

MERRITT COLLEGE

LANDSCAPE HORTICULTURE PROGRAM REVIEW
SPRING 2010

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Landscape Horticulture Program Review

2. The Landscape Horticulture department, one of the largest horticultural facilities in Northern California, offers a comprehensive vocational education program. The Landscape Horticulture Department was one of the original departments offering courses when the college opened in 1965 on the old Grove Street campus. Landscape Horticulture (formerly ornamental horticulture) is a broad field that is concerned with the production, care, sale, installation, and use of both edible and landscape plants. Our focus is on both sustainability as well as conservation of our natural resources. As with all other vocational education programs, we prepare students for a broad range of careers. The program offers both certificates and a degree curriculum. Students can earn an associate of science degree and up to 4 specialized certificates, including the newly offered Permaculture Certificate. In order to accommodate all students both daytime and evening courses are offered. Approximately 32-35 unit classes are offered each semester along with 10-12 fee based classes. The Dept. has maintained an average enrollment of 985 students per semester over the past 3 years. The Department has always been able to keep abreast of the latest trends in horticulture be it a specialization in native plant design or drought tolerant landscaping, design classes using the latest computer software or Permaculture. The Department is looking forward to expanding its outdoor nursery and propagation area, adding much need space for the landscape design classes as well as implementing classes in tissue culture.

3. Curriculum

3-1 The curriculum is constantly evolving as the needs of the industry change and as both environmental and social issues around landscaping change as well. Closing the feedback loop with our current and former students is essential in keeping us abreast of the latest trends. As the needs of our students change we review our course curriculum and make changes as necessary, dropping old courses and writing new ones. The following is a listing of all our courses and their respective dates:

Listing of courses and dates of most recent course outline update. All courses are scheduled for an update every three years and this will be facilitated by using Curricunet.

<u>Course</u>	<u>Date of Outline</u>
LH 1/1E Introduction (D/N)	Fall 2006
LH 2 Trees	Spring 2010
LH 2E Trees (N)	Spring 2010
LH 3 Ground Covers	Spring 2007
LH 3E Ground Covers (N)	Spring 2007
LH 4 Shrubs	Spring 2010
LH 4E Shrubs (N)	Spring 2010
LH 5A Fall Native Plants	Spring 2010

LH 5B Spring Native Plants	Spring 2010
LH 5EA Fall Native Plants (N)	Spring 2010
LH 5EB Sp. Native Plants (N)	Spring 2010
LH 6A Fall Herbaceous Plants	Spring 2010
LH 6B Sp. Herbaceous Plants	Spring 2010
LH 6EA Fall Herbaceous Plants (N)	Spring 2010
LH 6EB Sp. Herbaceous Plants (N)	Spring 2010
LH 7 Conifers	Spring 2007
LH 7E Conifers (N)	Spring 2007
LH 8 Turf	Spring 2007
LH 8E Turf (N)	Spring 2007
LH 9A/C Sketch-up Pro	Spring 2009
LH 10 Insects	Spring 2010
LH 11 Plant Diseases	Fall 2007
LH 12 Weeds	Fall 2007
LH 13 Arboriculture	Spring 2010
LH 13E Arboriculture (N)	Spring 2010
LH 14 Land. Construction	Fall 2007
LH 14E Land. Construction (N)	Fall 2007
LH 15 Botany for Hort.	Fall 2004
LH 16 Soil Management	Spring 2010
LH 17 Irrigation	Fall 2007
LH 17E Irrigation (N)	Fall 2007
LH 18A Landscape Design	Spring 2007
LH 18B Landscape Design	Fall 2007
LH 19 Plant Nutrition	Fall 2010
LH 20 Houseplants	Fall 2000
LH 21 Hort. Equip.	Fall 2000?
LH 22A Land. Design Lab	Spring 2007
LH 22B Land. Design Lab	Spring 2007
LH 23 Plant Termin. (D/N)	Spring 2010
LH 24 Plant Propagation	Spring 2010
LH 25 Nursery Management	Fall 2006
LH 26 Pruning	Spring 2010
LH 27 CAD Clinic	Fall 2010
LH 28A-D Permaculture	Fall 2010
LH 29 Planting Design	Fall 2007
LH 30 JoineryStructures for Hort. Const.	Spring 2010
LH 31 Site Operations	Spring 2007
LH 32 Design w/Native Plants	Spring 2010
LH 33A-B Design Eval.	Fall 2002
LH34 CAD A-C	Fall 2010
LH 35A/C Advanced Design	Fall 2005
LH 36 A/C Natural Building	Spring 2010
LH 38 Native Plant Habitats	Spring 2005

LH 39 Plant Materials Review	Spring 2007
LH 40 Med. Plants	Spring 2007
LH 40E Med. Plants (N)	Spring 2007
LH 45A-C Mushroom Cultivation	Spring 2009
LH 46 Cycles of Land Use	Spring 2010
LH 47 Dams to Greywater	Spring 2010
LH 48OJ Crop Production	Spring 2003
LH 48OV-OX Freehand Drawing	Fall 2007
LH 50 Plant Tax. (lec)	Spring 2007
LH 50L Plant Tax. (field)	Spring 2007
LH 51A-C Nat. Lands. Intrprt. (N)	Spring 2010
LH 52A-C Special Proj. Plant Prop	Spring 2010
LH 54 IPM	Fall 2008
LH 55 History of Gardens	Spring 2010
LH 56A/C Regenerative Design	Spring 2010
LH-57 Aesthetic Dynamics in Design	Spring 2010
LH 201 Land Maintenance Practices	Fall 2002
LH 202 A-D Soils Lab	Fall 2007
LH 203 Greenhouse Op. & Mgmt.	Fall 2002
LH 204 Flori/Greenhse Prod. & Hydro.	Fall 2006
LH 205 All About Roses	Spring 2002
LH 206 Land Maint. Bus Prac (N)	Spring 2003
LH 207 Sp. Projects in Lanht.	Fall 2006
LH 208A/C Growing/Using Herbs	Spring 2009
LH 209 Irrigation Troubleshooting	Spring 2007
LH 210 A/C Land Design Forum	Spring 2008
LH 211A/C Beneficial Beasts	Spring 2009
LH 220 Edible Landscaping	Fall 2002
LH 248 NM/MO Chem. For Garden	Spring 2008
LH 248 NP Soil Management Bay Gardens	Spring 2009
LH 501 Urban Gardening	Fall 2002

3-2 Curriculum review

Courses are reviewed and evaluated by all faculty, both full time and hourly. Courses are updated every 3 years as to keep their content current and SLO clear. Proposed courses are discussed at faculty meetings and with the department chair as to their content and appropriateness. We maintain an open communication with other departments as well as other schools to ensure that our courses are again appropriate and effective in preparing students for both transfer and a professional career. Meetings with other departments and schools are arranged as needed.

3-3 Curriculum improvement

The department and faculty keep in contact with quite a few of our graduates. Their feedback is helpful in assessing both the appropriateness and effectiveness of our courses. New ideas for classes are brought to us all the time and we are constantly updating our course offerings. A new certificate in Permaculture has just been approved and there are at least three others in process. We have also discontinued programs in horticultural therapy and turf management as the need greatly diminished.

Our course outline updates ensure that the most current textbooks or CD's listings have been updated and the outlines presented to the college curriculum committee for approval, and then to the district curriculum committee for final approval. VATEA recommendations are incorporated into the course revisions as needed. We also look at all our prerequisites, co-requisites and recommended preparations to ensure that students are prepared for these classes and modify as necessary. Validation dates are included on the first page of each outline. Using our Advisory Board we also are able to keep abreast of industry needs and standards for our graduates.

3-4 SLO

Every new class which is written as well as any class which is being updated or revised has SLO as part of the course outline. This process has enabled us to have over 50% of our classes with SLO. We are currently maintaining a list of all our courses that have SLO in order to facilitate the remaining classes as quickly as possible. Additionally, assessment tools are being evaluated for each of these classes in order to close the assessment loop.

3-5 Program Outcomes

COMMUNICATION

The Landscape Horticulture program is committed to promoting clear and precise verbal, oral, and graphic communication among instructors and staff, between students, and in the classroom. It is our goal to understand our audiences, be sensitive to the greater context and implications of inter-personal exchanges, and stay focused on the overall purpose of each communication. We strive to attain this goal in our classes through the use of written essays, oral presentations, graphic products, class discussions and debates, internet groups, and assigning state-of-the-art readings.

CRITICAL THINKING

The Landscape Horticulture program is committed to promoting clear critical thinking and problem solving as necessary and required parts of our curriculum, and our day-to-day operations. We are similarly committed to helping empower our students to develop creative and practical approaches and solutions to the issues they will face as professionals and citizens. We strive to attain this goal through incorporating critical thinking exercises and techniques in each of our classes, through active classroom discussions, and through addressing the issues that arise in our field with a national and global perspective.

QUANTITATIVE REASONING

The Landscape Horticulture program is committed to promoting college-level mathematical reasoning in our courses, and to empower our students to develop theories and reach empirical conclusions. We do this through the use of chemistry calculations in our Soils classes, trigonometry and geometry in Design classes, hydraulic calculations in Irrigation classes, structural calculations in Construction classes, and more.

CULTURAL AWARENESS

The Landscape Horticulture program is committed to promoting cultural awareness in our classes, and recognizing the importance of diversity in our department, in our professional, and in the make up of our cities, state and country. We do this by studying past and present landscapes in our Garden History class, by exploring the links between culture and landscape in Design classes, by visiting urban, rural, and natural areas to study the interaction of people and place in our Field Studies classes, and by recognizing the cultural history and value of plants worldwide in our Introduction and ID classes.

CIVIC ENGAGEMENT AND ETHICS

The landscape horticulture program is committed to promoting responsible citizenship and ethics as key parts of our curriculum. We do this in all our classes by covering laws, codes, licensing, and professional ethics, by promoting ecologically sustainable principles, by stressing the value of environmental stewardship, by undertaking community outreach programs, by taking on design work for underfunded public institutions, and by forming liaisons with public agencies (parks, EBMUD).

INFORMATION AND COMPUTER LITERACY

The landscape horticulture program is committed to promoting information technology as a key ingredient in learning, professional life, and citizenship. We do this by incorporating smart classroom technology in each of our classrooms, by teaching CAD programs (Vectorworks and Sketchup), by using the Web as a learning resource, by providing Internet access to our facility, by forming Yahoo groups to allow students,

staff, and instructors to stay connected, and by inviting software vendors to demonstrate new programs.

3-6 Recommendations and Priorities

We are on track to keep all our curriculum current and relevant. All curriculum is being reviewed on a three year cycle and during this process SLO will be incorporated as an integral part of both these and new courses. We are striving to move ahead with newly planned curriculum to reflect current industry needs and trends in the work place. New and innovative courses are constantly being introduced as well as new fee based classes. Curricular changes which are being considered include:

- Separating out Landscape Design from Construction and having two distinct certificates.
- Offer advanced classes in both Landscape Construction and Irrigation.
- Revising the groundcovers class to include a section on turf or making turf a short term class.
- Revitalizing the Nursery Management certificate with input from the nursery industry.
- Expanding the Permaculture Certificate to include an intermediate and advanced certificate.
- Offer a certificate in Native Plants Design, Maintenance and Restoration.
- Revise both the Interior Horticulture class as well as the Horticultural Equipment Operation, Maintenance and Repair class to reflect current needs.
- Add classes in Urban Forestry with a possible certificate.
- Revise the Landscape and Parks Maintenance certificate to include additional landscape maintenance courses.
- Offer additional classes in Plant Propagation such as Tissue Culture.

We are hoping to restructure our facility to accommodate these new courses and programs. Proposed changes include new classrooms, a student center with an enlarged library and food service, building and planting project areas, extended growing grounds, outdoor classrooms, and more. As new programs are developed and as we reflect on our existing programs, program level outcomes need to be developed keeping in mind the institutional learning outcomes. We pride ourselves on being the premier Horticulture program in the Bay Area. We strive to keep that leadership position through our continued program innovation which is in concert with industry and community organizations. Even through these severe financial times, it is important to keep evolving our curriculum in order to meet and anticipate student needs in preparing themselves for a changing environment.

4. 1. Describe effective and innovative strategies used by faculty to involve students in the learning process. How has new technology been used by the department to improve student learning?

Our instructors use a wide range of teaching methods and techniques to involve students in the learning process, including lectures, oral reports, cooperative learning exercises, slide shows, labs, guest speakers, field trips, community outreach projects, building, planting, and pruning workshops on our 7 acre grounds, model making, graphic and verbal reports, seminars and discussions, webcasts, and more.

We have established these teaching methods after nearly 40 years experience as a department. Our three full-time faculty members have a cumulative 60 years of work experience, and our part-time instructors (around 22) share 300+ years of experience. In addition, we regularly update our course outlines, copies of which are kept by the department, the office of instruction, and by the articulation officer. The course outlines reflect the requirements of transfer institutions and are frequently reviewed by the department staff for relevancy. Their currency is reflected in our up-to-date texts, readers, databases and audio-visual materials, which we also coordinate with other schools.

Here are some highlights:

- Many of our classes are split between lecture (instructor presents material to class) and labs (students work with the information as individuals and in groups). All of our part-time faculty and two of our three full-time faculty currently work in the landscape profession, and are thus able to create lab projects that speak directly to skills and techniques used in the field. For example, our LH14 Landscape Construction labs, supervised by a licensed C-27 Landscape Contractor, have built arbors, fences, decks, patios, retaining walls, and stairs on the Landscape Horticulture grounds. Our Natural Building labs have created outdoor ovens, green roofs, potting sheds, and walls made of recycle materials. Our Introduction to Horticulture labs have planted extensive parts of our 7 acre grounds with trees, shrubs, vines, and groundcovers. Our Pruning and Arboriculture classes have pruned hundreds of trees on our grounds, and for under-funded public enterprises such as the Oakland Zoo and the Lake Merritt Garden Center.
- Our plant identification classes make extensive use of web data on plant culture, visual characteristics, places of origin, commercial availability, and more. Such data has grown enormously in the past five years, and allows students to stay current with the latest nursery innovations and introductions.
- Our faculty members regularly bring in guest speakers from the landscape industry to address a wide range of topics. For example, in LH210 (Landscape Design Forum), speakers in the past five years have included a member of the Californian Landscape Technical Committee (supervises professional licensing), the marketing director of Bamboo Pipeline (a large plant supply and delivery service), the owners

of the Computer Plant Database software *Plantmaster*, the manager of the Urban Farmer (supplies site work materials), the owners of several large landscape contracting firms, Association of Professional Landscape Designers (APLD) presidents, experts on California's new Water Efficient Landscape Ordinance (WELO), and many more.

- We have developed our own horticultural library, internship programs, bonsai, pruning and propagation clubs, urban community gardening projects and other cooperative ventures with community gardens and organizations to reinforce the classroom learning experiences.
- All of our field and laboratory classes encourage cooperative learning in gathering data, arranging field walks and group cooperation in activities such as permaculture projects, plant propagation laboratory exercises, urban community gardening projects, landscape design exercises, planting, turf installation and pruning projects in the community.
- Many of our course topics and formats, plant databases, slide and digital image collections, and field trip classes serve as models for other Bay Area horticultural programs.
- Our 7.5-acre horticulture facility has been given official arboretum status, with a very large accession file of plant materials for use in instruction, and as a source for all classes covering plant material.
- All of our faculty take advantage of "smart classroom" technology such as digital images, LCD projection, overhead digital presenters (document cameras), DVDs, and web access. We have assigned a laptop computer, an LCD projector, and a document camera to each classroom, and all of our rooms have wireless or cable Internet access. Presently our instructors are beginning to incorporate Moodle to allow their students to access pertinent class materials on-line.

Our 5 greenhouses are all automated utilizing a Micro-Step Computer System designed by Wadsworth Control Systems. These operate the heating and cooling systems for the greenhouses. Our propagation house also has the Biotherm system of hot water bench heating for plant propagation.

Classes such as Soils and Plant Nutrition have access to LaMotte soil testing kits as well as Hydroponic systems for plant nutrient observations. Our Plant Diseases, Insects, and Weeds classes have access to both dissecting and compound microscopes.

4.2. How does the department maintain the integrity and consistency of academic standards within the discipline?

Our courses adhere to the strict set of standards outlined in our class syllabi. We use the same texts and readers for multiple sections of the same course, and share the same audio-visual materials. Our faculty interacts on a regular basis regarding what we are doing in our courses, especially when dealing with multiple sections of the same course. For example, the plant identification instructors regularly meet to share field trip information, slides and digital images, database sheets, and coordinate class content surrounding the introduction of new plant species to the nursery trade, and the elimination of out-of-date species. Our landscape design instructors meet to review course outlines, evaluate teaching methods, and insure that topics are covered thoroughly, and with minimal overlap.

While the department maintains a standard grading policy, instructors are encouraged to modify it as appropriate. Instructors include grading policies in all their class syllabi, and explain such criteria to each class.

4.3. Discuss enrollment trends of your department. What is the student demand for specific courses? How do you know? What do you think are the salient trends affecting enrollments?

Since 2003 our enrollments have increased from 748 (2004) to 1258 in 2008. The number of master sections has increased from 26 (2004) to 43 (2008). While demand seems to be increasing for all of our course offerings, two program areas that are in especially strong demand are landscape design and permaculture. Our landscape design offerings are especially broad compared to similar programs in California community colleges (14 design classes, 3 construction and irrigation classes), and the introductory classes fill quickly, sometimes within days, and have long waiting lists. Moreover, many former students (some from as far back as 20 years ago) regularly sign up for new design classes.

Enrollment trends in permaculture are also strong with classes regularly filling to over capacity every semester. Summer classes as well as additional sections have been added to accommodate the increasing numbers of students.

The popularity of these two programs is likely related to the rapid growth of green technologies in the past 5-10 years. Water conservation, low flow irrigation, regional plants and materials, recycled products, green roofs, LEEDS certification, and storm water management represent some of the increasingly popular “green” trends in the landscape profession. These areas will be defining elements for the coming generation of professionals, and will push the landscape profession into a role of greater prominence than it ever has ever seen before, both on the local and global levels. We have every reason to believe that our enrollments will continue to grow accordingly.

4.4. Are the courses scheduled in a manner that meets student needs and demand? How do you know?

The Landscape Horticulture Department works to accommodate students by offering classes at a wide range of days and times. Courses required for the certificate program are offered on a revolving basis as both day and evening classes to enable both day and evening students the coursework necessary for graduation. Students can access class offerings going five years forward through the Department's printed class scheduling chart to plan their academic progress.

We offer:

- a full range of daytime classes, from 9am-6pm, Monday - Friday.
- evening classes four days a week. Our evening classes typically run from 6:30pm-9:30pm rather than 7-10, to allow our evening students, most of whom are working, to get home at an earlier hour.
- intersession classes (between semesters)
- Saturday classes
- short term classes (12 weeks, 3-4 Saturdays, Saturday-Sunday, single day)
- summer school classes
- fee based classes
- weekend and week-long field trip classes

4.5 Recommendations and priorities

- Renovate and remodel facility in order to accommodate the continued increase in student enrollments. Such improvements include two additional classrooms, a student center and courtyard, a new propagation and growing area, outdoor classrooms, staging areas for class labs, and building and planting sites for class labs.
- Promote new courses and non-traditional courses with brochures and advertising, to reach out to a wider community of potential students.
- Increase the computer capabilities of the department in order to offer CAD classes in-house, and make computers available for student use.
- Increase funding for laboratory supplies and equipment in order to keep abreast of the latest technologies and maintain our strong reputation as a leader in the field.
- Collect information on student transfers both in and out of our department, to evaluate enrollment trends and student preferences.
- Collect information on job placement and career development from students who have graduated from our department.
- Continue to encourage students to complete certificate requirements through faculty out-reach, departmental publications, and by making potential employers aware of our training.

- Explore outreach to community organizations for possible internship funding.
- Establish better liaisons with DSPS, EOPS, Counseling, and the Learning Center, to assure that students with specific needs are not falling through the cracks.
- Increase classified staff in order to better utilize the 7.5 acres for student instruction, maintain the greenhouses, and support our arboretum status.
- Hire fourth full-time faculty member, as there are over 20 adjunct faculty currently teaching in the department.

5. Student Success

5.1 Describe student retention and program completion (degrees, certificates, persistence rates) trends in the department. What initiatives can the department take to improve retention and completion rates?

Retention rate: Our retention rate of 81% indicates that we are quite successful in keeping students who start our program. The Departments average baseline retention rate for Fall 04-07 is 66% while the College average retention is 72%. The dramatic increase in Fall 08 reinforces the fact that our students are serious about their educational pursuits and stay with their course work until completion.

Course completion rate: Our course completion rate for Fall 08 was 73%. Previously, the average Department Fall completion rate for the last 4 years was 58%. The colleges course completion average was 60%. We have a low drop out rate which is consistent with student success in our program.

Certificate completion rate: We have awarded 78 certificates from 2005/06 through 2007/08. This indicates that students are completing the courses required to demonstrate professional qualifications. Though impressive, this number does not truly reflect our success rate. We are a vocational program, and most of our students come to us to acquire on-the-job skills rather than to obtain a certificate or diploma. Our students are much older than the college average (47% of our students are 35-54 years old) and nearly the same percentage already has a bachelor's degree or better. Unlike students fresh out of high school, many of our students have families, jobs, travel commitments, and other middle-age lifestyle circumstances that prevent them from completing certificate requirements. Many of them take classes from us on a selective basis, in order to get training in a specific area, such as irrigation, construction, pruning, soils, or plant identification, subjects which can help them immediately on their jobs. In most classes, about two-thirds of the students are coming directly from work or are going there right afterwards. Certification may not be their primary goal. We are working to change this; please refer to "Program Completers" section which follows later.

Department Initiatives to improve retention and completion rates:

In order to improve both retention and completion rates the department has initiated a number of strategies.

- All faculty email addresses are posted on our faculty information board.
- Faculty cell phones, when available, are also listed on our faculty information board.
- E-mail addresses of all students are kept in the office in order to be able to contact students and reply quickly to their concerns.
- Office phone is given out to every student and published on our web page and when it is called a live person answers!
- Dept. chair visits every class and assures students that their concerns and suggestions are taken seriously and that he is available to them.
- Faculty are encouraged to contact students who miss more than one class to see if they can help if possible.
- Staff is available for students who are interested in volunteer opportunities in the greenhouses or on the grounds.
- Internships and Scholarships are also available to students. These opportunities increase student success by providing practical hands-on learning which supplements the academic principles learned in class.
- Lastly and maybe most importantly, faculty come early and stay late in order to ensure that all students are given the opportunities they need in order to succeed.

5.2 What are the key needs of students that affect their learning? What services are needed for these students to improve their learning? Describe the department's efforts to access these services. What are your department's instructional support need?

Key Needs of Students

- **Orientation and Ongoing Help and Guidance:** The Department Administrative Assistant provides day-to-day assistance for student orientation and guidance. Faculty offer individualized course load planning, program certificate options and career counseling. We also hold a yearly Department Night where we describe our program in all its facets to new students, where teachers introduce themselves and their classes to new students, and where the students can mix informally with the instructors and ask questions.

- **Facilities for Teaching** (parking, studio space, laboratory facilities, greenhouses, nursery, and landscape facilities)

Providing adequate facilities to accommodate students is an ongoing challenge in the department. Existing facilities often do not provide adequate space for accommodating large numbers of students and do not allow the department to offer more than 3 classes on-site at a time. There are 35 parking spaces. In the evenings and whenever there are more than two classes being offered there are over 70 cars.

- **Tutoring and Mentoring:** Individual assistance in mastering course materials is a challenge for many students. We provide the following services to supplement in-class learning:
 - 1) we encourage our teachers to identify the top students in each class, and those students experiencing difficulty with the material, and try to pair them up for tutoring purposes
 - 2) teachers refer students to tutors on the main campus. For example, the teacher of the Computer Assisted Design class referred students with basic computer questions to tutors in the computer lab.
 - 3) full and part time teachers maintain office hours to work with students (full-time faculty hold 5 hours/week; part-time faculty hold 1/2 hour per class per week)
 - 4) teachers encourage students to form study groups to prepare for exams and projects
 - 5) teachers often print out their lecture notes to give to students who have trouble taking notes in class, or need to move at a slower pace.
 - 6) teachers have let students take exams at the Learning Center on main campus if they need extra preparation time, or test taking time, due to learning difficulties.
 - 7) faculty are increasing using web based programs to post class information.

- **Practical Hands-on skills and practice:** In order to compete successfully in the horticulture and landscape industries, students must be able to demonstrate practical skills and applications. Classes in horticulture and landscape design and construction offer both academic and hands-on practical skills in horticulture, construction, and drafting. Also, we run a Pruning Club, where students share knowledge, and engage in pruning activities on the campus, public parks, the zoo, and other under funded institutions.

- **Safety:** The horticulture facility being an outdoor lab presents a set of unique challenges in the areas of health and safety. The safety issues involved in the lab control lab size. The facility itself has its own set of health/safety issues being that it is an outdoor lab area.

- **Creative scheduling:** In order to reach the widest audience possible, including many individuals who have full time day jobs, the department works to accommodate students by offering classes at a wide range of days and times. Please see 4.4 for further details.

- **Internet and Library services.** The department currently offers a computer with internet access available to students at all times. We also maintain a department library of close to 4,500 books, magazines, journals, and pamphlets. We regularly add books sent by academic publishers, and accept donations of books each year from former students and private benefactors. This collection is for in-house use only. Our students have access to the Merritt College main library and

there are numerous nearby public libraries, such as the Environmental Design Library, the Forestry library, and the Life Sciences Library on the UC Berkeley campus, as well as the Oakland, Berkeley, and nearby public libraries.

- **Financial Assistance:** Some students need financial assistance to cover fees and books. In addition to college financial aid our department publicizes numerous scholarships funded by trade organizations (Northern California Turf Council, California Native Plant Society, the California Association of Nurserymen, and more) to deserving students
- **Job Placement.** As a vocational program we actively help our students find employment by providing the following services:
 - 1) a job board (updated on a daily basis) listing opportunities offered by contractors, public institutions, parks and recreation departments, golf courses, homeowners, non-profits, and many other groups in need of employees or short or long term assistance.
 - 2) we maintain a job file listing our students skills, in order to match them up with prospective employers.
 - 3) many teachers refer students to employers, and write letters of reference for students applying to jobs
 - 4) many employers (parks and recreation departments, cities, golf courses, contractors, nurseries, landscape architects, tree services) send their employees to our department for advanced training

Services Needed for students to improve their learning.

- **Personnel and Student Assistants:** Existing staffing is not sufficient to maintain or develop current facilities.
- **Parking:** Carpooling is encouraged but often students cannot find a place to park and must go closer to the main campus.
- **Facility** was built in the late 70's and as such there is a dire need for the renovation of classrooms, greenhouses, and landscape facilities. Student Needs include student meeting spaces for study and small groups. Since the Department is physically separated from the rest of the campus, students do not have adequate space to study or for meetings especially between classes as there is no sheltered space for students.
- **Providing students with more hand-on experience:** Especially for classes held at night it is a challenge to provide students with the practical hands-on skills needed in horticulture.
- **Additional student accessible computers:** Currently only one computer is accessible for all students to use.

- Formation of closer ties of faculty and students with industry employers, mentors, and Department Alumni.

Departments efforts to access these services

The department has funded several instructional aides out of funds generated by fee based classes. We will continue to expand our fee based offerings which will supply much needed funding for instructional aides.

Collaborations will need to be developed with community partners in order to both develop and maintain the grounds surrounding the classrooms which are an integral part of the students hands-on experiences.

Additional parking outside the facility in the area of the tennis courts will need to be assessed in order to allow more students access to the facility.

Saturday labs might need to be incorporated as part of the evening classes in order to provide these students with the much needed hand-on experiences.

Classroom renovation is essential in order to bring technology into the classrooms and the construction of a new landscape design oriented classroom is also essential. A student computer area would be incorporated into this building.

Outreach to industry in an advisory capacity is essential.

Department's instructional support needs

Personnel: As we have 5,000 sq. ft. of both greenhouse and lath house to maintain as well as the remaining 7.5 acres. The Department needs a full time lab technician to help maintain our 7.5 acres and greenhouses to better meet existing needs not currently met, and to be able to meet the Permaculture, Nursery Management, Arboretum, and Native Plant certificates and degrees program efforts. The greenhouses themselves need a part-time permanent 20 hours/week lab technician. The grounds are simply overwhelming and a facility of this size and current usage by 2000+ students, staff, faculty, and community members, would have a minimum of 4 full time gardening staff assigned to maintain the entire grounds and a full time greenhouse manager.

Student Assistants: We employ a significant number of student assistants as the labs need more than one pair of eyes and hands to help. We currently employ 6 student aides and could easily use 10. In certain situations we will be able to increase the number of students in a lab if we know there will be student assistants available.

5.3 Describe the department's effort to assess student learning at the course level. Describe the efforts to assess student learning at the program level. In which ways has the department used student learning assessment results for improvement?

Departments Efforts to Access Learning at the Course level

Our students earn good grades. In 2008-09, of total students, 39.6 % get A's, while only 7% get C's or lower. 14% receive a Credit (CR) grade, an indication that for many students, the acquisition of skills is more important than a letter grade (only 4% receive a No Credit). These grade and credit numbers indicate that our students are doing excellent work.

Student Learning Outcomes for every course have been recently completed and the next step will be developing course rubrics for learning assessment.

Department efforts to assess student learning at the Program level.

We have awarded 146 certificates over four year period (1998-2002), and 78 certificates from 2005/06 through 2007/08. This is evidence that students are successfully completing our program. As explained previously, these numbers will rise as we promote our certificate options.

Our main indicator of student success at the program level are the numerous jobs and job promotions that students get after going through our program. Our students report significant improvement of their job performance in areas of plant identification and selection, design and graphics, pest management, pruning, propagation, cost estimating, business practices, and all the other skills we teach. While we do not have specific employment data, our students have made it clear that they come to us to get job training, and do not take or stay in classes that are not useful to them; our high enrollment numbers, retention rate and completion rate, suggest that we are meeting their needs. Again, we are a vocational program and our success is best measured by how well we help our students find jobs, receive job promotions, or increase the scope of their services; in all three areas we appear to be doing an outstanding job. Based on job placements, there seems to be a very active market for our students. Our job placement consistently has more jobs than students. Recent graduates have a very successful job placement rate.

In which ways has the department used student learning assessment results for improvement?

Currently, individual instructors make ongoing adjustment to class presentations, laboratories, projects, and exams to improve student learning. Once rubrics have been established for each course and statistical learning assessments are made then additional changes will be made to improve student learning of key objectives and learning outcomes.

Recommendations and Priorities

1. Continue to refine and promote Landscape Horticulture site and facilities Renovation Plan for classrooms, greenhouse, and landscape facilities for possible Measure A Funding.
2. Promote and ongoing development of new internship and volunteer programs and policies to better manage existing students and provide new opportunities for practical student learning.
3. Develop course Rubrics for each class for statistical surveys of student learning assessment.
4. Reconstitute the Landscape Horticulture Advisory committee to include members from the horticulture and landscape industries, community representatives, Department alumni, and student representatives.
5. Establish a Landscape Horticulture Alumni Association to help with Department recruitment, retention, and support.
6. Establish better ties with Landscape Horticulture industry as potential employers and internships for students.
7. Collect information on student job success while students are taking classes and after they graduate. The Department will develop an exit survey and follow-up survey to gather more accurate data on job placement upon completion.
8. Continue to promote the Landscape Design Seminar. Also, re-establish Career Night especially for new students by inviting professionals to share about opportunities in the fields of landscape and horticulture.

6. Human and Physical Resources

- Currently there are 3 full time faculty members and over 20 part time instructors who teach approximately 60% of our classes (excluding fee based). Additionally there are 2 full time classified staff and one part time permanent staff. The department employs student aides and work study students and also offers internships and volunteer opportunities for both students and community members.
- Our facilities, which are on 7.5 acres, include 3 classrooms, 5 greenhouses, tool room, lath house, outdoor nursery area, and misc. storage facilities including soil bins, etc. Equipment includes everything from horticultural hand tools and power tools to chain saws, gas gator and a tractor. Students in labs utilize most of the grounds, the greenhouses, lath house, nursery area, as well as all of the equipment.
- Restricted budgets have barely kept pace with the cost of replacing or repairing old equipment. Advancements in technology have not been forthcoming in the classrooms and new methods of plant propagation such as tissue culture cannot be explored. The development of the grounds has also been severely limited by both the lack of funding as well as the necessary personnel.

Staffing needs include:

- A full time instructor to decrease the dependency on part time instructors.
- A full time science lab technician to help maintain the 7.5 acres.
- A part-time permanent 20 hours/week science lab technician to help maintain the greenhouses.

Facility needs include:

- Upgrade to electrical throughout the dept.
- Improved ADA access to lab areas.
- Relocation of lath area to the back of facility as well as redesign and construct new nursery/propagation area.
- Rebuilding of all wooden gates surrounding the facility.
- Repair of all leaking water main valves around the facility.
- Complete overhaul of HVAC systems.
- Removal/relocation of refrigerator from H-105.
- Installation of white boards along with current blackboards.
- Enlarge present restrooms to accommodate current student population.
- Installation of an outdoor shower for chemical decontamination.
- Renovation of greenhouse heating systems for propagation.
- Repair of greenhouse controls.

- Nursery carts for plant propagation.
- Pesticide storage sheds.
- Chairs/Tables/Lamps for Horticulture library.
- Additional desks for students in H108/H101
- New drafting tables and chairs for H-105.
- Ceiling mounted audio visual for all classrooms.
- Improve the signage on the grounds to illustrate plant materials.
- Add to the plant materials collection for plant materials classes.
- Improve the access on all paths throughout the facility for students in lab classes.
- Restripe parking lot and reconfigure tennis courts and surrounding area to accommodate additional parking for students.

Recommendation and Priorities

Increase classroom space in order to serve more students and continue the growth in classes such as landscape design and permaculture. Drawings have already been rendered.

Develop the outdoor nursery and propagation area to better serve students in all classes.

Reconfigure the parking at the tennis courts to accommodate student need.

Hire the additional staff necessary to serve the facility.

Remodel facility to bring in up to current student needs and technology advancements.

7. Community Outreach and Articulation

For vocational programs

7.1 Describe the department's connection with industry. Is there an Advisory Board or Advisory Committee for the program? If so, how often does it meet? Is the program adequately preparing students for careers in the field? How do you know?

The full time and adjunct horticultural instructors maintain close ties with the nursery and landscape industries. This provides good interaction concerning new

products and industry trends. All four of the faculty members who teach landscape design and construction (one full-time, three part-time) are active landscape professionals (one licensed landscape architect, two licensed landscape contractors, one APLD certified designer), with nearly 100 years of cumulative experience between them. Their professional expertise helps assure that their course material addresses the skills and techniques needed for “real-world” work. Many adjunct instructors are also practicing professionals in their respective specialties including nursery management, turf care, pest and disease diagnosis and control, arboriculture, and landscape design and installation. The Department’s staff includes the current President of the National Association of Landscape Designers, Certified Nurserymen and Arborists.

At the present time, the Landscape Horticulture Advisory Board is in the process of being reorganized. It will include professionals in the field of landscape design, construction, and horticulture as well as LH Department alumni and current students, community members and volunteers in order to insure a wide and diverse range of opinions and perspectives. We meet once a year to review our mission statement and evaluate ways to keep us directed towards our goals. A Merritt Landscape Horticulture Alumni Association is also envisioned to retain and better connect with department alumni, both for their potential support of the program, and as key resources in the field, who can augment the content taught in courses with professional experience and insights.

Our department’s Landscape Design Forum class (LH210) provides a direct conduit between design classes and the landscape profession and industry. The Forum regularly features industry speakers who address professional licensing, water conservation, contracts and legal issues, outdoor lighting, BA, MLA, and Extension programs in landscape architecture, cost estimating, recycled products, water harvesting, edible landscapes, nursery plant introductions, CAD and plant database software, and more. At these sessions speakers not only interact with students, but collect names and emails addresses for their data bases.

Judging from the occupations of alumni the program is more than adequately preparing students for careers in nursery management, garden and park maintenance, and garden design and construction.

Our department does not have official ties to specific employers. However, we regularly refer students to potential employers, and have helped place many design students in landscape architecture firms, city and county parks departments, internships with non-profit agencies, and more.

7.2 Have students completing the program attained a foundation of technical and career skills? How do you know? What are the completion rates in your program?

Students completing the basic certificate requirements for have obtained both academic learning and practical skills in horticulture through lecture and laboratory exercises. In order to successfully pass the basic courses of horticulture, plant pests and diseases, plant terminology and identification, students take not only written exams, but also practical laboratory exams which test the students practical knowledge of horticulture. The department had a 73% completion rate for Fall 08.

Students completing landscape design classes and certificates are held to the same high standards as those found in the professional world. Specifically these standards include the ability to produce high-quality graphic products, to conduct a thorough site analysis, show a knowledge of design principles, identify and evaluate landscape materials and installation techniques, and generate designs that respond directly to client needs. As previously stated, our design instructors are all practicing professionals, and are able to determine that their students are meeting these objectives in the following ways:

1. By assigning real-world projects on city properties, where students must address the same criteria facing a professional on a similar job. Such projects have included designs for Towata Park in Alameda, the Montclair Firehouse, the Oakland Zoo, Children's Fairyland, and portions of the Merritt College campus.
2. By evaluating professional projects that students bring to LH210 (Landscape design Forum class), or bring in during instructor office hours for informal review. The Forum, thorough weekly emails, reaches over 300 past and present students, offering them a way to stay in touch long after leaving school.
2. By soliciting feedback from clients (private individuals, owners of design firms, public agencies, non-profits, etc.) for whom our students prepare designs or go to work.
3. By conducting professional practice seminars in the Landscape Design Forum surrounding professional practice topics such as writing contracts, setting and collecting fees, working with clients, obtaining licenses, managing employees, and keeping records.
4. Through liaison with the five landscape design groups that have formed since the year 2000. These groups, the membership of which totals over 50, typically meet once a month to share professional concerns, evaluate each others designs, hear speakers, and provide support for one another's endeavors. Our instructors maintain contact with these groups, and some faculty members are in fact members.
5. Because of the highly interactive nature of our department, and because so many of our students take nearly every class in a particular area that we offer, we maintain close contact with our student body. We are able to stay in constant touch, provide frequent and timely feedback on how our students are faring in the professional world, and adjust our mission according to concerns that people voice.

7.3 What are the employment placement rates? Include a description of job titles and salaries. What is the relationship between completion rates and employment rates?

Currently no job employment rates are known as we do not track specific job numbers, and as previously stated do not have official ties to individual employers. The department is however planning to administer exit interviews and ongoing job questionnaires for program graduates. Moreover, a high percentage of our students – unofficially as much as 75% or more – are self-employed, and many take classes to develop, rather than start, careers. At any given semester we have over one hundred students enrolled in design classes, and these individual students typically go on to assume the following professional roles, and at the following approximate percentages:

- gardening, maintenance, or horticultural consulting work: 45%
- self-employed landscape designer 20%
- landscape design/build firm (may include C-27 Landscape Contractor's license) 15%
- works for non-profit, school, church, or other community group with specific design project (10%)
- landscape designer in a firm or nursery (7%)
- designs own home landscape (3%)

Starting hourly rates for self-employed designers are in the \$25-35/hour range, while individuals with 5+ years of experience generally charge \$60-90/hour or more. Individuals with 5-10 years of experience may earn salaries of around \$50-75K per year or more.

Starting hourly rates for designers in landscape firms start around \$16-20/hour. Individuals with 5-10 years of experience may earn around \$50-75K per year or more.

Design/builders with 5-10 years of experience can make significantly more money, depending not just on their technical knowledge but also their business skills. During a strong economy such individuals can make \$100-150K per year if well organized and motivated.

Retail nursery manager/owner, can make \$45K-60K; while garden and park maintenance workers, \$35K-50K and park ranger \$40K-55K.

As previously stated, we also have a student job board which has opportunities ranging from small scale maintenance jobs to positions of landscape responsibility with major institutions. We also have an internship board which enables current students to network for future career options as well as gain valuable practical skills.

7.4 What industry trends are most critical for the future viability of the program? How do you know? What are the implications of these trends for curriculum development and improvement?

One of the most important industry trends which is critical to the viability of the program is that of sustainability. As stated in section 4.3 above, emerging trends in the landscape design and construction profession include water conservation, low flow irrigation, regional plants and materials, recycled products, green roofs, LEEDS certification, and groundwater recharge. These trends currently receive huge amounts of coverage wherever one looks: at industry trade shows, in horticulture magazines and newspaper articles, in legislation such as the new Water Efficient Landscape Ordinance (WELO), in East Bay MUD newsletters and publications (such as its book *Plants and Landscapes for Summer-Dry Climates*), in Leeds certification classes, in steady shifts to xerophytes in wholesale and retail nursery inventories, in public lectures, workshops, and symposiums such as those put on by the Garden Conservancy and Mediterranean Garden Society, in irrigation manufacturer catalogs such as Railbird and Toro, in the merging field of water harvesting, and more.

Our department is committed to keeping up with all these trends, and wherever possible, helping to set the pace. Our landscape design classes promote the use of regional and recycled materials, groundwater recharge methods, and low water-use plants. Our irrigation instructor has adjusted his approach to focus on low-flow such as in-line drip, low-flow rotors, and smart controllers. Our Landscape Design Evaluation of Bay Area Landscapes class studies regional design examples such as Portola Valley Ranch, where all 800 acres are planted with regional California natives, tours LEED certified buildings with cisterns, recycled water, and green roofs, and visits reuse centers such as the Richmond Greenwaste Recycle Yard.

Additionally, the Department has recently created a Permaculture Certificate Program, one of only a few which exists at the community college level in the U.S. This certificate will provide a foundational understanding and the practical skills necessary for graduates to successfully compete in a changing industry.

Increasingly, all courses taught in the Landscape Horticulture Department will include elements of sustainability, looking at the impact and effect of plants, gardens, the nursery, landscape construction and designs fields from a wholistic, sustainable point of view. Some course descriptions will need to be rewritten, new classes on sustainability added, and existing courses refined to incorporate sustainable principles and practices into the curriculum.

For transfer programs

Describe the department's efforts in meeting with and collaborating with local 4-year institutions. Is the program adequately preparing students for upper division course work. How do you know?

We are currently working out an articulation agreement with the University of California which will allow students to receive transfer credit to UCs College of Environmental Design for 6 of our landscape design classes (LH18A, 18B, LH22A, LH22B, LH33, and LH48OV). Students from Merritt routinely waive plant ID classes when they transfer to the UC Department of Landscape Architecture, and some even are hired to teach plant classes at UC when they attend as graduate students. The Department of Landscape Architecture also routinely refers students to Merritt to take plant ID, irrigation, and construction classes.

We have also had nearly thirty of our landscape design students transfer to landscape architecture graduate programs at Harvard, UC Berkeley, UC Davis, the University of Virginia, the University of Michigan, the University of Oregon, the University of Washington, Cal Poly Pomona, the University of Arizona, and more.

Some students have transferred to Cal-Poly, UC Davis and even Harvard's Landscape Architecture program. Students come from as far away as San Jose, Livermore, Tracy, Napa, and Stockton, as well as every neighboring county to take classes at Horticulture. When asked how students find us the most common answer is "everyone knows that if you want to learn Horticulture, Merritt is the only place to go!"

For all instructional programs:

1. The primary avenues we use to ensure that our department responds to the needs of our constituencies include student feedback, recommendations from our Advisory Board, advice from colleagues in the field, professional guest speakers, and the deep professional skill of our faculty. We maintain close ties with both present and past students, and their feedback is essential to our currency. A steady stream of guest speakers visits our classes, providing up-to-the-minute information on emerging technologies and trends. Moreover, nearly every one of our three full-time and 22 part-time instructors works in the landscape profession in some capacity: landscape architecture, contracting, consulting, nursery operations, maintenance, research, community development, and much more. The perspective these individuals bring to the classroom helps assure that our students are learning state-of-the-art information regarding the profession they are about to enter.

2. There are no other programs within the Peralta district that offer similar courses provided in the Landscape Horticulture certificate and Degrees Program. Safety issues in labs as well as space considerations restrict lab enrollments. As a result we are seeking support and funding to limit lab (only) enrollment size to 20-25, and to employ a consistent lab aide. In the last few years we have expanded into Permaculture, which seems to have tapped a very popular student base. Our Permaculture classes have regularly drawn upwards of 50 students per class. As a result, we have just approved our first Certificate in Permaculture and several classes are cross-listed with the Environmental Management Program. Additionally, our Landscape Design Certificate and program continue to be extremely popular and our instructors are continually assessing the curriculum and writing new course work. Lab space, which is primarily drafting tables, limits the enrollment in this program that usually closes within a few days of registration. We are also looking to use Measure A to construct a new landscape design classroom as well as a student library and environmental management classroom in place of H101 which is a portable and one of the original buildings at Horticulture.

Classes that are proving to be under enrolled are being either deactivated or modified through the sequence and frequency of scheduled offerings. Others are being converted to fee based.

The Nursery Management Certificate and program is about to be reworked and updated, as our new faculty hire has most of his experience in nursery work. The addition of a tissue culture lab will greatly enhance the Nursery Management Certificate, which will then better match the current industry needs in this area. We have already submitted a Measure A request to support the construction of a tissue culture lab. In addition, we are seeking funding for curriculum development to pay to support this effort. Also under development is an outdoor propagation area where students can have the room to propagate plants. Funding support is needed for planning and development.

Given the popularity of both Native Plants and drought tolerant plants, we want to pursue developing curriculum and an H Building planting and maintenance allocation, culminating in several new Native Plants certificates by Spring 2010. We are requesting curriculum development funding to implement and complete this need as well as funding for plant materials.

The Department has recently established new policies and programs for student internships and volunteers. Previously, no formalized program existed for managing the many students who are seeking opportunities for additional practical training in horticulture. Now students will work along with volunteer propagators, and the Department grounds staff on all aspects of greenhouse and landscape maintenance and plant propagation in addition to helping with marketing and the operation of the Department's twice yearly plant sales.

We are in the process of reconstituting our advisory committee to reflect industry as well as homeowner needs. We hope this new committee will assist in giving us a more focused direction. With the help of faculty, staff, volunteers, students etc. we will formulate an updated mission statement. We also plan to reinstitute a career day, where professionals from the nursery and landscape industry discuss job training and career opportunities with students

The Department also sponsors a Design Forum Seminar in which all students have the opportunity to learn from and interact with successful landscape professionals, and to learn about new developments and products in the industry.

One of our goals is to improve the Horticulture facility to the level that it can become an educational Arboretum and gain national recognition and status. It can then provide the students, staff, faculty, and community the opportunity the experiences of a living laboratory. Funding for additional staff for maintenance and expansion is necessary to meet this goal.

While our program is well known throughout the area, we are constantly striving to put our name out in the community. We have several community programs and partnerships, which are proving to be very rewarding to all parties involved. Several classes are presently taught in the community. Most local nurseries know about our program, recommend us to their customers and employ our graduates.