

Status: PENDING

PROGRAM REQUEST
Professional Golf Management

Last Updated: Stokoe, Laurie Anne
01/14/2011

Fiscal Unit/Academic Org	Horticulture & Crop Science - D1127
Administering College/Academic Group	Food, Agric & Environ Science
Co-administering College/Academic Group	
Semester Conversion Designation	Converted with minimal changes to program goals and/or curricular requirements (e.g., sub-plan/specialization name changes, changes in electives and/or prerequisites, minimal changes in overall structure of program, minimal or no changes in program goals or content)
Current Program/Plan Name	Professional Golf Management
Proposed Program/Plan Name	Professional Golf Management
Program/Plan Code Abbreviation	PGM-BS
Current Degree Title	Bachelor of Science in Agriculture

Credit Hour Explanation

Program credit hour requirements		A) Number of credit hours in current program (Quarter credit hours)	B) Calculated result for 2/3rds of current (Semester credit hours)	C) Number of credit hours required for proposed program (Semester credit hours)	D) Change in credit hours
Total minimum credit hours required for completion of program		63	42.0	43	1.0
Required credit hours offered by the unit	Minimum	37	24.7	22	2.7
	Maximum	39	26.0	23	3.0
Required credit hours offered outside of the unit	Minimum	26	17.3	20	2.7
	Maximum	26	17.3	21	3.7
Required prerequisite credit hours not included above	Minimum	15	10.0	10	0.0
	Maximum	15	10.0	10	0.0

Program Learning Goals

Note: these are required for all undergraduate degree programs and majors now, and will be required for all graduate and professional degree programs in 2012. Nonetheless, all programs are encouraged to complete these now.

Program Learning Goals

- Be competent in critical thinking and research, i.e., have the ability to effectively gather or generate, analyze, evaluate, and disseminate information.
- Have the ability to integrate the fundamentals of physical and biological sciences (e.g. chemistry, physics, biology, botany, genetics, molecular biology, evolution, scientific method, etc.) in sustainable plant systems.
- Have translational plant science competency, i.e., the ability to apply horticulture, and agronomic principles (e.g. soil science, plant phys., crop/field ecology, landscape design and maintenance, pest management, etc.) to grow and maintain healthy
- Understand the concept of sustainability and be able to use sustainable practices.
- Be able to communicate effectively in all aspects (oral, electronic, written, visual, etc.) at a professional level.
- Understand the fundamentals of successful business and entrepreneurial operation: i.e., planning, goal setting, personnel management, business terminology, finance, economics, etc.
- Have an appreciation for and ability to practice life-long learning through self-awareness and evaluation, seeking knowledge, and using evaluation and synthesizing skills.
- Have developed an appreciation of and respect for diversity.
- Understand the importance of social responsibility in sustainability and how to be socially responsible.

Assessment

Assessment plan includes student learning goals, how those goals are evaluated, and how the information collected is used to improve student learning. An assessment plan is required for undergraduate majors and degrees. Graduate and professional degree programs are encouraged to complete this now, but will not be required to do so until 2012.

Is this a degree program (undergraduate, graduate, or professional) or major proposal? Yes

Does the degree program or major have an assessment plan on file with the university Office of Academic Affairs? No

DIRECT MEASURES (means of assessment that measure performance directly, are authentic and minimize mitigating or intervening factors)

Standardized tests

- Certification or licensure examinations

Classroom assignments

- Embedded testing (i.e. specific questions in homework or exams that allow faculty to assess students' attainments of a specific learning goal)
- Pre- and post-testing
- Other classroom assessment methods (e.g., writing assignments, oral presentations, oral exams)

Evaluation of a body of work produced by the student

- Practicum, internship or research evaluation of student work
- Portfolio evaluation of student work
- Capstone course reports, papers, or presentations

INDIRECT MEASURES (means of assessment that are related to direct measures but are steps removed from those measures)

Surveys and Interviews

- Student survey
- Alumni survey
- Employer feedback or survey
- Student evaluation of instruction
- Student interviews or focus groups

Additional types of indirect evidence

- Job or post-baccalaureate education placement
- Student or alumni honors/recognition achieved
- Peer review of program
- External program review
- Curriculum or syllabus review
- Comparison or benchmarking

USE OF DATA (how the program uses or will use the evaluation data to make evidence-based improvements to the program periodically)

- Meet with students directly to discuss their performance
- Analyze and discuss trends with the unit's faculty
- Analyze and report to college/school
- Analyze and report to accrediting organization
- Make improvements in curricular requirements (e.g., add, subtract courses)
- Make improvements in course content
- Make improvements in course delivery and learning activities within courses

- Make improvements in learning facilities, laboratories, and/or equipment
- Periodically confirm that current curriculum and courses are facilitating student attainment of program goals
- Benchmark against best programs in the field

Program Specializations/Sub-Plans

If you do not specify a program specialization/sub-plan it will be assumed you are submitting this program for all program specializations/sub-plans.

Pre-Major

Does this Program have a Pre-Major? Yes

Students entering the PGM major are required to have a minimum golf handicap of 10 or better and to be enrolled in the first PGM course, HCS 2250. The pre-major allows them to reach that handicap while taking major classes toward their degree. This is the same as the pre-major was under quarters.

Attachments

- PGM Rationale.docx
(Program Rationale Statement. Owner: McMahan, Margaret Jane)
- PGM Internship Guidelines.docx
(Other Supporting Documentation. Owner: McMahan, Margaret Jane)
- PGM Qtr 4-year Plan.pdf
(Quarter Advising Sheet(s). Owner: McMahan, Margaret Jane)
- PGM Transition Policy.docx
(Transition Policy. Owner: McMahan, Margaret Jane)
- Curriculum Map-PGM.xlsx
(Curricular Map(s). Owner: McMahan, Margaret Jane)
- PGM Semester Curriculum-Active.doc
(List of Semester Courses. Owner: McMahan, Margaret Jane)
- PGM 4-Year Plan.doc
(Semester Advising Sheet(s). Owner: McMahan, Margaret Jane)
- 4.5-Year(2,2)TransPlanPGM.doc: PGM 2 yr qtr, 2 yr sem
(Semester Advising Sheet(s). Owner: McMahan, Margaret Jane)
- 4.5-Year(1,3)TransPlanPGM.doc: PGM 1 yr qtr, 3 yr sem
(Semester Advising Sheet(s). Owner: McMahan, Margaret Jane)
- DeptHCS Support Letter.jpg
(Letter from Program-offering Unit. Owner: McMahan, Margaret Jane)

Comments

- Several courses in this major are from units that have not yet submitted their semester courses. Courses from those units are still in their quarter format and will be changed when the semester conversions are available. *(by McMahan, Margaret Jane on 12/07/2010 09:34 AM)*

Status: PENDING

PROGRAM REQUEST
Professional Golf Management

Last Updated: Stokoe,Laurie Anne
01/14/2011

Workflow Information

Status	User(s)	Date/Time	Step
Submitted	McMahon,Margaret Jane	10/14/2010 09:39 AM	Submitted for Approval
Revision Requested	Stokoe,Laurie Anne	11/18/2010 11:09 AM	Unit Approval
Submitted	McMahon,Margaret Jane	12/07/2010 09:34 AM	Submitted for Approval
Approved	McMahon,Margaret Jane	12/20/2010 10:44 AM	Unit Approval
Approved	Stokoe,Laurie Anne	01/14/2011 04:09 PM	College Approval
Pending Approval	Soave,Melissa A	01/14/2011 04:09 PM	CAA Approval



November 16, 2010

The Department of Horticulture and Crop Science is submitting and supports the following semester programs:

Revised major:

Professional Golf Management

New major (replaces the current Crop Science, Landscape Horticulture, and Turfgrass Science majors):

Sustainable Plant Systems with 4 specializations: Agronomy, Horticulture, Landscape Design and Management, and Turfgrass Science.

Revised graduate programs:

Horticulture and Crop Science MS

Horticulture and Crop Science PH

Revised minors:

Agronomy (formerly Crop Science)

Horticulture

Landscape Design and Management (formerly Landscape Horticulture)

Turfgrass Science

The programs are the result of an extensive review of our current curriculum that began in early 2009. The review included input from our industry stakeholders and partners, graduate and undergraduate students, all departmental faculty and staff, other OSU departments, as well as with faculty at benchmark programs at other institutions. The results of the collected data were discussed at a day-long faculty and staff retreat in December 2009.

As a result of that retreat and subsequent weekly meetings of faculty, staff, and students from January through early September 2010, the following has occurred. A set of learning outcomes were developed for both the graduate and undergraduate programs. Courses were created, revised, or dropped as the curriculum was developed to meet those goals at the appropriate level. Currently a plan is being developed to make sure that the outcomes, courses, and curriculum continue to provide the best education possible for our students.

The faculty voted unanimously to approve the undergraduate majors and minors (25 for, 0 against). The faculty vote for approval of the graduate programs will be taken at the December faculty meeting.

Respectfully,

A handwritten signature in black ink, appearing to read "William Randle".

William Randle

Professor and Chair

Department of Horticulture and Crop Science

(New abbreviations requested for: Landscape Design and Management Minor = LNDESMG-MN
Agronomy Minor = AGRON-MN)

Rationale for Professional Golf Management major:

The OSU Professional Golf Management (PGM) program is designed to provide a world class educational opportunity for students by combining the academic requirements of The Ohio State University with the golf business knowledge and golf aptitude expectations of members of the PGA of America. A career as a golf professional requires diverse knowledge and skills including finance, personnel management, marketing, food and beverage management, merchandising, plant science, inventory control, lesson planning, individual and group teaching, and social and professional interactions, as well as golf skills. The required knowledge and skills are obtained in a series of academic courses which contain the finite body of knowledge of the PGA/PGM program. Upon completion of all requirements, students will receive a Bachelor of Science degree in Agriculture with a major in Professional Golf Management. The PGM major is a comprehensive academic program which requires students to excel in several disciplines relevant to the golf industry and beyond. For this curriculum, the College of Food, Agricultural and Environmental Sciences collaborates with the Fisher College of Business, the School of Physical Activities and Educational Services, and the College of Education & Human Ecology to offer a unique multidisciplinary curriculum to provide students with the necessary tools of business, economics, coaching, recreation leadership, hospitality management, and turfgrass science.

Professional Golf Management Major Curriculum – Semester Conversion

All students must complete two Global Issues courses. This requirement is the successor to the diamond and asterisk requirement. All students must take a Social Diversity requirement which in the GEC was completing Rural Sociology 105 or Sociology 101.

FAES 100 or USAS 100, etc	1	Historical Study	3
Writing Level 1	3	Culture & Ideas or Historical	3
Writing Level 2	3	Study	
Agr Comm 390 or Comm 321	3	Literature	3
Math 1130 or 1148 (College Algebra)	4	Art	3
Data Analysis (HCS 2260)	3	Open Option#1 (Econ 201*)	3
Biological Science (with lab)	5	Minor (must select Gen Bus)	15
Physical Science (with lab)	5	Major	43
Additional Science (H&CS 2200)	3	Contemporary Issues	3
Social Science 1	3	PGM Internship (HCS 4191.2)	1
(Rural Soc 1500 or Sociol 101*)		PGM Internship (HCS 4191.2)	1
Social Science 2	3	Electives	7
(Econ 200*)		TOTAL	121
<hr/>			
Major			43
Required Courses			42
BUS-MHR	590	Leading High-Performance Ventures	3*
CSFSNRTS	685.01	Merchandise Buying & Management (pre-req CFSNRTS 275)	3*
CSHSPMG	350.01	Principles of Food Management- Hosp. Mgt.	3*
CSHSPMG	370	Cost Management & Menu Planning	3*
CSHSPMG	400	Beverage Management (pre-req CSHSPMG 230)	2*
DESIGN	573	Fundamentals of Multimedia Design	2*
or H&CS	4560	Creating a Virtual Perspective	
EDU PAES	509	Sports & Leisure Service Delivery & Promotion	2*
EDU PAES	620.06	Coaching of Golf	2*
HCS	2250	PGM Introduction, Career Devel. History & Rules of Golf	2
HCS	2270	Historical Perspectives on Golf Courses	2
HCS	3501	PGM Basic Golf Operations	2
HCS	3502	PGM Club Design, Performance, Fitting & Repair	2
HCS	4503	PGM Advanced Golf Swing Analysis & Teaching	2
HCS	4504	PGM Advanced Golf Operations	2
HCS	3475	Turfgrass Management for Golf Courses	3
HCS	4189	PGM Player Development (repeatable)	1
HCS	4191.02	PGM Internship (1 cr, repeat three times)	3
HCS	5600	Capstone	2
HCS	5601	Managing your Virtual Portfolio (part of capstone req.)	1
Elective Courses to Complete Major			1
HCS	4189	PGM Player Development (repeatable)	1
HCS	3797.x	Study abroad	3

* At this time the non-HCS courses in the major are “best guesses” for semester versions so names and credit hours may change.

4.5 Year Plan – Professional Golf Management – Horticulture & Crop Science

Year 1	Fall Semester	Spring Semester	Summer Semester
	Survey FAES 100	English 110	H&CS 4191.02 (Maj. Req.)
	Social Sci. 1	Biol 1101	
	Math 1130 or 1148	History	
	Art	Social Sci. 2 (Econ 200)	
	H&CS 2250 (Maj. Req.)	H&CS 3501 (Maj. Req.)	
	<u>13</u>	<u>16</u>	<u>1</u>
30 credit hours			

Year 2	Fall Semester	Spring Semester	Summer Semester
	Phys Sci. w/lab	Data Analysis (H&CS 2260)	H&CS 4191.02 (Maj. Req.)
	H&CS 2200(Addl. Sci.)	Cult./Idea/History	
	2 nd Writing	H&CS 2270 (Maj. Req.)	
	Open Op. 1 (Econ 201)	H&CS 3502 (Maj. Req.)	
	H&CS 4189 (Maj. Elec.)	Agr Comm 390	
	<u>15</u>	<u>15</u>	<u>1</u>
31 credit hours			

Year 3	Fall Semester	Spring Semester	Summer Semester
	Acct Mis 310 (minor)	Contemp. Issues	H&CS 4191.02 (Maj. Req.)
	H&CS 4503 (Maj. Req.)	Bus Mhr 400 (minor)	
	H&CS 3475 (Maj. Req.)	Edu Paes 509 (Spec. Req.)	
	CFSSNRTS 275 (prereq.)	Literature	
	CSHSPMG 350.01 (Spec. Req.)	Edu Paes 620.06 (Spec. Req.)	
	H&CS 4189 (Maj. Elec.)	Design 573 (Spec. Req.)	
	<u>15</u>	<u>15</u>	<u>1</u>
31 credit hours			

Year 4	Fall Semester	Spring Semester	Summer Semester
	H&CS 4504 (Maj. Req.)	H&CS 5600/5601	H&CS 4191.02 (Maj. Req.)
	CSHSPMG 400 (Spec. Req.)	CSFSNRTS 685.01 (Spec. Req.)	
	Bus Fin 420 (minor)	CSHSPMG 370 (Spec. Req.)	
	Bus Mgt 430 (minor)	Bus Mhr 590 (Spec. Req.)	
	Bus M&L 450 (minor)	Free Elective	
	<u>13</u>	<u>14</u>	<u>1</u>
28 Credit hours			

Year 4.5	Fall Semester
	H&CS 4191.02(Maj. Req.)
	<u>1</u>
1 Credit hour	

Distribution of hours:

GE's	63
Major	43
(Major Req.	21)
(Specialization Req.	20)
(Major Electives	2)
Minor	<u>15</u>
Grand Total	121

Total Credit Hours 121

4.5 Year Transition Plan – Professional Golf Management –

<u>2010 Fall Quarter</u>		<u>Winter Quarter</u>		<u>Spring Quarter</u>		<u>Summer Quarter</u>	
Survey FAES 100	1	English 110	5	Chem 101	5	H&CS 489	1
H&CS 250	2	Biol 101	5	H&CS 4488	<u>1</u>		
Rural Soc or Soc 101	5	Visual and Perf. Art	5	Social Sci. (Econ 200)	5		
Math 148	4	H&CS 350.01	1	History	5		
	<u>12</u>		<u>16</u>		<u>16</u>		<u>1</u>

45 credit hours (30 semester)

<u>2011 Fall Semester</u>		<u>Winter Quarter</u>		<u>Spring Quarter</u>		<u>Summer Semester</u>	
Chem 102	5	H&CS 260	5	Major	6	H&CS 489	1
H&CS 200	5	Literature	5	Agr Comm 390	5		
2 nd Writing	5	H&CS 270	3	Free elective	3		
H&CS 350.03	1	Econ 201	5				
	<u>16</u>		<u>18</u>		<u>14</u>		<u>1</u>

49 credit hours (32 Semester)

<u>2012 Fall Semester</u>		<u>Spring Semester</u>		<u>Summer Semester</u>	
Minor	3	Contemp. Issues	3	H&CS 4191.2	1
Major (3 or more classes)	10	Minor	3		
Free elective	2	Major (2 or more classes)	6		
	<u>15</u>		<u>15</u>		<u>1</u>

31 credit hours

<u>2013 Fall Semester</u>		<u>Spring Semester</u>		<u>Summer Semester</u>	
Major (2 or more classes)	4	H&CS 5600/5601	3	H&CS 4191.2	1
Minor (3 classes)	9	Major (2 or more classes)	6		
		Elective	<u>4</u>		
	<u>13</u>		<u>13</u>		<u>1</u>

28 Credit hours

<u>2014 Fall Semester</u>	
H&CS 4191.2 (Maj. Req.)	<u>1</u>

1 Credit hour

121 Total Semester Hours

CAA
10 of 15

4.5 Year (1 Qtr, 3 Sem) Transition Plan – Professional Golf Management

2011	Fall Quarter		Winter Quarter		Spring Quarter		Summer Quarter	
	Survey FAES 100	1	English 110	5	Chem 101	5	H&CS 489	1
	H&CS 250	2	Biol 101	5	H&CS 4488	1		
	Rural Soc or Soc 101	5	Visual and Perf. Art	5	Social Sci. (Econ 200)	5		
	Math 148	4	H&CS 350.01	1	History	5		
		<u>12</u>		<u>16</u>		<u>16</u>		<u>1</u>

45 quarter hours (30 semester)

49 credit hours (32 Semester)

2012	Fall Semester		Spring Semester		Summer Semester	
	HCS 2200	3	AEDE 2201 or Econ 201	3	H&CS 4191.2	1
	Literature	3	HCS 2260	3		
	Second Writing	3	Culture and Ideas/Hist	3		
	Major	3	Major	3		
	AgrComm/Comm	3	Free Elective	3		
		<u>15</u>		<u>15</u>		<u>1</u>

31 credit hours

2013	Fall Semester		Spring Semester		Summer Semester	
	Minor	3	Contemp. Issues	3	H&CS 4191.2	1
	Major (several classes)	9	Minor	3		
	Elective	3	Major (several classes)	9		
		<u>15</u>		<u>15</u>		<u>1</u>

31 credit hours

2014	Fall Semester		Spring Semester		Summer Semester	
	Major (2 classes)	4	H&CS 5600/5601	3	H&CS 4191.2	1
	Minor (3 classes)	9	Major (2 or more classes)	4		
			Minor	3		
			Elective	<u>1</u>		
		<u>13</u>		<u>12</u>		<u>1</u>

28 credit hours

2015	Fall Semester	
	H&CS 4191.2 (Maj. Req.)	<u>1</u>

1 credit hour

121 Total Semester Credit Hours

CAA
16 of 15

**RECOMMENDED COURSE PLAN FOR PROFESSIONAL GOLF MANAGEMENT MAJOR
BUSINESS MINOR**

Effective Autumn 2009

This model plan of study is presented as a suggested path to graduation in 4 years. Students have unique situations that may cause them to deviate from this plan. This is especially true for students who transfer into the major after their sophomore year. Nevertheless, it is important for you to consider the flow of courses, in particular major courses.

Year	Autumn		Winter		Spring		Summer		Benchmarks
1st	FAES 100	1	History	5	Chem 101	5	H&CS 489 Internship	2	<i>Math 148 and English 110.01 should be completed by end of year.</i>
	Math 148	4	Biology 101	5	AED Econ 200 or Econ 200	5			
	Rural Soc 105 or Soc 101	5	English 110.01	5	Visual & Performing Arts	5			
	H&CS 250 Intro to PGM	2	H&CS 350.01	1	H&CS 350.02	1			
		12		16		16		2	Minimum 46 Hours
2nd	H&CS 200	5	Agr Comm 390	5	Literature	5	H&CS 489 Internship	2	<i>Minor should be declared by end of year. At least three sciences should be completed by end of year. Consider study abroad.</i>
	Chem 102	5	Econ 201	5	Acct & MIS 310 (Minor)	5			
	Second Writing	5	H&CS 260	5	Hosp Mgt 230	3			
	H&CS 350.03	1	H&CS 270	3	H&CS 350.04	1			
		16		17		14		2	Minimum 49 Hours
3rd	Physics 103	5	Hosp Mgt 350.01	5	H&CS 598	1	H&CS 489 Internship	2	<i>Half the minor should be completed by the end of this year. Half the hours in the major should be completed by the end of this year. Apply to graduate at least three qtrs prior to graduation.</i>
	BUS-FIN 420 (Minor)	4	BUS MHR 590	4	BUS MHR 400 (Minor)	4			
	H&CS 470	4	BUS MGT 430 (Minor)	4	Hosp Mgt 400	3			
	H&CS 350.05	1			Hosp Mgt 370 H&CS 350.06	5 1			
		14		13		14		2	Minimum 43 Hours
4th	Elective	4	H&CS 600	5	Elective	5	H&CS 489 Internship	4	Minimum 45 Hours Total 183 hours
	BUS M&L 450 (Minor)	4	H&CS 350.07	1	AED Econ 460	3			
	EDU PAES 620.06	3	H&CS 560	4	Contemporary Issues	5			
	Elective	4	EDU PAES 509	3					
		15		13		13		4	

Please refer to the General Education Curriculum sheet for the major for additional important curriculum information. Students must complete two international issues courses. One must be a non-western or global course designated by an asterisk (*). The second can be another non-western or global course (*) or a western (non-US) course designated with a diamond (◇).

Professional Golf Management
Transition Policy

The university Pledge to Undergraduate Students will be followed by the faculty advisors of Professional Golf Management majors. Advisors will encourage their advisees to be proactive in getting help with scheduling courses before and after the conversion to make sure progress toward graduation is not impeded as long as the students follow a course of action that promotes progress. That course of action includes but is not limited to: a timely declaration of major and minor, taking courses in proper sequence, taking and successfully completing a sufficient number of hours each term, maintaining GPA's in the major, minor, and overall above 2.00, etc.

Beginning in summer, 2010, transition students in the Professional Golf Management major (those who start under quarters and will finish under semesters) will be receiving information regarding the semester conversion via bulletin boards in Howlett Hall, the department website (hcs.osu.edu), and other communication methods. This is intended to keep them informed of the process, the progress being made program and course approval, as well as what they should be doing to make the transition as seamless as possible.

The required number of credit hours for graduation will be reduced from 183 to 121 and credits for courses taken under quarters adjusted accordingly. Courses that are a one for one switch from quarter to semester versions should be relatively easy to incorporate into a student's program. For quarter courses that are dropped or significantly altered, or semester versions that will not be available before the student's projected graduation date, suitable semester alternatives will be substituted. The substitutions will be based on course content and meeting the needs of the student's career path and time to graduation.

In general, transition students will be encouraged to complete the quarter system GEC categories that have no or few options (e.g. most sciences, social science) before the conversion. They are also being encouraged to take some required courses in the major for the same reason. We feel that the categories with the most options (some semester GE categories and electives in the major) will provide the most flexibility in course choice and scheduling under semesters.

Faculty and others who advise students will be kept up-to-date with advising policies, resources, and tips via the H&CS Q2S Carmen website and other communication formats.

Professional Golf Internship Guidelines

1 Credit (repeatable to a maximum of 5 credits)

An internship is intended to give PGM students real world job experience at golf courses, clubs, resorts or other venues where golf professionals are employed. While on internship, students will be mentored by the on-site PGA of America professional and complete specified work experience activities. Students will learn about career opportunities and better understand the types of tasks/challenges associated with a career in professional golf management. The student is expected to 1) gain practical knowledge of the golf industry and business through interaction with successful PGA of America members; 2) complete specified work experience activities appropriate to their rank in the OSU PGM program.

Students must register for HCS 4891 during the semester when they will be on internship. Internship employment must be full time (minimum of 35 h per week) for at least 14 weeks. Upon completion of each internship experience, students must meet with the PGM Internship Coordinator to review their internship duties and submit their completed work experience activities.

--	--	--	--	--	--	--	--	--	--

H&CS Undergrad Learning Objectives: *Upon successfully completing their degree program, H&CS undergraduates will:*

1. Be competent in critical thinking and research, *i.e.*, have the ability to effectively gather or generate, analyze, evaluate, and disseminate information.
2. Have the ability to integrate the fundamentals of physical and biological sciences (*e.g* chemistry, physics, biology, botany, genetics, molecular biology, evolution, scientific method, etc.) in sustainable plant systems.
3. Have translational plant science competency, *i.e.*, the ability to apply horticulture, and agronomic principles (*e.g.* soil science, plant phys., crop/field ecology, landscape design and maintenance, pest management, etc.) to grow and maintain healthy plants in an efficient, economically sound, environmentally compatible, and socially responsible way.
4. Understand the concept of sustainability and be able to use sustainable practices.
5. Be able to communicate effectively in all aspects (oral, electronic, written, visual, etc.) at a professional level.
6. Understand the fundamentals of successful business and entrepreneurial operation: *i.e.*, planning, goal setting, personnel management, business terminology, finance, economics, etc.
7. Have an appreciation for and ability to practice life-long learning through self-awareness and evaluation, seeking knowledge, and using evaluation and synthesizing skills.
8. Have developed an appreciation of and respect for diversity.
9. Understand the importance of social responsibility in sustainability and how to be socially responsible.

The above will be achieved through lectures, labs, field trips, research projects, study abroad experiences, department-, college- and university-sanctioned extracurricular events and activities, as well as other instructional practices.