MAJOR IN HORTICULTURE, HORTICULTURAL SCIENCE CONCENTRATION

Horticultural Science graduates conduct research to discover new information about plant growth, development, and environmental response. This research can lead to new plant varieties and production methods. The curriculum consists of a solid foundation in the basic natural sciences as well as in agricultural sciences and prepares students for technical and scientific careers in laboratory, greenhouse, or field research. Exceptional students participate in individual research projects coordinated by professors. Graduates in this area often continue their education.

Learning Objectives

Upon successful completion of this concentration, students will be able to:

1. Describe fundamental principles of plant structure, growth, development, and reproduction as they relate to horticultural crops.
2. Apply principles of soil science, water management, and plant nutrition to optimize plant health and productivity in various horticultural systems.
3. Explain proper propagation methods (e.g., seed, cuttings, grafting, tissue culture) and production techniques used in greenhouse, nursery, and field settings.
4. Utilize modern tools, equipment, and technologies (e.g., precision agriculture, automation, controlled environment agriculture) to improve horticultural efficiency and sustainability.
5. Collect, analyze, and interpret horticultural data to make informed decisions related to plant growth, production systems, and pest management.

Requirements Effective Spring 2026

Freshman

		AUCC	Credits
BZ 120	Principles of Plant Biology (GT-SC1)	3A	4
CHEM 111	General Chemistry I (GT-SC2)	3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)	3A	1
CHEM 113	General Chemistry II		3
CHEM 114	General Chemistry Lab II		1
CO 150	College Composition (GT-CO2)	1A	3
HORT 100	Horticultural Science	3A	4
HORT 192/LAND 192	Orientation to Horticulture/Landscape Arch		1
MATH 124[1]	Logarithmic and Exponential Functions (GT-MA1)	1B	1
MATH 125[1]	Numerical Trigonometry (GT-MA1)	1B	1
MATH 126	Analytic Trigonometry (GT-MA1)	1B	1
1C (https://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#aucc)		1C	3
Social and Behavioral Sciences (https://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#social-behavioral-sciences)		3C	3
	Total Credits		**30**

Sophomore

HORT 260	Plant Propagation		4
PH 121	General Physics I (GT-SC1)	3A	5
PH 122	General Physics II (GT-SC1)	3A	5
SPCM 200	Public Speaking		3
Select one course from the following:			3-4
BUS 150	Business Computing Concepts and Applications		
CS 110	Personal Computing		
Advanced Writing (https://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#advanced-writing)		2	3
Arts and Humanities (https://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#arts-humanities)		3B	3
Historical Perspectives (https://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#historical-perspectives)		3D	3
	Total Credits		**29-30**

Junior

BZ 440	Plant Physiology		3
MATH 155	Calculus for Biological Scientists I (GT-MA1)	1B	4
SOCR 240	Introductory Soil Science		4
SOCR 330	Principles of Genetics		3
STAT 301	Introduction to Applied Statistical Methods		3
Select one group from the following:			5-8
Group A:			
CHEM 245	Fundamentals of Organic Chemistry		
CHEM 246	Fundamentals of Organic Chemistry Laboratory		
Group B:			
CHEM 341	Modern Organic Chemistry I		
CHEM 343	Modern Organic Chemistry II		
CHEM 344	Modern Organic Chemistry Laboratory		
HORT XXX[2]			5
Arts and Humanities (https://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#arts-humanities)		3B	3
Elective			0-3
	Total Credits		**33**

Senior

AB 420	Horticultural Entomology		2
BC 351	Principles of Biochemistry		4
BSPM 361	Elements of Plant Pathology		3
HORT 310	Greenhouse Management	4B	4
HORT 454	Horticulture Crop Production and Management	4A,4C	2
HORT 476	Environmental Plant Stress Physiology		3
HORT 495	Independent Study		2
HORT XXX[2]			6
Elective[2]			1-2
	Total Credits		**27-28**
	Program Total Credits:		**120**

1 The equivalent to MATH 117 and MATH 118, if needed, may be taken using elective credits.

2 Students must select at least 12 credits of upper division (300- to 400-level) horticulture elective and/or free elective courses to bring the program total of upper division credits to a minimum of 42. Select enough elective credits to bring the program total to 120 credits.

Major Completion Map

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
BZ 120	Principles of Plant Biology (GT-SC1)			3A	4
CHEM 111	General Chemistry I (GT-SC2)	X		3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)	X		3A	1
CO 150	College Composition (GT-CO2)			1A	3
HORT 192/ LAND 192	Orientation to Horticulture/Landscape Arch				1
MATH 124	Logarithmic and Exponential Functions (GT-MA1)			1B	1
MATH 125	Numerical Trigonometry (GT-MA1)			1B	1
	Total Credits				**15**
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
CHEM 113	General Chemistry II				3

CHEM 114	General Chemistry Lab II				1
HORT 100	Horticultural Science			3A	4
MATH 126	Analytic Trigonometry (GT-MA1)			1B	1
1C (https://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#aucc)				1C	3
Social and Behavioral Sciences (https://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#social-behavioral-sciences)				3C	3
CO 150 and AUCC 1B must be completed by the end of Semester 2.		X			
	Total Credits				**15**
Sophomore					
Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
PH 121	General Physics I (GT-SC1)	X		3A	5
SPCM 200	Public Speaking				3
Select one course from the following:					3-4
BUS 150	Business Computing Concepts and Applications				
CS 110	Personal Computing				
Arts and Humanities (https://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#arts-humanities)				3B	3
BZ 120 must be completed by the end of Semester 3.		X			
	Total Credits				**14-15**
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
HORT 260	Plant Propagation				4
PH 122	General Physics II (GT-SC1)			3A	5
Advanced Writing (https://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#advanced-writing)				2	3
Historical Perspectives (https://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#historical-perspectives)				3D	3
CHEM 113 must be completed by the end of Semester 4.		X			
	Total Credits				**15**
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
MATH 155	Calculus for Biological Scientists I (GT-MA1)	X		1B	4
SOCR 330	Principles of Genetics				3
Select one group from the following:					5-6
Group A:					
CHEM 245	Fundamentals of Organic Chemistry				
CHEM 246	Fundamentals of Organic Chemistry Laboratory				
Group B:					
CHEM 341	Modern Organic Chemistry I				
CHEM 343	Modern Organic Chemistry II				
Arts and Humanities (https://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#arts-humanities)				3B	3
Elective					0-1
	Total Credits				**16**
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
BZ 440	Plant Physiology				3
SOCR 240	Introductory Soil Science				4
STAT 301	Introduction to Applied Statistical Methods				3
If Group B taken Semester 5, take the following:					0-2
CHEM 344	Modern Organic Chemistry Laboratory				
HORT XXX					5
Elective					0-2

CHEM 245 and CHEM 341 must be completed by the end of Semester 6.		X			
	Total Credits				**17**
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
AB 420	Horticultural Entomology				2
BC 351	Principles of Biochemistry				4
HORT 310	Greenhouse Management			4B	4
HORT 495	Independent Study				2
HORT XXX					2
	Total Credits				**14**
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
BSPM 361	Elements of Plant Pathology	X			3
HORT 454	Horticulture Crop Production and Management	X		4A,4C	2
HORT 476	Environmental Plant Stress Physiology	X			3
HORT XXX		X			4
Elective		X			1-2
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				**13-14**
	Program Total Credits:				**120**