Expected Outcome 1: Communication

Communicate horticultural information or knowledge effectively in written and oral formats.

Assessment Method 1: Scoring Rubric

Assessment Method Description

Scoring rubrics (attached) were used to evaluate written assignments or oral presentations in several courses. Faculty members were asked if any of their classes contained written assignments or oral presentations. If so, faculty members were asked if they would be willing to use these common rubrics and when they would use them. This was to identify those courses and facilitate collection of these rubrics as used throughout the year in different courses. Rubrics are to be completed by the instructor for that course. The current format of the rubric is a hard copy that requires the instructor to select by hand a score value for each attribute on the rubric. The rubric also asks the instructor to indicate the course and the type of assignment. Copies of the completed rubrics are then provided to the departmental SACS Assessment Committee who tallies the scores. A scoring rubric use schedule (attached) was prepared based on faculty responses for those courses that have a written assignment or oral presentation. Six are offered in the spring, three in summer, and six in fall. This allows for collection of data for different types of assignments and different course levels. The rubrics developed are easy to use by the instructor and appear to be a thorough way to standardize assessment of student performance across multiple courses and assignment types. Tallying the scores from the rubrics by hand is a bit tedious and time consuming but not prohibitively so. Data will be used to identify areas (content, format, grammar) that may need improvement so we can target our efforts at improving those aspects of communication.
# Writing Assignment

**Horticulture Departmental Scoring Rubric**

1 = unacceptable, 2 = poor, 3 = fair, 4 = good, 5 = excellent

### Content

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### Format

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### Grammar

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### Overall

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Course #

Type of writing assignment (check one)

- [ ] Professional communication (ex. letter)
- [ ] Resume
- [ ] Lab report
- [ ] Research paper
- [ ] Design
- [ ] Popular article
- [ ] Other (describe): ____________________________

Is the student a Horticulture major?  [ ] Y  [ ] N
Findings

For most categories in most assignments, students on average received at least a 4.0/5.0 (Table 1). Overall, results from data collected indicate that most improvement is needed in the areas of format and grammar (Table 1). It was noted that there was no way to distinguish between horticulture majors and non-horticulture majors on the rubrics currently in use. More data evaluating different types of written assignments and oral presentations are needed. In addition to evaluating the overall scores of our students, it would be useful to examine whether there are particular types of assignments in which our students show strengths/weaknesses. It may be informative to
evaluate multiple years of data to get a better representation of student performance on written assignments and oral presentations. As data collected expands over time, it may be necessary to identify a way to collect rubric scores electronically.

Table 1. Rubric scores for written assignments and oral presentations.

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Oral Presentations

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How did you use findings for improvement?
To improve student performance in written assignments and oral presentations, instructors will be provided with the data for their particular course. They will be asked to give more emphasis in their instruction in any areas that averaged a score of less than 4.0. The classification of Horticulture or non-Horticulture major has been added to both rubrics.

Additional Comments
**Assessment Method 2:** Senior / Alumni Survey

**Assessment Method Description**
The university administers surveys to graduating seniors and alumni. Respondents are asked to rate their level of ability at graduation for several items. These include “use writing to communicate effectively for a variety of audiences and purposes” and “make an effective oral presentation”. Responses were evaluated within and between respondent category.

**Findings**

Alumni and graduating seniors rated themselves as being between “intermediate ability” (3.0) and “advanced ability” (4.0) for written and oral communication skills (Table 2). There was no clear difference between responses from alumni and seniors. For this initial evaluation of these data, it is not known how Horticulture student compare to those in other majors in the College of Agriculture.

Table 2. Survey responses from alumni and graduating seniors regarding their written and oral communication skills upon graduation.

<table>
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**How did you use findings for improvement?**

Results indicate the importance of including written and oral assignments in Horticulture curriculum and support the continuation of these types of assignments. Instructors will be encouraged to continue existing assignments. For further level of improvement, we would like to identify how responses for Horticulture compare to those in other departments in the College of Agriculture.

**Additional Comments**
Expected Outcome 2: Horticultural Knowledge

Demonstrate knowledge of horticultural plant biology, identification, and culture.

Assessment Method 1: Pre-test / Post-test

Assessment Method Description
A multiple choice test (see Appendix A) was created to test general knowledge of horticulture plant propagation, physiology, identification, and culture. The test is administered during fall semesters at the beginning of the semester in Introduction to Horticulture HORT 1010 (pre-test) and at the end of the semester in Careers in Horticulture HORT 3950 (post-test). Respondents are asked to indicate classification (FR, SO, JR, SR), area of emphasis in major (if Horticulture major), and number of Horticulture classes completed.

Findings
Results indicate that student knowledge increased with increasing classification and number of Horticulture classes completed (Table 3). The number of horticulture classes appears to have a greater effect on scores than classification. This is likely due to the fact that many Horticulture students are transfer students or have just changed their major. Thus, they may have a higher classification but have not had any Horticulture courses. Scores are also higher for post-test than pre-test. Overall, results indicate that student knowledge of Horticulture information increases during enrollment in the curriculum. There was no clear difference in score depending on track. The number of responses for the post-test was unexpectedly low (lower than enrollment in the course). Currently, tests are completed and graded by hand, with information entered into a spreadsheet. This is not difficult, but it is somewhat time-consuming. Data should be analyzed to determine which topics present areas of weakness. In particular, emphasis should be placed on general horticultural knowledge topics that are presented in courses required for all students regardless of track.

Table 3. Results from pre-test and post-test of horticulture knowledge (scores out of 100).
### 2013

#### PRE-TEST

<table>
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<th>Score</th>
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#### POST-TEST

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### 2014

#### PRE-TEST

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#### POST-TEST

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**How did you use findings for improvement?**

More effort will be made to get a higher response rate on the post-test to have more complete data. In the future the test should be administered using Canvas to allow electronic compilation and facilitate a more thorough assessment of the data including the ability to determine
specific topic weaknesses based on individual questions. Instructors will be asked to emphasize topics that appear to be areas of weakness.

**Additional Comments**

**Assessment Method 2:** Senior / Alumni Survey

**Assessment Method Description**
The University administers survey to alumni. Respondents are asked how they agreed with the statement “My department provided effective instruction”. Graduating seniors are asked to rank their ability to “describe the basic principles... of one area of science” and to “synthesize your learning across multiple courses”.

**Findings**
Alumni indicated that they either somewhat agree (3) or strongly agree (4) with that statement (mean = 3.5). Seniors indicate an intermediate ability (3) or advanced ability (4) in the two knowledge areas (Table 4).

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**How did you use findings for improvement?**
Encourage faculty in upper level courses to emphasize the basic principles and how they relate together across courses. It was decided to include a Horticulture major specific question on the university survey to ask alumni .

**Additional Comments**
Appendix A

Multiple Choice Test

A. General Information

1) What is your current classification?
   a) FR
   b) SO
   c) JR
   d) SR

2) Are you currently majoring in Horticulture
   a) Yes
   b) No

3) If you are a Horticulture major, please indicate your current curriculum track:
   a) Landscape Horticulture
   b) Pre-Landscape Architecture
   c) Nursery / Greenhouse Production
   d) Fruit / Vegetable Production

4) How many Horticulture classes have you completed?
   a) 0
   b) 1-2
   c) 3-4
   d) >4

B. Please answer each the following questions to the best of your ability. There are no negative consequences for a wrong answer, so please select an answer for every question.

1) What is horticulture?
   a) The orderly classification of plants useful to mankind.
   b) The branch of agriculture concerned with intensely cultivated plants, directly and indirectly used by people for food, medicine, and aesthetics.
   c) The science art and business of cultivating the soil, producing crops and raising livestock useful to man.
   d) Growing cotton, soybeans and peanuts.

2) The subdivision of horticulture involved with growing vegetable crops is known as:
   a) Pomology
   b) Floriculture
   c) Arboriculture
   d) Olericulture
3) Research, Instruction, and ________________ are the three principle components of the land-grant university.
   a) Athletics
   b) Extension
   c) Exploration
   d) Engineering

4) Botanically speaking, a tomato is a
   a) Fruit
   b) Leaf
   c) Stem
   d) Vegetable

5) Soil pH is the measurement of the concentration of ____.
   a) Potassium (K+)
   b) Hydrogen (H+)
   c) Nitrogen
   d) Phosphorus

6) “Alternate bearing” is used to describe trees that ______.
   a) Produce fruit every other year
   b) Are perennial
   c) Produce fruit on alternate branches
   d) Produce a heavy crop one year, followed by a light crop the next year

7) When male and female flowers are produced on separate plants, this is known as:
   a) Deciduous
   b) Parthenocarpic
   c) Perfect
   d) Dioecious

8) Why is the accumulation of chilling hours required in order for temperate trees to flower?
   a) To allow plants to recover from hot summers
   b) To delay growth/bloom until after cold weather
   c) To prevent tropical areas from producing certain fruit crops
   d) To aid in color development

9) Which naturally occurring plant hormone is responsible for inducing apical dominance?
   a) Ethylene
   b) Cytokinin
   c) Gibberellic acid
   d) Auxin
10) The development of pesticide resistance in a pest or pathogen is accelerated if
   a) Biological control tactics are utilized
   b) Several chemicals are alternately used to control a given pest or pathogen
   c) Only one chemical is repeatedly used to control the pest or pathogen
   d) An integrated management strategy is used

11) What which of the following are provided by a propagation substrate?
   a) Support
   b) Water holding capacity
   c) Air space
   d) All of the above

12) Which of the following propagation techniques are NOT asexual/clonal?
   a) Grafting
   b) Cutting
   c) Layering
   d) Seed

13) What does it mean when a nutrient is immobile within the plant?
   a) It has difficulty moving through the root
   b) It does not move up the stem
   c) It cannot be remobilized from old tissue
   d) It doesn’t move in the soil

14) A high humidity environment is important for propagation because:
   a) It provides more sunlight
   b) It provides more nutrients
   c) It decreases plant water loss
   d) It keeps the leaves dry

15) Plant cells are _____ which means they have the necessary genes to produce all the
    characteristics of plant.
    a) Differentiated
    b) Totipotent
    c) Replicated
    d) Divided

16) Which of the following is a list of plants that are classified as monocots?
    a) Elms, boxwood, oaks
    b) English ivy, roses, hollies
    c) Ginkgos, junipers, cedars
    d) Grasses, lilies, palm trees
17) Which part of the flower develops into the fruit?
   a) Anther  
   b) Ovary  
   c) Organelle  
   d) Petiole

18) The process of breaking down molecules for plant maintenance and growth is known as_____.
   a) Photosynthesis  
   b) Respiration  
   c) Transpiration  
   d) Evaporation

19) The process of harnessing the energy in light and converting carbon dioxide into sugar is known as_____.
   a) Photosynthesis  
   b) Respiration  
   c) Transpiration  
   d) Evaporation

20) Which of the following characteristics of light can plants detect?
    a) Duration  
    b) Quality  
    c) Intensity  
    d) All of the above