

MAJOR IN AGRICULTURAL BIOLOGY, ENTOMOLOGY CONCENTRATION



The Agricultural Biology major with a concentration in Entomology provides a strong scientific foundation in entomology to address challenges in natural and managed systems. Students will gain tools to foster sustainability and address pressing issues involving biophysical and sociocultural components of these systems. The major features courses in agriculture, biology, and ecology as well as practical training through internships and/or research experiences. Students will learn the complex interactions that occur among microbes, insects, and plant species in natural and managed ecosystems and develop skills to use systems thinking to solve real-world problems. Knowledge and skills gained from the major will enable students to identify and solve complex problems in natural and managed systems, especially in implementing effective and sustainable pest management.

Learning Objectives

1. Integrate skills and knowledge to solve problems related to plants, insects, and microbes in natural and managed ecosystems
2. Demonstrate understanding of social, economic, and biophysical aspects of the management of biological problems in natural and managed ecosystems
3. Describe, assess, analyze, and synthesize knowledge from across the curriculum to create solutions for pests and beneficial species in natural and managed ecosystems
4. Promote and practice inclusion to form effective teams that solve complex problems in natural and managed ecosystems

5. Communicate effectively with diverse audiences regarding sustainable pest and pathogen management in natural and managed ecosystems

Potential Occupations

This major will be an excellent choice for students interested in careers as researchers, crop advisors, extension educators, growers, agriculture consultants, production managers, inspectors, diagnosticians, regulatory professionals and for those who wish to pursue careers in academia.

Advising

Reach out to Chris Amerman (Chris.Amerman@colostate.edu) to schedule an appointment to change your major/minor. The change of major form can be electronically submitted by a student's main advisor to the Registrar's Office.

- Individualized Appointment with Advisor Link for Scheduling - <https://calendly.com/socr-advising> (https://nam10.safelinks.protection.outlook.com/?url=https%3A%2F%2Fcalendly.com%2Fsocr-advising%2Fadvising-appointment%3Fmonth%3D2023-03&data=05%7C01%7CGiovanni.Tolentino_Ramos%40colostate.edu%7C1a3bedec788549031af108db20c2da86%7Caf58802ff7a4bb1ab21367ff2e%7C0%7C0%7C638139793483113872%7CUnknown%7CTWFpbGZsb3d8eyJWljiMC4wLjAwMDAiLCJQIjoiV2luMzliLCJBTiI6Ikl1haWV%7C3000%7C%7C%7C&sdata=a07T1zEgzLuGzC6TFEiqRYDibN5xb3xo2ZQzcn%2Fyjr0%3D&reserved=0)

Our majors and minors have no competitive entry requirements. Courses to take if you are interested in the programs include AB 111, BSPM 102, BSPM 302, BSPM 308, and BSPM 361. Students interested in our program should ideally declare in the first two years, but exceptions can be made depending on the student's previous coursework. For more information, please visit the Department of Agricultural Biology website (<https://agsci.colostate.edu/agbio/>).

Requirements Effective Spring 2023

Freshman

		AUCC	Credits
AB 120 ^{1,2}	Agricultural Biology--Freshman Orientation		1
AB 130 ^{1,2}	Working with Agricultural Biology Data		1
AREC 202	Agricultural and Resource Economics (GT-SS1)	3C	3
CHEM 107	Fundamentals of Chemistry (GT-SC2)	3A	4

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CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)	3A	1
CO 150	College Composition (GT-CO2)	1A	3
Select one group from the following:			8
Group A			
LIFE 102	Attributes of Living Systems (GT-SC1)	3A	
LIFE 103	Biology of Organisms-Animals and Plants (GT-SC1)	3A	
Group B			
BZ 110	Principles of Animal Biology (GT-SC2)	3A	
BZ 111	Animal Biology Laboratory (GT-SC1)	3A	
BZ 120	Principles of Plant Biology (GT-SC1)	3A	
Arts and Humanities (http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#arts-humanities)		3B	6
Electives			3
Total Credits			30

Sophomore

AB 230 ^{1,2}	Becoming an Agricultural Biology Professional		1
BSPM 302 ¹	Applied and General Entomology		2
CHEM 245	Fundamentals of Organic Chemistry		4
CHEM 246	Fundamentals of Organic Chemistry Laboratory		1
MATH 155	Calculus for Biological Scientists I (GT-MA1)	1B	4
SPCM 200	Public Speaking		3
Select one course from the following:			1-2
BSPM 303A ¹	Entomology Laboratory: General		
BSPM 303B ¹	Entomology Laboratory: Horticultural		
BSPM 303C ¹	Entomology Laboratory: Agricultural		
Select one course from the following:			3
LAND 220/LIFE 220 ¹	Fundamentals of Ecology (GT-SC2)	3A	
LIFE 320 ¹	Ecology		
Select one course from the following:			3
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)	2	
JTC 300	Strategic Writing and Communication (GT-CO3)	2	
LB 300	Specialized Professional Writing	2	
Select one course from the following:			3
AGRI 116/IE 116	Plants and Civilizations (GT-SS3)	1C	
HORT 171/SOCR 171	Environmental Issues in Agriculture (GT-SS3)	1C	
SOC 220	Environment, Food, and Social Justice (GT-SS3)	1C	
Select one course from the following:			3
STAT 301	Introduction to Applied Statistical Methods		
STAT 307	Introduction to Biostatistics		
Total Credits			28-29

Junior

AB 330 ¹	Applications in Agricultural Biology I	4A,4B,4C	2
BSPM 308 ¹	Ecology and Management of Weeds		3
BSPM 361 ¹	Elements of Plant Pathology		3
BSPM 487	Internship		3
BZ 220 ¹	Introduction to Evolution		3
BZ 350 ¹	Molecular and General Genetics		4
SOCR 240 ¹	Introductory Soil Science		4
Entomology Elective (see list below) ¹			3

Electives				5
Total Credits				30
Senior				
AB 410	Understanding Pesticides			3
AB 430 ¹	Applications in Agricultural Biology II	4A,4B,4C		3
AB 451	Integrated Pest Management			3
AGED 210	History of Agriculture in the United States	3D		3
Entomology Electives (see list below) ¹				9
Electives ³				10-11
Total Credits				31-32
Program Total Credits:				120

Entomology Electives

Code	Title	Credits
Select a minimum of 12 credits from the following:		
AB 523	Advanced Evolution/Classification of Insects	5
BSPM 445		4
BSPM 462/BZ 462/ MIP 462	Parasitology and Vector Biology	5

¹ A minimum grade of 'C' (2.000) must be obtained in this course in order to complete the program.

² Transfer students are required to take AB 270 in lieu of AB 120, AB 130, and AB 230.

³ Select enough elective credits to bring the program total to 120, of which at least 42 must be Upper-Division (300- to 400-level).

Major Completion Map

Distinctive Requirements for Degree Program: Each course used to satisfy requirements of the major requires a minimum grade of 'C' (2.000).

To prepare for first semester: The curriculum for the Agricultural Biology major assumes students enter college prepared to take calculus. Entering students who are not prepared to take calculus will need to fulfill pre-calculus requirements in the first semester. Those pre-calculus requirements are listed as benchmark courses in Freshman Semester 1 below.

Freshman

Semester 1		Critical	Recommended	AUCC	Credits
AB 120	Agricultural Biology–Freshman Orientation	X			1
AREC 202	Agricultural and Resource Economics (GT-SS1)		X	3C	3
CO 150	College Composition (GT-CO2)	X		1A	3
Arts and Humanities (http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#arts-humanities)				3B	3
Electives					3
MATH 117, MATH 118, MATH 124, MATH 125 may be necessary for some students to fill pre-calculus requirements.		X			
Total Credits					13

Semester 2		Critical	Recommended	AUCC	Credits
AB 130	Working with Agricultural Biology Data	X			1
CHEM 107	Fundamentals of Chemistry (GT-SC2)	X		3A	4
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)	X		3A	1
Select one group from the following:					8
Group A:					
LIFE 102	Attributes of Living Systems (GT-SC1)	X		3A	
LIFE 103	Biology of Organisms-Animals and Plants (GT-SC1)	X		3A	
Group B:					
BZ 110	Principles of Animal Biology (GT-SC2)	X		3A	
BZ 111	Animal Biology Laboratory (GT-SC1)	X		3A	
BZ 120	Principles of Plant Biology (GT-SC1)	X		3A	
Arts and Humanities (http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#arts-humanities)			X	3B	3
Total Credits					17

Sophomore

Semester 3		Critical	Recommended	AUCC	Credits
BSPM 302	Applied and General Entomology	X			2
MATH 155	Calculus for Biological Scientists I (GT-MA1)	X		1B	4
SPCM 200	Public Speaking	X			3
Select one course from the following:		X			1-2
BSPM 303A	Entomology Laboratory: General				
BSPM 303B	Entomology Laboratory: Horticultural				
BSPM 303C	Entomology Laboratory: Agricultural				
Select one course from the following:					3
CO 301B	Writing in the Disciplines: Sciences (GT-CO3)			2	
JTC 300	Strategic Writing and Communication (GT-CO3)			2	
LB 300	Specialized Professional Writing			2	
Select LAND 220/LIFE 220 Semester 3 if LIFE 320 will not be taken Semester 4:		X			0-3
LAND 220/ LIFE 220	Fundamentals of Ecology (GT-SC2)			3A	

Total Credits					13-14
Semester 4		Critical	Recommended	AUCC	Credits
AB 230	Becoming an Agricultural Biology Professional	X			1
CHEM 245	Fundamentals of Organic Chemistry	X			4
CHEM 246	Fundamentals of Organic Chemistry Laboratory	X			1
Select one course from the following:		X			3
AGRI 116/ IE 116	Plants and Civilizations (GT-SS3)			1C	
HORT 171/ SOCR 171	Environmental Issues in Agriculture (GT-SS3)			1C	
SOC 220	Environment, Food, and Social Justice (GT-SS3)			1C	
Select LIFE 320 Semester 4 if LAND 220/LIFE 220 was not taken Semester 3:					0-3
LIFE 320	Ecology				
Select one course from the following:		X			3
STAT 301	Introduction to Applied Statistical Methods				
STAT 307	Introduction to Biostatistics				

Total Credits **15**

Junior

Semester 5		Critical	Recommended	AUCC	Credits
BSPM 308	Ecology and Management of Weeds	X			3
BZ 220	Introduction to Evolution	X			3
BZ 350	Molecular and General Genetics	X			4
SOCR 240	Introductory Soil Science	X			4

Total Credits **14**

Semester 6		Critical	Recommended	AUCC	Credits
AB 330	Applications in Agricultural Biology I	X		4A,4B,4C	2
BSPM 361	Elements of Plant Pathology	X			3
BSPM 487	Internship	X			3
Entomology Electives (see list on Concentration Requirements Tab)					3
Electives			X		5

Total Credits **16**

Senior

Semester 7		Critical	Recommended	AUCC	Credits
AB 430	Applications in Agricultural Biology II	X		4A,4B,4C	3
Entomology Electives (see list on Concentration Requirements Tab)					3

Electives			X		9
Total Credits					15
Semester 8		Critical	Recommended	AUCC	Credits
AB 410	Understanding Pesticides	X			3
AB 451	Integrated Pest Management	X			3
AGED 210	History of Agriculture in the United States			3D	3
Entomology Electives (see list on Concentration Requirements Tab)		X			6
Electives		X			1-2
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
Total Credits					16-17
Program Total Credits:					120