Texas A&M University

Core Curriculum

Initial Request for a Course Addition to the Fall 2014 Core Curriculum

Foundational Component Area: Life and Physical Sciences

In the box below, describe how this course meets the Foundational Component Area description for Life and Physical Sciences. Courses in this category focus on describing, explaining, and predicting natural phenomena using the scientific method. Courses involve the understanding of interactions among natural phenomena and the implications of scientific principles on the physical world and on human experiences.

How does the proposed course specifically address the Foundational Component Area definition above?

Horticultural Science and Practices Lab is designed to provide a broad understanding of Horticulture through basic and applied science. This is achieved through weekly applied laboratory exercises that emphasize teamwork in creating and interpreting qualitative and/or quantitative data sets, and the synthesis of underlying basic science concepts that drive everyday natural plant phenomena reported in group discussion, along with observation and discussion of specimens and technique in the class and on field trips, and individually prepared written in-depth analysis of team-collected experimental results that reflect the scientific method.

Core Objectives

Describe how the proposed course develops the required core objectives below by indicating how each learning objective will be addressed, what specific strategies will be used for each objective and how student learning of each objective will be evaluated.

Critical Thinking (to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information):

1. Students will individually prepare a notebook-format journal, consisting of datasets collected in class. Higher order thinking will be required to answer question sets posed about the experiment at hand and its scientific and sometimes social implications.
2. Student-generated dichotomous keys are used to identify a finite set of plants to develop higher order thinking skills and to help in understanding and retention of biological terminology. Traditional floral keys are also used.
3. In an individual activity, students must synthesize the information at hand to determine the most appropriate technique to propagate student-selected 'attractive' plant materials, and subsequently evaluate the results of their decisions at the termination of the experiment. Students are often motivated to pick the most appropriate techniques, since successfully cloned plant materials go home with the students.

Communication (to include effective development, interpretation and expression of ideas through written, oral and visual communication):

1. Student groups are required to post data for class consumption with immediate feedback on format and missing/faulty information.
2. Subjective evaluations of mid-experiment results are often presented to the class orally by groups or individuals.
3. Demonstrations, by instructors and students, of grafting, layering and division serve as a basis of understanding of plant morphology and require exposition during demonstration and explanations in end-of-semester written reports.

Empirical and Quantitative Skills (to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions):
Texas A&M University

Core Curriculum

Initial Request for a Course Addition to the Fall 2014 Core Curriculum

1. Students learn to calculate fertilizer concentrations in class and have graded problem sets.
2. Students learn Metric and Standard systems interconversions with graded problem sets
3. Results of the experimental application of increasing fertilizers concentration on plants acts as a platform for inquiry into the scientific method and a subsequent discussion of social responsibility in application of agricultural chemicals.

Teamwork (to include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal):

Student teams of 2-6 in class:
1. Begin plant experiments (>30 occurrences) by planting transplants, seeds, propagules
2. Harvest experiments, measure quantitative variables (height, weight, branching vigor) and record and share datasets (>10 occurrences)
3. Develop unique keys to identify a finite set of plants, and teams must repeat the key until the instructor judges it appropriate. Subsequently, those student groups must apply standard keys to correctly identify species, variety, & cultivar of several plants.
4. Measure plant photosynthetic light levels that become variables in plant experimental treatments.

Please be aware that instructors should be prepared to submit samples/examples of student work as part of the future course recertification process.