MICROBIOLOGY - BACHELOR OF SCIENCE

The major in microbiology provides a solid academic base for those planning to enter any of the various fields of microbiology.

Requirements

Students must complete all University degree requirements, which include: General Education requirements, Viewing a Wider World requirements, and elective credits to total at least 120 credits with 48 credits in courses numbered 300 or above. Developmental coursework will not count towards the degree requirements and/or elective credits, but may be needed in order to take the necessary English and Mathematics coursework.

Prefix	Title	Credits
General Education		
Area I: Communications		*10*
English Composition - Level 1 [1]		
English Composition - Level 2 [1]		
Oral Communication [1]		
Area II: Mathematics		
MATH 1511G	Calculus and Analytic Geometry I [2]	4
or MATH 1511H	Calculus and Analytic Geometry I Honors	
Area III/IV: Laboratory Sciences and Social/Behavioral Sciences		*11*
Choose one sequence from the following (4 credits)		
PHYS 1230G & PHYS 1230L	Algebra-Based Physics I and Algebra-Based Physics I Lab	
PHYS 2230G & PHYS 2230L	General Physics for Life Science I and Laboratory to General Physics for Life Science I	
Choose one sequence from the following (4 credits)		
PHYS 1240G & PHYS 1240L	Algebra-Based Physics II and Algebra-Based Physics II Lab	
PHYS 2240G & PHYS 2240L	General Physics for Life Science II and Laboratory to General Physics for Life Science II	
Area IV: Social/Behavioral Sciences course (3 credits) [1]		
Area V: Humanities [1]		*3*
Area VI: Creative and Fine Arts [1]		*3*
General Education Elective		
BIOL 2610G & BIOL 2610L	Principles of Biology: Biodiversity, Ecology, and Evolution and Principles of Biology: Biodiversity, Ecology, and Evolution Laboratory (Departmental Requirement)	4
Viewing A Wider World [3]		**6**
Departmental Requirements		
BIOL 2110G & BIOL 2110L	Principles of Biology: Cellular and Molecular Biology and Principles of Biology: Cellular and Molecular Biology Laboratory	4
BIOL 305	Principles of Genetics	3
BIOL 311	General Microbiology	3
BIOL 311 L	General Microbiology Laboratory	2
BIOL 451	Physiology of Microorganisms [4]	3
or BIOL 475	Virology	
BIOL 455	Biometry	3
or A ST 311	Statistical Applications	
BIOL 474	Immunology	3
BIOL 478	Molecular Biology of Microorganisms	3
BIOL 479	Medical Microbiology	3
BIOL 479 L	Medical Microbiology Laboratory	1
Microbiology Electives		*6*
Select six additional credits from the following list to bring total upper-division credits in microbiology to 24: BIOL 412, BIOL 427, BIOL 451, BIOL 469, BIOL 473, BIOL 475, BIOL 476, BIOL 477		
Non-Departmental Requirements (in addition to Gen.Ed/VWW)		
CHEM 1215G	General Chemistry I Lecture and Laboratory for STEM Majors	4
or CHEM 1216	General Chemistry I Lecture and Laboratory for CHEM Majors	
CHEM 1225G	General Chemistry II Lecture and Laboratory for STEM Majors	4
or CHEM 1226	General Chemistry II Lecture and Laboratory for CHEM Majors	
CHEM 313	Organic Chemistry I	3
CHEM 314	Organic Chemistry II	3
CHEM 315	Organic Chemistry Laboratory	2
BCHE 395	Biochemistry I	3
Second Language Requirement (see below)		**0-8**
The number of credits required to satisfy this requirement will vary depending on the option a student choses.		
Electives, to bring the total credits to 120 [5]		**18-26**
Select sufficient electives to bring total credits to 120 including 48 upper-division credits.		
Total Credits		**120**

1 See the General Education (https://catalogs.nmsu.edu/nmsu/general-education-viewing-wider-world/) section of the catalog for a full list of courses.

2 MATH 1511G Calculus and Analytic Geometry I is required for the degree but students may need to take prerequisites courses before entering MATH 1511G.

3 See the Viewing a Wider World (https://catalogs.nmsu.edu/nmsu/general-education-viewing-wider-world/#viewingawiderworldtext) section of the catalog for a full list of courses.

4 Students may take both BIOL 451 Physiology of Microorganisms and BIOL 475 Virology; the second course will count as a microbiology elective.

5 Elective credit may vary based on prerequisites, dual credit, AP credit, double majors, and/or minor coursework. The elective credits in the requirement list is the amount needed to bring the total to 120 credits and may vary depending on the degree. Students may have to take more or less courses on a case-by-case basis and each student should discuss this with their advisor.

Second Language Requirement

For the Bachelor of Science in Microbiology there is a one year second language requirement, the options to complete this requirement are listed below. The number of credits that a student needs to take may vary depending on what level they come in with. Please speak with an advisor for more information as to which courses you will need to take to fulfill the second language requirement for this degree.

Option 1:

Prefix	Title	Credits
Complete one of the following sequences:		
FREN 1110 & FREN 1120	French I and French II	4-8
GRMN 1110 & GRMN 1120	German I and German II	4-8
JAPN 1110 & JAPN 1120	Japanese I and Japanese II	4-8
SPAN 1110 & SPAN 1120	Spanish I and Spanish II	4-8
PORT 1110 & PORT 1120	Portuguese I and Portuguese II	3-6
For Heritage Speakers:		
SPAN 1210 & SPAN 1220	Elementary Spanish for Heritage Learners I and Spanish for Heritage Learners II	3-6
or SPAN 2210	Spanish for Heritage Learners III	

Option 2:

Prefix	Title	Credits
Complete the following sequence for American Sign Language (with a C- or better):		
SIGN 1110	American Sign Language I	3
SIGN 1120	American Sign Language II	3

Option 3:

Prefix	Title	Credits
Challenge the 1120 level for the following courses:		
FREN 1120	French II	4
or GRMN 1120	German II	
or JAPN 1120	Japanese II	
or SPAN 1120	Spanish II	
PORT 1120	Portuguese II	3
or SPAN 1220	Spanish for Heritage Learners II	
or SPAN 2210	Spanish for Heritage Learners III	

Option 4:

Pass a three-credit, upper-division course (numbered 300 or above) taught in a second language by the department of Languages and Linguistics.

Option 5:

Obtain college certification of completion of three years of a second language at the high school level with a grade of C- or higher in the second-year level.

Option 6:

By obtaining certification of a working knowledge of a Native American language from the American Indian program director.

Option 7:

By obtaining, from the head of the Department of Languages and Linguistics, certification of a working knowledge of a second language if such language is not taught at NMSU.

Option 8:

In the case of a foreign student who is required to take the TOEFL exam admission, the dean will automatically waive the second language requirement.

A Suggested Plan of Study for Students

This roadmap assumes student placement in MATH 1220G College Algebra and ENGL 1110G Composition I. The contents and order of this roadmap may vary depending on initial student placement in mathematics and English. It is only a suggested plan of study for students and is not intended as a contract. Course availability may vary from fall to spring semester and may be subject to modification or change.

First Year		
Semester 1		**Credits**
ENGL 1110G or ENGL 1110H	Composition I [1] or Composition I Honors	4
MATH 1220G	College Algebra [1]	3
BIOL 2610G & BIOL 2610L	Principles of Biology: Biodiversity, Ecology, and Evolution and Principles of Biology: Biodiversity, Ecology, and Evolution Laboratory [1]	4
Area IV: Social and Behavioral Science Course [2]		3
Elective Course		1
	Credits	**15**
Semester 2		
MATH 1250G	Trigonometry & Pre-Calculus [1]	4
CHEM 1215G	General Chemistry I Lecture and Laboratory for STEM Majors [1]	4
BIOL 2110G & BIOL 2110L	Principles of Biology: Cellular and Molecular Biology and Principles of Biology: Cellular and Molecular Biology Laboratory	4
Choose from one of the following:		3
COMM 1115G	Introduction to Communication	
HNRS 2175G	Introduction to Communication Honors	
ACOM 1130G	Effective Leadership and Communication in Agriculture	
	Credits	**15**
Second Year		
Semester 1		
Choose from one of the following:		3
ENGL 2210G or ENGL 2210H	Professional and Technical Communication or Professional and Technical Communication	
ENGL 2215G	Advanced Technical and Professional Communication	
MATH 1511G or MATH 1511H	Calculus and Analytic Geometry I [1] or Calculus and Analytic Geometry I Honors	4
CHEM 1225G	General Chemistry II Lecture and Laboratory for STEM Majors [1]	4
BIOL 311 & 311 L	General Microbiology and General Microbiology Laboratory [1]	5
	Credits	**16**
Semester 2		
BIOL 305	Principles of Genetics [1]	3
CHEM 313	Organic Chemistry I [1]	3
Area V: Humanities Course [2]		3
Choose from one of the following:		3
BIOL 455	Biometry [1]	
A ST 311	Statistical Applications [1]	
Initial Second Language Course in series		3
	Credits	**15**

Third Year		
Semester 1		
CHEM 314	Organic Chemistry II [1]	3
CHEM 315	Organic Chemistry Laboratory [1]	2
PHYS 2230G & PHYS 2230L	General Physics for Life Science I and Laboratory to General Physics for Life Science I [1]	4
BIOL 474	Immunology	3
Next Second Language Course in series [1]		3
	Credits	**15**
Semester 2		
PHYS 2240G & PHYS 2240L	General Physics for Life Science II and Laboratory to General Physics for Life Science II [1]	4
BCHE 395	Biochemistry I [1]	3
Upper-division Biology Elective (Microbiology) [1]		3
Area V: Creative and Fine Arts Course [2]		3
VWW: Viewing a Wider World Course [3]		3
	Credits	**16**
Fourth Year		
Semester 1		
BIOL 478	Molecular Biology of Microorganisms	3
Upper-division Biology Elective (Microbiology) [1]		3
VWW: Viewing a Wider World Course [3]		3
Upper-division Elective Course [1]		3
Elective Course		3
	Credits	**15**
Semester 2		
BIOL 479 & 479 L	Medical Microbiology and Medical Microbiology Laboratory [1]	4
Choose from one of the following:		3
BIOL 451	Physiology of Microorganisms [1]	
BIOL 475	Virology [1]	
Upper-division Elective Course [1]		3
Elective Course		3
	Credits	**13**
	Total Credits	**120**

1. These courses have prerequisites and/or co-requisites and it is the students responsibility for checking and fulfilling all requirements for these courses.
2. See the General Education (https://catalogs.nmsu.edu/nmsu/general-education-viewing-wider-world/) section of the catalog for a full list of courses.
3. See the Viewing a Wider World (https://catalogs.nmsu.edu/nmsu/general-education-viewing-wider-world/#viewingawiderworldtext) section of the catalog for a full list of courses.