April 12, 2021

Dr. Michael Baumgartner
Executive Director
Coordinating Commission for
Postsecondary Education
140 N. 8th Street, Suite 300
Lincoln, NE 68509

Dear Michael:

Enclosed is a copy of the proposal to create the Bachelor of Science in Plant and Landscape Systems in the Department of Agronomy and Horticulture in the College of Agricultural Sciences and Natural Resources at UNL. The proposal was approved by the Board of Regents at the April 9, 2021 meeting. Also enclosed is the Proposal for New Instructional Program Form 92-40.

Please do not hesitate to contact me if you have any questions.

Sincerely,

Susan M. Fritz, PhD
Executive Vice President and Provost

Enclosures

c: Chancellor Ronnie Green
Executive Vice Chancellor Elizabeth Spiller
Vice President and Harlan Vice Chancellor Michael Boehm
Dean Tiffany Heng-Moss, College of Agricultural Sciences and Natural Resources
Vice Provost David Jackson

Executive Vice President and Provost
Varner Hall | 3835 Holdrege Street | Lincoln, NE 68583-0743 | 402.472.5242 | FAX: 402.472.4240 | nebraska.edu

COORDINATING COMMISSION
FOR POSTSECONDARY EDUCATION

140 N. 8th Street, Suite 300
Lincoln, NE 68508

Telephone: (402) 471-2847
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PROPOSAL FOR NEW INSTRUCTIONAL PROGRAM

Form 92-40

SECTION I

Institution Submitting Proposal: University of Nebraska-Lincoln

Title of Program: Plant and Landscape Systems

CIP Code: 01.1102

Organizational Unit in which program will be located:

Department of Agronomy and Horticulture
College of Agricultural Sciences and Natural Resources

Name of contact person in the event additional information is needed: Dr. Susan M. Fritz

Telephone: 402-472-5242

Degree, Diploma, or Certificate to be offered (use separate submittal for each level):

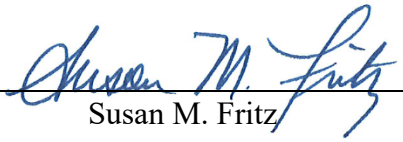
Bachelor of Science in Plant and Landscape Systems

Proposed date to initiate program: When approved by the Coordinating Commission

List the location(s) where this program will be offered: UNL

If the program has a projected ending date, please so indicate:

Date approved by Governing Board: April 9, 2021
(Attach all documents related to this proposal upon which the Governing Board made its decision to approve the proposal.)

Chief Executive Officer's or other Authorized Officer's signature: 
Susan M. Fritz

TO:	The Board of Regents	Addendum XI-A-5
	Academic Affairs Committee	
MEETING DATE:	April 9, 2021	
SUBJECT:	Creation of the Bachelor of Science in Plant and Landscape Systems in the Department of Agronomy and Horticulture in the College of Agricultural Sciences and Natural Resources at the University of Nebraska-Lincoln	
RECOMMENDED ACTION:	Approval to create the Bachelor of Science (BS) in Plant and Landscape Systems in the Department of Agronomy and Horticulture in the College of Agricultural Sciences and Natural Resources at the University of Nebraska-Lincoln (UNL)	
PREVIOUS ACTIONS:	January 18, 2008 – The Board approved the Bachelor of Science in Turfgrass and Landscape Management at UNL. The UNL undergraduate majors in Agronomy and Horticulture were established prior to modern records of Board approvals.	
EXPLANATION:	The UNL Department of Agronomy and Horticulture, informed by an external program review and employer/student feedback, is proposing a new 120-credit hour BS in Plant and Landscape Systems degree that will combine three undergraduate majors: Agronomy; Horticulture; and Turfgrass and Landscape Management. The proposed major is designed to create core experiences in the areas of agronomy and horticulture for all students, attract new students while retaining the traditional audience, and provide students curricular flexibility to match their career goals. Each student will choose a curricular option in agronomy, horticulture, landscape design, or turfgrass science. They will further shape their coursework and career pathway by selecting additional emphasis areas and minors. Graduates will leverage an appreciation of plant systems; scientific knowledge and data; and teamwork, communication, and problem-solving skills to become leaders and change makers in Nebraska and beyond. Upon approval of the new major, the existing Agronomy, Horticulture, and Turfgrass and Landscape Management majors will be proposed for teach-out and elimination. This proposal has been reviewed by the Council of Academic Officers; it also has been reviewed by the Academic Affairs Committee.	
PROGRAM COST:	$0 (No additional faculty or resources are needed.)	
SOURCE OF FUNDS:	N/A	

SPONSORS:	Michael J. Boehm Vice President, Agriculture and Natural Resources, University of Nebraska Harlan Vice Chancellor, Institute of Agriculture and Natural Resources, University of Nebraska-Lincoln Ronnie D. Green, Chancellor University of Nebraska-Lincoln
RECOMMENDED:	/s/ Susan M. Fritz Executive Vice President and Provost
DATE:	March 5, 2021

January 28, 2021

Susan Fritz, Executive Vice President and Provost
University of Nebraska
3835 Holdrege Street
Lincoln, NE 68583-0745

Dear EVP Fritz,

I am forwarding to you materials related to a proposal to create a Plant and Landscape Systems BS program to be administered by the Department of Agronomy and Horticulture in the College of Agricultural Sciences and Natural Resources. The proposal will combine three current undergraduate majors: Agronomy; Horticulture; and Turfgrass and Landscape Management. Proposals to delete these current degree programs will be submitted in 2021-22 once the new program has been approved by the CCPE. The core courses are already established, there are adequate existing resources, and a sufficient number of quality faculty are available.

This proposal is supported by a 5-year Academic Program Review conducted in 2017 recommending the streamlining of majors and options, creating core experiences for all majors in the areas of agronomy and horticulture, and creating a degree name and options that attract new audiences while retaining the traditional audience. It has the full endorsement of the Academic Planning Committee and it has my approval. I am requesting you approve it and that it be reported to the Board of Regents at an upcoming meeting.

Sincerely,

Ronnie D. Green, Ph.D.
Chancellor

c: Kurt Geisinger, Chair, Academic Planning Committee
Elizabeth Spiller, Executive Vice Chancellor
Michael Boehm, Vice Chancellor, IANR
Tiffany Heng-Moss, Dean, College of Agricultural Sciences and Natural Resources
Mike Zeleny, Associate to the Chancellor and APC Secretary
Renee Batman, Assistant Vice Chancellor, Academic Affairs
Suzi Tamerius, Project Coordinator, Academic Affairs
Karen Griffin, APC File

University of Nebraska-Lincoln
New Undergraduate Major or Degree

I. Descriptive Information

Name of Institution Proposing New Major or Degree
University of Nebraska-Lincoln
Name of Proposed Major or Degree
Plant and Landscape Systems
Degree to be Awarded to Graduates of the Major
Bachelor of Science (BS) in Plant and Landscape Systems
Other Majors or Degrees Offered in this Field by Institution
None
CIP Code
01.1102
Subject Code
New code: PLAS (will replace AGRO, HORT and TLMT for 000-400 level courses)
Administrative Units for the Major or Degree
Agronomy and Horticulture
Proposed Delivery Site
UNL
Program will be Offered *[full program, not individual courses]*
__x_____On-campus only _______Distance only _______Both (on-campus and distance)
Date Approved by the Governing Board
Pending
Proposed Date the New Major or Degree will be Initiated
Upon approval by the Coordinating Commission

Summary

The proposed Bachelor of Science (BS) in Plant and Landscape Systems program will combine three current undergraduate majors housed in the Department of Agronomy and Horticulture in the College of Agriculture and Natural Sciences at the University of Nebraska-Lincoln. The three existing undergraduate programs are: 1) Agronomy, 2) Horticulture, and 3) Turfgrass and Landscape Management. Proposals to delete the three aforementioned undergraduate degree programs will be submitted in 2021-22, once the new program has been approved by the CCPE.

With the new BS in Plant and Landscape Systems, students will be able to select from long-established options of agronomy, horticulture, landscape design and management, and turfgrass science and management and also shape their career pathways through emphases and minors available to them.

- Four options
  - Agronomy
  - Horticulture
  - Landscape Design and Management
  - Turfgrass Science and Management
- Fifteen emphases
  - Urban Food Systems
  - Agronomic Crop Production
  - Entrepreneurship
  - Natural Resource Conservation
  - Plant Breeding, Genetics and Biotechnology
  - Plant Protection
  - Soil Science
  - Specialty Crop Production
  - Water for Food
  - Controlled Environment Agriculture
  - Flowers
  - Turfgrass Science and Management
  - Plant Science Research
  - Landscape Management
  - Landscape Design

II. Details

A. Purpose of the Proposed Major or Degree

In the fall of 2017, the Department of Agronomy and Horticulture conducted the five-year Academic Program Review (APR). The APR review team consisted of six external and four internal members. Prior to the APR team on-campus visit, faculty in the Department of Agronomy and Horticulture developed a self-study document that included reports and questions regarding its undergraduate programs. The Department of Agronomy and Horticulture oversees three undergraduate majors, Agronomy, Horticulture, and Turfgrass and Landscape Management. The external review recommendations included: streamlining majors and options; creating core experiences for all majors in the areas of agronomy and horticulture; creating a degree name and options that attract new audiences while retaining the traditional audience; and developing a flexible curriculum that allows students to tailor their degree program to meet their professional goals as they complete the 120 credit hours needed for graduation. In response to the review, the Department undertook a comprehensive review and steps to transform their curricular offerings.

Information gathering began with a detailed survey and inventory of courses to identify the Student Learning Outcomes (SLOs), which unified the Department's current majors. This extended to Content Learning Outcomes (CLOs) prioritized in our undergraduate courses or service courses in other departments. These SLOs and CLOS were vetted through full-day faculty-staff-student teaching-learning retreats in 2018 and 2019. These retreats facilitated mapping student learning continuum/progression, including common core foundational knowledge for all students, and identifying gaps. This informed our work in building the degree core and options.

At various stages during the process, listening sessions were held with the broader faculty, staff, current students, partnering academic units, college administrators, alumni and an alumni advisory group on the core, options, and emphases areas. The process also included feedback from graduates through surveys on both the degree framework and the degree name.

The outcomes of information gathering, synthesis, surveys and listening sessions included:

- Revising student learning outcomes (SLOs) from each of the existing majors (Agronomy, Horticulture, and Turfgrass and Landscape Management), into one list that encompassed all undergraduate students in the Department of Agronomy and Horticulture.

- Identifying courses that taught content learning objectives identified as key to the SLOs. These courses make up the *core* requirements for the new Plant and Landscape Systems major.

- The new Plant and Landscape Systems major requires all students to have at least two experiential learning opportunities (internships) and allows students to include other experiential learning opportunities (i.e., judging teams, research experiences etc.) as part of their degree program.

- Identifying *options* that will retain current students. The previous majors became options. The Turfgrass and Landscape Management major was divided into two options – a) Landscape Design and Management; b) Turfgrass Science and Management.

- Identifying core courses in each of the proposed new options under the unified Plant and Landscape Systems major.

- Increasing customization and flexibility for students by developing emphasis areas that allow them to select groupings of courses that will assist them in reaching their professional goals.

- Filling learning outcome and curricular gaps in the major by creating a new course, PLAS 230: Technical Reporting for Plant Systems, and collaborating to create ENTO 105: Natural History of Arthropods Associated with Plants and PLPT 210: Introduction to Plant Diseases.

This unified degree program will facilitate shared language and goals among our students, develop team skills, promote increased student interaction across options, help students to focus on a career that adds value to the ecosystem services in our landscapes, and develop skills in the process of science and scientific writing - aligned with the unified student learning outcomes.

B. Description of the Proposed Major or Degree:

The proposed degree in Plant and Landscape Systems that includes our long-established program of Agronomy and Horticulture, aims to educate, and develop professionals prepared to design and

manage complex plant production, landscape, and soil management systems. Graduates will leverage an appreciation of nature; scientific knowledge and data; and teamwork, communication, and problem-solving skills to become leaders and change makers in agronomic, horticultural, landscape, and turfgrass systems in Nebraska and beyond.

Specifically, graduates of the Plant and Landscape Systems major will be able to:

1. Recognize, describe, and assess the value of nature.
2. Manage complex plant and soil systems which provide services for people and the planet.
3. Apply science and technology knowledge to problem solving.
4. Use diverse methods to generate, visualize, and communicate data that reveals truths and guides decision making.
5. Demonstrate effective communication to engage a target audience based on available information.
6. Lead and contribute to teams to amplify success in problem solving.

The Plant and Landscape Systems major will include a core to be completed by all students and four options to allow students to specialize in professional areas of interest. The four primary options are: a) Agronomy, b) Horticulture, c) Landscape Design and Management, and d) Turfgrass Science and Management.

The core curriculum provides the foundational knowledge and skills necessary for success in any career pathway in Plant and Landscape Systems, including courses in plant and soil science, pest biology, systems thinking, technical communication, and career development. Students build on this foundation to pursue focused expertise through a required option. Additionally, students will complement their program of study with two additional areas of professional specialization provided through emphases and/or minors.

There are no additional admission requirements beyond UNL's core course and performance requirements. Students are assigned a faculty advisor after New Student Enrollment.

Options

The **Agronomy Option** provides specialization in managing field crop systems and includes foundational learning experiences in crop and soil management, plant genetics, and physiology. Graduates with an agronomy option will be well-prepared to pursue careers as agronomists, crop consultants and advisers, farm managers, soil conservationists, crop input suppliers/sales representatives, crop research technicians, and farming systems innovators and entrepreneurs.

The **Horticulture Option** will prepare students to manage specialty crops in field, landscape, greenhouse, and controlled environment systems. This option includes foundational knowledge in plant propagation and physiology, genetics, plant identification and selection, and specialty crop management. Graduates with a horticulture option will be ready for careers as hydroponic and urban agricultural growers; greenhouse or nursery crop managers; farm managers or consultants for vegetable, fruit, nut, herb, floral, or medicinal plants; research associates in field or greenhouse environments; suppliers and sales associates for specialty crop seeds and inputs; and plant-based innovators and entrepreneurs.

The **Landscape Design and Management Option** will prepare students to design landscapes and manage landscape plants that provide cultural, ecological, and production functions. Students will learn to identify plants and their functional benefits in the landscape, use those plants to design and communicate plans for transforming the landscape, and the technical knowledge to install and

manage landscape plants using systems thinking. Students pursuing an option in landscape design and management may be interested in careers as a landscape designer or contractor; habitat restoration specialist; public gardens manager; landscaping business owner; and horticultural therapist.

The **Turfgrass Science and Management Option** will prepare students to manage turfgrass landscapes and businesses in the golf course, sports turf, sod, and lawn care industries. Students will apply knowledge of soils, turfgrass physiology and management, and pest management from this option to pursue careers as golf course superintendents, sports turf managers, lawn care specialists, and business owners.

A summary of the actions needed to implement the new Plant and Landscape System major are in the following table.

Table 1. Action table.

Agronomy major and all options	Allow students who have been accepted for Fall 2021 to finish their degree under these majors. Students may opt into the new Plant and Landscape Systems major. Delete the majors and discontinue admission into the Agronomy, Horticulture, and Turfgrass and Landscape Management majors after the Plant and Landscape Systems major is approved and appears on the admission application (target Fall 2022 application cycle).
Horticulture major, all options, and & science emphasis	
Turfgrass and Landscape Management major and all options	
Course prefix changes for 000-400 level courses from AGRO, HORT, and TLMT to PLAS.	Implement after the Plant and Landscape Systems major is approved and appears on the admission application (target Fall 2022 application cycle). Some courses may be cross-listed with the new subject code as the transition is in progress.
Delete AGRO, HORT, and TLMT prefixes for 000-400 level courses.	Complete after new PLAS prefix is implemented.

A brief overview of the Plant and Landscape Systems major and option requirements are below (Tables 2-6). Students must select and fulfill the requirements of one option based on their interest. Detailed information is found in the Appendix.

Table 2. Plant and Landscape Systems course requirements.

Requirement	Reason	Credit Hours
SCIL 101	CASNR Integrative (ACE 8)	3
Communications	ACE 1 and ACE 2	6
Math and Statistics	ACE 3	5
Economics, Humanities, and Social Sciences	ACE 5, ACE 6, ACE, 7, and ACE 9	12
AGRO 100	Major Integrative	3
Technical Data Communication	Major core	3
Natural Sciences	ACE 4, CASNR and Major core	11
Career Experience and Preparation	Major	2
Pest Biology	Major	4
Option (one of four)	Includes ACE 10	30-33
Emphases (15 possible)/minors	Major	24
Free electives	UNL requirement to reach 120 credits	14-17
Total credit hours		120

Table 3. Agronomy option requirements.

Requirement	Credit Hours
Agronomy Core	17
Crop and Soil Management	12
Capstone	3
Free Electives	15
Total	47

Table 4. Horticulture option requirements.

Requirement	Credit Hours
Horticulture Core	15
Identification and Production	11
Natural Science and Ecology	4
Capstone	3
Free Electives	14
Total	47

Table 5. Landscape Design and Management option requirements.

Requirement	Credit Hours
Landscape Design and Management Core	24
Design, Management, and Construction	3-4
Capstone	3-4
Free Electives	15–17
Total	47

Table 6. Turfgrass Science and Management option requirements.

Requirement	Credit Hours
Turfgrass Science and Management Core	19
Soil Management	3-4
Supporting Management and Experiential Learning	5
Capstone	3
Free Electives	16-17
Total	47

Table 7. Sample 4-year plan for the Agronomy option with a Precision Agriculture minor and a Soil Science emphasis.

Credits	Term 1 - Fall	Credits	Term 2 - Spring
2	ENTO 105	3	AGRO 230
3	AGRO 131	3	ACE 2 Oral Communication
1	AGRO 132	4	AGRO 153
2	MATH 102	3	SCIL 101
3	ACE 1 Written Communication	2	PLPT 210
3	AGRO 100		
1	AGRO 102		
15		**15**	
	Term 3 - Fall		Term 4 - Spring
4	CHEM 105 or 109	4	AGRO 278
4	AGRO 215	3	ACE 6 Economics
3	Emphasis or minor course	3	AGRO 204
1	TLMT 295	3	AGRO 240, 269, 366, 426, or 431
3	AGRO 240, 269, 366, 426, or 431	3	STAT 218
15		**16**	
	Term 5 - Fall		Term 6 - Spring
3	Emphasis or minor course	4	AGRO 325
3	Emphasis or minor course	3	ACE 5 Humanities
3	ACE 7 Arts	3	AGRO 240, 269, 366, 426, or 431
3	AGRO 240, 269, 366, 426, or 431	3	Emphasis or minor course
3	Free elective	3	Free elective
15		**16**	
	Term 7 - Fall		Term 8 - Spring
3	Emphasis or minor course	3	Emphasis or minor course
1	AGRO 395	3	ACE 8 Ethics
3	ACE 10 Capstone AGRO 405, 445, 475, 488 or AECN 435	3	Free elective
3	Emphasis or minor course	3	ACE 9 Global Awareness
3	Free elective	3	Emphasis or minor course
13		**15**	
120	**8-semester credit total**		

Table 8. Sample 4-year plan for the Horticulture option with an Engler Agribusiness Entrepreneurship 18-hour minor and an Urban Food Systems emphasis.

Credits	Term 1 - Fall	Credits	Term 2 - Spring
3	ACE 1 Written Communication	3	AGRO 230
1	HORT 133	3	ACE 2 Oral Communication
3	HORT 131	4	HORT 153
2	MATH 102	3	SCIL 101
2	ENTO 105	2	PLPT 210
3	HORT 100	15	
1	HORT 102		
15			
	Term 3 - Fall		Term 4 - Spring
4	CHEM 105 or 109	4	HORT 278
4	HORT 215	3	ACE 6 Economics
2	HORT 352	3	HORT 221
1	HORT 295	3	EAEP 275
3	HORT 201, 212, 213, or 214	3	STAT 218
2	EAEP 101		
16		**16**	
	Term 5 - Fall		Term 6 - Spring
2	HORT 306, 307, 353, 354, 355, or 362	3	Free elective
3	EAEP 388	4	AGRO 325, 478, CHEM 106, 110, or NRES 220 and 222
3	ACE 7 Arts	3	HORT 306
3	HORT 201, 212, 213, or 214	3	Identification or production course
3	FDST 101	1	EAEP 496
1	EAEP 496		
15		**14**	
	Term 7 - Fall		Term 8 - Spring
3	ACE 9 Global Awareness	3	ACE 10 Capstone HORT 488
1	HORT 395	3	ACE 8 Ethics
3	EAEP 395	3	HORT 453
3	AGRI 375	3	ACE 5 Humanities
3	Free elective	1	EAEP 496
1	EAEP 496	2	free electives
14		**15**	
120	**8-semester credit total**		

III. Review Criteria

A. Centrality to UNL Role and Mission:

The Plant and Landscape Systems major will prepare students to join the workforce of professionals who advance science, design approaches, and deploy technology to solve problems in plant production and landscape systems. A majority of graduates from this program will move directly into the private or public sector workforce or start their own businesses in the agricultural and green industries. Some graduates will continue their formal academic learning by entering graduate school and pursue careers in research and education. This new degree program is designed to continue and strengthen the mission of the three undergraduate programs currently delivered by the Department of Agronomy and Horticulture, including B.S. degree programs in: 1) Agronomy, 2) Horticulture, and 3) Turfgrass and Landscape Management. Consistent with the UNL mission, the Plant and Landscape Systems major will create opportunities for students to fulfil their highest ambitions and aspirations, which will lead to economic development for the state of Nebraska.

B. Relationship to NU 5-year strategic priorities

The Plant and Landscape Systems major will continue to meet the NU's 5-year strategic priorities currently achieved by our existing programs in Agronomy, Horticulture, and Turfgrass and Landscape Management. In addition, the new degree program will contribute to the NU's 5-year strategic priorities in three critical ways. First, the Plant and Landscape Systems major will increase the quality of the undergraduate learning pathway by engaging our students in systems thinking and increasing their confidence in data-based decision making. Second, the program will maximize efficiency and effectiveness by empowering our students to select discipline focus areas using emphasis and/or minors so they are prepared to attain their professional goals and enter the *Nebraska workforce* as competent and confident professionals. Finally, graduates of this program will be able to engage with the citizens of Nebraska to help solve plant and landscape challenges with consideration of social, economic, and environmental impacts.

C. Consistency with the Comprehensive Statewide Plan for Post-Secondary Education

The six core student learning outcomes for the Plant and Landscape Systems major will guide students to "meet the expectations of employers who are demanding a skilled workforce that can keep pace with an explosion of knowledge and rapid technological change – locally, regionally, nationally, and globally." The Department of Agronomy and Horticulture is the academic unit in the NU system which has the collective research, extension, and education expertise to prepare students to solve problems and drive changes in Nebraska's plant and landscape systems.

The Plant and Landscape Systems major addresses the following statewide education goals:

> "Nebraska colleges and universities will provide their graduates with the skills and knowledge needed to succeed as capable employees and responsible citizens."
>
> "Higher education in Nebraska will be responsive to the workforce development and ongoing training needs of employers and industries to sustain a knowledgeable, trained, and skilled workforce in both rural and urban areas of the State."
>
> "Higher education will serve the State by preparing individuals for productive, fulfilling lives and by developing and nurturing the citizens and future leaders of Nebraska."

"Postsecondary education institutions will assess evolving needs and priorities in a timely manner and will be prepared to change and adopt new methods and technologies to address the evolving needs and priorities of the students and people of Nebraska."

"Nebraska's postsecondary institutions will be student-centered and will offer life-long learning opportunities that are responsive to student's needs."
"Postsecondary education institutions will provide appropriate support services to help all students reach their educational goals, regardless of where or how the instruction is delivered."

D. Evidence of Need and Demand

1. *Need:* This consolidated major in Plant and Landscape Systems will continue to meet the state, regional, and national need for professional agronomists, horticulturists, landscape designers and managers, and turfgrass managers. This need is also supported by our stakeholders as documented in the industry support letters from Corteva Agriscience, Ward Laboratories Inc., Landscapes Golf Management, and Kinghorn Gardens.

2. *Demand:* Historically, the majority of students in this department have come to UNL from rural communities in Nebraska. This student population remains critically important to the success of this degree program and we will continue to actively recruit and serve students from rural, agricultural communities. However, this degree consolidation provides an opportunity to rebrand our degree program so it can be recognized by more students from urban and peri-urban areas of Nebraska and beyond and will meet the large employer demand expected in the next five years (Table 1). Our goal is to increase our enrollment, increase the quality and diversity of our graduates with forward-thinking career pathways in the agricultural and green industries. These include career opportunities in digital and precision agriculture, urban food systems, and bioinformatics and biotechnology.

Market Outlook

The national labor market demand for our graduates is expected to increase through 2028. Specific occupations such as farm advisors, farm and range managers, soil and plant scientists are projected to increase by more than 5% and up to 10% from 2018 (p. 83 ACT Market Snapshot). The US Bureau and Labor Statistics[1] projects a faster than average job outlook/growth in employment for agricultural (& food) scientists through 2029. In Nebraska, employment in all industries is projected to increase by 5.5% through 2028 (NE Department of Labor[2]) – professional, scientific, and technical services employment will have the largest employment increase at 11.4%, with agriculture, forestry, and fishing sectors increasing by 4.91%. Occupations requiring a bachelor's degree are expected to have an 8.4% growth. Except for the Panhandle, all NE regions are expected to experience employment growth through 2028 (NE Department of Labor[2]).

In fact, a recent employment outlook report released by the USDA National Institute of Food and Agriculture (NIFA) shows a strong demand for new college graduates with degrees in agricultural programs. It is projected that in the next five years, nearly 60K job opportunities will be available each year (Table 1). The projection is 2.6% growth over the previous five years (2015-2020), with employer demand exceeding available graduates. The uniquely designed Plant and Landscape Systems degree program – with core, options, and emphasis areas – will prepare our graduates to compete and obtain rewarding employment in management and business; science and engineering; food and materials production; and education, communication, and government services.

[1] https://www.bls.gov/ooh/life-physical-and-social-science/agricultural-and-food-scientists.htm#tab-6
[2] Nebraska Economic Insight and Outlook

Table 1 – Annual Employment Opportunities in Food, Agriculture, and Renewable Natural Resources and the Environment (FARNRE) for College Graduates and Expected number of FARNRE Graduates, 2020-2025 (Source: USDA-NIFA, 2020)[3]

Employment Type	Expected # Jobs	% Share	New FARNRE Graduates
Management & Business *Marketing, online sales, ecommerce* *Field technical services* *Business consultants, operations managers*	24,700	42%	15,552
Science & Engineering *Data science* *Agronomy, plant breeding & genetics* *Precision management of agriculture* *Water quality and environmental specialists* *Soil conservation and health*	18,400	31%	9,159
Food & Materials Production *Commercial & intensive livestock production* *Urban agriculture, horticulture, development of natural recreational & landscaped spaces,* *Local foods & specialty culinary products & craft beverages*	7,900	13%	7,293
Education, Communication & Government *Agriscience and natural resources teachers* *Extension & outreach personnel for rural and urban settings* *Experts in agricultural, natural resources, environmental and rural policy*	8,400	14%	4 108
TOTAL	**59,400**		

Historical Placement of Agronomy, Horticulture and Turf-Landscape Management Graduates
This consolidated major in Plant and Landscape Systems will continue to meet the state, regional, and national need for professional agronomists, horticulturists, landscape designers and managers, and turfgrass managers.

Exit survey data from recent (2016-2020) departmental graduates provide useful information about career areas of vigorous growth (Table 2)**.** Based on survey data and personal communication with students, placement of our graduates is above 90%. Agronomy graduates are employed as agronomists or sales agronomists and have average starting salaries of $48,610. Horticulture graduates are more diverse in their career paths, but the two most popular positions are in land-scape design and production management (e.g., greenhouse manager). The average starting salary of horticulture graduates is $39,200. Turfgrass and Landscape Management graduates are employed as assistant golf course superintendents, landscape managers, and sports turfgrass managers. Starting salaries of turfgrass and landscape management graduates average $40,690.

Table 2 – Reported salary of new graduates (BSc. In Agronomy, Horticulture, or Turf and Landscape Management, 2016-2020.

Employer type	Salary Range
Seeds Co., Agro-Chem Co., Coops, Consulting Services, Self-employed (own farm or ranch)	$30,000-$90,000
Garden Centers, Nurseries, Self-employed (own greenhouse or nursery)	$33,000-$55,000
Golf Courses, Landscape Services, City Parks and Recreation, Sports Turf Fields	$30,000-$50,000

[3] USDA 2020-2025 Employment Opportunities – in Food, Agriculture, Renewable Natural Resources, and the Environment (purdue.edu)

E. Avoidance of Unnecessary Duplication

Plant and Landscape Systems is a single degree program that will replace three undergraduate majors housed in the Department of Agronomy and Horticulture, including Agronomy, Horticulture and Turfgrass and Landscape Management (proposals for deletion will be forthcoming). A primary goal in its design was to eliminate duplication in option offerings and to unify learning outcomes among existing majors in Agronomy, Horticulture, and Turfgrass and Landscape Management. No cost savings will be realized from this consolidation. However, it will ensure every undergraduate student in the Department of Agronomy and Horticulture has similar preparation in core coursework, and it allows students to learn and interact with other students who have different career goals, but ones that are based in the plant, soil, and landscape sciences. PGA Golf Management and Plant Biology are complementary majors to the Plant and Landscape Systems major. Students in those majors take courses offered by Department of Agronomy and Horticulture faculty, but have different career paths. Most PGA Golf Management graduates become golf professionals who teach golf playing skills or manage golf pro shops and nearly all Plant Biology graduates enter graduate programs.

The Department of Agronomy and Horticulture has led UNL's land-grant mission of agricultural education for over 100 years. Department faculty collaborate with other departments to deliver this training, including plant pathology, entomology, biological systems engineering, natural resources, and landscape architecture. Within the state, students from Northeast Community College, Central Community College, Southeast Community College, Nebraska College of Technical Agriculture, and Metropolitan Community College offer two-year agronomy, horticulture and turfgrass management programs. The Department regularly communicates with these community college partners and evaluates courses to determine course equivalencies. The articulation agreements with these community colleges will be updated to reflect the new curriculum changes to ensure students from Nebraska's community colleges will continue to transfer to UNL to complete a bachelor's degree in Plant and Landscape Systems (see letter of support from Nebraska College of Technical Agriculture). The University of Nebraska at Omaha no longer offers horticulture courses, but the Department of Agronomy and Horticulture works with UNO students and faculty to help students successfully transfer to UNL to complete their degree in Agronomy, Horticulture or Turfgrass and Landscape Management. This will continue to occur with students planning to transfer into the Plant and Landscape Systems major. The University of Nebraska at Kearney has an agribusiness major that emphasizes business coursework. Private colleges in Nebraska, such as Doane and Concordia, offer agribusiness courses.

Regionally, the Plant and Landscape Systems major will compete with similar programs at other land-grant institutions, including Iowa State University, Kansas State University, and South Dakota State University.

The job prospect for graduates with this degree is fertile in Nebraska and beyond as employers seek to find employees with solid foundation training as well as specialized knowledge that will be gained through the emphasis areas proposed in this degree program. The ACT Labor Market Analyses indicates 10% growth in soil and plant professionals nationally for the period of 2018-2028. Employment opportunities include industry in sales, farm advisors, and agricultural managers.

F. Adequacy of Resources

1. Faculty/Staff: No change is expected.
2. Physical Facilities and Equipment: No change is expected. In addition, the University of Nebraska-Lincoln has the infrastructure and talent to ensure students have access to library resources to support their academic success.
3. Instructional Equipment and Informational Resources: No change is expected.

4. Budget Projections (see Budget Tables 1 and 2)

CCPE Table 2 shows the enrollment growth predicted, 10 resident students per year for the next five years (net gain of 50 students, from 179 students to 229 students).

IV. Appendix

A. Letters of Support
B. Curriculum: Majors, Options and Emphases (includes Tables 1-21)
C. Sample 4 Year Plans (includes Tables 22-25)
D. Learning Outcome Maps (includes Table 26)
E. Subject Prefix Conversion (includes Table 27)
F. Encoura Academic Interest Report
G. ACT Market Snapshot

A. Letters of Support

Corteva Agriscience
7250 NW 62nd Avenue
Johnston, IA 50131

27 July 2020

University Curriculum Committee:

This letter is in support of the proposed change for the undergraduate degree by the Department of Agronomy and Horticulture. I have served on the Agronomy & Horticulture Alumni Advisory Council since 2015 as a representative from private industry (DuPont Pioneer, now Corteva Agriscience). While my graduate training was in agronomy and weed science, I have worked in cross-functional and cross-disciplinary roles throughout most of my 15-year career, to-date. Specifically focused on integrating the science of agronomy with big data and predictive analytics, I (and Corteva) am passionate about driving sustainable intensification of our cropping systems. As such, I can speak to the skillsets we need and hire for, across not only agronomy, but also data science, crop modeling, digital, and precision agriculture.

I am pleased to see the new degree, Plant and Landscape Systems, and the ability for students to select an emphasis area. These emphasis areas will allow University of Nebraska students to really differentiate themselves from the competition. Across the board, private industry struggles to identify and hire cross-trained students in not only agronomy but in areas such as data science, math, geographic information systems (GIS), and digital. Because of these current gaps within the industry, we provide needed internal training to our employees, to either bolster agronomic understanding of data scientists or vice versa.

While a strong understanding of agronomic principles needs to remain as the foundation for any student graduating from UNL A&H, we must also recognize the changing landscape of agriculture and modify antiquated programs as needed. The proposed change to a single major and allowed differentiation within said major will provide students the opportunity to learn foundational principles while also developing marketable, relevant skillsets for placement after graduation. Thank you for the opportunity to voice my support for the proposed single major. I welcome any questions or requests for additional input.

Best,

Julie Abendroth

Leader within Predictive Agriculture, Research & Development, Corteva Agriscience

UNL B.Sc. 2001, UNL M.Sc. 2004

Kinghorn Gardens
Creating Beautiful Experiences

July 22, 2020

Martha Mamo
Professor and Department Head
Department of Agronomy and Horticulture
University of Nebraska-Lincoln
202H Keim Hall
Lincoln, NE 68583-0915

Design Services:
6464 Center Street
Suite 120
Omaha, NE 68106

Mailing Address:
P.O. Box 12455
Omaha, NE 68112

Ph (402) 457-6492
Fx (402) 457-0071

Dear Dr. Mamo,

I am grateful for the opportunity to write this letter of support for the re-envisioned Plant and Landscape Systems Degree within the Department of Agronomy and Horticulture.

It is apparent that the work done over the past few years on restructuring the curriculum is both thoughtful and progressive. I am in support of the department curriculum submittal for the following reasons:

1. Supports Strong Fundamentals - Sound science needs on a daily basis in the formation of a reliable professional in service to the clientele.
2. Offers Flexibility to the Student - Allows them to chart a direction more in alignment with their goals and broadens their learning opportunities.
3. Folded within this learning environment are two critical components that this curriculum leads to:
    1. Problem Solving Skill Building
    2. Fosters a sense of curiosity to learn beyond baseline expectations. Sustaining them as life long learners within a profession that needs both curiosity and critical thinking for the entirety of their career.

We look forward to the on-going working relationship we have with the University and Department in the years ahead.

With kind regards,

Bryan Kinghorn

Bryan Kinghorn
President

8-6-20

Dr. Martha Mamo

Agronomy Horticulture Department

UNL 202H Keim Hall

Lincoln, NE 68583-0915

Dear Dr. Mamo

I am writing to support the "new undergraduate degree proposal – Plant and Landscape Systems". I completed my BS and MS degrees in Agronomy at UNL in 1959 and 1961, respectively. I have been involved in soil fertility for many years and now soil health. Our laboratory works with many types of growers from around the world and I have experienced the desire for people to have more plant and soil knowledge.

I agree very strongly with the different choices for degrees. It seems natural that Agronomy and Horticulture involve growing plants and taking care of soil. Does it matter if it is an Agronomy or Horticulture plant? This proposal seems to bring the education of the student to understand plants and soils for any program. I work with all kinds of growers trying to improve their production practices or soil performance. It is interesting that I was educated in Agronomy but I have found that Horticulture has the same problems and the solving the problems are very similar, except on a different scale. I believe the new degree proposal will merge the two professions into a more diverse profession of plant and soil science.

The human population at this time seems to be more interested in the source and production of food. The new degree proposals seem to give students an opportunity to develop rewarding careers in plant and landscape systems. I think the new curriculum will fill some of the gaps I see in the soil and plant profession.

I have always been in favor of the department merger. The move now to merge the curriculums will build a sound education for all plant and landscape graduates. Opportunities should be much stronger.

Raymond C. Ward
Chair, PhD, CPSS, CCA

July 20, 2020

University of Nebraska Curriculum Committee
University of Nebraska
Lincoln, Nebraska

To Whom It May Concern;

Receiving support from stakeholders for new initiatives and programs is a vital part of any process. As a member of the Agronomy and Horticulture Alumni Advisory Committee, I was honored to be included in the process of the review of the curriculum for the new Plant and Landscape Systems degree program. The diversity of opportunities in agronomy and landscaping certainly made the process challenging. During and after the scheduled meetings led by Dr. Martha Mamo and Department of Agronomy and Horticulture team members, all committee members had the opportunity to review the information, offer suggestions, and comment on the curriculum. The department leaders maintained an open dialogue and listened to all constructive comments, ideas, and critiques from this committee and many other stakeholders. Although this was the first time for me to be included in a curriculum review process, it was inclusive, open, and engaging. This review was taken very seriously.

The diversity of the Agronomy and Horticulture program created multiple options for the new degree program. Based on specific needs generated by the committee members and other stakeholders for each discipline, the curriculum developed for each of 4 options satisfied the CASNR and UNL ACE requirements, Agronomy and Horticulture CORE requirements, department options, and department emphasis, including electives. My specialized field is Turfgrass Management, one of the specific options in the degree program. Although the turfgrass management field is currently in a decline, the ability to maintain relevance during trying times is paramount to hitting the upward cycle appropriately. The composition of the courses in the program covers the needs to get young learners excited and to make graduates attractive in the marketplace. A heavy emphasis is on the science required which include botany, turfgrass management, soils, water, plant nutrition and protection. Constituents in this field also demand an appreciation for business, interpersonal skills, and technology. All of these are incorporated in the new degree program.

Classroom education as we have learned and are learning with the COVID-19 pandemic has been and may be changed forever. The ability to teach and learn in alternative fashions is certainly becoming reality at all education levels. As a distance education graduate from UNL, I learned quickly how to navigate the distance requirements of the education process. Current students and future students will certainly be required to be flexible to learn by non-traditional methods. These will include distance education, guest lectures, site visits, and internships. There is a great need in the industry to have graduates with hands-on training when they start a new position. Internships that help meet this need are built into the new degree program.

After understanding the need for this review, witnessing the seriousness of the review process by the current department leaders, and having a chance to be included in the curriculum development review, I am in support of the new degree program.

Steven A. Merkel, CGCS, MS
Director of Agronomy and Maintenance
Landscapes Golf Management
Lincoln, Nebraska

University of Nebraska NCTA | NEBRASKA COLLEGE OF TECHNICAL AGRICULTURE

OFFICE OF THE DEAN
Larry Gossen, Ph.D.

To: Tiffany Heng-Moss

Dean, College of Agricultural Sciences and Natural Resources

From: Larry Gossen

Dean, Nebraska College of Technical Agriculture (NCTA)

Date: February 5, 2021

RE: Plant and Landscape Systems Degree Program

The Nebraska College of Technical Agriculture (NCTA) supports the Department of Agronomy and Horticulture's proposal to create a new bachelor's degree program in Plant and Landscape Systems. The new degree program aligns with the needs of today's workforce of agronomists, horticulturalists, landscape designers, turfgrass managers, and more.

The faculty at NCTA are committed to partnering with the Department of Agronomy and Horticulture to revise our current Associate to Bachelor (A to B) articulation pathway so students have a seamless transition and look forward to growing our partnership programming to ensure a talent workforce to support the state's agriculture industry.

Sincerely,

Larry Gossen
Dean
Nebraska College of Technical Agriculture

Ag Hall/404 E 7th Street/Curtis, NE 69025
(308) 367-5200/FAX (308) 367-5203/www.ncta.unl.edu

B. Curriculum: Majors, Options and Emphases
Tables 1-21

Table 1. CASNR Core.

CASNR Core	**26 credits**
College Integrative Course (ACE 8)	**3**
SCIL 101 Science and Decision-Making for a Complex World	
Communications	**6**
Written Communication (ACE 1) Select one of the following: ENGL 150 Writing and Inquiry – 3 cr. ENGL 151 Writing and Argument – 3 cr. ENGL 254 Writing and Communities – 3 cr. JGEN 120 Basic Business Communication – 3 cr. JGEN 200 Technical Communication I – 3 cr. JGEN 300 Technical Communication II – 3 cr.	3
Oral Communication (ACE 2) Select one of the following: ALEC 102 Interpersonal Skills for Leadership – 3 cr. COMM 101 Communication for the 21st Century – 3 cr. COMM 209 Public Speaking – 3 cr. COMM 210 Communicating in Small Groups – 3 cr. COMM 215 Visual Communication – 3 cr. COMM 283 Interpersonal Communication – 3 cr. COMM 286 Business and Professional Communication – 3 cr. JGEN 300 Technical Communication II – 3 cr. MRKT 257 Sales Communication – 3 cr. TMFD 121 Visual Communication and Presentation – 3 cr.	3
Mathematics and Statistics (ACE 3) Select 5 credits from the following: MATH 102 Trigonometry – 2 cr. MATH 104 Applied Calculus – 3 cr. MATH 106 Calculus I – 5 cr. STAT 218 Introduction to Statistics – 3 cr.	**5**
Economics, Humanities and Social Sciences AECN 141 or ECON 200, ECON 211, or ECON 212 (ACE 6) – 3 cr. For students planning on pursuing AECN 200+ level courses, take AECN 141 or ECON 212. Select one course each from ACE outcomes 5, 7, and 9. – 3 cr. each	**12**

Table 2. Major Core.

Major Core	**23 credits**
Major Integrative Course AGRO/HORT/TLMT 100 Plants, Landscapes, & the Environment – 3 cr.	**3**
Technical Data Communication AGRO/HORT/TLMT 230 Technical Reporting for Plant Systems – 3 cr.	**3**
Natural Sciences AGRO/HORT 131 Plant Science (ACE 4) – 3 cr. AGRO/HORT 153 Soil Resources – 4cr. AGRO/HORT 278 Botany – 4 cr.	**11**
Career Experience AGRO/HORT/TLMT 102 Internship and Career Preparation – 1 cr. AGRO/HORT/TLMT 295 Internship – 1 cr. A second internship (AGRO 395, HORT 395, TLMT 395L or TLMT 395T) is required and is option specific.	**2**
Pest Biology ENTO 105 Natural History of Arthropods Associated with Plants – 2 cr. PLPT 210 Introduction to Plant Diseases – 2 cr.	**4**

Table 3. Agronomy Option.

Agronomy option	**32**
Option requirements:	
AGRO 132 Agronomic Plant Science Lab – 1 cr.	1
CHEM 105 or CHEM 109 – 4 cr.	4
AGRO 204 Resource Efficient Crop Management – 3 cr.	3
AGRO 215 Genetics – 4 cr.	4
AGRO 325 Plant Physiology – 4 cr.	4
AGRO 395 Internship in Agronomy – 1 cr.	1
Select 12 hours from the following crop and soil management courses: AGRO 240 Forage Crop and Pasture Management – 3 cr. AGRO 269 Principles of Soil Management – 3 cr. AGRO 366 Soil Nutrient Relationships – 4 cr. AGRO 426 Invasive Plants – 3 cr. AGRO 431 Site-Specific Crop Management – 3 cr.	12
Option Capstone Course (ACE 10) Select one course: AGRO 405 Crop Management Strategies – 3 cr. AGRO 445 Livestock Management on Range and Pasture – 3 cr. AGRO 488 Entrepreneurship and Enterprise Development – 3 cr. AECN 435 Advanced Agricultural Marketing Management – 3 cr. AGRO 475 Water Quality Strategy – 3 cr.	3
Emphases and minors Students must complete two emphases, one emphasis and one minor, or two minors (minimally one must be in CASNR) of their choice for a minimum of 24 credit hours. Completion of a second major will account for 12 credits of this requirement. Courses used in the core, option or an emphasis area may not be counted twice. Suggested emphasis areas include: agronomic crop production; entrepreneurship; natural resources conservation; plant breeding, genetics, and biotechnology; plant protection; soil science; specialty crop production; urban food systems; and water for food. Suggested minors include agribusiness, agricultural economics, Engler entrepreneurship, international agriculture & natural resources, and precision agriculture. Students majoring in Plant and Landscape Systems cannot complete minors in agronomy, horticulture, landscape design and management, or turfgrass science and management. Students interested in these areas of study (outside of their option) should pursue relevant emphases	**24**
Agronomy option	**32**
Emphases and minors	**24**
Free electives	**15**
CASNR and Major Cores	**49**
Total credit hours	**120**

Table 4. Horticulture Option.

Horticulture option	**33**
Option requirements:	
CHEM 105 or CHEM 109 – 4 cr.	4
HORT 133 Horticultural Plant Sciences Lab – 1 cr.	1
HORT 215 Genetics – 4 cr.	4
HORT 221 Plant Propagation – 3 cr.	3
HORT 352 Horticultural Crop Physiology and Production – 2 cr.	2
HORT 395 Internship in Horticulture – 1 cr.	1
Select at least 11 hours from identification and production courses. *At least 6 hours from identification courses:* HORT 212 Woody Plants for Landscapes: Identification, Management, and Use – 3 cr. HORT 213 Cultivars and Varieties of Woody Plants for Landscapes – 3 cr. HORT 214 Herbaceous Landscape Plants – 3 cr. NRES 201 Dendrology: Study and Identification of Trees and Shrubs – 3 cr. *At least 2 hours from production courses:* HORT 306 Greenhouse Practices and Management – 3 cr. HORT 307 Hydroponics for Growing Populations – 3 cr. HORT 353 Vegetable Crop Production Laboratory – 2 cr. HORT 354 Fruit Production Laboratory – 2 cr. HORT 355 Perennial, Pot and Bedding Plant Production Laboratory – 2 cr. HORT 362 Nursery Crop Production – 2 cr. Select 4 hours from the following courses: AGRO 325 Plant Physiology – 4 cr. AGRO 478 Plant Anatomy – 4 cr. CHEM 106 or CHEM 110 – 4 cr. NRES 220 Ecology and NRES 222 Ecology Lab – 4 cr.	11 4
Option Capstone Course (ACE 10) Select one course: HORT 403 Scientific Writing and Communication – 3 cr. HORT 488 Entrepreneurship and Enterprise Development – 3 cr.	3
Emphases and minors Students must complete two emphases, one emphasis and one minor, or two minors (minimally one must be in CASNR) of their choice for a minimum of 24 credit hours. Completion of a second major will account for 12 credits of this requirement. Courses used in the core, option or an emphasis area may not be counted twice. Suggested emphasis areas include: entrepreneurship; flowers; landscape design; landscape management; plant breeding, genetics, and biotechnology; plant protection; specialty crop production; urban food systems; and water for food. Suggested minors include business; Engler entrepreneurship; hospitality, restaurant & tourism management; insect science; international agriculture & natural resources; urban forestry; and water science. Students majoring in Plant and Landscape Systems cannot complete minors in agronomy, horticulture, landscape design and management, or turfgrass science and management. Students interested in these areas of study (outside of their option) should pursue relevant emphases.	**24**
Horticulture option	**33**
Emphases and minors	**24**
Free electives	**14**
CASNR and Major Cores	**49**
Total credit hours	**120**

Table 5. Landscape Design and Management Option.

Landscape Design and Management option	**30-32**
Option requirements:	
CHEM 105 or CHEM 109 OR MSYM 109– 4 cr.	4
HORT 133 Horticultural Plant Sciences Lab – 1 cr.	1
HORT 212 Woody Plants for Landscapes: Identification, Management, and Use or NRES 201 Dendrology – 3 cr.	3
HORT 213 Cultivars and Varieties of Woody Plants for Landscapes – 3 cr.	3
HORT 214 Herbaceous Landscape Plants – 3 cr.	3
HORT 228 Introduction to Landscape Management – 3 cr.	3
HORT 265 Visual Communication for Landscape Design – 3 cr.	3
HORT 267 Introduction to Landscape Design Studio – 3 cr.	3
TLMT 395L Internship in Landscape Design and Management – 1 cr.	1
Select one course: HORT 300 Landscape Construction – 3 cr. HORT 467 Planting Design – 4 cr. TLMT 326 Landscape Solutions – 3 cr.	3-4
Option Capstone (ACE 10) Select one course: HORT 469 Ecological Landscape Design – 4 cr. HORT 470 Critical Thinking in Landscape Management – 3 cr.	3-4
Emphases and minors Students must complete two emphases, one emphasis and one minor, or two minors (minimally one must be in CASNR) of their choice for a minimum of 24 credit hours. Completion of a second major will account for 12 credits of this requirement. Courses used in the core, option or an emphasis area may not be counted twice. Suggested emphasis areas include: entrepreneurship; flowers; natural resources conservation; plant protection; soil science; turfgrass science and management; and urban food systems. Suggested minors include business; community and regional planning; Engler entrepreneurship; hospitality, restaurant & tourism management; insect science; international agriculture & natural resources; urban forestry; and water science. Students majoring in Plant and Landscape Systems cannot complete minors in agronomy, horticulture, landscape design and management, or turfgrass science and management. Students interested in these areas of study (outside of their option) should pursue relevant emphases.	**24**
Landscape Design and Management option	**30-32**
Emphases and minors	**24**
Free electives	**15-17**
CASNR and Major Cores	**49**
Total credit hours	**120**

Table 6. Turfgrass Science and Management Option.

Turfgrass Science and Management option	**30-31**
Option requirements	
AGRO 132 or HORT 133 – 1 cr.	1
AGRO 325 Plant Physiology – 4 cr.	4
CHEM 105 or CHEM 109 – 4 cr.	4
TLMT 227 Introductory Turfgrass Management – 3 cr.	3
TLMT 229 Introductory Turfgrass Management Laboratory – 1 cr.	1
TLMT 327 Turfgrass Science and Management – 3 cr.	3
TLMT 395T Internship in Turfgrass Science and Management – 1 cr.	1
TLMT 414 Turfgrass Diseases Management – 1 cr.	1
TLMT 480 Modified Root Zones – 1 cr.	1
Select one course in soil management: SOIL 269 Principles of Soil Management – 3 cr. SOIL 366 Soil Nutrient Relationships – 4 cr. SOIL 453 Urban Soil Properties and Management – 3 cr. SOIL 455 Soil Chemistry and Mineralogy – 3 cr. SOIL 472 Applied Soil Physics – 3 cr.	3-4
Select at least 5 hours from the following courses: AGRI 311 Domestic Study Tour in Turfgrass – 1 cr. AGRO 412 Crop and Weed Genetics – 2 cr. HRTM 475 Club Management – 3 cr. NRES 312 Introduction to Geospatial Information Sciences – 3 cr. TLMT 330 Pruning Ornamentals – 1 cr. TLMT 391T Special Topics in Turfgrass Science and Management – 1-5 cr. TLMT 395T Internship in Turfgrass Science and Management (3rd experience) – 1-3 cr.	5
Option Capstone (ACE 10) TLMT 427 Turfgrass Systems Management – 3 cr.	3
Emphases and minors Students must complete two emphases, one emphasis and one minor, or two minors (minimally one must be in CASNR) of their choice for a minimum of 24 credit hours. Completion of a second major will account for 12 credits of this requirement. Courses used in the core, option or an emphasis area may not be counted twice. Suggested emphasis areas include: entrepreneurship, flowers, landscape design, landscape management, natural resources conservation, plant protection, and soil science. Suggested minors include business; community and regional planning; Engler entrepreneurship; hospitality, restaurant & tourism management; urban forestry; and water science. Students majoring in Plant and Landscape Systems cannot complete minors in agronomy, horticulture, landscape design and management, or turfgrass science and management. Students interested in these areas of study (outside of their option) should pursue relevant emphases.	**24**
Turfgrass Science and Management option	**30-31**
Emphases and minors	**24**
Free electives	**16-17**
CASNR and Major Cores	**49**
Total credit hours	**120**

EMPHASIS AREAS

Table 7. Urban Food Systems emphasis requirements.

Requirement	Credit Hours
Choose at least 3 production credits from: HORT 306 Greenhouse Management HORT 307 Hydroponics for Growing Populations HORT 353 Vegetable Crop Production Lab HORT 354 Fruit Crop Production Lab	3
Choose 3 soils credits from: SOIL 453 Urban Soil Properties and Management SOIL 455 Soil Chemistry and Mineralogy	3
Choose 3 food credits from: FDST 101 Introductory Food Science FDST 101 FDST 131 + L The Science of Food + Lab FDST 372 Food Safety and Sanitation	3
Choose 3 marketing, business, or entrepreneurship credits from: AECN 225 Agribusiness Entrepreneurship in Food Products Marketing AGRI 375 Innovations for Agriculture HORT 388 Business Systems in Entrepreneurship HORT 488 Entrepreneurship and Enterprise Development	3
Total	12

Table 8. Natural Resource Conservation emphasis requirements. [1,2]

Requirement	Credit Hours
Required Soil Science Courses (3-6 cr. depending on option): SOIL 269 Principles of Soil Management SOIL 279 Soil Evaluation SOIL 354 Soil Conservation and Watershed Management SOIL 366 Soil Nutrient Relationships	3-6
Required Plant Ecology and Management Courses (3-6 credits depending on option): AGRO 242 North American Wildland AGRO 245 Plants Introduction to Grassland Ecology and Management AGRO 442 Wildland Plants	3-6
Choose 6-9 credits from: AGRO 440 Great Plains Ecosystems NRES 451 Soil, Air, and Environmental Chemistry SOIL 361 Soils, Environment and Water Quality SOIL 455 Soil Chemistry and Mineralogy SOIL 460 Soil Microbiology SOIL 472 Applied Soil Physics SOIL 477 Great Plains Field Pedology WATS 281 Introduction to Water Science	6-9
Total	12-15

[1]emphasis completion meets the minimum requirements for the current federal occupational requirements in positions in soil and/or natural resources conservation or management

[2]to meet the occupational requirements, the SOIL subject codes on cross-listed courses are required

Table 9. Flowers emphasis requirements.

Requirement	Credit Hours
HORT 261 Floral Design I	3
Choose 6 credits in Identification, production, and design from: HORT 214 Herbaceous Landscape Plants HORT 262 Floral Design II HORT 306 Greenhouse Management and Practices HORT 355 Perennial, Pot and Bedding Plant Production Laboratory HORT 362 Nursery Production	6
Choose 3 credits in business and entrepreneurship to explore new floral industry products or business plans from: AGRI 375 Innovations for Agriculture HORT 388 Business Systems in Entrepreneurship HORT 488 Entrepreneurship and Enterprise Development	3
Total	12

Table 10. Controlled Environment Agriculture emphasis requirements.

Requirement	Credit Hours
HORT 306 Greenhouse Practices and Management	3
Choose 6 additional Controlled Environment Agriculture credits from: HORT 221 Plant Propagation HORT 307 Hydroponics for Growing Populations HORT 352 Horticultural Crop Physiology and Production HORT 353 Vegetable Crop Production Laboratory HORT 355 Perennial, Pot and Bedding Plant Production Laboratory HORT 462 Cannabis Production and Breeding Basics	6
Choose 3 credits in business and entrepreneurship to explore new CEA products and business plans from: AGRI 375 Innovations for Agriculture HORT 388 Business Systems in Entrepreneurship HORT 488 Entrepreneurship and Enterprise Development	3
Total	12

Table 11. Water for Food emphasis requirements.

Requirement	Credit Hours
Choose 12 credits from*:* SCIL 109 Water in Society WATS 281 Introduction to Water Science SOIL 361 Soils, Environment and Water Quality AGRO 452 Irrigation Systems Management SOIL 354 Soil Conservation and Watershed Management	12
Total	12

Table 12. Agronomic Crop Production emphasis requirements.

Requirement	Credit Hours
Required, but do not count toward 12 credits if not completed in option: AGRO 204 Resource Efficient Crop Management SOIL 269 Principles of Soil Management or AGRO 366 Soil Nutrient Relationships AGRO 405 Crop Management Strategies	 3 3-4 3
Choose 3-12 credits from: AGRO 240 Forage Crop and Pasture Management SOIL 269 Principles of Soil Management AGRO 366 Soil Nutrient Relationships AGRO 405 Crop Management Strategies AGRO 426 Invasive Plants AGRO 431 Site-specific Crop Management AGRO 435 Agroecology AGRO 436 Agroecosystems analysis AGRO 439 Organic Farming and Food Systems AGRO 452 Irrigation Systems Management AGRO 496 Crops Judging Competition	3-12
Total	12-13

Table 13. Specialty Crop Production emphasis requirements.

Requirement	Credit Hours
Required, but do not count toward 12 credits if not completed in option: HORT 221 Plant Propagation HORT 352 Production and Physiology of Horticultural Crops	0-5
Choose 12 credits from: HORT 306 Greenhouse Practices and Management HORT 307 Hydroponics for Growing Populations HORT 319 Edible Landscapes HORT 353 Vegetable Crop Production Lab HORT 354 Fruit Crop Production Lab HORT 355 Perennial Production Lab HORT 362 Nursery Management HORT 462 Cannabis Production and Breeding HORT 471 Vines, Wines, and You	12
Total	12-17

Table 14. Plant Breeding, Genetics, and Biotechnology emphasis requirements.

Requirement	Credit Hours
AGRO 216 Plant Breeding Principles and Practice	2
Choose ten credits from: AGRO 409A Case Studies in Plant Breeding; Breeding for Disease Resistance AGRO 409B Case Studies in Plant Breeding: Transgenic Strategies for Disease Resistance AGRO 411 Crop Genetic Engineering AGRO 412 Crop and Weed Genetics AGRO 420 Bioinformatics Applications in Agriculture BIOS 425 Plant Biotechnology AGRO 429 Plant Biotechnology Applications BIOS 471 Plant Systematics	10
Total	12

Table 15. Soil Science emphasis requirements.

Requirement	Credit Hours
Choose any 12 credit from: AGRO 269 Principles of Soil Management AGRO 279 Soil Evaluation[1] AGRO 366 Soil Nutrient Relationships AGRO 453 Urban Soil Properties and Management AGRO 455 Soil Chemistry and Mineralogy AGRO 460 Soil Microbiology AGRO 472 Applied Soil Physics AGRO 477 Great Plains Field Pedology AGRO 496 Soil Microbiology Lab AGRO 496 Independent Study - Soil Carbon and Nitrogen Dynamics NRES 451 Soil, Air, and Environmental Chemistry	12
Total	12

[1]Soil Judging Team; can be taken multiple semesters

Table 16. Entrepreneurship emphasis requirements.

Requirement	Credit Hours
Choose 6 entrepreneurship credits from: AGRI 375 Innovations for Agriculture EAEP 101 Introductory Seminar: Opportunities in Entrepreneurship EAEP 275 Agribusiness Entrepreneurial Finance ENTR 322 Family Business HORT 388 Business Systems in Entrepreneurship HORT 488 Entrepreneurship and Enterprise Development	6
Choose 3 accounting credits from: ACCT 200 Accounting for Business Decisions ACCT 201 Introduction to Accounting I	3
Choose 3 marketing, finance or supply chain management credits from: FINA 260 Personal Finance MRKT 225 Agribusiness Entrepreneurship in Food Marketing MRKT 257 Sales Communication SCMA 331 Operations and Supply Chain	3
Total	12

Table 17. Turfgrass Science and Management emphasis requirements.

Requirement	Credit Hours
TLMT 227 Introductory Turfgrass Management	3
TLMT 327 Turfgrass Science and Management	3
TLMT 427 Turfgrass Systems Management	3
Choose any 3 credits from: AGRI 311 Study Tours in US Agriculture (turf tour) TLMT 229 Introductory Turfgrass Management Lab TLMT 391T Special Topics in Turfgrass Science and Management TLMT 395 Internship in Turfgrass Science and Management TLMT 414 Turfgrass disease management TLMT 480 Modified Root Zones	3
Total	12

Table 18. Plant Science Research emphasis requirements.

Requirement	Credit Hours
Research experience for at least one internship	0
MATH 104 or 106 in core	0
PHYS 141 or 151	4-5
CHEM 110	4
Choose 4 organic and biochemistry credits from: CHEM 251 and 253 Organic Chemistry I and Laboratory (4 cr.)	4
Choose 8 plant biology credits (only 4 credits needed for agronomy option students): AGRO/HORT 215 Genetics (4 cr.) AGRO 325 Introductory Plant Physiology (4 cr.) AGRO/HORT 478 Plant Anatomy (4 cr.)	4-8
Total	16-20

Table 19. Plant Protection emphasis requirements.

Requirement	Credit Hours
AGRO 426 Invasive Plants	3
PLPT 369 Introduction to Plant Pathology	3
Choose 3 insect credits from: ENTO 115 Insect Biology ENTO 308 Field Crop Insects ENTO 403 Horticultural Insects	3
Choose three credits from: ENTO 116 Insect identification PLPT 369L Introduction to Plant Pathology Lab TLMT 414 Turfgrass diseases AGRO 270 Biological invaders NRES 348 Wildlife management	3
Total	12

Table 20. Landscape Management emphasis requirements.

Requirement	Credit Hours
Choose 12 credits from: HORT 227 Turfgrass Management HORT 228 Introduction to Landscape Management HORT 319 Edible Landscapes HORT 326 Landscape Solutions HORT 330 Pruning Ornamentals HORT 470 Critical Thinking in Landscape Management	12
Total	12

Table 21. Landscape Design emphasis requirements.

Requirement	Credit Hours
Choose 12 credits from: HORT 265 Visual Communication HORT 267 Introduction to Landscape Design HORT 300 Landscape Construction HORT 319 Edible Landscapes HORT 467 Planting Design HORT 469 Senior Design	12
Total	12

C. Sample 4 Year Plans
Tables 22-25

4-YEAR PLANS

Table 22. Agronomy 4-year plan.

Agronomy Option			
Credits	Term 1 - Fall	Credits	Term 2 - Spring
2	ENTO 105	3	AGRO 230
3	AGRO 131	3	ACE 2 Oral Communication
1	AGRO 132	4	AGRO 153
2	MATH 102	3	SCIL 101
3	ACE 1 Written Communication	2	PLPT 210
3	AGRO 100		
1	AGRO 102		
15		15	
	Term 3 - Fall		Term 4 - Spring
4	CHEM 105 or 109	4	AGRO 278
4	AGRO 215	3	ACE 6 Economics
3	Emphasis or minor course	3	AGRO 204
1	TLMT 295	3	AGRO 240, 269, 366, 426, or 431
3	AGRO 240, 269, 366, 426, or 431	3	STAT 218
15		16	
	Term 5 - Fall		Term 6 - Spring
3	Emphasis or minor course	4	AGRO 325
3	Emphasis or minor course	3	ACE 5 Humanities
3	ACE 7 Arts	3	AGRO 240, 269, 366, 426, or 431
3	AGRO 240, 269, 366, 426, or 431	3	Emphasis or minor course
3	Free elective	3	Free elective
15		16	
	Term 7 - Fall		Term 8 - Spring
3	Emphasis or minor course	3	Emphasis or minor course
1	AGRO 395	3	ACE 8 Ethics (free elective if SCIL 101 taken)
3	ACE 10 Capstone AGRO 405, 445, 475, 488 or AECN	3	Free elective
3	Emphasis or minor course	3	ACE 9 Global Awareness
3	Free elective	3	Emphasis or minor course
13		15	
120	8-semester credit total		

Table 23. Horticulture 4-year plan.

Horticulture option			
Credits	Term 1 - Fall	Credits	Term 2 - Spring
3	ACE 1 Written Communication	3	AGRO 230
1	HORT 133	3	ACE 2 Oral Communication
3	HORT 131	4	HORT 153
2	MATH 102	3	SCIL 101
2	ENTO 105	2	PLPT 210
3	HORT 100	15	
1	HORT 102		
15			
	Term 3 - Fall		Term 4 - Spring
4	CHEM 105 or 109	4	HORT 278
4	HORT 215	3	ACE 6 Economics
2	HORT 352	3	HORT 221
1	HORT 295	3	Emphasis or minor course
3	HORT 201, 212, 213, or 214	3	STAT 218
14		16	
	Term 5 - Fall		Term 6 - Spring
2	HORT 306, 307, 353, 354, 355, or 362	4	Free elective
3	Emphasis or minor course	3	ACE 5 Humanities
3	ACE 7 Arts	4	AGRO 325, 478, CHEM 106, 110, or NRE 220 and 22
3	HORT 201, 212, 213, or 214	3	Emphasis or minor course
3	Emphasis or minor course	3	Identification or production course
14		17	
	Term 7 - Fall		Term 8 - Spring
3	Free elective	3	ACE 10 Capstone HORT 403 or HORT 488
1	HORT 395	3	ACE 8 Ethics (free elective if SCIL 101 taken)
3	Emphasis or minor course	3	Emphasis or minor course
3	Emphasis or minor course	3	ACE 9 Global Awareness
4	Free elective	3	Emphasis or minor course
14		15	
120	8-semester credit total		

Table 24. Landscape Design and Management 4-year plan.

Landscape Design and Management option			
Credits	Term 1 - Fall	Credits	Term 2 - Spring
2	ENTO 105	3	AGRO 230
4	HORT 153	3	ACE 2 Oral Communication
2	MATH 102	3	HORT 131
3	ACE 1 Written Communication	1	HORT 133
3	HORT 100	3	SCIL 101
1	HORT 102	2	PLPT 210
15		15	
	Term 3 - Fall		Term 4 - Spring
4	CHEM 105 or 109 or MSYM 109	4	HORT 278
3	HORT 228	3	ACE 6 Economics
3	HORT 265	3	HORT 267
1	HORT 295	3	HORT 213
3	HORT 212 or 201	3	STAT 218
14		16	
	Term 5 - Fall		Term 6 - Spring
3	Emphasis or minor course	3	Free elective
3	HORT 214	3	ACE 5 Humanities
3	ACE 7 Arts	3	Emphasis or minor course
3	HORT 300, 467 or 326	3	Emphasis or minor course
3	Free elective	3	Free elective
15		15	
	Term 7 - Fall		Term 8 - Spring
3	Emphasis or minor course	3	HORT 469 or TLMT 470
1	TLMT 395L	3	ACE 8 Ethics (free elective if SCIL 101 taken)
3	Emphasis or minor course	3	Emphasis or minor course
3	Emphasis or minor course	3	ACE 9 Global Awareness
5	Free elective	3	Emphasis or minor course
15		15	
120	8-semester credit total		

Table 25. Turfgrass Science and Management 4-year plan.

Turfgrass Science and Management Option			
Credits	Term 1 - Fall	Credits	Term 2 - Spring
2	ENTO 105	3	AGRO 230
4	AGRO 153	3	ACE 2 Oral Communication
2	MATH 102	3	AGRO 131
3	ACE 1 Written Communication	1	AGRO 132 or HORT 133
3	TLMT 100	3	SCIL 101
1	TLMT 102	2	PLPT 210
15		15	
	Term 3 - Fall		Term 4 - Spring
4	CHEM 105 or 109	4	AGRO 278
3	TLMT 227	3	ACE 6 Economics
1	TLMT 229	3	Emphasis or minor course
1	TLMT 295	3	Emphasis or minor course
3	Emphasis or minor course	3	STAT 218
3	ACE 7 Arts		
15		16	
	Term 5 - Fall		Term 6 - Spring
1	option select from list*	3	SOIL 269, 366, 453, 455, or 472
1	option select from list*	1	TLMT 414
3	Emphasis or minor course	1	TLMT 480
3	Emphasis or minor course	4	AGRO 325
3	ACE 5 Humanities	3	Emphasis or minor course
3	Free elective	3	TLMT 327
		15	
14			
	Term 7 - Fall		Term 8 - Spring
3	TLMT 427	1	option select from list*
1	TLMT 395T	1	option select from list*
1	option select from list*	4	Free elective
3	ACE 8 Ethics (free elective if SCIL 101 taken)	3	ACE 9 Global Awareness
3	Emphasis or minor course	3	Free elective
4	Free elective	3	Emphasis or minor course
15		15	
120	8-semester credit total		
*option select from list: AGRI 311, AGRO 412, HORT 242, HRTM 475, NRES 312, TLMT 330, 395T, 396T			

D. Learning Outcome Maps
Table 26ps

Table 26. Student learning outcomes and courses that will assess each outcome (using new PLAS codes).

Learning Outcome	Specific Course(s) to Assess Outcome
Graduates from the Plant and Landscape Systems degree program will be able to:	
1. Recognize, describe, and assess the value of nature.	Botany (PLAS 278) and Soil Resources (PLAS 153)
2. Manage complex plant and soil systems which provide services for people and the planet.	Plants, Landscapes, and the Environment (PLAS 100)
3. Apply science and technology knowledge to problem solving.	Plant Science (PLAS 131), Natural History of Arthropods Associated with Plants (ENTO 105), and Introduction to Plant Diseases (PLPT 210)
4. Use diverse methods to generate, visualize, and communicate data that reveals truths and guides decision making	Plant Propagation (PLAS 221), Technical Reporting for Plant Systems (PLAS 230), and Introductory Plant Physiology (PLAS 325),
5. Demonstrate effective communication to engage a target audience based on available information.	Option-specific capstones: Scientific Writing and Communication (PLAS 403); Entrepreneurship and Enterprise Development (PLAS 488); Crop Management Strategies (PLAS 405); Ecological Landscape Design (PLAS 469); Critical Thinking in Landscape Management (PLAS 470); Turfgrass Systems Management (PLAS 427)
6. Lead and contribute to teams to amplify success in problem solving.	Technical Reporting for Plant Systems (PLAS 230), Career Experience (PLAS 395ABLT)

E. Subject Prefix Conversion

Table 27

Table 27. Prefix Conversion. Delete AGRO, HORT, and TLMT prefixes. Leave other cross-listings as is (not listed below).

Current Prefixes, Numbers, and Course Names	New Prefix and Number
AGRO 092 Plant Biology Portfolio and Assessment	PLAS 092
AGRO/HORT 100 Plants, Landscapes, & the Environment	PLAS 100
AGRO/HORT/TLMT 102 Internship and Career Preparation	PLAS 102
AGRO 107 Invasive Plant Species: Impacts on Ecosystems	PLAS 107
AGRO/HORT 131 Plant Science	PLAS 131
AGRO 132 Agronomic Plant Science Laboratory	PLAS 132
HORT 133 Horticultural Plant Science Laboratory	PLAS 133
AGRO/HORT/TLMT 134 Plant Sciences Laboratory	PLAS 134
AGRO/HORT 153 Soil Resources	PLAS 153
AGRO 204 Resource-Efficient Crop Management	PLAS 204
HORT 212 Landscape Plants I	PLAS 212
HORT 213 Landscape Plants II	PLAS 213
HORT 214 Herbaceous Landscape Plants	PLAS 214
AGRO/HORT/TLMT 215 Genetics	PLAS 215
AGRO 216 Plant Breeding Principles and Practice	PLAS 216
HORT 221 Plant Propagation	PLAS 221
AGRO/HORT/TLMT 227 Introductory Turfgrass Management	PLAS 227
AGRO/HORT/TLMT 228 Introduction to Landscape Management	PLAS 228
AGRO/HORT/TLMT 229 Introductory Turfgrass Management Laboratory	PLAS 229
AGRO 230 Technical Reporting for Plant Systems	PLAS 230
AGRO 240 Forage Crop and Pasture Management	PLAS 240
AGRO/HORT 242 North American Wildland Plants	PLAS 242
AGRO 245 Introduction to Grassland Ecology and Management	PLAS 245
HORT 261 Floral Design I	PLAS 261
HORT 262 Floral Design II	PLAS 262
HORT 265 Visual Communication for Landscape Design	PLAS 265
HORT 267 Introduction to Landscape Design Studio	PLAS 267
AGRO 269 Principles of Soil Management	PLAS 269
AGRO/HORT 278 Botany	PLAS 278
AGRO 295 Internship	PLAS 295
HORT 300 Introduction to Landscape Construction	PLAS 300
HORT 301 Introduction to Landscape Contracting	PLAS 301
HORT 306 Greenhouse Practices and Management	PLAS 306
HORT 307 Hydroponics for Growing Populations	PLAS 307
HORT 319 Edible Landscapes	PLAS 319
AGRO 325 Introductory Plant Physiology	PLAS 325
AGRO/HORT/TLMT 326 Landscape Solutions	PLAS 326
AGRO/HORT/TLMT 327 Turfgrass Science and Management	PLAS 327
AGRO/HORT/TLMT 330 Pruning Ornamentals	PLAS 330
AGRO 340 Range Management and Improvement	PLAS 340
HORT 352 Production and Physiology of Horticultural Crops	PLAS 352

Current Prefixes, Numbers, and Course Names	New Prefix and Number
HORT 353 Vegetable Crop Production Laboratory	PLAS 353
HORT 354 Fruit Production Laboratory	PLAS 354
HORT 355 Perennial, Pot and Bedding Plant Production Laboratory	PLAS 355
HORT 362 Nursery Crop Production	PLAS 362
AGRO 366 Soil Nutrient Relationships	PLAS 366
AGRO/HORT/TLMT 375 Innovations for Agriculture	PLAS 375
AGRO/HORT 388 Business Systems in Entrepreneurship	PLAS 388
TLMT 391T Special Topics in Turfgrass Science and Management	PLAS 391T
AGRO 395 Internship in Agronomy	PLAS 395A
HORT 395 Internship in Horticulture	PLAS 395B
TLMT 395T Internship in Turfgrass Science and Management	PLAS 395T
TLMT 395L Internship in Landscape Design and Management	PLAS 395L
HORT 396 Current Projects and Topics in Horticulture	PLAS 396B
HORT 399 Independent Study	PLAS 399
AGRO/HORT 403 Scientific Writing and Communication	PLAS 403
AGRO 405 Crop Management Strategies	PLAS 405
AGRO/HORT 409A Case studies in plant breeding: Breeding for Disease Resistance	PLAS 409
AGRO/HORT 409B Case Studies in plant breeding: Transgenic strategies for Disease Resistance	PLAS 409
AGRO 411 Crop Genetic Engineering	PLAS 411
AGRO 412 Crop and Weed Genetics	PLAS 412
AGRO 420 Bioinformatics Applications in Agriculture	PLAS 420
AGRO/HORT 426 Invasive Plants	PLAS 426
AGRO/HORT/TLMT 427 Turfgrass Systems Management	PLAS 427
AGRO 429 Plant Biotechnology Applications	PLAS 429
AGRO 431 Site-specific Crop Management	PLAS 431
AGRO/HORT 435 Agroecology	PLAS 435
AGRO/HORT 436 Agroecosystems Analysis	PLAS 436
AGRO/HORT 439 Organic Farming and Food Systems	PLAS 439
AGRO 440 Great Plains Ecosystem	PLAS 440
AGRO/HORT 441 Perennial Plant Function, Growth, and Development	PLAS 441
AGRO 442 Wildland Plants	PLAS 442
AGRO 444 Ecosystem Monitoring and Assessment	PLAS 444
AGRO/HORT 453 Urban Soil Properties and Management	PLAS 453
AGRO 455 Soil Chemistry and Mineralogy	PLAS 455
AGRO 460 Soil Microbiology	PLAS 460
HORT 467 Planting Design	PLAS 467
HORT 469 Ecological Landscape Design	PLAS 469
AGRO/HORT/TLMT 470 Critical Thinking in Landscape Management	PLAS 470
HORT 471 Vines, Wines, and You	PLAS 471
AGRO 472 Applied Soil Physics	PLAS 472
AGRO/HORT/TLMT 480 Modified Rootzones	PLAS 480
AGRO/HORT 488 Entrepreneurship and Enterprise Development	PLAS 488

Current Prefixes, Numbers, and Course Names	New Prefix and Number
AGRO/HORT 489 Urbanization of Rural Landscapes	PLAS 489
AGRO 496 Independent Study	PLAS 496
AGRO 498 Senior Project	PLAS 498
AGRO 499H Honors Thesis	PLAS 499H
HORT 499H Honors Thesis	delete, only need one honors course

F. Encoura Academic Interest Report

Search Name:		Exported On:	11/11/2020 3:35 PM
Search Type:	Recommended, Prospect Search	Latest Search Action:	Edited 11/11/2020 3:35 PM by You
Search Time Period:	Now	Search Volume:	80,667
		Undiscovered:	3,392

Filter Summary

Filter Criteria	Criteria Details
Career & Academic Interest	Agriculture
Graduation Year	2021

Enrollment Predictor

Score Range	Volume
0.90-1.00	2,945
0.80-0.89	7,430
0.70-0.79	10,448
0.60-0.69	11,223
0.50-0.59	12,413
0.40-0.49	10,664
0.30-0.39	9,670
0.20-0.29	8,830
0.10-0.19	5,830
0.00-0.09	846

Distribution Breakdown by Gender

Gender	Volume	Percentage
Another Gender	8	0.01%
Not Reported	953	1.18%
Female	30,381	37.66%
Male	49,325	61.15%

Distribution Breakdown by State

State	Volume	State	Volume	State	Volume	State	Volume
AK	30	KS	1,529	NM	598	WA	767
AL	5,255	KY	1,376	NV	606	WI	1,739
AR	1,619	LA	2,216	NY	2,071	WV	465
AZ	1,887	MA	710	OH	4,422	WY	274
CA	5,345	MD	330	OK	3,544		
CO	908	ME	89	OR	1,193		
CT	397	MI	1,037	PA	1,866		
DC	11	MN	2,553	PR	1		
DE	174	MO	3,041	RI	47		
FL	2,410	MP	1	SC	2,554		
FM	1	MS	1,210	SD	509		
GA	2,825	MT	603	TN	3,050		
HI	423	NC	2,721	TX	7,637		
IA	1,168	ND	520	UT	794		
ID	394	NE	2,099	VA	885		
IL	1,647	NH	42	VI	1		
IN	1,828	NJ	1,035	VT	210		

G. ACT Market Snapshot

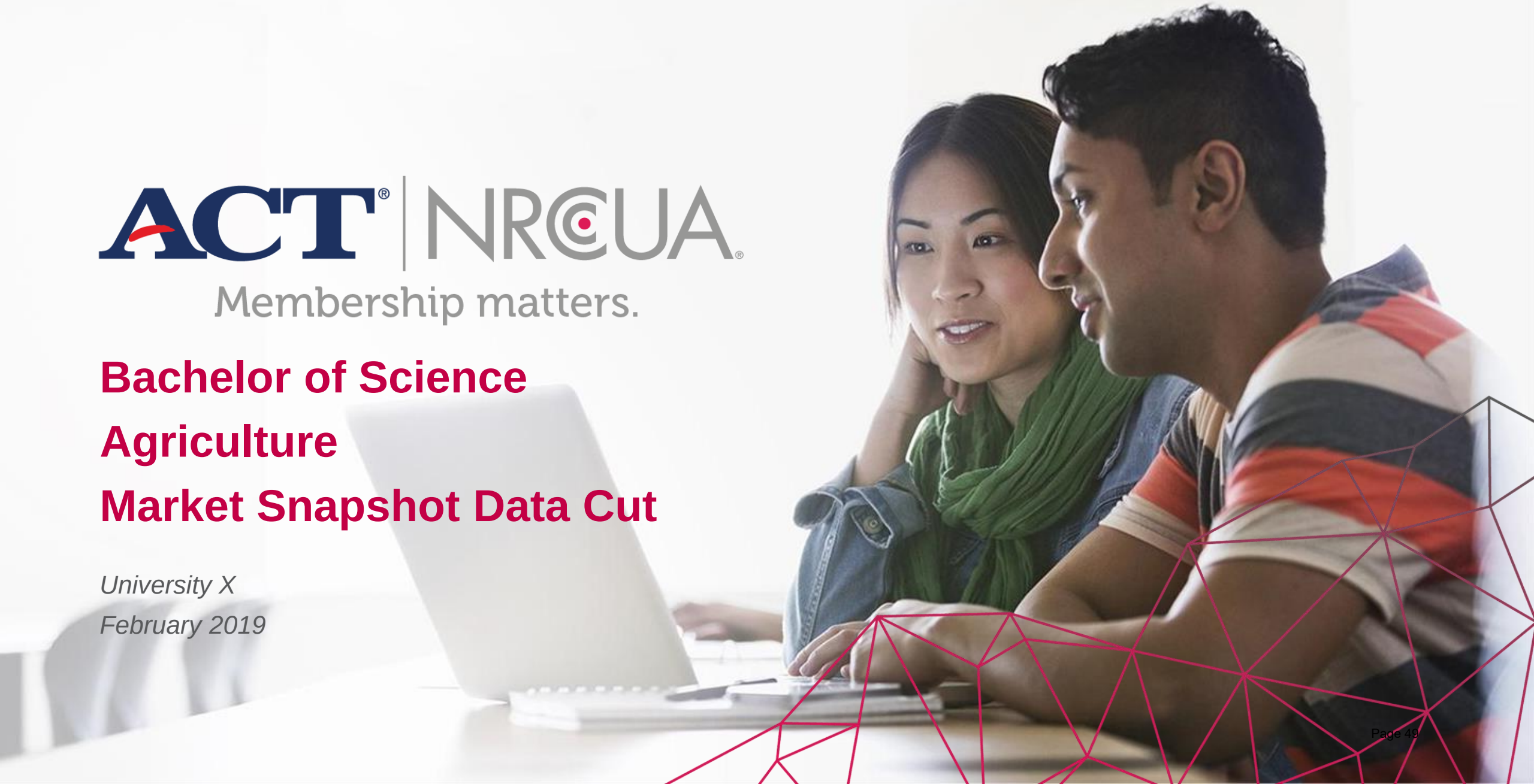
ACT® | NRCUA®

Membership matters.

Bachelor of Science Agriculture Market Snapshot Data Cut

University X

February 2019



Labor Market Demand- National

encoura Eduventures Research

National Labor Market Demand: All Occupations

SOC	Description	2018 Jobs	2028 Jobs	2018-2028 Change	2018-2028 % Change	States with highest number of 2028 jobs
All SOC Codes	All Occupations	151,603,792	166,427,697	14,823,905	9.8%	CA, TX, NY, FL, IL

National Labor Market Demand: Identified Occupations

SOC	Description	2018 Jobs	2028 Jobs	2018-2028 Change	2018-2028 % Change	States with highest number of 2028 jobs
19-1011	Animal Scientists	3,540	3,901	361	10.2%	MA, WI, CA, NY, MN
25-9021	Farm & Home Management Advisors	9,907	10,895	988	10.0%	KY, MI, CA, TX, IN
49-3041	Farm Equipment Mechanics and Service Technicians	38,683	41,759	3,076	8.0%	TX, CA, IA, OH, WI
	Farmers, Ranchers, & Other Agricultural Managers	83,908	89,801	5,893	7.0%	CA, WA, TX, FL, OR
19-1012	Food Scientists and Technologists	17,686	19,111	1,425	8.1%	CA, NJ, TX, GA, MI
45-2041	Graders and Sorters, Agricultural Products	64,281	68,088	3,807	5.9%	CA, TX, WA, FL, GA
49-3042	Mobile Heavy Equipment Mechanics, Except Engines	144,224	156,631	12,407	8.6%	TX, CA, FL, PA, WA
	Soil and Plant Scientists	17,345	19,152	1,807	10.4%	CA, TX, IA, NC, MN

Source: Emsi

TABLE 1: PROJECTED EXPENSES - NEW INSTRUCTIONAL PROGRAM
UNL BS in Plant and Landscape Systems

	(FY2022) Year 1		(FY2023) Year 2		(FY2024) Year 3		(FY2025) Year 4		(FY2026) Year 5		
Personnel	**FTE**	Cost	FTE	Cost	FTE	Cost	FTE	Cost	FTE	Cost	**Total Cost**
Faculty											
Professional											
Graduate Assistants											
Support Staff											
Subtotal		$0		$0		$0		$0		$0	$0
Operating											
General Operating [1]		$0		$0		$0		$0		$0	$0
Equipment											
New or renovated space											
Library/Information Resources											
Subtotal		$0		$0		$0		$0		$0	$0
Total Expenses		$0		$0		$0		$0		$0	**$0**

[1] The department and college will internally reallocate funds to update recruiting and advising materials, web page development, and further support recruiter travel to promote the revised program.

TABLE 2: PROJECTED REVENUES - NEW INSTRUCTIONAL PROGRAM
UNL BS in Plant and Landscape Systems

	(FY2022) Year 1	(FY2023) Year 2	(FY2024) Year 3	(FY2025) Year 4	(FY2026) Year 5	**Total**
Reallocation of Existing Funds						
Required New Public Funds						
1. State Funds						
2. Local Tax Funds (community colleges)						
Tuition and Fees [1]	$77,700	$155,400	$233,100	$310,800	$388,500	$1,165,500
Other Funding						
Total Revenue	$77,700	$155,400	$233,100	$310,800	$388,500	$1,165,500

[1] Gross tuition projection based on projected enrollment in table below. The estimated course and lab fees per student over the course of their program is $500.

	(FY2022) Year 1		(FY2023) Year 2		(FY2024) Year 3		(FY2025) Year 4		(FY2026) Year 5	
Student Type	R	NR	R	NR	R	NR	R	NR	R	NR
Est. Tuition per student	$7,770	$24,900	$7,770	$24,900	$7,770	$24,900	$7,770	$24,900	$7,770	$24,900
Est. Total Enrollment in Major	189		199		209		219		229	
Est. Total New Students in Major	10		20		30		40		50	
Est. New Enrollment - Student Type	10	0	20	0	30	0	40	0	50	0
Est. New Tuition & Fees	$77,700	$0	$155,400	$0	$233,100	$0	$310,800	$0	$388,500	$0
Est. New Tuition & Fees	$77,700		$155,400		$233,100		$310,800		$388,500	
Est. New Total Tuition & Fees	**$1,165,500**									