

Ornamental Horticulture Curriculum Guide

**Central Valley Consortium
Agricultural Education
Tech Prep**

**Developed by the
Central Valley Consortium
Agricultural Education Tech Prep
Ornamental Horticulture
Curriculum Committee**

Committee Members:

Phase I - Writing the Curriculum

Dale Pollard	Sandy Newsome	Larry Tosta
Bill Morris	Dave Stauber	Mark Grover
	Jerry Fisher	

Mark Bender, Chairman - Phase I

Phase II - Field Testing the Curriculum

Jim Schulte, Esparto High School
Kip Proctor, Tracy High School
Dale Pollard, Turlock High School
Mark Bender, Chairman - Phase II

Don Borges, Coordinator

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*Word processing, formatting, and editing done by Jennifer Sweeney,
Cindy Young and Patti Couch*

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** These documents/appendices were inserted into this guide in their original form and therefore the page numbering which pertains to these documents is not truly accurate. The page numbering in this table of contents indicates where the new appendix begins. Most of the appendices are longer than one page. However, since we have included original copies, we did not want to alter them by arbitrarily placing page numbers at the bottom.*

SECTION ONE

Introduction

1. Introduction

Ornamental Horticulture Tech Prep is a 4 year sequence that encompasses the last 2 years of High School, Junior Grade 11 and Senior Grade 12, and the first 2 years of Community College, Freshman Grade 13, Sophomore Grade 14. Expectations are that students will have been enrolled in agricultural education courses at the beginning of their high school tenure. Curriculum Grids have been developed to encompass these first two years of High School as well as the Tech Prep Sequence Grades 11 through 14. These Grids have several expectations of the Tech Prep Identified Student:

1. Completion of the Basic Core I and II at the Freshman and Sophomore High School Level.
2. Completion of Applied Academics courses throughout the 4 years of High School.
3. Fulfillment of the Tech Prep Admissions requirements, including passing the Ag Basic Core with a "C" grade or better, a Student Portfolio containing a Letter of Introduction, Resume, Letter of Recommendation, job application, four work samples including the Ag Record Book, Supervised Practical Experience Evaluation, earn a score of "Proficient" or "Advanced" in the Ag Basic Core Written Scenario Evaluation.

Provisions will be made to accommodate special population groups and a procedure will be developed to remediate deficiency areas.

There are also Grids to accommodate the various options to High School students so that Tech Prep involvement is obvious and attainable. These options include:

College Prep/Tech Prep
Traditional Agriculture Program and Tech Prep
Sports and Tech Prep
Agricultural Mechanics and Tech Prep

All the grids provide options that allow a student to become involved in Work-Place Learning, fulfill University of California or California State University entrance requirements, as well as develop Tech Prep foundations to carry to the Community College Tech Prep Program.

Ornamental Horticulture Tech Prep has been divided into 3 distinct courses at the high school level, Nursery Industry, Landscape Industry, Floral Design. These courses are based on the Advanced Cluster Curriculum in Ornamental Horticulture, developed by teams of California agriculture instructors led by Dr. James Leising through a special State Department grant with University of California, Davis. The Junior year, Grade 11, curriculum encompasses the Nursery Industry Curriculum Units and provides the basic skills necessary to be successful in the Ornamental Horticulture Field. The Senior year, Grade 12, is divided into a Floriculture option and a Landscape option. These year long courses of study are also based on the Advanced Cluster Curriculum in Ornamental Horticulture. The committee felt that many schools currently taught some form of a Nursery skills course and then offered Floral Design and/or Landscape Industry courses. Breaking the curriculum in this way was a logical outcome of that reality.

The state also provides Agriculture Performance Standards in Ornamental Horticulture. Along with these Performance Standards are Integrated Activities that are used to teach and enhance classroom instruction. One of the tasks that was necessary was to identify which units of instruction fulfilled the Performance Standards and which of the Integrated Activities could be used to augment the classroom instruction. A complete explanation is included in "Developing Tech Prep Curriculum".

High School courses, using the Advanced Cluster and State Standards and Integrated Activities, taught correctly and with sufficient levels of instruction and skill development, may approximate an introductory course at the Community College level. In those cases, where a course articulation agreement is part of the Tech Prep Program, students may receive college credit for the course taken at the high school level. Schools must agree upon the methods of assessing competency in order for this to take place. When Tech Prep articulation functions as intended, it provides for eliminating duplication in the 4 year sequence for the specific career pathway. In addition, other college credit may be awarded for leadership activities, Supervised Practical Experience and Work-Place learning activities, and other areas where duplication is unnecessary.

Introduction continued...

At the Community College level, the student has many options. Suggested Technician Certificate programs in Ornamental Horticulture could be in the areas of Commercial Floristry, Landscape and Park Maintenance, Nursery Production, Landscape Design, to name a few. Grids for these are provided. In addition, many students transfer to institutions that grant Bachelors Degrees. Tech Prep programs must provide educational foundations for success as students transfer. It is possible for a student to attain an Associate (2 yr.) degree, a Technician Certificate and then transfer to a University. This may take the student an extra semester but is well worth this level of accomplishment.

Work-Place Learning is an integral part of all Tech Prep Programs in Agriculture. As such, the specific Tech Prep Grid allows for time in the school day for these activities in the High School Senior year. The remaining grids offer options that allow a student to be involved in Tech Prep and meet other personal and educational objectives. For these students, there may not be sufficient time within the traditional school day to be involved in Work-Place Learning. In both of these cases, work-place learning can occur after the traditional school day is finished, on weekends, during vacations, and summer breaks. This can be facilitated through independent study or work experience classes which also allow students to earn graduation credits.

Work-place learning begins in the High School Freshman year with Supervised Practical Experience opportunities which is also a requirement of Ag Tech Prep. These are often entrepreneurial enterprises and usually continue throughout High School. Paid Work Experience (SPE) usually commences during the Junior Year and continues through college. At the Community College level, work experience that is directly related to the career path is required. The number of hours varies by program and institution. Work-place learning enhances the educational process and provides needed job survival skills. This procedure is outlined in the Work-Place Learning Guide, "Learning to Work-Working to Learn".

Finally, Tech Prep is a partnership between High Schools and Community Colleges, Teachers and Counselors and Administrators, Industry Representatives and Students and Parents. In order for success to be part of this formula, all parties need to cooperate and work toward a common goal. There are always sufficient reasons why something won't work and individuals willing to point them out. Our task is to **MAKE TECH PREP WORK.** Curriculum is the most important aspect of this process. It must be current, industry validated, taught by instructors with high levels of expertise and industry experience, enhanced with work-place learning experiences, articulated between high schools and community colleges. Curriculum and the entire educational process must benefit our students with lifelong career options. This is education's role. Sometimes we forget the real function of education...

SECTION TWO

Curriculum

2. Developing Tech Prep Curricula

The following is an explanation of the procedure that was followed in identifying, developing, implementing, and field testing the Ornamental Horticulture Curriculum.

The following definitions will be helpful:

State Standards--Agriculture Performance Standards developed by the state and validated by industry in each of the 7 career paths or clusters. These are the student expectations after having completed specific courses in agriculture.

Integrated Performance Activities--Agriculture Integrated Activities that are used to enhance classroom instruction and are a hands-on, problem solving approach to education. They were developed to provide methodology to fulfill the State Standards and can be tied closely to them.

Ag I Core--The Basic Core, the state agriculture curriculum intended for the High School Freshman (Grade 9) year. This is a broad overview of all agriculture industries. It is a compilation of curriculum unit outlines complete with objectives, methods, enhancements, and assessments.

Ag II Core--A continuation of the Ag I Basic Core with increasing levels and student expectations. It is designed to be taught at the High School Sophomore (Grade 10) year. It is also a compilation of curriculum unit outlines complete with objectives, methods, enhancements, and assessments.

Advanced Clusters--The 7 career specific advanced curriculum areas with attendant units of instruction. The curriculum is narrowed to a single career area, of greater depth and expectations, but follows the same format as the Ag I and Ag II Basic Cores. It is intended to be taught in the High School Junior (Grade 11) and Senior (Grade 12) years.

Assumption of Industry Validation--It is unclear exactly how much industry validation occurred in the development of the above. Industry advisory was included in the process through the agriculture instructors who developed the curriculum units. To date there has been no disagreement as to the validity of these units or standards/activities by the Industry Advisory Committees associated with this Tech Prep Consortium.

Local enhancement--Additional activities and/or curriculum that is specific to a particular program and/or is not provided in the advanced cluster.

Supervised Practical Experience (SPE), Supervised Agricultural Experience (SAE), and Supervised Occupational Experience Programs (SOEP), are all synonymous terms that explain the project aspect of FFA and work-place learning. These activities are integral to the instructional program and are extensions of the classroom. Students may be involved in

Entrepreneurial Enterprise Ownership Projects and/or Work Experience Projects. In both cases the activities should be directly related to the student's career pathway and are closely monitored and supervised by the agriculture instructor.

<p style="text-align: center;">Steps Followed in Developing the Ornamental Horticulture Tech Prep Curriculum</p>

Step 1

Identify that a curriculum exists and validate that it is appropriate for Ag Tech Prep Programs. Resulted in adopting the California State Agriculture Curriculum, Ornamental Horticulture Advanced Cluster.

Step 2

Identify if there existed a set of adopted standards that could be used in curriculum direction and assessment. Resulted in adopting the State Agriculture Performance Standards in Ornamental Horticulture.

Step 3

Identify if any other materials had been developed to enhance the educational and validation process. Resulted in adoption of State Agriculture Integrated Activities in Ornamental Horticulture.

Step 4

Articulate (match) the State Standards and the Integrated Activities into logical pairs or groups.

Step 5

Articulate the State Standards, Integrated Activities, and Advanced Cluster Curriculum Units. This validates what curriculum units fulfill which standards and provides integrated activities for inclusion with the teaching unit. This many-faceted approach builds higher student competency levels and critical-thinking problem-solving skills.

Step 6

Identify additional integrated activities that can be used with the curriculum to attain completion of State Standards.

Step 7

Identify if the curriculum breaks itself down into logical groups of units and subsequent courses of instruction. The Ornamental Horticulture Curriculum can be logically divided into 3 courses: Nursery Industry, Floral Design, Landscape Industry. Identified that Nursery Industry is needed by all Ornamental Horticulture students, it should be taught in the Junior year, and should be a prerequisite for the other two areas, Floral and Landscape Industry. Floral Design and Landscape Industry should be taught in the Senior Year.

Step 8

Identify if the time allocated for teaching each unit is reasonable given the inclusion of integrated performance activities and local enhancements. After reviewing the curriculum, it was apparent that the time allocated to each unit was not sufficient to cover the material. It was determined that each of the 3 courses would be better taught as year long courses.

Step 9

Identify if any additional curriculum units were needed to complete the State Standards expectations. The Floral Design curriculum was insufficient in scope and complexity. Consequently, the Chair obtained the Texas Agriculture Curriculum in Floral Design which was included in the field-testing process and should be adopted by this Tech Prep Consortium.

Steps followed in developing the Ornamental Horticulture Tech Prep Curriculum continued...

Step 10

Take each course and sequence units of instruction into a logical sequence of increasing complexity and expectations.

Step 11

Identify additional integrated activities for either new units or to enhance already developed curriculum units of instruction. Identify any local enhancements that will enrich the curriculum for specific programs.

Step 12

Field-Test curriculum units, integrated performance activities, and assessment tools. Develop Written Scenarios, Work Samples, additional units of instruction, additional integrated activities, and generally identify if the curriculum functions as intended in the time frame allowed.

Step 13

Make adjustments to the curriculum to reflect the field-test evaluations.

Step 14

Identify if the course curriculum and materials are of sufficient scope, level, expectations, to approximate an available community college course.

Step 15

Articulate the Advanced Cluster courses with specific college courses. Identify which college courses can be approximately duplicated through instruction at the secondary level. Develop skill lists and objective expectations for the college course for student assessment and certification. Augment the existing high school units with additional curriculum, integrated activities, local enhancements and skill expectations to fulfill the college course objectives and requirements.

Step 16

Provide a system for developing high school and community college course articulation agreements.

Step 17

Document this process so that others may use this model for development of Ornamental Horticulture Tech Prep Programs. Provide adaptability so that other individuals and institutions may choose portions of this process and developed materials to augment their existing programs. At the same time, provide a complete model that schools can use to develop a new Ornamental Horticulture program with little additional resources needed.

This chart not available in this format. To receive a copy of this chart, write to
Ag Tech Prep
Stanislaus County Office of Education
County Center Three Ct.
Modesto Ca 95355

or call (209) 525-5020

Fax (209) 525-6990

4. Career Path Cluster Performance Standards for Ornamental Horticulture

D.1 Plant Classification

Students will classify and identify plants using the following systems: botanical growth habits, landscape uses and cultural requirements. Students will demonstrate plant selection and identification for local landscape applications. **(6100 - Unit in the Advanced Cluster Curriculum)**

D.2 Plant Physiology

Students will understand the principles of plant physiology and growth, including photosynthesis, transpiration, respiration, plant structure, and cell structure. Students will raise various plant materials under a variety of conditions affecting plant growth. **(6150, 6200)**

D.3 Plant Propagation

Students will understand the methods of sexual and asexual plant propagation as well as factors affecting them. Students will safely demonstrate propagation practices and monitor plant development. **(6250)**

D.4 Pest Management

Students will understand principles of integrated pest management. They will identify pest and disease damage, propose methods of control and recommend selected pest management practices. They will demonstrate safe pesticide handling practices. **(6300)**

D.5 Soil and Fertilizer

Students will understand the role of soil and other planting media in plant growth. They will prepare and amend soils, calculate fertilizer application rates, implement methods of soil conservation and evaluate results. **(6350, 6400)**

D.6 Water Management

Students will understand water management practices for ornamental plants including irrigation and drainage. They will analyze plant needs and related environmental factors including soil moisture, weather, soil structure, water penetration and drainage, and demonstrate irrigation techniques. **(6450)**

D.7 Industry Practices

Students will understand industry practices relevant to ornamental horticulture. They will demonstrate their knowledge of plant selection, purchasing, planting, care, merchandising, marketing and record keeping. **(6500, 6750)**

D.8 Pruning Methods

Students will understand the principles of pruning and training trees and shrubs in the landscape. They will evaluate various plant materials and prune them according to plant and landscape requirements to enhance growth and/or fruit production. **(6550)**

D.9 Nursery Production Facilities

Students will understand the care and maintenance of nursery stock and nursery facilities. Students will understand the care and maintenance of nursery stock, nursery facilities and nursery conditions commonly found in commercial nursery production. They will propagate and maintain a horticultural crop to the point of sale. **(6600, 6500)**

D.10 Floriculture

Students will understand the principles and skills of floral design including cultivating, identifying, handling, safely preparing and arranging cut flowers. They will design and floral arrangements and/or corsages for identified purposes. Students will understand the employment opportunities and the importance of marketing and sales in the floral industry and be aware of related employment opportunities. **(6650)**

D.11 Basic Landscaping

Students will understand the basic principles of landscape planning, design, construction and maintenance. Students will design and install a simple (permanent or temporary) landscape plot and present a finished proposal to a client. **(6700)**

D.12 Ornamental Horticulture Industry

Students will understand the role of support organizations within the nursery, landscape, and floriculture industries. They will analyze and compare the services, and professional development opportunities provided by those organizations. **(6750)**

D.13 Ornamental Horticulture Equipment

Students will understand the use, repair, and maintenance of tools, equipment and facilities found in horticulture business. They will safely operate and maintain selected power equipment.

D.14 Horticulture Business Practices

Students will understand sales and marketing in horticultural businesses. They will be able to perform small scale sale, market a horticulture product and operate business machines.

D.15 Horticulture Record Keeping

Students will understand the importance of keeping records of business transactions and production records. Students will maintain and complete record books, production records and other records as needed.

D.16 Turfgrass

Students will understand the selection, installation, and maintenance of turf. They will install and/or maintain a lawn area. (6700)

D.17 Leadership Development

Students will recognize the traits of effective leaders, and participate in leadership training activities associated with the FFA including public speaking, leading group discussions, working within a committee, conducting business meetings, and problem solving.

D.18 Supervised Practical Experience

Students will engage in a supervised practical experience employing skills and knowledge learned in the classroom. Students will maintain a record book.

5. Career Path Integrated Performance Activities for Ornamental Horticulture

D.1 Landscape Plot

Students individually prepare a landscape plan for a small plot of land (approximately 10' X 10'). The plan should take into consideration environmental characteristics, appropriate plant materials, compatibility of plant materials, design principles, soil requirements, cultural requirements, water requirements, functions, etc. The plan and its merits are presented to the class. Landscape crews of four or five select and/or modify a landscape design and install it.

D.2 Plant Physiology

In five small groups, students construct models and prepare illustrations depicting one aspect of plant physiology (photosynthesis, transpiration, respiration, plant structure or cell structure). They prepare and deliver oral presentations to describe the influence of horticultural practices on the assigned physiological function.

D.3 Irrigation and Drainage Demonstration and Experiment

In groups, students will design an irrigation system for a local residential landscape. Students prepare short written reports covering the advantages and disadvantages of several irrigation systems such as sprinkler, bubbler, and drip.

D.4 Planting Techniques

Students demonstrate and give an oral presentation on proper planting techniques for one of the different plant groups (ground cover, bedding plants, floriculture crops, vines, trees, shrubs). They discuss spacing and depth of planting, show how to correctly provide support until plant establishment in larger containers or the interior/exterior landscape. They will identify and demonstrate three ways to protect the plant group from freeze.

D.5 Plant Growth Experiment

Students each select an ornamental plant and design an experiment that alters environmental conditions such as soil type (sand, perlite, peat mix), nutrient availability, water availability, temperature variation and/or light requirements. Using their knowledge of plant systems and growth requirements, students predict possible outcomes and implement the experiment. Students maintain a journal of the progress of plants in normal and altered environments. Students chart the differences in plant growth and formulate reasons for the differences between the two groups. Students complete the activity with a report on the experiment and their research finding.

D.6 Long-Term Production and Sales Project

Students select an ornamental horticulture crop to propagate and grow to a marketable size. They will keep a written journal of growth data, observations, cultural practices, skills performed, marketing and sales strategies, financial records and conclusions.

D.7 Integrated Pest Management

Working in groups of four or five, students select a crop of importance to their local area and prepare an oral presentation on probable pest and economical solutions for their control. They may use resources such as cooperative extension agents, licensed pest control applicators, crop protection personnel, growers, and printed materials to determine the best integrated pest management system.

D.8 Floral Arrangement

Given flowers and floral supplies, student will prepare materials for use. They will use their knowledge of industry practices and consumer tastes to plan, construct, and price a floral arrangement and body flower for sale.

D.9 Horticulture Associations

Students working individually or in groups, contact a horticultural association or local chapter and interview an employee or officer about the organization's goals and purposes, related careers, professional development, special student programs, meeting places and times and other related activities. A video or oral presentation is given on interview results.

D.10 Plant Identification Collection

Students create a personal reference collection for plant and flower identification and use. In small groups, students collect samples of plant material (a minimum of 25 plants) during each season of the year from those on a provided list. The samples are pressed, mounted, and labeled. The label includes the botanical name, common name, exposure and other pertinent information such as the plant's form, leaf shape, leaf margin, flowering characteristics, climate zones classification as to deciduous or evergreen and industry use. A short narrative about landscape use for each sample should be included with the project.

D.11 Plant Selection

Given four plants of the same variety in the form of rooted cuttings, shrubs, trees, floriculture crops, foliage, or bedding plants, students place them in order of quality based on the criteria for the ornamental horticulture and floriculture contest found in the California Agriculture Teachers Association Curricular Code. From their own notes, students individually provided an oral justification for their placings.

D.12 Advanced Community Project

An advanced ornamental horticulture class selects a site in the community that is in need of improvement. Students work in groups and develop designs for the area taking into account the location, ease of maintenance and cost. The designs are presented to a local community organization (Lions, Rotary, City Council, California Association of Nurserymen, or Soroptimists) that is co-sponsoring the activity. The presentation includes the design, cost and timeline for completion. Students and the co-sponsor select and implement one of the designs. Students keep a journal of the activities involved in the project. Upon completion of the project the class applies for recognition from at least one award program.

D.13 Plant Propagation Experiment

Students develop an experiment involving plant propagation and predict results. Working in small groups students propagate plants varying at least one method or condition such as propagation types, hormones, rooting media, or environmental factors. Upon completion of the project students compare predictions to outcomes and prepare a laboratory journal.

D.14 Horticulture Mechanics

Students demonstrate the maintenance, care and safety of one horticultural type of equipment or facility related to the industry. Students discuss and justify orally or in writing what the advantages of proper maintenance are.

D.15 Landscape Maintenance Methods

After being assigned ornamental trees, shrubs, and vines students safely demonstrate support methods of ornamentals and common pruning methods as assigned by the instructor. Students orally evaluate and justify the methods employed.

D.16 Turf

Students, working in groups select an area, choose an appropriate type of turf and completely install a seed or sod lawn. They take into consideration soil preparation, growing environment, slope, materials needed, irrigation and requirements to establish the lawn. Students provide a justification at each phase of the project for how they made their decisions.

D.17 Insect Collection

Each student will collect twenty-five different insects and mites. They are to identify each specimen, indicate whether the specimen is harmful or beneficial, name the damaging stage(s), and give three different control methods for each. Students present their findings in a portfolio.

D.18 Marketing

Students select a product and develop an oral sales pitch on the product. They also make a display for the product using various techniques such as signs, care sheets, color, etc., and provide reasons for their decisions.

D.19 Turf Management

Students select, safely use and maintain the appropriate mower for different types of turf. They discuss their rationale for selecting the equipment.

D.20 Preparation and Care of Floriculture Crops

Students demonstrate orally or by video correct procedures for receiving, processing, maintaining, preparing and storing flower and foliage materials for use. They will explain each step in the process and provide an explanation for each step.

D.21 Horticulture Tool Identification and Safety

Students demonstrate and identify proper handling, care and safety of floriculture and horticultural tools, equipment and supplies. They provide a justification for a particular choice or use from each category.

D.22 Turf Fertilization

Students working individually or in groups, write an annual fertilization program for cool and warm season turf types grown in California. The student prescribes the correct type and amount of fertilizer for a specified turf type to be applied for one of the feedings during the year. They discuss why they selected that particular fertilization regimen.

D.23 Landscape Equipment

Develop and implement a written maintenance program for basic landscape equipment. Include power equipment (mower, rototiller, weedeater, etc.) and hand tools (shovels, hoe, rake, etc.). The program should include maintenance records, needed inventory of parts, list of repair companies, safety rules and equipment and records for each item.

6. Additional Integrated Activities

Landscape Units of Instruction for Tech Prep *From Ornamental Horticulture Curriculum*

(CLF6300) DISEASES AND
PESTS OF
ORNAMENTAL PLANTS

(CLF6301) Plants Pathology and A
Plant Health
(CLF6302) Weed Control.
(CLF6303) Safe and effective
(CLF6304) Introduction to integrated
pest management, IPM.
(CLF6305) Nursery Sanitation

This is an area that must deal more with the problems most common to your area. Activities would include visiting plants on the campus that have problems and diagnosing the problem. Develop flash cards of different symptoms and their cause and the solution. Even include the susceptible varieties and/or give an oral presentation. Obtain some different biological solutions and try them out on infestations or create problems to solve. Experiment with different weed control methods at the school.

(CLF6350) ELEMENTS NECESSARY
PLANTS GROWTH

(CLF6355) Soil Amendments
(CLF6356) Uses of Fertilizers
(CLF6357) Symptoms of Nutrient
Deficiencies
(CLF6358) Determining Nutrient
Deficiencies
(CLF6359) Methods of Application

Students can create deficiencies by planting seeds in a soil media that does not have certain elements and can record the results. Assign students certain plants and have them design a fertilizer that will work the best for the plant. Compare different fertilizer label information. As students experience nutrient deficiencies throughout the year have them bring them in for a diagnosis. Amend the soil in a landscape project to be completed.

(CLF6400) HORTICULTURAL SOILS
AND PLANTING MEDIA

(CLF6403) Managing Horticulture
Soils

Students can bring in a soil sample from home and evaluate the soils pH, texture and other available tests. Through a landscaping project be sure to spend time talking about the soil and areas to improve the soil.

(CLF6450) IRRIGATION AND DRAINAGE

(CLF6450) Irrigating Ornamental Plantings

- (CLF6452) Drainage
- (CLF6453) Sprinkler Irrigation System
- (CLF6454) Drip Irrigation Systems
- (CLF6455) Conserving Water in Irrigation

Students can obtain different sprinklers and set up a grid of cans and evaluate the sprinklers performance. Drip systems could be tested as to amount of gallons per minute would work best on various soils. Design a small system as a class project and install it in a landscape project.

(CLF6500) SELECTION, PLANTING, AND CARE OF ORNAMENTALS

Techniques

(CLF6501) Evaluation and Selection of Quality Plants
(CLF6502) Planting

- (CLF6503) Determining, Spacing, and Planting
- (CLF6504) Staking and Tying Plants
- (CLF6505) Frost Protection
- (CLF6506) Benefits of Xeriscape

Take a walking tour of neighborhood and evaluate the landscapes. Have the groundsman give a saking demonstration.

(CLF6550) PRUNING AND TRAINING ORNAMENTAL PLANTS

- (CLF6551) Purpose of Pruning
- (CLF6552) Timing of Pruning
- (CLF6553) Identification, Safe Use, and Maintenance of Pruning
- (CLF6554) Techniques for Making Pruning Cuts
- (CLF6555) Methods of Pruning Trees and Shrubs
- (CLF6556) Major Tree Pruning Systems
- (CLF6557) Plant Support Systems

Have the students be responsible of the maintenance of a small portion of the school grounds to practice pruning techniques. Prune a tree as a demonstration. Important to go over pruning equipment repair and sharpening.

(CLF2850) TYPES OF ENGINES
(from the Ag. Mechanics
Curriculum)

(CLF2851) Engine types and operating
cycles

(CLF2852) Engine Operating Principle

(CLF2854) Engine Systems

(CLF3855) Engine Disassembly and
Reassembly

This unit must use the equipment that is associated with the landscape industry. Using small air-cooled engines commonly found on lawnmowers, edgers, weed eaters, blowers and the like. Some of the information is geared for larger type engines so tailoring the units to the landscape industry is a must.

Simply maintain equipment that the class will be using or borrowing. Have the groundsman come in and show off all his landscape equipment.

(CLF6700) LANDSCAPE DESIGN,
CONSTRUCTION, AND
MAINTENANCE

(CLF6701) Plant Selection and Design

(CLF6702) Hardscape Options & Design

(CLF6703) Turf in the Landscape

(CLF6704) Irrigation Design and
Installation

(CLF6705) Design Techniques

(CLF6706) Estimating and Bid
Preparation.

The landscape industry uses hundreds of different types of plants so it is vital that students continue to increase their plant knowledge. Plant collections, are a great way to develop these skills. Flash cards containing plant information is another way. Take a trip through the campus or nearby park and identify the different plants.

Visit landscapes and breakdown the components of the design.

Install a landscape project that incorporates different landscape components. Prepare a bid for a landscape design.

(CLF6750) ORNAMENTAL
HORTICULTURE INDUSTRY

(CLF6751) Career Opportunities
and Educational
Requirements

(CLF6752) Horticulture Trade
Association

(CLF6753) Utilizing Trade
Association Publications.

Have each student research a career and give a report to the class. Have guest speakers visit from industry.

In general throughout the year guest speakers can talk on topics related to the subject area being taught.

The ideal situation will include some type of actual installation for students to experience. Throughout the landscape units, the instructor must drive the curriculum and ensure that it is geared towards landscaping and landscape maintenance. In addition it is assumed that the first year of the advanced Ornamental horticulture is taught and this course will build on that towards competencies in landscaping and landscape maintenance.

7. Articulated Performance Standards With Integrated Activities

Career Path Cluster Performance Standards and Integrated Activities Ornamental Horticulture

D.1 Plant Classification

Students will classify and identify plants using the following systems: botanical growth habits, landscape uses and cultural requirements. Students will demonstrate plant selection and identification for local landscape applications. **(6100)**

AD.1 Landscape Plot

Students individually prepare a landscape plan for a small plot of land (approximately 10' X 10'). The plan should take into consideration environmental characteristics, appropriate plant materials, compatibility of plant materials, design principles, soil requirements, cultural requirements, water requirements, functions, etc. The plan and its merits are presented to the class. Landscape crews of four or five select and/or modify a landscape design and install it.

AD.10 Plant Identification Collection

Students create a personal reference collection for plant and flower identification and use. In small groups, students collect samples of plant material (a minimum of 25 plants) during each season of the year from those on a provided list. The samples are pressed, mounted, and labeled. The label includes the botanical name, common name, exposure and other pertinent information such as the plant's form, leaf shape, leaf margin, flowering characteristics, climate zones classification as to deciduous or evergreen and industry use. A short narrative about landscape use for each sample should be included with the project.

D.2 Plant Physiology

Students will understand the principles of plant physiology and growth, including photosynthesis, transpiration, respiration, plant structure, and cell structure. Students will raise various plant materials under a variety of conditions affecting plant growth. **(6150, 6200)**

AD.2 Plant Physiology

In five small groups, students construct models and prepare illustrations depicting one aspect of plant physiology (photosynthesis, transpiration, respiration, plant structure or cell structure). They prepare and deliver oral presentations to describe the influence of horticultural practices on the assigned physiological function.

AD.5 Plant Growth Experiment

Students each select an ornamental plant and design an experiment that alters environmental conditions such as soil type (sand, perlite, peat mix), nutrient availability, water availability, temperature variation and/or light requirements. Using their knowledge of plant systems and growth requirements, students predict possible outcomes and implement the experiment. Students maintain a journal of the progress of plants in normal and altered environments. Students chart the differences in plant growth and formulate reasons for the differences between the two groups. Students complete the activity with a report on the experiment and their research finding.

D.3 Plant Propagation

Students will understand the methods of sexual and asexual plant propagation as well as factors affecting them. Students will safely demonstrate propagation practices and monitor plant development. **(6250)**

AD.6 Long-Term Production and Sales Project

Students select an ornamental horticulture crop to propagate and grow to a marketable size. They will keep a written journal of growth data, observations, cultural practices, skills performed, marketing and sales strategies, financial records and conclusions.

AD.13 Plant Propagation Experiment

Students develop an experiment involving plant propagation and predict results. Working in small groups students propagate plants varying at least one method or condition such as propagation types, hormones, rooting media, or environmental factors. Upon completion of the project students compare predictions to outcomes and prepare a laboratory journal.

D.4 Pest Management

Students will understand principles of integrated pest management. They will identify pest and disease damage, propose methods of control and recommend selected pest management practices. They will demonstrate safe pesticide handling practices. **(6300)**

AD.7 Integrated Pest Management

Working in groups of four or five, students select a crop of importance to their local area and prepare an oral presentation on probable pest and economical solutions for their control. They may use resources such as cooperative extension agents, licensed pest control applicators, crop protection personnel, growers, and printed materials to determine the best integrated pest management system.

AD.17 Insect Collection

Each student will collect twenty-five different insects and mites. They are to identify each specimen, indicate whether the specimen is harmful or beneficial, name the damaging stage(s), and give three different control methods for each. Students present their findings in a portfolio.

D.5 Soil and Fertilizer

Students will understand the role of soil and other planting media in plant growth. They will prepare and amend soils, calculate fertilizer application rates, implement methods of soil conservation and evaluate results. **(6350, 6400)**

AD.5 Plant Growth Experiment

Students each select an ornamental plant and design an experiment that alters environmental conditions such as soil type (sand, perlite, peat mix), nutrient availability, water availability, temperature variation and/or light requirements. Using their knowledge of plant systems and growth requirements, students predict possible outcomes and implement the experiment. Students maintain a journal of the progress of plants in normal and altered environments. Students chart the differences in plant growth and formulate reasons for the differences between the two groups. Students complete the activity with a report on the experiment and their research finding.

AD.16 Turf

Students, working in groups select an area, choose an appropriate type of turf and completely install a seed or sod lawn. They take into consideration soil preparation, growing environment, slope, materials needed, irrigation and requirements to establish the lawn. Students provide a justification at each phase of the project for how they made their decisions.

D.6 Water Management

Students will understand water management practices for ornamental plants including irrigation and drainage. They will analyze plant needs and related environmental factors including soil moisture, weather, soil structure, water penetration and drainage, and demonstrate irrigation techniques. (6450)

AD.1 Landscape Plot

Students individually prepare a landscape plan for a small plot of land (approximately 10' X 10'). The plan should take into consideration environmental characteristics, appropriate plant materials, compatibility of plant materials, design principles, soil requirements, cultural requirements, water requirements, functions, etc. The plan and its merits are presented to the class. Landscape crews of four or five select and/or modify a landscape design and install it.

AD.3 Irrigation and Drainage Demonstration and Experiment

In groups, students will design an irrigation system for a local residential landscape. Students prepare short written reports covering the advantages and disadvantages of several irrigation systems such as sprinkler, bubbler, and drip.

AD.16 Turf

Students, working in groups select an area, choose an appropriate type of turf and completely install a seed or sod lawn. They take into consideration soil preparation, growing environment, slope, materials needed, irrigation and requirements to establish the lawn. Students provide a justification at each phase of the project for how they made their decisions.

D.7 Industry Practices

Students will understand industry practices relevant to ornamental horticulture. They will demonstrate their knowledge of plant selection, purchasing, planting, care, merchandising, marketing and record keeping. **(6500, 6750)**

AD.4 Planting Techniques

Students demonstrate and give an oral presentation on proper planting techniques for one of the different plant groups (ground cover, bedding plants, floriculture crops, vines, trees, shrubs). They discuss spacing and depth of planting, show how to correctly provide support until plant establishment in larger containers or the interior/exterior landscape. They will identify and demonstrate three ways to protect the plant group from freeze.

AD.6 Long-Term Production and Sales Project

Students select an ornamental horticulture crop to propagate and grow to a marketable size. They will keep a written journal of growth data, observations, cultural practices, skills performed, marketing and sales strategies, financial records and conclusions.

AD.8 Floral Arrangement

Given flowers and floral supplies, student will prepare materials for use. They will use their knowledge of industry practices and consumer tastes to plan, construct, and price a floral arrangement and body flower for sale.

AD.11 Plant Selection

Given four plants of the same variety in the form of rooted cuttings, shrubs, trees, floriculture crops, foliage, or bedding plants, students place them in order of quality based on the criteria for the ornamental horticulture and floriculture contest found in the California Agriculture Teachers Association Curricular Code. From their own notes, students individually provided an oral justification for their placings.

AD.18 Marketing

Students select a product and develop and oral sales pitch on the product. They also make a display for the product using various techniques such as signs, care sheets, color, etc., and provide reasons for their decisions.

D.8 Pruning Methods

Students will understand the principles of pruning and training trees and shrubs in the landscape. They will evaluate various plant materials and prune them according to plant and landscape requirements to enhance growth and/or fruit production. **(6550)**

AD.15 Landscape Maintenance Methods

After being assigned ornamental trees, shrubs, and vines students safely demonstrate support methods of ornamentals and common pruning methods as assigned by the instructor. Students orally evaluate and justify the methods employed.

D.9 Nursery Production Facilities

Students will understand the care and maintenance of nursery stock and nursery facilities. Students will understand the care and maintenance of nursery stock, nursery facilities and nursery conditions commonly found in commercial nursery production. They will propagate and maintain a horticultural crop to the point of sale. **(6600, 6500)**

AD.6 Long-Term Production and Sales Project

Students select an ornamental horticulture crop to propagate and grow to a marketable size. They will keep a written journal of growth data, observations, cultural practices, skills performed, marketing and sales strategies, financial records and conclusions.

AD.14 Horticulture Mechanics

Students demonstrate the maintenance, care and safety of one horticultural type of equipment or facility related to the industry. Students discuss and justify orally or in writing what the advantages of proper maintenance are.

D.10 Floriculture

Students will understand the principles and skills of floral design including cultivating, identifying, handling, safely preparing and arranging cut flowers. They will design and construct floral arrangements and/or corsages for identified purposes. Students will understand the employment opportunities and the importance of marketing and sales in the floral industry and be aware of related employment opportunities. **(6650)**

AD.8 Floral Arrangement

Given flowers and floral supplies, student will prepare materials for use. They will use their knowledge of industry practices and consumer tastes to plan, construct, and price a floral arrangement and body flower for sale.

AD.18 Marketing

Students select a product and develop an oral sales pitch on the product. They also make a display for the product using various techniques such as signs, care sheets, color, etc., and provide reasons for their decisions.

AD.20 Preparation and Care of Floriculture Crops

Students demonstrate orally or by video correct procedures for receiving, processing, maintaining, preparing and storing flower and foliage materials for use. They will explain each step in the process and provide an explanation for each step.

D.11 Basic Landscaping

Students will understand the basic principles of landscape planning, design, construction and maintenance. Students will design and install a simple (permanent or temporary) landscape plot and present a finished proposal to a client. **(6700)**

AD.1 Landscape Plot

Students individually prepare a landscape plan for a small plot of land (approximately 10' X 10'). The plan should take into consideration environmental characteristics, appropriate plant materials, compatibility of plant materials, design principles, soil requirements, cultural requirements, water requirements, functions, etc. The plan and its merits are presented to the class. Landscape crews of four or five select and/or modify a landscape design and install it.

AD.12 Advanced Community Project

An advanced ornamental horticulture class selects a site in the community that is in need of improvement. Students work in groups and develop designs for the area taking into account the location, ease of maintenance and cost. The designs are presented to a local community organization (Lions, Rotary, City Council, California Association of Nurserymen, or Soroptimists) that is co-sponsoring the activity. The presentation includes the design, cost and timeline for completion. Students and the co-sponsor select and implement one of the designs. Students keep a journal of the activities involved in the project. Upon completion of the project the class applies for recognition from at least one award program.

AD.15 Landscape Maintenance Methods

After being assigned ornamental trees, shrubs, and vines students safely demonstrate support methods of ornamentals and common pruning methods as assigned by the instructor. Students orally evaluate and justify the methods employed.

D.12 Ornamental Horticulture Industry

Students will understand the role of support organizations within the nursery, landscape, and floriculture industries. They will analyze and compare the services, and professional development opportunities provided by those organizations. **(6750)**

AD.9 Horticulture Associations

Students working individually or in groups, contact a horticultural association or local chapter and interview an employee or officer about the organization's goals and purposes, related careers, professional development, special student programs, meeting places and times and other related activities. A video or oral presentation is given on interview results.

D.13 Ornamental Horticulture Equipment

Students will understand the use, repair, and maintenance of tools, equipment and facilities found in horticulture business. They will safely operate and maintain selected power equipment.

AD.14 Horticulture Mechanics

Students demonstrate the maintenance, care and safety of one horticultural type of equipment or facility related to the industry. Students discuss and justify orally or in writing what the advantages of proper maintenance are.

AD.19 Turf Management

Students select, safely use and maintain the appropriate mower for different types of turf. They discuss their rationale for selecting the equipment.

AD.21 Horticulture Tool Identification and Safety

Students demonstrate and identify proper handling, care and safety of floriculture and horticultural tools, equipment and supplies. They provide a justification for a particular choice or use from each category.

AD.23 Landscape Equipment

Develop and implement a written maintenance program for basic landscape equipment. Include power equipment (mower, rototiller, weedeater, etc.) and hand tools (shovels, hoe, rake, etc.). The program should include maintenance records, needed inventory of parts, list of repair companies, safety rules and equipment and records for each item.

D.14 Horticulture Business Practices

Students will understand sales and marketing in horticultural businesses. They will be able to perform small scale sale, market a horticulture product and operate business machines.

AD.6 Long-Term Production and Sales Project

Students select an ornamental horticulture crop to propagate and grow to a marketable size. They will keep a written journal of growth data, observations, cultural practices, skills performed, marketing and sales strategies, financial records and conclusions.

AD.18 Marketing

Students select a product and develop and oral sales pitch on the product. They also make a display for the product using various techniques such as signs, care sheets, color, etc., and provide reasons for their decisions.

D.15 Horticulture Record Keeping

Students will understand the importance of keeping records of business transactions and production records. Students will maintain and complete record books, production records and other records as needed.

AD.6 Long-Term Production and Sales Project

Students select an ornamental horticulture crop to propagate and grow to a marketable size. They will keep a written journal of growth data, observations, cultural practices, skills performed, marketing and sales strategies, financial records and conclusions.

AD.23 Landscape Equipment

Develop and implement a written maintenance program for basic landscape equipment. Include power equipment (mower, rototiller, weedeater, etc.) and hand tools (shovels, hoe, rake, etc.). The program should include maintenance records, needed inventory of parts, list of repair companies, safety rules and equipment and records for each item.

D.16 Turfgrass

Students will understand the selection, installation, and maintenance of turf. They will install and/or maintain a lawn area. **(6700)**

AD.16 Turf

Students, working in groups select an area, choose an appropriate type of turf and completely install a seed or sod lawn. They take into consideration soil preparation, growing environment, slope, materials needed, irrigation and requirements to establish the lawn. Students provide a justification at each phase of the project for how they made their decisions.

AD.19 Turf Management

Students select, safely use and maintain the appropriate mower for different types of turf. They discuss their rationale for selecting the equipment.

AD.22 Turf Fertilization

Students working individually or in groups, write an annual fertilization program for cool and warm season turf types grown in California. The student prescribes the correct type and amount of fertilizer for a specified turf type to be applied for one of the feedings during the year. They discuss why they selected that particular fertilization regimen.

D.17 Leadership Development

Students will recognize the traits of effective leaders, and participate in leadership training activities associated with the FFA including public speaking, leading group discussions, working within a committee, conducting business meetings, and problem solving.

AD.9 Horticulture Associations

Students working individually or in groups, contact a horticultural association or local chapter and interview an employee or officer about the organization's goals and purposes, related careers, professional development, special student programs, meeting places and times and other related activities. A video or oral presentation is given on interview results.

AD.12 Advanced Community Project

An advanced ornamental horticulture class selects a site in the community that is in need of improvement. Students work in groups and develop designs for the area taking into account the location, ease of maintenance and cost. The designs are presented to a local community organization (Lions, Rotary, City Council, California Association of Nurserymen, or Soroptimists) that is co-sponsoring the activity. The presentation includes the design, cost and timeline for completion. Students and the co-sponsor select and implement one of the designs. Students keep a journal of the activities involved in the project. Upon completion of the project the class applies for recognition from at least one award program.

D.18 Supervised Practical Experience

Students will engage in a supervised practical experience employing skills and knowledge learned in the classroom. Students will maintain a record book.

D.13 Ornamental Horticulture Equipment

Students will understand the use, repair, and maintenance of tools, equipment and facilities found in horticulture business. They will safely operate and maintain selected poser equipment.

AD.14 Horticulture Mechanics

Students demonstrate the maintenance, care and safety of one horticultural type of equipment or facility related to the industry. Students discuss and justify orally or in writing what the advantages of proper maintenance are.

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D.18 Supervised Practical Experience

Students will engage in a supervised practical experience employing skills and knowledge learned in the classroom. Students will maintain a record book.

8. Sequenced Units

Ornamental Horticulture Suggested Sequence of Advanced Cluster Curriculum Units

Nursery Industry Course (Grade 11)

6100 Botanical Classification

- (CLF6100) BOTANICAL CLASSIFICATION
- (CLF6101) History & Terminology of Taxonomy
- (CLF6102) Practical Taxonomy
- (CLF6103) Use of Plant ID Key
- (CLF6104) Characteristics of Leaves and Leaf Surfaces
- (CLF6105) Characteristics of Stems and Roots
- (CLF6106) Characteristics of Fruits
- (CLF6107) Characteristics of Flowers
- (CLF6108) Identifying Ornamental Plants
- (CLF6149) Unit Exam

6150 Photosynthesis and Respiration

- (CLF6150) PHOTOSYNTHESIS & RESPIRATION
- (CLF6151) Photosynthesis
- (CLF6152) Respiration
- (CLF6153) Photosynthesis & Respiration in Horticulture
- (CLF6154) Cellular Function in Plants
- (CLF6199) Unit Exam

6200 Physiology and Growth

- (CLF6200) PHYSIOLOGY & GROWTH
- (CLF6201) Growth Structures & Functions
- (CLF6202) Growth Patterns
- (CLF6203) Growth Requirements
- (CLF6204) Seedling Growth

6400 Horticultural Soils and Planting Media

(CLF6400) HORTICULTURAL SOILS & PLANTING MEDIA

(CLF6401) Soil Basics

(CLF6402) Horticultural Soils

(CLF6403) Managing Horticultural Soils

(CLF6404) Seedbed Preparation

(CLF6405) Composting

(CLF6449) Unit Exam

6350 Elements Necessary for Plant Growth

(CLF6350) ELEMENTS NECESSARY FOR PLANT GROWTH

(CLF6351) Primary, Secondary, & Micro-nutrients Necessary for Plant Growth

(CLF6352) Sources of N, P, & K

(CLF6353) Function of Nutrients in Plant Growth

(CLF6354) Reading the Fertilizer Label

(CLF6355) Soil Amendments

(CLF6356) Uses of Fertilizer

(CLF6357) Symptoms of Nutrient Deficiencies

(N,P,K,Fe,S,Mg,B, & Zn)

(CLF6358) Determining Nutrient Deficiencies

(CLF6359) Methods of Application

6250 Sexual and Asexual Propagation

(CLF6250) SEXUAL & ASEXUAL PROPAGATION

(CLF6251) Sexual & Asexual Propagation

(CLF6252) Parts of the Flower

(CLF6253) Pollination & Seed Production

(CLF6254) Reproduction by Spores

(CLF6255) Vegetative Cuttings

(CLF6256) Budding & Grafting

(CLF6257) Other Propagation Methods

(CLF6299) Unit Exam

6600 Growth and Maintenance of Nursery Stock

- (CLF6600) GROWTH & MAINTENANCE OF NURSERY STOCK
- (CLF6601) Horticulture Structures
- (CLF6602) Sterilization & Sanitation
- (CLF6603) Mixing Growing Media
- (CLF6604) Planting of Seeds
- (CLF6605) Watering Nursery Stock
- (CLF6606) Tool & Equipment Identification
- (CLF6607) Transplanting Growing Stock
- (CLF6608) Irrigation Systems
- (CLF6649) Unit Exam

6300 Diseases and Pests of Ornamental Plants

- (CLF6300) DISEASES & PESTS OF ORNAMENTAL PLANTS
- (CLF6301) Plant Pathology & Health
- (CLF6302) Weed Control
- (CLF6303) Safe & Effective Use of Chemical Pesticides
- (CLF6304) Introduction to Integrated Pest Management (IPM)
- (CLF6305) Nursery Sanitation
- (CLF6349) Unit Test

6500 Selection, Planting and Care of Ornamentals

- (CLF6500) SELECTION, PLANTING, & CARE OF ORNAMENTALS
- (CLF6501) Evaluation & Selection of Quality Plants
- (CLF6502) Planting Techniques
- (CLF6503) Determining Spacing & Planting
- (CLF6504) Staking & Tying Plants
- (CLF6505) Frost Protection
- (CLF6506) Benefits of Xeriscape
- (CLF6507) Sale & Merchandising of Plants
- (CLF6549) Unit Exam

6750 Ornamental Horticulture Industry

- (CLF6750) ORNAMENTAL HORTICULTURE & INDUSTRY
- (CLF6751) Career Opportunities Educational Requirements
- (CLF6752) Horticultural Trade Assoc.
- (CLF6753) Utilizing Trade Association Publications

LANDSCAPE INDUSTRY COURSE (GRADE 12)

6100 Botanical Classification

- (CLF6100) BOTANICAL CLASSIFICATION
- (CLF6101) History & Terminology of Taxonomy
- (CLF6102) Practical Taxonomy
- (CLF6103) Use of Plant ID Key
- (CLF6104) Characteristics of Leaves and Leaf Surfaces
- (CLF6105) Characteristics of Stems and Roots
- (CLF6106) Characteristics of Fruits
- (CLF6107) Characteristics of Flowers
- (CLF6108) Identifying Ornamental Plants
- (CLF6149) Unit Exam

6400 Horticultural Soils & Planting Media

- (CLF6400) HORTICULTURAL SOILS & PLANTING MEDIA
- (CLF6401) Soil Basics
- (CLF6402) Horticultural Soils
- (CLF6403) Managing Horticultural Soils
- (CLF6404) Seedbed Preparation
- (CLF6405) Composting
- (CLF6449) Unit Exam

6350 Elements necessary for plant growth

- (CLF6350) ELEMENTS NECESSARY FOR PLANT GROWTH
- (CLF6351) Primary Secondary, & Micro-nutrients Necessary for
Plant Growth
- (CLF6352) Sources of N, P, & K
- (CLF6353) Function of Nutrients in Plant Growth
- (CLF6354) Reading the Fertilizer Label
- (CLF6355) Soil Amendments
- (CLF6356) Uses of Fertilizer
- (CLF6357) Symptoms of Nutrient Deficiencies
(N,P,K,Fe,S,Mg,B, & Zn)
- (CLF6358) Determining Nutrient Deficiencies
- (CLF6359) Methods of Application

6500 Selection, Planting, & Care of Ornamentals

- (CLF6500) SELECTION, PLANTING, & CARE OF ORNAMENTS
- (CLF6501) Evaluation & Selection of Quality Plants
- (CLF6502) Planting Techniques
- (CLF6503) Determining Spacing & Planting
- (CLF6504) Staking & Tying Plants
- (CLF6505) Frost Protection
- (CLF6506) Benefits of Xeriscape
- (CLF6507) Sale & Merchandising of Plants
- (CLF6549) Unit Exam

6550 Pruning & Training Ornamental Plants

- (CLF6550) PRUNING & TRAINING ORNAMENTAL PLANTS
- (CLF6551) Purposes of Pruning
- (CLF6552) Timing of Pruning
- (CLF6553) Identification, Safe Use, & Maintenance of Pruning Equipment
- (CLF6554) Techniques of Pruning Trees & Shrubs
- (CLF6555) Methods of Pruning Trees & Shrubs
- (CLF6556) Major Tree Pruning Systems
- (CLF6557) Plant Support Systems
- (CLF6599) Unit Exam

6300 Diseases & Pests of Ornamental Plants

- (CLF6300) DISEASES & PESTS
- (CLF6301) Plant Pathology & Health
- (CLF6302) Weed Control
- (CLF6303) Safe & Effective Use of Chemical Pesticides
- (CLF6304) Introduction to Integrated Pest Management (IPM)
- (CLF6305) Nursery Sanitation
- (CLF6349) Unit Test

6450 Irrigation & Drainage

- (CLF6450) IRRIGATION & DRAINAGE
- (CLF6451) Irrigating Ornamental Plantings
- (CLF6452) Drainage
- (CLF6453) Sprinkler Irrigation Systems
- (CLF6454) Drip Irrigation Systems
- (CLF6455) Conserving Water in Irrigation
- (CLF6449) Unit Exam

6700 Landscape Design, Construction, & Maintenance

(CLF6700) LANDSCAPE DESIGN, CONSTRUCTION, & MAINTENANCE

(CLF6701) Plant Selection & Design

(CLF6702) Hardscape Options & Design

(CLF6703) Turf in the Landscape

(CLF6704) Irrigation Design & Installation

(CLF6705) Design Techniques

(CLF6706) Estimating & Bid Preparation

(CLF6749) Unit Exam

6750 Ornamental Horticulture Industry

(CLF6750) ORNAMENTAL HORTICULTURE INDUSTRY

(CLF6751) Career Opportunities & Educational Requirements

(CLF6752) Horticultural Trade Assoc.

(CLF6753) Utilizing Trade Association Publications

FLORAL INDUSTRY COURSE (GRADE 12)

6100 Botanical Classification

(CLF6100) BOTANICAL

(CLF6101) History & Terminology Classification of Taxonomy

(CLF6102) Practical Taxonomy

(CLF6103) Use of Plant ID Key

(CLF6104) Characteristics of Leaves and Leaf Surfaces

(CLF6105) Characteristics of Stems and Roots

(CLF6106) Characteristics of Fruits

(CLF6107) Characteristics of Flowers

(CLF6108) Identifying Ornamental Plants

(CLF6149) Unit Exam

6500 Selection, Planting & Care of Ornamentals

(CLF6500) SELECTION, PLANTING, & CARE OF ORNAMENTALS

(CLF6501) Evaluation & Selection of Quality Plants

(CLF6502) Planting Techniques

(CLF6503) Determining Spacing & Planting

(CLF6504) Staking & Tying Plants

(CLF6505) Frost Protection

(CLF6506) Benefits of Xeriscape

(CLF6507) Sale & Merchandising of Plants

(CLF6549) Unit Exam

6300 Diseases & Pests of Ornamental Plants

- (CLF6300) DISEASES & PESTS OF ORNAMENTAL PLANTS
- (CLF6301) Plant Pathology & Health
- (CLF6302) Weed Control
- (CLF6303) Safe & Effective Use of Chemical Pesticides
- (CLF6304) Introduction to Integrated Pest Management (IPM)
- (CLF6305) Nursery Sanitation
- (CLF6349) Unit Test

6650 Floriculture & Floral Design

- (CLF6650) FLORICULTURE & FLORAL DESIGN
- (CLF6651) Floriculture Terms
- (CLF6652) Identification of Foliage & Seasonal Plants
- (CLF6653) Classification & Use of Flower Design Categories
- (CLF6654) Identification & Use of Design Tools Materials
- (CLF6655) Preparation & Conditioning of Flowers & Foliage
- (CLF6656) Basic Floral Design Shapes
- (CLF6657) Simple Floral Arrangement & Corsage Construction

6750 Ornamental Horticulture Industry

- (CLF6750) ORNAMENTAL HORTICULTURE INDUSTRY
- (CLF6751) Career Opportunities & Educational Requirements
- (CLF6752) Horticultural Trade Assoc.
- (CLF6753) Utilizing Trade Association Publications

9. Ornamental Horticulture

Industry Skills

Mental Skills

1. Public Relations
2. Personal Management
3. Business Management
4. History of Nursery Business
5. Advertising
6. Communications
7. Knowledge of Legal Ethics
8. Organizing Work
9. Know Property Values
10. Educational Knowledge of:
 - a. ornamental plants., shrubs, trees, vines
 - b. landscape construction
 - c. electricity
 - d. plumbing
 - e. basic biology
 - f. mathematics
 - g. basic horticulture
 - h. herbaceous landscape plants
 - i. surveying
 - j. perspective
 - k. delineation
 - l. landscape design
 - m. landscape construction drawing
 - n. landscape contracting
 - o. turfs and turf management
 - p. general entomology
 - q. botany
 - r. chemistry
11. Know Good Nursery Practices
 - a. use of fertilizers
 - b. know state laws on insecticide application
 - c. how to control insects and diseases
 - d. rodent control
 - e. safety measures
 - f. identify drainage problems
 - g. proper pest root control
 - h. root inspection
 - i. selection of plants

- j. selection of seeds
 - k. selection of bulbs
 - l. understand pollenization
 - m. identify mineral characteristics
 - n. identify flowers, vegetables, shrubs
 - o. select seed bulbs
 - p. storage of bulbs
 - q. storage of seeds
12. Understand sexual and asexual propagation
 13. Recognize examples of fruit by type and kind
 14. Selection of wood cutting
 15. Selection of scion and bud wood
 16. Know various root hormones
 17. Know the botany and physiology of the small fruit and their relationship to production
 18. Know how to propagate small fruit and o grow them to planting size
 19. Plan an economical nursery unit
 20. Know how to carry out a labor training program
 21. Understand nursery and plant sanitation
 22. Know how to prune and train nursery stock
 23. Appreciation of trees for landscape use
 24. Terminology of the arborist
 25. Stimulate creative thinking and encourage creative activity and work
 26. Analyze the family needs and relate them to community needs
 27. Use of plant key
 28. Identify by leaf, flower, fruit, and habits of growth many shrubs, vines, trees
 29. Understand landscape needs of schools, cities, parks, city streets and other public areas
 30. Art principles
 31. Live values

Physical Skills

1. Prune and train
 - a. ornamental. shrubs
 - b. ornamental. trees
 - c. ornamental. vines
 - d. grapes, roses, --beet---cane
 - e. street trees
 - f. fruit trees
 - g. hedges

2. Pruning
 - a. dead wood
 - b. disease and insect infested branches
 - c. excess growth
 - d. undesired growth habits

- e. removal of injured and broken wood
- 3. Tools of Pruning
 - a. looping shears
 - b. brush cutters
 - c. point cut pruners
 - d. tree trimmers
 - e. anvil cut pruners
 - f. pruning saws
 - g. pole saws
 - h. flower shears
 - i. snap cut shears
- 4. Rebuild old and broken down shrubs
- 5. Grafting
 - a. grafting equipment
 - b. grafting hood
- 6. Building of Propagational Structures
 - a. green house
 - b. hotbed
 - c. lath house
 - d. cold frames
 - e. mist beds
- 7. Mixing medias for propagation
- 8. Methods of propagation
 - a. sexual
 - b. asexual
 - runners
 - suckers
 - layering
 - separation
 - division
 - cutting
 - leaf
 - leaf bud cuttings
 - hardwood cuttings
 - softwood cuttings
 - budding
 - grafting(inarch, cleft, whip)
- 9. Transplanting
 - a. seedlings
 - b. canned plant materials
- 10. Planting bare root
- 11. Testing of seed for germination
- 12. Prepare and construct
- 13. Select and use fertilizers and soil conditions

- a. liquid
- b. dry
- c. drill
- 14. Weed control
 - a. cultivation
 - b. spraying
 - c. sterilize
 - d. howing
- 15. Irrigation
 - a. furrow
 - b. flood
 - c. sprinkler and auto. systems
- 16. Lay out water systems
 - a. time clocks
 - b. line strainers
 - c. time suited assembly
 - d. PVC plastic pipe and fittings
 - e. Various sprinklers
 - f. Various fitters
 - g. Solenoid valves
- 17. Wind protection
- 18. Establish and maintain an acid bed
- 19. Care for acid loving plants
- 20. Staking
 - a. trees
 - b. vines
 - c. shrubs
- 21. Select and use insecticides and fungicides
 - a. dusts
 - b. sprays
- 22. Thinning
 - a. fruit
 - b. flower
 - c. buds
 - d. branches

- 23. Operate Power equipment and Hand tools
 - a. mower
 - b. edger
 - c. hedge trimmer
 - d. rototiller
 - e. garden tractor
 - f. spray machines
 - g. aerator

- h. sickle bar
 - i. lawn seeders
 - j. top dressers
 - k. lawn sweepers
 - l. litter lifts
 - m. soil shredders
24. Maintain equipment
25. Fumigate soil
26. Maintain safety
27. Prepare seed bed, sow grass seed and care for turf
- a. grading of area
 - b. drainage of area
 - c. preparation of soil
 - d. planting
 - e. watering
 - f. weeding
 - g. raking
 - h. fertilizing
 - i. sodding
 - j. aireate
 - k. rolling
 - l. mulching
 - m. mowing
28. Types of Grasses (common)
- a. Kentucky Blue
 - b. Chewings Fescue
 - c. Red Top
 - d. Rough Slatbed Meadow Grass
 - e. White Clover
 - f. Colonial Bent Grass
 - g. Buffalo Grass
 - h. Centipede Grass
 - i. Bermuda Grass
 - j. Carpet Grass
 - k. St. Augustine Grass
 - l. Italian Rye Grass
 - m. Canadian Blue Grass
29. Suitable lawn mixtures
- a. for sun
 - b. for shade
 - c. for golf course
30. Flower bed maintenance
- a. soil building
 - b. weeding
 - c. fertilizing

31. How to sharpen tools
 - a. hand tools
 - b. power tools
32. How to adjust lawn mowers
33. Basic Art
34. Sketching
35. Designing
36. Ground cover substitute
 - a. fir bark
 - b. pebble bark
 - c. pea gravel
 - d. acorn bark
 - e. aggregates
 - f. walnut hulls
 - g. rocks
 - h. concrete
 - i. brick
 - j. redwood blocks
 - k. stepping stones
 - l. cement blocks
37. Packaging and storing of seeds and bulbs
38. Prepare a bill of materials
39. Interpreting blue prints
40. Selecting and using
 - a. pencils
 - b. scales
 - c. lettering equipment
 - d. inks
41. Artifacts used in landscapes
 - a. benches
 - b. statues
 - c. boulders
 - d. driftwood
 - e. mosaics
 - glass bits
 - smalti
 - stained glass
 - bottle glass
 - ceramic tile
 - broken pottery
 - linoleum
 - pebbles and stones
 - marble
 - wood
 - seeds

42. Greenhouse cooling
 - a. floral breeze fans
 - b. turbulators
 - c. attic and exhaust fans
 - d. aspen pods
 - e. water and sump pumps
43. House Plants
 - a. potting
 - b. insect pests
 - c. summer cars
 - d. aquariums
 - e. terrariums
44. Selection of Plants
 - a. color of foliage and flowers
 - b. fragrance of flowers
 - c. branching habits
 - d. height-width spread
 - e. leaf size
 - f. soil adaptation
 - g. hardness
 - h. disease and pest resistance
 - i. climate
 - j. ecology
45. Plumbing
 - pipe steel-tubing, copper
 - nipples steel-brass
 - elbows 90 degrees and 45 degrees
 - tees
 - reducing tees
 - valves gate
 - cross of 4 way tee
 - cans
 - plugs
 - compression fitting flood top
 - unions
 - brushings
 - bell reducers
 - couplings
 - coils
 - couplings copper sweat type
 - elbows 90 sweat type
 - elbows 45 sweat type
 - flaring tools
 - joint compound
 - thread cutting oil

- cutting pipe
- cutting pipe
- vice dies
- wrenches
- acetylene or blow torch
- emery cloth
- tubing cutter
- pipe and tubing benders-hickeys
- hacksaw
- copper to IPS male
- compressed fitting flood top cut to IPS female
- elbows flood cu
- couplings flood type, cut to cu
- coils flood type, cu to IPS female
- coils flood type, cu IPS male
- 46. Propagational supplies
 - tee jet nozzles
 - misting nozzles
 - thermometers
 - plant hormones
 - soil drenches
 - heating cables and thermometers
- 47. Propagation medias
 - peat
 - perlite
 - vermiculite
 - loam
 - sand
 - firbark
 - sphagnum moss
 - U.C. mix
- 48. Water tools
 - lever lock nozzles
 - flaring rose nozzle
 - root irrigation
 - square sprays
 - oscillating sprinklers
 - fogging nozzles
- 49. Shade materials
 - cheesecloth
 - plant bed covers
 - shade cloth
 - fiberglass insect screening
 - shading compound
 - unbleached muslin

- super black cloth
- sheeting
- burlap
- 50. Landscape construction
 - patios
 - sundecks
 - fences-gates
 - tea houses
 - walk
 - aggregate
 - rock
 - brick
 - cement block
 - fountain
 - pools
 - arbors
 - wishing wells
 - work centers
 - terraces
 - bridges
 - screens
 - moving strips
 - lamp posts
 - bird baths
 - window boxes
 - water falls
 - sun dials
 - cantilevered lath growing areas
- 51. Management of nursery business
 - a. organization
 - b. marketing
 - culture
 - protection while growing and shipping
 - pricing and selling plants
 - c. arrangement of key man
 - propagator-grows seedlings
 - plantsman-grows stock
 - mechanic-orders supplies
 - gardener-cares for display
 - sales person-mark items and sells to customer
 - office manager-keeps records
 - d. cost accounting
 - e. records
 - f. office procedure
 - g. income accounts

MISCELLANEOUS (FAMILY LIVING AND HOME BEAUTIFICATION) SKILLS

Physical Skills

1. The use of pea gravel
2. The use of redwood for building fences
3. Selecting, locating, and operating fire extinguishers
4. Identifying, labeling, and storing poisonous materials
5. Safely storing tool and equipment
6. Installing and adjusting machinery safety guards
7. Keeping vicious and potentially dangerous animals secured
8. Preparing seed and plant order forms
9. Heeling in plants and cuttings
10. Transplanting
11. Watering plants
12. Treating seeds before planting or storing
13. Soaking seeds
14. Preparing seedbeds
15. Staking plants
16. Protecting plantings against rodents and climatic factors
17. Selecting and using spraying and dusting equipment
18. Setting horticultural, forestry, and landscaping plants
19. Thinning out
20. Determining the maturity of fruits and vegetables
21. Inoculating leguminous seeds
22. Banding trees
23. Curing fruits and vegetables
24. Blanching
25. Mulching
26. Selecting materials and tools and constructing law fences
27. Staking orchard, garden, forestry, and landscaping sites
28. Edging sidewalks and fences
29. Selecting and applying lime and fertilizer
30. Selecting and tagging seed plants
31. Packaging and storing seeds and bulbs
32. Preparing hot-houses and cold frames
33. Preparing produce for storage (freezing, canning)
34. Selecting grafting scions, stocks, and buds
35. Making single, twig, plant, bud grafts
36. Making whip, cleft, splice, saddle, veneer, side shield, inlayed and bridge grafts
37. Selecting root-cuttings, bulbs, suckers, and tubers
38. Preparing and applying grafting wax
39. Selecting and using tree hole diggers
40. Measuring and stacking cord wood

Managerial Skills

1. Storing and labeling inflammables
2. Selecting various types of insurance
3. Applying for insurance
4. Developing a landscaping plan for the farmstead
5. Selecting types and varieties of orchard, garden, forestry, and landscaping seeds and plants
6. Calculating planting requirements
7. Determining depth of planting and spacing
8. Identifying forestry and horticultural insects and plant diseases
9. Selecting spraying and dusting materials
10. Selecting and using weeding equipment and sprays
11. Storing fruits and vegetables
12. Selecting storage facilities
13. Selecting and using lawn mowers
14. Selecting orchard, garden, shelterbelt, and windbreak sites
15. Selecting a wood-lot site and developing a plan on paper
16. Developing an orchard, garden, shelterbelt, and windbreak plan
17. Calculating lime and fertilizer requirements
18. Identifying, selecting, and using pruning knives, shears, and saws
19. Curing wood products
20. Selecting a farm pond site
21. Planning a household budget
22. Taking an inventory of household goods and equipment
23. Selecting and ordering household furniture and equipment
24. Treating seeds before planting or storing

SECTION THREE

Community College

10. Articulated Courses

Community College Ornamental Horticulture Course Objectives *Topical content Outline (Potential CC/HS Articulated Courses)*

OH 200 - Ornamental Gardening

Catalog Description:

Fundamentals of indoor and outdoor gardening, planting for patios and balconies, gardening in containers and simple landscaping. Designed for anyone interested in gardening, regardless of prior experience or size of garden. A series of 30 television programs supported by coordinating textual material and by additional printed materials that are optional.

Objectives - The student will:

- A. Describe how soil structure, availability of necessary nutrients and correct watering practices relate to success in the home garden.
- B. Outline a planning strategy for making correct choices for the garden.
- C. Explain the proper procedure in making a simple soil test, taking soil samples, amending soil and adding nutrients and changing pH balance.
- D. Describe how to select, plant and maintain lawns and ground covers, flowering plants, trees, shrubs, vines, fruits, vegetables and succulents.
- E. Explain technologies that make gardening easier and more economical.
- F. Describe the origins, importance, function and historical uses of plants.

Content

- A. Introduction
- B. Soil Basics
- C. Plant nutrients
- D. Vegetable/Gardening
- E. Landscape design
- F. Lawns and ground covers
- G. Watering
- H. Planter mixes and transplants
- I. Gardening in containers
- J. Annuals
- K. Shrubs
- L. Trees
- M. Roses
- N. Insect pests

- O. Diseases
- P. How plants function
- Q. Shade gardens
- R. Fruits
- S. Indoor plants
- T. Propagation
- U. Bulbs and succulents (cacti)
- V. Greenhouses and conclusion

OH 210 - Introduction to Ornamental Horticulture

Catalog Description

General course in ornamental horticulture, emphasis on nursery operation including structures and layout, seeding, transplanting, plotting, balling, canning, fertilizing, pest control, plant diseases and abnormalities. Preparation and use of propagating and planting mediums. Use and maintenance of common tools and equipment. Saturday field laboratory may be required.

Objectives - The student will:

- A. Describe the principles of plant reproduction, sexual and asexual.
- B. Describe and differentiate the processes of osmosis, transpiration, respiration, photosynthesis.
- C. Explain the effect of temperature, water, humidity, and fertility on plant growth.
- D. Identify common plants of landscape value in the area.
- E. Plan and design a nursery layout.
- F. Practice the procedures of plant propagation including seed, cuttings, budding, layering, grafting, division.
- G. Formulate planting and propagating media.
- H. Transfer plants into larger containers.
- I. Measure and mix fertilizers and apply them.
- J. Discuss control procedures for common garden, landscape, and greenhouse pests.
- K. Use and maintain propagating tools.
- L. Identify and use common nursery and landscape tools and equipment.

Content

- A. Introduction to ornamental horticulture
- B. Planting mediums
- C. Asexual propagation
- D. Propagation of cuttings
- E. Transplanting of seedlings
- F. Fertilizing and watering of plant stock
- G. Discussion of various seed treatment processes
- H. Discussion of plant breeding in relation to practical nursery practices
- I. Controlling insects and diseases of nursery stock
- J. Construction of cold frames and hot beds
- K. Transplanting large plants.
- L. Potting and canning
- M. Use and maintenance of common garden tools
- N. Photoperiodism and its effect on plant growth
- O. Shade houses and green houses

OH 276 - Park Landscape and Maintenance

Catalog Description

Training in installation of plant materials and materials used in parks and other planted areas and in skills required for students to qualify as technicians. Special interest directed to provide specific skills in such areas as forestry, highway maintenance, city, state and federal parks.

Objectives - The student will:

- A. Apply the principles of cabling and tree surgery
- B. Demonstrate the ability and skills necessary for landscape installation and maintenance
- C. Interpret landscape plans
- D. Apply principles of soil pre-planting preparation
- E. Remove trees
- F. Demonstrate the ability to prune trees, shrubs, ground covers, and herbaceous plants
- G. Diagnose plant abnormalities
- H. Calculate the estimates of maintenance costs

Content

- A. Landscape Maintenance Machinery and Equipment
 - 1. Field labs to landscape machinery company
 - 2. Field labs to concerns using special landscape equipment
- B. Preparation of Planting Site
 - 1. Bringing to grade
 - 2. Application of soil amendments
 - 3. Application of fertilizers in pre-planting
- C. Installation of Trees and Shrubs
 - 1. Planting of bare root plants
 - 2. Planting of balled plants
 - 3. Planting of canned plants

- D. Planting from Flats
 - 1. Annuals
 - 2. Perennials
 - 3. Ground covers

- E. Moving Small Shrub or Tree
 - 1. Preparation (pre-soaking, root pruning)
 - 2. Ball-burlap technique
 - 3. Removing and handling
 - 4. Replanting

- F. Planting of Specialty Plants
 - 1. Hedges
 - 2. Acid loving plants

- G. Fertilizer Application

- H. Pruning Trees and Shrubs
 - 1. Street trees
 - 2. Specimen trees
 - 3. Shrubs
 - a. Deciduous
 - b. Broadleaf evergreen
 - c. Coniferous

- I. Diagnosis of Plant Troubles
 - 1. Nutritional diseases or abnormalities
 - 2. Insect diagnosis and control
 - 3. Disease diagnosis and control

- J. Standards of Workmanship
 - 1. Pruning
 - 2. Cabling
 - 3. Surgery
 - 4. Evaluation or appraisal work of plant materials

OH280 - Beginning Floral Design

Catalog Description

An introductory course in commercial floristry teaching theory, techniques, and skills currently practiced in the floral design industry. Construction of basic floral products for resale; cut flower processing and industry sales practices.

Objectives - The student will:

- A. Correctly process and care for cut flowers, greens, and potted plants used in the floral industry
- B. Identify, select, and correctly use florist tools, equipment and materials
- C. Identify flowers, greens, and plants used in the floral industry
- D. construct simple floral arrangements
- E. Sale of floral products in a retail setting
- F. Package, present, and sell floral products for specific occasions
- G. Demonstrate skills necessary for entry level employment

Content

- A. Basic Introduction to the floral industry
- B. Care and Handling of cut flowers
 - 1. Cleaning and preparation of flowers
 - 2. Storage
 - 3. Rotation
 - 4. Sanitation and up-keep of floral refrigerator
- C. Materials and Supplies
 - 1. Wire-uses and sizes
 - 2. Ribbon uses and sizes/types
 - 3. Nets, Tulle
 - 4. Floral, Tape, Bowl Tape
 - 5. Corsage and boutonniere pins, bags, boxes
 - 6. Floral foam
 - 7. Foils and laces
 - 8. Containers
- D. Cut flowers available in California Markets
 - 1. Where and how to purchase
 - a. Bunch, bundle, individual
 - 2. Flower Identification

3. Unit pricing
- E. Basic flower arranging elements
1. Types of flowers
 - a. Line
 - b. Mass
 - c. Form
 - d. Filler
 2. Basic Shapes
 - a. Symmetrical
 - b. A-symmetrical
 - c. Vertical
 - d. Horizontal
 - e. Round
 - f. L-Shape
 3. Containers-Height/Container Relationship
 4. Flower Placement
- F. Arrangements that may be made in class
1. Symmetrical
 2. A-symmetrical
 3. Horizontal
 4. Vertical
 5. Round
- G. Foliage Plants
1. Care and handling
 2. Wrapping
 3. I.D. common varieties used in the floral industry
 4. Holiday enhancements
- H. Dish Gardens
1. Construction
 2. Plant selection
 3. Care and handling
- I. Wire Services
1. Types
 2. Transmittal of flower orders
 3. Methods of operations
 4. Advantages
- J. Chain of Life
1. Grower
 2. Wholesaler

3. Florist
 4. Consumer
 5. Preservatives
- K. Salesmanship
1. Do's and Don'ts
 2. Telephone skills
- L. Corsages
1. Wiring techniques
 2. Names of corsages
 3. Evaluation of corsage flowers
- M. Types of corsages that may be made in class
1. Single carnation
 2. Feathered carnation
 3. Roses
 4. Mini carnation
 5. Spring Mix
 6. Combination of above
- N. Wholesale/Retail
1. Pricing
 2. Supermarket vs. Super florist
 3. Outlets for purchasing materials

OH 390 - Nursery Industry Skills

Catalog Description

A repeatable short course in Ornamental Horticulture that covers all skill aspects of the wholesale and retail nursery business. Also included are excerpts from plant identification, turfs, and landscape design.

Objectives - The student will:

- A. Identify problems common to the home landscape environment
- B. Recognize causative agents of problems common to the home landscape environment
- C. Formulate a plan to solve problems common to the home landscape environment
- D. Recommend a course of action that will solve identified problems through the implementation of the formulated plan

Content

- A. How Plants Grow
 - 1. Botany, physiology, water, air, temperature, light, nutrients, photosynthesis, respiration, transpiration, diffusion, osmosis, etc.
- B. Soils
 - 1. Recognition and solving of soil problems-texture, structure, compaction, pH, fertility relationships to texture, soil amendments, soil problems of new building sites
- C. Turf
 - 1. Varieties, species, environmental and maintenance requirements
 - 2. Fertilization, mowing, watering, insects, diseases, and controls
 - 3. Mixes of varieties and why
- D. Insects
 - 1. I.D. of common insects and their damage
 - 2. Aphids, trips, white fly, caterpillars, scale, mites, mealy bugs, lygus and plant bugs, and beetles
 - 3. Beneficial and predacious insects-controls an/or management-biological/chemical

- E. Weeds
 - 1. Weed control in ornamental plantings
 - 2. I.D. of common turf weeds
 - 3. What does a chemical do and what must be done to make it work?
 - 4. Pre-emergent and post-emergent
 - 5. Contact, translocated, sterilants, and fumigants

- F. Diseases
 - 1. I.D. of common fungal diseases
 - 2. Recognition of conditions which often cause disease, i.e., humidity, air circulation, soil drainage, etc.
 - 3. Resistance and other biological controls
 - 4. Specific and broadspectrum fungicides
 - 5. Care and safety procedures with pesticides

- G. House or Foliage Plants
 - 1. I.D. and care, light requirements and determining available foot candles. Watering, insects and control, fertilization, and size control

- H. Fruit Trees for the Home Yard
 - 1. Selection, root stock, spray programs, pruning, espaliering, spacing, and management

- I. Vegetables
 - 1. Soil preparation, selection, fertilizing, watering, thinning, sprays or dusts, harvesting, storage, etc.

- J. New and Unusual Plant Materials
 - 1. Dwarf plants, grafted, new clones, and their values in the landscape or environment

- K. Sprinkler Irrigation Systems
 - 1. Management, maintenance, and trouble-shooting

- L. Selection of Components and Design of a Sprinkler System

- M. Landscape Design
 - 1. Site analysis
 - 2. Client needs and analysis
 - 3. Landscape sketches
 - a. vehicle for problem-solving
 - 4. Use areas around dwelling
 - a. public, private, service
 - 5. Plant functions in landscaping
 - 6. Plan selection to fulfill design requirements

- N. Nursery Business
 - 1. The sales process
 - 2. Advertising and displays
 - 3. Store organization
 - 4. Seasonal variance and inventory control
 - 5. Customer relations
 - 6. Employer/employee relations

11. Skills Listing for Proposed Course Articulations

INTRODUCTION TO ORNAMENTAL HORTICULTURE

Laboratory activities necessary

Nursery Facilities and Tools

Propagation Methods

Sexual - Seed

Annual bedding and vegetable plants
Woody plants (Trees and Shrubs)
Indoor plants

Asexual

Division
Layering
Budding
Grafting
Cuttings
Softwood/herbaceous
Semi-Hardwood
Hardwood
Tissue Culture*

Media Preparation and Fertilizer

Nursery Industry Survey

Retail Nursery/Florist
Wholesale Grower
Foliage and Pot Flower
Woody Ornamental Plants
Bedding Plants
Cut Flowers
Specialized Plants (Orchids, Herbs, etc.)

Chemical Use and Safety

Major Classifications of Chemicals

Insecticides

Herbicides

Fungicides

Fumigants

Growth Regulators

Disinfectants and algacides

Cultural Practices

Planting and Transplanting

Pruning

Selection and Preparation of Plant Material for sale

12. Sample Articulation Agreement

Community College
OH 280/380 BEGINNING FLORAL DESIGN

Community College will award three (3) units of credit for ORNAMENTAL HORTICULTURE, BEGINNING FLORAL DESIGN to the student who:

For OH 280 CREDIT

1. completes Floriculture class with a B grade or better.
2. demonstrates successful mastery of agreed upon series of competencies as stated in attachment 2A verified by the high school instructor.
- 3A. verifies their design ability by presentation of portfolio including photographs of each required project stated in attachment 2A.
- 3B. verifies their design ability (or manipulative skills) by passing a manipulative exercise at CC as described in Attachment 2A.
- 4A. passes written examinations at the secondary level, testing knowledge and understanding of principles of the floral industry as listed in Attachment 2A.
- 4B. successfully passes Community College OH 280 comprehensive examination covering the course outline found in attachment 2C. (Testing will be administered by CC Staff at CC on agreed date and time.)
5. has the recommendation of the secondary instructor as indicated in attachment 2B.

THE Grade for OH 280 will be the grade received on the comprehensive examination.

Articulation Agreement Continued...

For OH 380 CREDIT

the student who does not choose to take, or is unsuccessful in either the CC written and/or manipulative examinations but has completed all other requirements listed above.

The Grade for OH 380 will be the grade given for the high school course.

CONDITIONS

The student must:

1. begin CC no later than one academic year following high school exit.
2. successfully complete one other Ornamental Horticulture related course before the end of the first year of course work at CC.

13. Articulation Agreement:

Attachment 2A

KNOWLEDGE AND UNDERSTANDING

Student possesses the knowledge of and understands the principles behind the floral industry as demonstrated by passing a written test covering:

- Proper care, processing, and conditioning of fresh flowers and foliage's
- Basic design elements and principles
- Basic understanding of colors (primary and secondary colors)
- How to properly use design master spray color
- Techniques of drying flowers
- The buying and marketing of floral products
- Wire services
- Pricing floral products
- Floral deliveries
- Plant grooming and care
- Selling of and taking a floral order
- Packaging/wrapping a single flower and bouquet
- Record keeping
- Assembly line procedures
- Bucket stands vs. full service vs. grocery stores

COURSE COMPETENCIES

Identification

Identification, with at least 80% accuracy

- Tools and Materials (50 items)
- Cut Flowers and Foliage (75 items)
- Blooming and Foliage Plants (50 items)
(lists attached)

Attachment 2A continued...

Design Ability

Mastery of basic manual skills to construct a fresh floral design using proper design and artistic principles.

Proper design principles, artistic expression, and basic manual skills demonstrated in construction of fresh floral designs.

- Bows
- Wiring and taping of flowers and foliage
- Bud vases
- Corsage: rose, carnation, and mixed flowers
- Vertical arrangements
- Horizontal arrangements
- L shaped arrangements
- Symmetrical arrangements
- Round arrangements
- Rose arrangements
- Balloon design
- European hand tied bouquets
- Gift baskets

See course outline.

Floral Industry and Business Awareness

Testing during the course will measure the student's knowledge and understanding of the principles of the floral industry and principles of business to be successful in the industry.

See course outline.

TESTING

FOR CREDIT FOR OH 280:

The student will take the written OH 280 comprehensive final examination at the college. The date and time is to be determined by agreement of both instructors.

Attachment 2A continued (testing)...

A manipulative exercise will be given at the same time.

A charge of \$10.00 will be made for the supplies to be used for the examination.

FOR CREDIT FOR OH 380:

The student must successfully pass written tests indicating their knowledge and understanding of the business principles in the floral industry.

The student must present a portfolio demonstrating their skill and design ability. Photos representative of the following to be included:

- Bows (using any width ribbon)
- Wiring and taping of flowers and foliage
- Bud vases
- Corsage: rose, carnation, and mixed flowers
- Vertical arrangements
- Horizontal arrangements
- L shaped arrangements
- Symmetrical arrangements
- Round arrangements
- Rose arrangements
- Balloon design
- European hand tied bouquets
- Gift baskets

14. Articulation Agreement: Attachment 2B

Recommendation and Course Completion Verification

RECOMMENDATION: *I certify, without reservation, that*

Please Print

has completed, with above average competency, the skills and competencies listed in attachment 2A.

_____ Is the grade received for the high school course work. This grade will be the grade for OH 380.

_____ He/she may present himself/herself for the examination at Community College.

High School Instructor Signature

Date

VERIFICATION: EXAMINATION COMMUNITY COLLEGE

The student, listed above has passed the CC OH 280 Beginning Floral Design final comprehensive written examination and the manipulative examination with a C grade or better. (Grade listed below.)

Grade

CC Examination Instructor

Date

STUDENT INSTRUCTIONS:

1. File this document, with your certificate of completion, in the Agriculture Department at CC.
2. After completing required CC course, obtain signature of CC Agriculture Instructor on this document and on the Certificate of Completion.
3. Turn in the two documents to the CC Agriculture Office to be submitted for posting of credit.

Continued on next page...

SECTION FOUR

Field Testing Results

15. Field-Testing The Advanced Cluster In Ornamental Horticulture

The Advanced Cluster Curriculum in Ornamental Horticulture was field tested in 3 segments by 3 different schools. These paralleled the three courses of study suggested by the Ornamental Horticulture Curriculum Committee. Turlock High School, Instructor Dale Pollard, was assigned the Nursery Industry portion of the field-test process; Jim Schulte at Esparto High School agreed to field-test the Floral Industry portion of the curriculum; and Kip Proctor, Tracy High School, evaluated the Landscape industry portion. Each was asked to accomplish several activities in the process:

1. Evaluate each unit of instruction by teaching the unit and suggesting improvements where needed.
2. Identify if the time frame suggested in the advanced core is sufficient to teach the unit and make adjustments as needed.
3. Evaluate the state framework integrated activities that were used to reinforce the curriculum, determine the feasibility and appropriateness, and to develop any other activities that helped to support the curriculum.
4. Develop authentic assessment tools that included written scenarios, suggested work samples, and any other evaluatory instruments that would demonstrate student competency.
5. Develop any additional curriculum units that were missing from the advanced core if sufficient time was available.
6. Organize the curriculum into a course outline sequence based on this field-test process.

The Turlock High School field-test process evaluated all of the advanced cluster curriculum in ornamental horticulture as it related to their course entitled "Plants and Gardens". The curriculum evaluation includes units that were also field-tested by other schools evaluating the Landscape and Floriculture curriculum units. This additional information is helpful as many schools will have to infuse Tech Prep concepts into existing courses until the opportunity to institute a complete Tech Prep Program in Ornamental Horticulture is feasible.

16. Evaluation Of The Field-Test Process

The overall evaluation of the field-testing process in ornamental horticulture was a positive process. It emphasized that for Tech Prep to be effective, sufficient time must be allocated to teaching the curriculum and this curriculum must be reinforced with hands-on learning of skills. The activities suggested by the state framework may not be appropriate in all schools' situations but give a good outline of the types of activities that would support the classroom instructional process.

As expected, the courses suggested by the curriculum committee were validated as being the appropriate division of the advanced cluster and that each should be a year long course of study. The Nursery Industry Course provides foundations in general plant knowledge and nursery skills and is taught in the grade 11 Junior year. Landscape Industry and Floral Industry courses become more specific in those areas of study and should be taught in the grade 12 Senior year. It is not expected that every school with an Ornamental Horticulture Tech Prep program would offer all three courses. It is suggested that the Nursery Industry course be taught in all O.H. Tech Prep programs. Then the program might elect to offer just Landscape Industry or Floral Industry to emphasize these segments of the industry.

It is important to note that Tech Prep is a 4 year sequence providing 2 years of instruction at the High School and 2 years at the Community College. College credit may be awarded to students passing the high school curriculum with an "Advanced" or "Proficient" rating in the written scenario and other authentic assessment tools. Course Articulations need to be developed and finalized in the next phase of this project. Included in this document are suggestions as to how this may evolve.

17. Ornamental Horticulture Curriculum

Turlock High School Field Test Results

1. **BOTANICAL CLASSIFICATION - CLF6100**

A. **History and Terminology of Taxonomy - CLF6101**

This unit was covered almost in its entirety except not much was covered on the area of all the division names. Excellent information is used.

B. **Practical Taxonomy - CLF6102**

Excellent unit was used in its entirety. This unit is very important as much of the information is referred to over and over again throughout the year.

C. **Use of Plant ID Key - CLF6103**

Did not use any of this information. Found much of the material not needed for much of the industry.

D. **Characteristics of Leaves and Leaf Surfaces - CLF6104**

Most of this area was covered with the exception of the leaf apices and I did not cover all the leaf shapes. This unit was too in-depth for my students.

E. **Characteristics of Stems and Roots - CLF6105**

This unit was covered except A2 was not. This unit would be best served in the first year agriculture class. But as many if not most of the students are not or were not in the first year agriculture class, this has to be covered in depth.

F. **Characteristics of Fruits - CLF6106**

This unit saw limited use.

G. **Characteristics of Flowers - CLF6107**

Selected the basic flower parts and did not go much beyond that. It is important that all the students understand the basics of the flower and their functions.

H. Identifying Ornamental Plants - CLF6108

This is an on going subject. Throughout the year on certain weeks 10-12 plants are introduced and students complete a handout about them and are tested on their knowledge at the end of the week. Plant identification is cumulative and students are expected to know all the plants covered from week to week.

II. PHOTOSYNTHESIS AND RESPIRATION - CLF6150

A. Photosynthesis - CLF6151

This is too difficult for my students. Our class covers the basic concepts of photosynthesis and its importance.

B. Respiration - CLF6152

Students were only briefly introduced to this information. Much more here than industry standards.

C. Photosynthesis and Respiration in Horticulture - CLF6153

Many of these items discussed are incorporated in our practical application process. During this course the students are exposed to many of the ideas in this unit through the many cultural practices in the horticulture area.

D. Cellular Function in Plants - CLF6154

Much of this area was covered in the instructional unit.

E. Unit Exam - CLF6199

III. PHYSIOLOGY AND GROWTH - CLF6200

A. Growth Structures and Functions - CLF6201

Excellent unit

B. Growth Patterns - CLF6202

Good unit, but there was no time to incorporate the material into the classroom.

- C. Growth Requirements - CLF6203**
Very important information to have students understand. This information is important as a building block for further information that will come later. Not all the information was used as presented in the curriculum.
- D. Seedling Growth - CLF6204**
This is a good unit that was covered but not as completely as the curriculum is written.

IV. SEXUAL AND ASEYUAL PROPAGATION - CLF6250

- A. Sexual and Asexual Propagation - CLF6251**
Our class did extensive activities in the asexual propagation area and less activity in sexual propagation. Good information here.
- B. Parts of the Flower - CLF6252**
Covered completely in the class.
- C. Pollination and Seed Production - CLF6253**
Covered in the class but not as completely as the curriculum states.
- D. Reproduction by Spores - CLF6254**
Only discussed briefly and did show some examples. that had developed in the greenhouse.
- E. Vegetative Cuttings - CLF6255**
Extensive activities in this area throughout the year, as this is very important to the industry.
- F. Budding and Grafting - CLF6256**
Only discussed and gave demonstration and used unit in the textbook.
- G. Other Propagation Methods - CLF6257**
Discussed all of these methods and practice separation, division, and layering.
- H. Unit Exam - CLF6299**

V. DISEASES AND PESTS OF ORNAMENTAL PLANTS - CLF6301

This unit would be covered in more complete detail in a landscape course.

- A. Plant Pathology and Plant Health - CLF6301**
Covered a lot of plant health but did not go into the depth that this unit suggests.
- B. Weed Control - CLF6302**
Did not really cover. This would be better suited in a landscaping class.
- C. Safe and Effective Use of Chemical Pesticides - CLF6303**
Covered through the unit in the textbook and discussion.
- D. Introduction to Integrated Pest Management - CLF6304**
Covered but not to the depth that the curriculum suggests.
- E. Nursery Sanitation - CLF6305**
Very important in the classroom and in the horticulture area by practicing what is being taught.
- F. Unit Exam - CLF6349**

VI. ELEMENTS NECESSARY FOR PLANT GROWTH - CLFF6350

- A. Primary Secondary, and Micronutrients Necessary for Plant Growth - CLF6351**
Excellent material that was covered in parts during the year. This unit takes more than one hour to complete.
- B. Sources of N, P, and K - CLF6352**
This unit was covered only fractionally as outlined in the curriculum.
- C. Function of Nutrients in Plant Growth - CLF6353**
Excellent information is provided. This was covered in the class.

- D. Reading the Fertilizer Label - CLF6354**
covered but not as detailed as outlined.
- E. Soil Amendments - CLF6355**
Covered extensively on the importance of organic matter and pH modification.
- F. Uses of Fertilizers - CLF6356**
This was covered with and while talking about plant nutrients.
- G. Symptoms of Nutrient Deficiencies (N,P,K,Fe,S,Mg,B and Zn) - CLF6357**
This is taught along with sources of nutrients. Excellent unit.
- H. Determining Nutrient Deficiencies - CLF6358**
Good discussion items along with practical application through soil testing by the students.
- I. Methods of application - CLF6359**
Did not cover this very much only touched on this as it applied to our nursery area.

VII. HORTICULTURAL SOILS & PLANTING MEDIA

- A. Soil Basics - CLF6401**
Excellent information that ties in with the text's chapter.
- B. Horticulture Soils - CLF6402**
Some of the material was covered in the class but not all. Selected the portions that directly related to our area. Impossible to teach in two hours as there is too much information.
- C. Managing Horticulture Soils - CLF6403**
Only discussed as it related to the landscape or garden.
- D. Seedbed Preparation - CLF6404**
Practiced this through the planting of a garden at school.

- E. **Composting - CLF 6405**
 Only discussed at various times throughout the year as it applied.
- F. **Unit Exam - CLF6449**

VIII. IRRIGATION AND DRAINAGE

Did not cover this except in the horticulture area. This would be a better fit in a landscape type course.

- A. **Irrigating Ornamental Plantings - CLF6451**
- B. **Drainage - CLF6452**
- C. **Sprinkler Irrigation Systems - CLF6453**
- D. **Drip Irrigation 'Systems - CLF6454**
- E. **Conserving Water in Irrigation - CLF6455**
- F. **Unit Exam - CLF6449**

IX. SELECTION, PLANTING, & CARE OF ORNAMENTALS

- A. **Evaluations & Selection of Quality Plants - CLF6501**
 This was covered during the course.
- B. **Planting Techniques - CLF6502**
 Covered this unit.
- C. **Determining Spacing & Planting- CLF6503**
 This was covered in the horticulture area not formerly in the classroom
- D. **Staking & Tying Plants - CLF6504**
 Again this was covered in the nursery area as opposed to the classroom setting.
- E. **Frost Protection - CLF6505**
 Not covered.
- F. **Benefits of Xeriscape - CLF6505**
 Not Covered.

- G. Sale & Merchandising of Plants - CLF6507**
Covered through the application of the information through the organization of a plant sale.

- F. Unit Exam - CLF6599**

X. PRUNING & TRAINING ORNAMENTAL PLANTS

- A. Purposes of Pruning - CLF6551**
Covered very quickly.
- B. Timing of Pruning - CLF6552**
Scratched only the surface, discussed the importance as it was pertinent.
- C. Identification, Safe Use, and Maintenance of Pruning Equipment - CLF6553**
Covered.
- D. Techniques for making Pruning Cuts - CLF6554**
Covered.
- E. Methods of Pruning Trees and Shrubs - CLF6555**
Covered only as they applied to our nursery stock on hand and discussed other applications.
- F. Major Tree Pruning Systems - CLF6556**
Covered only slightly.
- G. Plant Support Systems - CLF6557**
Covered only slightly.
- H. Unit Exam - CLF6559**

XI. GROWTH AND MAINTENANCE OF NURSERY STOCK

- A. Horticulture Structures - CLF6601**
Did not cover other than the application of items as they related to our horticulture area.

- B. Sterilization and Sanitation - CLF6602**
Excellent and covered previously. It's more important to practice these procedures as the class goes through the routine of growing and caring for the plant material in the horticulture area.
- C. Mixing and Growing Media - CLF6603**
Practiced extensively in the horticulture area.
- D. Planting of Seeds - CLF6604**
Covered extensively and in more depth than the curriculum shows.
- E. Watering Nursery Stock - CLF6605**
Covered in practice throughout the year.
- F. Tool and Equipment Identification - CLF6606**
Covered.
- G. Transplanting Growing Stock - CLF6607**
Covered in detail and practiced over and over again.
- H. Irrigation Systems - CLF6608**
Only covered in the application of them in our horticulture area.
- I. Unit Exam - CLF6649**

XII. FLORICULTURE AND FLORAL DESIGN - This unit was only covered as the information needed to complete a corsage.

- A. Floriculture Terms - CLF6651**
- B. Identification of Foliage and Seasonal Plants - CLF6652**
- C. Classification and Use of Flower Design Categories - CLF6653**
- D. Identification and Use of Design Tools and Materials - CLF6654**
- E. Preparation and Conditioning of Flowers and Foliage - CLF6655**
- F. Basic Floral Design Shapes - CLF6656**
- G. Simple Floral Arrangement and Corsage Construction - CLF6657**

XIII. LANDSCAPE DESIGN, CONSTRUCTION, AND MAINTENANCE - This was covered in only a small amount. This would be an area to cover more in depth in a landscape course.

- A. Plant Selection and Design - CLF6701**
- B. Hardscape Options and Design - CLF6702**
- C. Turf in the Landscape - CLF6703**
- D. Irrigation Design and Installation - CLF6704**
- E. Design Techniques - CLF6705**
- F. Estimating and Bid Preparation - CLF6707**
- G. Unit Exam - CLF6749**

XIV. ORNAMENTAL HORTICULTURE INDUSTRY

- A. Career Opportunities and Educational Requirements - CLF6751**
Covered in the beginning of the class and discussed throughout the course.
- B. Horticultural Trade Association - CLF6752**
Covered only slightly.
- C. Utilizing Trade Association Publications - CLF6753**
Covered only slightly.

This information was obtained through the teaching of the curriculum, with the experience of teaching this class the past few years. The comments in this evaluation are based on the premise that hands-on activities will teach the best and be retained the longest. Also the growing of plants is what gets the students excited about horticulture.

18. Curriculum Unit Evaluation (Field Testing)

WEEKLY ACTIVITY LOG #1

Field Test/School Site: Tracy High School
Curriculum Area Landscape design, Construction, Maintenance
Unit # covered: CLF6701, 2, 5
Unit title: Plant selection & Design, Hardscapes, Design techniques
Topic covered: Above
Time recommended for unit was: 10 weeks
That time was: Too little
Actual time spent was: 20 weeks
Grade level taught: 11th & 12th
Rigor of this unit was: 11th & 12th
Activities Used: 1.) Drawing and Design activities. 2.) Plant selection, site problem, visit site, do site analysis, design, plant key, then install
Assessment tools used: Drawing and Field Work
Additional comments:

WEEKLY ACTIVITY LOG #2

Field Test/School Site: Tracy High School
Curriculum Area: Irrigation
Unit # covered: CLF6451
Unit title: Irrigating Ornamental Plants
Topic covered:
Time recommended for unit was: 1 week
That time was: Correct
Actual time spent was: 1 week
Grade level taught: 11th
Rigor of this unit was: 11th
Activities Used: Lecture
Assessment tools used: Quiz
Additional comments:

WEEKLY ACTIVITY LOG #3

Field Test/School Site: Tracy High School
Curriculum Area: Irrigation & Drainage
Unit # covered: CLF6453
Unit title: Sprinkler Irrigation Systems
Topic covered: Sprinkler Irrigation Systems
Time recommended for unit was: 4 weeks
That time was: Too Little
Actual time spent was: 6 weeks
Grade level taught: 11th & 12th
Rigor of this unit was: 11th & 12th
Activities Used: Design a system, install a system
Assessment tools used: Drawings, installation practices
Additional comments:

WEEKLY ACTIVITY LOG #4

Field Test/School Site: Tracy High School
Curriculum Area: Selection Planting & Care of Plants
Unit # covered: CLF6504
Unit title: Staking & Tying
Topic covered: Staking & Tying
Time recommended for unit was: 1
That time was: Correct
Actual time spent was: 1 hour
Grade level taught: 11th
Rigor of this unit was: 11th
Activities Used: Lecture, Video
Assessment tools used: Actual Assessment
Additional comments:

WEEKLY ACTIVITY LOG #5

Field Test/School Site: Tracy High School
Curriculum Area: Pest Management
Unit # covered: CLF6304
Unit title: IPM
Topic covered: Insect ID/ Control
Time recommended for unit was: 2
That time was: Too Little
Actual time spent was: 4
Grade level taught: 11th & 12th
Rigor of this unit was: 11th & 12th
Activities Used: Insect ID/Collection
Assessment tools used: Quiz, Collection
Additional comments:

WEEKLY ACTIVITY LOG #6

Field Test/School Site: Tracy High School
Curriculum Area: Pest Management
Unit # covered: CLF6302
Unit title: Weed ID
Topic covered: Weeds
Time recommended for unit was: 5
That time was: Too Little
Actual time spent was: 5 +
Grade level taught: 11th & 12th
Rigor of this unit was: 11th & 12th
Activities Used: 1.) Lecture 2.) Weed Collections 3.) Read <u>Sunset Western Garden</u> section on weeds 4.) Practiced various methods of weed control in landscape area, example: weed whip, hoe, box scraper, use of mulches etc.
Assessment tools used: 1.) Quizzes 2.) Collections 3.) Field Assessment
Additional comments: Fun unit can be applied to all phases of Horticulture industry

WEEKLY ACTIVITY LOG #7

Field Test/School Site: Tracy High School
Curriculum Area: Plant ID (Botanical Classification)
Unit # covered: CLF6108
Unit title: Identifying Ornamental Plants
Topic covered:
Time recommended for unit was: 10 hours
That time was: Too little
Actual time spent was : 20 +
Grade level taught: 11th & 12th
Rigor of this unit was: 11th & 12th
Activities Used: This unit included several hands on activities. 1. Students were to develop their own plant ID sheet. 2. Collect, ID, and press at least 25 plant samples from our local area. 3. Locate plants in <u>Sunset Western Garden</u> book.
Assessment tools used: 1. Quizzes on plants covered. 2. Plant ID Collection. 3. Properly using plants in the landscape.
Additional comments: A real tough unit to get High School students to buy into until they see the importance as related to the whole horticulture industry.

WEEKLY ACTIVITY LOG #8

Field Test/School Site: Tracy High School
Curriculum Area: Selection Planting & Care of Plants
Unit # covered: CLF6502
Unit title: Planting
Topic covered: Planting of OH Plants
Time recommended for unit was: 2
That time was: Correct
Actual time spent was: 2
Grade level taught: 11th
Rigor of this unit was: 11th
Activities Used: 1. Lecture 2. Demonstration 3. Actual Planting
Assessment tools used: 1. Actual Planting
Additional comments:

WEEKLY ACTIVITY LOG #9

Field Test/School Site: Tracy High School
Curriculum Area: Landscape Equipment Safety & Operation
Unit # covered:
Unit title: Equipment Operation & Safety
Topic covered: Equipment Operation
Time recommended for unit was:
That time was:
Actual time spent was: Ongoing
Grade level taught: 11th & 12th
Rigor of this unit was: 11th & 12th
Activities Used: 1. Safety Lecture, 2. Videos Safety/Operation 3. Demonstrations 4. Actual use of equipment: Kubota Tractor, box scraper, front loader, rototiller, Massey Ferguson/Frontloader, Threepoint Hitch, Backpack Blower, Weed Whip, auger, Chipper, Cement Mixer.
Assessment tools used: 1. Safety test 2. Actual Field Assessment
Additional comments:

WEEKLY ACTIVITY LOG #10

Field Test/School Site: Tracy High School
Curriculum Area: Pruning & Training of Plants
Unit # covered: CLF6551, 2, 3, 4, 5
Unit title: Purpose of Pruning, Timing, use of equipment, techniques
Topic covered: Above items
Time recommended for unit was: 9
That time was: Correct
Actual time spent was: 9
Grade level taught: 11th & 12th
Rigor of this unit was: 11th
Activities Used: 1. Lecture 2. Demonstration
Assessment tools used: 1. Quiz 2. Actual Field Assessment
Additional comments:

WEEKLY ACTIVITY LOG #11

Field Test/School Site: Tracy High School
Curriculum Area: Horticulture Soils & Planting Media
Unit # covered: CLF6403
Unit title: Managing Horticultural Soils
Topic covered: Managing Horticultural Soils
Time recommended for unit was: 2
That time was: Too Little
Actual time spent was: 6 +
Grade level taught: 11th & 12th
Rigor of this unit was: 11th & 12th
Activities Used: 1. Actual Rototilling of soils with various power equipment, leveling, adding organics to soils etc.
Assessment tools used: 1. Students actually worked soil and planted a crop
Additional comments:

WEEKLY ACTIVITY LOG #12

Field Test/School Site: Tracy High School
Curriculum Area: Horticulture Soils & Planting Media
Unit # covered: CLF6404
Unit title: Seed Bed Preparation
Topic covered: Seed Bed Preparation
Time recommended for unit was: 1
That time was: Too Little
Actual time spent was: 4 +
Grade level taught: 11th & 12th
Rigor of this unit was: 11th & 12th
Activities Used: 1. Students actually use equipment to prepare seed beds for planting a crop at school lab.
Assessment tools used: 1. Actual physical seed bed preparation and success of growing a crop
Additional comments:

WEEKLY ACTIVITY LOG #13

Field Test/School Site: Tracy High School
Curriculum Area: Horticulture Soils & Planting Media
Unit # covered: CLF6405
Unit title: Composting
Topic covered: Composting
Time recommended for unit was: 1
That time was: Too Little
Actual time spent was: 5 +
Grade level taught: 11th & 12th
Rigor of this unit was: 11th && 12th
Activities Used: 1. Lecture 2. Actual production of compost ran several materials to determine best etc. lawn clippings, leaves, chipped clippings
Assessment tools used: 1. Construction of a compost pile 2. Operation of chipper
Additional comments: Great unit!

WEEKLY ACTIVITY LOG #14

Field Test/School Site: Esparto
Curriculum Area: Floriculture
Unit # covered: CLF6650
Unit title: Floriculture & Floral Design
Topic covered: Classification & Use of Flower Design Categories
Time recommended for unit was: 3
That time was: Too Little
Actual time spent was: 5
Grade level taught: 10th, 11th & 12th
Rigor of this unit was: 11th
Activities Used: Use of different flowers & foliage - Students then classified them according to category (Activity #1 - 6653.2)
Assessment tools used: Students used the plants in an arrangement and explained the use of each
Additional comments: This unit should be combined with a unit on principles of design.

WEEKLY ACTIVITY LOG #15

Field Test/School Site: Esparto
Curriculum Area: Floriculture
Unit # covered: CLF6650 / CLF 6657
Unit title: Floriculture & Floral Design
Topic covered: Simple Floral Arrangement & Corsage Construction
Time recommended for unit was: 4
That time was: Too Little
Actual time spent was: 10
Grade level taught: 10th, 11th & 12th
Rigor of this unit was: 10th
Activities Used: Students learned to tie bows, tape & wire, showed video corsage construction VEP, students constructed three corsages, flower mini carnations
Assessment tools used: The third corsage was evaluated using the floral design criteria of FFA Floriculture contest
Additional comments: This unit could easily be 15 days unless you have advanced students to help

WEEKLY ACTIVITY LOG #16

Field Test/School Site: Esparto
Curriculum Area: Floriculture
Unit # covered: CLF6650
Unit title: Floriculture & Floral Design
Topic covered: Preparation & Conditioning Flowers
Time recommended for unit was: 2
That time was: Correct
Actual time spent was: 2
Grade level taught: 10th, 11th & 12th
Rigor of this unit was: 10th
Activities Used: Showed video - Processing Flowers/ Students sterilized containers, used preservative, sprays, & refrigeration
Assessment tools used: Observed students procedures processing flowers, students take turns processing cut flowers after flowers are brought from flower market
Additional comments: Use IMS 8944-A/ unit 4 Test "Floriculture"

WEEKLY ACTIVITY LOG #17

Field Test/School Site: Esparto
Curriculum Area: Floriculture
Unit # covered: CLF6100
Unit title: Botanical Classification
Topic covered: Identifying Ornamental Plants 6108
Time recommended for unit was: 10
That time was: Too Little
Actual time spent was: see comment
Grade level taught: 10th 11th & 12th
Rigor of this unit was: 11th
Activities Used: Activity #2 & #5 of 6108.13 , Supplemental work sheets, instructor introduces each plant
Assessment tools used: students were tested on ID for FFA Floriculture contest using slides & live plants. Use IMS materials 8943-A & 8943-B
Additional comments: Common ornamental plant list was replaced with state FFA Floriculture ID list. Supplemental worksheet was replaced with CalPoly VEP slide worksheet on Floral ID combine unit with 6652

WEEKLY ACTIVITY LOG #18

Field Test/School Site: Esparto
Curriculum Area: Floriculture
Unit # covered: CLF6650
Unit title: Floriculture & Floral Design
Topic covered: ID of Floral & Seasonal Plants 6652
Time recommended for unit was: 3
That time was: Too Little
Actual time spent was: 10 hours
Grade level taught: 10th, 11th, & 12th
Rigor of this unit was: 11th
Activities Used: Students used slides and sample plants to identify: Students took samples of each or drew a picture to help memorize or associate. Activity #1 6652.4 - Field Trip to Flower Market.
Assessment tools used: Students orally ID plants and written test. Students were each assigned a plant/cut flower, they then took turns teaching the class about their plant/cut flower. This was done 4 times for a total of 75-80 ID plants/cut flowers.
Additional comments: This unit should be combined with 6100 Identifying Ornamental Plants

WEEKLY ACTIVITY LOG #19

Field Test/School Site: Esparto
Curriculum Area: Floriculture
Unit # covered: CLF6650
Unit title: Floriculture & Floral Design
Topic covered: Classification & use of floral design categories (6653)
Time recommended for unit was: 3
That time was: Too Little
Actual time spent was: 5
Grade level taught: 10th, 11th & 12th
Rigor of this unit was: 11th
Activities Used: Activity #31 6653.2, flowers & foliage were provided for students to classify. Overhead unit on "Principle of Design", students drew & took notes. Unit 2 Floriculture
Assessment tools used: Students were provided line, mass and filler material to construct a western T arrangement.. Students had to first draw the arrangement and explain the use of each category.
Additional comments: This unit should be combined with a unit on principle of design.

WEEKLY ACTIVITY LOG #20

Field Test/School Site: Esparto
Curriculum Area: Floriculture
Unit # covered: CLF6650
Unit title: Floriculture & Floral Design
Topic covered: Identification & use of design tools and materials
Time recommended for unit was: 3
That time was: Correct
Actual time spent was: 3
Grade level taught: 10th, 11th & 12th
Rigor of this unit was: 10th
Activities Used: Using the floral supply syndicate catalog students price individual and build items from list provided from instructors
Assessment tools used: Students took visual and written test on floriculture tool ID (FFA contest). Hand in price list from Activity #1
Additional comments: Field trip to floral supply syndicate

WEEKLY ACTIVITY LOG #21

Field Test/School Site: Esparto
Curriculum Area: Floriculture
Unit # covered: CLF6650
Unit title: Floriculture & Floral Design
Topic covered: Floriculture Terms (6651)
Time recommended for unit was: 2
That time was: Correct
Actual time spent was: 2
Grade level taught: 10th, 11th & 12th
Rigor of this unit was: 10th
Activities Used: Students viewed examples of each term - slides were also used. Toured wholesale flower market
Assessment tools used: Oral responses from students on each term.
Additional comments: Use text "Floriculture Design & Merchandising". Look up terms.

Final Curriculum Report

Curriculum Area: Ornamental Horticulture
School Name: Tracy High School
Percent of the assigned curriculum covered: 50%
Percent of the curriculum that was local enhancement:
What unit/topics were NOT covered, and why? CLF6101-7, CLF6301-3-5, CLF6350, CLF6401, CLF6502-3-5-6-7, CLF6570, CLF65566-7, CLF6703-6. The above units were not covered for the following reasons. <u>First:</u> Time constraints did not allow for completion of the entire curriculum. <u>Second:</u> Some units should have been completed in earlier classes. They should only briefly be reviewed or enhanced.
Additional comments: If allowed to start at the beginning of the year and complete to the end of the year the majority of the curriculum could be completed with no major problem. Time spent on various units will depend on expertise of teacher in that field.

19. Results of the Field Test Process

Ornamental Horticulture Curriculum

Turlock High School

Note: from Mark Bender, Coordinator

Turlock High School was assigned the task of field testing the Nursery Industry portion of the curriculum. The approach taken was to evaluate the units of instruction as they applied to an existing course, "Plants and Gardens". As such, the field test process contained some additional units in Landscape and Floriculture. The entire Advanced Cluster Curriculum was studied and evaluated as it pertained to this Turlock Ag Course. What follows is the result of the field-test process.

Field Test Results: from Dale Pollard

This class that teaches the Ornamental Horticulture curriculum at Turlock High School is called Plants and Gardens. This class fulfills the life science requirement for graduation. As a requirement, many students take the class for graduation. In doing so, most of the students do not take the Agriculture Science 1-2 and do not have basic horticulture skills. Consequently this requires that many basic horticulture concepts be taught. These additional teaching areas reduce the amount of time to cover the advanced areas of ornamental horticulture.

My belief in this class is to first give students the basic understanding of plants through identification of the plant parts and basic plant physiology. The many principles of the Nursery Industry cannot be taught unless some basic skills are mastered. Then students can proceed on to other areas of study in the Ornamental Horticulture area.

The textbook used is Introductory Horticulture 4th edition by H. Edward Reiley and Carroll L. Shry jr. This is the first year that I have been using this book and I am still working on the best chapters and their order for the class. Along with the classroom curriculum our class takes care of the Turlock High School horticulture facility. While caring for the facility many nursery cultural practices are taught. These activities require a great deal of time. A large portion of the "Plants and Gardens" class hours are in the horticulture facility reinforcing the curriculum being taught in the classroom. The following is the material taught in the "Plants and Gardens" class and its order.

The very first activities include covering the importance of plants to humankind. If students really understand that plants are the very foundation of life, they have a greater appreciation for the class.

USING THE ORNAMENTAL HORTICULTURE ADVANCE CLUSTER CURRICULUM AND THE INTRODUCTORY HORTICULTURE TEXTBOOK THE FOLLOWING UNITS WERE TAUGHT.

Units are assigned from the Introductory Horticulture textbook.

CAREERS OF THE HORTICULTURE INDUSTRY - UNIT 1 - 3 HOURS

Add material as they relate to your area. Use the video Choose Horticulture.

THE PARTS OF THE PLANT AND THEIR FUNCTIONS - UNIT 3 - 15 HOURS

This unit only is the ice breaker for the unit. Additional materials are added including parts of the flower, stem, roots and information concerning photosynthesis. I use a few handouts and a model of the flower. Students also bring in a flower and dissect it and divide the plant into its components. Always using the terms throughout the course reinforces the material.

LEADERSHIP - 10 HOURS

Students are given the information from the core concerning the leadership portion of the curriculum, and the recordbook. The recordbook is best taught a little at a time beginning in the Fall and then periodically throughout the year.

ENVIRONMENTAL REQUIREMENTS FOR PLANT GROWTH - UNIT 4 - 15 HOURS

This is a large unit that the book does not cover as well as it should, and additional materials are needed. These include more soil information, nutrient deficiencies and fertilizers. Students bring in their soil samples and perform nutrient and pH test of their soils and the best way to improve it. This does take a great deal of time but real learning takes place during this process. After the testing they all do a soil texture test through the settling test by taking a jar of their soil and adding Calgon or any water softener to allow the soil particles to settle out into sand, silt, and clay. Then using the soil triangle they can determine its texture. Students also read the fertilizer bags and understand what they mean. Students can also raise plants in straight perlite and record the effects of the lack of nutrients and what happens when specific nutrients are added. This again is a very important unit that requires additional material than provided by the book. This could take more time than allotted.

The video Growing Media for Landscape Plants (VEP) and Horticulture Soil Explained can be used.

PROPAGATION - UNITS 6-12 - 15 HOURS

This is a fun unit for the class as they propagate a few plants of their choice in addition to the plants propagated in a similar methodology as the industry would use. There are many activities that can be used such as taking cuttings of all different kinds air-layering, grafting, budding, separation and seed planting. Students go through the whole process of taking cuttings; mixing the rooting media, collecting cutting materials, processing prunings into cuttings of the proper length and hardness, placing them into a prepared flat correctly and placing the float into the mist bed. There is a process for seeds also that is followed.

The other propagation methods are demonstrated and some limited practice by the students also occurs.

This unit allows the students to start their own plants to take home. The video Romancing the Seed and Plant Propagation I & II are good to use.

PLANT IDENTIFICATION - UNIT 2 - 8 HOURS

Unit 2 starts the plant identification that will continue throughout the whole year. Students are given a handout to complete with information about the plant., This unit can be inserted any time the instructor feels it is appropriate. It is important that the students be shown real plants to identify, not pictures. The "Plants and Gardens" class starts identifying the plants in the horticulture facility and nearby. This makes it easier for students to identify the plants if they are around them. The identification goes on at various times of the year. During the beginning of the unit the students complete plant presses with the write up about the plant and turn them in. This again reinforces the identification unit.

Other items that are not in the book are the correct cultural practices that are ongoing and are not in the book such as; Transplanting, tying and staking, soil-making, watering, pruning, plant spacing, sanitary practices and other nursery related cultural practices. These activities are performed as they relate to instruction and the timelines of the season for the activity.

Around the time before Christmas the class covers a unit on floriculture. This is a good time especially since it is around the Winter Formal for Turlock and some students can make their own corsages and boutonnieres.

FLORICULTURE - UNITS 48-50 - 15 HOURS

This is an exciting unit as the students really get enthused about this unit. We order carnations and greens for them to make corsages and boutonnieres. This unit is not that difficult if you breakdown the construction of the corsage into different steps and teach each step separately and it will work.

PRUNING - UNIT 33 - 6 HOURS

Students go into the facility and prune plants. The video Gardening From The Ground Up Pruning could be used.

CULTURAL PRACTICES OF CONTAINER GROWN PLANTS - UNIT 24 - 25 HOURS

Another area that is being taught throughout the year and this unit summarizes all the activities that the students have done in the horticulture facility. The video How to Grow Plants in a Greenhouse and How to Grow Healthy House plants can be used both are gardening videos.

VEGETABLE PRODUCTION - UNIT 38-41 - 10 HOURS

This again can be partially done in the fall with Fall vegetables. This is also another area to raise vegetables from seed for the summer garden. Vegetables that work well are potatoes, onions, radishes, squash, carrots anything that will be harvested before the students leave for the summer. Obviously this will only work if there is room for a vegetable garden at the school. The videos How to Grow a Vegetable Garden, How to Grow cool-Season Vegetables and How to Grow Warm-Season Vegetables can be shown. They are all Gardening videos.

PEST CONTROL - UNIT 16-18 12 HOURS

This is an excellent unit in the book. Again the use of the horticulture facility works well in showing areas that might become infected and show students the pest. This also takes on another aspect in that the students know it is important to quickly identify pests. Look for pests for you in the horticulture facility that need to be destroyed.

TERRARIUMS - UNIT 21 - 12 HOURS

An enjoyable unit for the students that goes over plant baskets, dish gardens and terrariums. This is another method to use more plants and identify them.

LANDSCAPE BASICS - UNIT 25-34 - 15 HOURS

This unit would be covered in the depth allowed at the end of the year. I believe this unit will be barely covered.

The instructional hours only add up to 151 hours this allows for teacher inservice days, special activities such as plant sales FFA week and related activities. This also allows for programs to be adjusted for local enrichment.

STUDENTS SPEND A GREAT DEAL OF TIME IN THE HORTICULTURE FACILITY PRACTICING THE SKILLS TAUGHT IN THE CLASSROOM. TO KEEP TRACK OF THESE ACTIVITIES, THE STUDENTS FILL OUT AN EXPERIENCE RECORD. THIS DOCUMENTS THEIR LAB EFFORTS.

20. Unit Sequence Outline (Field Testing)

COURSE: FLORICULTURE

- I. History of Floral Design** IMS 8945-A
(Days) (10)
 - A. Introduction
 - B. Egyptian Period (2800-28 B.C.)
 - C. Greek Period (600-146 B.C.)
 - D. Chinese
 - E. Roman
 - F. Byzantine
 - G. Middle Ages
 - H. Japanese
 - I. Renaissance
 - J. Baroque
 - K. Flemish
 - L. Victorian
 - M. Modern American

- II. FFA and Supervised Agricultural Experience Program** (24)
 - A. Awards and Degree Applications
 - B. Program of work
 - C. Floriculture Judging
 - D. Floriculture Crop
 - E. SAEP Records

- III. Careers** Griner Unit 1
(5)
 - A. Types of Flower Shops
 - B. Job Opportunities in the Retail Flower Shop
 - C. Training for a job in the Retail Flower Shop

- IV. Floriculture Terms** CLF 6651
(2)
 - A. Spray
 - B. Disbud
 - C. Annual
 - D. Perennial
 - E. Potted Plant
 - F. Foliage Plant
 - G. Bedding Plant

<p>V. ID and Use of Design Tools and Materials</p> <ul style="list-style-type: none"> A. Cutting Tools B. Wiring Materials C. Adhesive Materials D. Stem Support Materials E. Containers 	<p>CLF 6654 IMS 8947-A Griner Unit 5 (3)</p>
<p>VI. Principles of Floral Design Classification and Use of Floral Design Categories and Shapes</p> <ul style="list-style-type: none"> A. Shape B. Line C. Mass D. Filler E. Round F. Vertical G. Horizontal H. Symmetrical 	<p>CLF 6653 6656 IMS 8946-A Griner Unit 2 (8)</p>
<p>VII. ID of Floral and Seasonal Plants</p> <ul style="list-style-type: none"> A. Introduction B. Flower and Foliage Classifications C. Tropical Foliage Plants D. Flowering Plants 	<p>CLF 6652 IMS 8943-A IMS 8943-B</p>
<p>VIII. Preparation and Conditioning of Flowers</p> <ul style="list-style-type: none"> A. Stem Treatment B. Using Preservatives C. Storing Requirements 	<p>(5)</p>
<p>IX. Safety in Floral Design</p> <ul style="list-style-type: none"> A. Identifying Poisonous Plants B. Practicing Safety with Tools C. Practicing Safety with Chemicals 	<p>IMS 8951-A</p>
<p>X. Simple Floral Arrangement and Corsage Construction</p> <ul style="list-style-type: none"> A. Construction of Bows B. Boutonniere Construction C. Corsage Construction 	<p>CLF 6657 IMS 8949-B, C, & E Text 7 & 8 (14)</p>

- XI. Bud Vases** Griner Unit 9
(3)
- A. Selecting Flowers
 - B. Foliage
 - C. Accessories
 - D. One Bloom
 - E. Three Bloom
- XII. Circular Arrangements** Griner Unit 10
IMS 8947-D
(8)
- A. Circular
 - B. Conical
 - C. Oval
 - D. Fan
- XIII. Arrangements** Griner Unit 12
(8)
- A. Inveiled T
 - B. L-Pattern
 - C. Vertical
 - D. Crescent
 - E. Hograth
 - F. Face Style
- XIV. Arrangements Triangular** Griner Unit 11
IMS 8947-B
IMS 8947-C
(8)
- A. Equilateral Triangle
 - B. Isosceles Triangle
 - C. Center Piece Design
 - D. Asymmetrical Triangle
 - E. Scalene Triangle
 - F. Right Triangle
- XV. Holiday Arrangements** Griner Unit 13
IMS 8950-A
(27)
- A. Thanksgiving
 - B. Halloween
 - C. Christmas
 - D. Valentines Day
 - E. Easter
 - F. Mother's Day
- XVI. Wedding Flowers** Griner Unit 14
(9)
- A. Bridal Consultations
 - B. Wedding Order Form
 - C. Bridal and Attendant Bouquets
 - D. Ceremonial Decorations
 - E. Reception Decorations

- XVII. Decorating Potted Plants** Griner Unit 19
(5)
- A. Poly Foil
 - B. Preformed Pot Covers
 - C. Jardinieres
 - D. Decorating Dish Gardens
 - E. Care of Potted Plants in the Shop
- XVIII. Pricing Strategies** Text Unit 20
(5)
- A. Determine Unit Cost
 - B. Standard Ratio Mark-up Pricing
 - C. Retail Cost of Goods Plus Labor
- XIX. Selling in the Flower Shop** Text Unit 21
(5)
- A. Characteristics of a Professional Sales Person
 - B. Selling by Telephone
 - C. Sending Flowers by Wire
- XX. Displays** Text Unit 22
(5)
- A. Primary Purpose of Displays
 - B. Secondary Purposes
 - C. Artistic Display
 - D. Categories of Display
 - E. Designing Display Arrangement
- XXI. Delivery** Text Unit 23
(3)
- A. The Delivery Person Training
 - B. The Delivery Vehicle
 - C. Delivery Categories & Charges
 - D. Processing an Order for Delivery
 - E. Loading the Delivery Vehicle
 - F. Making the Delivery
- XXII. Professional Organizations** (3)
- A. Trade Organizations
 - B. Trade Publications
 - C. Student Organizations
 - D. Certification Programs

TEXT: Floriculture "Designing and Merchandising"
Charles Griner, 1995 Delmar Publications
Instructional Materials Service

Unit Sequence Outline (Field Testing)

COURSE: LANDSCAPE CONSTRUCTION

Unit 1 - *Plant Identification*

- Botanical Classification (6100)
- Trees (6701)
- Shrubs (6701)
- Ground Covers (6701)
- Perennials (6701)
- Annuals (6701)

Unit 2 - *Landscape Design* (6700)

- Landscape Drafting Equipment (6705)
- Drafting Exercises
- Landscape Design Projects
- Landscape Design Details
- Plant Keys (6701)

Unit 3 - *Equipment Operation*

- Safety
- Tractor Operation
- Front Loader
- Rototiller
- Box scaper
- Power Hand Tools

Unit 4 - *Landscape Irrigation*

- Irrigation Materials (6453)
- Irrigation Design (6704)
- Irrigation Installation (6704)

Unit 5 - <i>Plant Installation</i>	(6500)
• Proper Planting Procedure	(6502)
• Soil Amendments	(6400)
• Staking of Trees	(6504)
Unit 6 - <i>Lawns</i>	
• Types of Grasses	(6701)
• Selection of Turf Grasses	(6701)
• Lawn Installation	(6703)
• Lawn Maintenance	(6703)
Unit 7 - <i>Woodworking for Landscapes</i>	(6702)
• Woods for the landscape	
• Wood Structures for the Landscape	
Unit 8 - <i>Concrete in the Landscape</i>	(6702)
• Components of concrete	
• Concrete calculations	
• Tools used in concrete work	
• Concrete structures	
Unit 9 - <i>Landscape Maintenance</i>	
• Pruning	(6550)
• Fertilization	(6350)
• Mowing	(6703)
• Weed ID/Control	(6302)
• Insect ID/Control	(6304)
• Plant Disease ID/Control	(6301)
• Mulching	(6405)
Unit 10 - <i>Soils</i>	(6400)
• Soil Types	(6401)
• Soil Nutrients	(6351)
• Soil Amendments	(6355)

SECTION FIVE

Student Assessment

21. Introduction To Student Assessment In Tech Prep

What is Assessment? By definition*, assessment involves appraisal & evaluation. Assessment in education not only evaluates what a student understands or skills that he/she can demonstrate but additionally indicates the quality of instruction that was provided. So as we enter the age of "accountability" in education, assessment becomes extremely important to determine the level of a student's understanding and ability to complete a task, as well as the quality of instruction received. Too often in education, students are assessed using paper/pencil written examinations that involve multiple choice, true/false or short essay questions. Most of these assessment strategies utilize a student's short-term memory or ability to memorize facts. Therefore a more realistic approach to assessment has been selected for Tech Prep. Alternative assessment, performance assessment or authentic assessment are all terms that indicate this new approach to assessment.

Authentic Assessment (Performance assessment) is typically defined by a set of performance standards (instructional objectives). Students must show progress towards these standards. Authentic assessment may include many different types of testing approaches that are more typical of real - life settings and allow students to demonstrate their knowledge and skills through creating a product, demonstrating a skill or documenting a process.

Two different types of assessment have been selected for use in Tech Prep for Ag Education. They are Cumulative assessment; projects which develop over an extended time frame and have more than one component. The other form of assessment is administered or (on - demand) assessments which are short term examinations that determine a student's knowledge in a more specified area. We firmly believe that today's diverse student population can be better served by a flexible system of assessment that allows students to demonstrate a variety of knowledge and skills.

The cumulative form of assessment selected for use in Tech Prep is the Portfolio and the administered form of assessment used in Tech Prep is the Written Scenario.

*Websters

22. Work Samples

Ornamental Horticulture

- 1.) Design a landscape plan for a 10' x 10' plot.
- 2.) Diagram and illustrate one aspect of plant physiology:
 - Photosynthesis
 - Transpiration
 - Respiration
- 3.) Design an irrigation system for a local residential landscape
- 4.) Report on the advantages and disadvantages of several irrigation systems: sprinkler, micro sprinklers, drip, and bubbler systems.
- 5.) Explain and diagram the proper planting techniques for one of the following: ground covers, bedding plants, vines, trees, or shrubs.
- 6.) Report on a common horticultural pest and economical solutions for its control.
- 7.) Plan, construct and price a floral arrangement, provide photograph of finished product..
- 8.) Interview and report on a member of a local horticultural association about the organization's goals, purposes, and activities.
- 9.) Select and write justification for a class of 4 horticultural specimens.
- 10.) Describe and demonstrate the maintenance, care and safety of one type of horticultural equipment or one type of horticulture facility.
- 11.) Construct a sales display for some horticultural product, provide photograph..
- 12.) Describe correct procedures for receiving, storing, processing and maintaining flower and foliage materials.
- 13.) Write a report explaining the proper safety and handling of horticultural tools, equipment and supplies.

- 14.) Design a fertilization program for turf grown in CA. Prescribe correct types and amounts of fertilizer to be applied during 1 year and justify your choices.
- 15.) Develop a maintenance program for landscape power equipment and hand tools.
 - Maintenance records
 - Part inventory
 - Repair companies
 - Safety rules

23. Examples Of Student Work Samples

For Landscape Construction

Unit 1 - *Plant I.D.*

- Plant Collection of 25 Plants

Unit 2 - *Landscape Design*

- Landscape Drawing and Design Portfolio

Unit 3 - *Equipment Operation*

- Each Student will operate each piece of equipment covered in this unit - video tape or photograph, operation checklist

Unit 4 - *Landscape Irrigation*

- Irrigation design for a given area - photographs of finished project

Unit 5 - *Plant Installation*

- Students will plant trees, shrubs and ground covers - photographs of completed work.

Unit 6 - *Lawns*

- Students outline procedures of installing a lawn

Unit 7 - *Woodworking for the Landscape*

- Construction of a Wood project for the landscape - Photographs of finished product

Unit 8 - *Concrete in the Landscape*

- Concrete installation - mow strips, walks, etc. - photographs

Unit 9 - *Landscape Maintenance*

- Weed Collection
- Insect Collection
- Explain proper pruning methods - skill checklist

Unit 10 - *Soils*

- Develop a compost system
- Analyze a soil problem and recommend solutions. (written essay)

24. Written Scenarios

WRITTEN SCENARIO #1

TOPIC: Horticultural Soils

INSTRUCTIONS:

You will be required to take on the role described in a special topic area. You will read the situation, analyze it, determine the problem, and suggest remedies to the problems. Your answer will be graded on your answering techniques and your technical accuracy.

OCCUPATION:

Landscape Maintenance Superintendent for Public Schools

PROBLEM:

A principal has called and complained that portions of the lawn at her school have died leaving trails and patches of bare ground. This was the first you have heard about this problem, so you decide to check it out in person.

You begin your analysis of the problem by a visual check of the area. The first problem you notice is heavy foot traffic and student congregation in the area where the lawn has died. Next you check to see how the watering system works. The system works nicely with no problems. Next you check for lawn disease and pests and none are found. Examination of the soils indicates severe compaction from the traffic you observed earlier.

You conclude that the problem is severe localized soil compaction which is a result of heavy foot traffic. You now must decide on a plan of action to repair the damage and prevent a recurrence of the problem.

WRITTEN SCENARIO #2

TOPIC: **Irrigation**

INSTRUCTIONS:

You will be required to take on the role described in a specific topic area. You will read the situation, analyze it, determine the problem, then suggest remedies to the problems. Your answer will be graded on your answering techniques and your technical accuracy.

OCCUPATION:

Irrigation Specialist

PROBLEM:

A golf course superintendent has called you and is asking for advice on a newly installed sprinkler system on their practice green. He has observed problems such as dry patches on the green and very wet patches next to some sprinkler heads.

What approaches will you take to determine what the problem is and what action should be taken to remedy the problem.

WRITTEN SCENARIO #3

TOPIC: **Disease and Pests of Ornamental Horticulture Plants**

INSTRUCTIONS:

You will be required to take on the role described in a specific topic area. You will read the situation, analyze it, determine the problem, and then suggest remedies to the problems. Your answer will be graded on your answering techniques and your technical accuracy.

OCCUPATION:

Ornamental Horticulture Pest Control Advisor

PROBLEM:

You have been contacted by County Parks Department to help solve the problem of their dying lawns. You have gone over the basics with the maintenance crew such as watering, mowing, fertilizing, and other cultural practices. All practices have been followed and all equipment, sprinkler systems are in excellent condition.

Your primary diagnostics indicate that there is a pest problem. Describe in detail the procedure you will use to locate, identify and control the pest problem affecting the lawns of the County Parks.

WRITTEN SCENARIO #4

TOPIC: Selection of plants

INSTRUCTIONS:

You will be required to take on the role described in a specific topic area. You will read the situation, analyze it, determine the problem, then suggest remedies to the problems. Your answer will be graded on your answering techniques and your technical accuracy.

OCCUPATION:

Retail Nursery Person

PROBLEM:

A customer has come in complaining and raising a big time commotion in the nursery. His complaint is that all the plants purchased died or look horrible. When he purchased the plants he did not seek any advice from any of the certified nurserymen.

First what are you going to do to calm your customer down, then what are you going to do to solve the problem. Your preliminary questions reveal that he has followed all correct planting and watering procedures.

WRITTEN SCENARIO #5

TOPIC: Elements for Plant Growth

INSTRUCTIONS:

You will be required to take on the role described in a specific topic area. You will read the situation, analyze it determine the problem, then suggest remedies to the problems. Your answer will be graded on your answering techniques and your technical accuracy.

OCCUPATION:

Landscape Maintenance Foreman

PROBLEM:

You were hired by a large industrial park to maintain over 50,000 sq. ft of lawn area. Upon initial examination you notice the majority of the lawn is chlorotic and in relatively poor health. Pest and disease have been ruled out and you have made a preliminary decision that it probably is a fertilizer problem.

What test and actions will you employ to remedy the problem you are facing.

WRITTEN SCENARIO #6

TOPIC: **Botanical Classification**

INSTRUCTIONS:

You will be required take on the role described in a specific topic area. You will read the situation, analyze it determine the problem, then suggest remedies to the problems. Your answer will be graded on your answering techniques and your technical accuracy.

OCCUPATION:

Retail Nurseryman

PROBLEM:

A customer has just come into your nursery with four plant specimens. He is asking you to identify them, you have no problem identifying two of them from experience. But, you are unable to identify two specimens. Luckily the customer has furnished you with a large enough sample with flowers, stems and leaves. What process will you use to ID the plants. Explain the exact process in detail.

WRITTEN SCENARIO #7

TOPIC: Pruning

INSTRUCTIONS:

You will be required take on the role described in a specific topic area. You will read the situation, analyze it determine the problem, then suggest remedies to the problems. Your answer will be graded on your answering techniques and your technical accuracy.

OCCUPATION:

Home Owner

PROBLEM:

You have just purchased an older home with a large, beautiful oak tree. The tree has several dead limbs, a large cavity and a few limbs are in close proximity to power lines. After analyzing the situation you make a decision to save the tree. What pruning techniques and practices will you use to save this majestic oak tree. Be sure to include tools and correct pruning procedures.

WRITTEN SCENARIO #8

TOPIC: Corsages and Boutonniere Construction

PROBLEM:

You are working in a flower shop for a day for extra credit for class. You are asked to make three corsages and two boutonnieres and you see that there are:

- six mini carnations
- five large carnations
- two colors of ribbon

The owner wants the boutonnieres and corsages to be very colorful. He/she also wants six to seven flowers in each corsage and two flowers in the boutonniere. You know you do not have enough mini carnations. How would you use the large carnation? Everything else (tape and wire) is there for you.

INSTRUCTIONS:

Make the corsages and boutonniere as the owner wants them. Explain step by step how you would use the flowers and put the corsages and boutonnieres together. Also explain what the corsages and boutonnieres will be kept in and where you will store them?

WRITTEN SCENARIO #9

TOPIC: Corsages and Boutonniere Construction

PROBLEM:

A friend is going to a dance and she asked you to make her a corsage. She does not know a lot about corsages. She wants to wear her corsage on her jade dress and she is medium size.

You should remember:

- the color of dress, corsage should complement the dress.
- the size of the person to the size of the corsage.
- where the person is going to wear the corsage.

INSTRUCTIONS:

Make a corsage to fit your friend's need. Explain where she is going to wear the corsage and how you should make the corsage fit on the dress and how the size should fit to her size.

WRITTEN SCENARIO #10

TOPIC: **Types of Flower Shops**

PROBLEM:

Your friend is getting married. He/She asks you which floral shop to go to for the wedding.

INSTRUCTIONS:

First explain what each of floral shops listed below does and then explain which is best for wedding occasions and why.

Floral Shops:

- Full Service Shop
- Carriage Trade Shop
- Specialty Shop

WRITTEN SCENARIO #11

TOPIC: Floral Pricing Strategies

PROBLEM:

You have your own florist shop. You have just received a new shipment of supplies for your Valentine Day vase arrangements. In your shipment you received two bunches of babies breath, two bunches of Leatherleaf, one case of 48 vases, and three bunches of 24 roses. Each arrangement should take you around 30 minutes. The going rate for florists today is \$6.00 per hour. You have 24 arrangements to put together. The cost of the shipment is listed below:

Red Roses	\$24.00 per bunch
Babies Breath	\$7.50 per bunch
Leatherleaf	\$3.00 per bunch
Vases	\$20.00
Shipping Cost	\$6.00

INSTRUCTIONS:

In each arrangement, you are to use three roses and enough babies breath and leatherleaf to make the arrangement look full. Add up the expenses for this Valentine Day project and figure out how much each vase should be sold for you to make a \$6.00 profit on each vase. Do not forget labor expenses.

WRITTEN SCENARIO #12

TOPIC: **Holiday Floral Arrangements**

PROBLEM:

The holiday season is approaching and a customer comes in the day before Mother's Day and wants to order an arrangement. He/she only wants to spend \$25.00. You look in the cooler and see that you only have:

	YOUR COST
4 daffodils	\$.75 each
6 pink carnations	\$.99 each
1 bunch of leatherleaf fern	\$7.50 bunch
2 stems of mini chrysanthemums (white)	\$1.50 bunch
2 stems of baby's breath	\$.80 each
2 gerbera daisies (peach)	\$1.25 each

INSTRUCTIONS:

Explain how you would make the arrangement to include balance, rhythm, harmony, and color. Your boss wants to make a 50% profit. What do you use and how much do you use? What effect do holidays have on the floral industry? Draw a picture of the arrangement as you would make it.

WRITTEN SCENARIO #13

TOPIC: Floral Displays and Arrangements

PROBLEM:

You are the owner of a floral shop. You handle all of the decisions. Today, you received your shipment of supplies for your Valentine's Day arrangements. You received:

- enough for 40 rose or carnation arrangements with ribbon
- cardettes
- balloons
- cards

Today is February 11th. You have to do your arrangements and display them for Valentine's Day.

INSTRUCTIONS:

Write down what you would do in this situation. When would you display your arrangements and accessories? How should you display them? Which method would you use? Also discuss the primary purpose of displays, designing display arrangements, and artistic display.

25. Other Suggested Written Scenario Topics and Work Samples

Have the students map out the propagation, growing and marketing of a crop. This would include all steps from beginning to end sale of the crop. Propagation method and procedures necessary to prepare a propagation flat. Transplanting and growing practices needed to have the plant at salable size. Timing is very important for this to be completed correctly. Then students are to describe a method of marketing their crop.

Students are to set up a nursery. Whether it be a retail or wholesale nursery. Procedures for converting the site into a nursery operation. This would include the size of greenhouses, growing areas, office, headhouse, shop, loading area etc. In designing a retail nursery the student would have to determine square footage of the store area, office, shadehouse, bedding plants, irrigation systems and materials to stock.

Given a set of observations of a plant give a diagnosis and solution to the plants failing health.

Given a group of plants, have the student identify and tell important traits of the plants, including size, growing conditions, propagation, landscape use and plant needs.

Students are to explain all the areas that plants help mankind and give examples of the plants and their effects. Give examples of what would the Earth be like without certain plants or all plants. Explain how plants have helped make mankind better enjoy their life.

26. Example Criteria Sheet for Scoring Written Scenarios

COMPACTED SOIL PROBLEM

Answering Process:

- _____ (2 pts) Answer to question was clean and understandable
- _____ (2 pts) Answer was presented in a logical, easy to understand sequence
- _____ (2 pts) Answer had clear introduction and strong conclusion
- _____ (2 pts) Main points of answer were clearly stated

Technical Aspects:

- _____ (4 pts) Answer addresses the type of soil texture in the area
- _____ (8 pts) Answer addresses specific processes to repair damaged soil
- _____ (8 pts) Answer addresses how to prevent compaction from occurring again
- _____ (8 pts) Answer addresses impact on students and campus activities
- _____ (8 pts) Answer addresses maintenance procedures that can be used to maintain healthy lawns and soil conditions

SECTION SIX

Appendices

Appendix A
Students Will be Able to...



aic principles

- Read, understand, and follow the instructions on a chemical label
- Have a proficient understanding of the metric system
- Have the ability to lead and follow

Professional***

- All of the above
- Utilize statistical methods; Be able to analyze and interpret data from research and draw inferences from charts, tables, and graphs that illustrate data from real-world situations
- Design and develop experimental tasks
- Use experimental or theoretical probability as appropriate, to represent and solve problems involving uncertainty
- Have ability to retrieve, sequence, package and present information
- Have ability to supervise and evaluate personnel matters
- Possess and exhibit leadership skills

ommunication skills in a second language

Entry level** jobs are those at the lowest level of responsibility and these workers generally work under the supervision of another. A high school diploma is usually required for employment, but that requirement is often waived if the applicant has sufficient experience. *Technical level** employees usually work in an occupation involving mid-level responsibility and decision making is nearly always a part of it. These occupations usually require an associate of arts/science degree or certificate/license providing evidence of two or more years of specialized training. *****Professional level** occupations normally require a baccalaureate or higher college degree. Some of these occupations may also require certification or licensure. These employees perform very complex tasks and serve in positions that require the responsibility for successful management of departments, enterprises, programs or projects.

Appendix B
Targeted Occupations

AGRICULTURE CAREER CLUSTER AREAS TARGETED OCCUPATIONS

Curriculum Area: ORNAMENTAL HORTICULTURE

I. Entry Level: High school graduate in general can do

1. Tree Worker
2. Gardener
3. Landscape Maintenance Worker
4. Greenhouse Worker
5. Florist, Retail, Sales Clerk
6. Agricultural Aide
7. Landscape Laborer
8. General Nursery Worker
9. Cut Flower Harvester
10. Plant Propagation Worker

II. Advanced Level: Tech Prep completers preferred

- | | |
|----------------------------|-----------------------------------|
| 1. Arborist | 11. Greenhouse Grower/Manager |
| 2. Sales Representative | 12. Draftsperson |
| 3. Interior Plantscaper | 13. Nursery Salesperson |
| 4. Landscape Contractor | 14. Pest Control Operator |
| 5. Irrigation Technician | 15. Tissue Culture Specialist |
| 6. Golf Course Manager | 16. Plant Propagation Supervisor |
| 7. Floral Designer | 17. Sod Grower/Salesperson |
| 8. Florist | 18. Sport Recreation Turf Manager |
| 9. Greenskeeper | |
| 10. Ag Research Technician | |

III. Professional Level: Baccalaureate degree required

1. Arboretum/ Park Manager
2. County Planner/Landscape Architect
3. Consultant, Industry
4. Curator, Botanical Garden
5. Teacher, Horticulture
6. Field Representative
7. Geneticist/Plant Breeder
8. Golf Course Superintendent
9. Ag Research Scientist
10. Ag Inspector, Horticulture

ORNAMENTAL HORTICULTURE

Note: Job titles in all caps are from the "Targeted Occupations list.

Job Title	Entry Level	Technical Level	Professional Level
ABORETUM/PARK MANAGER			X
Ag Biologist			X
AG INSPECTOR, HORTICULTURE			X
AG RESEARCH SCIENTIST			X
AG RESEARCH TECHNICIAN		X	
AGRICULTURE AIDE	X		
Arboretum/Botanical/Horticultural Garden Curator			X
Arboretum/Botanical/Horticultural Garden Dir.			X
Arboretum/Botanical /Horticultural Garden Ed. Dir.			X
Arboretum/Botanical/Horticultural Garden Librarian		X	
Arboretum/Botanical/Horticultural Garden Manager		X	
Arboretum/Botanical /Horticultural Garden Tour Guide		X	
Arboretum/Botanical/Hort. Garden Visitor's Aide		X	
ARBORIST		X	
Bonsai Culturist		X	
Botanist			X
Bulb Production Company Breeder			X
Bulb Production Company Field Worker	X		
Bulb Production Company Grader	X		
Bulb Production Company Owner/Operator/Manager			X
Bulb Production Company Packaging/Ship. Suprv.		X	
Bulb Production Company Quality Control Suprv.			X
Bulb Production Company Sales Manager			X
Bulb Production Company Sales Rep		X	
Bulb Production Company Technician		X	
Bulb Production Company Worker	X		
Christmas Tree Grower		X	
Chrysanthemum Grower/Manager		X	
CONSULTANT, INDUSTRY			X
COUNTY PLANNER/LANDSCAPE ARCHITECT			X
CUT FLOWER HARVESTER	X		
DRAFTSPERSON		X	
Entomologist			X
FARM ADVISOR/CONSULTANT			X
Fertilizer Sales and Service Person		X	
FIELD REP			X
Floral Consultant		X	
FLORAL DESIGNER		X	
Floriculture Production Consultant			X
Floriculture Production Field Operations Supervisor		X	
Floriculture Prod. Flower Packing/Shipping Suprv.		X	
Floriculture Production Grower		X	
Floriculture Production Inventory Controller		X	
Floriculture Production Marketing Manager			X
Floriculture Production Owner/Operator			X
Floriculture Technician		X	

Floriculturist			X
FLORIST		X	
Florist, Retail, Arranger		X	
Florist, Retail, Designer		X	
FLORIST, RETAIL, SALES CLERK	X		
Florist, Retail, Store Manager		X	
Florist, Wholesale, Buyer			X
Florist, Wholesale, Manager			X
Florist, Wholesale, Route Salesperson		X	
Florist, Wholesale, Sales Manager			X
Florist, Wholesale, Salesperson		X	
Floristry Shop Manager		X	
Foliage/Floriculture/Bulb/Rose Grower		X	
Garden Center Management Trainee		X	
Garden Center Owner/Operator			X
Garden Worker	X		
GARDENER	X		
Gardener, Special Effect		X	
GENERAL NURSERY WORKER	X		
Geneticist/Plant Breeder			X
Golf Course Consultant			X
Golf Course Maintenance Worker	X		
Golf Course Management Contractor			X
GOLF COURSE MANAGER		X	
GOLF COURSE SUPERINTENDENT			X
Golf Course Worker	X		
Greenhouse Crew Supervisor		X	
Greenhouse General Manager			X
GREENHOUSE GROWER/MANAGER		X	
Greenhouse Supervisor		X	
Greenhouse Technician		X	
GREENHOUSE WORKER	X		
GREENSKEEPER		X	
Groundskeeper Supervisor		X	
Horticultural Farm Advisor			X
Horticultural Film Producer			X
Horticultural Import Specialist			X
Horticultural Research Scientist			X
Horticultural Research Technician		X	
Horticultural Sales Staff Trainer			X
Horticultural Specialist			X
Horticultural Specialist, UC Co-op Extension Ser.			X
Horticultural Supply Sales Rep		X	
Horticultural Technical Writer		X	
Horticultural Therapist			X
Horticulturist			X
Interior Plant Maintenance Worker	X		
INTERIOR PLANTSCAPER		X	
Irrigation Consultant			X
Irrigation Equipment/Supplies Sales/Service Rep.			X

Irrigation System Installer		X	
IRRIGATION TECHNICIAN		X	
Landscape Equipment Operator	X		
Landscape Architect			X
Landscape Company General Manager			X
Landscape Consultant			X
LANDSCAPE CONTRACTOR		X	
LANDSCAPE DESIGNER		X	
Landscape Drafter		X	
Landscape Estimator		X	
LANDSCAPE FOREPERSON		X	
Landscape Gardener	X		
Landscape Installation Foreperson		X	
Landscape Installation Worker	X		
LANDSCAPE LABORER	X		
Landscape Maintenance Lead Worker		X	
LANDSCAPE MAINTENANCE WORKER	X		
Landscape Project Coordinator			X
Landscape Services Company Owner/Operator			X
Landscape Specialist		X	
Landscape Technician		X	
Landscape, Supervising Groundskeeper		X	
Lawn Service Business Owner/Operator		X	
Lawn Service Worker	X		
Nursery Production, Consultant			X
Nursery Production, Container Plant Foreperson		X	
Nursery Production, Customer Service Rep			X
Nursery Production, Field Foreperson		X	
Nursery Production, Field Superintendent			X
Nursery Production, Greenhouse Manager		X	
Nursery Production, Grower		X	
Nursery Production, Inventory Controller		X	
Nursery Production, Irrigator	X		
Nursery Production, Laborer	X		
Nursery Production, Manager			X
Nursery Production, Manager Assistant		X	
Nursery Production, Owner/Operator			X
Nursery Production, Pest Control Applicator		X	
Nursery Production, Pest Control Manager			X
Nursery Production, Product Developer			X
Nursery Production, Production Manager		X	
Nursery Production, Propagator		X	
Nursery Production, Sales Manager			X
Nursery Production, Shipping Foreperson		X	
Nursery Retail and Garden Center, Buyer			X
Nursery Retail and Garden , Division Supervisor		X	
Nursery Retail and Garden, Greenhouse Manager		X	
Nursery Retail and Garden , Landscape Designer		X	
Nursery Retail and Garden, Maintenance Person		X	
Nursery Retail and Garden, Manager			X

Nursery Retail and Garden , Salesperson		X	
NURSERY SALESPERSON		X	
Nursery Worker	X		
Orchid Grower		X	
Orchid Grower Technician		X	
Orchid Plant Breeder			X
Orchid Propagator		X	
Park Manager		X	
Park Planner			X
Park Superintendent		X	
Park Worker	X		
Parks Groundskeeper		X	
Parks Maintenance Supervisor			X
Parks Service Manager			X
PEST CONTROL ADVISOR			X
Pest Control Inspector		X	
PEST CONTROL OPERATOR		X	
Pest Management Technician		X	
Pesticide Advisor			X
Plant Geneticist			X
Plant Pathologist			X
Plant Physiologist			X
PLANT PROPAGATION SUPERVISOR		X	
PLANT PROPAGATION WORKER	X		
Plant Quarantine Inspector			X
Plant Scientist			X
Pruner	X		
Rose Breeder			X
Rose Grower Sales Manager			X
Rose Grower Sales Rep		X	
Rose Grower Technician		X	
Rose Grower/Laborer	X		
Rose Propagator		X	
SALES REP		X	
Seed Harvesting Machine Operator	X		
Seed Production Company, Breeder			X
Seed Production Company, Contract Grower			X
Seed Production Company, Field Worker	X		
Seed Production Company, Grower		X	
Seed Production Company, Laboratory Technician			X
Seed Production Company, Manager			X
Seed Production Company, Owner/Operator			X
Seed Production Company, Production Supervisor			X
Seed Production Company, Sales Manager			X
Seed Production Company, Sales Rep		X	
SOD GROWER/SALESPERSON		X	
SPORT RECREATION TURF MANAGER		X	
TEACHER, HORTICULTURE			X
TISSUE CULTURE SPECIALIST		X	
Tissue Culturist			X

Tree Farmer			X
TREE WORKER	X		
Turf Maintenance Specialist		X	
Urban Forester			X

Appendix C
Pathway Grids
for all
Agricultural Pathways

AGRICULTURAL EDUCATION TECH PREP
Career Pathways Core Lists

Career Pathway

A List

B List

Agricultural Business

Ag Business 1

Ag Business 2

Agricultural Mechanics

Ag Mechanics 3
*Power & Machinery
 or Metal Fabrication
 or Ag Structures*

Ag Mechanics 4
*Power & Machinery
 or Metal Fabrication
 or Ag Structures*

Animal Science

Animal Science 1

Animal Science 2

Forestry & Natural Resources

Natural Resources 1
 Natural Resources 1

Forestry
 Natural Resources 2

Ornamental Horticulture

Ornamental Hort. 1
Nursery Industry

Ornamental Hort. 2
*Landscape Industry
 or Florist Industry*

Plant Science

Plant Science 1

Plant Science 2

Technical Elective C List

Ag Mechanics 1 or 2

Ag Mechanics 3 or 4

Power & Machinery

Metal Fabrication

Ag Structures

Ag Business or Ag Computers

Typing/Keyboarding

Ornamental Horticulture

Wildlife Production

Other Technical Courses related to the Career Pathway but not Agriculture:

ie. Industrial Technology

Business or Computers

Foreign Language

Drafting or Mechanical Drawing

Environmental Studies

This list is to be used in advising students using the generic Tech Prep Grids

WORKPLACE LEARNING AND TECH PREP

Workplace learning is an integral part of all Tech Prep Programs in Agriculture. As such, the specific Tech Prep Grid allows for time in the school day for these activities in the Senior year. The remaining grids offer options that allow a student to be involved in Tech Prep and meet other personal and educational objectives. For these students, there may not be sufficient time within the school day to be involved with Workplace Learning. In both of these cases, workplace learning could occur after the school day is finished, on weekends, during vacations, and summer breaks.

Workplace learning begins in the Freshman year with Supervised Practical Experience opportunities which is also a requirement of Ag Tech Prep. These are often entrepreneurial enterprises and usually continue throughout High School. Paid Work Experience SPE usually commences during the Junior year and continues through college. This procedure is outlined in the Workplace Learning Guide, "Learning to Work - Working to Learn."

TECH PREP AGRICULTURE CURRICULUM

TECH PREP	<i>Secondary Curriculum</i>			
SUBJECT	Freshman	Sophomore	Junior	Senior
Technical Core	Agriculture 1 Core	Agriculture 2 Core	Tech Prep Career Pathway A List	Tech Prep Career Pathway B List
Technical Elective	*Tech Prep Elective C List	*Tech Prep Elective C List	*Tech Prep Elective C List	*Tech Prep Elective C List
Math	Applied Math 1 (Math 1 Algebra 1)	Applied Math 2 (Math 2 Geometry)	Applied Math 3 (Algebra 2 Trigonometry)	Work Place Learning
Science	Applied Biology	Applied Biology or Chemistry	Applied Physics 1	Applied Physics 2
Communications	English 1	English 2 Applied Communications	English 3 Applied Communications	English 4 Applied Communications
Social Science	Social Studies	World History	U.S. History	Government Economics
P.E. Foreign Language	Physical Education	Physical Education	Fine Arts **	Work Place Learning

SECONDARY TECH PREP SEQUENCE FOR SELECTED CAREER PATHWAY.

* *Tech Prep Electives possible with 7 period day*

***FINE ART CREDIT MAY BE AWARDED FOR CERTAIN AG COURSES.*

UC/CSUC acceptance of Applied Academics courses for Math, English, Biology, and Physics will determine student eligibility for admission

Depending on how closely the High School follows the Appropriate Curriculum, college credit may be awarded to successful completers.

TECH PREP AGRICULTURE CURRICULUM

Traditional Agriculture	<i>Secondary Curriculum</i>			
SUBJECT	Freshman	Sophomore	Junior	Senior
Technical Core	Agriculture 1 Core	Agriculture 2 Core or Ag Biology	Tech Prep Career Pathway A List	Tech Prep Career Pathway B List
Technical Elective	*Tech Prep Elective C List	*Tech Prep Elective C List	*Tech Prep Elective C List	*Tech Prep Elective C List
Math/ Humanities	Algebra A Math 1 (Algebra 1)	Algebra B Math 2 (Geometry)	Fine Arts ** <hr style="width: 10%; margin: 0 auto;"/>	
Physical Science	Physical Science	*	*	*
Communica- tions	English 1	English 2	English 3	English 4
Social Science	Social Studies	World History	U.S. History	Government Economics
P.E.	Physical Education	Physical Education		

SECONDARY TECH PREP SEQUENCE FOR SELECTED CAREER PATHWAY.

* *Tech Prep Electives possible with 7 period day*

***FINE ART CREDIT MAY BE AWARDED FOR CERTAIN AG COURSES.*

Minimum High School Graduation requirements

Ag Biology Accepted, allows for local graduation requirements differences

AGRICULTURAL EDUCATION TECH PREP
COMMUNITY COLLEGE
AGRICULTURE TECHNICIAN PROGRAMS

The technician programs in Agriculture include an extended period of specialized training beyond high school, but less than that required for a Bachelor of Science. An individual in the technician program will acquire the skill and ability to make practical application of his/her theoretical knowledge in performing specific tasks in the production of goods and services in agriculture and related fields.

Certificates are awarded to students in technical programs in recognition of completion of specified requirements which indicate proficiency. All certificate core courses must be passed with a "C" grade or better.

The technician programs are as follows:

Agricultural Business Pathway

Agricultural Sales, Service Technician

Agricultural Mechanics Pathway

Agricultural Mechanics Technician

Animal Science Pathway

Artificial Insemination Technician

Forestry and Natural Resources Pathway

Forestry Technician

Recreation Land Management Technician

Ornamental Horticulture Pathway

Commercial Floristry Technician

Landscape Design Technician

Landscape and Park Maintenance Technician

Nursery Production Technician

Plant Science Pathway

Agricultural Laboratory Technician

Food Processing Technician

TECH PREP AGRICULTURE CURRICULUM

TECHNICIAN CERTIFICATE

TC

Community College Curriculum

SUBJECT	<i>Freshman 1st Semester</i>	<i>Freshman 2nd Semester</i>	<i>Sophomore 1st Semester</i>	<i>Sophomore 2nd Semester</i>
Technical Core	AG 315 * Intro to Agriculture Guidance	Career Path Core* Option	Career Path Core* Option	Career Path Core* Option
Technical Core	Career Path Core* Option	Career Path Core* Option	Career Path Core* Option	Career Path Core* Option
Technical Core	AG 280 * Ag Computations	Career Path Core* Option	AG 285 * Ag Communications	Career Path Core* Option
Technical Core	Career Path Core* Option	Career Path Core* Option	Career Path Core* Option	Career Path Core* Option
Core Elective General Education	Career Path Core* Option	Career Path Core* Option	GE Social Science	GE Humanities
General Education	English Comp	GE Activities	Health Education	Communications Analytical Thinking
Work- Place Learning	Work Experience Minimum 60	Work Experience	Work Experience	Work Experience

*Specific Technician Certificate Requirements

Minimum competency must be demonstrated in Reading, Written Expression, Mathematics, as referred to in the Specific College Graduation Requirements.

Successful completion of additional courses for the Intersegmental General Education Transfer Core Curriculum will GE certify the lower division B.S. requirements for UC and CSUC

Successful completion of additional courses for the CSUC Transfer Core Curriculum will GE certify the lower division B.S. Requirement for CSUC.

Minimum 62 units completion for the Associate in Science (A.S.) Degree (30 units must be in Agriculture)

TECH PREP AGRICULTURE CURRICULUM
ASSOCIATE DEGREE/CSU TRANSFER PATTERN

AS/CSU Community College Curriculum

SUBJECT	<i>Freshman 1st Semester</i>	<i>Freshman 2nd Semester</i>	<i>Sophomore 1st Semester</i>	<i>Sophomore 2nd Semester</i>
Technical Core	AG 315 * Intro to Agriculture	Career Path Core Option	Career Path Core Option	Career Path Core Option
Technical Core	Career Path Core Option	Career Path Core Option	Career Path Core Option	Career Path Core Option
Technical Core Elective	Career Path Core Option	Career Path Core Option	Elective	
General Education	English Comp	Communications Analytical Thinking	GE Humanities	Elective
General Education	Guidance	GE Activities	GE Activities	Elective
General Education	Health Education	GE Math	GE Natural Science	GE Social Science
Work- Place Learning	Work Experience Minimum 6	Work Experience	Work Experience	Work Experience

Minimum competency must be demonstrated in Reading, Written Expression, Mathematics, as referred to in the Specific College Graduation Requirements.

Successful completion of additional courses for the Intersegmental General Education Transfer Core Curriculum will GE certify the lower division B.S. requirements for UC and CSUC

Successful completion of additional courses for the CSUC Transfer Core Curriculum will GE certify the lower division B.S. Requirement for CSUC.

Minimum 62 units completion for the Associate in Science (A.S.) Degree (30 units must be in Agriculture)

Appendix D
*Ornamental
Horticulture
Grids*

AGRICULTURAL EDUCATION TECH PREP
Career Pathways Core Lists

Career Pathway

A List

B List

Agricultural Business

Ag Business 1

Ag Business 2

Agricultural Mechanics

Ag Mechanics 3
*Power & Machinery
 or Metal Fabrication
 or Ag Structures*

Ag Mechanics 4
*Power & Machinery
 or Metal Fabrication
 or Ag Structures*

Animal Science

Animal Science 1

Animal Science 2

Forestry & Natural Resources

Natural Resources 1
 Natural Resources 1

Forestry
 Natural Resources 2

Ornamental Horticulture

Ornamental Hort. 1
Nursery Industry

Ornamental Hort. 2
*Landscape Industry
 or Florist Industry*

Plant Science

Plant Science 1

Plant Science 2

Technical Elective C List

Ag Mechanics 1 or 2

Ag Mechanics 3 or 4

*Power & Machinery
 Metal Fabrication
 Ag Structures*

Ag Business or Ag Computers

Typing/Keyboarding

Ornamental Horticulture

Wildlife Production

Other Technical Courses related to the Career Pathway but not Agriculture:

- ie. Industrial Technology
 - Business or Computers
 - Foreign Language
 - Drafting or Mechanical Drawing
 - Environmental Studies

This list is to be used in advising students using the generic Tech Prep Grids

WORKPLACE LEARNING AND TECH PREP

Workplace learning is an integral part of all Tech Prep Programs in Agriculture. As such, the specific Tech Prep Grid allows for time in the school day for these activities in the Senior year. The remaining grids offer options that allow a student to be involved in Tech Prep and meet other personal and educational objectives. For these students, there may not be sufficient time within the school day to be involved with Workplace Learning. In both of these cases, workplace learning could occur after the school day is finished, on weekends, during vacations, and summer breaks.

Workplace learning begins in the Freshman year with Supervised Practical Experience opportunities which is also a requirement of Ag Tech Prep. These are often entrepreneurial enterprises and usually continue throughout High School. Paid Work Experience SPE usually commences during the Junior year and continues through college. This procedure is outlined in the Workplace Learning Guide, "Learning to Work - Working to Learn."

TECH PREP AGRICULTURE CURRICULUM ORNAMENTAL HORTICULTURE

TECH PREP

Secondary Curriculum

SUBJECT	Freshman	Sophomore	Junior	Senior
Technical Core	Agriculture 1 Core	Agriculture 2 Core or Intro to O.H.	OH 1 Nursery Industry	OH 2 Landscape or Floral Industry
Technical Elective	*Tech Prep Elective C List	*Tech Prep Elective C List	*Tech Prep Elective C List	*Tech Prep Elective C List
Math	Applied Math 1 (Math 1 Algebra 1)	Applied Math 2 (Math 2 Geometry)	Applied Math 3 (Algebra 2 Trigonometry)	Work Place Learning
Science	Applied Biology	Applied Biology or Chemistry	Applied Physics 1	Applied Physics 2
Communications	English 1	English 2 Applied Communications	English 3 Applied Communications	English 4 Applied Communications
Social Science	Social Studies	World History	U.S. History	Government Economics
P.E. Foreign Language	Physical Education	Physical Education	Fine Arts **	Work Place Learning

SECONDARY TECH PREP SEQUENCE FOR NURSERY/LANDSCAPE OR NURSERY/FLORAL INDUSTRY.
REQUIRED SEQUENCE 1 YEAR NURSERY INDUSTRY AND 1 YEAR OF LANDSCAPE OR FLORAL INDUSTRY
CONCENTRATION.

* *Tech Prep Electives possible with 7 period day*

***FINE ART CREDIT MAY BE AWARDED FOR CERTAIN AG COURSES.*

UC/CSUC acceptance of Applied Academics courses for Math, English, Biology, and Physics will determine student eligibility for admission

Depending on how closely the High School follows the Appropriate Curriculum, college credit may be awarded to successful completers.

TECH PREP AGRICULTURE CURRICULUM ORNAMENTAL HORTICULTURE

Traditional Agriculture

Secondary Curriculum

SUBJECT	Freshman	Sophomore	Junior	Senior
Technical Core	Agriculture 1 Core	Agriculture 2 Core or Ag Biology	OH 1 Nursery Industry	OH 2 Landscape or Floral Industry
Technical Elective	*Tech Prep Elective C List	*Tech Prep Elective C List	*Tech Prep Elective C List	*Tech Prep Elective C List
Math/ Humanities	Algebra A Math 1 (Algebra 1)	Algebra B Math 2 (Geometry)	Fine Arts ** _____	
Physical Science	Physical Science	*	*	*
Communica- tions	English 1	English 2	English 3	English 4
Social Science	Social Studies	World History	U.S. History	Government Economics
P.E.	Physical Education	Physical Education		

SECONDARY TECH PREP SEQUENCE FOR NURSERY/LANDSCAPE OR NURSERY/FLORAL INDUSTRY.
REQUIRED SEQUENCE 1 YEAR NURSERY INDUSTRY AND 1 YEAR OF LANDSCAPE OR FLORAL INDUSTRY
CONCENTRATION.

* *Tech Prep Electives possible with 7 period day*

***FINE ART CREDIT MAY BE AWARDED FOR CERTAIN AG COURSES.*

Minimum High School Graduation requirements

Ag Biology Accepted, allows for local graduation requirements differences

TECH PREP AGRICULTURE CURRICULUM ORNAMENTAL HORTICULTURE

College Prep/Tech Prep

Secondary Curriculum

SUBJECT	Freshman	Sophomore	Junior	Senior
Technical Core	Agriculture 1 Core	Agriculture 2 Core or Intro to O.H.	OH 1 Nursery Industry	OH 2 Landscape or Floral Industry
Technical Elective	*Tech Prep Elective C List	*	*	*Tech Prep Elective C List
Math/ Humanities	Math 1 (Algebra 1)	Math 2 (Geometry)	Math 3 (Algebra 2 Trigonometry)	Fine Arts **
Science' Technical Elective	*	Biology	Chemistry	*
Communica- tions	English 1	English 2	English 3	English 4
Social Science	Social Studies	World History	U.S. History	Government Economics
P.E. Foreign Language	Physical Education	Physical Education	Foreign Language	Foreign Language

SECONDARY TECH PREP SEQUENCE FOR NURSERY/LANDSCAPE OR NURSERY/FLORAL INDUSTRY.
REQUIRED SEQUENCE 1 YEAR NURSERY INDUSTRY AND 1 YEAR OF LANDSCAPE OR FLORAL INDUSTRY
CONCENTRATION.

** Tech Prep Electives possible with 7 period day*

****FINE ART CREDIT MAY BE AWARDED FOR CERTAIN AG COURSES.**

Fulfills Requirements for UC/CSUC Admission from H.S.

TECH PREP AGRICULTURE CURRICULUM ORNAMENTAL HORTICULTURE

COLLEGE TECH PREP/SPORTS

Secondary Curriculum

SUBJECT	Freshman	Sophomore	Junior	Senior
Technical Core	Agriculture 1 Core	Agriculture 2 Core or Ag Biology	OH 1 Nursery Industry	OH 2 Landscape or Floral Industry
Foreign Language/ Humanities	Tech Prep Elective C List	Foreign Language	Foreign Language	Fine Arts **
Math/ Physical Science	Math 1 (Algebra 1)	Math 2 (Geometry)	Math 3 (Algebra 2 Trigonometry)	Chemistry
Additional Technical Electives	*	*	*	*
Communica- tions	English 1	English 2	English 3	English 4
Social Science	Social Studies	World History	U.S. History	Government Economics
P.E. Foreign Language	Physical Education	Physical Education	Physical Education	Physical Education

SECONDARY TECH PREP SEQUENCE FOR NURSERY/LANDSCAPE OR NURSERY/FLORAL INDUSTRY.
REQUIRED SEQUENCE 1 YEAR NURSERY INDUSTRY AND 1 YEAR OF LANDSCAPE OR FLORAL INDUSTRY
CONCENTRATION.

* *Tech Prep Electives possible with 7 period day*

***FINE ART CREDIT MAY BE AWARDED FOR CERTAIN AG COURSES.*

Fulfills Requirements for UC/CSUC Admission from H.S. with Ag Biology Credit

Sports Option

TECH PREP AGRICULTURE CURRICULUM ORNAMENTAL HORTICULTURE

Ag Mech Option

Secondary Curriculum

SUBJECT	Freshman	Sophomore	Junior	Senior
Technical Core	Agriculture 1 Core	Agriculture 2 Core or Biology	OH 1 Nursery Industry	OH 2 Landscape or Floral Industry
Technical Elective	Ag Mechanics 1	Ag Mechanics 2	*	Ag Mechanics 3
Math/ Humanities	Math 1 (Algebra 1)	Math 2 (Geometry)	Math 3 (Algebra 2 Trigonometry)	Fine Arts **
Science	*	*	Chemistry	*
Communications	English 1	English 2	English 3	English 4
Social Science	Social Studies	World History	U.S. History	Government Economics
P.E. Foreign Language	Physical Education	Physical Education	Foreign Language	Foreign Language

SECONDARY TECH PREP SEQUENCE FOR NURSERY/LANDSCAPE OR NURSERY/FLORAL INDUSTRY.

REQUIRED SEQUENCE 1 YEAR NURSERY INDUSTRY AND 1 YEAR OF LANDSCAPE OR FLORAL INDUSTRY *

Tech Prep Electives possible with 7 period day

****FINE ART CREDIT MAY BE AWARDED FOR CERTAIN AG COURSES.**

Fulfills Requirements for UC/CSUC Admission from H.S. with Ag Biology Credit

Ag Mechanics Option

AGRICULTURAL EDUCATION TECH PREP

COMMUNITY COLLEGE AGRICULTURE TECHNICIAN PROGRAMS

The technician programs in Agriculture include an extended period of specialized training beyond high school, but less than that required for a Bachelor of Science. An individual in the technician program will acquire the skill and ability to make practical application of his/her theoretical knowledge in performing specific tasks in the production of goods and services in agriculture and related fields.

Certificates are awarded to students in technical programs in recognition of completion of specified requirements which indicate proficiency. All certificate core courses must be passed with a "C" grade or better.

The technician programs are as follows:

Agricultural Business Pathway

Agricultural Sales, Service Technician

Agricultural Mechanics Pathway

Agricultural Mechanics Technician

Animal Science Pathway

Artificial Insemination Technician

Forestry and Natural Resources Pathway

Forestry Technician

Recreation Land Management Technician

Ornamental Horticulture Pathway

Commercial Floristry Technician

Landscape Design Technician

Landscape and Park Maintenance Technician

Nursery Production Technician

Plant Science Pathway

Agricultural Laboratory Technician

Food Processing Technician

TECH PREP AGRICULTURE CURRICULUM

COMMERCIAL FLORISTRY TECHNICIAN CERTIFICATE

CFT *Community College Curriculum*

SUBJECT	<i>Freshman 1st Semester</i>	<i>Freshman 2nd Semester</i>	<i>Sophomore 1st Semester</i>	<i>Sophomore 2nd Semester</i>
Technical Core	AG 315 * Intro to Agriculture	OH 212 * Floriculture	AG-EC 200* Ag Accounting	
Technical Core	OH 210 * Intro to Ornamental Horticulture	SPCOM 102 *	BUSAD 257 *	BUSAD 258 *
Technical Core	OH 280 * Beginning Floral Design	OH 281 Advanced Floral Design	OH 282 Flower Shop Management	OH 383 * Flower Shop Internship
General Education	AG-EC 225 * Ag Computers	GE Social Science _____	Communications Analytical Thinking _____	
General Education	Guidance	GE Activities _____	GE Activities _____	GE Humanities _____
General Education	English Comp _____	GE Math _____	Health Education _____	GE Natural Science _____
Work- Place Learning	Work Experience Minimum 6	Work Experience	Work Experience	Work Experience

*Specific Technician Certificate Requirements, Total Core units required - 46

Minimum competency must be demonstrated in Reading, Written Expression, Mathematics, as referred to in the Specific College Graduation Requirements.

Successful completion of additional courses for the Intersegmental General Education Transfer Core Curriculum will GE certify the lower division B.S. requirements for UC and CSUC

Successful completion of additional courses for the CSUC Transfer Core Curriculum will GE certify the lower division B.S. Requirement for CSUC.

Minimum 62 units completion for the Associate in Science (A.S.) Degree (30 units must be in Agriculture)

TECH PREP AGRICULTURE CURRICULUM
LANDSCAPE DESIGN TECHNICIAN CERTIFICATE

LDT *Community College Curriculum*

SUBJECT	<i>Freshman 1st Semester</i>	<i>Freshman 2nd Semester</i>	<i>Sophomore 1st Semester</i>	<i>Sophomore 2nd Semester</i>
Technical Core	AG 315 * Intro to Agriculture ARCH 100* Intro to Architecture	OH Core * Option	ARCH 131 * or ARCH 331 *	OH Core * Option
Technical Core	OH 210 * Intro to Ornamental Horticulture	OH Core * Option	OH 215 * Landscape Design	OH Core * Option
Technical Core	OH 202 * or OH 201 * Plant ID	OH 202 * or OH 201 * Plant ID	OH Core * Option	OH Core * Option
General Education	ARCH 110 * or ARCH 111 *	NR 200 * Soils <i>GE Natural Science</i>	ARCH 112 *	GE Social Science
General Education	Guidance	GE Activities	GE Activities	GE Humanities
General Education	English Comp	GE Math	Health Education	Communications Analytical Thinking
WorkPlace Learning	Work Experience Minimum 6	Work Experience	Work Experience	Work Experience

*Specific Technician Certificate Requirements

Minimum competency must be demonstrated in Reading, Written Expression, Mathematics, as referred to in the Specific College Graduation Requirements.

Successful completion of additional courses for the Intersegmental General Education Transfer Core Curriculum will GE certify the lower division B.S. requirements for UC and CSUC

Successful completion of additional courses for the CSUC Transfer Core Curriculum will GE certify the lower division B.S. Requirement for CSUC.

Minimum 62 units completion for the Associate in Science (A.S.) Degree (30 units must be in Agriculture)

Landscape Design Technician Certificate

Other Core Options:

Complete 18 units from the list below:

NR 222	Native Plant Identification - 3
OH 276	Park and Landscape Maintenance - 3
OH 278	Landscape Engineering - 3
ARCH 106	Materials of Construction or
ARCH 107	Materials of Construction Lab - 1,2
ARCH 151	Basic Design/Architectural
ARCH 152	Architectural Design 1 - 3
ENGR 101	Plane Surveying or
AG-M 230	Farm Surveying - 3,2
ENGTC 210	Introduction to CAD - 1
BOT 110	Plant Biology - 3
CMPSC 203	General Computer Literacy or
AG-EC 225	Agricultural Computer Applications - 3

Total Core Units Required for Certificate - 48-49

Total Core Units Required for A.S. Degree - 30

TECH PREP AGRICULTURE CURRICULUM

LANDSCAPE AND PARK MAINTENANCE TECHNICIAN CERTIFICATE

LPM *Community College Curriculum*

SUBJECT	<i>Freshman 1st Semester</i>	<i>Freshman 2nd Semester</i>	<i>Sophomore 1st Semester</i>	<i>Sophomore 2nd Semester</i>
Technical Core	AG 315 * Intro to Agriculture Guidance	OH Core * Option	OH Core * Option	OH Core * Option
Technical Core	OH 210 * Intro to Ornamental Horticulture	OH 202 * or OH 201 * Plant ID	OH 202 * or OH 201 * Plant ID	OH 215 * Landscape Design
Technical Core	AG 280 * Ag Computations	OH 276 * Landscape and Park Maintenance	AG 285 * Ag Communications	OH 278 Landscape Engineering
Technical Core	AG-M 200 * Ag Mechanics	AG-M 230 *	AG-M 222 * OH 220 * Turf Management OH Machinery	AG-M 215 * Tractors
General Education	OH Core * Option	NR 200 * Soils <i>GE Natural Science</i>	GE Social Science	GE Humanities
General Education	English Comp	GE Activities <i>2 units</i>	Health Education	Communications Analytical Thinking
WorkPlace Learning	Work Experience Minimum 6	Work Experience	Work Experience	Work Experience

*Specific Technician Certificate Requirements

Minimum competency must be demonstrated in Reading, Written Expression, Mathematics, as referred to in the Specific College Graduation Requirements.

Successful completion of additional courses for the Intersegmental General Education Transfer Core Curriculum will GE certify the lower division B.S. requirements for UC and CSUC

Successful completion of additional courses for the CSUC Transfer Core Curriculum will GE certify the lower division B.S. Requirement for CSUC.

Minimum 62 units completion for the Associate in Science (A.S.) Degree (30 units must be in Agriculture

Landscape and Park Maintenance Technician

Core Options:

Student must complete ten units from the following:

AG-EC 280	Agricultural Sales and Service - 3
AG-EC 200	Agricultural Accounting and Analysis - 4
AG-M 230	Farm Surveying - 2
AG-M 215	Farm Tractors - 2
NR 230	Recreational Land Management - 3

Total Core Units Required for Technician Certificate - 53

Total Core Units Required for A.S. Degree - 30

**TECH PREP AGRICULTURE CURRICULUM
LANDSCAPE AND PARK MAINTENANCE
TECHNICIAN CERTIFICATE**

NPT *Community College Curriculum*

SUBJECT	<i>Freshman 1st Semester</i>	<i>Freshman 2nd Semester</i>	<i>Sophomore 1st Semester</i>	<i>Sophomore 2nd Semester</i>
Technical Core	AG 315 * Intro to Agriculture	AG-M 200 * Basic Ag Mechanics	AG-M 222 * OH 220 * OH Machinery Turf Management	OH Core * Option <hr/>
Technical Core	OH 210 * Intro to Ornamental Horticulture	AG 280 * Ag Computations	AG 285 Ag Communications	OH Core * Option <hr/>
Technical Core	OH 202 * or OH 201 * Plant ID	OH 202 * or OH 201 * Plant ID	OH 215 * Landscape Design	
AG Core General Education	PI-SC 200 * Plant Science <i>GE Natural Science</i>	NR 200 * Soils	AG-EC 200 * Ag Accounting	GE Social Science <hr/>
General Education	Guidance	GE Activities <hr/>	GE Activities <hr/>	GE Humanities <hr/>
General Education	English Comp <hr/>	GE Math <hr/>	Health Education <hr/>	Communications Analytical Thinking <hr/>
WorkPlace Learning	Work Experience Minimum 6	Work Experience	Work Experience	Work Experience

*Specific Technician Certificate Requirements

Minimum competency must be demonstrated in Reading, Written Expression, Mathematics, as referred to in the Specific College Graduation Requirements.

Successful completion of additional courses for the Intersegmental General Education Transfer Core Curriculum will GE certify the lower division B.S. requirements for UC and CSUC

Successful completion of additional courses for the CSUC Transfer Core Curriculum will GE certify the lower division B.S. Requirement for CSUC.

Minimum 62 units completion for the Associate in Science (A.S.) Degree (30 units must be in Agriculture)

Nursery Production Technician Certificate

Core Options

Core Options six units required:

Students must take one of the following:

Plant Science or
Agricultural Economics or
Agricultural Mechanics course - 3

and at least one of the following:

OH 212 Floriculture Crop Production or
OH 276 Park and Landscape Maintenance or
OH 278 Landscape Engineering - 3

Total Core Units Required for Technician Certificate - 47

Total Core Units Required for A.S. Degree - 30

**TECH PREP AGRICULTURE CURRICULUM
ORNAMENTAL HORTICULTURE ASSOCIATE DEGREE/
CSU TRANSFER PATTERN**

OHAS

Community College Curriculum

SUBJECT	<i>Freshman 1st Semester</i>	<i>Freshman 2nd Semester</i>	<i>Sophomore 1st Semester</i>	<i>Sophomore 2nd Semester</i>
Technical Core	AG 315 * Intro to Agriculture	NR 200 * Soils	OH Core * Option _____	OH Core * Option _____
Technical Core	OH 210 * Intro to Ornamental Horticulture	OH Core * Option _____	OH Core * Option _____	OH Core * Option _____
Technical Core Elective	OH 202 * or OH 201 * Plant ID	OH 202 * or OH 201 * Plant ID	GE Natural Science _____	GE Social Science _____
General Education	English Comp _____	Communications Analytical Thinking _____	GE Humanities _____	Elective _____
General Education	Guidance _____	GE Activities _____	GE Activities _____	Elective _____
General Education	Health Education _____	GE Math _____	Elective _____	
WorkPlace Learning	Work Experience Minimum 6	Work Experience	Work Experience	Work Experience

*Specific Technician Certificate Requirements

Minimum competency must be demonstrated in Reading, Written Expression, Mathematics, as referred to in the Specific College Graduation Requirements.

Successful completion of additional courses for the Intersegmental General Education Transfer Core Curriculum will GE certify the lower division B.S. requirements for UC and CSUC

Successful completion of additional courses for the CSUC Transfer Core Curriculum will GE certify the lower division B.S. Requirement for CSUC.

Minimum 62 units completion for the Associate in Science (A.S.) Degree (30 units must be in Agriculture)

Appendix E
State Model Curriculum
Order Sheet

Agriculture Learning Activities Packets

The University of California, Davis is pleased to offer a diverse group of Learning Activity Packets (LAPS) for individualized instruction. These packets include student and teacher manuals. Most packets are available in Spanish and/or English, and are sold separately. The LAPS are written at a low reading level (4th to 5th grade) and are particularly good for sheltered agriculture courses, junior high school, and students who are learning handicapped.

Items	Quantity in English	Quantity in Spanish	Unit Price	Total Amount
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EXPLORING ANIMALS

Sheep			\$20.00	
Wildlife			\$15.00	
Poultry			\$20.00	
Animal Science			\$20.00	
Small Animal			\$15.00	
Dairy Cattle			\$15.00	
Beef			\$20.00	
Swine			\$15.00	
Horses			\$15.00	

EXPLORING PLANTS

Vegetable Crops			\$20.00	
Field Crops			\$20.00	
Ornamental Horticulture			\$20.00	
Tree Crops			\$20.00	
Plant Science			\$20.00	
Forestry			\$20.00	

OTHER SUBJECTS

Agriculture and Society				
Careers in Agriculture				
FFA				
Supervised Occupational Experience				

Subtotal from Page 2	\$
Subtotal from Page 1	\$
ORDER TOTAL	\$

Send completed order form, along with school purchase order or check. (Make checks payable to The Regents of the University of California.) Mail completed order to:

Agriculture Model Curriculum Project
 Agriculture Education Program
 Dept. of Agronomy and Range Science
 University of California
 Davis, CA 95616

Curriculum Office (916) 752-8002
 J. Leising (916) 752-1808
 FAX (916) 752-4361

Model Curriculum Order Form

Name:	School:
School District:	Phone:
Address:	
City:	State: Zip:

Items	Disk Version Price	Disk Types Avail	Specify Disk Type	Disk Qty. Wanted	Printed Version Price	Printed Qty. Wanted	Total Amt.
Agriculture Model Curriculum Guide					\$15.00		

LESSON PLANS

Basic Core (9th & 10th grades)	\$30.00	DOS or Mac			\$80.00		
First Year Basic Core Lab Manual					\$10.00		

ADVANCED CLUSTERS

Animal Science	\$30.00	DOS or Mac			\$60.00		
Plant & Soil Science	\$30.00	DOS or Mac			\$60.00		
Ag. Mechanics	\$30.00	DOS or Mac			\$60.00		
Ag. Business Management	\$30.00	DOS or Mac			\$60.00		
Integrated Agriculture Biology Syllabus & Resource Materials					\$60.00		
Forestry					\$80.00		
Natural Resources & Rural Recreation					\$80.00		

OTHER MATERIALS

Animal Health Core Curriculum					\$80.00		
International Infusion Packet					\$15.00		
California Vocational Agriculture Record Book Manual					\$7.00		
California Vocational Agriculture Record Book Problems					\$7.00		

*\$

* Subtotal (Shipping included; sales tax not required)
Please carry subtotal to previous page

Appendix F
Tech Prep Curriculum
Order Sheet

**Central Valley Consortium
Agriculture Education Tech Prep
Order Form**

ITEM	UNIT COST	QUANTITY REQUESTED	TOTAL
A Project Overview	\$3.00		
Advisory Committee Manual	\$3.00		
Articulation Guide	\$3.00		
<i>Choose Agriculture and Win</i> A Recruitment Guide	\$3.00		
Counseling and Guidance Guide	\$3.00		
Curriculum Guides (Supplements to the State Frameworks)			
Agribusiness	\$3.00		
Agricultural Mechanics	\$3.00		
Animal Science	\$3.00		
Forestry & Natural Resources	\$3.00		
Ornamental Horticulture	\$3.00		
Plant & Soil Science	\$3.00		
<i>Getting a Job and Keeping It</i> A Placement Guide	\$5.00		
Integration of Academics Guide	\$5.00		
<i>Learning to Work -- Working to Learn</i> A Workplace Learning Guide			
Portfolio Guidelines for Grade 13-14	\$3.00		
Program Assessment and Certification Guide	\$3.00		
<i>Special Needs Not Different People</i> A Special Needs Populations Guide	\$3.00		
Student Tracking and Follow-up Guide	\$3.00		
Targeted Occupations in Agriculture Guide	\$3.00		
The Role of Student Assessment in Tech Prep	\$3.00		
TOTAL (Prices Include Tax & Shipping)			

<p style="text-align: center;"><u>Make Checks or Purchase Order Payable to:</u></p> <p style="text-align: center;">Stanislaus County Office of Education Agriculture Education Tech Prep 801 County Center III Court Modesto, CA 95355 For Information: (209) 525-5020</p>	<p style="text-align: center;">Ship to:</p> <p>School: _____</p> <p>Attention: _____</p> <p>Street: _____</p> <p>City: _____</p> <p>State: _____</p> <p>Zip: _____</p> <p>Phone: _____</p> <p>Your Purchase Order#: _____</p>
MATERIALS MAY NOT BE DUPLICATED FOR COMMERCIAL PURPOSES	

