MICROBIOLOGY - BS

The degree program in Microbiology is designed to provide a comprehensive education in the biology of microorganisms. A graduate of this program will have a thorough grounding in the classical areas of microbial physiology and biochemistry, microbial genetics, and developing areas like the molecular biology of microorganisms. The curriculum provides excellent training toward a career in any one of many areas of industrial microbiology and public health services. It is also an ideal preparation for advanced study or professional school in medicine, dentistry and other related fields, especially medical technology and biotechnology.

Program Requirements

First Year

Fall		Semester Credit Hours
BIOL 111	Introductory Biology I [1,2]	4
CHEM 119	Fundamentals of Chemistry I [2]	4
Select one of the following: [2,3]		4
MATH 147	Calculus I for Biological Sciences	
MATH 151	Engineering Mathematics I	
MATH 171	Calculus I	
Communication (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#communication)		3
	Semester Credit Hours	15
Spring		
BIOL 112	Introductory Biology II [1, 2]	4
CHEM 120	Fundamentals of Chemistry II [2]	4
Select one of the following: [2]		3-4
MATH 148	Calculus II for Biological Sciences	
MATH 152	Engineering Mathematics II	
MATH 172	Calculus II	
STAT 201	Elementary Statistical Inference	
Communication (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#communication)		3
	Semester Credit Hours	14

Second Year

Fall		
BIOL 213	Molecular Cell Biology [2]	3
CHEM 227 & CHEM 237	Organic Chemistry I and Organic Chemistry Laboratory [2]	4
PHYS 201	College Physics	4
American history (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#american-history) [4,5]		3
	Semester Credit Hours	14
Spring		
BIOL 214	Genes, Ecology and Evolution [2]	3
CHEM 228 & CHEM 238	Organic Chemistry II and Organic Chemistry Laboratory [2]	4
PHYS 202	College Physics	4
American history (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#american-history) [4,5]		3
	Semester Credit Hours	14
	Total Semester Credit Hours	57

1. Grade of C or better required.
2. Must be completed by start of 5th full semester.
3. Students may not use MATH 142 to satisfy this requirement.
4. Students seeking teacher certification must take HIST 105 and HIST 106. Other students may choose HIST 105 and HIST 106 or any 6 hours of American history courses (3 hours may be in Texas history).
5. Students successfully completing the required four semesters of upper-level ROTC courses may substitute these courses for 3 hours of American history and 3 hours of government/political science.

The following are CBK courses and must be completed prior to the start of 5th full semester: BIOL 111, BIOL 112, BIOL 213, BIOL 214, CHEM 119 , CHEM 120 , CHEM 227 & CHEM 237, CHEM 228 & CHEM 238, MATH 147, MATH 148 or STAT 201.

Third Year

Fall		Semester Credit Hours
BICH 410 or BICH 440	Comprehensive Biochemistry I or Biochemistry I	3
BIOL 351	Fundamentals of Microbiology	4
GENE 302 & GENE 312	Principles of Genetics and Comprehensive Genetics Laboratory	4
STAT 312	Statistics for Biology	3
	Semester Credit Hours	14
Spring		
BICH 411 or BICH 441	Comprehensive Biochemistry II or Biochemistry II	3
BICH 414 or BICH 432/ GENE 432	Biochemical Techniques I or Laboratory in Molecular Genetics	2
POLS 206	American National Government [5]	3
Social and behavioral science (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#social-behavioral-sciences)		3
General elective [6]		6
	Semester Credit Hours	17

Fourth Year

Fall		
BIOL 406/ GENE 406	Bacterial Genetics	3
BIOL 445 or BIOL 454	Biology of Viruses or Immunology	3
POLS 207	State and Local Government [5]	3
Language, philosophy and culture (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#language-philosophy-culture)		3

Directed electives [7, 8]		4
	Semester Credit Hours	16
Spring		
BIOL 438	Bacterial Physiology	3
Creative arts (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#creative-arts)		3
Directed elective [7, 8]		3
General elective [7]		7
	Semester Credit Hours	16
	Total Semester Credit Hours	63

[6] Select from any 100-499 course not used elsewhere. (Except AGLS 101; ASCC 101, ASCC 102, ASCC 289; BIMS 101; BIOL 101, BIOL 107, BIOL 113, BIOL 206; CHEM 106, CHEM 116; MATH 102, MATH 142; WFSC 101.) Only one KINE 199 may be used as a general elective.

[7] Select directed electives from the list below.

[8] Two courses in the major must be designated as writing intensive.

Total Program Hours 120

Directed Electives

Code	Title	Semester Credit Hours
Select one course from the following:		
BIOL 300-499 (http://catalog.tamu.edu/undergraduate/course-descriptions/biol/)		
OCNG 320	Biological Oceanography	3
Select remaining courses from the following:		
Industrial Microbiology		
BIOL 352	Diagnostic Bacteriology	4
BIOL 414	Developmental Biology	3
BIOL 430	Biological Imaging	4
BIOL 450/ BICH 450	Genomics	4
BIOL 461	Antimicrobial Agents	1
BESC 401	Bioenvironmental Microbiology	3
BESC 402	Microbial Processes in Bioremediation	3
Environmental Microbiology		
BIOL 352	Diagnostic Bacteriology	4
BIOL 430	Biological Imaging	4
BIOL 440	Marine Biology	4
SCSC 405	Soil and Water Microbiology	3
BESC 401	Bioenvironmental Microbiology	3
BESC 402	Microbial Processes in Bioremediation	3
BESC 403	Sampling and Environmental Monitoring	3
Medical Microbiology		
BIOL 352	Diagnostic Bacteriology	4
BIOL 445	Biology of Viruses	3
BIOL 454	Immunology	3
BIOL 455	Laboratory in Immunology	2
BIOL 456	Medical Microbiology	3
VTPB 487/ BIOL 487	Biomedical Parasitology	4
Molecular Microbiology		
BIOL 352	Diagnostic Bacteriology	4
BIOL 413	Cell Biology	3
BIOL 430	Biological Imaging	4
BIOL 445	Biology of Viruses	3