Landscape and Horticultural Technology

Associate in Applied Science Degree

Named one of the top six Outstanding Post-Secondary Agriculture Programs in the United States by the National Association of Agricultural Educators, the Landscape and Horticultural Technology (LHT) programs at County College of Morris (CCM) provide students with the technical knowledge and practical skills to succeed in a wide range of horticultural related professions.

With a primary focus on ornamental horticulture, students have an opportunity to earn an Associate in Applied Science degree in Landscape Management and Design, Turf and Turfgrass Management, or Agribusiness.

The programs also provide students who have very focused career goals with the choice of earning Certificates of Achievement in Landscape Design, Grounds Maintenance, Landscape Contractor or Garden Center. These certificates are designed specifically to meet the needs of students who may be currently employed and want to enhance their skill set or for those who already hold a baccalaureate or associate degrees in other areas. Certificates of Achievement may also be desirable for students who are making a career change and want or need to earn a credential as quickly as possible.

Each program is designed to prepare students for employment in specialized occupations in the field of agriculture, horticulture, and ornamental horticulture.

The Agribusiness degree program prepares students for careers in horticulture business operations including retail and wholesale endeavors, service businesses, retail and wholesale equipment suppliers, and florist shops.

The Landscape Management and Design degree program prepares students to become professional landscape designers or specialists in the design and installation of landscapes in both the residential and commercial markets.

The Turf and Turfgrass Management degree program is specifically structured to prepare students to become professional turf managers of commercial complexes, sports turf, recreational turf and golf courses.

The emphasis in each program is on the development of professional attributes, problem-solving capability and strong technical skills. Students are provided opportunities to develop leadership ability and entrepreneurial skills as well as skills in management.

Graduates of the Landscape and Horticultural Technology programs can find employment as landscape designers, landscape installers, managers and supervisors, golf course superintendents, grounds maintenance supervisors, and much more. Upon completion of the associate’s degree, students may also elect to transfer to a four-year institution to further their education. The Department of Landscape and Horticultural Technology has an articulation agreement with Delaware Valley College which provides CCM-LHT graduates a guarantee of junior status as long as they meet the minimum grade point criteria.

For more information, visit the Landscape and Horticultural Technology (http://www.ccm.edu/academics/divdep/health-professions-natural-sciences/department-of-landscape-and-horticultural-technology) website.

Degrees

- AAS Agribusiness (p. 1)
- AAS Landscape Management and Design (p. 2)
- AAS Turf and Turfgrass Management (p. 2)

Agribusiness

(P3321)

This program provides career preparation in the skills needed to work in horticultural related service industries as well as in both wholesale and retail sales of horticultural products. It is ideal for those who love the business aspect of the horticultural field but who do not feel drawn to designing and for those with a desire to be actively involved in sales positions. The Agribusiness degree program includes a strong emphasis on both horticultural technical knowledge as well as business management skills. Career opportunities are varied and, in addition to retail and wholesale nurseries, include equipment suppliers, landscape product suppliers, fertilizer and pesticide sales, as well as business management related to design build companies.

Due to continual program revisions mandated by the accrediting agencies and/or changes in state mandated requirements, students should consult their academic advisors when selecting courses.

General Education Foundation

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>Communication</td>
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<tr>
<td>ENG-111 English Composition I</td>
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<td>General Education Electives</td>
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<td>BIO-127 Biology of Environmental Concerns</td>
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<td>CHM-117 Introductory Chemistry Lecture</td>
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Agribusiness Core

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<tr>
<td>LHT-110 Plant Science</td>
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<td>LHT-111 Introduction to Horticulture</td>
<td>4</td>
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<tr>
<td>LHT-114 Landscape Plant Identification Management and Use</td>
<td>3</td>
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<tr>
<td>LHT-116 Horticultural Soils</td>
<td>4</td>
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<tr>
<td>LHT-215 Plant Pest Management</td>
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<tr>
<td>LHT-231 Landscape Construction and Equipment</td>
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<tr>
<td>LHT-235 Irrigation Systems</td>
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For more information, visit the Landscape and Horticultural Technology website. AAS Horticultural Technology (p. 1) AAS Landscape Management and Design (p. 2) AAS Turf and Turfgrass Management (p. 2) AAS Agribusiness (P3321)
BUS-205 Landscape Specifications and Estimating  3
LHT-233 Cooperative Agricultural Experience  3
Business Electives  6
  Business Elective
  Business Elective
  Select one of the following technical electives:
     LHT-101 Introduction to Turf Management
     LHT-108 Herbaceous Plant Materials
     LHT-115 Horticultural Computer Software Applications *
     LHT-124 Grounds Maintenance and Development
     LHT-130 Arboriculture
Agribusiness Core Credits  40
Total Credits  60

1 Choose any 3 credit Business Course other than BUS-205 and BUS-119, or any 3 credit course from Accounting, Economics or Marketing. Consult with academic advisor for additional information.

+ LHT 115 Horticultural Computer Software Applications can be used to fulfill the Technology Literacy requirement.

**Landscape Management and Design**
(P3320)

This program provides career preparation in the skills needed to design, build and manage ornamental and natural landscapes. It is ideal for those with an artistic flair who also enjoy working outdoors and for anyone who derives satisfaction from building and completing projects. Students learn to measure, analyze, draw and install landscapes. Hands-on activities are provided whenever possible. Career opportunities abound for the landscape designer and opportunities to either work for or develop a landscape design and build company are also tremendous. Because students also learn technical aspects of landscape installation, graduates are in as much demand as skilled technicians in landscape and plant material installation. Graduates may also elect to transfer into a Landscape Architecture program, enrolling in a bachelor's or master's degree program.

**General Education Foundation**

Communication  6
   ENG-111 English Composition I
   ENG-112 English Composition II
Math-Science-Technology  3
   MAT-124 Statistics
   or MAT-110 College Algebra
Social Science or Humanities  3
   Choose from General Education Humanities or Social Science course list
General Education Electives  8
   BIO-127 Biology of Environmental Concerns
   CHM-117 Introductory Chemistry Lecture
   CHM-118 Introductory Chemistry Laboratory
General Education Foundation Credits  20

**Landscape Management and Design Core**

LHT-115 Horticultural Computer Software Applications (+)
LHT-111 Introduction to Horticulture  4
LHT-114 Landscape Plant Identification Management and Use  3
LHT-108 Herbaceous Plant Materials  3
LHT-215 Plant Pest Management  4
LHT-235 Irrigation Systems  4
LHT-211 Landscape Design and Planning I  3
LHT-212 Landscape Design and Planning II  3
BUS-205 Landscape Specifications and Estimating  3
LHT-116 Horticultural Soils  4
LHT-233 Cooperative Agricultural Experience  3
Choose one of the following technical electives:  3
   LHT-124 Grounds Maintenance and Development
   LHT-110 Plant Science
   LHT-231 Landscape Construction and Equipment
   LHT-130 Arboriculture
   LHT-101 Introduction to Turf Management
Landscape Management and Design Core Credits  40
Total Credits  60

Due to continual program revisions mandated by the accrediting agencies and/or changes in state mandated requirements, students should consult their academic advisors when selecting courses.

**Turf and Turfgrass Management**
(P3324)

This program provides career preparation in the skills needed to manage large turf areas including golf courses, sports turf and both active and passive recreational turf areas. It is ideal for those who enjoy sports or who have participated in sports and want to find a rewarding career that provides continued contact with sports-related activities. Technical skills including understanding turfgrass physiology and morphology, soils management, installation techniques, and grounds management are all included in this course of study. Additionally, management and problem-solving skills are also an integral component. Graduates of the Turf and Turfgrass Management program are prepared for entry into a career in turf management or may choose to transfer to a four-year program in turf science.

**General Education Foundation (20 Cr)**

Communication  6
   ENG-111 English Composition I
   ENG-112 English Composition II
Math-Science-Technology  3
   MAT-110 College Algebra *
   or MAT-124 Statistics
Social Science or Humanities  3
   Choose from General Education Course List (Social Science or Humanities)
Select either the Biology or the Chemistry General Education Science sequences:
BIO-121 General Biology I & BIO-122 General Biology II
OR
CHM-125 General Chemistry I - Lecture & CHM-126 General Chemistry I - Laboratory
CHM-127 General Chemistry II - Lecture & CHM-128 General Chemistry II - Laboratory

General Education Foundation (20 Cr) Credits 20

Turf and Turfgrass Management Core
LHT-101 Introduction to Turf Management 3
LHT-108 Herbaceous Plant Materials 3
LHT-110 Plant Science 3
LHT-111 Introduction to Horticulture 4
LHT-114 Landscape Plant Identification Management and Use 3
LHT-116 Horticultural Soils 4
LHT-215 Plant Pest Management 4
LHT-231 Landscape Construction and Equipment 3
LHT-234 Landscape and Turf Installation 3
LHT-235 Irrigation Systems 4
LHT-233 Cooperative Agricultural Experience 3
Choose one of the following technical electives: 3
LHT-115 Horticultural Computer Software Applications * 3
LHT-124 Grounds Maintenance and Development
LHT-130 Arboriculture

Turf and Turfgrass Management Core Credits 40
Total Credits 60

For students who intend to transfer, MAT-110 is recommended. Be advised that students must be exempt from or pass MAT-016, Intermediate Algebra as it is a required prerequisite for BIO 121 & 122 and CHM 125/126 & CHM 126/127

For LHT 115, Horticultural Computer Software Applications can be used to fulfill the Technology Literacy requirement for students who do not pass the Technology Literacy Competence exam.

Due to continual program revisions mandated by the accrediting agencies and/or changes in state mandated requirements, students should consult their academic advisors when selecting courses.

Certificates of Achievement

• Landscape Design - A Certificate of Achievement within Landscape and Horticultural Technology (p. 3)
• Grounds Maintenance - A Certificate of Achievement within Landscape and Horticultural Technology (p. 3)
• Landscape Contractor - A Certificate of Achievement within Landscape and Horticultural Technology (p. 3)
• Garden Center - A Certificate of Achievement within Landscape and Horticultural Technology (p. 4)

Landscape and Horticultural Design Certificates of Achievement

The Landscape and Horticultural Technology Certificates of Achievement are designed for current or future professionals who want to improve their technical knowledge and skills in any of the four certificate areas. Each curriculum is balanced with theory and hands-on experiences. Students complete projects using the greenhouses, the plant preparation laboratory, the landscape design studio, the computer laboratory and the horticultural shop. The four certificate areas are: Landscape Design, Grounds Maintenance, Landscape Contractor and Garden Center. The Certificates of Achievement are designed primarily for part-time students who are currently working or plan to work in one of these areas. It is possible to complete any certificate within three years utilizing evening classes or within a shorter period of time with day classes or a combination of face-to-face and online or hybrid classes. Students with diverse career goals may earn more than one certificate.

Landscape Design
A Certificate of Achievement within Landscape and Horticultural Technology
(P0320)

LHT-108 Herbaceous Plant Materials 3
LHT-110 Plant Science 3
LHT-114 Landscape Plant Identification, Management and Use 3
LHT-211 Landscape Design and Planning I 3
LHT-212 Landscape Design and Planning II 3
BUS-205 Landscape Specifications and Estimating 3

Total Credits 18

Grounds Maintenance
A Certificate of Achievement within Landscape and Horticultural Technology
(P0321)

LHT-110 Plant Science 3
LHT-215 Plant Pest Management 4
LHT-124 Grounds Maintenance and Development 3
LHT-111 Introduction to Horticulture 4
LHT-116 Horticultural Soils 4

Total Credits 18

Landscape Contractor
A Certificate of Achievement within Landscape and Horticultural Technology
(P0322)

LHT-110 Plant Science 3
LHT-114 Landscape Plant Identification, Management and Use 3
LHT-211 Landscape Design and Planning I 3
LHT-116 Horticultural Soils 4
BUS-205 Landscape Specifications and Estimating 3
LHT-231 Landscape Construction and Equipment 3

Total Credits 19
Garden Center
A Certificate of Achievement within Landscape and Horticultural Technology (P0323)

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<td>LHT-108</td>
<td>Herbaceous Plant Materials</td>
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<td>Business Elective</td>
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</table>

Total Credits 20

1 Students should consult their academic advisors when selecting these courses.

Faculty
Brian Oleksak
Chairperson, Assistant Professor
Landscape and Horticultural Technology Department
M.S., The Ohio State University
B.S., The Pennsylvania State University
LHT 104 973-328-5363  boleksak@ccm.edu

Craig Tolley
Assistant Professor, Landscape and Horticultural Technology
M.S., Rutgers University
B.S., Cook College, Rutgers University
LHT 103 973-328-2480 ctolley@ccm.edu

Courses

LHT-101. Introduction to Turf Management. 3 Credits.
LECT 2 hrs, LAB 3 hrs
Intended to provide students with the skills needed to professionally manage turf facilities including golf courses, recreational and athletic fields. Topics include turf establishment and reseeding, turf management, turf maintenance, irrigation, control of turf pests and maintenance of turf areas. This course may be eligible for New Jersey Pesticide Recertification Credits in both core and selected categories. This course is offered as a traditional face-to-face course or as a hybrid online course. The face-to-face course also has an online supplement.
Additional Fees: Course fee applies.

LHT-108. Herbaceous Plant Materials. 3 Credits.
LECT 2 hrs, LAB 3 hrs
Teaches field identification techniques for herbaceous plants including annuals, biennials and perennials. The installation, selection and uses of herbaceous plants in a landscape, maintenance of herbaceous plants, and the selection of tools and equipment in the maintenance of herbaceous landscape plants are also included. This course is offered as a face-to-face course with an online supplement and also as a hybrid course.
Additional Fees: Course fee applies.

LHT-110. Plant Science. 3 Credits.
LECT 2 hrs, LAB 3 hrs
Plant Science includes studying the effects of the environment on plant growth and development, plant morphology and physiology, and plant classification. Students apply theory by propagating, maintaining and studying plants using the Landscape and Horticultural Technology program greenhouse facility. This course is offered as a traditional face-to-face course with an online supplement, as an online course or as a hybrid online course.
Additional Fees: Course fee applies.

LHT-111. Introduction to Horticulture. 4 Credits.
LECT 3 hrs, LAB 3 hrs
Plant production, plant propagation, greenhouse management and marketing of bedding plants represent the major topics of study. Students apply classroom theory by producing both annual and perennial plants from seed, cuttings and division. Commercial production techniques are emphasized, including professional greenhouse management. This course is offered as a traditional face-to-face course or as a hybrid online course. The face-to-face course also has an online supplement.
Additional Fees: Course fee applies.

LHT-114. Landscape Plant Identification Management and Use. 3 Credits.
LECT 2 hrs, LAB 3 hrs
This course focuses on field identification techniques applied to the study of woody plant material including trees, shrubs, groundcovers and vines. Both conifer and deciduous plants are covered. The landscape uses of plants and the factors which should be used to guide plant selection are also discussed. Over 100 species of woody plant material are studied including trees, shrubs, vines and groundcovers. The County College of Morris campus, local garden centers and arboreta of the Morris County Park Commission are all used for field study. This course is offered as a traditional face-to-face course, as an online course or as a hybrid online course. The face-to-face course also has an online supplement.
Additional Fees: Course fee applies.

LHT-115. Horticultural Computer Software Applications. 3 Credits.
LECT 2 hrs, LAB 3 hrs
Improves technical literacy by familiarizing students with the most effective ways to use the computer as a tool for online research, landscape design, landscape imaging and digital presentation development. Computer-assisted drafting is a major focus, and students also are introduced to GPS and GIS technology applications in agriculture. Students are provided with the opportunity to achieve competence in the selection and use of horticultural computer software. This course includes an online supplement and also offers students the opportunity to lease or purchase landscape design software at a significant discount.
Additional Fees: Course fee applies.
LHT-116. Horticultural Soils. 4 Credits.
LECT 3 hrs, LAB 3 hrs
The origin, composition and management of soils, including study of the physical and chemical properties with emphasis on ion exchange processes, soil classification, soil amendments and biological processes that occur in the soil. The lab provides students with the opportunity to learn how to analyze and evaluate soil productivity including nutrient and pH levels as well as texture and structure. The emphasis throughout the course is on the development of problem-solving abilities which can be applied to field work. Students are required to complete a semester project which requires that they analyze the suitability of soils in an assigned area. This course is offered as a face-to-face course which includes an online supplement or as a hybrid online course.
Additional Fees: Course fee applies.

LHT-124. Grounds Maintenance and Development. 3 Credits.
LECT 2 hrs, LAB 3 hrs
This course provides students with the skills needed to professionally manage exterior environments. Topics include turf and landscape plant management, irrigation, control of landscape pests, winter property maintenance and management of landscape construction features as well as the maintenance of grounds equipment. This course is offered as a face-to-face course with an online supplement and as a hybrid course.
Additional Fees: Course fee applies.

LHT-130. Arboriculture. 3 Credits.
LECT 2 hrs, LAB 2 hrs
This course introduces students to the science and technology of tree care in urban and suburban environments. Topics include the anatomy and physiology of trees, fertility, water relations, pest management, pruning, disease management, tree/utility line conflicts, preservation of older trees in the landscape and identification of hazardous trees.
Additional Fees: Course fee applies.

LHT-211. Landscape Design and Planning I. 3 Credits.
LECT 1 hr, LAB 6 hrs
Class instruction emphasizes the theory, principles and practices of design and planning, effective use of plant materials, artistic consideration of form and function, and basic drawing and drafting techniques. Students learn to apply the design process as a problem-solving technique to produce finished designs. The process of design is a major focus and students are also taught presentation techniques. Sustainable practices are infused throughout the course. This course is offered as a face-to-face course with an online supplement or as a hybrid online course. Student project work is posted online using a free online portfolio system.
Prerequisites: LHT-114 or permission of department chair
Additional Fees: Course fee applies.

LHT-212. Landscape Design and Planning II. 3 Credits.
LECT 1 hr, LAB 6 hrs
A continuation of Landscape Design and Planning I. Class instruction focuses on problem-solving for difficult sites, including designing for slopes, sustainability, landscape lighting design, cultural influences on design and specialty garden design. Cost estimation, presentation skills and GPS applications are also covered. This course is offered as a face-to-face course with an online supplement or as a hybrid online course.
Prerequisites: LHT-211 or permission of department chair
Additional Fees: Course fee applies.

LHT-215. Plant Pest Management. 4 Credits.
LECT 3 hrs, LAB 3 hrs
Teaches insects, diseases and weeds that are recognized as pests of ornamental plant materials and turf areas. The nature, structure and function of insect body parts, and the growth, habits, injurious effects and life cycles of pest organisms are studied in detail. Pesticides, regulations governing pesticide use and methods of selection and application are discussed with an emphasis on safety. Integrated Pest Management (IPM) techniques are stressed and students apply an understanding of IPM techniques to both greenhouse and landscape management. This course may be eligible for New Jersey Pesticide Recertification credits in both core and selected categories. This course is offered as a face-to-face course with an online supplement and as either a hybrid or online course.
Prerequisites: LHT-110 or LHT-111 or permission of department chair
Additional Fees: Course fee applies.

LHT-231. Landscape Construction and Equipment. 3 Credits.
LECT 2 hrs, LAB 3 hrs
Course emphasizes state-of-the-art landscape construction and installation techniques, surveying techniques and the safe operation and maintenance of landscaping equipment. Utilizing the well-equipped Landscape and Horticultural Technology facility, this course provides the student with extensive hands-on instruction in hardscapes installation and also focuses on teaching students the value of professional certification programs. This course is offered as a face-to-face course with an online supplement and as a hybrid online course.
Additional Fees: Course fee applies.

LHT-233. Cooperative Agricultural Experience. 3 Credits.
COOP 3 hrs
Recognizing that hands-on, real-work experience is invaluable to LHT students, this course provides students enrolled in the Landscape and Horticultural Technology program with on-the-job training and work experience prior to graduation. In order to successfully complete this course, students must be employed within the landscape or horticultural profession and satisfactorily complete a minimum of 300 hours on the job. Students must have minimum 2.0 GPA and completion of 25 credits in Agribusiness, Landscape Management and Design or Turf and Turfgrass Management programs to be eligible to enroll.
Prerequisites: Permission of department chair.

LHT-234. Landscape and Turf Installation. 3 Credits.
LECT 2 hrs, LAB 3 hrs
This course is intended to provide students with the skills and knowledge needed to succeed as landscape and turf installers and managers. Skills developed include surveying, understanding grading and drainage, and installation techniques for both landscape plants and turf. This course may be eligible for New Jersey Pesticide Recertification credits in both core and selected categories. This course is offered as a face-to-face course with online enhancements and as a hybrid online course.
Prerequisites: LHT-101 or LHT-110 or LHT-111 or LHT-124 or permission of department chair
Additional Fees: Course fee applies.
LHT-235. Irrigation Systems. 4 Credits.
LECT 3 hrs, LAB 3 hrs
This course is intended to provide the student with a general understanding of the components, use and function of irrigation systems. By completion of this course, the students are able to operate, maintain and repair irrigation systems. This course is offered as a face-to-face course with an online supplement or as a hybrid course.

Additional Fees: Course fee applies.

LHT-291. Special Topics in Agriculture I. 3 Credits.
LECT 3 hrs
This course is an independent study course which involves students in an individualized course of study designed to fit each student’s program of study and career goals. There is an online supplement for this course.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.

LHT-292. Special Topics in Agriculture II. 3 Credits.
LECT 3 hrs
This course is the second independent study course of a two semester sequence which involves students in an individualized course of study designed to fit each student’s program of study and career goals. There is an online supplement for this course.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.