# Bachelor of Science in Microbiology

## About This Program

The Bachelor of Science in Microbiology is recommended to those students desiring to become professional microbiologists or biology teachers in secondary schools, and to those intending to continue their education through entrance into professional schools of medicine or dentistry.

## Competencies

1. Upon completion, students will be able to explain the microbiological evidence demonstrating that evolution drives the diversity of life on Earth and reveals phylogenetic relationships among groups of microorganisms.
2. Upon completion, students will be able to explain how the structure and function of prokaryotic cells affects their ability to survive, reproduce, and perform specific functions in microorganisms including how genetic information is stored and passed from one generation to the next.
3. Upon completion, students will be able to describe and demonstrate the scientific methods of observation, experimentation, hypothesis formulation, and hypothesis testing.
4. Upon completion, students will be able to apply quantitative skills such as estimation, graphing data, statistical analyses, and analysis of large datasets.
5. Upon completion, students will be able to apply foundational concepts of general and organic chemistry to analyze biochemical processes in microbiological systems.

## Curriculum

The Bachelor of Science in Microbiology is recommended to those desiring to become professional microbiologists or biology teachers.

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| **Foundations** | | |
| General Core Requirements (https://catalog.uta.edu/academicregulations/degreerequirements/generalcorerequirements/) | | 42 |
| Students must complete specific courses in certain core areas: | | |
| For Communication select: | | |
| ENGL 1301 | RHETORIC AND COMPOSITION I | |
| ENGL 1302 | RHETORIC AND COMPOSITION II | |
| For Mathematics select: | | |
| MATH 1421 | PREPARATION FOR CALCULUS | |
| MATH 1426 | CALCULUS I [1] | |
| For Life and Physical Science select: | | |
| PHYS 1441 | GENERAL COLLEGE PHYSICS I | |
| PHYS 1442 | GENERAL COLLEGE PHYSICS II | |
| For US History select: | | |
| HIST 1301 | HISTORY OF THE UNITED STATES TO 1865 | |
| HIST 1302 | HISTORY OF THE UNITED STATES, 1865 TO PRESENT | |
| Biology Foundations | | |
| Additional hours required in core. | | 4 |
| UNIV 1131 | STUDENT SUCCESS | 1 |
| or UNIV 1101 | CAREER PREPARATION AND STUDENT SUCCESS | |
| **Program Requirements** | | |
| CHEM 1441 | GENERAL CHEMISTRY I | 4 |
| CHEM 1442 | GENERAL CHEMISTRY II | 4 |
| CHEM 2181 | ORGANIC CHEMISTRY I LABORATORY | 1 |
| CHEM 2321 | ORGANIC CHEMISTRY I | 3 |
| CHEM 2182 | ORGANIC CHEMISTRY II LABORATORY | 1 |
| CHEM 2322 | ORGANIC CHEMISTRY II | 3 |
| CHEM 4311 | BIOCHEMISTRY I | 3 |
| Select one of the following in oral communication: | | 3 |
| COMS 2302 | PROFESSIONAL AND TECHNICAL COMMUNICATION FOR SCIENCE AND ENGINEERING | |
| COMS 1301 | FUNDAMENTALS OF PUBLIC SPEAKING | |
| Select any course. | | 9 |

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| **Biology Specialization** | | |
| BIOL 1441 | BIOLOGY I FOR SCIENCE MAJORS: CELL AND MOLECULAR BIOLOGY | 4 |
| BIOL 2444 | GENERAL MICROBIOLOGY | 4 |
| BIOL 3304 | MICROBIAL GENETICS | 3 |
| BIOL 3306 | BACTERIAL PHYSIOLOGY AND ANTIBIOTICS | 3 |
| BIOL 4441 | ADVANCED MICROBIOLOGY LAB | 4 |
| Select 24 hours from the following: | | 24 |
| BIOL 3301 | CELL PHYSIOLOGY | |
| BIOL 3311 | SELECTED TOPICS IN MICROBIOLOGY | |
| BIOL 3312 | IMMUNOLOGY | |
| BIOL 3318 | LIMNOLOGY | |
| BIOL 3308 | MICROBIAL ECOLOGY AND EVOLUTION | |
| BIOL 3359 | MEDICAL MOLECULAR BIOLOGY | |
| BIOL 3353 | FUNDAMENTAL MEDICAL MYCOLOGY | |
| BIOL 4303 | MICROBIOMES: HEALTH AND THE ENVIRONMENT | |
| BIOL 4312 | INTRODUCTION TO VIROLOGY | |
| BIOL 4317 | BACTERIAL PATHOGENESIS | |
| BIOL 4390 | INSTRUCTIONAL TECHNIQUES IN MICROBIOLOGY | |
| BIOL 4392 | INSTRUCTIONAL TECHNIQUES IN MICROBIOLOGY LEADER | |
| or BIOL 4389 | RESEARCH IN BIOLOGY | |
| **Total Hours** | | **120** |

[1] Transfer students must present a minimum of six semester credit hours of equivalent or higher level mathematics courses through transfer or placement examination.

## SUGGESTED COURSE SEQUENCE

**First Year**

| First Semester | Hours | Second Semester | Hours |
|---|---|---|---|
| ENGL 1301 | 3 | ENGL 1302 | 3 |
| MATH 1421 | 4 | MATH 1426 | 4 |
| CHEM 1441 | 4 | CHEM 1442 | 4 |
| BIOL 1441 | 4 | BIOL 2444 | 4 |
| UNIV 1131 or 1101 | 1 | | |
| | **16** | | **15** |

**Second Year**

| First Semester | Hours | Second Semester | Hours |
|---|---|---|---|
| BIOL 3312 | 3 | BIOL 3304 | 3 |
| POLS 2311 | 3 | BIOL 4312 | 3 |
| CHEM 2321 & CHEM 2181 | 4 | CHEM 2322 & CHEM 2182 | 4 |
| Any Level Elective | 3 | Social & Behavioral Science | 3 |
| | **13** | | **13** |

**Third Year**

| First Semester | Hours | Second Semester | Hours |
|---|---|---|---|
| BIOL 3306 | 3 | BIOL 4317 | 3 |
| CHEM 4311 | 3 | BIOL 3301 | 3 |
| Foundational Component Area Elective | 3 | BIOL 4390 | 3 |
| HIST 1301 | 3 | PHYS 1441 | 4 |
| POLS 2312 | 3 | Creative Art | 3 |
| | **15** | | **16** |

**Fourth Year**

| First Semester | Hours | Second Semester | Hours |
|---|---|---|---|
| BIOL 4441 | 4 | BIOL 3311 | 3 |
| BIOL 3308 | 3 | BIOL 4392 | 3 |
| PHYS 1442 | 4 | COMS 2302 | 3 |
| Any Level Elective | 6 | Language/Philosophy/Culture | 3 |

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|---|---|---|
| | HIST 1302 | 3 |
| | **17** | **15** |

**Total Hours: 120**

## Advising Resources

Biology department advising is available for transfer students, prospective students, and first time in college students after meeting transition criteria.

### Location:

Life Science Building 3rd floor - 345, 347, 349, 351

### Email:

Find advisor emails at link below.

### Phone:

817-272-2408

### Web:

Contact your advisor - schedule an appointment (https://www.uta.edu/academics/schools-colleges/science/departments/biology/advising/)