14 |
| | 13-14 | 14 |

Total Hours: 120-121

- ¹ Satisfies Core Curriculum requirement for Component Area III (Life and Physical Science).
- ² Satisfies Core Curriculum requirement for Component Area I (Communications).
- ³ Satisfies Core Curriculum requirement for Component Area II (Mathematics).
- ⁴ Satisfies Core Curriculum requirement for Component Area VI (U.S. History).
- ⁵ Satisfies Core Curriculum requirement for Component Area VII (Political Science).
- ⁶ Biomedical Electives: ANSC 3373, BIOL 3409, BIOL 3420, BIOL 3440, BIOL 3460, BIOL 3480, BIOL 3490, BIOL 4095, BIOL 4410, BIOL 4350, BIOL 4360, BIOL 4363, BIOL 4380, BIOL 4460, BIOL 4480, BIOL 4490, BIOL 4493.