Curriculum Standard for Plant Systems: Horticultural Science Technology

**Career Cluster:** Agriculture, Food, and Natural Resources **

**Cluster Description:** The production, processing, marketing, distribution, financing, and development of agricultural commodities and resources including food, fuel, fiber, wood products, natural resources, horticulture, and other plant and animal products/resources.

**Pathway:** Plant Systems  
**Effective Term:** Fall 2014 (2014*03)

<table>
<thead>
<tr>
<th>Program Major / Classification of Instruction Programs (CIP) Code</th>
<th>Credential Level(s) Offered</th>
<th>Program Major Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Golf Course Management Technology</td>
<td>CIP Code 31.0302 AAS/Diploma/Certificate</td>
<td>A15230</td>
</tr>
<tr>
<td>Horticulture Technology</td>
<td>CIP Code: 01.0601 AAS/Diploma/Certificate</td>
<td>A15240</td>
</tr>
<tr>
<td>Landscape Gardening</td>
<td>CIP Code: 01.0605 AAS/Diploma/Certificate</td>
<td>A15260</td>
</tr>
<tr>
<td>Turfgrass Management Technology</td>
<td>CIP Code: 01.0607 AAS/Diploma/Certificate</td>
<td>A15420</td>
</tr>
</tbody>
</table>

**Pathway Description:**
These curricula are designed to prepare individuals for various careers in horticulture. Classroom instruction and practical laboratory applications of horticultural principles and practices are included in the program of study.

Course work includes plant identification, pest management, plant science and soil science. Also included are courses in sustainable plant production and management, landscaping, and the operation of horticulture businesses.

Graduates should qualify for employment in a variety of positions associated with nurseries, garden centers, greenhouses, landscape operations, governmental agencies/parks, golf courses, sports complexes, highway vegetation, turf maintenance companies, and private and public gardens. Graduates should also be prepared to take the North Carolina Pesticide Applicator’s Examination and/or the North Carolina Certified Plant Professional Examination.

**Program Major Description:** Choose one of the following 4th paragraphs to use in conjunction with the first three paragraphs of the pathway description above for documentation used to identify each Program Major:

**Golf Course Management Technology:** A program that prepares individuals to manage the operation of golf courses. Potential course work includes instruction in turf grass science and management, golf course design and construction, grounds equipment and operation, pest control, and grounds management.

**Horticulture Technology:** A program that focuses on the general production and management of cultivated plants, shrubs, flowers, foliage, trees, groundcovers, and related plant materials; the management of technical and business operations connected with horticultural services; and the basic scientific principles needed to understand plants and their management and care.

**Landscape Gardening:** A program that prepares individuals to manage and maintain indoor and/or outdoor ornamental and recreational plants and groundcovers and related conceptual designs established by landscape architects, interior designers, enterprise owners or managers, and individual clients. Potential course work includes instruction in applicable principles of horticulture, gardening, plant and soil irrigation and nutrition, turf maintenance, plant maintenance, equipment operation and maintenance, personnel supervision, and purchasing.

**Turfgrass Management Technology:** A program that focuses on turfgrasses and related groundcover plants and prepares individuals to develop ornamental or recreational grasses and related products; plant, transplant, and manage grassed areas; and to produce and store turf used for transplantation. Potential course work includes instruction in applicable plant sciences, genetics of grasses, turf science, use analysis, turf management, and related economics.

*Within the degree program, the institution shall include opportunities for the achievement of competence in reading, writing, oral communication, fundamental mathematical skills, and basic use of computers.*

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I. General Education Academic Core

Curriculum Requirements for associate degree, diploma, and certificate programs in accordance with 1D SBCCC 400.10: Degree programs must contain a minimum of 15 semester hours including at least one course from each of the following areas: humanities/fine arts, social/behavioral sciences, and natural sciences/mathematics. Degree programs must contain a minimum of 6 semester hours of communications. Diploma programs must contain a minimum of 6 semester hours of general education; 3 semester hours must be in communications. General education is optional in certificate programs.

### Plant Systems: Horticultural Science Technology

<table>
<thead>
<tr>
<th>Recommended General Education Academic Core</th>
<th>AAS</th>
<th>Diploma</th>
<th>Certificate</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Minimum General Education Hours Required:</strong></td>
<td>15 SHC</td>
<td>6 SHC</td>
<td>0 SHC</td>
</tr>
</tbody>
</table>

Courses listed below are recommended general education courses for this curriculum standard. Colleges may choose to include additional or alternative general education courses to meet local curriculum needs.

*Recommended certificate and diploma level curriculum courses. These courses may not be included in associate degree programs.*

**Communication:**

- **COM 101** Workplace Communication
  - 3 SHC
- **COM 110** Introduction to Communication
  - 3 SHC
- **COM 120** Intro Interpersonal Com
  - 3 SHC
- **COM 231** Public Speaking
  - 3 SHC
- **ENG 101** Applied Communications I
  - 3 SHC
- **ENG 102** Applied Communications II
  - 3 SHC
- **ENG 110** Freshman Composition
  - 3 SHC
- **ENG 111** Expository Writing
  - 3 SHC
- **ENG 112** Argument-Based Research
  - 3 SHC
- **ENG 114** Prof Research & Reporting
  - 3 SHC
- **ENG 115** Oral Communication
  - 3 SHC
- **ENG 116** Technical Report Writing
  - 3 SHC

**Humanities/Fine Arts:**

- **HUM 101** Values in the Workplace
  - 2 SHC
- **HUM 110** Technology and Society
  - 3 SHC
- **HUM 115** Critical Thinking
  - 3 SHC
- **HUM 230** Leadership Development
  - 3 SHC
- **PHI 230** Introduction to Logic
  - 3 SHC
- **PHI 240** Introduction to Ethics
  - 3 SHC

**Social/Behavioral Sciences:**

- **ECO 151** Survey of Economics
  - 3 SHC
- **ECO 251** Prin of Microeconomics
  - 3 SHC
- **GEO 110** Introduction to Geography
  - 3 SHC
- **GEO 111** World Regional Geography
  - 3 SHC
- **PSY 101** Applied Psychology
  - 3 SHC
- **PSY 102** Human Relations
  - 2 SHC
- **PSY 118** Interpersonal Psychology
  - 3 SHC
- **PSY 135** Group Processes
  - 3 SHC
- **PSY 150** General Psychology
  - 3 SHC
- **SOC 105** Social Relationships
  - 3 SHC
- **SOC 210** Introduction to Sociology
  - 3 SHC
- **SOC 215** Group Processes
  - 3 SHC

**Natural Sciences/Mathematics:**

- **BIO 140** Environmental Biology
  - 3 SHC
- **BIO 160** Introductory Life Science
  - 3 SHC
- **MAT 110** Math Measurement & Literacy
  - 3 SHC
- **MAT 121** Algebra/Trigonometry
  - 3 SHC
- **MAT 143** Quantitative Literacy
  - 3 SHC
- **MAT 152** Statistical Methods I
  - 4 SHC
- **MAT 171** Precalculus Algebra
  - 4 SHC
- **PHY 110** Conceptual Physics
  - 3 SHC
- **PHY 121** Applied Physics I
  - 4 SHC
II. Major Hours. AAS, diploma, and certificate programs must include courses which offer specific job knowledge and skills. Work-based learning may be included in associate in applied science degrees up to a maximum of 8 semester hours of credit; in diploma programs up to a maximum of 4 semester hours of credit; and in certificate programs up to a maximum of 2 semester hours of credit. Below is a description of each section under Major Hours.

A. Technical Core. The technical core is comprised of specific courses which are required for all Program Majors under this Curriculum Standard. A diploma program offered under an approved AAS program standard or a certificate which is the highest credential level awarded under an approved AAS program standard must include a minimum of 12 semester hours credit derived from the curriculum core courses or core subject area of the AAS program.

B. Program Major(s). The Program Major must include a minimum of 12 semester hours credit from required subjects and/or courses. The Program Major is in addition to the technical core.

C. Other Major Hours. Other major hours must be selected from prefixes listed on the curriculum standard. A maximum of 9 semester hours of credit may be selected from each prefix listed, with the exception of prefixes listed in the core or other Major Areas.

<table>
<thead>
<tr>
<th>Plant Systems: Horticultural Science</th>
<th>AAS</th>
<th>Diploma</th>
<th>Certificate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum Major Hours Required:</td>
<td>23-26 SHC</td>
<td>9-12 SHC</td>
<td></td>
</tr>
<tr>
<td><strong>A. Technical Core:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plant Identification. Choose one:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HOR 160 Plant Materials I</td>
<td>3 SHC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TRF 110 Intro Turfgrass Cult &amp; ID</td>
<td>4 SHC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pest Management. Choose one:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HOR 164 Hort Pest Mgmt</td>
<td>3 SHC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TRF 240 Turfgrass Pest Control</td>
<td>3 SHC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Design. Choose one.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HOR 112 Landscape Design I</td>
<td>3 SHC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TRF 120 Turf Irrigat &amp; Design</td>
<td>4 SHC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TRF 151 Intro Landscape Design</td>
<td>3 SHC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soil Science. Choose one.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AGR 170 Soil Science</td>
<td>3 SHC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HOR 166 Soils and Fertilizers</td>
<td>3 SHC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LSG 111 Basic Landscape Technique</td>
<td>2 SHC</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**B. Program Major(s):**

**Golf Course Management**

- #GCM 220 Golf Course Maint Systems 3 SHC
- #GCM 230 Golf Course Org and Admin 3 SHC
- #GCM 240 Golf Course Design 3 SHC

Select additional courses from the GCM prefix for a minimum of 12 SHC for the Golf Course Management AAS program.

Courses required for the Golf Course Management Diploma are designated with #.
### B. Program Major(s)(Continued)

#### Horticulture Technology

<table>
<thead>
<tr>
<th>Course Prefix</th>
<th>Course Title</th>
<th>SHC</th>
</tr>
</thead>
<tbody>
<tr>
<td>HOR</td>
<td>162 Applied Plant Science</td>
<td>3</td>
</tr>
<tr>
<td>HOR</td>
<td>168 Plant Propagation</td>
<td>3</td>
</tr>
</tbody>
</table>

Operations. Choose one:

<table>
<thead>
<tr>
<th>Course Prefix</th>
<th>Course Title</th>
<th>SHC</th>
</tr>
</thead>
<tbody>
<tr>
<td>HOR</td>
<td>124 Nursery Operations</td>
<td>3</td>
</tr>
<tr>
<td>HOR</td>
<td>134 Greenhouse Operations</td>
<td>3</td>
</tr>
<tr>
<td>LSG</td>
<td>121 Fall Gardening Lab</td>
<td>2</td>
</tr>
</tbody>
</table>

Select additional courses from the HOR or LSG prefix for a minimum of 12 SHC for the Horticulture Technology AAS program.

A Horticulture Technology diploma requires a minimum of 12 SHC extracted from the required technical/program major core of the AAS degree.

#### Landscape Gardening

Select a minimum of 12 SHC from the following courses for the Landscape Gardening AAS program:

<table>
<thead>
<tr>
<th>Course Prefix</th>
<th>Course Title</th>
<th>SHC</th>
</tr>
</thead>
<tbody>
<tr>
<td>WBL</td>
<td>111 Work-Based Learning I</td>
<td>1</td>
</tr>
<tr>
<td>+HOR</td>
<td>114 Landscape Construction</td>
<td>3</td>
</tr>
<tr>
<td>+HOR</td>
<td>134 Greenhouse Operations</td>
<td>3</td>
</tr>
<tr>
<td>+LSG</td>
<td>111 Basic Landscape Technique</td>
<td>2</td>
</tr>
<tr>
<td>+LSG</td>
<td>121 Fall Gardening Lab</td>
<td>2</td>
</tr>
<tr>
<td>+LSG</td>
<td>122 Spring Gardening Lab</td>
<td>2</td>
</tr>
<tr>
<td>LSG</td>
<td>123 Summer Gardening Lab</td>
<td>2</td>
</tr>
<tr>
<td>LSG</td>
<td>231 Landscape Supervision</td>
<td>4</td>
</tr>
</tbody>
</table>

Courses required for the Landscape Gardening Diploma are designated with +

#### Turfgrass Management Technology

<table>
<thead>
<tr>
<th>Course Prefix</th>
<th>Course Title</th>
<th>SHC</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRF</td>
<td>152 Landscape Maintenance</td>
<td>3</td>
</tr>
<tr>
<td>^TRF</td>
<td>210 Turfgrass Eqmt Mgmt</td>
<td>3</td>
</tr>
<tr>
<td>^TRF</td>
<td>230 Turfgrass Mgmt Apps</td>
<td>2</td>
</tr>
<tr>
<td>TRF</td>
<td>260 Adv Turfgrass Mgmt</td>
<td>4</td>
</tr>
</tbody>
</table>

Courses required for the Turfgrass Management Diploma are designated with ^

### C. Other Major Hours

To be selected from the following prefixes:

- ACC, AGR, ANS, ARC, ATR, BIO, BTC, BUS, CHM, CIS, CSC, CST, CUL, DFT, ECO, ELC, ETR, FLO, FOR, FWL, GCM, GIS, HET, HOR, IVS, LAR, LID, LSG, MNT, SEL, SST, TRF, VEN and WBL.

Up to two semester hour credits may be selected from ACA.

Up to three semester hour credits may be selected from the following prefixes: ARA, ASL, CHI, FRE, GER, ITA, JPN, LAT, POR, RUS and SPA.
III. Other Required Hours

A college may include courses to meet graduation or local employer requirements in a certificate (0-1 SHC), diploma (0-4 SHC), or an associate in applied science (0-7 SHC) program. These curriculum courses shall be selected from the Combined Course Library and must be approved by the System Office prior to implementation. Restricted, unique, or free elective courses may not be included as other required hours.

IV. Employability Competencies

Fundamental competencies that address soft skills vital to employability, personal, and professional success are listed below. Colleges are encouraged to integrate these competencies into the curriculum by embedding appropriate student learning outcomes into one or more courses or through alternative methods.

A. Interpersonal Skills and Teamwork – The ability to work effectively with others, especially to analyze situations, establish priorities, and apply resources for solving problems or accomplishing tasks.

B. Communication – The ability to effectively exchange ideas and information with others through oral, written, or visual means.

C. Integrity and Professionalism – Workplace behaviors that relate to ethical standards, honesty, fairness, respect, responsibility, self-control, criticism and demeanor.

D. Problem-solving – The ability to identify problems and potential causes while developing and implementing practical action plans for solutions.

E. Initiative and Dependability – Workplace behaviors that relate to seeking out new responsibilities, establishing and meeting goals, completing tasks, following directions, complying with rules, and consistent reliability.

F. Information processing – The ability to acquire, evaluate, organize, manage, and interpret information.

G. Adaptability and Lifelong Learning – The ability to learn and apply new knowledge and skills and adapt to changing technologies, methods, processes, work environments, organizational structures and management practices.

H. Entrepreneurship – The knowledge and skills necessary to create opportunities and develop as an employee or self-employed business owner.

*An Employability Skills Resource Toolkit has been developed by NC-NET for the competencies listed above. Additional information is located at: http://www.nc-net.info/employability.php

**The North Carolina Career Clusters Guide was developed by the North Carolina Department of Public Instruction and the North Carolina Community College system to link the academic and Career and Technical Education programs at the secondary and postsecondary levels to increase student achievement. Additional information about Career Clusters is located at: http://www.nc-net.info/NC_career_clusters_guide.php or http://www.careertech.org.

Summary of Required Semester Hour Credits (SHC) for each credential:

<table>
<thead>
<tr>
<th></th>
<th>AAS</th>
<th>Diploma</th>
<th>Certificate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum General Education Hours</td>
<td>15</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>Minimum Major Hours</td>
<td>49</td>
<td>30</td>
<td>12</td>
</tr>
<tr>
<td>Other Required Hours</td>
<td>0-7</td>
<td>0-4</td>
<td>0-1</td>
</tr>
<tr>
<td><strong>Total Semester Hours Credit (SHC)</strong></td>
<td><strong>64-76</strong></td>
<td><strong>36-48</strong></td>
<td><strong>12-18</strong></td>
</tr>
</tbody>
</table>

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