

Ornamental Horticulture Technology

APRC 2005-2006

section 1 of 2


MSU

Department of HORTICULTURE

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DEPARTMENT OF HORTICULTURE
Michigan State University
A222 Plant & Soil Sciences Building
East Lansing, MI 48824-1325

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Please send your comments to Ms. Sandy Allen allens@msu.edu



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Department of HORTICULTURE

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 Duck, Marcus
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 Flore, Jim
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 Loescher, Wayne
 Lownds, Norm
 McLellan, Mary
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 Ngouajio, Mathieu
 Perry, Ronald
 Peterson, Diane
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Saylor, Jesse
 Schutzki, Robert
 Sink, Ken
 Snapp, Sieglinde
 VanNocker, Steven
 Warner, Ryan
 Widders, Irvin
 Zabadal, Thomas
 Zandstra, Bernard

 Emeritus Professors

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DEPARTMENT of HORTICULTURE

Ronald L. Perry, Chairperson

The subject of horticulture was first taught at the Agricultural College of the State of Michigan in a combined Department of Botany and Horticulture in 1858. The Department of Horticulture at MSU, the first such department at an institution in the United States, began as an independent department with its first chairperson, Liberty Hyde Bailey in 1883. The department is administered by the College of Agriculture and Natural Resources. Horticulture is a complex and integrative discipline encompassing the biological, physical, and management sciences and the arts to improve plant production and management, enhance human health, provide personal enrichment, and improve the environment. Horticulture includes high value woody and herbaceous ornamentals, fruits, vegetables, and other plant species. Horticultural crops and their uses connect agricultural producers, consumers, society, and the environment. With over 160 majors in our four-year program and nearly 100 students in our two-year Institute for Agricultural Technology, we have one of the largest undergraduate horticulture programs in the US. We offer two areas of concentration for our four-year students: general horticulture and landscape design, construction and management. Additionally, a certificate program administered by the Institute of Agricultural Technology is offered in the field of horticulture and in the field of landscape and nursery management. All of our programs require an internship experience. Our undergraduate curriculum is continuously reviewed and evaluated for opportunities to introduce new concepts, practices, and technologies, and to ensure that the curriculum is well-integrated with practical and hands-on experiences and internships to help students develop problem solving skills in management, design, science, and technology. Students will have opportunities to enroll in courses online, courses which are integrated with outreach/extension programs (on and off campus) and 1- and 2-credit-module courses offered in 5 and 10- week periods. Students are also extensively involved in professional and social activities beyond the classroom: working in research laboratories; assisting in landscape, greenhouse, garden, and nursery operations; running the Horticulture Club's very popular annual spring garden show; and participating in academic and field events associated with the Associated Landscape Contractors of America and the Mid-American Collegiate Horticultural Society. Our classrooms, computer access, and laboratory facilities are housed in a state of the art Plant and Soil Sciences Building. Other facilities include the award-winning Horticultural Demonstration Gardens, the nationally recognized 4-H Children's Gardens, the Lewis Arboretum and the Horticulture Teaching and Research Center (HTRC) on south campus. Our newly established student organic farm is located at the HTRC where 10 acres are devoted to a Community Supported Ag (CSA) farm where students gain practical experience and produce food for CSA members.

UNDERGRADUATE PROGRAM

Horticulture is the science and art concerned with the culture, marketing, and utilization of high-value intensively cultivated plants. Horticultural crops are diverse, including both annual and perennial species, both food and ornamental plants, and plants grown both outdoors and in controlled environments. Horticultural foods and food products, flowers, and landscapes sustain and enrich our lives. The primary horticulture discipline areas include

floriculture (flowers), landscape horticulture (trees and shrubs), olericulture (vegetables), and pomology (fruits).

Graduates with a major in horticulture may enter a broad range of challenging and rewarding professional careers in production, management, marketing, education, consulting and service industries, or research. In addition, graduates frequently become entrepreneurs or obtain employment in horticultural business enterprises (e.g., commercial production operations, landscape companies, nurseries, retail flower shops, or fruit and vegetable markets). Graduates may also pursue careers in nontraditional areas that require a knowledge of horticulture such as secondary education, the publication industry, or international development.

The academic study of horticulture is by its nature highly integrative. The undergraduate program combines scientific knowledge, knowledge of technology, and problem-solving skills for application in various professions related to horticulture. Students in horticulture study such diverse fundamental disciplines as physical science (chemistry), biological sciences (botany, genetics, plant physiology, entomology, and plant pathology), environmental science (soil science), and business science (economics, management, and marketing). Communication and computer skills are also cultivated within the horticulture curriculum. Students complete either the General Horticulture concentration or the Horticulture Landscape Design, Construction, and Management concentration. In both concentrations, students obtain hands-on experiences through laboratory exercises in the greenhouses, in the horticulture gardens, or at the Horticulture Teaching and Research Center. Field trips expose students to successful horticultural businesses, industries, and support services within Michigan. Students may gain professional work experience through internships, independent study, and part-time employment in research and extension programs within the Department of Horticulture.

Students who are enrolled in the Bachelor of Science degree program with a major in horticulture may elect a Specialization in Agricultural and Natural Resources Biotechnology. For additional information, refer to the *Specialization in Agricultural and Natural Resources Biotechnology* statement.

Requirements for the Bachelor of Science Degree in Horticulture

- The University requirements for bachelor's degrees as described in the *Undergraduate Education* section of this catalog; 120 credits, including general elective credits, are required for the Bachelor of Science degree in Horticulture.

The University's Tier II writing requirement for the Horticulture major is met by completing Horticulture 404. That course is referenced in item 3. a. below.

Students who are enrolled in the Horticulture major leading to the Bachelor of Science degree in the Department of Horticulture may complete an alternative track to integrative studies in Biological and Physical Sciences that consists of the following courses: Plant Biology 105 and 106 and Chemistry 141, 143, and 161. The completion of Plant Biology 106 and Chemistry 161 satisfies the laboratory requirement. Plant Biology 105 and 106 and Chemistry 141, 143, and 161 may be counted toward both the alternative track and the requirements for the major referenced in item 3. below.

The completion of the College of Agriculture and Natural Resources mathematics requirement may also satisfy the University mathematics requirement.

- The requirements of the College of Agriculture and Natural Resources for the Bachelor of Science degree.

Certain courses referenced in requirement 3. below may be counted toward College requirements as appropriate.

- The following requirements for the major:

	CREDITS
a. All of the following courses:	28
CEM 141 General Chemistry	4
CEM 143 Survey of Organic Chemistry	4
CEM 161 Chemistry Laboratory I	1
CSS 210 Fundamentals of Soil and Landscape Science	3
HRT 203 Principles of Horticulture I	2
HRT 203L Principles of Horticulture I Laboratory	1
HRT 204 Plant Propagation	2
HRT 207 Horticulture Career Development	1
HRT 404 Horticulture Management (W)	3
HRT 493 Professional Internship in Horticulture	3
PLB 105 Plant Biology	3
PLB 106 Plant Biology Laboratory	1
b. One of the following two concentrations:	34 to 42
General Horticulture (34 credits):	

AGRICULTURE AND NATURAL RESOURCES

- (1) All of the following courses (16 credits):
- | | | |
|---------|--------------------------------------|---|
| CSS 350 | Introduction to Plant Genetics | 3 |
| ENT 404 | Insects: Success in Biodiversity | 4 |
| HRT 221 | Greenhouse Structures and Management | 3 |
| PLB 301 | Introductory Plant Physiology | 3 |
| PLP 405 | Plant Pathology | 3 |
- (2) Nine credits of designated production course work from an approved departmental list. A maximum of 6 credits of Horticulture 432 - 435L may be used to meet this requirement.
- (3) Three of the following courses (9 credits):
- Either Horticulture 401 or 480 must be used as one of the three courses used to satisfy this requirement.
- | | | |
|---------|---|---|
| CSS 451 | Biotechnology Applications for Plant Breeding and Genetics | 3 |
| HRT 401 | Physiology and Management of Herbaceous Plants | 3 |
| HRT 403 | Handling and Storage of Horticultural Crops | 3 |
| HRT 407 | Horticulture Marketing | 3 |
| HRT 480 | Woody Plant Physiology | 3 |
| HRT 486 | Biotechnology in Agriculture: Applications and Ethical Issues | 3 |
- Horticulture Landscape Design, Construction, and Management (42 credits):**
- (1) All of the following courses:
- | | | |
|---------|--|---|
| ATM 431 | Irrigation, Drainage and Erosion Control Systems | 3 |
| CSS 232 | Introduction to Turfgrass Management | 3 |
| HRT 210 | Nursery Management | 3 |
| HRT 211 | Landscape Plants I | 3 |
| HRT 212 | Landscape Plants II | 3 |
| HRT 311 | Landscape Design and Management Specifications | 4 |
| HRT 411 | Landscape Contract Management | 3 |
| HRT 480 | Woody Plant Physiology | 3 |
| LA 220 | Graphic Communication | 4 |
| LA 330 | Site Construction: Materials and Methods | 4 |
| MTH 116 | College Algebra and Trigonometry | 5 |
| PLP 407 | Diseases and Insects of Forest and Shade Trees | 4 |

GRADUATE STUDY

The Department of Horticulture offers graduate study leading to the Master of Science and Doctor of Philosophy degrees. Areas of study include: floriculture, landscape horticulture, pomology, and vegetable crops, with several areas of specialization according to the student's research interest.

The Department of Horticulture is affiliated with the Doctor of Philosophy degree program with a major in ecology, evolutionary biology and behavior. For information about a Doctor of Philosophy degree program that involves ecology, evolutionary biology and behavior and a major in the Department of Horticulture, refer to the statement on the doctoral program in ecology, evolutionary biology and behavior in the *College of Natural Science* section of this catalog.

Students who are enrolled in Master of Science degree programs in the Department of Horticulture may elect a Specialization in Ecology, Evolutionary Biology and Behavior. For additional information, refer to the statement on the specialization in the *College of Natural Science* section of this catalog.

Students who are enrolled in Master of Science degree programs in the Department of Horticulture may elect a Specialization in Food Safety. For additional information, refer to the statement on the specialization in the *College of Veterinary Medicine* section of this catalog.

HORTICULTURE

Master of Science

In addition to meeting the requirements of the University and of the College of Agriculture and Natural Resources, students must meet the requirements specified below.

Admission

Students must have completed a Bachelor of Science degree or its equivalent in a plant related field, a basic course in horticulture, 15 credits in plant or soil sciences including plant physiology, and one course each in trigonometry, physics, and organic chemistry. Exceptions must be approved by the departmental Graduate Affairs Committee. Applicants lacking the necessary undergraduate background will be required to complete either collateral courses in addition to the requirements for the master's degree or a second Bachelor of Science degree with a major acceptable to the department.

Requirements for the Master of Science Degree in Horticulture

The student may elect either Plan A (with thesis) or Plan B (without thesis). A total of 30 credits is required for the degree under Plan A or Plan B.

The program of study for the Master of Science degree will include courses from departments other than the Department of Horticulture, but it should include at least 3 credits in the 800 series in horticulture in addition to research. For Plan A, at least 6 but not more than 10 credits of master's thesis research (Horticulture 899) is required. For Plan B, at least 2 but not more than 5 credits of research (Horticulture 898) is required. All programs of study are subject to departmental review.

A final oral examination on courses and research pursued during the program will be scheduled at the end of the student's final semester of enrollment.

Doctor of Philosophy

In addition to meeting the requirements of the University and of the College of Agriculture and Natural Resources, students must meet the requirements specified below.

Requirements for the Doctor of Philosophy Degree in Horticulture

An oral qualifying examination may be conducted by the guidance committee shortly after the student begins advanced graduate study to determine his or her qualifications and to provide a basis for developing the program of study.

At least 6 credits in the 800 series in horticulture are recommended. Three of the six credits may have been completed as part of master's degree requirements.

PLANT BREEDING and GENETICS— HORTICULTURE

The Department of Horticulture offers Master of Science and Doctor of Philosophy degree programs in plant breeding and genetics-horticulture. Students meet the requirements for admission and the requirements both for Horticulture, as specified above, and for Plant Breeding and Genetics, as specified in the statement on *Interdepartmental Graduate Programs in Plant Breeding and Genetics*.

MSU Landscape and Nursery Certificate

LANDSCAPE and LAWN MANAGEMENT PROGRAM

MSU Contact: Marcus Duck, Program Coordinator – (517) 355-5191 ext. 351; duckmarc@msu.edu
 GRCC Contact: Karen Holt, Counselor – (616) 234-4130; KHOLT@grcc.edu

GRAND RAPIDS COMMUNITY COLLEGE COURSES

Required - One of the following:*

BA 101	Business and Technical English I	3
EN 100	College Writing	3
EN 101	English Composition	3

*If pursuing Associate in Arts degree the EN series must be taken, since BA courses do not satisfy the AA degree

Required:

BA 103	Introduction to Business	4
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Required - Two courses from the following:

BA 156	Accounting Fundamentals	3
OR		
BA 256	Principles of Accounting I	4

BA 172	Sales	3
BA 174	Advertising	3
BA 183	Supervision	3
BA 270	Marketing	3
BA 283	Business Management	3

Required:

BI 103	General Botany	4
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Required:

BA 145	Computer Applications in Business	4
OR		
CO 151	Electronic Spreadsheet <i>and</i>	1
CO 153	Personal Computer Word Processing	1

Required - One of the following:*

MA 104	Elementary Algebra	4
MA 105	Basic Geometry	4
MA 107	Intermediate Algebra	3
TE 103	Mathematics	4
TE 104	Advanced Technical Mathematics	3

*NOTE: MA 003 may be a prerequisite for the above courses based on student's math background

MICHIGAN STATE UNIVERSITY COURSES (24 credits minimum)

Required:

HRT 213	Landscape Maintenance	2
HRT 211	Landscape Plants I	3
HRT 212	Landscape Plants II	3
HRT 214	Landscape and Turfgrass Business Operations	2
CSS 210	Fundamentals of Soil and Landscape Science	3
CSS 232	Intro to Turfgrass Management	3
ENT 110	Applied Entomology for Ornamentals & Turf	3
PLP 491	Plant Diseases	3

Required Internship:

AT 293	Placement Training	3
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Elective courses:

AT 290	Independent Study in Ornamental Horticulture	variable (1-4)
HRT 111	Landscape Planning and Design	3
HRT 218	Landscape Irrigation	3
HRT 475	Study Abroad	4

Other MSU HRT and CSS courses not listed here may also be offered and accepted as electives in the program. Course offerings are subject to change. Consult with the program coordinator.

Total credits to complete the MSU certificate:

48

4/27/04

LANDSCAPE AND LAWN MANAGEMENT PROGRAM
MSU COURSES (24 Credits Minimum)

Required Courses

- HRT 213 Landscape Maintenance** (Spring of Odd years) **2 credits**
Principles and practices involved in ornamental plant management. Plant growth and development related to pruning, fertilization, weed control, transplanting; specifications.
- HRT 211 Landscape Plants I** (Fall of Even years) **3 credits**
Identification, adaption and evaluation of trees, deciduous shrub, narrow-leaved evergreens, woody vines and herbaceous perennials. Emphasis on management and functional uses in landscape.
- HRT 212 Landscape Plants II** (Fall of Odd years) **3 credits**
Identification, adaptation and evaluation of flowering trees, deciduous shrubs, broad-leaved evergreens, woody vines, ground covers, bulbs and corms. Emphasis on management and functional uses in the landscape.
- HRT 214 Turf and Landscape Business Management** (Spring of Even years) **2 credits**
Organizing, marketing, and directing a business enterprise within the turf and landscape industry. Project estimating, bidding, and accounting. Practical hands-on learning using real-life examples and case studies.
- CSS 210 Fundamentals of Soil and Landscape Science** (Fall of Even years) **3 credits**
Management of soils based on physical and chemical properties and biological activity. Effect of soil properties on plant growth. Selection and use of various soil management techniques and fertilizers.
- CSS 232 Introduction to Turfgrass Management** (Spring of Odd years) **3 credits**
Turfgrass management principles, utilization, identification, and establishment. Exploration of turfgrass responses to various cultural practices.
- ENT 110 Applied Entomology for Ornamentals and Turf** (Fall of Even Years) **3 credits**
Arthropod pests of woody ornamentals and turf grasses.
- PLP 491 Plant Diseases** (Fall of Odd Years) **3 credits**
Diseases of woody ornamentals and turf grasses.

Internship:

- AT 293 Placement Training** **3 credits**
A supervised work experience in business and industry appropriate to the individual student's education and training. Contact program coordinator for more information.

Elective Courses: (4 credits minimum)

- AT 290 Independent Study in Ornamental Horticulture** (Fall, Spring, and Summer every year) **variable credits (1-4)**
An organized and planned learning experience developed by the student in cooperation with a faculty member in special studies, not part of regularly scheduled courses. Students *must* have approval from an instructor prior to enrolling for AT 290.
- HRT 111 Landscape Planning and Design** (Spring of Even years) **3 credits**
Landscape design techniques, plant selection, plant/site interaction, relationship between design and planning, construction materials and design specifications.
- HRT 218 Landscape Irrigation** (Spring of Even years) **3 credits**
Principles and practices in the design, installation and maintenance of irrigation systems for turfgrass and landscape plants. Design hydraulics, equipment selection, pump stations, water features, water quality and conservation
- HRT 475 Study Abroad** (Summer Semester) **4 credits**
This program introduces students to production agriculture, horticulture and turfgrass practices in England, Scotland, and Ireland. Field trips include visits to farms, gardens, food processing plants, agribusinesses, natural resource sites, golf courses, and other sports turf venues. The program also includes visits to many cultural and historical sites throughout the area.

GRCC Associate in Arts; Associate in Applied Arts & Sciences and MSU Landscape & Nursery Certificate LANDSCAPE & LAWN MANAGEMENT PROGRAM

This sheet outlines the requirements for:

- MSU-GRCC Landscape & Lawn Management Program (48 credits) *and*
- Associate of Applied Arts and Science (minimum of 66 credits) *and/or*
- Associate in Arts Degree (minimum of 68 credits)

WELLNESS EDUCATION ACTIVITY – 1 to 2 CREDITS Minimum of 1 credit and no more than 2 credits of WE for the AAAS or AA degree.

ENGLISH – 6 CREDITS

Choose one of the following tracks. It is recommended to stay within the same discipline; i.e., if taking BA 101 choose complementary BA 102.

BA 101 - Business and Technical English I 3 credits

BA 102 - Business and Technical English II 3 credits

OR

EN 100 - College Writing: Prerequisite: Competency in written English OR 3 credits

EN 101 - English Composition 1: Prerequisite: Competency in written English 3 credits

EN 102 - English Composition 2: Prerequisite: EN 100, EN 101 or equivalent 3 credits

If pursuing Associate in Arts degree the EN series must be taken, since BA courses do not satisfy the AA degree.

HUMANITIES – 6 CREDITS

Choose 6 credits (listed below are 3 credit classes). For a complete course list see GRCC catalog.

***Note:** 8 credits of humanities are required for an ASSOCIATE IN ARTS degree.

AT 105 - History of Art Before 1400

AT 106 - History of Art After 1400

AT 195 - Art History Abroad: (Formerly AT 115)

AT 270 - History of Architecture: (Formerly AT 206)

AT 271 - Modern Art: 1850-Present: (Formerly AT 208)

EN 233 - Poetry

EN 235 - Drama

EN 237 - Fiction

EN 242 - Popular Literature

EN 246 - Writing for Publication

EN 261 - Great American Writers 1

EN 262 - Great American Writers 2

EN 270 - Multicultural Literature

TH 248 - Introduction to Theater

HU 270 - Contemporary Arts and Ideas

HU 280 - The Art of Being Human

PL 201 - Introduction to Philosophy

PL 202 - Introduction to Logic

PL 205 - Introduction to Ethics

PL 209 - Business Ethics

MU 107 - Introduction to Music Listening

SOCIAL SCIENCES – 8 CREDITS

Choose from 2 or more disciplines, i.e., a PS and an EC course. All courses listed below are 3 credits. For a complete course list see GRCC catalog.

Required:

PS 110 - Survey of American Government

3 credits

Choose 2 additional courses from the following:

AN 201 - Introduction to Anthropology (Prerequisite: Soph. standing)

AN 205 - Introduction to Archaeology

AN 210 - Cultural Anthropology

AN 280 - The Culture and History of Native Americans

SS 120 - Introduction to Study of the Future

SS 220 - Women and Men in the Work Place

EC 251 - Principles of Economics 1

EC 252 - Principles of Economics 2 (Prereq: Soph. standing)

PS 200 - State and Local Politics

PS 202 - International Relations (Prereq: PS 110)

PS 215 - The Survey of Asian Politics

PY 201 - General Psychology

PY 203 - Applied Psychology (Prereq: PY 201)

PY 231 - Abnormal Psychology

PY 232 - Developmental Psych.: (Prereq: PY 201.)

PY 233 - Child Psychology: (Prereq: PY 201)

PY 234 - Adolescent Psychology: (Prereq: PY 201)

SO 251 - Principles of Sociology

SO 260 - Race & Ethnicity

SO 270 - American Families in Transition

SO 295 - Comparative Sociology

NATURAL SCIENCE/MATH – 8 CREDITS

Required:

CM 101 - Chemistry in the Modern World	4 credits
BI 103 - General Botany	4credits

BUSINESS – 14 CREDITS

Required:

BA 103 - Introduction to Business	4 credits
BA 256 - Principles of Accounting 1	4 credits

Two courses from the following:

BA 172 - Sales	3 credits
BA 174 - Advertising	3 credits
BA 183 - Supervision	3 credits
BA 270 - Marketing	3 credits
BA 283 - Business Management	3 credits

MATHEMATICS - 3-4 CREDITS

Choose one of the following:

MA 104 Elementary Algebra	4 credits
MA 105 Basic Geometry	4 credits
MA 107 Intermediate Algebra	4 credits
TE 103 Mathematics	4 credits
TE 104 Advanced Technical Mathematics	3 credits

Note: MA 003 may be a prerequisite for the above courses based on student's math background.

COMPUTER - 2 or 4 CREDITS

BA 145 - Computer Applications in Business	4 credits
OR	
CO 151 - Electronic Spreadsheet (1 cr) AND	
CO 153 - Personal Computer Word Processing (1 cr)	2 credits

LANDSCAPE & LAWN MANAGEMENT PROGRAM = 24 MSU credits min. requirement

All of the following are required courses:

	<u>Credits</u>
HRT 211 – Landscape Plant Identification I	3
HRT 212 – Landscape Plant Identification II	3
HRT 213 – Landscape Maintenance	2
HRT 214 – Landscape and Turfgrass Business Operations	2
CSS 210 – Fundamentals of Soil and Landscape Science	3
CSS 232 – Introduction to Turfgrass Management	3
ENT 110 – Applied Entomology for Ornamentals & Turf	3
PLP 491 – Plant Diseases	3
AT 293 – Placement Training/Internship	3

Electives:

HRT 111 – Landscape Design	3
HRT 218 – Landscape Irrigation Design	3
HRT 475 – Study Abroad	4

Other MSU HRT and CSS courses may be acceptable electives in the program. Course offerings are subject to change. Consult with MSU Program Coordinator.

MSU Contact: Marcus Duck, Program Coordinator – (517) 355-5191 ext. 351; duckmarc@msu.edu
GRCC Contact: Karen Holt, Counselor – (616) 234-4130; KHOLT@grcc.edu

APRC Questions for OHT PRP

1. As a profession, how is ornamental horticulture different from/related to landscaping, or landscape architecture?

Ornamental horticulture is a term used to distinguish this type of horticulture from other types. Specifically, ornamental horticulture deals with the study of plants and other non-plant materials used around homes, businesses, golf courses and plant nurseries and greenhouses. This would then include trees, shrubs, ground covers, annual/perennial flowers and turf. Ornamental horticulture would be different from fruit and vegetable production which is also considered horticulture. Landscaping is considered one of the professions included in ornamental horticulture as is landscape architecture.

2. Discuss the relationship of this program to the nursery industry.

The nursery industry is a large industry in Michigan. Michigan ranks among the leading states in the production of plants. The nursery industry is one segment of ornamental horticulture that students that graduate from the program pursue. A number of graduates currently work in the nursery industry. Some former students own their own nurseries. The program continues to work closely with this segment of the industry to place our interns and graduates.

3. What advantage do program graduates have over those who learn the business on the job?

The program graduates do have an advantage over those who learn the business on the job. While the OHT program emphasizes hands on skills, we also study the science behind what we do. This is where our graduates have a distinct advantage. The on the job trained person is often limited to what their employer teaches them. Our graduates go beyond this by understanding the principles behind what is done. Our graduates also are exposed to a wide range of topics which can translate into more career options that might not be available to others. The graduate obtains on the job training through their internship and any other work experience they obtain.

4. Discuss the ease or difficulty of finding additional temporary staff for this program, whether other Biology faculty or adjuncts.

Temporary staff are very difficult to obtain. Biology faculty have specific specialties and only a couple are qualified to teach a course or two. The Biology department is still understaffed so freeing up qualified faculty would be difficult. In the immediate surrounding area the expertise just isn't available, especially since the Biology department requires a minimum of a MS degree to lecture and a BS degree to run labs.

APRC Questions for OHT PRP

5. Discuss in more detail the need for an additional faculty member.

Two program courses are currently being taught by Biology department faculty or by adjunct faculty members. In addition, the program director is teaching three courses as overload. Since the program coordinator is less interested in overload assignments and the desire to begin looking at retirement in the future it is important to get a new tenure track faculty member on board. This will give more continuity as the program experiences a transition from its current staffing to its future configuration.

6. What kinds of assistance in recruiting would help this program?

The program coordinator needs the time to make additional contacts with high schools that teach horticulture as well as the opportunity to make more contacts with industry groups. In addition, the program needs to establish a better web presence as a recruiting tool.

7. Comment on the adequacy of the supply and equipment budget allotted to the program.

There is no supply and equipment budget provided to the program. Any supplies needed must be requested from the department head on an individual item basis. With the responsibilities to run the program, maintain the greenhouses and equip program labs, we need a budget line for the program.

8. Comment on the differences in perception of the program of the faculty and the department head.

The department faculty has a long history with the program and with the university. While the faculty do value the emphasis that the program has, the department head has other ideas. Many of these attitudes are not based on facts but rather on opinions. The department head views developing a four year degree as a way to solve staffing issues. By this I mean that he would want to drop the two year degree and spread out the courses over four years without offering any new courses. No new faculty would be required and the program would have existing courses in business and technology fill in the remaining course slots to make a BS degree. The AAS degree would be dropped in the department head's plan. This does not sit well with department faculty who see it as a easy way out of our staffing issues and not really providing a quality BS degree. They see the need to have an additional faculty to help with the program.

9. What options exist for the design of a four-year program? It is mentioned in the report that contacts with Business and Technology would be desirable. Have these contacts been made?

At this point those contacts have not been made although we have for all the years that the program has been in existence maintained a connection with the Business since a

APRC Questions for OHT PRP

number of our students ladder into the 4 year transfer program in Small Business Management. The idea to contact Business and Technology came our of the department head's idea of how to establish a 4 year degree in OHT. Since we have not secured any kind of approval on this , we have not pursued it yet.

10. What would be needed for a four-year program to compete with MSU's?

MSU has the long standing BS degree program in ornamental horticulture. Early in our history as a program we had an agreement that MSU would provide certificate, BS and graduate level programming in horticulture. Ferris had the AAS degree. This arrangement worked for many years. Now MSU has moved into AAS degree programs through its association with certain community colleges. In order to compete with MSU we would need to establish a unique program that is not being duplicated by MSU. We have been able to market ourselves on the basis of smaller class sizes, more hands-on experiences and having professors in all classes, no graduate students teaching. We would have to overcome the long tradition and superior facilities that are present at MSU. While I think we can do it, but it will take some time, additional resources and additional staffing.

APRC Questions for OHT PRP

1. As a profession, how is ornamental horticulture different from/related to landscaping, or landscape architecture?
2. Discuss the relationship of this program to the nursery industry.
3. What advantage do program graduates have over those who learn the business on the job?
4. Discuss the ease or difficulty of finding additional temporary staff for this program, whether other Biology faculty or adjuncts.
5. Discuss in more detail the need for an additional faculty member.
6. What kinds of assistance in recruiting would help this program?
7. Comment on the adequacy of the supply and equipment budget allotted to the program.
8. Comment on the differences in perception of the program of the faculty and the department head.
9. What options exist for the design of a four-year program? It is mentioned in the report that contacts with Business and Technology would be desirable. Have these contacts been made?
10. What would be needed for a four-year program to compete with MSU's?

ORNAMENTAL HORTICULTURE TECHNOLOGY

PROGRAM REVIEW PANEL REPORT

September 1, 2005

ORNAMENTAL HORTICULTURE TECHNOLOGY

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TABLE OF CONTENTS

	Page
Program Review Panel Members	2
Section 1 Ornamental Horticulture Technology Program Overview	5
History	6
Mission Statement and Program Goals	6
Program Visibilities and Distinctiveness	7
Program Relevance	8
Program Value	9
Section 2 Collections of Perceptions	10
Graduate Follow-up Survey	11
Current Students Follow-up Survey	16
Employers Follow-up Survey	23
Program Faculty Follow-up Survey	25
Biology Faculty Follow-up Survey	28
Advisory Committee Follow-up Survey	30
Section 3 Program Profile	32
Profile of Students	33
Student Demographic Profile	33
Quality of Students	33
Employability of Students	34
Enrollment	34
Program Capacity	35
Retention and Graduation	35
Curriculum	35
Quality of Instruction	37
Composition and Quality of Faculty	37
Service to Non-Majors	39
Degree Program Costs and Productivity Data	39
Assessment and Evaluation	40
Administrative Effectiveness	40
Section 4 Facilities and Equipment	41
Instructional Environment	42
Computer Access and Availability	42

Other Instructional Technology	Page 42
Library Resources	43
Section 5 Conclusions and Recommendations	44
Appendices	47
Appendix 1 Administrative Program Review	48
Appendix 2 Michigan Green Industry Labor Study	53
Scope of Michigan's Green Industry	59
Appendix 3 Michigan Nursery and Landscape Assoc. letter	61
Appendix 4 Program Courses Syllabi	64
Appendix 5 Department of Biological Sciences Department Head Analysis	69
Appendix 6 College of Arts and Sciences Dean's Analysis	73

History:

The Ornamental Horticulture Technology (OHT) program accepted its first class of students in the fall of 1974. The OHT program had been in the planning stages for a number of years prior to accepting the first class. The individuals that initially established this program at Ferris State College(University)were able to combine the needs that were expressed by industry with the academic framework necessary to prepare graduates for employment in the horticultural or green industry. Since its inception, the program has stressed a “hands-on” approach for the preparation of its students. The two year, five semester program leads to an Associates of Applied Science degree. The OHT program is very broad based, preparing students for employment in the many career options in the horticulture industry. Some of these career tracks include golf course management, nursery management, landscape design, landscape construction, botanical garden management, grounds maintenance as well as a number of careers in the supporting services like equipment and chemical sales that are a part of this industry. It has been the intention not to prepare students for a limited number of these career areas but to provide the broad based educational preparation that affords the students options. If a particular segment of the industry has fewer employment opportunities, many other options exist. These employment options give the students opportunities to diversify within the industry. Through the coursework that the students take, especially with the strong laboratory component, they are well prepared for employment.

Even though other horticulture programs are available in Michigan, the program at Ferris State remains unique. The two year Associates of Applied Science degree in Ornamental Horticulture Technology that is granted to graduates and the hands on instruction that the students receive is not available at other colleges and universities in Michigan.

Mission Statement and Program Goals:

The mission of the Ornamental Horticulture Technology program is to prepare students for employment in the ornamental horticultural or green industry. The Ornamental Horticulture Technology program integrates foundational courses in plant sciences, hands on laboratory experiences and courses in general education resulting in graduates that are in high demand by industry. At the conclusion of the two year curriculum, the Associates of Applied Science degree is conferred. Students will be ready to assume their place as professionals in the horticultural industry and as productive and educationally prepared citizens in our society.

The following goals have been established jointly between the OHT program coordinator representing Ferris State University and the members of the OHT Advisory Committee who represent industry.

GOALS:

1. To expose students to basic general education coursework.
2. To introduce students to the principals and practices associated with plant science, care and maintenance.
3. To introduce students to the technical skills necessary for employment in the horticultural industry.
4. To increase the student's awareness of the opportunities that exist in the industry as well as the job skills necessary to secure such employment.
5. To provide quality advising for students in the OHT curriculum.
6. To maintain up to date facilities and equipment with which to instruct students in the skills and procedures necessary for the horticulture industry.

The mission statement and the program goals have not changed since the last program review completed by the OHT program. While the advisory committee reviews these goals on a regular and on-going basis, it has not changed them recently. The committee believes that they continue to address the needs of employers and the students who prepare academically to secure employment in this industry.

The OHT program continues to adhere to the universities mission statement which says that "Ferris State University will be a national leader in providing opportunities for innovative teaching and learning in career-oriented, technological and professional education." The OHT program prepares students for careers in the horticulture industry. Horticulture is a multibillion dollar business in the United States and is one of the largest industries in Michigan's economy. This industry has a critical shortage of qualified employees. This is recognized by the industry as the most critical issue for continued growth. The industry is looking to schools like Ferris State to supply the technically and academically prepared graduates that will assume key industry positions. The industry wants more than technically trained individuals. They want graduates of programs who have prepared academically as well as technically. They want employees who can meet consumers with the confidence that comes from preparation like that received in the OHT program.

PROGRAM VISIBILITIES AND DISTINCTIVENESS:

The OHT program is one of three AAS degree programs in available in Michigan. It does remain unique in that the program is broad based and cuts across a number of career tracks, a feature that is not available from the other programs in Michigan. The program continues to attract students who are looking for this broad based approach and are drawn to the Ferris State campus which might not be as overwhelming as the campuses of some universities. The program at Ferris competes for students with Michigan State University and Lansing Community College. A program at Oakland Community College is starting to become re-established in the Detroit area but tends to be more geared to those already in the industry who are interested in evening classes. Most all programs in the state have to overcome the long tradition that horticulture has at Michigan State University. This does make recruiting more difficult since they are better funded and staffed and have far superior facilities. At Ferris we are able to compete with our hands on approach and our dedicated and qualified faculty who teach the core courses. The two year degree continues to be well suited for many students. The Ferris State University Smith Greenhouse has added visibility to the program through the outreach efforts of faculty and staff who have prepared educational report and interviews for media outlets like TV 9/10.

PROGRAM RELAVENCE:

National and state trade associations continue to value programs in horticulture that are delivered by schools like Ferris State. In Appendix 3 you will find a letter from Amy Frankmann, Executive Director of the Michigan Nursery and Landscape Association and members of the Board of Directors of that organization. They state that they write "on behalf of our industry to inform you of the importance of our partnership with Ferris State's Ornamental Horticulture Technology program. We encourage you to continue your work as the industry relies on the qualified individuals you produce." It further states that "one of the biggest challenges the industry is facing... is the shortage of qualified labor." In Appendix 2 you will find a summary of a study titled The Michigan Green Industry Labor Study. In this study researchers identified that supervisory positions in the green industry are the most difficult to fill and that these positions require a higher level of education, licensing, training or prior experience.

The OHT program relays heavily on the expertise that the OHT Advisory Committee brings. It is through this committee that the program monitors the emerging issues in the industry and how the program responds to these issues by making adjustments in course subject coverage and curriculum make up. Students both past and present provide input that also keeps the program on track and insures its relevance.

Students come to Ferris State for this program because it offers in a two year format the core educational training that a student needs to seek employment in the

industry. Their satisfaction with the OHT program is reflected in the comments that they made on survey documents which are found in Section 2. Further, their satisfaction is measured through student assessment of instruction evaluations as well as personal conversations with the coordinator during advising sessions.

PROGRAM VALUE:

The Ornamental Horticulture Technology program contributes to the University in a number of ways. The OHT program brings a number of students to the University who come here specifically for this program. While there are other degree granting institutions in the state, this program is unique in its course offerings and hands on approach to preparing students for employment in this profession. The students are typically very motivated and academically prepared to take their place as students in the university setting. As these students graduate they enter the work force and contribute to society. Many start their own businesses. In doing so, they help build the economic base in Michigan.

The OHT program faculty contributes to the university community through the expertise that they bring to committees across campus. They also contribute to the local, state and national community by lending their expertise to civic groups, clubs and organizations that value their knowledge of plant sciences and horticulture. This willingness to share information gives the University an exposure within the green industry at the state and national level.

The University also benefits from facilities that are maintained through the OHT program. Most specifically the program maintains a greenhouse facility which provides educational opportunities to the students in the program. In addition, the greenhouse provides instructional resources to Biology department classes and also for the plant material needs of the Professional Golf Management program. It is also available to the general student population as a place to visit and enjoy. The greenhouse, staffed by students and technicians, provides seasonal and event based plant displays for graduations and other activities as requested by FSU administration.

The OHT program responds to the needs and interests of the general public by making available the expertise of its faculty and its facilities. The program has hosted groups of community members who tour our facilities, especially our greenhouse. In doing so we involve our students so they also have the opportunity to interact with the public, giving them valuable experiences. Such exposure has given us opportunities to secure scholarship opportunities for our students as well. Faculty members have participated as invited speakers to groups like Master Gardeners and the Federated Garden Clubs of Michigan. Our faculty's expertise gives us the opportunity to provide recognition to Ferris State across the state and nation.

GRADUATE FOLLOW-UP SURVEY:

The students of record who graduated from the Ornamental Horticulture Technology program since 1999 were contacted and provided with the survey form found on the following pages. When surveys that were undeliverable were removed, the survey was sent to a total of 52 individuals. Twenty five responded by returning the survey document. This return rate was a little under 50 % which is consistent with the number returned by graduates who responded in the last OHT program review. It is a statistically significant return. A copy of the survey form with summarized responses to the questions is found on the following pages. Some references to faculty members, courses, and facilities might not be current since a number of years have passed since some of these students were on campus. The graduate survey and the entire program review document will be reviewed by the advisory committee and any appropriate actions will be taken to address concerns. Several areas of concern were noted. Graduates of the program were somewhat concerned with the adequacies of equipment and facilities. Some of these comments come from students who were here during our remodeling and before we had completed construction of the new greenhouse facility. The graduate survey conducted in the last program review indicated a need to increase hands on experiences. The response received in this program review indicates some improvement in this area of concern.

The area where graduates gave the program high marks included the quality of the faculty although there seems to be some concern expressed with the use of adjunct faculty and their abilities to teach OHT classes. The graduates also seemed to value their internship experiences, felt that they got good advising and had an overall satisfaction with the program. Some of the graduates expressed an interest in a 4 year degree or the fact that the 2 year degree seemed too compressed.

Of those who responded, 15 were employed in the industry while 10 were either not employed or were seeking additional educational opportunities.

GRADUATE PERCEPTIONS
OF THE ORNAMENTAL HORTICULTURE TECHNOLOGY PROGRAM

N = 25

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1. The program is academically challenging.	13 52%	12 48%			
2. The program is technologically sound.	8 32%	13 52%	3 12%	1 4%	

3. The program is administered effectively.	12 48%	13 52%			
4. The facilities and equipment were sufficient to support quality education.	4 16%	18 72%	2 18%	1 4%	
5. The program courses were taught by qualified faculty.	17 68%	8 32%			
6. The program courses provide sufficient coverage in each of the subject areas.	9 36%	16 64%			
7. The program courses provided information that you found to be valuable to your career preparation.	9 36%	16 64%			
8. The program utilizes sufficient lab experiences to enhance your career preparation.	9 36%	14 56%	2 8%		
9. The program coursework covered relevant information.	15 60%	10 40%			
10. The program includes sufficient instruction in oral and written communication.	10 40%	12 48%	2 8%	1 4%	
11. The program courses are sufficiently challenging academically.	14 56%	11 44%			
12. Instructors seem interested in the academic progress of students.	13 52%	11 44%	1 4%		
13. As a student you received adequate advising	14 56%	8 32%	3 12%		
14. The internship was an important part of the program	14 56%	9 36%	1 4%		1 4%
15. The program courses utilized enough "hands on" experiences.	11 44%	9 36%	4 16%	1 4%	

The following responses were received for the survey questions that follow:

16. *Are you currently employed in the horticulture industry? If so indicate your position/employer. If not indicate the reason*

- Yes, Gerych's Greenhouses, greenhouse operations
- Yes, garden center sales
- Yes, greenhouse tech at Smith Greenhouse FSU
- Yes, Greenhouse maintenance
- Yes, first assistant golf course superintendent at the Old Collier Club/ Florida
- Yes, Schneider Tree Care Greenville S.C. as an arborist
- No, didn't enjoy running my own company
- Yes, assistant golf course superintendent at Metamora Golf and Country Club
- No, using my education to conquer the challenges at home
- Yes, landscape construction
- Yes, garden center sales
- Yes, at Frederik Meijer Gardens in outdoor display
- Yes, Shoemaker Services as head of sales and landscape design
- No, seasonal work all that is available in our area and got married
- No, not a lot of people were hiring in this area
- Yes, Ridgeview Landscaping as head foreman and designer
- No, continuing education
- No, I was on educational leave from Delphi and was called back to work there
- Yes, assistant superintendent at Berrien Hills Country Club
- No
- Yes, DeVries Landscaping as landscape foreman
- Yes, Greensward Landscaping as a designer
- No, I developed a brain tumor
- No, wasn't able to secure a position with benefits

17. *What is the greatest strength of the Ornamental Horticulture program?*

- The knowledge of the professors and small class size
- The hands-on experiences in the class and the internship
- The instructors
- All the classes
- Instructors who know their classes

- **Close relationship with Dr. Scott and Vanderploeg that want you to learn the material and will go the extra mile to do so**
- **The hands-on learning**
- **Staff really cares about students, small class sizes, hands-on info and easy climate to learn**
- **The knowledge of the professors**
- **The faculty**
- **The amount of information/education compacted in a two year program**
- **The wide range of classes**
- **I think Prof. V is very experienced in many ends of the horticultural jobs and is a good professor**
- **Hands-on experience, the ability to experience the plants, soils, growing environments first hand**
- **Insect pest management and coverage of fertilizers**
- **The diverse classes**
- **Tree identification and care**
- **Good coverage of broad spectrum of subjects/topics**
- **The teachers. Dr Scott and Vanderploeg taught me so much and I had so much fun in all of their classes**
- **The hands-on labs**

18. *What is the greatest weakness of the program?*

- **Not enough exposure to growing plants, need more time in the greenhouse**
- **The only thing that I can think of is having more classes or longer classes on plant identification because it is such an important part of horticulture knowledge**
- **Need a 4 yr. degree where you could go deeper into some of the topics where you only get an overview in the current program**
- **Entomology teacher and Botany teacher**
- **No irrigation class**
- **Construction issues and a greenhouse**
- **No weaknesses**
- **No weaknesses**
- **Lack of technology in the labs**
- **Being a 2 year program, not being able to more fully investigate each aspect of horticulture**
- **The lack of time to cover all the material. A bachelor's degree?**
- **No four year degree program and more technology**
- **No weaknesses that I can detect.**
- **The field pest study at the end**
- **I think there needs to be more hands-on material and something with irrigation**
- **Limit of what can be covered in 2 years**
- **I would like to see a hardscape class**

- Can't think of any
- Inadequate facilities

19. *Which of the core classes did you find to be of the most value to you as a graduate?*

- Plant ID, Landscape Design and Insect Pest Management
- All plant ID classes
- Plant ID
- Turfgrass Management
- Landscape Design and Plant Pathology
- Soil Science, Plant ID, and Landscape design
- They were all most valued
- Identity of trees, shrubs, flowers
- Plant ID and Landscape Design
- Soils, Botany
- Turf Management and Soil Science
- Plant ID, Plant Pathology and Design
- Plant Pathology
- Plant ID
- Landscape Design
- Insect Pest Management
- Plant ID, Plant Propagation and Landscape Plant Management
- Plant Propagation
- Plant ID, Plant Pathology and Landscape Design
- Plant ID, Soil Science, Plant Pathology and Plant Prop
- Soil Science
- Botany and Soils
- Plant ID

20. *Which of the core courses did you find to be of the least value to you as a graduate?*

- Seminar
- Plant Propagation
- Flower part of Plant ID, Turfgrass and Propagation
- Turfgrass
- Soils
- Seminar
- Turfgrass and Plant Prop
- All important
- Turfgrass
- None, all important to me
- The collections at the end

- Botany
- Botany
- Turfgrass class
- Seminar
- Landscape Design
- Really none
- None
- Insect Pest Management
- Insect Pest Management

21. *Are there any courses not currently offered that you think would be a benefit in your employment?*

- Tropical plants ID and more disease coverage
- Irrigation
- More plant ID and floral arrangement
- Indoor tropical plants and greenhouse environment
- Irrigation and an additional design class
- CAD and hardscape materials
- A hydroponics section
- Design and estimating class
- Expand existing classes
- CAD
- Computer and business classes
- More current landscape design CAD program
- Irrigation
- Pesticides and plant pathology expanded
- None
- None
- Irrigation
- Advanced design
- CAD design

CURRENT STUDENTS FOLLOW-UP SURVEY:

All available students currently enrolled in the Ornamental Horticulture Technology program were surveyed to determine their opinions of the program. Their responses to a number of questions are recorded below. Since these students are actively pursuing their degree, their comments concerning the program are particularly relevant. The current students expressed a general satisfaction with the program, its faculty and the coursework available to them. They see the program as

preparing them for future employment. The students are satisfied with the advising they received. Students were more satisfied with available facilities which are a marked improvement from the last program review when we lacked adequate greenhouse facilities. The greatest strengths of the program were its faculty, the hands on approach to instruction and the broad based instruction they received. The greatest weakness of the program expressed by a number of students is that a four year degree option was not available. Students felt that this compressed the program too much. The lack of adequate numbers of faculty was expressed. Some students indicated which classes they felt needed to be strengthened. The need for additional instructional faculty came up in the last program review and since it was not adequately addressed after the last program review, it is coming up again in this review.

CURRENT STUDENTS PRECEPTIONS OF THE ORNAMENTAL HORTICULTURE PROGRAM

N = 21

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1. The courses in the OHT Program follow a logical progression	7 33%	14 67%			
2. The Program provides sufficient coverage in each of the courses.	5 24%	16 76%			
3. The Program courses are taught by qualified faculty.	16 76%	5 24%			
4. Program courses do not have excessive amounts of repetition.	7 33%	7 33%	7 33%		
5. The Program provides information that you would consider valuable to your education.	14 67%	7 33%			
6. The program utilizes sufficient lab experiences to enhance your education.	8 38%	12 57%	1 5%		
7. Program courses are taught in surroundings that are conducive to learning.	9 43%	11 52%	1 5%		
8. Program courses cover relevant information.	9 43%	11 52%	1 5%		
9. Program courses are sufficiently challenging academically.	9 43%	11 52%	1 5%		
10. Instructors seem interested in the academic progress of students in the program	12 57%	8 38%	1 5%		
11. As a student in the program you have received adequate advising assistance.	9 43%	11 52%	1 5%		
12. The internship is an important part of the Program.	11 52%	8 38%	2 10%		
13. the facilities and equipment seem adequate for this program	5 24%	11 52%	5 24%		

14. Are you in your (first year) or (second year) of the program. Circle one
Provide the grade average that you are maintaining in the program. _____

The following responses were received for the survey questions that follow:

15. What is the greatest strength of the Ornamental Horticulture Program?

- Advisor and professor Vanderploeg
- I think the Hort programs greatest strength is the amount of information that is given in the program. It can be slightly fast passed at times but it provides a challenge.
- This program relates very well to what is needed to know in the horticulture industry after graduation. Everything we learn is used in the real world.
- It is a challenging program that teaches you a lot about horticulture. It constantly builds on things previously learned so you can't forget things. Also the internship really helps to apply your knowledge to the real world.
- Dedication to our success by our coordinator
- The greatest strength is how the professors teach in this program, rather than all lecture you get to go outside and also have detailed lab stations.
- Going out into the field and doing work.
- Relating all the classes together. Teaches you what you need to know in all aspects of horticulture.
- The greatest strength of the OHT program is that it covers a diverse amount of information in 2 years. There seems to be no filler material. Every class is important.
- The greatest strength is probably the Landscape Plant ID classes. They teach you not only to identify the plants but also what conditions the plants prefer and how they grow.
- I think the greatest strength is the small class sizes. This is because it feels as though if you're struggling it isn't too uncomfortable to speak up. Also this helped all in the program to get close and we all seem to know each other well.
- I think Professor Vanderploeg is the only reason this program is running. He teaches most of the classes and also is our advisor.
- I think the program has been very organized. The material is all useful and necessary to know for a successful career in horticulture. It is a very good stepping stone before you go out and get experience at a job site.
- All the professors in the program have great knowledge of what they are teaching. Good preparation for the work force in that there is a lot of material covered in little time.
- The way that the classes tie together and reinforce one another.
- All the hands on activities that we do working in the greenhouse, going around campus/town identifying trees/shrubs, working in the tree nursery,

- pruning, planting and care of the plants on the golf course. Small class size allows this.
- I feel that the greatest strength has to be the staff. It is easy to be taught by people who know what they are teaching and have had experience in the field rather than someone who just has a degree.
 - The greatest strength in this program is the hands on lab time we receive with each class. To me this is as important as sitting in the classroom being lectured on the information part of it. Another strength is that the wealth of knowledge that the main professor has along with the supporting professors in this program. I like the fact that the program is smaller and we can get some of that 1 on 1 time with the professors.
 - Very hands on and the professor is very knowledgeable.
 - Taught by professors who know from experience what they are teaching.
 - John Vanderploeg is an excellent professor and advisor.

16. What is the greatest weakness of the program?

- The program could be improved with the addition of a design course which utilizes AutoCadd. I also think there should be a greater emphasis on organic gardening.
- Not enough hands on experience. Need more work with plants up front instead of on slides.
- I would have to say the only weakness is that its only a 2 year instead of a 4 year. I would like to go another 2 years to make a four year degree in ornamental horticulture.
- It's a 2 year Associates program. I feel that more time can be spent on important subjects if there were more time to learn it. The professors do well with the time given.
- Being a 2 year program and not a 4 year. Having a 4 hr. propagation lab.
- I think the soil science class could be stronger. The textbook and course are quite elementary.
- I think there needs to be more specific courses. There is a lot of areas in horticulture for employment that we didn't even scratch the surface on. This program just has basic and just covers a little bit on each topic.
- I don't believe that there are many weaknesses. There are not very many instructors and the university does not seem overly interested in the Ornamental Horticulture program as far as recognition but in my opinion it is a great program.
- That it is only a 2 year program. If it were a larger and 4 year program this degree would be more respected.
- That it is only a 2 year program. It would be nice if they extended it to 4 and included more business classes so the bulk of us don't have to go elsewhere for business.
- The greatest weakness is that it is only an associates degree. A BS would get you farther ahead.

- The program is only a 2 year program. It would be nice to have more than a 2 year program.
- Soil instructor.
- Not much
- Not enough faculty.
- Not enough proper equipment. We don't have enough money to be able to buy updated equipment that can make things easier for us to do our job.
- I haven't found any weaknesses in this program. This program is everything and more than I would have expected.
- The greatest weakness of the program is the fact that its only a two year program. If the program was extended to a four year much more information and different courses could be given and the speed of some classes could be reduced.
- Not enough courses.

17. Which course would you consider least valuable in the program? Why?

- Soils, applied mostly to golf course students and very boring. Experiments seem quite alike.
- I think the soils class was least relevant because most people are probably going to send soil samples out to get an analysis instead of doing it themselves.
- I haven't taken enough of the classes for this program to find even one class that wasn't valuable to my career.
- Botany was least valuable because everything else really applies to the program while Botany is just a general class that most took in high school.
- Soils, I don't feel I learned that much from Mr. Bogart
- The electives that I'm required to take. Those have absolutely nothing to do with the program and in the electives you don't learn much.
- All classes seemed to be valuable for the program.
- Soils class. I didn't learn much because the instructor was doing it for the first time.
- I didn't think there is a course that in not valuable but propagation would be least valuable. Because I am not going into propagation, but I'm still glad it's offered.
- The soils course because much of what you learn in that class should already be common knowledge.
- Turf because I'll never work with it since we always subcontract it out.
- Small business management. Some people don't care about how a business is run.
- I believe that all the courses are valuable, but if I were to pick one I would say turfgrass because I don't feel like I need to know in depth every weed of North America but for some of us that are going into golf Course mgmt. it is useful.

- **Insect pest management.** There are thousands and thousands of insects out there and it's extremely difficult to learn them unless that is going to be your job in the future. Too big of an area to cover.
- **I don't have a course that I think should be eliminated.** I do think a couple could be strengthened and or updated.
- **IPM,** Yes we need to know insects but we really don't concentrate on certain insects. Too much info was covered that makes it difficult and I'm sure half of the current students don't even remember anything from the course.
- **Horticulture Seminar.** I feel it is needed but it is the least important. I need to know how to give a presentation but I did not learn much about Horticulture other than my topic.
- **All of the classes benefit you in a way.** But some people depending on the field you are interested in might not have a use for 1 or 2 classes. Like if you are going to do design work the turf class might not seem very important or valuable to you.
- **None-** all are very important.
- **Plant propagation.** I think this is the least valuable because all of these things if needed could be learned on the job. Also I disliked this class because we met once a week for four hours...you don't want to learn when you have to be there that long.
- **All the courses are valuable.**

Additional comments

- **I would have liked to use a more updated program than the plant database used in Plant ID 1 and 2.**
- **I liked that the professors are concerned with each one of us academically.** If we are having a problem they will help us in class and during office hours and sometimes make special office hours for us.
- **I would like another more specific design course,** would love to see a bachelors degree, Professor Scott was awesome in Plant Propagation, seminar class I learned a lot.
- **The instructors are very knowledgeable about the subjects they teach and they seem to be enthusiastic about teaching us about their subject.**
- **The greenhouse should be expanded**
- **It would be nice to be able to do more in the greenhouse and at the nursery.** Greenhouse needs more room to work.
- **I think Mr. Vanderploeg does a great job and he is the best teacher I have had here for any class.**
- **I think there should be a third ID class on our native trees, shrubs and flowers.**

EMPLOYER FOLLOW UP SURVEY:

The employer's survey can be found on the pages that follow. This survey was designed to determine employer's satisfaction with the OHT program graduates and interns. Of the 56 survey documents sent, 34 were returned. This represents a 61% return rate. Many of the respondents seemed to be pleased to be included in the review process.

The information obtained will be used to further refine the program so employers will continue to hire our graduates and interns.

Employers ranked our graduates and interns very favorably when compared with those from other universities. The employers seemed confident that they would hire another OHT graduate or intern. The employers seemed somewhat divided on where the internship experience should be placed in the two years of the program. Some favored what is current practice while others wanted it at the end of the program. This is an issue to employers who want student expertise in all subjects before starting the internship. Employers seemed comfortable referring students to the OHT program.

EMPLOYERS PERCEPTIONS OF INTERNS AND EMPLOYEES

N=34

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1. I would rate students from Ferris State University's Ornamental Horticulture Technology program very favorably.	14 41%	19 56%	1 3%		
2. Graduates/interns seem well prepared academically.	11 32%	20 59%	3 9%		
3. Students have been prepared well	6	24	4		

in subject areas that are relevant to me as an employer.	17%	71%	12%		
4. Graduates/interns from the Ornamental Horticulture(OHT) program at Ferris compare favorably with students from other universities.	10 29%	15 44%	9 27%		
5. I would hire another intern/graduate from the FSU OHT program.	19 56%	15 44%			
6. I consider the internship to be an important part of the student's preparation for employment.	26 76%	7 21%	1 3%		
7. An internship would make more sense if it was placed at the end of the two year program.	6 17%	8 24%	11 32%	8 24%	1 3%
	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
8. An intern/graduate would be more valuable if they had already completed their pesticide certification.	13 39%	10 29%	10 29%	1 3%	
9. An intern/graduate would be more valuable if they were given instruction in equipment operations and maintenance.	12 35%	15 44%	6 18%	1 3%	
10. I feel very comfortable referring perspective students to the OHT program at Ferris State University.	16 47%	17 50%	1 3%		

Employers Perceptions of Interns and Employees comments

- I believe a business component should be included, i.e. marketing, how to price items, how to make purchase selections, how to do estimating.,
- Students from 4 year programs seem to be better suited to start higher, higher income and position.
- I believe skills gained from hands on would clearly out weight those gained from core study. Having an internship under their belt before entering the job market might better their resume.
- A commercial driver's license would be helpful also.
- Internships a benefit both ways, between the two years and at the end.
- A CDL would be helpful.
- I only use FSU students.
- John Vanderploeg really shows a strong desire to work with students and industry.
- I feel Ferris State has a good horticulture program and I would like to see students succeed. I would like to see an additional turfgrass management class added to the curriculum. It would aid us at the Vail Golf Club and the Vail Recreation District. We would like to thank you for including us in your review process.
- Thanks John for doing such a good job.

PROGRAM FACULTY FOLLOW-UP SURVEY:

The faculty who are involved in either full-time or part-time instruction in the Ornamental Horticulture Technology program were surveyed to determine their opinions. The responses to the survey questions are recorded below. Overall, the faculty are supportive of the way the program is structured and the role it plays in preparing students for employment in the horticulture industry. A few concerns that were stated included a lack of sufficient qualified faculty to teach program courses, an insufficient supplies and equipment funds and inadequate storage space for supplies and equipment. Program faculty does not always feel the support of the department and college. This concern probably centers on inadequate staffing of program courses and the need for additional supply and equipment support. There is also support for an expanded 4 year program in OHT.

**PERCEPTIONS OF FACULTY WHO TEACH COURSES FOR THE ORNAMENTAL
HORTICULTURE TECHNOLOGY PROGRAM**

N = 3

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1. The Ornamental Horticulture Program provides its students an academically challenging curriculum.	2 67%	1 33%			
2. The Ornamental Horticulture Program provides students with hands on learning experiences.	3 100%				
3. The Ornamental Horticulture Program successfully prepares students for employment in the horticulture field.	2 67%	1 33%			
4. The program courses are arranged in a logical sequence where one course builds on another.	1 33%	2 67%			
5. The program offers students opportunities to develop good oral and written communication skills.	1 33%	1 33%	1 33%		
6. The internship plays a key role in preparing students in the Program.	1 33%	1 33%	1 33%		
7. The Program offers sufficient coursework opportunities for students.	1 33%	2 67%			
8. The Program responds to the needs of the horticulture industry.		3 100%			
9. The Program is limited by the lack of sufficient qualified faculty.	2 67%	1 33%			
10. The Program relies too heavily on adjunct and part-time faculty.	3 100%				
11. The Program has an adequate budget for supplies and equipment.				1 33%	2 67%
12. The program is limited by a lack of sufficient equipment.		3 100%			
13. The Program has adequate				3	

storage space for supplies and equipment.				100%	
14. Program faculty should be more actively involved in recruitment of new students.			1 33%	2 67%	
15. The Program could function more efficiently if it added additional tenure track faculty lines.	3 100%				

Comments received for the following questions

The OHT program is most limited by a lack of?

- Equipment
- Personnel
- Budget support
- Support of the department head

The OHT program is successful because....?

- John Vanderploeg adapts to the inappropriate funding, administrative undermining, lack of support staff and additional faculty teaching in OHT amazingly well. This is not an excuse for the poor way he and the OHT program has been treated.
- It provides a needed service to a very important industry in Michigan that continues to struggle with obtaining educated and trained workforce.
- It prepares students for employment in the industry.

Additional comments.

- I have been more impressed by the OHT students in my classes, when there are a combination of OHT and Biology Education or Elem. Ed students. Typically the OHT students are better writers and communicators both orally and on research papers. The OHT students are usually a delight to teach.
- I would like to have a fully funded, fully staffed, and fully supported OHT program with a Bachelor's degree option if possible, in addition to the strongly needed Associate's degree.

BIOLOGY FACULTY FOLLOW-UP SURVEY:

The faculty in the Biology Department supports the OHT program. They feel that the program is consistent with the objectives and goals of the Biology Department. They consider the program to be consistent with the FSU Mission statement. However, there are some concerns regarding the overall commitment to the program by the administration. This relates to the lack of sufficient faculty to teach program courses. Biology faculty commented that additional staffing would allow the coordinator to devote more time to recruitment and building the program. They feel that the OHT program should explore a 4 year degree option.

BIOLOGY FACULTY PERCEPTIONS OF THE ORNAMENTAL HORTICULTURE PROGRAM

N = 12

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1. The Ornamental Horticulture Program is consistent with the FSU Mission Statement.	12 100%				
2. The Program is consistent with the objectives and goals of the Biology Department.	11 92%		1 8%		
3. The Biology faculty as a group supports the Program.	11 92%	1 8%			
4. FSU administration at the college level supports the program.	2 17%	9 75%	1 8%		
5. FSU administration at the department level supports the Program.	1 8%	1 8%		7 60%	3 24%

As a member of the Biology Department, I support/don't support the Ornamental Horticulture Technology program.

- Support**
- I support the program**
- Strongly support. John is doing a super job running this program.**
- Support**
- I support this program in the strongest possible terms. I taught a class for the program until issues relating to my teaching load forced me to discontinue my involvement. I also have helped with OHT field trips. The students are good people, the OHT program provides them with a degree well suited to their abilities and interests.**
- support**
- strongly support**
- support**
- support**
- strongly support**
- support**

Additional comments included on the survey form.

- The Biology Department has no goals or objectives so there is no basis for comparison with the OHT program. It is a shame that the Department Head does not recognize the value of this program and won't lift a finger to support it. He has the same attitude toward Biotechnology but gives it token support to ensure a source of students and equipment for his research.**
- This is a strong program that enhances our department.**
- I would like to see the program have access to additional staff so John would be able to stop doing overloads, if he so chooses.**
- John Vanderploeg continues to do an exemplary job with the OHT program. The program is a valuable component of the Biology Department. If John were given the help he needs, he would have time to spend on recruiting and perhaps exploring the possibilities of a baccalaureate in OHT**
- The Ornamental Horticulture Program offers students a unique curriculum in an area with diverse job opportunities. I think that it should be expanded to a B.S., but maintain the AAS, offering students the option of employment after two years. Possibly the B.S. option could be offered to professionals in Grand Rapids. The Biology faculty support OHT and are concerned about the coordinator being over extended because of the loss of a faculty position in this area a decade ago.**
- The program is highly valued by the department, college and university and these units use the OHT program and greenhouse in promotions and advertisements on behalf of FSU. Unfortunately, the Biology department administratively does not support the program. I have even witnessed first hand the department head undermining the program verbally and financially both in front of faculty candidates during interviews and in normal operational settings. I personally would like to see a Bachelor's**

degree in addition to the Associate's degree offered by our department with the faculty line support, funding support and programmatic support needed to make the program as visually profiled as the Biotechnology and Forensics programs.

ADVISORY COMMITTEE FOLLOW – UP SURVEY:

The advisory committee is made up of individuals that represent the different career tracks found in this industry. The advisory committee perceptions are found below. The survey does reveal a concern for adequate staffing of program courses and establishing a more balanced workload between teaching and administration for the program coordinator. The advisory committee feels that the program prepares students for employment in the industry and that the demand for graduates remains strong. During advisory committee meeting, members expressed frustration over the general disregard that the advisory committee perceives from the administration.

**ADVISORY COMMITTEE PERCEPTIONS
OF THE ORNAMENTAL HORTICULTURE TECHNOLOGY PROGRAM**

N = 5

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1. The program is academically sound.		3 60%	2 40%		
2. The program is technologically sound.	2 40%	3 60%			
3. The program is administered effectively by the University.			1 20%	3 60%	1 20%
4. The facilities and equipment are sufficient to support quality education.		5 100%			
5. The program is staffed adequately by the University.		1 20%		1 20%	3 60%
6. The advisory committee plays an important role in directing the program.		3 60%	2 40%		

7. The advisory committee should meet more often to adequately guide the program.			4 80%	1 20%	
8. The program meets the expectations of industry.		5 100%			
9. The program provides sufficient coursework to adequately prepare students for employment.	2 40%	3 60%			
10. The program includes sufficient instruction in oral and written communication.	2 40%	3 60%			
11. The program performs a valuable service to the industry.	2 40%	3 60%			
12. The demand for graduates from the program is strong.	3 60%	2 40%			

Ornamental Horticulture Technology

APRC 2005-2006

section 2 of 2

PROFILE OF STUDENTS:

STUDENT DEMOGRAPHIC PROFILE:

Students enrolled in the OHT program are about equally divided between male and female. There seems to be a trend toward more female students when compared to students enrolled in the previous program review cycle. The students are overwhelmingly Caucasian with the only exception being a Native American student three years ago. Students tend to enter the program after high school completion although a number of non-traditional students have participated in and graduated from the program. The students are mostly in-state. The program averages about one out of state student per 3 years. The vast majority of students are pursuing their degree on a full time basis. Only occasionally does a part time student enter the program. The classes in the program are only available during the day and are all on campus. Because so many of the students are traditional, scheduling and delivery of coursework follows a format that students are familiar with from high school.

QUALITY OF STUDENTS:

Students in the OHT program have an average grade point average(GPA) of 2.79. The GPAs range from 1.5 to 3.96. Students who graduate from the program have an average GPA of 2.85. ACT scores for newly admitted students and those continuing average 22.7. Students who are graduating from the OHT program have an average GPA of 22.4. These values seem to remain fairly constant throughout the years. While some efforts have been made to raise admission standards for the program, our averages have changed only slightly. In addition to GPA and ACT data available for students in the OHT program, the program coordinator utilizes personal interviews to determine the quality of students entering the program. These interviews are on-going throughout the student's participation in the OHT program. The information gathered also becomes the basis for student advising and career planning.

The students in the program have secured a number of awards from state wide organizations. Every year the Federated Garden Clubs of Michigan gives a scholarship to a student in the program. In addition, the local garden club has given a scholarship to support a student employed in the Smith Greenhouse. The Michigan Nursery and Landscape Association has recognized an outstanding student from the program each year. That has also been true of the Michigan Turfgrass Foundation which has provided scholarship support to students who are pursuing a career in golf course management. Scholarships are also supplied by a graduate of the program who wants to give back to the university by helping students who are currently enrolled in the program. These scholarship opportunities are encouraging to the students and help offset the costs associated with attending college.

Students in the program have secured interesting and beneficial internships that speak well for both the student and the program. Last year a student was accepted for an internship at the Smithsonian Institution this was probably the highest profile internship that the program has had recently. In that same year a student was accepted for an international internship completed in the Netherlands.

EMPLOYABILITY OF STUDENTS:

Graduates have many employment opportunities available to them at graduation. Within the first year all either are or could be employed in the field. Some students find that the compensation is not adequate or that benefits are not provided and seek employment elsewhere. Some students have indicated that the employment that they find is too seasonal and therefore not to their liking. From the employment statistics gathered when contacting the graduates of the program, about two thirds of the graduates of the past five years are employed in the field. Graduates of the program have an range of starting salary of \$28-32,000. This compares favorably with what graduates in this region and nationally might expect. Students and graduates obtain career assistance through services available at the university. The majority of students seek career guidance assistance from the program advisor. This continues for some students who are employed but ask advice when considering their next career move.

The majority of graduates find employment in Michigan. There are always a few who move to warmer climates to secure employment. This eliminates the seasonal employment issue that some experience.

Each year about one quarter of the graduates go on for additional degrees. Some continue on at Ferris securing a BS degree in Small Business Management. These are usually students who have the goal of having their own business some day. Some students continue their education by transferring to another university, most typically Michigan State University.

ENROLLMENT:

The anticipated fall 2005 enrollment is 24 to 26 students. This would include newly enrolled students, transfers, continuing and dual degree students. This also represents an increase over last year. The class admitted in the fall of 2004 was unusually small. This has impacted both this year and last years student count. This small entering class last year also impacted the student credit hour production. The table below indicates enrollment and student credit hour production since the last program review. The entering fall 2005 class is larger. This would seem to indicate that last year reduced enrollment was an isolated occurrence. In the five years evaluated in the last program review, enrollment averaged 29. This program review five year enrollment average is 30.

	2000/01	2001/02	2002/03	2003/04	2004/05
Enrollment	38	33	30	26	24
SCH	598	577	467	481	N/A

The numbers of students applying, being admitted and enrolling has been very consistent with the numbers of students who have entered the program.

PROGRAM CAPACITY:

It is the programs goal to have enrollment at the level that would fill one section of each major's course in the curriculum. Our enrollment numbers do fall somewhat short of that goal but recruiting efforts continue as time allows. Our goal is to have at least 24 students in each of the major's classes. This will allow the program to deliver the coursework given the faculty and adjuncts available to us. Additional recruiting might help us to fill the remaining seats.

RETENTION AND GRADUATION:

The average attrition rate for the years since the last program review has been 10 %. The program continues to address retention through interaction with the students in the classroom setting, outside of class and through the advising process. The program has remained relatively constant in the number of degrees awarded. With a relatively constant retention rate, graduation rates also remain constant. Any variations in graduation numbers is usually the result of students delaying graduation from the OHT program as they continue their education at FSU. Students enrolled in the program typically graduate within two years.

CURRICULUM:

The Ornamental Horticulture Technology program required courses are outlined on the program check sheet attached below. These courses were chosen as a result of the recommendations of the program's advisory committee. Each year the advisory committee reviews the program curriculum to determine whether it needs adjustment or continues to prepare students for employment in the horticulture industry. Since the advisory committee members are representatives of industry, they are well suited to make these determinations. Advisory committee members are selected as representatives of specific industry segments so they can speak to their particular needs.

General education courses included are requirements for the OHT program follow the university guidelines for AAS degrees. There are no hidden prerequisites. The program curriculum has not been changed since the last program review. There are no curricular changes in the review process and no curriculum changes are planned for the next 3 to 5 years unless recommended by the advisory committee.

Ornamental Horticulture Technology Check Sheet

General Education Requirements

Communication Competence 6 Sem. Credits

ENGL 150 3 credits
 ENGL 211 3 credits

Scientific Understanding 3 Sem. Credits

BIOL 113 3 credits

Quantitative Skills 3 Sem. Credits

MATH 115 or higher or Math 115 proficiency or higher or Math ACT of 24 or higher.

Cultural Enrichment 3 Sem. Credits

Social Awareness Elective 3 Sem. Credits

Program Courses

Course	Credits
HORT 111	3
HORT 112	3
HORT 136	3
HORT 138	4
HORT 143	4
HORT 150	4
HORT 151	4
HORT 152	2
HORT 201	3
HORT 225	4
HORT 250	1
HORT 291	5

Electives

To a total requirement of 60 semester credits.

Course work outside of A and S

MGMT 310 3 Credits

QUALITY OF INSTRUCTION:

Both current students in the program and alumni of the program have given high marks to the quality of instruction that they receive in the OHT program. This has been noted by both groups as one of the strengths of the program, especially the hands on instruction received. The advisory committee also indicated that the quality of instruction is outstanding but have noted a concern that the program coordinator carries too heavy a class load and needs relief in the form of additional faculty support to avoid overload. Since the program does depend on adjunct faculty help, all of the advising duties are assumed by the program coordinator. The employers of the graduates and interns of the program have also made comments suggesting that the quality of instruction is very good. They are best able to determine this by the knowledge and qualifications of the students they hire. The faculty who teach in the program continue to explore new and innovative ways to deliver coursework to the OHT students.

Professional development for program faculty is made somewhat difficult by a general lack of sufficient travel support. The Center for Teaching and Learning has offered limited support for professional development like support to attend the Golf Industries Conference which meets with the Golf Course Superintendents Association. Since this organization encourages faculty by providing a complimentary registration, costs can be kept at a minimum. Program faculty also attend the Michigan Nursery and Landscape Association annual conference as an additional professional development activity.

Program faculty and students in the program have always interacted very well. This is facilitated through interaction in lab settings and by activities like seminars and guest speakers. Students are also encouraged to attend professional meetings with faculty.

COMPOSITION AND QUALITY OF FACULTY:

The following faculty teaches courses in the program:

Assistant Professor Scott Herron

Program courses taught:

Hort 152 Plant Propagation

Biol 113 Basic Botany

Assistant Professor Herron is a new tenure track faculty member in the Biology Department.

Professor Philip Watson

Program courses taught:

Hort 138 Insect Pest Management

Professor Watson was a Merit recipient in 2004-2005 academic year.

Professor John Vanderploeg

Program courses taught:

Hort 111 Plant Identification I

Hort 112 Plant Identification II

Hort 136 Plant Pathology

Hort 150 Landscape Design

Hort 151 Landscape Plant Management

Hort 201 Pest Field Study

Hort 225 Turf Management

Hort 250 Horticulture Seminar

Hort 291 Horticulture Internship

Professor Vanderploeg received Merit in the 2000-2001 academic year.

Faculty are engaged in professional activities as their schedules and travel funds allow. The program coordinator has participated in the Golf Course Superintendents Association conference in 2004 and 2005. He has also attended the American Society for Horticultural Sciences conference in 2002. Annually the coordinator attends the Michigan Nursery and Landscape conference.

Workload in the Biology department is based on a formula that is referred to as the Fonner formula. A full load is defined as between 26 and 28 Fonner points. Each lecture hour per week is given 2 points while labs are given 1 point per hour. Additional points are given based on student credit hours generated and extra points for multiple preparations. The only faculty member with a full time commitment to the OHT program does have overloads every semester including summer semester.

Faculty recruitment has not occurred in the program since our last review. Any adjunct faculty are hired by the Biology Department head.

The program does utilize adjunct faculty out of necessity. Those who have been involved in the program in the last year are:

Jim Bogart

Peg Wilson

Both had a one semester appointment in the Biology Department. Neither are teaching in the academic year 2005/2006. One course, Hort 143 Soil Science, is taught by adjunct faculty in the new academic year which is Hort 143 Soil Science. This represents about 8 % of the total. The programs use of faculty from the department and adjunct faculty does not address the need for additional help with advising and program development. The program needs to hire competent and knowledgeable full time tenure track faculty. With reduced overloads by the program coordinator, more coursework will be shifted to adjunct faculty. Some students in the program have commented that the adjunct faculty have not performed very well in courses like Soil Science and Basic Botany. Some of these

concerns have been addressed by not rehiring the two adjunct faculty we used last year.

SERVICE TO NON-MAJORS:

The program faculty, specifically the program coordinator, does provide coursework for the School of Business by teaching a course titled Biol 114, The Biology and Maintenance of Turfgrass, for the Professional Golf Management program. That course is currently delivered in the Summer semester. In addition, a course titled Biol 351 Field Botany is provided for students enrolled in the School of Education/Biology Education and various Applied Biology options. Delivery of these courses has very little impact on the OHT program but does add to the program coordinators work load. The programs commitment to these service courses should remain the same for the coming year.

DEGREE PROGRAM COSTS AND PRODUCTIVITY DATA:

Student Credit Hours Produced in the Years Since the Last Program Review

Year	Summer	Fall	Winter	F + W
1999-00	104	388	254	642
2000-01	141	405	193	598
2001-02	108	326	251	577
2002-03	117	277	190	467
2003-04	93	301	180	481

Student Credit Hours per FTEF

Year	Summer	Fall	Winter	F + W
1999-00	130.73	180.66	143.10	327.33
2000-01	145.30	168.20	112.96	290.55
2001-02	128.25	135.39	140.54	275.17
2002-03	138.94	117.21	105.56	224.34
2003-04	114.96	134.38	100.00	238.12

Total Cost per Student Credit Hour (average for program) 2002/2003

Ornamental Horticulture Technology	\$221.53
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ASSESSMENT AND EVALUATION:

The program utilizes a number of assessment instruments. Students every semester complete an evaluation of instruction form for two program courses. Those two courses are always one in the first year of the program and the other from the second year. In addition, students are conferred with at the time of graduation to determine their level of satisfaction with the program. The program also undergoes a total program review each 6 years. This review helps evaluate the effectiveness of the program in reaching its program goals. The main variable tracked by the program is the success that students have in securing employment in the horticulture industry. In addition, the advisory committee continues to monitor the program and the way it prepares students for employment in the industry. As the committee detects any problems, adjustments are made.

ADMINISTRATIVE EFFECTIVENESS:

The program is run in an efficient manner. Student's class schedules are sometimes built more closely to the availability of adjunct faculty which can lead to reduced efficiency. Students complain about long lectures such as three hours in a row on a given day. Students are able to secure their courses in a timely manner. With the advising that the student receives, scheduling problems are reduced. The program does have access to clerical support which does take some of the load off the program coordinator and is appreciated.

INSTRUCTIONAL ENVIRONMENT:

The current classrooms and labs are adequate for delivery of coursework for the Ornamental Horticulture program. Since the last program review, the Smith Greenhouse was completed and has been operational for the past three years. This has improved our ability to deliver program specific coursework and has given students the opportunity to work and learn in a state of the art facility. We continue to lag behind on some of our technology including adequate microscopes, available software and some supplies. One of the recommendations of the last program review was a program budget so that some of the supply and equipment concerns could be addressed. This recommendation was not realized so we continue to see some problems here. Comments in surveys from current students and program graduates indicate a need to improve our equipment and technology in labs and classroom settings. Students expect to use the latest equipment and software, items they would encounter in industry settings.

COMPUTER ACCESS AND AVAILABILITY:

Computers are used in the delivery of coursework in the program. The computer resources seem to be adequate but additional software and updated laptop computers would increase our effectiveness in the delivery of technology in this program. Currently the program has access to desktop computers in its labs. Currently there are plans to update them to faster machines. Laptop computers and program specific software would allow us to utilize the latest CAD software and plant databases. With internet access students in the program can have access to program enriching web sites.

At this time no plan is in place to address our hardware and software needs. This is one area where a budget line in the department budget could begin to correct some of these deficiencies. Continued shortfalls in supplies and equipment budgets make it difficult to make much progress in addressing these program needs.

OTHER INSTRUCTIONAL TECHNOLOGY:

The program utilizes an array of different equipment from pruners and surveying equipment to power assisted hardware. This equipment is utilized in courses like Landscape Plant Management and Landscape Design to give real world learning experiences to the program students. While our equipment resources are adequate, additional new equipment and replacement of old equipment will become an issue in the near future. An acquisition plan will be developed in the near future to address future equipment needs.

LIBRARY RESOURCES:

The library resources, both print and electronic, have been adequate. On a regular basis library personnel makes contact with program faculty to determine what print and electronic resources might be needed for the program. In addition, library staff seems willing to provide instructional assistance as needed for the operations of the program. No noticeable deficiencies have been observed.

The Ornamental Horticulture Technology program at Ferris State University continues to prepare well rounded, trained and educated graduates to meet the continued needs of the billion dollar green industry in Michigan. Its innovative, broad based, hands on programming continues to prepare students for careers in the various segments of the industry. Students are ready to assume position of leadership through the skills they develop at Ferris State University. The OHT program is clearly consistent with the mission of Ferris State University. The approach that the program takes to preparing students makes the OHT program distinctive within this state and region. The two year AAS degree provides a good balance of technical course work as well as an effective general education component. These qualities are recognized by industry groups like the Michigan Nursery and Landscape Association who want to continue to work with Ferris State in a partnership which serves both the University and the industry. Graduates often aspire to having their own small businesses which ultimately contributes to the economic base of the state.

The OHT program will have between 24-26 majors in the fall. These numbers are a little lower than in past years due to an unusually small freshmen class in the fall of 2004. With the group registered for fall of 2005 and another strong class in 2006 the program numbers will begin to move up.

Most of the students who graduate from the program assume supervisory positions either immediately or after only a short time in the work force. A number of graduates indicated that they are assistant superintendents on golf courses. This is second in command at these golf courses. With a short amount of additional experience they will begin to apply for superintendent positions. The same opportunities for advancement are also available in other segments of this industry. This ability for graduates to move into supervisory positions helps them avoid the part-time or seasonal nature of some jobs in this industry. While some untrained or under prepared workers are affected by the seasonal nature of their employment, program graduates are in year around full time positions.

On the basis of the evaluation of many of the current students, graduates of the program and the advisory committee, the program curriculum continues to effectively prepare students for careers. The broad based course work coverage helps the students secure employment in the diverse segments of the industry. Course offerings and quality of the courses seem to make an impression on current students and graduates.

Faculty who teach the courses care about the preparation that the students receive. While additional faculty are needed for this program, those who are currently teaching are doing an excellent job.

The following recommendations and plans have come out of the discussions of the Program Review Panel. They address some of the concerns expressed by the group and also represent some of the new thinking that the committee engaged in during this program review process.

- 1. Establish closer ties with the Colleges of Business and Technology. In doing so we will be better able to incorporate course work that helps students realize their goals to have their own business**
- 2. Hire additional full time faculty for a term that is longer than one year. This will give more continuity to our courses and offers the students other faculty perspectives.**
- 3. Develop a tracking system which would allow the program the ability to follow the careers of graduates after 10-20 years. This tracking would show what kinds of career advancement graduates are able to accomplish with the preparation they received at Ferris State.**
- 4. Provide students with even more practical experiences especially in the greenhouse. A working greenhouse in a business model would give students experiences that they are not currently receiving. This could also apply to the nursery area at Katke Golf Course and display gardens that are planned for the area behind the Science Building.**
- 5. Bring in more outside speakers who represent the industry. They can offer a perspective to the students that might not be as easily conveyed by the faculty.**
- 6. Continue to connect with the community through outreach efforts such as tours of our facilities, workshops and presentations on subjects of interest to the community.**
- 7. Secure a budget line with in the department budget that will allow us to purchase equipment and supplies needed to carry out some of the plans stated above.**
- 8. Explore the development of a four years BS degree option within the program. This will allow us to attract more students who might not come to Ferris State for an AAS degree alone.**

APPENDICIES

Horticulture Technology program. At each advisory committee meeting the information is reviewed and recommendations are made. These recommendations are put into affect as soon as possible. In year six the program collects and evaluates the data fro academic program review. Recommendations from this review process are implemented as soon as is possible and when sufficient funding has been made available.

d) What assessment data were collected in the past year?

The OHT program is in academic program review so we are currently collecting the data called for in that process. In addition internship evaluations are completed every year as well as student evaluation of instruction and course evaluations.

e) How have assessment data been used for programmatic or curricular change?

The assessment data is reviewed by the advisory committee and result in the adjustments of coursework and course content to meet industry expectations. If the advisory committee feels that a change is needed to better address industries expectations, then such changes are recommended.

II. Course Outcomes Assessment

a) Do all multi-sectioned courses have common outcomes?

No multi-section courses are offered in OHT.

b) If not, how do you plan to address discrepancies?

c) How do individual course outcomes meet programmatic goals?

Each course fits into the overall programmatic goals for OHT.

III. Program Features

1. Advisory Board

a) Does the program have a board/committee? When did it last meet? When were new members last appointed? What is the composition of the committee (how many alumni, workplace representatives, academic representatives, etc.)

The OHT program does have an advisory committee. We last met in 2003 but have another meeting scheduled for March 29, 2005. One of the agenda items is to consider the addition of new members. Our last new member was added in January of 2005. Our advisory committee is made up of representatives of the major industry segments that hire our graduates. I serve as the only

academic representative. Two of the current members are alumni of the OHT program.

- b) If no advisory board exists, please explain by what means faculty receive advice from employers and outside professionals to inform decisions with in the program.
- c) Has feedback from the Advisory Board affected programmatic or curricular change?

As noted above, the Advisory board is the primary driving force in programmatic or curricular change.

2. Internships/cooperative or Experiential Learning

- a) Is an internship required or recommended?

An internship is required to complete the degree in OHT.

- b) If the internship is only recommended, what percentage of majors elect the internship option?
- c) What challenges does the program faced in regard to internships? What is being done to address these concerns?

The main challenge is to satisfy the demand for interns, which results in many internship opportunities go unfilled. The program continues to seed additional students that can as a result help satisfy the demand.

- d) Do you seek feedback from internship supervisors?

All interns are evaluated by their intern supervisors. This feedback is additionally secured through intern site visits.

If so, does that feedback affect pedagogical or curricular change?

The feedback is considered by the advisory board and appropriate curricular or coursework adjustments are made.

3. On-Line Courses

- a) Please list the web-based courses, both partial internet and fully online, offered last year.

No web-based courses are offered in OHT.

- b) What challenges and/or opportunities has web-based instruction created?

- c) What faculty development opportunities have been encouraged/required in order to enhance web-based learning within the program?

Release time would be required to develop web-based instruction.

- d) How has student feed-back been used to enhance course delivery?

- e) Is there any plan to offer this program on-line? If yes, what rationale is there to offer this program online?" (emerging market opportunity?, expand enrollment?, demand fro niche program offering?, etc.)

No such plans exist.

4. Accreditation

- a) Is the program accredited or certified?

No accreditation is available for the OHT program.

- b) By whom?

- c) When is the next review?

- d) When is the self-study due?

- e) How has the most recent accreditation review affected the program?

5. Student/Faculty Recognition

- a) Have students within the program received any special recognition or achievement?

Outstanding students in the OHT program are identified and recognized each year by the Michigan Nursery and Landscape Association. In addition the Federated Garden Club of Michigan recognizes one of our students by annually conferring a scholarship.

- b) Have faculty within the program received any special recognition or achievement?

Recognition is in the form of guest appearances on 9/10 News, and serving as an instructor for the Master Gardener program. I have also secured licensure as a

certified pesticide handler with special designation to conduct research and demonstrations with pesticides deemed restricted by the EPA.

6. Student Engagement

a) Is volunteerism and student engagement a structured part of the program?

This is not a structured part of the program but students do volunteer in different situations.

b) Does the program utilize service learning in the curriculum?

No it does not.

c) does the program participate in the American Democracy Project?

No.

Areas of Strength:

The greatest strength of the OHT program is its hands-on approach to laboratory instruction, utilizing the greenhouse and nursery facilities. The broad based approach that the program takes, by which students are prepared to enter a number of sub-disciplines within the horticulture industry is an additional strength. The program successfully prepares students for employment in the industry.

Areas of Concern (and proposed actions to address them)

Quality of available adjunct instructors and enrollment in the program are the two most significant concerns. I have little control of the first stated concern but know that we might be getting some relief through the search now underway. Enrollment concerns will be an agenda item at the advisory committee meeting on March 29. any plans identified by the advisory committee will be implemented as soon as possible.

Future Goals:

- 1. Expand the greenhouse and program web site.**
- 2. Develop a demonstration garden site behind the Science building.**
- 3. Continue to expand the nursery by increasing the number of plants under cultivation.**
- 4. Continue to expand our outreach to the community through our greenhouse and demonstration gardens.**
- 5. Build program enrollment through additional recruitment efforts.**

Preface

The Michigan Green Industry Labor Study Project described in this report was an outcome of a series of discussions initiated in 2001 by the Michigan Agricultural Experiment Station at Michigan State University between green industry representatives and MSU researchers. The primary purpose of these discussions was to stimulate research on the labor needs in the industry and to develop educational programs that would improve the situation. During the course of group discussions concerns arose over the constraints on industry growth from an insufficient labor supply, on the one hand, and the under representation of minorities and women in the industry, on the other. It became evident that industry representatives needed more specific firm, workforce, and jobs background information to better understand the labor needs in firms across the green industry. The authors of this report, with input from industry representatives, developed plans for a field research project in 2002. The method for conducting the project was developed and data collection and analysis was done in 2003. The writing up of this report, which took place in Fall 03, and Spring & Summer 04, has been a collaborative effort of the principal investigator and project manager.

We are pleased to acknowledge the financial support of the Michigan Agricultural Experiment Station and the Julian Samora Research Institute for this project. We are also grateful to The Michigan Nursery and Landscape Association and The Michigan Turfgrass Foundation for the information, the encouragement, assistance, and guidance provided on the various facets of this study.

RPR

PB

Abstract

The purpose of this report is to present the results of our exploratory study on the labor needs of Michigan's Green Industry as a single aggregated industry comprised of twenty diverse market/industry segments yet unified in activities that blend agriculture and esthetics. The basic procedure of the study involved partnering with Michigan Green Industry representatives to develop a mailed survey instrument, which was administered to the 12, 446 firms and individuals considered to operate in the green industry in Michigan in 2003. Findings from the 680 firms responding to the survey describe 1) firms by industry segment and firm (employment) size; 2) the racial and ethnic composition of the workforce, and its distribution by firm size and industry segment; 3) the distribution of jobs by job type across firms by size and industry segment; 4) employer perceptions of labor management relations and labor needs by firm size and industry segment; 5) the distribution of job openings by job type and occupational type; and 6) the characteristics of occupation types including benefits, training, and educational requirements.

No attempt was made to select a statistically valid sample in the sense of choosing firms in proportion to their number according to type of firm by green industry segment or firm size. Although this study represents the most comprehensive sampling of firms in the green industry to date, future research is needed to verify sample findings. Findings from this study serve as baseline descriptive data and hypotheses for future labor need studies of green industry firms.

The study's findings strongly suggest that the type of business firm (as characterized by the industry subgroup/segment or firm size) and the type of jobs and job openings created, are crucial in understanding and addressing the industry's labor needs. These organizational and labor market structural aspects of the industry should be given consideration when developing training and educational programs or other initiatives to attract and retain minority and women workers to address the industry's current and long-term labor needs. In developing these programs it is important to consider, for example, that half of the Greenhouse Production workforce was Hispanic, as were two thirds of the workers among Nursery Growers. Findings from this study should also propel discussions among industry leaders on the benefits of gaining institutional recognition for the green industry as a major group in the North American Industrial Classification System (NAICS) with its designated digit code numbers. There is also the expectation that more scholarly attention will be paid to the concerns of the industry's growth problems from the prospective of the industry's labor market. A better understanding of demand (job and job types) and supply (sources and types of workers) side factors of the labor market is necessary to develop the training programs necessary to address the industry's labor needs.

Executive Summary

The Michigan Green Industry Labor Study was launched in 2002, to help Michigan Green Industry representatives better understand and address the industry's labor needs across its various market segments. The project was based on the assumption that labor needs varied by type of job and job openings, and that these were related to firm size and industry market segment.

Firms in the study were grouped by employee firm size and also into one of 20 industry segments if 51 percent or more of their sales revenue came from a single industry segment. The project focused on the 2002 labor force to identify the demographic composition of the workers and the type of jobs created in the industry: seasonal or year-round, full-time or part-time, temporary, or H2A, H2B. Employer perceptions of labor needs and labor management relations were also assessed. The anticipated job openings were analyzed by industry segment, occupational type, and by other job opening characteristics including health insurance or type of retirement plan. The expectation was that research-based information in these areas, when disseminated to industry representatives, would change their knowledge and understanding of the industry and its labor needs, and result in more industry leaders and employers adopting strategies to address specific labor needs in the industry. It was also the expectation that the adoption in the study of a broad scope of the industry, as measured by firms operating across 20 different industry segments, would propel discussions on the benefits and challenges to Michigan's Green Industry and help understand what can be done to better present itself as a unified industry group.

The basic procedure for collecting the information for the study was a statewide survey of firms in the green industry done in partnership with industry leaders. The base for determining the target population of firms in the industry was a list provided by the Michigan Department of Agriculture that included all individuals or firms with any type of Michigan Plant Dealer or Grower's License. The Michigan Nursery and Landscape Association did a mailing from this list, noted returned mail, updated the list, and submitted the updated file to be used in this study. The Michigan Turfgrass Foundation added to this mailing list and included individuals and businesses involved in other segments of the green industry that may or may not require a nursery stock dealer's license. This list included golf courses, parks, municipal and private landscape maintenance firms, stadiums, and sod growers. A postcard explaining the purpose of the survey was mailed to the 12,467 known Michigan Green Industry firms the first week of January 2003, followed by a cover letter, the survey, and a self-addressed postage paid envelope, which were sent the second week of January. Seven hundred forty five (745) surveys were returned by March 31, 2003, and collected at MSU. However, 65 of these surveys were blank, from respondents who were out of business, or did not want to participate in the study. These responses were not included as part of the sample. The valid sample (n) is 680, approximately five and one half percent (5.5%) of the total population as determined by the method described above.

From a labor market perspective, a firm's need for labor is derived from the demand for the good or service the firm provides. Thus, an industry-wide assessment of labor needs cannot be understood fully without some background information on the diversity of firms in the industry. In the case of the green industry in Michigan, the goods and services produced cut across firms of different sizes and operating across 20 different segments. While this study was able to draw upon lists of green industry firms, information on these firms by segment or employment size was not available. This survey of the known population of green industry firms represents an attempt to get information on the different types of firms in the green industry as defined by industry segment and firm size, and the labor needs they have. No attempt was made to select a statistically valid sample in the sense of choosing firms in proportion to their number according to type of firm by green industry segment or by firm size.

A summary of the study's findings is found in the concluding section of this report. Among the key findings from the survey are the following:

- In the aggregate, the industry is represented by firms that are dispersed across 20 different markets but firms are concentrated in just five or six segments,
- Eighty-six percent of the firms relied on paid labor and ninety-five percent reported excellent or good relations with their workers,
- Most firms (61%) are small in size, one to 10 employees. A significant portion (45%) of the workforce, however, is concentrated in the largest 10 percent of all firms,
- The workforce is about three-fourths male, three fourths White, and one-fifth Hispanic, with the concentration of Hispanics in the larger firms and in particular segments.
- The industry's labor market is seasonal; with over a third (37%) of the jobs seasonal full-time and a quarter seasonal part-time. However, there is variability in the proportional representation of these jobs by segment. Variation in the proportional representations by industry segment is also the case for the 27 percent of year-round full-time jobs.
- There is significant variation in the proportion of jobs by type by industry segment. For example, in the case of seasonal jobs, 79 percent of all paid jobs in the Landscape Contractor segment were seasonal. By contrast, 56 percent of the jobs in Golf Course Management, and 40 percent of jobs in Garden Centers were seasonal in nature.
- The distribution in the type of job openings projected for 2003, which combined for nearly 37 percent of all jobs reported in 2002, mirrors the distribution of existing jobs by type, although the proportion of seasonal part-time openings (54%) in 2003 was significantly higher than the proportion of existing seasonal part-time jobs (37%) in 2002, suggesting a trend toward seasonal part-time jobs.
- The job openings were listed and defined in employers' terms and cut across several Standard Occupational Classification codes. None-the-less, they naturally broke into four groups: laborer, supervisor, skilled/technical and sales/clerk. Two thirds or the occupations were laborer occupations, 10 percent were supervisory/leader occupations and 15% were skilled/technical occupations.

- The need to fill each type of occupation varied by industry segment; some segments needed laborers almost exclusively; others needed significant percentages of supervisors.
- Supervisory positions were the most difficult to fill (50% of all the job openings in the category), while laborer jobs were the least difficult to fill (15% of all job opening in this category).
- Although a smaller share of laborer occupations, as compared to supervisory occupations, were difficult to fill, the difficulty in filling laborer occupations is significant because of the large proportion of these job openings overall. They accounted for 44 percent of all job openings listed as difficult to fill.
- Job openings by occupation type show a variation in labor needs across industry segments. For example, Nursery Growers (95%) and Greenhouse Producers (95%) needed laborers almost exclusively. Landscape Contracting (23%) and Landscape Management firms (21%) stood out in their need for workers in supervisory positions.
- Job openings requiring an educational level, a license, training or prior experience varied by occupation. For example, laborer occupations had the least educational and prior experience requirements. While 31 percent of sales/clerical job openings require prior experience, there were few other requirements that employers listed for this position. Thirteen percent of skilled/technical job openings listed some sort of training needed beyond high school. A pesticide applicator license was required for 12 percent of these job openings and a chauffeur's or commercial driver's license is required for nine percent of the job openings.
- The provisions of insurance and retirement plans also varied by occupation. Over half (53%) of all supervisor/leader occupations and over thirty percent (31%) of skilled/technical occupations included health insurance. Retirement plans were provided in supervisory and skilled/technical occupations 31% and 22% of the time respectively. This contrasts sharply with laborer jobs at nine percent with health insurance and eight percent with a retirement plan. Sales/clerical jobs have 13 and 12 percent respectively in these categories.
- The provisions of insurance and retirement plans also varied by industry segment. The landscaping segments had the highest percentage of job openings that include health insurance, Landscape Contractor, 25 percent, and Landscape Management, 27 percent. Garden Center job openings also listed 21 percent as including health insurance and Golf Course Management listed 14 percent. Thirty percent of Landscape Management occupations, nineteen percent of Garden Center occupations, and 17% of Landscape Contractor jobs included a retirement plan.

However, better definition of the industry's labor market is also important in understanding the industry's labor needs. On the demand side of the labor market, the firms are offering employment in six distinct types of jobs and in four groups of occupations. These job characteristics need to be taken into account when addressing the industry's labor needs. The use of the Standard Occupational Classification codes to classify occupations in the industry may be beneficial in that regard.

On the supply side of the labor market, the majority of the workforce in the green industry is White, but there are particular segments in which the racial and ethnic composition of the workforce is predominantly Latino/Hispanic. The relatively larger participation of these workers in particular industry segments, and in the relatively larger firms, suggests that these segments and firms offer the best chances of identifying best practices in the recruitment, retention, and training of these workers. Firms utilizing Hispanic workers also offer examples of the challenges confronted by the industry in expanding its workforce. Given the strong reliance on Hispanic workers in certain industry segments, the impact on the labor supply on such issues such as homeland security or guest worker programs is also of increasing concern.

In conclusion, basic company and labor market information is still needed to better understand and address the industry's labor needs. The green industry needs to consider effective ways to collect this basic information. Perhaps green industry employer surveys could be used to gather industry and job and job opening information, which could be shared with workforce boards and employment program planners to use in identifying employment opportunities by industry segment, occupation, and geography. Additionally, membership applications could perhaps be used to gather formation on firms by industry segment and firm size. Industry segment and firm size are key firm characteristics in the assessment of labor needs and attention should be given to finding the best way to collect this type of information.



Scope of Michigan's Green Industry

The Michigan nursery, perennial plant production, Christmas tree, sod producers, landscaping and lawn care industries contribute \$1.2 billion to Michigan's economy. Nursery and perennial plant producers generate about \$291 million* in annual sales and distribute their products into 35 states, Mexico and Canada, making us the second largest agriculture commodity group in Michigan and the fifth largest nursery industry in the nation. Our landscape contractors and designers generate \$655 million** in annual sales, and our lawn service companies and sod growers have expenses that contribute \$272 million*** to Michigan's economy.

Michigan Nursery and Landscape Association

Our mission: To foster the well-being and integrity of Michigan's Green Industry. The Michigan Nursery and Landscape Association (MNLA), established in 1922, is the statewide trade association that represents the over 8,000 licensed Green Industry firms in Michigan. Segments of the Green Industry that we serve include landscape contractors,

landscape management, landscape design, garden center, golf course maintenance, irrigation, greenhouse production, grower, interiorscape, nursery production, supplier, turf management, water gardener, and snow plowing firms.

Our organization is committed to developing and fostering partnerships to provide unparalleled resources for our Green Industry. Regional Chapter and Plant Michigan Allied Members include:

Associated Grand Rapids Landscape Professionals
Capital Area Landscape and Nursery Association
Genesee Area Landscape and Nursery Association
Kalamazoo Valley Landscape and Nursery Association
Saginaw Valley Association of Nurserymen
Southeast Michigan Nursery and Landscape Association
West Michigan Nursery and Landscape Association
Michigan Native Plant Producers Association
Michigan Seedling Growers Association
Michigan Sod Growers Association

In addition, we have established and flourishing partnerships with related green industry universities, regulatory agencies, and state and national associations, including Michigan State University, Lansing Community College, Oakland Community College, Michigan Department of Agriculture, Michigan Department of Natural Resources, Michigan IPM Alliance, Michigan Forestry and Park Association, Michigan Irrigation Association, Michigan Invasive Plants Council, the National Irrigation Association, the Association of Professional Landscape Designers, the American Nursery and Landscape Association and the Professional Landcare Network.

Contact Information: Amy Frankmann, Executive Director, 2149 Commons Parkway, Okemos, Mich. 48864, Telephone: 1-800-879-6652, Fax: (517) 381-0638, E-mail: amyf@mnl.org, Websites: www.mnl.org, www.plantmichigan.com

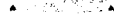
*Michigan Rotational Survey Nursery and Christmas Tree 1999-2000

**MASS 2004 Economic Impact Study of MI Landscape Contractors and Designers

***MASS Michigan Rotational Survey Turfgrass Survey 2002



Michigan Nursery and Landscape Association



June 21, 2005

Ferris State University
820 Campus Dr.
ASC 2004
Big Rapids, MI 49307

To Whom It May Concern:

The Michigan nursery, perennial plant production, Christmas tree, sod producers, landscaping and lawn care industries contribute \$1.2 billion to Michigan's economy. Nursery and perennial plant producers generate about \$291 million* in annual sales and distribute their products into 35 states, Mexico and Canada, making us the second largest agriculture commodity group in Michigan and the fifth largest nursery industry in the nation. Our landscape contractors and designers generate \$655 million** in annual sales, and our lawn service companies and sod growers have expenses that contribute \$272 million*** to Michigan's economy.

I write to you today to alert you to one of the biggest challenges the industry is facing. This challenge is the shortage of qualified labor. As the state organization we are working with other commodity groups, organizations and universities to find solutions.

We write today on behalf of our industry to inform you of the importance of our partnership with Ferris State's Ornamental Horticulture Technology program. We encourage you to continue your work as the industry relies on the qualified individuals you produce.

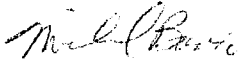
We look forward to our continued work together to provide solutions to the green industry.



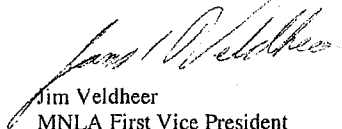
Please feel free to contact any of us should you need any further information.

Thank you for your time.

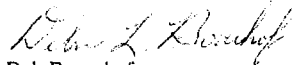
Sincerely,



Michael Bovio
MNLA President
English Gardens
Telephone (248) 855-9240
mbovio@englishgardens.com



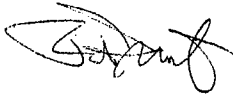
Jim Veldheer
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Deb Boverhof
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Michael Smith
MNLA Director-at-Large
Stonebridge Landscape Service
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stonebridge@aol.com



Peter Motz
Immediate Past President
Plum Line Landscape & Design
Telephone (989) 224-3313
motzpete@yahoo.com

Amy Frankmann
Executive Director
Michigan Nursery and Landscape Assoc.
Telephone (800) 879-6652
amyf@mnla.org

Hort 150
Landscape Design
Syllabus
Fall 2005

Course: Hort 150 Landscape Design
4 Credits An introduction to the principles of residential landscape design concentrating on the aesthetic and functional uses of plants in the landscape.

Instructor: Prof. J. Vanderploeg ASC 2119
Phone: 591-2547 email vanderpj@ferris.edu

Office Hours: 8:30-9:00 MWF
1-1:50 M 9-10:50 Th
Additional office hours are available by appointment

Text: Planting Design by W.R. Nelson

Materials

Needed: 6" 45/45/90 triangle
10" 30/60/90 triangle
8" flexible french curve
engineers scale
architects scale
mechanical drafting pencil (lead holder)
pencil lead (2B,HB,2H,4H)
lead sharpener
eraser (Pink Pearl)
erasing shield
drafting tape
compass
protractor
T-square (24")
vellum drafting paper
storage tube
assorted of optional supplies

Exam Schedule: (subject to change)

Exam 1	Sept.30, 2005
Exam 2	Nov. 4, 2005
Exam 3	Dec. 12, 2005 8:00 - 9:40 a.m. Science 231

Quiz Schedule:

Several unannounced quizzes are scheduled during the semester. Quizzes will be given when attendance falls below 90%.

Grading Policy:

Final grades will be based on a total points basis. (subject to change)

Exam 1	100 pts.
Exam 2	100 pts.
Exam 3	100 pts.
Design Proj. 1	100 pts.
Design Proj. 2	100 pts.
Design Proj. 3	100 pts.
Minor Proj.	<u>200 pts</u>
	800 pts.

Any project turned in late will carry a penalty of 5 pts per day. If you miss an exam, you have the option to make it up if you have either a medical doctors excuse or a pre-approved excused absence. Early final exams will not be given. Quizzes can not be made up. The final exam will be cumulative, covering the last unit plus the entire semester.

Grading Scale:

94-100 - A	73-76 - C
90-93 - A-	70-72 - C-
87-89 - B+	67-69 - D+
83-86 - B	63-66 - D
80-82 - B-	60-62 - D-
77-79 - C+	below 60 - F

Attendance

Policy: You are expected to be at every lecture and lab. To do well in this course it is very important to attend. Avoid tardiness since it is disruptive to others in the class. While in lab, you may be more informal as long as you continue to make progress on your projects. Early departure from labs is discouraged. Your assigned projects may be collected if you leave before the lab time is up.

Student Conduct

Policy: During lectures and labs, students should be attentive. It is important to be involved in the classroom discussion. Learning is enhanced if you involve yourself. As a student, it is up to you to maximize your education. If you are having difficulty, be sure to seek the instructors assistance or contact student services. Cheating, disruptive behavior, inattentive behavior and rudeness will not be tolerated. Cheating on exams will result in an automatic failure in the course. Cheating on quizzes will result in a grade of zero for that quiz.

Course

Objectives: In this course you will learn the basics of preparing a landscape plan from basic graphics to the finished presentation drawings. Emphasis will also be given to advanced graphics, site and client evaluation and site surveying.

HORT 225

Turfgrass Management

Syllabus Fall 2005

Course: Hort 225 Turfgrass Management 4 credits A review of the culture, care and identification of turfgrasses used in utility, recreational and ornamental applications.

Instructor: Prof. John Vanderploeg ASC 2119
Phone 591-2547 email vanderpj@ferris.edu

Office Hours: 8:30-9:00 MWF 1-1:50 M 9-10:50Th

Text: Turfgrass Management by A.J. Turgeon 6th edition Reston Publishers Inc.

Exam Schedule: (subject to change)

Exam 1	September 23, 2005
Exam 2	October 21, 2005
Exam 3	November 11, 2005
Final	December 12, 2005 (12-1:40PM)

Quiz Schedule: Biweekly quizzes will be given in lab. Additional quizzes will be given when attendance falls below a prescribed number.

Grading Policy: Final grades will be based on a total points possible basis.

Exam 1	100 points
Exam 2	100 “
Exam 3	100 “
Final	150 “
Quizzes	100 “
Class Participation	<u>100</u> “
And lab exercises	650 points possible

Any project turned in late will carry a penalty of 5 points per day. If you miss an exam, you have the option to make it up IF you have either a medical doctor's note or a PRE-APPROVED excused absence. Early finals will not be given. Quizzes can not be made up. The first three exams are unit exams while the fourth exam covers the remaining information and a cumulative review of the semesters work.

Grading

Scale:	A	94-100%	B-	80-82%	D+	67-69%
	A-	90-93	C+	77-79	D	63-66
	B+	87-89	C	73-76	D-	60-62
	B	83-86	C-	70-72	F	below 60%

Attendance

Policy: You are expected to be at every lecture and lab. To do well in this course it is important that you attend. Avoid tardiness since it is disruptive.

**Student
Conduct**

Policy: During lectures and labs students should be attentive and not carry on personal conversations. It is important to be involved in the class discussion. Learning will be enhanced if you involve yourself. As a student, it is up to you to maximize your education. If you are having difficulty in the course, be sure to seek the instructor's assistance or contact Student Services. Cheating, disruptive behavior, inattentive behavior and rudeness will not be tolerated. Cheating on exams will result in an automatic failure in the course. Cheating on quizzes will result in a grade of zero for that quiz.

Preparation

For class: We will be in the field regularly. It is important that you be able to walk some distance during class. Wear comfortable shoes and clothing. Be prepared to be in the field for up to 2 hours. As the semester moves into late fall and early winter, be sure that you wear warm clothing.

**Course
Objectives:**

1. To learn about the growth and development of turfgrass.
2. To recognize the characteristics of both cool and warm season turfgrasses.
3. Learn the culture and management practices involved in the maintenance of turfgrasses.
4. Identify and learn to control pests of turfgrasses.
5. To develop sound turfgrass management skills
6. To help develop the necessary skills enabling the student to think critically and to be able to solve problems.

Ferris State University

Department of Biological Sciences

DATE: August 9, 2005
TO: Academic Program Review Council
FROM: Jim Hoerter, Biological Sciences Department Head
RE: Ornamental Horticulture Program

I recently received and reviewed the draft of the Academic Program Review of the Ornamental Horticulture Technology Program. I wish to acknowledge that this program has a long history of success in preparing students for employment in the ornamental horticulture industry. Graduates of the program praise the quality of the curriculum and faculty. Our partners in industry continue to emphasize the importance of our program in preparing well qualified graduates for employment in the ornamental horticulture industry. The recent expansion and remodeling of the greenhouse and the hiring of a part-time greenhouse technician have greatly improved the quality of instruction and expanded the potential opportunities for program enhancement.

The ornamental horticulture profession offers many different career opportunities, including landscape design, installation and maintenance, floral design, greenhouse, nursery or garden center management, and turf maintenance. Because of this diversity, the horticulture job market is excellent and is expected to remain good well into the future. Ornamental horticulture profession offers rewarding careers for individuals who enjoy working with people and plants, and who find satisfaction in enhancing our environment.

However, despite the historical success and quality of the program, some challenges must be addressed and solutions found, especially during a time of limited university resources so that the OHT program can continue to improve and maintain its academic integrity. From an administrative viewpoint, I list some concerns I have with the program in its present configuration:

- The trend in program enrollment and student credit hour production is on a downward trend. This may be temporary, but no significant growth in student enrollment has occurred over several years, indicating that student enrollment is topped out with a ceiling of about 15-18 students per year who are interested in a 2-yr degree in ornamental horticulture.
- The program requires faculty that are very specialized in their training; it is very difficult to located qualified faculty when we are limited to extending one-year temporary appointments.
- Reliance on adjunct appointments and overloads to consistently offer all the courses in the curriculum undermines the academic integrity of the program.

- A one-man department does not provide the breadth of expertise and diversity of educational approaches that is required to maintain a program with academic rigor and vitality.
- The two-year degree program limits our ability to respond to changes in number of students enrolled. The program is locked-stepped in its design, requiring that all courses be offered every year each semester to permit students to graduate in two years; this prevents offering courses on an alternate year basis and has limited flexibility to create tracks or minors within the program to meet the changing needs of industry and the profession.
- The program does not have a tracking system to accurately assess the long-term employment satisfaction of our graduates with a 2-yr degree. It is important to determine if graduates remain in the field, continue to be employed full-time, achieve upward mobility in the profession in management and supervisory positions, and have opportunities for increased earning potential with an AAS degree.
- The program is a “curricular island” in the department with few course-requirement overlaps with any other programs. Course enrollments are directly tied to OHT program student enrollment each year. More commonality in course requirements between applied biology and OHT, or the design of interdisciplinary courses combining BIOL or HORT areas will not only help students discover relationships between the two disciplines, but help swell enrollments when OHT program enrollment is down. Consideration should be given to requiring more business courses that prepare students for owning their own greenhouse/landscaping business.

I do not have the perfect solution to all of these challenges. However, it is my recommendation that a few of the current problem and challenges can be solved or overcome if we proceed to critically examine course content and convert the current OHT program to a B.S. degree program with a greater emphasis on business and management proficiency. With a 4-year degree, tracks could be designed within the major to allow students to concentrate in such areas as landscape, greenhouse, or garden center management. We must find better ways to help students compete and advance professionally in the horticulture industry for supervisory positions because according to the Michigan Green Industry Labor Study (executive summary included in program review document), 62% of all the jobs in the industry are seasonal.

In designing the 4-yr program, the tendency to add many new upper-division specialized courses in the B.S. program should be avoided, but increased emphasis needs to be placed on redesigning existing courses or adding new courses that will also contribute to applied biology majors, OHT minors, tracks, or certificates. This will open up opportunities to locate faculty with the ability to teach in both OHT and BIOL disciplines, giving greater flexibility in teaching assignments. A 4-year program will also permit alternate year offerings that will reduce the need for teaching overloads.

In summary, the program needs to re-invent itself and critically examine how to channel limited resources to offer a 4-yr program that will be distinctive and prepare students better for select professions in an industry that is in flux and rapidly changing by designing innovative curricula and linking with already existing programs in the biology department and other departments within the College of Business. Other faculty in the department must help to meet its teaching needs to provide students with a greater perspective on the field. It must be distinctive and capitalize on our unique resources and industrial contacts. Above all, it must not be a program that already exists at other major universities in Michigan. It must create a new niche in an already competitive market that meets some emerging employments needs in the horticulture industry.



FERRIS STATE UNIVERSITY

To: Academic Senate Program Review Council
From: Matthew A. Klein, Dean, College of Arts and Sciences
Date: August 31st, 2005
Re: Ornamental Horticulture Program

This memorandum presents my review of the Ornamental Horticulture Technology Program (OHT) and is based on that program's APRC report, meetings with its faculty, students, and advisory board, and consultation with Department Head Jim Hoerter. I concur with Dr. Hoerter's praise of the program and its faculty and students. Ornamental Horticulture is an outstanding program. It is also true, however, that the program is undersubscribed and is relatively expensive when compared to other Arts and Sciences programs. The Vice President has asked me to review the program due to this low enrollment in concert with its APRC appraisal, and all OHT stakeholders are aware that the program is at a critical stage in its history. I believe that the program will need to be redirected in order for it to be viable, but it should be noted that John Vanderploeg and his students have done an outstanding job of supporting this program. Were it not for Dr. Vanderploeg's efforts OHT would not exist.

I will use the APRC recommended categories for the remainder of my remarks:

Health of the Program

In its current form, I expect that OHT will continue with relatively few majors. While there are many reasons for this, it appears that the seasonal nature of the work, a shift in emphasis at Ferris away from two-year programs, and competition from Michigan State University's four-year program are chief among the reasons for the program's low enrollment. Dr. Hoerter also correctly points out that the program is locked into, as he puts it, a "curricular island," which has meant that the program is stuck in something of a vicious cycle. Its costs will continue be high because of the sequence of the curriculum and its low enrollment, and yet we cannot easily add students without overburdening the faculty member, a precondition to justifying a new tenure-track line in the area.

Future Goals

OHT will need restructuring if it is to move beyond its current small base of students, and it is true, as the OHT report suggests, that creating a four-year program would be one solution to the current challenge. However, offering a four-year program that is identical to Michigan State's should raise some serious questions about the depth of the job market for this degree. If like the field of engineering there is enough demand for OHT jobs, offering the four-year degree in the area will not be a problem. It seems more likely, though, that the program will need to consider developing a niche category that is not currently served by other universities. For example, it would be logical to

explore how the program might create alternatives for the University's Pro-Golf Management Program. Students who lack the requisite golf skills could still find employment with golf facilities as greens keepers. Thought should also be given to opportunities with the College of Business for creating a program that would develop management and administrative skills appropriate for the job market.

Adequacy of Resource Allocation

The existing resources are appropriate given the current configuration of the program. Current student numbers and the cost of the program do not justify additional expenditures at this time. If the program realizes growth through reorganization of the curriculum or the establishment of a four-year program, additional resources will have to be provided.

Relationship of Program to FSU Mission

Ornamental Horticulture Technology fits well with Ferris' traditional career-focused hands-on curricular approach.

Program's Visibility, Distinctiveness & Value

The program is well respected locally and offers enhancement to the community in terms of the master gardening certification it provides. OHT services the PGM program but is relatively isolated from biological sciences in terms of its curriculum. In a sense, its distinctiveness, as discussed earlier, has made it weaker because it does not realize economies of support were it more integral to other biology programs. The greenhouse itself is an asset that enhances the university.

Characteristics, Quality, and Employability of Students in the Program

The students in the program are motivated and as a group have performed well scholastically when compared with other Ferris students. The employability of graduates has been good although the seasonal nature of the work can pose challenges for graduates. Graduates are obviously at a disadvantage when competing for jobs where applicants hold a four-year degree.

Quality of Curriculum and Instruction & Composition and Quality of Faculty

John Vanderploeg is the principle faculty member in the program. His expertise and tireless efforts on behalf of his program are outstanding in every way and have been key to the program's success.

Adequacy of Facilities and Equipment

The current facilities and equipment are adequate to the existing needs of the program due in no small part to the recent renovation and expansion of the greenhouse.

