

**HLTSBS Program Assessment Report
Horticulture Department
University of Arkansas
Academic Year 2021-2022**

Department of Horticulture

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Department Mission

The mission of the Department of Horticulture at The University of Arkansas is to conduct applied and basic research and support and enhance the Arkansas horticulture industries and to conduct high quality teaching and student research programs leading to B.S., M.S. and Ph.D. degrees in a diverse, equitable, and inclusive environment. Our department head and dedicated faculty and staff have set specific goals for executing our mission.

Program Goals

The goal of the Department of Horticulture is to serve the people of Arkansas and assist the nation and the world through education, research, and service. Through dedicated teaching, pursuit of knowledge and interaction with society, we seek to improve our contributions to the general welfare. The Department of Horticulture has, as perhaps no other department, a goal to create quality of life for all citizens – economic, aesthetic and social well-being by educating students in horticultural and turfgrass sciences, conducting research that makes a difference, and to communicate those findings to industry and the public.

University of Arkansas General Education Curriculum Outcomes Assessed in This Report:

Goal 1: Strengthen written, oral, and multimodal communication abilities.

Learning Outcome 1.2 – Upon reaching this goal, students will be able to communicate with a variety of audiences not only in writing but also by speaking and using a range of electronic and digital modes.

Goal 4: Expand diversity awareness, intercultural competency, and global learning.

Learning Outcome 4.1 – Upon reaching this goal, students will have developed knowledge and abilities aimed at interacting appropriately within intercultural contexts and engaging with complex global systems and issues.

Learning Outcome 4.2 – Upon reaching this goal, students will have developed familiarity with concepts of diversity in the United States.

Assessment Measures for General Skills:

Student Learning Outcome (SLO)– Oral Communication.

- (1) Achievement will be assessed using an oral communication rubric during oral presentations where the student has compiled and evaluated the scientific literature as part of a class project and/or completed an independent research project as part of a special problems, research project or internship class.
- (2) This is a direct measure of student learning.

Student Learning Outcome – Diversity, Intercultural, and Global Learning.

- (1) Examine and interpret an intercultural experience from both one's own and another's worldview.
- (2) Articulate the essential tenets of a cultural worldview other than one's own through an analysis of its components, including but not limited to history, values, communication styles, politics, economy, and beliefs and practices.
- (3) Identify and analyze the historical and/or contemporary interrelationships among multiple global cultures.
- (4) This is a direct measure of student learning.

Assessment Measures for Discipline Specific Skills: Oral Communication Benchmarks for achieving discipline specific skills.

The definition of oral communication is a prepared, purposeful presentation designed to increase knowledge, or to promote change in the listener's attitudes, values, beliefs, or behaviors.

- (1) Organization
- (2) Language
- (3) Delivery
- (4) Supporting Material
- (5) Central Message

Assessment Measures for Diversity Awareness, Intercultural Competency, and Global Learning.

Appreciate and communicate the diverse impacts of horticulture on people.

- (1) Describe the various ways plants impact human well-being (mental, psychological and restorative, physical, medicinal, and physiological).
- (2) Describe and assess the influence of plants and their management on environmental sustainability, habitat restoration or low-impact development.
- (3) Quantify the economic importance of plants in managed ecosystems and the impact of horticultural in food systems and societies.
- (4) Describe the social, spiritual, and cultural importance of plants to historical and contemporary communities of people.

Methodology:

For this assessment report, two courses were identified. HORT 1103 Plants People and You (3 hours credit), and HORT 472 V (2 hours credit) HTLS Internship Assessment. HORT 1103 is a recognized university general education option with a diversity awareness, intercultural competency, and global learning designation (Goal 4 of the University of Arkansas General Education Curriculum: Learning Outcome 4.1 and 4.2). For HORT 1103, this assessment report uses data from the fall 2021/spring 2022 semesters. For HORT 472V, data were taken from the fall 2021 semester.

HORT 472V Internship Assessment was assessed using the General Outlook Skills Student Learning Outcome 2: Oral Communication Skills (see Attachment 1 below).

HORT 1103 Plants People and You was assessed using the Benchmarks for Achieving Discipline Specific Skills from Learning Outcome 4.1 and 4.2 (see Attachment 2 below).

Oral Communication Components Assessed:

HORT 472V HTLS Internship Assessment: Students are required to prepare a professional formal seminar based on the internship experience. The expected time duration is about 12 minutes and 3 minutes for questions. The internship coordinator and the seminar instructor of record collected evaluation forms from graduate students enrolled in the department seminar class (HORT 5001). The form is based on a grading rubric developed to match the assessment plan criteria. The overall average score is reported in Table 1.

Diversity awareness, Intercultural Competency, and Global Learning Components Assessed:

HORT 1103 Plants, People, and You: This course is an introductory survey of the horticulture discipline to expose underclassmen in horticulture, or students university-wide who need a general-education credit with a cultural, diversity, or global designation. A horticulture faculty member leads each lecture period, or an invited external guest with expertise in the subject matter presented. Lecture topics were evaluated for content that meets the diversity, cultural, and global criteria. Data on lecture topics

Acceptable and Ideal Targets for the Discipline Specific Skills: Student Learning Outcome-Oral Communication.

- (1) Acceptable target: Graduating students must demonstrate skills in the continuum between Milestones 2 and 3 in the student learning outcomes for written communication, oral communications and critical thinking outlined in the rubrics.
- (2) Ideal target: Students will be able to demonstrate skills outlined in the Capstone column for oral communication.

Acceptable and Ideal Targets for the Discipline Specific Skills: Student Learning Outcome – Diversity awareness, Intercultural Competency, and Global Learning.

- (1) Acceptable target: Graduating students should be able to describe the various ways plants impact human well-being (mental: psychological and restorative; physical; medicinal and physiological. Additionally, the student should be able to describe the social, spiritual, and cultural importance of plants to historical and contemporary communities of people.
- (2) Ideal target: Students should be able to demonstrate skills outlined in the Capstone column for learning outcome 4.

Summary of Findings:

Oral Communication Assessment:

Students assessed in HORT 472V were all upperclassmen and within one or two semesters from graduation. Summarized data for HORT 472V Internship Assessment is given in Table 1. Because of ongoing COVID-19 concerns, all seminars were presented/recorded remotely via the Zoom Platform. Students improved in assessment ratings for oral communication from the 2020-2021 assessment report (3.6 to 3.75) and met the Horticulture Department’s target rating of 2 to 3 (see above). Areas for discussion were identified, and will be discussed under the recommendation section. All students met the acceptable target of milestones 2 and 3.

Table1. Oral communication student learning outcome scoring data for HORT 472V Internship Assessment during the fall semester of the 2021-2022 academic year.

Course Assessed	Number of Students Assessed	Overall Average Assessment Score*	Minimum Score Assessed	Maximum Score Assessed
Hort 472V Internship Assessment	6	3.75	2.5	4.0

*Average assessment score for this course is the overall course average based on a rubric rating scale of 0 (does not meet minimum student learning outcome goals for oral communication or the student failed to present a seminar for assessment) to 4 (mastery of the student learning outcome goals for oral communication).

Diversity awareness, Intercultural Competency, and Global Learning Components Assessment:

Table 2. Lecture Topics Specifically Dedicated to Learning Outcomes 4.1 and 4.2 for HORT 1103 Plants People and You for the fall and spring semesters for the 2021-2022 academic year.

Lecture Title / Topic	4.1 and 4.2 SOL Content Covered	Semester
Gardens of the World	Global Awareness	Fall
Cherokee Nation Seed Bank	Diversity Awareness	Fall
Center for Arkansas Food and Farms	Diversity and Culture	Fall
Crop Domestication	Global Awareness	Fall
Chili Peppers and World Culture	Culture and History	Fall
Ecological Land Care: Integrating Horticulture with Ecology	Culture	Fall
School, Institutional, and Community Gardens	Diversity Awareness and Culture	Fall
Arkansas Natural Heritage Commission	Culture and History	Fall
Why Aren't There More Native American Restaurants	Diversity Awareness and Culture	Fall
Percent of Total Fall Lectures With 4.1 and 4.2 Content: 28%		
Cherokee Nation Seed Bank	Diversity Awareness	Spring
Great Gardens of the World	Global Awareness	Spring
Bobi Agribusiness Institute and Watoto Childcare Ministries - Uganda	Global Awareness and Culture	Spring
History of Beer and Wine	Culture and History	Spring
Chili Peppers and World Culture	Culture and History	Spring
School, Institutional, and Community Gardens	Diversity Awareness and Culture	Spring
Native Prairies	Culture and History	
Ecological Land Care: Integrating Horticulture with Ecology	Culture and Economics	Spring
Center for Arkansas Food and Farms	Diversity and Culture	Spring
Percent of Total Spring Lectures With 4.1 and 4.2 Content: 28%		

Table 3. Student enrollment, average grade assigned, and percent (%) of enrollment of non-HORT majors in HORT 1103 Plants, People, and You for the 2021-2022 academic year.

Semester	Total Enrollment	Average Grade Point	Percent of Enrollment of Non-Majors
Fall 2021	126	3.28	88%
Spring 2022	146	2.97	94%

Discussion

HORT472V Internship Assessment: Oral Communication.

The average assessment score for oral communication in the 2021-2022 academic year had a modest increase from 3.6 to 3.75 over the 2020-2021 academic year (See Table 1.). Covid restrictions were extended another academic year with all seminars being presented via the Zoom distance platform. Previous recommendations for more personal interaction between the students enrolled in HORT472V were necessarily delayed for another academic year. These recommendations included one on one “coaching” of the student and practices in an actual “live” seminar setting with more interaction between the student and the instructor/ advisor. Practice sessions were conducted via Zoom prior to a student’s presentation and was effective in improving the visual graphic aspects of the seminar. What was lacking was the live interaction and the presenters’ ability to interact with a live audience and observe non-verbal communication.

HORT 1103 Plants, People, and You.

This course is a freshman level survey course that can satisfy a general education elective with a diversity and cultural component (4.1 and 4.2) as part of the UA General Education Curriculum. As a survey course, content is general in nature and delivered by a number of horticulture faculty, instructors, and qualified guest speakers. While the content from semester to semester is stable, it does vary because of speaker schedules and availability. Topics relevant to SLO’s 4.1 and 4.2 are given in Table 2. Because of the lack of in-depth subject content, this course is not part of the horticulture program’s horticulture core block, nor part of the horticulture electives block. It may be taken as a discipline related course. Many incoming horticulture students without prior knowledge of the discipline take this course. However, the majority of students enrolled are non-majors (See Table 3). This course is often a “gateway” class for students still searching for a career path. For both fall 2021, and spring 2022, 28% of the total enrollment were classified as non-majors (See Table 2.).

Action Plan:

HORT472V Internship Assessment. General Skills: Oral Communication. .Discipline. Specific Skills Student Learning Outcome 5: Demonstrates professionalism and proficiency in skills that relate to horticulture.

Actions for Oral Communication.

If Covid restrictions allow in the fall of 2022, previous recommendations remain in effect. The main recommendation is for the internship coordinator and the instructor of record for HORT 472V to increase efforts to work more closely with students on their internship presentations, particularly in the area of professionalism in the discipline, and improved visuals and presentation styles.

HORT1103 Plants, People, and You: Learning Outcome 4. Appreciate and communicate the diverse impacts of horticulture on people.

Actions for Learning Outcome 4.

Recommendations are to increase the percentage (%) of lectures devoted to SLO 4.1 and 4.2 from 28% to about 33%. There are no guidelines or criteria given on how many lectures should be devoted to diversity and cultural and global awareness in a non-technical survey course. One-third of the lectures seems a reasonable amount.

Additional lectures in international horticulture, the global food chain, and food security would be beneficial to students by broadening their perspectives and offering additional career paths that are currently unknown, or unexplored by the students.

ATTACHMENT 1

Table 2. Oral Communication VALUE Rubric: The definition of oral communication is a prepared, purposeful presentation designed to increase knowledge, to foster understanding, or to promote change in the listeners' attitudes, values, beliefs, or behaviors (*for more information, please contact value@aacu.org*).

	Capstone 4	Milestones		Benchmark 1
		3	2	
Organization	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is clearly and consistently observable and is skillful and makes the content of the presentation cohesive.	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is clearly and consistently observable within the presentation.	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is intermittently observable within the presentation.	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is not observable within the presentation.
Language	Language choices are imaginative, memorable, and compelling, and enhance the effectiveness of the presentation. Language in presentation is appropriate to audience.	Language choices are thoughtful and generally support the effectiveness of the presentation. Language in presentation is appropriate to audience.	Language choices are mundane and commonplace and partially support the effectiveness of the presentation. Language in presentation is appropriate to audience.	Language choices are unclear and minimally support the effectiveness of the presentation. Language in presentation is not appropriate to audience.
Delivery	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation compelling, and speaker appears polished and confident.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation interesting, and speaker appears comfortable.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation understandable, and speaker appears tentative.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) detract from the understandability of the presentation, and speaker appears uncomfortable.
Supporting Material	A variety of types of supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make appropriate reference to information or analysis that significantly	Supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make appropriate reference to information or analysis that generally supports the presentation or	Supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make appropriate reference to information or analysis that partially supports the presentation or	Insufficient supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make reference to information or analysis that minimally supports the

	supports the presentation or establishes the presenter's credibility/authority on the topic.	establishes the presenter's credibility/authority on the topic.	establishes the presenter's credibility/authority on the topic.	presentation or establishes the presenter's credibility/authority on the topic.
Central Message	Central message is compelling (precisely stated, appropriately repeated, memorable, and strongly supported.)	Central message is clear and consistent with the supporting material.	Central message is basically understandable but is not often repeated and is not memorable.	Central message can be deduced, but is not explicitly stated in the presentation.

**Evaluators are encouraged to assign a zero to any work sample or collection of work that does not meet benchmark (cell one) level performance.*

ATTACHMENT 2

Table 5. Benchmarks for achieving discipline specific skills.
 Modified from: Pritts, M.P. and T. Park. 2013. Proposed Learning Outcomes for Four-year Horticulture Programs in the United States. HortTech. 23(2): 237-240.

Goals	Benchmarks			
	4	3	2	1
Learning outcome 1: Acquire, integrate, and apply knowledge of plant science to managed systems				
Goal 1. Use multiple sources, including current and older literature, to find, evaluate, organize, and manage information related to horticultural systems.	Publish an article on a plant based system with a thorough literature review.	Write a thorough literature review about a specific topic for classroom credit.	Write a term paper utilizing primary resources related to a horticultural topic.	Be able to identify primary and secondary information sources and differentiate between referred and non-referred sources.
Goal 2. Demonstrate competence with both laboratory and field-based technologies used in modern horticulture.	Present research findings at regional or national meetings / competitions.	Participate in faculty directed research programs incorporating laboratory or field technology.	Gain competence operating laboratory/ field technology through internships or work-related activities.	Perform laboratory exercises using laboratory equipment/ technology in horticulture courses.
Goal 3. Apply concepts of plant biology, systematics, ecology, and genetics to manage and improve plants and their products.	Conduct capstone research projects related to genetics, plant breeding, genomics, plant identification, and cultivar performance.	Develop a plant selection guide for use in specific horticultural systems as part of an in-class assignment.	Complete courses in fruit/vegetable crops, or landscape/ turf management and understand the selection and appropriate use of plant species or cultivars unique to those courses.	Complete at least one course in plant identification, taxonomy/systematics or genetics.
Goal 4. Apply scientific methods to test hypotheses.	Write, submit to peer or instructor evaluation, defend, a capstone research thesis. Give a public presentation of the work.	Write a research proposal and conduct a research project leading to a published or presented paper.	Write a research proposal and conduct a research project leading to a summary paper as a special topic.	Conduct classroom laboratory experiments with hypothesis testing, data collection and analysis and conclusions.
Learning outcome 2: Demonstrate interdisciplinary knowledge and competency in managing horticultural systems				
Goal 1. Assess soils, soil health, plant fertility, water, and site limitations.	Conduct capstone or special problems research related to soil-plant interaction, plant nutrition, plant-water relations	Participate in projects related to landscape management, or crop production practices. Internship	Complete classes that include site analysis and management for crop production systems. Complete	Complete a soil science or soil physics course.

Goals	Benchmarks			
	4	3	2	1
	including abiotic stress on site management.	focus on soil management, soil fertility, site assessment and design, or irrigation management.	classes in landscape planning and landscape/turf management which includes site assessment.	
Goal 2. Assess potential and evaluate realized interactions with the abiotic and biotic environment in which plants are grown	Conduct a capstone or special problems research project focused on plant-pest interactions or abiotic stressors.	Complete assigned classroom projects developing integrated pest management strategies.	Identify key insect pests and diseases associated with limitations to plant growth and development. Identify abiotic factors critical in production and landscape/turf management systems.	Complete principles of horticulture course. Complete courses in entomology, weed science or plant pathology.
Goal 3. Recommend and use appropriate application methods, materials, and diagnostic skills for addressing soil constraints and irrigation, nutrient, stress, and pest management issues	Complete a capstone or special problems research project related to soil management, remediation, landscape management, crop fertility, or pest management.	Participate in an internship focused on substrate/soil or pest management, irrigation design/ installation or product testing and sales.	Complete classroom projects in soil/substrate management, soil fertility and applying fertilizers, irrigation design and management, plant protection strategies and schedules.	Complete classes in principles of horticulture, soil science, soil fertility, entomology, weed science, or plant pathology. Student complete class in landscape management, greenhouse management, fruit production or vegetable production.
Goal 4. Apply principles of accounting, business law, labor, marketing, and personnel management to a horticultural business and contribute to developing the various components of a business plan.	Conduct a capstone or special problems research project developing a business plan for a start-up horticultural enterprise.	Conduct classroom projects related to developing the various components of a business plan.	Understand business models. Develop start-up and financing strategies, personnel management policies, marketing and sales strategies.	Complete courses in business management, business law, finance, marketing or entrepreneurship
Learning outcome 3: Synthesize knowledge and use insight and creativity to better understand and improve plant systems				
Goal 1. Anticipate and recognize problems, identify causes of those problems, quantify potential impacts, analyze options, identify viable solutions to the problems, and evaluate actions and consequences of treatments and interventions	Conduct a capstone or special problems research project related to testing or proposing a management system.	Participate in a service learning activity related to horticulture involving a multi-faceted approach to system management.	Complete classroom assignments related to critical analysis and decision making protocols on production or management systems.	Complete courses in plant pathology, entomology, weed science, soil fertility, landscape/turf management or controlled environments.

Goals	Benchmarks			
	4	3	2	1
Goal 2. Develop, identify, and employ best management practices that lead to sustainable solutions and outcomes.	The SUST minor capstone project is a horticulture related project; project is presented to the department.	Enroll in and complete the SUST or ENSC minor.	Complete a project or term assignment related to sustainable management plan development; develop a best practices management plan.	Complete a course related to horticultural or system sustainability.
Goal 3. Understand how global issues including climate change, energy use, water availability, and/or food safety impact the sustainability of horticultural systems locally, nationally, and globally.	Complete a SUST capstone project, an honors project, or special topic research project related to climate change, and the FEWS nexus of horticulture production.	Enroll in and complete the SUST or ENSC minor.	Complete a project or term assignment related to the impacts of climate change on horticulture production systems.	Complete a course related to horticultural or system sustainability.
Learning outcome 4. Appreciate and communicate the diverse impacts of horticulture on people				
Goal 1. Describe the various ways plants impact human well-being (mental: psychological and restorative; physical: medicinal and physiological).	Complete a research project investigating the relationship or influence of horticulture on human well-being.	Participate in a service learning project focused on human-plant interaction or recreational or sports fields.	Complete a course in environmental sociology or ethno-horticulture.	Complete a general survey class in horticulture.
Goal 2. Describe and assess the influence of plants and their management on environmental sustainability, habitat restoration or low-impact development (LID).	Complete a capstone project, honors project or special research project related to sustainability, habitat restoration or low-impact development.	Participate in classroom projects focused on sustainable practices and implementation.	Complete a course in environmental restoration, ecosystem assessment or landscape/turf management.	Complete a class assignment or learning module focused on restoration or sustainable practices related to horticulture.
Goal 3. Quantify the economic importance of plants in managed ecosystems and the impact of horticultural crops in food systems.	Complete a capstone project, honors project or special problems course investigating the production and post-harvest economics of a horticultural food crop.	Complete a written or visual presentation comparing and contrasting various worldwide food production systems focusing on horticultural crops.	Complete a course in environmental economics or food and agricultural marketing.	Complete a learning module focused on economically important food crops and associated production and distribution systems.
Goal 4. Describe the social, spiritual, and cultural importance of plants to historical and contemporary communities of people.	Complete and present a capstone, honors or special problems project investigating in role of plants in human culture.	Write a research paper on a specific culture or community and how plant interaction and use affected or	Complete a learning module on the role of ornamental, spiritual and medicinal plants in	Complete a general survey class in horticulture.

Goals	Benchmarks			
	4	3	2	1
		influenced that culture.	early and modern human culture.	
Goal 5. Communicate effectively with various audiences using oral, written, and visual presentation skills, and contemporary networking/social media technologies.	Create and publish content on a horticulture related topic using digital media.	Prepare and present horticulturally related content at a professional or industry meeting/ conference.	Complete a project or term assignment which is presented orally, written or through digital media.	Complete a communication intensive course.
Learning outcome 5. Demonstrate professionalism and proficiency in skills that relate to horticulture				
Goal 1. Acquire knowledge of a range of cultures, values, and political perspectives relevant for living in a global community.	Complete a study abroad experience or international internship.	Participate in a department or college associated international travel opportunity.	Complete a research paper on a topic associated with human-plant interactions and the effect on culture.	Complete a course in world or regional geography.
Goal 2. Demonstrate a high level of personal and social responsibility.	Leadership position in a collegiate organization involved in local community interactions.	Develop an action plan using horticulture to engage a local or regional community.	Complete a research project investigating the role of horticulture in modern urban and rural society.	Complete a humanities course in ethics or social work.
Goal 3. Demonstrate leadership and the ability to collaborate and work in teams.	Election to a regional or national undergraduate organization associated with a professional society.	Leadership position in a student club or university related organization.	Active participation in an undergraduate related club or collegiate organization.	Demonstrate leadership in class group projects or team building activities.
Goal 4. Plan, engage, and learn from actions that demonstrate civic responsibility to community and society.	Propose, design and implement a project relating to a socio-horticulture topic such as a community/school garden or horticulture therapy program.	Write a research paper evaluating the effectiveness and/or impact of a school or community garden on the targeted community.	Complete a course with a service learning component.	Complete a course module on horticulture-based outreach activities, opportunities and responsibilities on a local, regional or national level.
Goal 5. Develop a plan for life-long learning as it relates to career choice and professionalism.	Postgraduate involvement and leadership in professional or trade organizations.	Participate in regional or national professional meetings as an undergraduate.	Participate in extracurricular activities; attend seminars, trade shows or industry meetings relating to a career choice.	Student membership in a profession-related organization.