The Ohio State University

Mission and Vision Statement

The Ohio State University has as its mission the attainment of international distinction in education, scholarship, and public service. As the state’s leading comprehensive teaching and research university, Ohio State combines a responsibility for the advancement and dissemination of knowledge with a land-grant heritage of public service. It offers an extensive range of academic programs in the liberal arts, the sciences, and the professions.

Ohio State provides accessible, high-quality undergraduate and graduate education for qualified students who are able to benefit from a scholarly environment in which research inspires and informs teaching.

At Ohio State, we celebrate and learn from our diversity and we value individual differences. Academic freedom is defended within an environment of civility, tolerance, and mutual respect.

The Ohio State University is a community of scholars in which:

- teaching and research are recognized as part of the same process: learning;
- academic units and curricula are structured to foster learning and nurture creativity;
- administrative services, facilities, and technology enrich the academic experience;
- academic programs and research opportunities are extensive and excellent, but not exhaustive; and
- human resources complement our promise. High-ability students, faculty, and staff from diverse backgrounds participate in leading programs and enrich an environment that sustains learning and growth.

Affirmative Action, Equal Employment Opportunity and Non-Discrimination/Harassment Policy

The Ohio State University is committed to building a diverse faculty and staff for employment and promotion to ensure the highest quality workforce, to reflect human diversity, and to improve opportunities for minorities and women. The university embraces human diversity and is committed to equal employment opportunity, affirmative action, and eliminating discrimination. This commitment is both a moral imperative consistent with an intellectual community that celebrates individual differences and diversity, as well as a matter of law.

Discrimination against any individual based upon protected status, which is defined as age, ancestry, color, disability, gender identity or expression, genetic information, HIV/AIDS status, military status, national origin, race, religion, sex, sexual orientation, or veteran status, is prohibited.

For more information or questions regarding University Policy Number 1.10, contact The Ohio State University Office of Human Resources, 1590 N. High St., Suite 300, Columbus, Ohio 43201-2190; 614-292-1050.

Campuses

Columbus
Lima
Mansfield
Marion
Newark
Agricultural Technical Institute, Wooster
# Agricultural Technical Institute

## Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mission</td>
<td>2</td>
</tr>
<tr>
<td>General Information</td>
<td>2</td>
</tr>
<tr>
<td>Academic Opportunities</td>
<td>3</td>
</tr>
<tr>
<td>Fees and expenses</td>
<td>4</td>
</tr>
<tr>
<td>Curricular information</td>
<td>6</td>
</tr>
<tr>
<td>Associate of Applied Science Degree programs</td>
<td></td>
</tr>
<tr>
<td>Bioenergy and Biological Waste Management</td>
<td>7</td>
</tr>
<tr>
<td>Business Management</td>
<td>8</td>
</tr>
<tr>
<td>Construction Management</td>
<td>9</td>
</tr>
<tr>
<td>Crop Management and Soil Conservation</td>
<td>10</td>
</tr>
<tr>
<td>Dairy Cattle Production and Management</td>
<td>11</td>
</tr>
<tr>
<td>Floral Design and Marketing</td>
<td>12</td>
</tr>
<tr>
<td>Greenhouse and Nursery Management</td>
<td>13</td>
</tr>
<tr>
<td>Horse Production and Management</td>
<td>14</td>
</tr>
<tr>
<td>Hydraulic Power and Motion Control</td>
<td>15</td>
</tr>
<tr>
<td>Landscape Horticulture</td>
<td>16</td>
</tr>
<tr>
<td>Livestock Production and Management</td>
<td>17</td>
</tr>
<tr>
<td>Power Equipment</td>
<td>18</td>
</tr>
<tr>
<td>Turfgrass Management</td>
<td>19</td>
</tr>
<tr>
<td>Associate of Science Degree programs</td>
<td></td>
</tr>
<tr>
<td>Agribusiness</td>
<td>20</td>
</tr>
<tr>
<td>Agricultural Communication</td>
<td>21</td>
</tr>
<tr>
<td>Agricultural Systems Management</td>
<td>22</td>
</tr>
<tr>
<td>Agriscience Education</td>
<td>23</td>
</tr>
<tr>
<td>Agronomy</td>
<td>24</td>
</tr>
<tr>
<td>Animal Sciences</td>
<td>25</td>
</tr>
<tr>
<td>Biochemical Sciences</td>
<td>26</td>
</tr>
<tr>
<td>Community Leadership</td>
<td>27</td>
</tr>
<tr>
<td>Construction Systems Management</td>
<td>28</td>
</tr>
<tr>
<td>Environment and Natural Resources</td>
<td>29</td>
</tr>
<tr>
<td>Food Business Management</td>
<td>30</td>
</tr>
<tr>
<td>Horticultural Science</td>
<td>31</td>
</tr>
<tr>
<td>Sustainable Agriculture</td>
<td>32</td>
</tr>
<tr>
<td>1 + 3 Program</td>
<td>33</td>
</tr>
<tr>
<td>Professional Golf Management</td>
<td>34</td>
</tr>
<tr>
<td>Certificate Programs</td>
<td>35</td>
</tr>
<tr>
<td>Bioenergy</td>
<td>36</td>
</tr>
<tr>
<td>Hydraulic Service and Repair</td>
<td>37</td>
</tr>
<tr>
<td>Turfgrass Equipment Manager</td>
<td>38</td>
</tr>
<tr>
<td>Course offerings</td>
<td>39</td>
</tr>
<tr>
<td>Faculty and staff</td>
<td>40</td>
</tr>
<tr>
<td>University Calendar</td>
<td>41</td>
</tr>
<tr>
<td>Phone numbers and web sites</td>
<td>42</td>
</tr>
</tbody>
</table>

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At The Ohio State University, every effort is made to provide accurate and up-to-date information. However, the university reserves the right to change without notice statements in university publications concerning rules, policies, fees, curricula, courses, or other matters when necessary. In addition, Ohio State is currently reviewing and restructuring many of our academic programs in an effort to enhance their quality and improve our efficiency. In that process, some of the programs and courses mentioned in this bulletin may be modified, consolidated with other programs or courses, or eliminated.
Mission
The Ohio State University Agricultural Technical Institute provides educational programs leading to associate degrees in agriculture, horticulture, environmental sciences, business, and engineering technology. With a high value placed on lifelong learning, we provide accessible, high-quality, applied educational experiences. Our goal is to prepare individuals to be technically competent, self-reliant, and productive citizens in a global society.

The purposes of the institute are to offer: 1) associate of science and associate of applied science degrees and certificates which include general and technical courses; 2) credit and non-credit continuing education and workforce development opportunities; and 3) transfer programs leading to higher levels of education.

Emphasis is placed on: 1) preparing technically proficient individuals for various careers; 2) developing skills and abilities in problem solving, critical thinking, leadership, and communication; and 3) fostering an environment where diversity is valued and integrated throughout the institute.

General Information
Ohio State ATI provides outstanding educational opportunities for students interested in careers in agriculture, horticulture, business, engineering technologies, and the environment. Twenty-six programs of study leading to the Associate of Applied Science, Associate of Science, or Associate of Technical Study prepare students for careers in as little as two years.

An Ohio State ATI education is based on the premise that students learn best when they participate actively in the learning process. Teaching and learning reach beyond the classroom to the laboratories, greenhouses, studios, and farm facilities that complement the Ohio State ATI campus. An experiential learning approach to education lets students learn by doing, complementing traditional classroom instruction.

To help students succeed, Ohio State ATI offers a personalized learning environment in which students receive individual attention from faculty with real-world knowledge and expertise. A student/full-time faculty ratio of 19:1 gives students the opportunity to work side-by-side with faculty who take a personal interest in their success.

In an increasingly competitive job market, experience coupled with technical training makes the difference. Seventy-three percent of Ohio State ATI graduates report they had secured employment before graduation.

Internships are an invaluable part of an Ohio State ATI associate of applied science degree. Students complete internships to gain work experience, make professional contacts, earn money, and receive academic credit. Faculty and staff assist students in locating internships that reflect their career goals and interests.

Ohio State ATI is located in a major agricultural center one and one-half miles southeast of Wooster, Ohio, and is easily accessible from any area of the state. The city serves as the Wayne County seat and is home to approximately 26,000 people. In addition to an expanding number of concerts, intramural sports, dances, and other activities held on campus, the surrounding community provides students opportunities to attend theater and cultural events, YMCA programs, movies, and fairs. Wooster is within an hour’s drive of Cleveland, Akron, and Canton, which offer a variety of activities including major league sports, concerts, and shopping.

Established in 1969, Ohio State ATI has a statewide mandate to provide comprehensive agricultural education. The institute is an administrative unit of The Ohio State University College of Food, Agricultural, and Environmental Sciences and maintains a close relationship with the Ohio Agricultural Research and Development Center (OARDC), Ohio State University Extension (OSUE), and the Ohio Department of Higher Education. These affiliations provide students access to additional resources and opportunities.

The Ohio State University is a member of the Association of American Universities, the National Association of Land-Grant Colleges and State Universities, and the Higher Learning Commission (phone 800-621-7440, www.hlcommission.org).
Academic Opportunities
Ohio State ATI offers the Associate of Applied Science, the Associate of Science, and the Associate of Technical Study degrees. All degrees include courses in communication, social sciences, mathematics, and science basic to the technical component of the program. (The code following each program will be used on your Application for Admission)

Associate of Applied Science
The Associate of Applied Science degree program provides students with the technical and management skills to enter the workforce in middle management positions. Each curriculum has minimum requirements that have been established with input from industry advisory committees.

The Associate of Applied Science degree is offered in the following areas:

- Bioenergy and Biological Waste Management
- Business Management
- Construction Management
- Crop Management and Soil Conservation
- Dairy Cattle Production and Management
- Floral Design and Marketing
- Greenhouse and Nursery Management
- Horse Production and Management
- Hydraulic Power and Motion Control
- Landscape Horticulture
- Livestock Production and Management
- Power Equipment
- Turfgrass Management

Horticulture and Crop Sciences; and the School of Environment and Natural Resources.

The Associate of Science degree option is available in the following areas:

- Agribusiness
- Agricultural Communication
- Agricultural Systems Management
- Agriscience Education
- Agronomy
- Animal Sciences
- Biochemical Sciences
- Community Leadership
- Construction Systems Management
- Environment and Natural Resources
- Food Business Management
- Horticultural Science
- Sustainable Agriculture

1 + 3 Program
The professional golf management (PGM) program is a four-year curriculum for aspiring PGA professionals. The objective of the PGM program at Ohio State ATI is to allow students to complete the first year of the Bachelor of Science in Professional Golf Management. After one year, students transition to the Columbus campus to complete the remainder of the program.

Professional Golf Management

Associate of Technical Study
The Associate of Technical Study degree allows students to create a unique curriculum that focuses on special interests based on individual career goals. An educational plan identifying the courses chosen must be approved before the student earns 30 credits. The approval process begins after enrollment with the student’s advisor.

Undeclared Majors
Students who have not yet decided on a major should enter the following code on their Application for Admission:

Undeclared

Certificate of Competency
The Certificate of Competency is a program that can be completed within a year. These programs emphasize technical courses.

Bioenergy

Hydraulic Service and Repair

Turfgrass Equipment Manager
Continuing and Professional Education Options
The Ohio State ATI Business Training and Educational Services Program offers opportunities for adults to upgrade their skills to meet the requirements of current technology and to retrain for new positions. The instructional offering consists of credit courses; noncredit workshops, seminars, and certificate programs; and specialized programs contracted with individual companies or associations.

Credit courses Students can enroll on a non-degree basis in any credit course offered at ATI. Non-degree students may enroll full- or part-time, and can choose to audit courses or take courses for a grade.

Certificate programs These programs consist of courses, workshops, and seminars aimed at upgrading an individual’s skills and qualifications to meet the needs of technological change.

- Certificate of Completion given to students completing a course or series of courses in a specific skill area.
- Certificate of Achievement given to students completing a pre-approved series of courses. This series of courses may be a prescribed curriculum designed to meet the employment qualifications for a specific job classification or may be individualized to meet the career goals of the student.

Transitioning to Columbus Campus
Students who have completed at least 30 semester credit hours post-high school (may include transfer hours) and have a minimum cumulative college GPA of 2.0 are eligible to transition to the Columbus campus.

Fees and expenses
The costs for an academic semester or year depend, in part, on the student. Expenses will vary with the individual student’s type of housing, meals, transportation, and other factors. All fees are subject to change.

Application fee ......................... $60
Required of every student upon first application to the university. Nonrefundable and not applicable toward any other university fee. Fee for international applicant is $70.

Acceptance fee ......................... $100
Required of every degree-seeking student upon first admission to the university. Nonrefundable and not applicable toward any other university fee.

Housing filing/reservation and academic year fees ........$350/$125
New students pay a non-refundable housing filing fee of $50. All students in campus housing are assessed: a space reservation fee of $300, which is refunded if they complete the conditions of their lease; and a $125 per year non-refundable fee for academic year housing.

Housing – ATI Hall Council Program fee ...............$20/semester
Required of all students living on campus. Nonrefundable and not applicable toward any other university fee.

Orientation Day ......................... $50
Required of every degree-seeking student upon first enrollment at Ohio State ATI. Nonrefundable and not applicable toward any other university fee.

Learning Technology Fee ...... variable
Most students are assessed this fee to pay technology related expenses within their primary program. Cost is based on student enrollment:
Part Time: 1-11 cr hrs ........... $4.10/cr hr
Full Time: 12-18 cr hrs .......... $49.20
19+ cr hrs ...... full time rate + $4.10/cr hr

Publication fee ......................... $2
Assessed for all students in the College of Food, Agricultural, and Environmental Sciences including Ohio State ATI in their first term of enrollment for the academic year.

Safety and Security fee $22.50/term
Ohio State ATI students are assessed this fee for safety and security costs on the Wooster campus, even when students are on internship.

Student health insurance ...................... $1626/semester
Students will be billed for health insurance through the university unless they opt out of insurance at the time of registration.
A course fee is assessed for any term in which the student is enrolled in the following:

- ANMLTEC 2201T: $80
- ANMLTEC 2801T: $50
- ANMLTEC 2811T: $50
- ANMLTEC 3101T: $50
- ANMLTEC 3131T: $30
- ANMLTEC 3137T: $50
- ANMLTEC 3151T: $300
- ANMLTEC 3161T: $350
- ANMLTEC 3171T: $150
- ANMLTEC 3201T: $50
- BIOLOGY 1101: $80
- BIOLOGY 1113, 1114: $50
- BIOTECH 2218T: $50
- BIOWMGT 2020T: $50
- BIOWMGT 2030T: $50
- BUSTEC 1202T: $30
- BUSTEC 2207T: $50
- CHEM 1110, 1210, 1220: $50
- ENGETCH 2016T: $50
- ENGETCH 2050T: $50
- ENGETCH 2121T: $50
- ENGETCH 2240T: $50
- ENGETCH 2312T: $20
- ENGETCH 2325T: $35
- GENBIOL 1200T, 1250T: $50
- HORTTEC 2140T: $50
- HORTTEC 2150T: $25
- HORTTEC 2189.10T: $50
- HORTTEC 2189.21T: $50
- HORTTEC 2190.10T: $50
- HORTTEC 2190.21T: $50
- HORTTEC 2225T: $15
- HORTTEC 2230T: $15
- HORTTEC 2240T: $20
- HORTTEC 2250T: $15
- HORTTEC 2270T: $15
- HORTTEC 2320T: $40
- HORTTEC 2360T: $50
- HORTTEC 2520T: $50
- HORTTEC 2540T: $50
- HORTTEC 2600T: $50
- HORTTEC 2620T: $25
- HORTTEC 2640T: $50
- HORTTEC 2680T: $50
- HORTTEC 2740T: $25
- HORTTEC 2880T: $25
- HORTTEC 2890T: $25
- KNSHP 1142.01, 1157.01: $10
- MICRBIO 4000.01: $50
- PHYSICS 1200, 1201: $50
- RNEWNRG 2025T: $50
- RNEWNRG 2035T: $50

*Qualified Residents: Ohio Law requires male students between the ages of 18 and 26 to be registered with the Selective Service System, unless they are on active duty with the armed forces of the United States (other than the National Guard or Reserves) or legally excluded, to be eligible for state educational assistance programs. Residents who are not registered or have not indicated they do not need to register by the first day of the semester are required to pay the Out-of-State Tuition as required by Ohio law. Students can register with Selective Service in the year they become 18 and must complete registration by 30 days after their 18th birthday. Selective Service registration can be accomplished within a few minutes at www.sss.gov. Students wishing to indicate exempt status can request materials to do so by contacting The Ohio State University Buckeye Link at 614-292-0300.

University fees
The university reserves the right to change fees without notice. Undergraduate students enrolled in any semester or term for 12-18 credit hours will be assessed full fees. Fees for undergraduate students enrolled for 11 or fewer credit hours shall be assessed fees on a per-credit hour basis. Students taking over 18 credit hours pay the full-time tuition plus the per-credit hour rate for each additional hour.

 Approximate costs for Ohio State

### ATI 2018-2019

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<th>Tuition effective Autumn 2018</th>
<th>Credit hours</th>
<th>Resident tuition*</th>
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* Costs listed are estimated. Miscellaneous/Personal expenses consist of transportation, clothing, laundry, phone, etc.

** Safety/Security, Publication, and Housing Hall Council Program fees (rounded)
Curricular information

Graduation requirements
To obtain a degree at Ohio State ATI a student must:
• earn the minimum number of semester credit hours required with a cumulative point-hour ratio of 2.00 or above;
• satisfactorily complete a prescribed curriculum;
• earn a minimum of 30 credit hours through regular course work at the institute (exclusive of the internship);
• complete an occupational internship with a grade of C (2.00) or better, if included in the degree requirements;
• complete the prescribed hours of practicum with a grade of C (2.00) or better in each semester of practicum enrollment; a maximum of 9 credit hours of practical experience courses (e.g., practicum and internship) will count toward graduation.
• file an application for the degree in accordance with institute deadlines; and
• enroll in the institute during the last semester necessary to complete the degree requirements. This may be waived on petition by the student.

Internship and practicum
Occupational internship is a required course in all Associate of Applied Science programs. It consists of a minimum of one academic semester of employment in the student’s specialized field of study and completion of a major written report. For this course, the student enrolls for credit, pays fees, receives grades, is supervised by Ohio State ATI personnel, and is paid a salary by the employer.

Practicum is a course of supervised practical experience required in most Associate of Applied Science programs. The practicum is designed to develop and improve occupational skills beyond the levels achieved in normal classroom and laboratory activities.

Credit by examination
Ohio State ATI offers the opportunity to earn college credit through satisfactory achievement on a variety of examinations. The credit by examination (EM) program is available to all currently enrolled students for most courses during the semesters they are offered. Students interested in this opportunity should contact the course instructor.

Associate of Applied Science
Each curriculum has minimum requirements (described on pages 7-19) that have been established with input from industry advisory committees.

Associate of Science
The curriculum includes both courses required for the Bachelor of Science degree and selected Ohio State ATI courses. The courses will transfer to fulfill major or minor requirements or may be used as electives. Practical applications may be required through internship and/or practicum. Each curriculum has minimum requirements which are described on pages 20-37.

Associate of Technical Study
In addition to the general graduation requirements, students pursuing the AT degree must meet the following requirements:

General Education
English composition; social science or humanities; mathematics; natural sciences; and applied Gen. Ed. minimum 30 credits

Technical Studies courses
Courses chosen in consultation with an advisor minimum 30-35 credits

Certificate programs
Certificates are available on both a credit (Certificate of Competency) and noncredit (Certificate of Completion and Certificate of Achievement) basis. For a description of the three certificate options, see pages 3 and 4.
Associate of Applied Science Degree programs

Bioenergy and Biological Waste Management

The objective of this program is to educate and prepare students for employment in the bioenergy and bioproducts industry, the water resource management (water and wastewater treatment) industry and in remediation of environmental pollution (soil and water).

Career opportunities

Graduates of this program are well positioned to take up roles as operators in training (OIT) in water and wastewater treatment (municipal and industrial) plants. Additionally, graduates will be prepared to take the state-administered wastewater operator license (Class II). Graduates of this program will also fill positions as technicians, analysts and sales representatives in water treatment equipment manufacturing firms, bioenergy (biogas, bioethanol, biodiesel, bio-butanol) plants (including farm-operated biogas plants) and research laboratories; in bio-products (biologically derived chemicals) and other fermentation-based plants; in soil and water conservation, in industrial water purification facilities, in grain handling, as analysts in environmental consultancies and energy firms, and in food processing plants (energy/water consumption and waste management).

Facilities

Students of this program will be exposed to cutting edge technologies including respirometer for real-time analysis of anaerobic digestion, 20-liter biodigester for larger-scale anaerobic digestion, 10-liter bioreactors for fermentation studies (production of liquid biofuels and bio-derived chemicals), customized biomass pretreatment reactor for biomass hydrolysis, protein and DNA gel electrophoresis apparatuses, touch-screen Bio-Rad thermocycler (polymerase chain reaction machine), rotary shaker for miniature fermentation and wastewater analytical studies, apparatuses for analyses of nitrogen, phosphorus and chemical oxygen demand (COD), high performance liquid chromatography and gas chromatography for analyzing sugars, biofuels, aldehydes, and other bio-products.

Applied learning opportunities

Students of this program are afforded ample opportunities to apply principles learned in the classroom to real world settings. For instance, the capstone course, Bioenergy and Biological Waste Management Projects (BIOWMGT 2040T) allows students to pursue design projects that tackle real-world problems in the field, as well as a laboratory-based project on some of the most relevant challenges in the industry. Additionally, assignments are geared towards solving existing challenges in the industry and often involve interfacing with industry experts. Internship and practicum allow students to hone their skills in the workplace while acquiring new ones.

General Education

AEDECON 2001 Principles of Food & Resource Economics
BIOLOGY 1113 Bio Sci: Energy Transfer and Development
BIOWMGT 1201T Exploring Bioenergy & Biological Waste Management
CHEM 1210 General Chemistry I
ENGLISH 1110.01 First-Year English Composition
GENSTDS 1201T College Orientation
MATH 1148 College Algebra
MICRIBIO 4000.01 Basic and Practical Microbiology
RURLSOC 1500 Introduction to Rural Sociology
or ENR 2300 Society and Natural Resources
TECPHYS 1150T Technical Physics

Technical Studies

*BIOWMGT 2189T Bioenergy & Biological Waste Management Practicum
*BIOWMGT 2191T Bioenergy & Biological Waste Management Internship
BIOWMGT 2010T Introduction to Bioenergy & Biological Waste Management
BIOWMGT 2020T Bioenergy & Wastewater Technologies
BIOWMGT 2030T Feedstock Evaluation & Analysis
BIOWMGT 2035T Sustainability and Waste Mgt.
BIOWMGT 2040T Bioenergy & Biological Waste Management Projects
ENGTECH 2310T Building Science: Electrical and Lighting Systems
ENGTECH 2345T Building Science: Mechanical Systems
ENR 2100 Intro to Environmental Science

* The student must earn a grade of “C” or higher in this course to receive an Associate of Applied Science Degree in Bioenergy and Biological Waste Mgt.

Course descriptions begin on page 42.
Business Management
The objective of this program is to prepare individuals to assume various positions such as sales, customer service, as well as entry level management with businesses involved in retailing, wholesaling, manufacturing, and/or agriculture.

Career opportunities
Many opportunities exist in the business world for individuals with good interpersonal skills and the knowledge of accounting, marketing, and computers. With additional on-the-job training and experience, graduates of the business management program could operate their own business.

Curriculum
The curriculum emphasizes management skill development, marketing, accounting, computer technology, human resource management, business law, and small business operations. By choosing a specialization in either General Business or Agricultural Business, the students have the opportunity to gain more knowledge about a specific industry. General Business students gain more in-depth understanding of the business world by taking classes such as Fundamentals of International Business and Foundations of Personal and Professional Leadership. Agricultural Business students choose a specialty in agriculture where they take a minimum of six credit hours of classes within their chosen area.

Core courses
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<td>AGRCOMM 3130</td>
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<td>AEDECON 2105</td>
<td>Managerial Records and Analysis</td>
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<td>BUSTEC 1151T</td>
<td>General Economics</td>
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<tr>
<td>BUSTEC 1201T</td>
<td>Exploring Business</td>
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<tr>
<td>BUSTEC 1202T</td>
<td>Software Applications</td>
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<tr>
<td>*BUSTEC 2191T</td>
<td>Business Internship</td>
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<tr>
<td>BUSTEC 2207T</td>
<td>Problem Solving with Spreadsheets and Databases</td>
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<td>BUSTEC 2231T</td>
<td>Fundamentals of Marketing</td>
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<td>BUSTEC 2241T</td>
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<td>BUSTEC 2244T</td>
<td>Human Resource Management and Leadership</td>
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<td>BUSTEC 2249T</td>
<td>Fundamentals of Business Finance</td>
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<tr>
<td>ENGLISH 1110.01</td>
<td>First-Year English Composition</td>
</tr>
<tr>
<td>GENBIOL 1200T</td>
<td>General Biology</td>
</tr>
<tr>
<td>or 1250T</td>
<td>General Botany with Applications</td>
</tr>
<tr>
<td>GENCHEM 1100T</td>
<td>Introduction to General Chemistry</td>
</tr>
<tr>
<td>GENCOMM 2115T</td>
<td>Technical and Business Writing</td>
</tr>
<tr>
<td>GENMATH 1141T</td>
<td>Business Mathematics</td>
</tr>
<tr>
<td>GENSTDS 1201T</td>
<td>College Orientation</td>
</tr>
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<td></td>
<td>Social Science Elective</td>
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</table>

Specialization courses
Agricultural Business
Additional Natural or Applied Science
AEDECON 3141 Agricultural Cooperatives
Agricultural Electives (from approved list)

General Business
Humanities Elective
Business Electives (from approved list)

*The student must earn a grade of “C” or higher in this course to receive an Associate of Applied Science Degree in Business Management.

Course descriptions begin on page 42.

Applied learning opportunities
Business management students must also complete an industry internship consisting of 450 hours of full-time employment in the field of their study or interest.

Other degree options
Students interested in earning a bachelor’s degree may be interested in the Associate of Science degree in Agribusiness or Food Business Management. See curricular information on pages 20 and 35.
construction management

the objective of this program is to help prepare students for management careers in the construction industry; emphasis is primarily on building construction, with an introduction to other sectors of the construction industry provided as well.

career opportunities

career opportunities are available with home builders, general contractors, subcontractors, building material retailers, and manufacturers.

facilities

the ohio state ati construction laboratory provides space and learning opportunities for students to design, construct, test, and evaluate construction materials and system components. the ohio state ati computer lab features industry specific cad, scheduling, and estimating computer software, which are utilized in technical courses throughout the program.

applied learning opportunities

construction management students must also complete an industry internship consisting of at least 450 hours of full-time employment in a work experience related to their career interest.

construction management students also take advantage of opportunities to attend industry conferences as well as volunteering with the local habitat for humanity.

curriculum

the construction management curriculum emphasizes two major content areas: building science and business management.

generald education

aeedcon 2001 principles of food and resource economics
agcomm 3130 oral expression in agriculture
bustec 1202t software applications
bustec 2244t human resource management and leadership
bustec 2247t business law
english 1110.01 first-year english composition
engtech 1201.02t exploring construction careers and industry
engtech 2121t drafting and computer-aided design
engtech 2310t building science: electrical and lighting systems
engtech 2345t building science: mechanical systems
gencomm 2115t technical and business writing
genstds 1201t college orientation
techphys 1150t technical physics

technical studies

aeedcon 2105 managerial records and analysis
engtech 2110t construction drawings and basic estimating
engtech 2120t building science: methods and materials
engtech 2160t estimating and scheduling
engtech 2170t construction project management
*engtech 2191.01t construction management internship
engtech 2440t site development and surveying
engtech 2600t construction safety and health
bustec elective (from approved list)

*the student must earn a grade of "c" or higher in this course to receive an associate of applied science degree in construction management.

course descriptions begin on page 42.

other degree options

students interested in earning a bachelor's degree may be interested in the associate of science degree in construction systems management. see curricular information on page 33.
Crop Management and Soil Conservation

The objective of this program is to educate students to maximize the quality and quantity of cereal and forage crop yields through the application of scientific principles. Students enrolled in this program may specialize in crop management or soil conservation.

Career opportunities
Graduates are employed as farm managers, machinery operators, and field persons for seed, fertilizer, and chemical companies, and grain elevators. Graduates may be self-employed through custom application of farm chemicals and fertilizers.

Curriculum
Students in the program study grain and oil seed production, forage production, soil science and management, pest management, and machinery management.

Core courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>AEDECON 2001</td>
<td>Principles of Food and Resource Economics</td>
</tr>
<tr>
<td>CRPSOIL 1201T</td>
<td>Exploring Agronomy, Sustainable Agriculture, and Crop Management and Soil Conservation</td>
</tr>
<tr>
<td>*CRPSOIL 2191T</td>
<td>Crop and Soil Internship</td>
</tr>
<tr>
<td>CRPSOIL 2300T</td>
<td>Introduction to Soil Science</td>
</tr>
<tr>
<td>CRPSOIL 2301T</td>
<td>Introduction to Soil Science Laboratory</td>
</tr>
<tr>
<td>CRPSOIL 2412T</td>
<td>Technology and Field Management of Forage Crops</td>
</tr>
<tr>
<td>CRPSOIL 2580T</td>
<td>Soil Fertility and Fertilizers</td>
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<td>ENGLISH 1110.01</td>
<td>First-Year English Composition</td>
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<td>GENCHEM 1100T</td>
<td>Introduction to General Chemistry</td>
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<td>College Orientation</td>
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<td>HCS 2201</td>
<td>Ecology of Managed Plant Systems</td>
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Specialization courses

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<tr>
<th>Program</th>
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<td>Crop Management</td>
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<td>BIOTECH 2219T</td>
<td>Pesticides and Their Use</td>
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<td>*CRPSOIL 2189T</td>
<td>Practicum in Crop and Soil Technologies</td>
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<td>CRPSOIL 2265T</td>
<td>Integrated Pest Management</td>
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<td>CRPSOIL 2280T</td>
<td>Applied Precision Agriculture</td>
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<td>CRPSOIL 2422T</td>
<td>Weed Control Technology</td>
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<tr>
<td></td>
<td>CRPSOIL 3800T</td>
<td>Principles of Farm Business Mgmt.</td>
</tr>
<tr>
<td></td>
<td>ENGTECH 216T</td>
<td>Tillage, Planting, Harvesting, and Storage Equipment</td>
</tr>
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<td>GENMATH 1141T</td>
<td>Business Mathematics</td>
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<td>HCS 3100</td>
<td>Introduction to Agronomy</td>
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Soil Conservation

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<td>BUSTEC 1202T</td>
<td>Software Applications</td>
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<td>CRPSOIL 2228T</td>
<td>Manure Management</td>
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<td>CRPSOIL 2342T</td>
<td>Soil Management</td>
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<td>CRPSOIL 2422T</td>
<td>Weed Control Technology</td>
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<td>ENGTECH 2040T</td>
<td>Soil and Water Conservation Systems</td>
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<td>ENGTECH 2600T</td>
<td>Construction Safety and Health</td>
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<td></td>
<td>ENR 2100</td>
<td>Intro to Environmental Science</td>
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*The student must earn a grade of "C" or higher in this course to receive an Associate of Applied Science Degree in Crop Management and Soil Conservation.

Course descriptions begin on page 42.

Facilities

Students are involved in field work and related activities at the 1,700-acre Grace Drake Learning Laboratory and the 143-acre Land Laboratory.

Applied learning opportunities

The practicum course provides students with supervised, practical work experience, and an opportunity to apply classroom instruction in the field.

An internship provides students with an opportunity to gain industry experience through full-time employment for 450 hours in the area of their interest.

Other degree options

Students interested in earning a bachelor's degree may be interested in the Associate of Science program in Agricultural Systems Management, Agronomy, or Sustainable Agriculture. See curricular information on pages 22, 24, and 37.
Dairy Cattle Production and Management

The objective of this program is to educate students in techniques of dairy production and management for careers with dairy farms and associated dairy businesses and industries.

Career opportunities

Dairy cattle production and management positions are available in production management, service, sales, and quality control.

A graduate of the dairy cattle production and management program could fill the following positions: herd manager, dairy farm manager, dairy field representative, dairy technician, or sales representative in the dairy industry.

Curriculum

The curriculum includes principles and application of milk production, genetics, reproduction, nutrition and feeding, health, animal selection, and financial management.

General Education

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
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<tbody>
<tr>
<td>AEDECON 2001</td>
<td>Principles of Food and Resource Economics</td>
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<tr>
<td>AEDECON 2105</td>
<td>Managerial Records and Analysis Industry</td>
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<tr>
<td>ANMLTEC 1201.07T</td>
<td>Exploring Dairy Careers and Industry</td>
</tr>
<tr>
<td>ANMLTEC 3140T</td>
<td>Animal Anatomy and Physiology</td>
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<tr>
<td>ANMLTEC 3157T</td>
<td>Dairy Cattle Genetic Improvement</td>
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<td>CRPSOIL 2300T</td>
<td>Introduction to Soil Science</td>
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<td>ENGLISH 1110.01</td>
<td>First-Year English Composition</td>
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<tr>
<td>GENBIOL 1200T</td>
<td>General Biology</td>
</tr>
<tr>
<td>GENSSC 1181T</td>
<td>Hispanic Culture and Language in the Workplace</td>
</tr>
<tr>
<td>GENSTDS 1201T</td>
<td>College Orientation</td>
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<tr>
<td>GENMATH 1141T</td>
<td>Business Mathematics</td>
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<tr>
<td>or 1145T</td>
<td>Technical Mathematics</td>
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Technical Studies

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<td>*ANMLTEC 2787T</td>
<td>Appl. Dairy Herd Practices and Mgt.</td>
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<tr>
<td>ANMLTEC 2797T</td>
<td>Dairy Industry Seminar and Experience</td>
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<td>ANMLTEC 3137T</td>
<td>Dairy Cattle Feeding Management</td>
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<tr>
<td>ANMLTEC 3167T</td>
<td>Dairy Cattle Milking and Reproductive Management</td>
</tr>
<tr>
<td>ANMLTEC 3177T</td>
<td>Dairy Cattle Health Management</td>
</tr>
<tr>
<td>*ANMLTEC 3191.07T</td>
<td>Dairy Industry Internship</td>
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<tr>
<td>ANMLTEC 3207T</td>
<td>Dairy Cattle Evaluation and Herb Records</td>
</tr>
<tr>
<td>ANMLTEC 3407T</td>
<td>Dairy Cattle Facilities, Environment, and Equipment</td>
</tr>
<tr>
<td>ANMLTEC 3800T</td>
<td>Principles of Farm Business Mgmt.</td>
</tr>
<tr>
<td>or 3887T</td>
<td>Integrated Dairy Farm Business Management</td>
</tr>
<tr>
<td>Technical electives</td>
<td>(from approved list)</td>
</tr>
</tbody>
</table>

The student must earn a grade of “C” or higher in these courses to receive an Associate of Applied Science Degree in Dairy Cattle Production and Management.

Course descriptions begin on page 42.

Facilities

Ohio State ATI's dairy facilities house more than 100 high-producing and genetic award winning registered Holstein, Jersey, and Brown Swiss milking cows in a free-stall barn with a drive-through total mixed ration feeding system. The fully automated double-ten parallel milking parlor is equipped with electronic identification, computerized milk weight recorders, and herd management software.

On-site computer systems house internal herd and financial records and are online with the Dairy Herd Improvement Association’s processing center and breed associations. In addition, feeding and nutrition tracking software and an electronic health and reproduction monitoring system are used in herd management.

Applied learning opportunities

Students take Applied Dairy Herd Practices and Management (supervised, practical work experience), which provides an opportunity to apply and practice skills learned in class at the ATI Dairy Laboratory during their second academic year.

Dairy students must also complete an industry internship consisting of a minimum of 300 hours of full-time employment in the dairy industry. Internship locations and type of dairy business – production or agri-business – are based upon student field of study or interest.

Opportunities are available for students to participate in a variety of activities like the national award winning dairy cattle judging team, Dairy Challenge, and the Ohio State ATI Dairy Club.

In addition, part-time jobs are available on many of the 200 dairy farms in the local county (Wayne County) while attending Ohio State ATI.

Other degree options

Students interested in earning a bachelor’s degree may be interested in the Associate of Science program in Animal Sciences – Dairy Specialization. See curricular information on page 27.
Floral Design and Marketing

The objective of this program is to educate individuals to assume design and management positions in the retail floral industry.

Career opportunities

Graduates may find job opportunities as floral designers, managers, or wedding consultants. The artistic principles learned in the program also prepare graduates to assume positions as interior plantscape technicians, estate gardeners, or display artists. With additional on-the-job experience, graduates should be able to go into business for themselves.

Curriculum

The curriculum provides the principles of designing traditional and contemporary arrangements as well as specialty designs for weddings, parties, and funerals. The techniques of handling and storing flowers, and decorative uses of plants are emphasized. Principles of floral marketing and business operation are developed as well.

General Education

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>AEDECON 2105</td>
<td>Managerial Records and Analysis</td>
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<tr>
<td>AGRCOMM 3130</td>
<td>Oral Expression in Agriculture</td>
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<tr>
<td>BUSTEC 1151T</td>
<td>General Economics</td>
</tr>
<tr>
<td>BUSTEC 2232T</td>
<td>Personal Selling</td>
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<td>BUSTEC 2244T</td>
<td>Human Resource Management and Leadership</td>
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<tr>
<td>GENBIOL 1250T</td>
<td>General Botany with Applications</td>
</tr>
<tr>
<td>GENHUM 1190.02T</td>
<td>Humanities as a Window on Cultural Pluralism: Global Arts</td>
</tr>
<tr>
<td>GENMATH 1141T</td>
<td>Business Mathematics</td>
</tr>
<tr>
<td>GENSTDS 1201T</td>
<td>College Orientation</td>
</tr>
<tr>
<td>HORTTEC 1201T</td>
<td>Exploring Horticulture</td>
</tr>
<tr>
<td>PSYCH 1100</td>
<td>Introduction to Psychology</td>
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<tr>
<td>or RURLSOC 1500</td>
<td>Introduction to Rural Sociology</td>
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Technical Studies

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<th>Course Code</th>
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<tr>
<td>BUSTEC 1202T</td>
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<td>BUSTEC 2231T</td>
<td>Fundamentals of Marketing</td>
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<tr>
<td>BUSTEC 2241T</td>
<td>Small Business Management</td>
</tr>
<tr>
<td>HORTTEC 2110T</td>
<td>Plant Materials I</td>
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<tr>
<td>*HORTTEC 2189.10T</td>
<td>Practicum in Floral Design</td>
</tr>
<tr>
<td>*HORTTEC 2190.10T</td>
<td>Practical Leadership in Floral Design</td>
</tr>
<tr>
<td>*HORTTEC 2191.10T</td>
<td>Floral Design and Marketing Internship</td>
</tr>
<tr>
<td>HORTTEC 2140T</td>
<td>Horticultural Photography</td>
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<tr>
<td>HORTTEC 2600T</td>
<td>Commercial Floral Design</td>
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<tr>
<td>HORTTEC 2620T</td>
<td>Retail Flower Shop Operation</td>
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<td>HORTTEC 2640T</td>
<td>Flowers for Celebrations</td>
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<td>HORTTEC 2660T</td>
<td>Post Harvest Flower Care</td>
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<tr>
<td>HORTTEC 2680T</td>
<td>Contemporary Floral Design</td>
</tr>
</tbody>
</table>

*The student must earn a grade of “C” or higher in these courses to receive an Associate of Applied Science Degree in Floral Design and Marketing.

Course descriptions begin on page 42.

Facilities

Facilities for the floral design program include a large floral design studio, flower preparation room, flower shop, and extensive greenhouse and gardens for fresh flower production.

Applied learning opportunities

Students work in The Ohio State ATI Flower Shop as a part of their practicum experiences, where they have an opportunity to apply skills learned in class. Practicum activities include designing arrangements, processing incoming flower shipments, creating in-store and window displays, stocking the floral display cooler, assisting customers, developing design concepts and marketing materials for weekly flower specials, and creating decorations for special events. Students also work as a team to transform the flower shop into a holiday showroom for an annual Christmas sale of student-designed floral décor.

Floral Design and Marketing students complete an industry internship consisting of 300 hours of full-time employment in a retail flower shop or related business. In addition, industry leaders provide specialized classroom instruction as participants in the American Institute of Floral Designers Artist-in-Residence program.
Greenhouse and Nursery Management

The objective of this program is to educate individuals for managerial positions in the greenhouse or nursery industries.

Career opportunities

Depending on the specialization, graduates will find job opportunities in greenhouse and/or nursery businesses, garden centers, public horticulture, specialist propagators, and horticultural supply companies. Graduates may fill the following positions: greenhouse and/or nursery grower, manager, technician, and sales.

Curriculum

The curriculum emphasizes production greenhouse and overwintering greenhouse environmental controls and the production, harvesting, handling, and use of floriculture, vegetable and nursery crops. Pest and pathogen management principles are taught and practiced. In addition to business management and marketing, merchandising and selling plant products are presented.

Facilities

The Ohio State ATI production and overwintering greenhouses, conservatory, and the outdoor nursery and display gardens provide opportunities for practical experience in greenhouse and nursery production. In addition, facilities at OARDC and Secrest arboretum are used.

Core courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
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</thead>
<tbody>
<tr>
<td>AEDECON 2001</td>
<td>Principles of Food and Resource Economics</td>
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<tr>
<td>AGRCOMM 3130</td>
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<td>General and Applied Entomology</td>
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<td>Introduction to General Chemistry</td>
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<td>Plant Diseases of Ornamentals and Turf</td>
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Specialization courses

Greenhouse Engineering Technology

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<td>Engineering Tech Fundamentals</td>
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<td>ENGTECH 2322T</td>
<td>Basic Electricity and Electronics</td>
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<td>ENGTECH 2325T</td>
<td>Analog and Digital Electronics</td>
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<td>GENMATH 1145T</td>
<td>Technical Mathematics</td>
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<td>*HORTTEC 2189.21T</td>
<td>Practicum in Greenhouse Management</td>
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<td>*HORTTEC 2190.21T</td>
<td>Practical Leadership in Greenhouse Management</td>
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<td>*HORTTEC 2191.23T</td>
<td>Greenhouse Engineering Technology Internship</td>
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<td>HORTTEC 2500T</td>
<td>Greenhouse Environment Control</td>
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<td>HORTTEC 2520T</td>
<td>Greenhouse Perennial Production</td>
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<td>Greenhouse Vegetable Production</td>
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<td>HORTTEC 3550T</td>
<td>Components of Greenhouse Technologies</td>
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<td>HORTTEC 3560T</td>
<td>Integrated Greenhouse Climate Control</td>
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Greenhouse

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<td>Business Mathematics</td>
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<td>Greenhouse Perennial Production</td>
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<td>HORTTEC 2540T</td>
<td>Greenhouse Production of Annuals</td>
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<td>Greenhouse Vegetable Production</td>
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Nursery

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<td>*HORTTEC 2189.22T</td>
<td>Practicum in Nursery Management</td>
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<td>Nursery Management Internship</td>
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<td>HORTTEC 2410T</td>
<td>Sustainable Nursery Production and Management</td>
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<td>HORTTEC 2420T</td>
<td>Garden Center Management</td>
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<tr>
<td>HORTTEC 2500T</td>
<td>Greenhouse Environment Control</td>
</tr>
<tr>
<td>*HORTTEC 2740T</td>
<td>Plant Propagation</td>
</tr>
</tbody>
</table>

*The student must earn a grade of “C” or higher in these courses to receive an Associate of Applied Science Degree in Greenhouse and Nursery Management.

Course descriptions begin on page 42.

Applied learning opportunities

Students take practicum (supervised, practical work experience in campus greenhouses and outdoor nursery), which provides an opportunity to apply skills learned in class. Students must also complete an industry internship consisting of 450 hours of full-time employment in the greenhouse or nursery industry.

Other degree options

Students interested in earning a bachelor’s degree may be interested in the Associate of Science program in Horticultural Science (page 36).
Horse Production and Management
The objective of this program is to prepare individuals for employment in the horse industry.

Career opportunities
A variety of opportunities exist in horse training, horse breeding, stable management, and other equine support industries. Graduates are prepared for employment in independent or corporate-owned units. Additional employment opportunities exist in businesses which supply goods and services to horse-related industries.

Horse production majors may find positions as trainers, instructors, breeding farm managers, stallion managers, stable managers, breed association representatives, race track or veterinarian clinic employees, or marketing representatives for feed, tack or equipment companies.

Curriculum
The curriculum includes principles and practical application of training, nutrition, reproduction, genetics, live animal evaluation, health, equine marketing and facility design and management. Business and accounting principles are also presented. Practical application and hands-on experiential learning is emphasized at Ohio State ATI’s horse facilities.

General Education
AEDECON 2001 Principles of Food and Resource Economics
AEDECON 2105 Managerial Records and Analysis
AGRCOM 3130 Oral Expression in Agriculture
ANMLTEC 1201.01T Exploring Equine Careers and Industry
ANMLTEC 3140T Animal Anatomy and Physiology
BUSTEC 2241T Small Business Management
ENGLISH 1110.01 First-Year English Composition
GENBIOL 1200T General Biology
GENMATH 1141T Business Mathematics or 1145T Technical Mathematics
GENSSC 1181T Hispanic Culture and Language in the Workplace
GENSTDS 1201T College Orientation
Applied Gen Ed Elective (from approved list)

Technical Studies
*ANMLTEC 2189.01T Horse Practicum
*ANMLTEC 2190.01T Leadership in Equine Operations Management
ANMLTEC 2201T Introduction to Horse Science
ANMLTEC 3101T Equine Marketing and Facility Management
ANMLTEC 3131T Equine Feeding and Nutrition
ANMLTEC 3151T Horse Breeding and Selection
ANMLTEC 3171T Horse Health and Disease
*ANMLTEC 3191.01T Equine Industry Internship Experience
ANMLTEC 3201T Horse Judging and Evaluation
ENGTECH 2015T Agricultural Equipment Operation and Maintenance

Technical Electives (5 credit hours needed)
ANMLTEC 2801T Horsemanship and Equitation
ANMLTEC 2811T Schooling and Training the Riding Horse
ANMLTEC 3161T Applied Equine Reproductive Management
BUSTEC 2232T Personal Selling
CRPSOIL 2412T Technology and Field Management of Forage Crops

*The student must earn a grade of “C” or higher in these courses to receive an Associate of Applied Science Degree in Horse Production and Management.

Course descriptions begin on page 42.

Applied learning opportunities
Students take practicums (supervised, practical work experience), which provide an opportunity to apply skills learned in class. Supervisory experience can be gained in a required Leadership practicum.

Horse students must also complete an industry internship consisting of 450 hours of full-time employment in the field of their study or interest.

Other degree options
Students interested in earning a bachelor’s degree may be interested in the Associate of Science program in Animal Sciences – Horse specialization. See curricular information on page 28.
Hydraulic Power and Motion Control

The objective of this degree program is to prepare students to service, design, and sell hydraulic, electrohydraulic, and pneumatic equipment and systems.

Career opportunities

Hydraulic power and motion control is rapidly expanding into numerous segments of industry. Hydraulic power and motion control graduates are employed as service or production technicians, test technicians, applications engineers, market and product engineers, quality control technicians, troubleshooters, and sales representatives.

Curriculum

Areas of study include power transmission, properties and application of hydraulic components, repair and maintenance of fluid power system components, system design and analysis, control circuits, electrohydraulics, instrumentation, and troubleshooting of fluid power systems.

General Education

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<td>Software Applications</td>
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<td>Problem Solving: Career and Society Applications</td>
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<td>Drafting and Computer-Aided Design</td>
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<td>Basic Electricity and Electronics</td>
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<td>GENCOMM 2115T</td>
<td>Technical and Business Writing</td>
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<td>GENMATH 1145T</td>
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<td>TECPHYS 1150T</td>
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Technical Studies

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<td>*ENGTECH 2214T</td>
<td>Fundamentals of Fluid Power and Components</td>
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<td>ENGTECH 2224T</td>
<td>Fluids, Filtration, and Fluid Conveyance</td>
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<td>*ENGTECH 2226T</td>
<td>Components of Hydraulic Circuits</td>
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<tr>
<td>ENGTECH 2234T</td>
<td>Basic Pneumatic Systems</td>
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<td>*ENGTECH 2238T</td>
<td>Electrohydraulics and System Design</td>
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<td>ENGTECH 2242T</td>
<td>Metals and Metal Manufacturing</td>
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<td>ENGTECH 2248T</td>
<td>Instrumentation and Control Systems</td>
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<td>ENGTECH 2312T</td>
<td>Engineering Technology Fundamentals</td>
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<td>*ENGTECH 2325T</td>
<td>Analog and Digital Electronics</td>
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<td>ENGTECH 2336T</td>
<td>Methods of Power Transmission</td>
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*The student must earn a grade of “C” or higher in these courses to receive an Associate of Applied Science Degree in Hydraulic Power and Motion Control.

Course descriptions begin on page 42.

Facilities

Students utilize a state-of-the-art fluid power lab with specialized facilities and equipment in hydraulics, pneumatics, and electronics. Students design, assemble, and test an array of fluid power components and systems in the fluid power lab.

Applied learning opportunities

Hydraulic Power and Motion Control students must complete an industry internship consisting of 450 hours of full-time employment in the field of their study.

Hydraulic Power and Motion Control students also participate in state and national industry trade shows, meetings, and scholarship programs.
Landscape Horticulture
The objective of this program is to prepare individuals to enter the workforce at any landscape company. Students learn sustainable techniques that develop responsibility as tomorrow's land stewards.

Career opportunities
Career opportunities exist with landscape businesses, recreational organizations such as amusement parks, and large organizations with grounds to be managed and maintained. Graduates may fill positions such as designer, landscape crew leader, account manager, landscape manager, or horticulturist.

Curriculum
The Landscape Horticulture program provides students a broad introduction to all areas of landscaping, including design, management, construction, and pest control. Students will practice their skills not only on the Ohio State ATI grounds, but will work with outside clients as well. Basic classes in plant identification, landscape design, and landscape construction lead to more advanced classes in weed science as well as pest identification and control.

Ohio State ATI's Landscape Horticulture program is one of only 18 two-year programs in the nation to be accredited by the Professional Landcare Network (PLANET), the national trade association for landscape professionals.

General Education
AGRCOMM 3130 Oral Expression in Agriculture
BIOTECH 2218T General and Applied Entomology
BUSTEC 1151T General Economics
BUSTEC 1202T Software Applications
CRPSOIL 2300T Introduction to Soil Science
ENGLISH 1110.01 First-Year English Composition
GENBIOL 1250T General Botany with Applications
GENCHEM 1100T Introduction to General Chemistry
GENMATH 1141T Business Mathematics
GENSSC 1181T Hispanic Culture and Language in the Workplace
or PSYCH 1100 Introduction to Psychology
GENSTD 1201T College Orientation
HORTTEC 1201T Exploring Horticulture
Arts/Hum Elective (from approved list)
Business Elective (from approved list)

Technical Studies
*HORTTEC 2110T Plant Materials I
*HORTTEC 2120T Plant Materials II
*HORTTEC 2191.30T Landscape Horticulture Internship
*HORTTEC 2230T Fundamentals of Turfgrass Science and Management
*HORTTEC 2320T Landscape Construction
*HORTTEC 2360T Landscape Design
*HORTTEC 2880T Principles of Weed Science
*HORTTEC 2890T Plant Diseases of Ornamentals and Turf
Technical Elective

*The student must earn a grade of “C” or higher in these courses to receive an Associate of Applied Science Degree in Landscape Horticulture.

Course descriptions begin on page 42.

Facilities
Landscape students have access to outstanding facilities at Ohio State ATI:
• The adjacent 122-acre Secrest Arboretum
• 11 specialty gardens
• Ohio State ATI campus grounds
• Landscape laboratory with digital design software
• Landscape Construction and Construction building

Applied learning opportunities
Landscape students must also complete an industry internship of 450 hours of full-time employment in their chosen field of study.

Other degree options
Students interested in earning a bachelor's degree may be interested in the Associate of Science program in Horticultural Science (page 36).
Livestock Production and Management

The objective of this program is to prepare individuals for successful employment in beef, swine, or small ruminant production or related industries.

Career opportunities

Livestock production majors may find positions in the areas of beef, swine, sheep or goat production, related service industries, and sales of related products. A variety of commercial opportunities exist in purebred, commercial or club-animal production. Graduates are also prepared for employment in entry-level positions in agri-businesses such as breed associations, artificial insemination centers, animal research laboratories, feed and pharmaceutical companies and the meat industry.

Curriculum

The curriculum emphasizes the principles and practical application of reproduction, genetics, nutrition, live animal and carcass evaluation, health, facility design, and record use in the efficient management of all phases of production. Business and accounting principles are also presented. Practical application is emphasized at the Ohio State ATI Grace Drake Learning Laboratory which houses beef, swine, and goats.

Facilities

Ohio State ATI's Grace Drake Learning Laboratory houses a 100 cow beef herd along with a small herd of swine. The beef herd includes purebred and commercial animals. The farm also maintains a small herd of goats and has access to the sheep flock at the Ohio Agricultural Research and Development Center.

Applied learning opportunities

Students take operations management courses (supervised, practical work experience) which provide an opportunity to apply skills learned in class.

Students also complete an industry internship consisting of 450 hours of employment in the field of their study and interest.

Core courses

AEDECON 2001 Principles of Food and Resource Economics
AEDECON 2105 Managerial Records and Analysis
AGRCOMM 3130 Oral Expression in Agriculture
ANMLTEC 1201.02T Exploring Livestock Careers and Industry
ANMLTEC 3140T Animal Anatomy and Physiology
ANMLTEC 3150T Livestock Genetic Improvement
ANMLTEC 3170T Principles of Livestock Health
ANMLTEC 3200T Livestock Selection and Evaluation
ANMLTEC 3800T Principles of Farm Business Management
CRPSOIL 2228T Manure Management
ENGLISH 1110.01 First-Year English Composition
GENBIOL 1200T General Biology
GENMATH 1141T or 1145T Business Mathematics or Technical Mathematics
GENSTDS 1201T College Orientation
Applied Gen Ed Elective (from approved list)

Specialization courses

Beef
ANMLTEC 2202T Introduction to Beef and Small Ruminant Production
*ANMLTEC 2510.02T Food Animal Resource Management I – Beef
*ANMLTEC 2582.02T Food Animal Resource Management II – Beef
ANMLTEC 3132T Ruminant Feeds and Feeding
*ANMLTEC 3191.02T Beef Industry Internship
ANMLTEC 3402T Beef Production and Management Technical Electives (from approved list)

Small Ruminant
ANMLTEC 2202T Introduction to Beef and Small Ruminant Production
*ANMLTEC 2510.04T Food Animal Resource Management I – Small Ruminants
*ANMLTEC 2582.04T Food Animal Resource Management II – Small Ruminants
ANMLTEC 3132T Ruminant Feeds and Feeding
*ANMLTEC 3191.04T Small Ruminant Industry Internship
ANMLTEC 3404T Small Ruminant Production and Management Technical Electives (from approved list)

Swine
*ANMLTEC 2510.03T Food Animal Resource Management I – Swine
*ANMLTEC 2582.03T Food Animal Resource Management II – Swine
ANMLTEC 2603T Swine Production & Management I
ANMLTEC 3133T Swine Production & Management II
*ANMLTEC 3191.03T Swine Industry Internship
ANMLTEC 3403T Swine Production & Management II Technical Electives (from approved list)

*The student must earn a grade of “C” or higher in these courses to receive an Associate of Applied Science Degree in Livestock Production and Management.

Course descriptions begin on page 42.

Other degree options

Students interested in earning a bachelor’s degree may be interested in the Associate of Science program in Animal Sciences – Beef specialization (page 26), Small Ruminant specialization (page 29), or Swine specialization (page 30).
Power Equipment
The objective of this program is to prepare students for careers involving the purchase, utilization, maintenance, repair, and sale of off-road machinery.

Career opportunities
Career opportunities are available with agricultural equipment, construction equipment, and industrial equipment dealerships, manufacturers of mobile equipment, contractors, and fleet operations.

Curriculum
Areas of study include internal combustion engines; agricultural, construction, and industrial equipment; electronics; hydraulics; air conditioning; metal fabrication; power transmission; business management; marketing; and sales.

General Education
AGRCOMM 3130 Oral Expression in Agriculture
BUSTEC 1151T General Economics
BUSTEC 1202T Software Applications
ENGLISH 1110.01 First-Year English Composition
ENGETECH 2092T Problem Solving: Career and Society Applications
ENGETECH 1201.01T Exploring Engineering Technologies
ENGETECH 2322T Basic Electricity and Electronics
ENGETECH 2331T Distributor Management
GENCOMM 2115T Technical and Business Writing
GENMATH 1145T Technical Mathematics
GENSTDS 1201T College Orientation
TECPHYS 1150T Technical Physics
Soc Sci or Arts/Hum Elective (from approved list)

Technical Studies
*ENGTECH 2191.03T Power Equipment Internship
ENGTECH 2214T Fundamentals of Fluid Power and Components
ENGTECH 2240T Fluids, Filtration, and Fluid Conveyance
ENGTECH 2241T Welding Technology
ENGTECH 2312T Engineering Technology Fundamentals
ENGTECH 2314T Introduction to Power Equipment
*ENGTECH 2324T Engine Diagnosis and Repair
ENGTECH 2325T Mobile Heating and Air Conditioning
*ENGTECH 2334T Vehicle Electrical and Electronic Systems
ENGTECH 2336T Methods of Power Transmission
ENGTECH 2338T Diesel Engine Systems
*ENGTECH 2348T Performance of Mobile Power Units

*The student must earn a grade of “C” or higher in these courses to receive an Associate of Applied Science Degree in Power Equipment.

Course descriptions begin on page 42.

Facilities
Students utilize a fully equipped power equipment lab. In addition, students also utilize the institute’s campus equipment along with the latest agricultural equipment in their course work.

Applied learning opportunities
Power Equipment students must complete an industry internship consisting of 450 hours of full-time employment in the field of their study and interest.

Students participate in local and state industry trade shows, meetings, and scholarship programs.
Turfgrass Management
The objective of this program is to educate and prepare individuals for technical and management positions in the golf course and sports turf industries.

Career opportunities
Career opportunities exist with golf courses, sports turf facilities, lawn care services, sod farms, parks, educational and corporate campuses, and other institutional grounds, and other decorative and recreational users of turfgrass. With sufficient on-the-job experience, a graduate of the turfgrass program could fill one of the following positions: golf course superintendent, sports complex field operations manager, lawn care manager, sod farm manager, turf research technician, or sales representative within the turf industry.

Curriculum
The curriculum emphasizes botany, turfgrass science and turfgrass facilities management; weed, insect, and disease management; maintenance of other ornamental plants; irrigation and drainage; pesticide usage; and power equipment maintenance and operation.

General Education
AEDECON 2001  Principles of Food and Resource Economics
AEDECON 2105  Managerial Records and Analysis
AGRCOMM 3130  Oral Expression in Agriculture
BIOTECH 2218T General and Applied Entomology
BUSTEC 1202T Software Applications
CRPSOIL 2300T Introduction to Soil Science
CRPSOIL 2301T Introduction to Soil Science Lab
ENGLISH 1110.01 First-Year English Composition
GENBIOL 1250T General Botany with Applications
GENCHEM 1100T Introduction to General Chemistry
GENMATH 1141T Business Mathematics
GENSSC 1181T Hispanic Culture and Language in the Workplace
GENSTDS 1201T College Orientation
HORTTEC 1201T Exploring Horticulture

Technical Studies
ENGTECH 2011T  Small Engine Basics
*HORTTEC 2110T  Plant Materials I
*HORTTEC 2191.50T Turfgrass Management Internship
*HORTTEC 2225T  Turf Equipment Operation and Maintenance
*HORTTEC 2230T  Fundamentals of Turfgrass Science and Management
*HORTTEC 2240T  Golf Course and Sports Turf Irrigation and Drainage
*HORTTEC 2250T  Turfgrass Cultural Systems and Practices
*HORTTEC 2260T  Sports Turf Operations Organization and Management
or *2270T  Golf Course Organization and Management
*HORTTEC 2880T  Principles of Weed Science
*HORTTEC 2890T  Plant Diseases of Ornamentals and Turf

*The student must earn a grade of “C” or higher in these courses to receive an Associate of Applied Science Degree in Turfgrass Management.

Course descriptions begin on page 42.

Facilities
Ohio State ATI owns and operates an 18-hole championship golf facility, Hawk’s Nest at Ohio State ATI, which provides students with the opportunity for practical applied experience with turfgrass management. In addition, the Ohio State ATI campus grounds include sports fields, turfgrass plots and a model golf hole.

Applied learning opportunities
Optional: Students can participate in a turf practicum (supervised, practical experience on campus) which provides an opportunity to apply skills learned in class.

Turfgrass students must also complete an industry internship consisting of 450 hours (based on OSU’s academic calendar) of full-time employment at an approved turfgrass facility.

Other degree options
Students interested in earning a bachelor’s degree may be interested in the Associate of Science program in Horticultural Science (page 36).
Associate of Science Degree programs

Agribusiness
The objective of the Agribusiness program at Ohio State ATI is to allow students to complete the first half of a Bachelor of Science in Agriculture, majoring in Agribusiness and Applied Economics or to prepare for employment in agricultural business.

Career opportunities
Graduates with a BS in Agribusiness and Applied Economics will find careers in management, finance, marketing, resource management, and community or international development.

Curriculum
The curriculum of the agribusiness program emphasizes the application of business and economic principles to agribusiness; firms that produce, process, distribute, and sell agricultural and natural resource products.

General Education
AEDECON 2001 Principles of Food and Resource Economics
AGROCOMM 2367 Agricultural Issues in Contemporary Society
BIOLOGY 1101 Exploring Business
CHEM 1110 Elementary Chemistry
COMPSTD 2301 Introduction to World Literature
or RELSTDS 2370 Introduction to Comparative Religion
ENGLISH 1110.01 First-Year English Composition
GENSTDS 1201T College Orientation
HISTORY 1152 American Civilization since 1877
MATH 1130 College Algebra for Business
MATH 1131 Calculus for Business
MUSIC 2250 Music Cultures of the World
RURLSOC 1500 Introduction to Rural Sociology

Major courses
AEDECON 2105 Managerial Records and Analysis
AGROCOMM 3130 Oral Expression in Agriculture
BUSTEC 2231T Fundamentals of Marketing
BUSTEC 2232T Personal Selling
BUSTEC 2241T Small Business Management
BUSTEC 2244T Human Resource Management and Leadership
BUSTEC 2249T Fundamentals of Business Finance

Course descriptions begin on page 42.

Other degree options
An Associate of Applied Science degree is available in Business Management. See curricular information on page 8.
Agricultural Communication

The objective of the Agricultural Communication program at Ohio State ATI is to allow students to complete the first half of a Bachelor of Science in Agriculture, majoring in Agricultural Communication at The Ohio State University.

Career opportunities
Graduates with a Bachelor of Science in Agricultural Communication have many career options. A few of the possibilities include: writers and editors for agricultural publications, advertising and public relations professionals who work with agribusinesses and commodity groups, directors of communication for agricultural organizations, and on-air broadcasters and reporters for agriculture-related radio and television programs.

Curriculum
Agricultural Communication majors must choose an agriculture minor; one should be chosen at Ohio State ATI. Minor options include: agribusiness, animal science, crop science, equine, horticulture, natural resources, production agriculture, and turfgrass.

General Education
AEDECON 2001 Principles of Food and Resource Economics
AGRCOMM 2367 Agricultural Issues in Contemporary Society
AGRCOMM 3130 Oral Expression in Agriculture
BIOLOGY 1101 Introductory Biology
CHEM 1110 Elementary Chemistry
COMPSTD 2301 Introduction to World Literature
ENGLISH 1110.01 First-Year English Composition
GENCOMM 1201T Exploring Agricultural Communication, Education and Leadership
GENSTDS 1201T College Orientation
HISTORY 1152 American Civilization since 1877
MATH 1148 College Algebra
MUSIC 2250 Music Cultures of the World
RURLSOC 1500 Introduction to Rural Sociology

Major courses
COMLDR 2530 Introduction to Agricultural Communication, Education, and Leadership
COMLDR 3530 Foundations of Personal and Professional Leadership
COMLDR 3537 Data Analysis in the Applied Sciences
PSYCH 1100 Introduction to Psychology

Elective courses
A minimum of 14 transferable elective credits are required, including credits toward the minor. Students will select a minor in consultation with their advisor.

Course descriptions begin on page 42.
Agricultural Systems Management

The objective of the Agricultural Systems Management program at Ohio State ATI is to allow students to complete the first half of a Bachelor of Science degree in Agriculture, majoring in Agricultural Systems Management.

Career opportunities

Graduates with a BS majoring in Agricultural Systems Management will have specialized in one of three specializations available within the major: Power and Machinery, Soil and Water, or Facilities Management and Planning. Graduates from this major have a wide array of opportunities based on the specialization selected. Employers include equipment manufacturers, farmstead designers, equipment dealerships, seed producers, grain cooperatives, food distributors, production agriculture, and various agriculture facility construction companies.

Curriculum

The curriculum of the Agricultural Systems Management Associate of Science program allows the student to take technical courses for the major along with general education courses required for the Bachelor of Science degree majoring in Agricultural Systems Management.

General Education

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<td>AGCOMM 2367</td>
<td>Agricultural Issues in Contemporary Society</td>
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<td>or ENR 2367</td>
<td>Communicating Environmental and Natural Resources Information</td>
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<tr>
<td>AGCOMM 3130</td>
<td>Oral Expression in Agriculture</td>
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<tr>
<td>ANIMSCI 2200.01</td>
<td>Introductory Animal Sciences</td>
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<td>CRPSOIL 2300T</td>
<td>Introduction to Soil Science</td>
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<td>ENGLISH 1110.01</td>
<td>First-Year English Composition</td>
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<td>Exploring Agricultural Systems Management</td>
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<td>RURLSOC 1500</td>
<td>Introduction to Rural Sociology</td>
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<td>TECPHYS 1150T</td>
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Arts/Hum electives (from approved list)

Major courses

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<td>Introduction to Animal Sciences Lab</td>
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<td>BUSTEC 2241T</td>
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<td>or ANMLTEC 3800T</td>
<td>Principles of Farm Business Mgmt.</td>
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<td>CRPSOIL 2228T</td>
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<td>Introduction to Soil Science Lab</td>
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<td>Soil and Water Conservation Systems</td>
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<td>ENGTECH 2120T</td>
<td>Building Science: Methods and Materials</td>
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<td>ENGTECH 2191.04T</td>
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<td>ENGTECH 2240T</td>
<td>Welding Technology</td>
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Technical Elective (from approved list)

Course descriptions begin on page 42.

Applied learning opportunities

Students must also complete an industry internship consisting of 300 hours of full-time employment. Internship locations are based upon student field of study or interest.
Agriscience Education
The objective of the Agriscience Education program at Ohio State ATI is to allow students to complete the first half of a Bachelor of Science in Agriculture, majoring in Agriscience Education at The Ohio State University.

Career opportunities
Graduates with a Bachelor of Science in Agriscience Education will find careers as educators in schools, extension, and agribusiness.

Curriculum
The curriculum of the Agriscience Education program will focus on the agricultural science/production specialization. There is an additional GPA requirement in the bachelor degree program that must be met following transition to the Columbus campus.

General Education
AEDECON 2001 Principles of Food and Resource Economics
AGRCOMM 2367 Agricultural Issues in Contemporary Society
BIOLOGY 1101 Introductory Biology
CHEM 1110 Elementary Chemistry
COMPSTD 2301 Introduction to World Literature
ENGLISH 1110.01 First-Year English Composition
GENCOMM 1201T Exploring Agricultural Communication, Education, and Leadership
GENSTDS 1201T College Orientation
HISTORY 1152 American Civilization since 1877
MATH 1148 College Algebra
MUSIC 2250 Music Cultures of the World
PSYCH 1100 General Psychology
RURLSOC 1500 Introduction to Rural Sociology

Major courses
AGRCOMM 3130 Oral Expression in Agriculture
ANIMSCI 2200.01 Introductory Animal Sciences
ANMLTEC 2200.02T Introduction to Animal Sciences Lab
ASE 2189 Early Experience in Agriscience Education
COMLDR 2530 Introduction to Agricultural Communication, Education and Leadership
COMLDR 3530 Foundations of Personal and Professional Leadership
COMLDR 3537 Data Analysis in the Applied Sciences
CRPSOIL 2300T Introduction to Soil Science
CRPSOIL 2301T Introduction to Soil Science Lab
ENGTECH 2011T Small Engine Basics
ENGTECH 2240T Welding Technology

Course descriptions begin on page 42.
Agronomy
The objective of the agronomy program is to prepare students to complete a Bachelor of Science in Agriculture, majoring in Sustainable Plant Systems with an Agronomy emphasis or for employment in the crop production and agricultural services industry.

Career opportunities
Graduates with a BS in Sustainable Plant Systems: Agronomy may find careers as independent crop producers; professional agricultural consultants; technical representatives for seed, fertilizer, equipment and agrochemical companies; and other related careers.

Curriculum
The agronomy program curriculum provides students with the opportunity to take technical courses in crop production along with general education courses required for the Bachelor of Science degree in Sustainable Plant Systems with an Agronomy emphasis.

General Education
AEDECON 2001 Principles of Food and Resource Economics
AGRCOMM 2367 Agricultural Issues in Contemporary Society
or ENR 2367 Communicating Environmental and Natural Resources Information
or AGRCOMM 3130 Oral Expression in Agriculture
BIOLOGY 1113 Bio Sci: Energy Transfer and Development
CHEM 1110 Elementary Chemistry
or CHEM 1210 General Chemistry I
CRPSOIL 1201T Exploring Agronomy, Sustainable Agriculture, and Crop Mgmt. and Soil Conservation
ENGLISH 1110.01 First-Year English Composition
GENSTDS 1201T College Orientation
HCS 2201 Ecology of Managed Plant Systems
HCS 2202 Form and Function in Cultivated Plants
MATH 1148 College Algebra
RURLSOC 1500 Introduction to Rural Sociology
Arts/Hum electives (from approved list)

Major courses
BIOTECH 2218T General and Applied Entomology
CRPSOIL 2189T Practicum in Crop and Soil Technologies
CRPSOIL 2300T Introduction to Soil Science
CRPSOIL 2301T Introduction to Soil Science Laboratory
CRPSOIL 2324T Soil Management
CRPSOIL 2580T Soil Fertility and Fertilizers
HCS 3100 Introduction to Agronomy
Technical Electives (from approved list)

Course descriptions begin on page 42.

Other degree options
An Associate of Applied Science degree is available in Crop Management and Soil Conservation. An Associate of Science degree is available in Agricultural Systems Management and Sustainable Agriculture. See curricular information on pages 10, 22, and 37.
Animal Sciences
Animal Health Specialization

The objective of the Animal Sciences – Animal Health program at Ohio State ATI is to allow students to complete the first half of a Bachelor of Science degree in Agriculture majoring in Animal Sciences (Animal Biosciences) at The Ohio State University with a focus on animal health careers and/or academic preparation for professional degrees or graduate work.

The Animal Health Specialization is specifically designed to provide: 1) opportunities for students to receive instruction and experience in multiple animal species, 2) an educational track for students interested in animal medicine to receive instruction in and experience with large animal production methods, and 3) an opportunity for students interested in food animal medicine to apply to veterinary school to The Ohio State University College of Veterinary Medicine through the Veterinary Early Commitment Program.

Career opportunities

Graduates with a Bachelor of Science in Animal Sciences will find careers as technical representatives for pharmaceutical, animal health, feed, breeding/genetics, equipment, and other related companies: research or product development technicians; quality assurance, public health, animal welfare, inspection, and laboratory technicians; managers of livestock production units; and others.

Graduates may also apply to veterinary school (or other professional schools) for careers in production medicine, veterinary research, public health, toxicology, pharmacology, nutrition, animal welfare, and other veterinary specialties.

Curriculum

The curriculum of the Animal Sciences program allows the student to choose one of six specializations: animal health, beef, dairy, horse, swine, or small ruminant. The Animal Health specialization provides a broader approach to course selection and career goals within the Animal Sciences major as required courses can be selected from various species specific classes and additional opportunities are available for animal, business, and internship elective courses.

General Education

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<td>HISTORY 1152 or MUSIC 2250</td>
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Major courses

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<td>ANMLTEC 3131T or 3132T or 3133T or 3137T</td>
<td>Equine Feeding and Nutrition</td>
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<td>ANMLTEC 3150T or 3157T</td>
<td>Ruminant Feeds and Feeding</td>
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<tr>
<td>ANMLTEC 3170T or 3171T or 3177T</td>
<td>Practical Swine Feeding</td>
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<td>ANMLTEC 3170T</td>
<td>Dairy Cattle Feeding Management</td>
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<td>ANMLTEC 3170T</td>
<td>Livestock Genetic Improvement</td>
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<td>Dairy Cattle Genetic Improvement</td>
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<td>Principles of Livestock Health</td>
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<td>ANMLTEC 3170T</td>
<td>Horse Health and Disease</td>
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<td>Dairy Cattle Health Management</td>
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<tr>
<td>Technical Electives</td>
<td>(from approved list)</td>
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Course descriptions begin on page 42.
**Animal Sciences Beef Specialization**

The objective of the Animal Sciences – Beef program at Ohio State ATI is to allow students to complete the first half of a Bachelor of Science in Agriculture, majoring in Animal Sciences at The Ohio State University.

**Career opportunities**

Graduates with a Bachelor of Science in Animal Sciences will find careers as managers of livestock production units; technical representatives for feed, equipment, pharmaceutical, breeding/genetics and other related companies; research or product development technicians; livestock buyers; and others. Practical application is emphasized at the Ohio State ATI Grace Drake Learning Laboratory.

**Curriculum**

The curriculum of the Animal Sciences program allows the student to choose one of six specializations: animal health, beef, dairy, horse, swine, or small ruminant.

**General Education**

- **AEDECON 2001** Principles of Food and Resource Economics
- **AGRCOM 3130** Oral Expression in Agriculture
- **ANMLTEC 1201.02T** Exploring Livestock Careers and Industry
- **ANIMSCI 2200.01** Introductory Animal Sciences
- **ANMLTEC 3140T** Bio Sci: Energy Transfer and Development
- **BIOLOGY 1113** Elementary Chemistry
- **CHEM 1110 or 1210** General Chemistry 1
- **COMPSSTD 2301 or RELSTDS 2370** Intro. to World Literature
- **ENGLISH 1110.01** First-Year English Composition
- **GENSTDS 1201T** College Orientation
- **HISTORY 1152** American Civilization since 1877
- **MUSIC 2250** Music Cultures of the World
- **MATH 1148** College Algebra
- **RURLSOC 1500** Introduction to Rural Sociology

*The student must earn a grade of “C” or higher in these courses to receive an Associate of Science Degree in Animal Science.

Course descriptions begin on page 42.

**Major courses**

- **ANMLTEC 2202T** Introduction to Beef and Small Ruminant Production
- **ANMLTEC 2200.02T** Introduction to Animal Sciences Laboratory
- **ANMLTEC 2510.02T** Food Animal Resource Management I – Beef
- **ANMLTEC 2582.02T** Food Animal Resource Management II - Beef
- **ANMLTEC 3132T** Ruminant Feeds and Feeding
- **ANMLTEC 3150T** Livestock Genetic Improvement
- **ANMLTEC 3170T** Principles of Livestock Health
- **ANMLTEC 3402T** Beef Production and Management
- **CRPSOIL 2228T** Manure Management
- **CRPSOIL 2412T** Technology and Field Management of Forage Crops

Other degree options

An Associate of Applied Science degree is available in Livestock Production and Management. See curricular information on page 17.
Animal Sciences
Dairy Specialization

The objective of the Animal Sciences – Dairy specialization program at Ohio State ATI is to allow students to complete the first half of a Bachelor of Science degree in Agriculture, majoring in Animal Sciences, and to educate students in techniques of dairy production and management for careers with dairy farms and associated businesses and industries.

Career opportunities
Graduates with a Bachelor of Science in Animal Sciences will find careers as managers of livestock production units; technical representatives for feed, equipment, pharmaceutical, breeding/genetics and other related companies; research or product development technicians; livestock buyers; and others.

Graduates with an Associate of Science in Animal Sciences – Dairy Specialization could fill positions in herd and farm management, field representatives and technicians, or sales representatives in the dairy industry.

Curriculum
The curriculum of the Animal Sciences program allows the student to emphasize a specialization in dairy science as part of the broader animal science field.

General Education
AEDECON 2001 Principles of Food and Resource Economics
AGRCOM 3130 Oral Expression in Agriculture
ANMLTEC 1201.07T Exploring Dairy Careers and Industry
ANMLTEC 2787T Applied Dairy Herd Practices & Management
ANMLTEC 3137T Dairy Cattle Feeding Management
ANMLTEC 3157T Dairy Cattle Genetic Improvement
ANMLTEC 3167T Dairy Cattle Milking & Reproductive Management
ANMLTEC 3177T Dairy Cattle Health Management
ANMLTEC 3207T Dairy Cattle Evaluation and Herd Records
ANMLTEC 3407T Dairy Cattle Facilities, Environment and Equipment
ANMLTEC 3887T Integrated Dairy Farm Business Management

*The student must earn a grade of “C” or higher in this course to receive an Associate of Science Degree in Animal Science.

Course descriptions begin on page 42.

Facilities
Ohio State ATI’s dairy facilities house more than 100 high-producing and genetic award-winning registered Holstein, Jersey, and Brown Swiss milking cows in a free-stall barn with a drive-through total mixed ration feeding system. The fully automated double-ten parallel milking parlor is equipped with electronic identification, computerized milk weight recorders, and herd management software.

On-site computer systems house internal herd and financial records and are online with the Dairy Herd Improvement Association’s processing center and breed associations. In addition, feeding and nutrition tracking software and an electronic health and reproduction monitoring system are used in herd management.

Applied learning opportunities
Students take Applied Dairy Herd Practices and Management (supervised, practical work experience), which provides an opportunity to apply and practice skills learned in class at the ATI Dairy Laboratory during their second academic year.

Dairy students must also complete an industry internship consisting of a minimum of 300 hours of full-time employment in the dairy industry. Internship locations and type of dairy business – production or agribusiness – are based upon student field of study or interest.

Opportunities are also available for students to participate in a variety of activities like the national award winning dairy cattle judging team, Dairy Challenge, and the Ohio State ATI Dairy Club.

In addition, part-time jobs are available on many of the over 200 dairy farms in the local county (Wayne) while attending Ohio State ATI.

Other degree options
An Associate of Applied Science degree is available in Dairy Cattle Production and Management. See curricular information on page 11.
Animal Sciences
Horse Specialization

The objective of the Animal Sciences – Horse program at Ohio State ATI is for students to complete the equine minor prior to enrolling in a Bachelor of Science program other than Animal Sciences, or to complete approximately the first half of a Bachelor of Science in Agriculture, majoring in Animal Sciences at The Ohio State University.

Career opportunities

Graduates in Animal Sciences – Horse specialization are prepared for careers in horse training, horse breeding, and equine science industries.

Curriculum

The curriculum of the Animal Sciences – Horse program allows students to complete an Associate of Science degree which is transferable to several bachelor's degree programs offered in the College of Food, Agricultural, and Environmental Sciences at The Ohio State University.

General Education

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<td>Oral Expression in Agriculture</td>
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<td>ANMLTEC 1201.01T</td>
<td>Exploring Equine Careers and Industry</td>
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<td>ANIMSCI 2200.01</td>
<td>Introductory Animal Sciences</td>
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<td>ANMLTEC 3140T</td>
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<td>HISTORY 1152</td>
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<td>or MUSIC 2250</td>
<td>Music Cultures of the World</td>
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<tr>
<td>MATH 1148</td>
<td>College Algebra</td>
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<tr>
<td>RURLSOC 1500</td>
<td>Introduction to Rural Sociology</td>
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Major courses

*ANMLTEC 2189.01T Horse Practicum
ANMLTEC 2201T Introduction to Horse Science
ANMLTEC 3101T Equine Marketing and Facility Mgt.
ANMLTEC 3131T Equine Feeding & Nutrition
ANMLTEC 3151T Horse Breeding & Selection
ANMLTEC 3161T Applied Equine Reproductive Mgt.
ANMLTEC 3171T Horse Health and Disease
Technical Electives (from approved list)

*The student must earn a grade of "C" or higher in these courses to receive an Associate of Science Degree in Animal Science.

Course descriptions begin on page 42.

Other degree options

An Associate of Applied Science degree is available in Horse Production and Management. See curricular information on page 14.
Animal Sciences
Small Ruminant Specialization
The objective of the Animal Sciences – Small Ruminant program at Ohio State ATI is to allow students to complete the first half of a Bachelor of Science in Agriculture, majoring in Animal Sciences at The Ohio State University.

Career opportunities
Graduates with a Bachelor of Science in Animal Sciences will find careers as managers of livestock production units; technical representatives for feed, equipment, pharmaceutical, breeding/genetics and other related companies; research or product development technicians; livestock buyers; and others. Practical application is emphasized at the Ohio State ATI Grace Drake Learning Laboratory.

Curriculum
The curriculum of the Animal Sciences program allows the student to choose one of six specializations: animal health, beef, dairy, horse, swine, or small ruminant.

General Education
AEDECON 2001 Principles of Food and Resource Economics
AGRCOMM 3130 Oral Expression in Agriculture
ANMLTEC 1201.02T Exploring Livestock Careers and Industry
ANIMSCI 2200.01 Introductory Animal Sciences
ANMLTEC 3140T Animal Anatomy and Physiology
BIOLOGY 1113 Bio Sci: Energy Transfer and Development
CHEM 1110 or 1210 Elementary Chemistry or General Chemistry 1
COMPSTD 2301 Introduction to World Literature
or RELSTDS 2370 Intro. to Comparative Religion
ENGLISH 1110.01 First-Year English Composition
GENSTDS 1201T College Orientation
HISTORY 1152 American Civilization since 1877
or MUSIC 2250 Music Cultures of the World
MATH 1148 College Algebra
RURLSOC 1500 Introduction to Rural Sociology

Major courses
ANMLTEC 2202T Introduction to Beef and Small Ruminant Production
ANMLTEC 2200.02T Introduction to Animal Sciences Laboratory
*ANMLTEC 2510.04T Food Animal Resource Management I – Small Ruminants
*ANMLTEC 2582.04T Food Animal Resource Management II – Small Ruminants
ANMLTEC 3132T Ruminant Feeds and Feeding
ANMLTEC 3150T Livestock Genetic Improvement
ANMLTEC 3170T Principles of Livestock Health
ANMLTEC 3404T Small Ruminant Production and Management
CRPSOIL 2228T Manure Management
CRPSOIL 2412T Technology and Field Management of Forage Crops

*The student must earn a grade of “C” or higher in these courses to receive an Associate of Science Degree in Animal Science.

Course descriptions begin on page 42.

Other degree options
An Associate of Applied Science degree is available in Livestock Production and Management. See curricular information on page 17.
Animal Sciences
Swine Specialization

The objective of the Animal Sciences – Swine program at Ohio State ATI is to allow students to complete the first half of a Bachelor of Science in Agriculture, majoring in Animal Sciences at The Ohio State University.

Career opportunities

Graduates with a Bachelor of Science in Animal Sciences will find careers as managers of livestock production units; technical representatives for feed, equipment, pharmaceutical, breeding/genetics and other related companies; research or product development technicians; livestock buyers; and others. Practical application is emphasized at the Ohio State ATI Grace Drake Learning Laboratory.

Curriculum

The curriculum of the Animal Sciences program allows the student to choose one of six specializations: animal health, beef, dairy, horse, swine, or small ruminant.

General Education

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Major courses

- ANMLTEC 2200.02T Introduction to Animal Sciences Laboratory
- ANMLTEC 2510.03T Food Animal Resource Management I – Swine
- ANMLTEC 2582.03T Food Animal Resource Management II - Swine
- ANMLTEC 2603T Swine Production & Management I
- ANMLTEC 3133T Livestock Genetic Improvement
- ANMLTEC 3150T Principles of Livestock Health
- ANMLTEC 3170T Swine Production & Management II
- ANMLTEC 3403T Manure Management
- CRPSOIL 2228T Transferable Elective (consult with advisor for options)

*The student must earn a grade of "C" or higher in these courses to receive an Associate of Science Degree in Animal Science.

Course descriptions begin on page 42.

Other degree options

An Associate of Applied Science degree is available in Livestock Production and Management. See curricular information on page 17.
Biochemical Sciences
The objective of the Biochemical Sciences program at Ohio State ATI is to allow students to complete the first half of a Bachelor of Science degree, majoring in Biology or Food Science, and obtain the prerequisites to apply for veterinary school.

Career opportunities
Graduates with an Associate of Science in Biochemical Sciences can find careers as food science technicians, quality assurance technicians, research/laboratory technicians (plant, animal and environmental).

Graduates with a Bachelor of Science in Food Science can become product development scientists, quality assurance supervisors, plant managers, food processing operations supervisors, food microbiologists, technical sales managers, flavor chemists, analytical laboratory directors, food research scientists, or food biotechnologists.

Graduates with a Bachelor of Science in Biology can find careers in communications, business (pharmaceutical or sales), teaching, research biologists, biomedical or health science researchers, scientific writers, research or product development.

Graduates who further their education in a veterinary medicine program become practicing or research veterinarians.

Curriculum
Biochemical Sciences majors consist of a variety of general courses designed to give students a foundation in the natural sciences. Areas of study include: biology, chemistry, microbiology, mathematics and data analysis.

Core courses
- AEDECON 2001 Principles of Food and Resource Economics
- BIOTECH 1201T Exploring Biochemical Sciences and Biotechnology
- BIOLOGY 1113 Bio Sci: Energy Transfer and Development
- CHEM 1210 General Chemistry 1
- CHEM 1220 General Chemistry 2
- CHEM 2510 Organic Chemistry 1
- ENGLISH 1110.01 First-Year English Composition
- GENSTDS 1201T College Orientation
- MICRBIIO 4000.01 Basic and Practical Microbiology
- RURLSOC 1500 Introduction to Rural Sociology
- Arts/Hum Electives (from approved list)

Specialization courses
Biology
- AGRCOMM 2367 Agricultural Issues in Contemporary Society
- BIOLOGY 1114 Bio Sci: Form, Function, Diversity and Ecology
- CHEM 2520 Organic Chemistry 2
- MATH 1151 Calculus I

Food Science
- AGRCOMM 2367 Agricultural Issues in Contemporary Society
- CHEM 2520 Organic Chemistry 2
- MATH 1150 Pre-Calculus
- MATH 1151 Calculus I
- PHYSICS 1200 Mechanics, Kinematics, Fluids, Waves

Pre-Veterinary Medicine
- AGRCOMM 3130 Oral Expression in Agriculture
- ANMLTEC 3140T Animal Anatomy and Physiology
- BIOLOGY 1114 Bio Sci: Form, Function, Diversity and Ecology
- MATH 1150 Pre-Calculus
- Electives

Course descriptions begin on page 42.
Community Leadership
The objective of the Community Leadership program at Ohio State ATI is for students to complete the first half of a Bachelor of Science in Agriculture, majoring in the Community Leadership program at The Ohio State University.

Career opportunities
The Community Leadership major is designed to equip students with knowledge and skills needed to exert a leadership influence in a future context. Graduates in the Community and Extension Education specialization as part of the Community Leadership major are prepared to pursue careers as After-School Educators, Extension Professionals, Non-Profit Specialists, Volunteer Trainers, Youth Leaders, and Youth Outreach Coordinators.

Curriculum
The curriculum of the Community Leadership program will focus on a variety of courses designed to give students a broad understanding of community issues and the preparation to continue in the Bachelor of Science degree in Community Leadership at The Ohio State University.

Core courses
- AEDECON 2001 Principles of Food and Resource Economics
- AGRCOMM 2367 Agricultural Issues in Contemporary Society
- AGRCOMM 3130 Oral Expression in Agriculture
- BIOLOGY 1101 Introductory Biology
- CHEM 1110 Elementary Chemistry
- COMLDR 2530 Introduction to Agricultural Communication, Education, and Leadership
- COMLDR 3530 Foundations of Personal and Professional Leadership
- COMLDR 3537 Data Analysis in the Applied Sciences
- COMPSTD 2301 Introduction to World Literature
- ENGLISH 1110.01 First-Year English Composition
- GENCOMM 1201T Exploring Agricultural Communication, Education and Leadership
- GENSTDS 1201T College Orientation
- HISTORY 1152 American Civilization since 1877
- MATH 1148 College Algebra
- MUSIC 2250 Music Cultures of the World
- PSYCH 1100 Introduction to Psychology
- RURLSOC 1500 Introduction to Rural Sociology
- Electives (from approved list)

Specialization courses
Community and Extension Education
- COMLDR 2189 Early Experience in Community and Extension Education

Leadership
- BUSTEC 2232T Personal Selling
- BUSTEC 2244T Human Resources Management and Leadership

Course descriptions begin on page 42.
Construction Systems Management
The objective of the Construction Systems Management program at Ohio State ATI is to allow students to complete the first half of a Bachelor of Science in Agriculture, majoring in Construction Systems Management.

Career opportunities
Graduates with a Bachelor of Science in Construction Systems Management may be employed by contractors and construction supply companies; companies and agencies providing related materials and services; or be self-employed as a contractor, consultant, or owner/operator of a construction business in either the residential, commercial, or heavy highway/infrastructure sectors of the construction industry.

Curriculum
The curriculum of the Construction Systems Management Associate of Science program allows the student to complete both technical construction management courses along with general education courses required for the Bachelor of Science degree in Construction Systems Management.

General Education
AEDECON 2001 Principles of Food and Resource Economics
AGRCOMM 2367 Agricultural Issues in Contemporary Society
or ENR 2367 Communicating Environmental and Natural Resources Information
AGRCOMM 3130 Oral Expression in Agriculture
COMLDR 3537 Data Analysis in the Applied Sciences
CRPSOIL 2300T Introduction to Soil Science
CRPSOIL 2301T Introduction to Soil Science Lab
ENGLISH 1110.01 First-Year English Composition
ENGTECH 1201.02T Exploring Construction Careers and Industry
GENSTDS 1201T College Orientation
MATH 1148 College Algebra
RURLSOC 1500 Introduction to Rural Sociology
TECPHYS 1150T Technical Physics
Art/Hum electives (from approved list)

Major courses
BUSTEC 1202T Software Applications
ENGTECH 2110T Construction Drawings and Basic Estimating
ENGTECH 2120T Building Science: Methods and Materials
ENGTECH 2121T Drafting and Computer-Aided Design
ENGTECH 2160T Estimating and Scheduling
ENGTECH 2170T Construction Project Management
ENGTECH 2191.01T Construction Management Internship
ENGTECH 2310T Building Science: Electrical and Lighting Systems
ENGTECH 2345T Building Science: Mechanical Systems
ENGTECH 2440T Site Development and Surveying
ENGTECH 2600T Construction Safety and Health

Course descriptions begin on page 42.

Other degree options
An Associate of Applied Science degree is available in Construction Management (curriculum on page 9).
Environment and Natural Resources
The objective of the Environment and Natural Resources Science program at Ohio State ATI is to allow students to complete the first half of a Bachelor of Science degree, majoring in Environmental Science; Forest, Fisheries and Wildlife; Natural Resource Management; or Environmental Planning and Decision Making in the School of Environment and Natural Resources at The Ohio State University.

Career opportunities
Graduates with a Bachelor of Science degree from the School of Environment and Natural Resources will find careers as environmental and ecosystems scientists and consultants, land use management planners and specialists, wildlife and fisheries biologists, environmental health and safety managers, wetland and soil scientists, foresters, environmental policy analysts, outdoor recreation and park administrators, and environmental educators, naturalists, and communicators.

Curriculum
The curriculum of the Environment and Natural Resources program consists of a variety of technical and general courses designed to give students a broad understanding of environmental and natural resources issues.

Core courses
- AEDECON 2001 Principles of Food and Resource Economics
- BIOLOGY 1113 Bio Sci: Energy Transfer and Development
- COMLDR 3537 Data Analysis in the Applied Sciences
- ENGLISH 1110.01 First-Year English Composition
- ENGTECH 2050T Introduction to Geographic Information Systems
- ENR 2100 Introduction to Environmental Science
- ENR 2300 Society and Natural Resources
- ENR 2367 Communicating Environmental and Natural Resources Information
- ENVSCT 1201T Exploring Environmental Science
- GENSTDS 1201T College Orientation
- RURLSOC 1500 Introduction to Rural Sociology
- Art/Hum electives (from approved list)

Specialization courses
Environmental Science
- BIOLOGY 1114 Bio Sci: Form, Function, Diversity and Ecology
- CHEM 1210 General Chemistry 1
- CRPSOIL 2300T Introduction to Soil Science
- CRPSOIL 2301T Introduction to Soil Science Lab
- MATH 1151 Calculus I
- Elective

Natural Resource Management
- CHEM 1110 Elementary Chemistry
- MATH 1148 College Algebra
- Electives

Course descriptions begin on page 42.
Food Business Management

The objective of the Food Business Management program at Ohio State ATI is to allow students to complete the first half of a Bachelor of Science in Agriculture, majoring in Food Business Management at The Ohio State University, or to prepare for employment in the food and agricultural industry.

Career opportunities

Graduates with a Bachelor of Science in Food Business Management will be prepared for a variety of careers, from commodity purchasing to food product sales and management. From purple ketchup to “smart” water to the growing demand for organic products, new food developments make this a challenging and fast-paced industry.

Curriculum

Ohio State ATI’s Food Business Management program provides a balanced curriculum consisting of technical and general coursework, as well as practical experience in business classes.

General Education

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>AEDECON 2001</td>
<td>Principles of Food and Resource Economics</td>
</tr>
<tr>
<td>AGRCOMM 2367</td>
<td>Agricultural Issues in Contemporary Society</td>
</tr>
<tr>
<td>BIOLOGY 1113</td>
<td>Bio Sci: Energy Transfer and Development</td>
</tr>
<tr>
<td>BUSTEC 1201T</td>
<td>Exploring Business</td>
</tr>
<tr>
<td>CHEM 1110</td>
<td>Elementary Chemistry</td>
</tr>
<tr>
<td>COMPSTD 2301</td>
<td>Introduction to World Literature</td>
</tr>
<tr>
<td>ENGLISH 1110.01</td>
<td>First-Year English Composition</td>
</tr>
<tr>
<td>GENSTDS 1201T</td>
<td>College Orientation</td>
</tr>
<tr>
<td>HISTORY 1152</td>
<td>American Civilization since 1877</td>
</tr>
<tr>
<td>MATH 1148</td>
<td>College Algebra</td>
</tr>
<tr>
<td>MICRBIIO 4000.01</td>
<td>Basic and Practical Microbiology</td>
</tr>
<tr>
<td>MUSIC 2250</td>
<td>Music Cultures of the World</td>
</tr>
<tr>
<td>RURLSOC 1500</td>
<td>Introduction to Rural Sociology</td>
</tr>
</tbody>
</table>

Major courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>AEDECON 2105</td>
<td>Managerial Records and Analysis</td>
</tr>
<tr>
<td>AGRCOMM 3130</td>
<td>Oral Expression in Agriculture</td>
</tr>
<tr>
<td>BUSTEC 2231T</td>
<td>Fundamentals of Marketing</td>
</tr>
<tr>
<td>BUSTEC 2232T</td>
<td>Personal Selling</td>
</tr>
<tr>
<td>BUSTEC 2241T</td>
<td>Small Business Management</td>
</tr>
<tr>
<td>BUSTEC 2244T</td>
<td>Human Resource Management and Leadership</td>
</tr>
<tr>
<td>BUSTEC 2249T</td>
<td>Fundamentals of Business Finance</td>
</tr>
</tbody>
</table>

Course descriptions begin on page 42.
Horticultural Science

The objective of the Horticultural Science program at Ohio State ATI is to allow students to complete the first half of a Bachelor of Science in Agriculture, with a focus in Landscape Horticulture, Turfgrass Science, or Crop Science.

Career opportunities
Graduates with a landscape horticulture specialization will find careers in design, sales, management, interiorscape, and grounds management. Turfgrass Science majors may become golf course superintendents, athletic field managers, lawn care specialists, or sod producers. Crop science specialists will find careers in nursery and greenhouse production, management, consulting, or sales and technical support for agribusiness.

Curriculum
The curriculum of the Horticultural Science program consists of a combination of general and technical courses. Selection of courses from a group of transferable electives will allow students to individualize the curriculum.

General Education

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>AEDECON 2001</td>
<td>Principles of Food and Resource Economics</td>
</tr>
<tr>
<td>AGRCOMM 2367</td>
<td>Agricultural Issues in Contemporary Society</td>
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<td>CHEM 1110</td>
<td>Elementary Chemistry</td>
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<tr>
<td>COMPSTD 2301</td>
<td>Introduction to World Literature</td>
</tr>
<tr>
<td>ENGLISH 1110.01</td>
<td>First-Year English Composition</td>
</tr>
<tr>
<td>GENSTDS 1201T</td>
<td>College Orientation</td>
</tr>
<tr>
<td>HISTORY 1152</td>
<td>American Civilization since 1877</td>
</tr>
<tr>
<td>HCS 2201</td>
<td>Ecology of Managed Plant Systems</td>
</tr>
<tr>
<td>HCS 2202</td>
<td>Form and Function in Cultivated Plants</td>
</tr>
<tr>
<td>HORTTEC 1201T</td>
<td>Exploring Horticulture</td>
</tr>
<tr>
<td>MATH 1148</td>
<td>College Algebra</td>
</tr>
<tr>
<td>MUSIC 2250</td>
<td>Music Cultures of the World</td>
</tr>
<tr>
<td>RURLSOC 1500</td>
<td>Introduction to Rural Sociology</td>
</tr>
</tbody>
</table>

Major courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOTECH 2218T</td>
<td>General and applied Entomology</td>
</tr>
<tr>
<td>CRPSOIL 2300T</td>
<td>Introduction to Soil Science</td>
</tr>
<tr>
<td>CRPSOIL 2301T</td>
<td>Introduction to Soil Science Lab</td>
</tr>
<tr>
<td>HORTTEC 2110T</td>
<td>Plant Materials I</td>
</tr>
<tr>
<td>PLNTPTH 3001</td>
<td>General Plant Pathology Lecture</td>
</tr>
<tr>
<td>PLNTPTH 3002</td>
<td>General Plant Pathology Laboratory</td>
</tr>
</tbody>
</table>

Electives

Course descriptions begin on page 42.

Other degree options
Associate of Applied Science degrees are available in Greenhouse and Nursery Management, Landscape Horticulture, and Turfgrass Management. See curricular information on pages 13, 16, and 19.
Sustainable Agriculture

The objective of the Sustainable Agriculture program at Ohio State ATI is to allow students to complete the first half of a Bachelor of Science degree, majoring in Natural Resource Management – Sustainable Agriculture in the School of Environment and Natural Resources. This program integrates principles of crop and animal management and business to build social, economic, and ecological capital in the agricultural system.

Career opportunities

Graduates find employment through entrepreneurial crop, livestock, and dairy enterprises. Graduates may find employment as farm managers and in the agricultural services industry.

Curriculum

Sustainable Agriculture majors enroll in general education and technical courses developed to enrich student’s understanding of crops, soils, animals, and marketing in the agricultural system.

General Education

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>AEDECON 2001</td>
<td>Principles of Food and Resource Economics</td>
</tr>
<tr>
<td>BIOLOGY 1114</td>
<td>Bio Sci: Form, Function, Diversity, and Ecology</td>
</tr>
<tr>
<td>CHEM 1110 or 1210</td>
<td>Elementary Chemistry</td>
</tr>
<tr>
<td>CRPSOIL 1201T</td>
<td>Exploring Agronomy, Sustainable Agriculture, and Crop Management and Soil Conservation</td>
</tr>
<tr>
<td>ENGLISH 1110.01</td>
<td>First-Year English Composition Introduction to Environmental Science</td>
</tr>
<tr>
<td>ENR 2100</td>
<td>Society and Natural Resources</td>
</tr>
<tr>
<td>ENR 2300</td>
<td>Communicating Environmental and Natural Resources Information</td>
</tr>
<tr>
<td>GENSTDS 1201T</td>
<td>College Orientation</td>
</tr>
<tr>
<td>MATH 1148</td>
<td>College Algebra</td>
</tr>
<tr>
<td>RURLSOC 1500</td>
<td>Introduction to Rural Sociology</td>
</tr>
</tbody>
</table>

Art/Hum Electives (from approved list)

Major courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>AEDECON 2105</td>
<td>Managerial Records and Analysis</td>
</tr>
<tr>
<td>ANIMSCI 2200.01</td>
<td>Introductory Animal Sciences</td>
</tr>
<tr>
<td>ANMLTEC 2200.02T</td>
<td>Introduction to Animal Sciences Laboratory</td>
</tr>
<tr>
<td>ANMLTEC 2400T</td>
<td>Sustainable Animal Systems and Marketing</td>
</tr>
<tr>
<td>CRPSOIL 2200T</td>
<td>Introduction to Sustainable Agriculture</td>
</tr>
<tr>
<td>CRPSOIL 2201T</td>
<td>Sustainable Cropping Systems and Marketing</td>
</tr>
<tr>
<td>CRPSOIL 2210T</td>
<td>Sustainable Agriculture Methods</td>
</tr>
<tr>
<td>CRPSOIL 2300T</td>
<td>Introduction to Soil Science</td>
</tr>
<tr>
<td>CRPSOIL 2301T</td>
<td>Introduction to Soil Science Laboratory</td>
</tr>
<tr>
<td>CRPSOIL 3800T</td>
<td>Principles of Farm Business Management</td>
</tr>
</tbody>
</table>

or ANMLTEC 3800T (cross-listed course) Elective

Course descriptions begin on page 42.

Other degree options

An Associate of Applied Science degree is available in Crop Management and Soil Conservation. An Associate of Science degree is available in Agricultural Systems Management and Agronomy. See curricular information on pages 10, 22, and 24.
1 + 3 Program

Professional Golf Management

The professional golf management (PGM) program is a four-year curriculum for aspiring PGA professionals. Students in the program are required to provide proof of an 18-hole golf handicap of 10 or better. The objective of the PGM program at Ohio State ATI is to allow students to complete the first year of the Bachelor of Science degree, majoring in Professional Golf Management. After one year, students transition to the Columbus campus to complete the remainder of the program.

Career opportunities

Graduates with a Bachelor of Science in Professional Golf Management have diverse career opportunities, including Director of Golf, Head Golf Professional, Director of Instruction, Tournament Director, golf manufacturing sales representative, golf association administrator, golf club repair and golf journalist, as well as positions in golf club research and development, general management, and golf retailing.

Curriculum

The PGM curriculum emphasizes the knowledge and skills necessary for success in the golf industry through extensive classroom studies, internship experience, and player development. In addition to business, finance, marketing, turfgrass science and hospitality management classes, the curriculum encompasses specialty classes in swing analysis and swing concepts, tournament operations, golf club repair, club fitting, retail merchandising, golf course design, and coaching golf.

Facilities

Ohio State ATI owns and operates an 18-hole championship golf facility, Hawk’s Nest at Ohio State ATI, which provides special playing privileges to PGM students in addition to the practical applied learning experiences students receive within the clubhouse and on the grounds. In addition, the Ohio State ATI campus grounds include a model golf hole for convenient practice between classes.

The following PGM courses are offered on the Ohio State ATI campus:

General Education

- AEDECON 2001 Principles of Food and Resource Economics
- CHEM 1110 Elementary Chemistry
- COMPSTD 2301 Introduction to World Literature
- ENGLISH 1110.01 First-Year English Composition
- GENSTDS 1201T College Orientation
- HISTORY 1152 American Civilization since 1877
- HORTTEC 1201T Exploring Horticulture
- MATH 1130 College Algebra for Business
- or 1148 College Algebra
- MUSIC 2250 Music Cultures of the World
- RURLSOC 1500 Introduction to Rural Sociology

Major courses

- HCS 2250 Introduction to Professional Golf Management
- HCS 3488.02 PGM Player Development
- HCS 4191.02 PGM Internship

Course descriptions begin on page 42.

Applied learning opportunities

All students majoring in professional golf management are required to complete five internships prior to graduation. Students receive a total of 5 academic credit hours for these work experiences.

Other degree options

Students interested in the management and maintenance of golf facilities may be interested in the Associate of Applied Science in Turfgrass Management or the Associate of Science in Horticultural Science. See curricular information on pages 19 and 36.
Certificate Programs

Bioenergy
The increasing demand for energy particularly from renewable energy resources will continue to drive the need for trained bioenergy technicians. This Certificate Program in Bioenergy will prepare students with the skills and knowledge that are relevant to the industry. This certificate program will also benefit people already working in the industry but need to update their knowledge and skills. A new Associate of Applied Science in Bioenergy and Biological Waste Management has recently been introduced. This certificate may also serve as a first year foundation leading to the Associate of Applied Science in Bioenergy and Biological Waste Management.

Career opportunities
Owing to the dynamic aspects of the industry, graduates may find job opportunities with start-up firms as well as with established companies. Graduates can enter the workforce as lab technicians, wastewater treatment plant operators, feedstock analysts, bioethanol or biodiesel plant technicians, and component sales, as well as other indirect jobs that support bioenergy construction and operations.

Gainful Employment Disclosure
The Federal Department of Education requires colleges and universities to disclose certain information for “programs that prepare students for gainful employment in recognized occupations”. For important information about the educational debt, earnings, and completion rates of students who attended this program visit https://ati.osu.edu/node/2408.

Curriculum
Areas of study include a Bioenergy introductory course, Biomass Feedstock Evaluation and Analysis, Bioenergy and Wastewater Treatment Technologies and two (2) practicums.

General Education
BIOLOGY 1113 Bio Sci: Energy Transfer and Development
ENGLISH 1110.01 First-Year English Composition
MATH 1148 College Algebra
RURLSOC 1500 Introduction to Rural Sociology

Technical Studies
CHEM 1210 General Chemistry 1
BIOWMGT 2010T Introduction to Bioenergy and Biological Waste Management
BIOWMGT 2020T Bioenergy and Wastewater Technologies
BIOWMGT 2030T Feedstock Evaluation and Analysis
BIOWMGT 2189T Bioenergy and Biological Waste Management Practicum

Course descriptions begin on page 42.
Hydraulic Service and Repair

The increasing complexity of equipment and a shortage of qualified maintenance personnel have created an immediate demand for skilled technicians with the ability to maintain, repair and rebuild fluid power components. This Certificate of Competency will prepare individuals with the skills and knowledge to get started in the industry. Students may choose to pursue the Associate of Applied Science degree at a later time.

Career opportunities

Because rebuilding is often more cost effective and quicker than buying new components, many large industrial users and manufacturers seek individuals with the skills to repair or rebuild pumps, valves, motors, and cylinders.

Graduates can enter the work force as a system assembler, component rebuilder, or test technician. Employment opportunities also exist with firms that specialize in the repair or rebuilding of hydraulic components and industrial machinery.

Gainful Employment Disclosure

The Federal Department of Education requires colleges and universities to disclose certain information for “programs that prepare students for gainful employment in recognized occupations”. For important information about the educational debt, earnings, and completion rates of students who attended this program visit https://ati.osu.edu/node/2409.

Curriculum

Areas of study include hydraulic principles of operation, component technology, fluid conveyance, hydraulic component rebuilding, electrical and electronics, and welding metal fabrication.

<table>
<thead>
<tr>
<th>General Education</th>
<th>Technical Studies</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUSTEC 1202T</td>
<td>ENGTECH 2214T</td>
</tr>
<tr>
<td>ENGTECH 1201.01T</td>
<td>Fundamentals of Fluid Power and Components</td>
</tr>
<tr>
<td>ENGLISH 1110.01T</td>
<td>Component Rebuilding</td>
</tr>
<tr>
<td>or AGRCOMM 3130</td>
<td>Fluids, Filtration, and Fluid Conveyance</td>
</tr>
<tr>
<td>GENSTDS 1201T</td>
<td>ENGTECH 2240T</td>
</tr>
<tr>
<td>Free Elective</td>
<td>Welding Technology</td>
</tr>
<tr>
<td>Students must be eligible to enroll in GENMATH 1141T or</td>
<td>ENGTECH 2312T</td>
</tr>
<tr>
<td>1145T to complete the certificate requirements. If not</td>
<td></td>
</tr>
<tr>
<td>eligible, students will need to successfully complete</td>
<td></td>
</tr>
<tr>
<td>remedial mathematics courses depending on math</td>
<td></td>
</tr>
<tr>
<td>placement level.</td>
<td>ENTECH 2336T</td>
</tr>
<tr>
<td></td>
<td>Methods of Power Transmission</td>
</tr>
<tr>
<td></td>
<td>BUSTEC elective (from approved list)</td>
</tr>
<tr>
<td></td>
<td>ENTECH elective (from approved list)</td>
</tr>
</tbody>
</table>

Course descriptions begin on page 42.
Turfgrass Equipment Manager
The Turfgrass Equipment Manager Certificate of Competency program is designed to prepare aspiring turf care specialists with the applied technical skills needed in the field. These skills include the maintenance, adjustment, and repair of commercial turf equipment as well as management of turf care facilities. This program is one of a very few of its type in the country and is attracting the attention of leaders in the turf equipment and sports turf industries, where the demand for qualified employees continues to expand.

Career opportunities
Graduates work with equipment dealers, wholesalers, manufacturers, lawn care companies, landscape firms, nurseries, golf courses, parks, and professional athletic enterprises. Fulfillment of this certificate brings with it a wide spectrum of employment opportunities such as equipment service manager at a golf course, country club, or park, OEM sales representative, or service technician with a manufacturer, wholesaler, or dealer.

Curriculum
Areas of study include engine principles of operation, diesel engine service and repair, power transmission, hydraulics, electrical and electronics, welding/metal fabrication, reel mower maintenance, and turfgrass management.

General Education
AGRCOMM 3130 Oral Expression in Agriculture
BUSTEC 1202T Software Applications
ENGTECH 2322T Basic Electricity and Electronics
GENBIOL 1250T General Botany with Applications
GENSTDS 1201T College Orientation
HORTTEC 1201T Exploring Horticulture

Students must be eligible to enroll in GENMATH 1141T or 1145T to complete the certificate requirements. If not eligible, students will need to successfully complete remedial mathematics courses depending on math placement level.

Technical Studies
ENGTECH 2011T Small Engine Basics
ENGTECH 2214T Fundamentals of Fluid Power and Components
ENGTECH 2240T Welding Technology
ENGTECH 2312T Engineering Technology Fundamentals
ENGTECH 2336T Methods of Power Transmission
HORTTEC 2191.55T Turf Equipment Manager Internship
HORTTEC 2225T Turf Equipment Operation and Maintenance
HORTTEC 2227T Turfgrass Reel Mower Maintenance

Course descriptions begin on page 42.

Gainful Employment Disclosure
The Federal Department of Education requires colleges and universities to disclose certain information for "programs that prepare students for gainful employment in recognized occupations". For important information about the educational debt, earnings, and completion rates of students who attended this program visit https://ati.osu.edu/node/2406.
Course offerings

The following pages describe courses offered by the Agricultural Technical Institute. The most current information regarding new courses, changes to existing courses, credit hours, sections, days, times, buildings, rooms, and instructors may be found in the semester Master Schedule of Classes.

Explanation of a course listing

A Course number: 3140T
A dagger (†) denotes that the course will not be offered this year.
An asterisk (*) indicates that the course is offered every other year.
Prerequisite(s): GenBiol 1200T (120T) or Biology 1113 (113) recommended. Not open to students with credit for 221T. This course is available for EM credit.

B Course description:
An introductory study of the structure and functions of the various organ systems of domestic animals.

C Semesters of offering:
Su—Summer; Au—Autumn; Sp—Spring; May—May session

Classroom and laboratory hours: 3 cl, 1 2-hr lab
Course credit is earned through satisfactory completion of course work which may involve classroom, laboratory, field trip attendance, or internship participation.

Prerequisite(s): GenBiol 1200T or Biology 1113 (113) recommended. The course number(s) or other information indicates the preparation or classification required to enroll in the course. If no department name is listed, the number(s) refers to the specific course within the same department.

Repeatability clause: Indicates the maximum number of hours a course may be repeated for credit.

General information clause: Gives general information about the course.

Animal Sciences Technology

(ANMLTEC)

1201.01T Exploring Equine Careers and Industry U 0.5
Promotes student success in college and preparation for a career; explores personal and career interests, needs, goals, and the support services available for student success.
Au. 1 cl.

1201.02T Exploring Livestock Careers and Industry U 0.5
Promotes student success in college and preparation for a career; explores personal and career interests, needs, goals, and the support services available for student success.
Au. 1 cl.

1201.07T Exploring Dairy Careers and Industry U 0.5
Promotes student success in college and preparation for a career; explores personal and career interests, needs, goals, and the support services available for student success.
Au. 1 cl.

2189.01T Horse Practicum U 1
Practical experience in supervised equine laboratories with emphasis on developing and improving competencies related to classroom objectives and horse industry standards.
Su, Au, Sp. Arr. Prereq: Permission of instructor. A grade of C or better required to meet graduation requirements. Repeatable to a maximum of 4 cr hrs or 4 completions.

2189.07T Practicum in Dairy Cattle Production U 1-2
Supervised practical experience in dairy cattle production at the Ohio State ATI dairy farm with emphasis on developing and improving dairy cattle production skills and competencies.
Su, Au, Sp. Arr. Prereq: Permission of instructor. A grade of C or better required to meet graduation requirements. Repeatable to a maximum of 4 cr hrs or 4 completions.

2189.08T Practicum in Livestock Production and Management U 1-2
Supervised practical experience in livestock production and management at the Grace Drake Learning Laboratory with emphasis on developing and improving livestock production skills and competency.
Su, Au, Sp. Arr. Prereq: Permission of instructor. Repeatable to a maximum of 4 cr hrs or 4 completions.

2190.01T Leadership in Equine Operations Management U 1 Practical, supervised leadership experience in equine facility management with emphasis on herd and facility operations and personnel supervision.
Au. Arr. Prereq: 2189.01T (289.04T) with a grade of C or above; 2201T (211T); Completion of tractor/mobile equipment safety certification process. A grade of C or better required to meet graduation requirements. Repeatable to a maximum of 2 cr hrs.

2193T Individual Studies U 1-3
Designed to give an individual student an opportunity to pursue special studies not offered in other courses.
Au, Sp. Prereq: Permission of instructor. Repeatable to a maximum of 10 cr hrs or 10 completions.

2194T Group Studies U 1-3
Designed to give groups of students an opportunity to pursue special studies not offered in other courses.
Au. Prereq: Permission of instructor. Repeatable to a maximum of 10 cr hrs or 10 completions.

2200.02T Introduction to Animal Sciences Laboratory U 1 Laboratory application of basic animal husbandry practices in the various livestock and related industries.
Au, Sp. 1 2-hr lab. Prereq or concur: 2200T or AnimSci 2200.01. This course is available for EM credit.

2201T Introduction to Horse Science U 3
Fundamental survey of the development of domestic horses and breeds, terminology, behavior, uses, conformation, management and safe horse handling.
Au. 2 cl, 1 2-hr lab. Prereq: Not open to students with credit for 211T. This course is available for EM credit. Course fee: $80

2202T Introduction to Beef and Small Ruminant Production U 3
Overview of beef cattle, sheep, goat, and other small ruminant species industries with regard to production and marketing; focus on ruminant livestock needs and the opportunities involved in their production.
Au. 2 cl, 1 rec, 1 2-hr lab. Prereq: Not open to students with credit for 222.01T. This course is available for EM credit.

2400T Sustainable Animal Systems and Marketing U 3
Introduction to principles, practices, and marketing of animal products in a sustainable management system.
Sp. 3 cl. Prereq: CrpSoil 2200T (220T). This course is available for EM credit.

2510.02T Food Animal Resource Management I—Beef U 1 Supervised practical experience in beef production and management at the Grace Drake Learning Laboratory with emphasis on developing and improving beef production and management skills and competency.
Au, Sp. 1 rec, 1 3-hr lab. A grade of C or better required to meet graduation requirements. Repeatable to a maximum of 4 cr hrs.

2510.03T Food Animal Resource Management I—Swine U 1 Supervised practical experience in swine production and management at the Grace Drake Learning Laboratory with emphasis on developing and improving swine production and management skills and competency.
Au, Sp. 1 rec, 1 3-hr lab. A grade of C or better required to meet graduation requirements. Repeatable to a maximum of 4 cr hrs.

2510.04T Food Animal Resource Management I—Small Ruminants U 1 Supervised practical experience in small ruminant production and management at the Grace Drake Learning Laboratory with emphasis on developing and improving small ruminant production and management skills and competency.
Au, Sp. 1 rec, 1 3-hr lab. A grade of C or better required to meet graduation requirements. Repeatable to a maximum of 4 cr hrs.
2582.02T Food Animal Resource Management II – Beef U 1
Supervised practical experience in beef production and management at the Grace Drake Learning Laboratory with emphasis on developing and improving leadership characteristics, beef production and management skills and competency. Au, Sp. 1 rec, 1 3-hr lab. Prereq: 2510.02T. A grade of C or better required to meet graduation requirements. Repeatable to a maximum of 4 cr hrs.

2582.03T Food Animal Resource Management II – Swine U 1
Supervised practical experience in swine production and management at the Grace Drake Learning Laboratory with emphasis on developing and improving leadership characteristics, swine production and management skills and competency. Au, Sp. 1 rec, 1 3-hr lab. Prereq: 2510.03T. A grade of C or better required to meet graduation requirements. Repeatable to a maximum of 4 cr hrs.

2582.04T Food Animal Resource Management II – Small Ruminants U 1
Supervised practical experience in small ruminant production and management at the Grace Drake Learning Laboratory with emphasis on developing and improving leadership characteristics, small ruminant production and management skills and competency. Au, Sp. 1 rec, 1 3-hr lab. Prereq: 2510.04T. A grade of C or better required to meet graduation requirements. Repeatable to a maximum of 4 cr hrs.

2603T Swine Production and Management I U 3
A study of the basic principles of production and management for contemporary commercial swine production enterprises. 1 to 3 day field trips, including weekends, may be required. Students will pay costs associated with field trips (lodging, transportation, meals, etc.) above Ohio State tuition and fees. Au. 2 cl, 1 rec, 1 2-hr lab. Prereq: Not open to students with credit for 222.02T. This course is available for EM credit.

2707T Dairy Cattle Presentation U 1
Principles and skills practiced in fitting, presenting, and merchandising dairy cattle. Field trips, including weekends, may be required. Students will pay costs associated with field trips (lodging, transportation, meals, etc.) above Ohio State tuition and fees. Sp of even-numbered years. 3-hr lab. Prereq: Not open to students with credit for 206T. This course is available for EM credit.

2787T Applied Dairy Herd Practices and Management U 1
Experience in applying, directing, and evaluating dairy herd management procedures and practices at the Ohio State ATI dairy farm. Au, Sp. Arr. Prereq: Soph standing; permission of instructor; completion of the Equipment Training and Certification process and a driver background check required. A grade of C or better required to meet graduation requirements. Repeatable to a maximum of 3 cr hrs.

2797T Dairy Industry Seminar and Experience U 1
Current trends, issues, technology, and developments in the dairy industry; emphasis on developing lifelong learning skills through evaluation of science/trade journals, participation in professional meetings, and visits to innovative businesses. 1 to 3 day field trips, including weekends, may be required. Students pay field trip costs of lodging, meals, etc. above Ohio State tuition and fees. Sp. Arr. Prereq: Permission of instructor. Prereq or concur: English 1110.01 or 1110.03. Repeatable to a maximum of 3 cr hrs or 3 completions. This course is graded S/U.

2801T Horsemanship and Equitation U 3
Intermediate course in equitation with emphasis on continued development of balanced seat riding skills that incorporate natural horsemanship concepts into mounted work. Students should have riding proficiency at walk, trot, and canter. Au, 1 cl, 2 rec. 2 2-hr labs. Prereq: Permission of instructor. Concurs: 2189.01T or 2190.01T. Not open to students with credit for 213T. Repeatable to a maximum of 6 cr hrs. This course is available for EM credit. Course fee: $50

2811T Schooling and Training the Riding Horse U 3
Applied techniques of schooling and training riding horses with emphasis on producing supple, willing and knowledgeable mounts. Au. 2 cl, 3 1-hr labs. Prereq: 2201T (211T), 2801T (267T), permission of instructor. Concours: 2189.01T or 2190.01T. Not open to students with credit for 268.01T. Course fee: $50

3101T Equine Marketing and Facility Management U 4
A study of the principles of safe and efficient equine facility design and the basic factors of managing and marketing horses and horse facilities. Au. 3 cl, 1 rec. 1 2-hr lab. Prereq: 2201T and 2189.01T. This course is available for EM credit. Course fee: $50

3130T Principles of Animal Nutrition U 2
A study of the nutrients and the basic principles involved in the feeding of domestic animals, including the characteristics/composition of feedstuffs and factors that affect feed utilization. 2 cl. Recommended prerequisite: 2200T or 3140T; GenBiol 120T (120T) or Biology 1113 (113). Not open to students with credit for 214T or 240T. This course is available for EM credit.

3131T Equine Feeding and Nutrition U 3
A study of the nutritional needs of equids and of the principles and practices involved in providing balanced rations to different nutritional classes of equids. Sp. 2 cl, 1 3-hr lab. Prereqs: 2200T or 2201T; GenMath 1040T or Math 1075 or Math placement level R or higher. This course is available for EM credit. Course fee: $30

3132T Ruminant Feeds and Feeding U 3
Principles of beef cattle and small ruminant nutrient requirements and feeding management with emphasis on the critical evaluation and formulation of rations in current management situations. Sp. 2 cl, 1 2-hr lab. Prereqs: 2200T or 2202T; GenMath 1040T or Math 1075 or Math placement level R or higher. This course is available for EM credit.

3133T Practical Swine Feeding U 3
A study of the basic nutritional requirements and feeding management of swine, with an emphasis on evaluation and formulation of common feedstuffs and ration balancing. Sp. 3 cl. prerequisite: 2200T or 260T; GenMath 1040T or Math 1075 or Math placement level R or higher. This course is available for EM credit.

3137T Dairy Cattle Feeding Management U 3
Principles of dairy cattle feeding management with emphasis on the critical evaluation and formulation of rations in current management situations. Sp. 2 cl, 1 rec, 1 3-hr lab. Prereqs: GenMath 1040T or Math 1075 or Math placement level R or higher. This course is available for EM credit. Course fee: $50

3140T Animal Anatomy and Physiology U 4
An introductory study of the structure and functions of the various organ systems of domestic animals. Au, Sp. 3 cl, 1 2-hr lab. Recommended prerequisite: GenBiol 120T (120T) or Biology 1113 (113). Not open to students with credit for 221T. This course is available for EM credit.

3150T Livestock Genetic Improvement U 3
Principles of inheritance and the genetic improvement of livestock through cellular, qualitative, and population genetics; emphasizing breeding values, selection, and mating systems. Sp. 3 cl, 2 rec. Prereqs: GenBiol 120T or Biology 1113; GenMath 1040T or Math 1050 or Math placement level R or higher. This course is available for EM credit.

3151T Horse Breeding and Selection U 3
Principles of equine breeding management with emphasis on applied equine reproductive physiology, breeding methods, breeding stock management and basic genetics and selection. Sp. 2 cl, 1 2-hr lab. Prereq: 2201T (211T). Recommended prerequisite: 3140T (221T) or GenBiol 1200T (120T). Not open to students with credit for 265T. This course is available for EM credit. Course fee: $300

3157T Dairy Cattle Genetic Improvement U 3
Principles of inheritance and the genetic improvement of dairy cattle through cellular, qualitative, and population genetics; emphasizing breeding values, selection, and mating systems. Sp. 3 cl, 2 rec. Prereqs: GenBiol 120T or Biology 1113; GenMath 1040T or Math 1050 or Math placement level R or higher. This course is available for EM credit.
316T Applied Equine Reproductive Management  U 2
Advanced course in equine reproductive management with emphasis on understanding and improving equine infertility; applications of current research; and development of technical skills.
Sp. 1 cl, 1.3-hr lab. Prereq: 2201T (211T), Prereq or concur: 3151T (266T). Concur: 2189.01T or 2190.01T. Not open to students with credit for 269T. Course fee: $350

316T Dairy Milking and Reproductive Management  U 4
A study of recommended dairy milking and reproductive management practices, based on the anatomy and physiology of the systems.
Aus. 3 cl, 1 rec, 1.3-hr lab. Prereq: Not open to students with credit for 201T and 203T. This course is available for EM credit.

3170T Principles of Livestock Health  U 3
A basic introduction to the relationship between animal health and performance. Topics include: immunology, sanitation, disease etiology, and disease prevention, symptoms, and treatment.
Sp. 3 cl. Prereq: 2200T or 2202T or 2603T. This course is available for EM credit.

3171T Horse Health and Disease  U 3
Study of equine disease, lameness and emergency first aid with emphasis on preventative health care and the manager's role with the veterinary professional.
Sp. 2 cl, 1.2-hr lab. Prereq: 2200T or 2201T. This course is available for EM credit. Course fee: $150

3177T Dairy Cattle Health Management  U 4
A study of immunology and dairy cattle health management, including disease prevention, identification, and treatment of common diseases influencing the performance of dairy cattle.
Sp. 3 cl, 1.3-hr lab. Prereq: Not open to students with credit for 201T, 203T, and 252T. This course is available for EM credit.

3191.01T Equine Industry Internship Experience  U 1-3
Employment in the equine industry structured to provide varied occupational experiences: supervised by an industry employer and coordinated by faculty; comprehensive report required.
Su, Au, Sp. Arr. Prereq: 2189.01T (289.04T), 2201T (211T), CPHR 2.0 or above, Soph standing, and permission of instructor. Not open to students with credit for 290.04T. A grade of C or better required to meet graduation requirements. Repeatable to a maximum of 4 cr hrs or 3 completions.

3191.02T Beef Industry Internship  U 2-3
Employment in the beef industry structured to provide varied occupational experiences; supervised by an industry employer and coordinated by faculty; comprehensive report required.
Su, Au, Sp. Arr. Prereq: 2202T, 2510.02T, CPHR 2.0 or above; permission of instructor. A grade of C or better is required to meet graduation requirements. Repeatable to a maximum of 6 cr hrs or 2 completions.

3191.03T Swine Industry Internship  U 2-3
Employment in swine industry structured to provide varied occupational experiences; supervised by an industry employer and coordinated by faculty; written comprehensive report required.
Su, Au, Sp. Arr. Prereq: 2603T, 2510.03T, CPHR 2.0 or above; permission of instructor. A grade of C or better is required to meet graduation requirements. Repeatable to a maximum of 6 cr hrs or 3 completions.

3191.04T Small Ruminant Industry Internship  U 2-3
Employment in a small ruminant industry structured to provide varied occupational experiences; supervised by an industry employer and coordinated by faculty; comprehensive report required.
Su, Au, Sp. Arr. Prereq: 2202T, 2510.04T, CPHR 2.0 or above; permission of instructor. A grade of C or better is required to meet graduation requirements. Repeatable to a maximum of 6 cr hrs or 2 completions.

3191.07T Dairy Industry Internship  U 2-3
Employment in the dairy industry structured to provide varied occupational experiences; supervised by an industry employer and coordinated by faculty; comprehensive report required.
Su, Au, Sp. Arr. Prereq: 3167T (201T and 203T), 3207T (202T), 3177T (252T); CPHR 2.0 or above; permission of instructor. A grade of C or better is required to meet graduation requirements. Repeatable to a maximum of 6 cr hrs or 3 completions.

3200T Livestock Selection and Evaluation  U 2
Principles of live animal selection and carcass evaluation of livestock.
Au. 2 rec, 2.2-hr labs. Prereq: 2200T (210T) or 2202T (222.01T) or 2603T (222.02T) or 3140T (221T). Not open to students with credit for 223T.

3201T Horse Judging and Evaluation  U 2
Comparative evaluation of horse conformation by breed, assessment of performance in a variety of performance disciplines; development of tools for assessing and placing show horses.
Sp. 1 cl, 1.3-hr lab. Prereq: Not open to students with credit for 212T. This course is available for EM credit. Course fee: $50

3207T Dairy Cattle Evaluation and Herd Records  U 2
Comparative evaluation of dairy cattle conformation and introduction to herd performance records; emphasis on breed characteristics, functional type, lifetime profitability, and record data collection, analysis, and use.
Au. 2.3-hr labs. Prereq: Not open to students with credit for 201T and 202T. This course is available for EM credit.

3402T Beef Production and Management  U 4
The application of science and basic principles of nutrition, genetics, physiology, and marketing to the production and management of beef cattle in breeding and feeding production programs. 1 to 3 day field trips, including weekends, may be required. Students will pay costs associated with field trips (lodging, transportation, meals, etc.) above Ohio State tuition and fees.
Sp. 3 cl, 1.2-hr lab. Prereq: 2200T and 2510.02T. Recommended prereq: 2582.02T, 3130T, 3132T, 3140T, 3150T, and 3170T.

3403T Swine Production and Management II  U 4
An advanced study of the principles of managing a commercial swine enterprise. Coordination of production programs, evaluating economic performance, and a survey of contemporary swine housing and equipment options. 1 to 3 day field trips, including weekends, may be required. Students will pay costs associated with field trips (lodging, transportation, meals, etc.) above Ohio State tuition and fees.
Sp. 3 cl, 1.2-hr lab. Prereq: 2603T, 3140T, 3170T. Prereq or concur: 3133T, 3150T. Not open to students with credit for 2613T. This course is available for EM credit.

3404T Small Ruminant Production and Management  U 4
The application of science and basic principles of nutrition, genetics, physiology, and marketing to the production and management of sheep, goats, and other small ruminants. 1 to 3 day field trips, including weekends, may be required. Students will pay costs associated with field trips (lodging, transportation, meals, etc.) above Ohio State tuition and fees.
Sp. 3 cl, 1.2-hr lab. Prereq: 2202T and 2510.04T. Recommended prereq: 2582.04T, 3130T, 3132T, 3140T, 3150T, 3170T.

3407T Dairy Cattle Facilities, Environment, & Equipment  U 3
Design and management of dairy cattle facilities, environment, and associated equipment; emphasizing milking equipment and parlors, animal housing, environmental control, waste management, feeding systems, and utilities. 1 to 3 day field trips, including weekends, may be required. Students pay costs associated with field trips (lodging, transportation, meals, etc.) above Ohio State tuition and fees.
Au. 2 cl, 2 rec, 1.3-hr lab. Prereq: GenMath 104T or Math 1050 or Math placement level R or higher. Prereq or concur: 3167T. This course is available for EM credit.

3800T Principles of Farm Business Management  U 4
A study of economic and management principles involved in planning, organizing, operating, and administering a farm business; emphasis placed on developing a business plan and problem solving.
Sp. 3 cl, 1 rec, 1.2-hr lab. Prereq: ADEEcon 2105 (BusTec 101T or 102T). Prereq or concur: BusTec 1151T (151T) or ADEEcon 2001 (200T). Not open to students with credit for BusTec 240T. This course is available for EM credit. Cross-listed in CrpSoil.

3887T Integrated Dairy Farm Business Management  U 4
A study of dairy farm business management combining business, financial, and animal management principles, practices, and strategies; emphasis placed on developing a business plan and problem solving.
Sp. 2 cl, 1 rec, 2.2-hr lab. Prereq: ADEEcon 2001 or BusTec 1151T; Soph standing; minimum of 10 cr hrs in AnmtTec. This course is available for EM credit.
Bioenergy and Biological Waste Management (BIOWMG)

1201T Exploring Bioenergy and Biological Waste Management U 0.5
Promotes student success in college and preparation for a career; explores personal and career interests, needs, goals, and the support services available for student success.
Au. 1 cl.

2010T Introduction to Bioenergy and Biological Waste Management U 3
An introduction to conventional and alternative energy (with emphasis on bioenergy and bioproducts), including conservation, economic and environmental issues. Water consumption, scarcity, pollution, and water resource recovery will be emphasized. Fermentation technology and biochemistry of microbial breakdown of carbohydrates, proteins, and lipids will be introduced.
Au. 3 cl. This course is available for EM credit.

2020T Bioenergy and Wastewater Technologies U 4
A detailed description of technologies employed in bioenergy-generating processes and wastewater treatment. Scientific and technical backgrounds of fermentation technology will be introduced. A critical evaluation of the environmental impacts of organic wastes. Bioreactor design; management of industrial, agricultural, and municipal solid wastes and wastewater will be covered.
Au. 3 cl. 1 3-hr lab. Prereq: 2010T; Chem 1210. This course is available for EM credit. Course fee: $50

2030T Feedstock Evaluation and Analysis U 3
An introduction to feedstocks used in the bioenergy/bio-products industry, including analytical tools for feedstock evaluation and handling, and logistical and economic aspects of industrial biomass feedstocks.
Au. 2 cl, 1 3-hr lab. Prereq: 2010T. This course is available for EM credit. Course fee: $50

2035T Sustainability and Waste Management U 3
The science and economics of composting, recycling, bioremediation, and phytoremediation will be introduced. Bioconversion of organic wastes and plant-derived sugars to value-added non-fuel products (platform chemicals and other bio-products) will be explored through classroom sessions and laboratory experiments.
Sp. 2 cl, 1 3-hr lab. Prereq: 2010T; Chem 1210. This course is available for EM credit.

2040T Bioenergy and Biological Waste Management Projects U 3
This capstone course provides a general overview of bioenergy-generating and wastewater treatment systems with emphasis on planning and logistics, project management, economics, and operations in a real-world setting. Practical applications for managing waste-to-energy projects and wastewater treatment will be emphasized through hands-on and on-site experience.
Sp. 2 cl, 1 3-hr lab. Prereq: 2020T; 2030T.

2189T Bioenergy and Biological Waste Management Practicum U 1-2
Supervised practical experience in a relevant work environment – bioenergy laboratory, wastewater treatment plant, biogas plant – with emphasis on developing competencies related to classroom and career activities.
Su, Au, Sp. Arr. A grade of C or better required to meet graduation requirements. Repeatable to a maximum of 4 cr hrs or 2 completions.

2191T Bioenergy and Biological Waste Management Internship U 2
Employment experience in a bioenergy/biological waste management work environment that provides varied occupational experience, supervised by an employer and coordinated by faculty.
Su, Au, Sp Arr. Prereq: GPA 2.00 or above and permission of instructor. A grade of C or better required to meet graduation requirements.

2193T Individual Studies U 1-3
Designed to give an individual student an opportunity to pursue special studies not offered in other courses.
Au, Sp. Prereq: Permission of instructor. Repeatable to a maximum of 10 cr hrs or 10 completions. This course is graded S/U.

2194T Group Studies U 1-3
Designed to give groups of students an opportunity to pursue special studies not offered in other courses.
Prereq: Permission of instructor. Repeatable to a maximum of 10 cr hrs or 10 completions.

Biotechnology (BIOTECH)

1201T Exploring Biochemical Sciences and Biotechnology U 0.5
Promotes student success in college and preparation for a career; explores personal and career interests, needs, goals, and the support services available for student success.
Au. 1 cl.

2194T Group Studies U 3
Designed to give groups of students an opportunity to pursue special studies not offered in other courses.
Prereq: Permission of instructor. Repeatable to a maximum of 10 cr hrs or 10 completions.

2218T General and Applied Entomology U 3
Classification, identification, life cycles, external/ internal structures, and functions of insects; common insect pests and their damage; methods of control and their applications.
Au, Sp. 2 cl, 1 3-hr lab. Prereq: Not open to students with credit for 218T or LabBioSc 218T. This course is available for EM credit. Course fee: $50

2219T Pesticides and their Use U 3
A study of the classification of pesticides and their mode of action, physiological effects, persistence in the environment, benefits, hazards, use, performance and regulation.
Au. 3 cl. Prereq: Not open to students with credit for 219T or LabBioSc 219T. This course is available for EM credit.

Business Technology (BUSTEC)

1151T General Economics U 3
Study of macro and micro-economic principles applicable to business, agricultural and personal financial decision making.
Au, Sp. 3 cl. Prereq or concur: GenMath 104T or Math 1050 or Math placement level R or higher. Not open to students with credit for ADEEcon 2001. This course is available for EM credit.

1201T Exploring Business U 0.5
Promotes student success in college and preparation for a career; explores personal and career interests, needs, goals, and the support services available for student success.
Au. 1 cl.

1202T Software Applications U 1
An overview of basic computer skills and study of the features and capabilities of presentations, word processing, spreadsheet and database software as decision management aids.
Au, Sp. 1 2-hr lab. Prereq: Not open to students with credit for 202T. This course is available for EM credit. Course fee: $50

2191T Business Internship U 3
Experience of employment in a business to provide varied occupational experience, supervised by an employer, and coordinated by faculty.
Su, Au, Sp. Arr. Prereq: GPA 2.00 or above, and permission of instructor. Not open to students with credit for 290.02T or 290.03T. A grade of C or better required to meet graduation requirements. Repeatable to a maximum of 6 cr hrs.

2193T Individual Studies U 1-3
Designed to give an individual student an opportunity to pursue special studies not offered in other courses.
Au. Sp. Prereq: Permission of instructor. Repeatable to a maximum of 10 cr hrs or 10 completions. This course is graded S/U.

2194T Group Studies U 1-3
Designed to give groups of students an opportunity to pursue special studies not offered in other courses.
Prereq: Permission of instructor. Repeatable to a maximum of 10 cr hrs or 10 completions.
2207T Problem Solving with Spreadsheets and Databases U 2
A problem-solving approach to managing typical business scenarios utilizing spreadsheets and databases.
Sp. 1 cl, 1.2-hr lab. Prereq: 1202T (202T). Not open to students with credit for 204T and 205T. This course is available for EM credit. Course fee: $50.

2231T Fundamentals of Marketing U 3
A survey of the field of marketing including functions, policies, problems, structure, strategies, and opportunities.
Sp. 3 cl. Prereq or concur: 1151T (151T) or ADED Econ 2001 (200). Not open to students with credit for 231T. This course is available for EM credit.

2232T Personal Selling U 3
A study of the basic principles and concepts of personal selling with emphasis on practical application and personal interaction.
Au, Sp. 3 cl. Prereq: Not open to students with credit for 232T. This course is available for EM credit.

2233T Advertising and Promotion U 3
A theory of retail advertising and its practical application, with emphasis on planning, implementation, control, merchandise projection, and supportive promotional techniques.
Au, 2 cl, 1.2-hr lab. Prereq: Not open to students with credit for 233T. This course is available for EM credit.

2240T Introduction to Project Management U 3
An introduction to project management concepts and techniques focusing on how to initiate, plan, manage, control, and close a project.
Au, 2 cl, 1.2-hr. lab. This course is available for EM credit.

2241T Small Business Management U 3
A general study of the field of small business focusing on policies, strategies, organization, operation, and problems associated with the operation of an entrepreneurial enterprise.
Au, Sp. 2 cl, 1.2-hr. lab. Prereq: 1151T (151T) or ADED Econ 2001 (200); ADED Econ 2105 (BusTec 101T or 102T). Not open to students with credit for 241T. This course is available for EM credit.

2244T Human Resource Management and Leadership U 3
A study of human resource, supervisory, and leadership principles and practices that focus on recruitment, training, evaluating, and compensating employees for improved productivity.
Au, Sp. 3 cl. Prereq: Not open to students with credit for 244T and 245T. This course is available for EM credit.

2247T Business Law U 3
A study of legal principles, contracts, negotiable instruments, leases, sales, product liability, and consumer protection.
Au. 3 cl. Prereq: Not open to students with credit for 247T. This course is available for EM credit.

2248T Introduction to Cooperatives U 2
An examination of business organizations including cooperatives and non-cooperatives. Analysis of the role of government in American business, with emphasis on the history, legal basis, organization, and operation of cooperatives.
Sp. 2 cl. Prereq: Not open to students with credit for 248T. This course is available for EM credit.

2249T Fundamentals of Business Finance U 3
A study of basic finance principles, such as financial institutions, time value of money, financial analysis, risk and return, budgeting, and investments.
Sp. 2 cl, 1.2-hr lab. Prereq: ADED Econ 2105 (BusTec 101T or 102T). Prereq or concur: 1151T (151T) or ADED Econ 2001 (200). Not open to students with credit for 249T. This course is available for EM credit.

2250T Fundamentals of International Business U 3
An overview of international business including the environment, strategies, issues, decisions, and challenges that global businesses encounter.
Sp. 2 cl, 1.2-hr rec. Prereq: 2100T (100T) or 2231T (231T) or 1151T (151T) or ADED Econ 2001 (200). This course is available for EM credit.
2324T Soil Management U 3
A study of sustainable-use of soil resources related to soil formation, mechanics, and erosion control.
Sp. 2 cl, 1 3-hr lab. Prereq: 2300T and 2301T. This course is available for EM credit.

2411T Grain and Oilseed Crops U 3
A study of the cultural practices and production principles for grain and oilseed crops.
Sp. 2 cl, 1 2-hr lab. Prereq: GenBio1 1200T or 1250T or Biology 1113. This course is available for EM credit.

2412T Technology and Field Management of Forage Crops U 3
An applied study of the crop species, field management practices and agricultural technologies used to grow grasses, legumes, and forbs for forage and livestock production systems.
Sp. 2 cl, 1 3-hr lab. This course is available for EM credit.

2422T Weed Control Technology U 3
An introduction to the application of technologies used to control weeds in field cropping systems, including biological, chemical, and mechanical methods.
Au. 2 cl, 1 2-hr lab. This course is available for EM credit.

2580T Soil Fertility and Fertilizers U 3
A study of plant nutrient cycles, fertilizer recommendations, application of ag-time, fertilizers, animal manure, and municipal biosolids.
Au. 2 cl, 1 2-hr lab. Prereq: 2300T and 2301T. This course is available for EM credit.

3800T Principles of Farm Business Management U 4
A study of economic and management principles involved in planning, organizing, operating, and administering a farm business; emphasis placed on developing a business plan and problem solving.
Sp. 3 cl, 1 rec, 1 2-hr lab. Prereq: AEDEcon 2105 (BusTec 101T or 102T). Prereq or concur: BusTec 1151T (151T) or AEDEcon 2001 (200). Not open to students with credit for BusTec 240T. This course is available for EM credit. Cross-listed in AnmtTec.

Engineering Technology (ENGETECH)

1201.01T Exploring Engineering Technologies U 0.5
Promotes student success in college and preparation for a career; explores personal and career interests, needs, goals, and the support services available for student success.
Au. 1 cl.

1201.02T Exploring Construction Careers and Industry U 0.5
Promotes student success in college and preparation for a career; explores personal and career interests, needs, goals, and the support services available for student success.
Au. 1 cl.

1201.03T Exploring Agricultural Systems Management U 0.5
Promotes student success in college and preparation for a career; explores personal and career interests, needs, goals, and the support services available for student success.
Au. 1 cl.

2011T Small Engine Basics U 4
A study of the theory of operation, service and maintenance and repair of small off-road gasoline and diesel engines.
Sp. 2 cl, 2 2-hr labs. Prereq: Not open to students with credit for 240T and 247T. This course is available for EM credit.

2015T Agricultural Equipment Operation and Maintenance U 2
A study of tractors and other agricultural equipment with emphasis on operation, maintenance and adjustment for safe, efficient operation.
Au. 1 cl, 2 rec, 1 2-hr lab. Prereq: Not open to students with credit for 215.01T or 215.02T. This course is available for EM credit.

2016T Tillage, Planting, Harvesting, and Storage Equipment U 3
Principles and applications of safety operating, adjusting, and maintaining agricultural equipment and storing crops.
Au. 2 cl, 3 rec, 1 3-hr lab. Prereq: Not open to students with credit for 216T, 217T, and 231T. Recommended prereq: Completion of tractor/mobile equipment safety certification process. This course is available for EM credit. Course fee: $50.

2040T Soil and Water Conservation Systems U 4
Introduction to erosion control, irrigation, drainage, and wetland systems with an emphasis on land surveying and mapping, system selection, and design.
Sp. 3 cl, 1 3-hr lab. Prereq: CrpSoil 2300T and CrpSoil 2301T (221T). Not open to students with credit for 224T. This course is available for EM credit.

2050T Introduction to Geographic Information Systems U 3
A study of spatial relationships using global positioning and geographic information systems in urban and rural landscapes.
Sp. 1 cl, 2 2-hr labs. Prereq: GenMath 1040T or Math 1050 or Math placement level R or higher. This course is available for EM credit. Course fee: $50.

2092T Problem Solving: Career and Society Applications U 2
A multi-discipline, problem-solving course with emphasis on the application of problem solving and related topics in career and society settings.
Au. 2 cl, 1 rec. Prereq: Soph standing. Not open to students with credit for 292T. This course is available for EM credit.

2110T Construction Drawings & Basic Estimating U 1
Reading and interpretation of various types of construction drawings, as well as an introduction to material quantity calculations and estimate development.
Au. 1 rec, 1 2-hr lab. Prereq: GenMath 1030T or Math placement level S or higher. This course is available for EM credit.

2120T Building Science: Methods & Materials U 4
A study of materials science and installation methods used in residential and commercial construction. Emphasizes structural and architectural systems, moisture managed designs, air sealing, and thermal design for energy efficient structures.
Au. 2 1½/hr cl, 1 rec, 1 3-hr lab. Prereq or concur: English 1110.01; GenMath 1145T or Math 1148 or higher. This course is available for EM credit.

2121T Drafting & Computer-Aided Design U 2
Principles and applications of technical drawing utilizing proper drafting techniques for creating two dimensional, scaled drawings both by hand and by using current computer-aided design software. Basic computer skills required.
Sp. 1 cl, 1 3-hr lab. Recommended prereq: Previous experience with mechanical drawing, engineering graphics, drafting, or equivalent. This course is available for EM credit. Course fee: $50.

2160T Estimating and Scheduling U 2
Estimating complete projects and developing project schedules for standard construction projects in the residential or commercial sectors of the industry.
Sp. 1 cl, 1 rec, 1 2-hr lab. Prereq: 2110T, 2120T, 2440T, and Soph standing. This course is available for EM credit.

2170T Construction Project Management U 2
Principles and practices of construction project and construction business management.
Sp. 2 2-hr lab. Prereq or concur: 2160T, and Soph standing. This course is available for EM credit.

2191.01T Construction Management Internship U 2-3
Construction Management occupational internship, structured to provide occupational experiences; supervised by an industry employer and coordinated by faculty.
Su. Au. Sp. Arr. Prereq: 2110T and 2120T (253T, 256T, and 257T), and 2600T, and CPHR 2.0 or above, and permission of instructor. A grade of C or better is required to meet graduation requirements. Repeatable to a maximum of 6 cr hrs or 2 completions.

2191.02T Hydraulic Power and Motion Control Internship U 3
Employment in fluid power industries; structured to provide varied occupational experiences; supervised by an industry employer and coordinated by faculty.
Su. Au. Sp. Arr. Prereq: 2224T (274T), 2226T (271T), and 2322T (202T); CPHR 2.0 or above; permission of instructor. A grade of C or better is required to meet graduation requirements. Repeatable to a maximum of 6 cr hrs.
2191.03T Power Equipment Internship  U 3
Employment in power equipment industries; structured to provide varied occupational experiences; supervised by an industry employer and coordinated by faculty.
Su, Au, Sp. Arr. Prereq: 2314T (241T), 2322T (202T), and 2324T (245T), and CPHR 2.0 or above, and permission of instructor. A grade of C or better is required to meet graduation requirements. Repeatable to a maximum of 6 cr hrs.

2191.04T Agricultural Systems Technology Internship  U 2
Agricultural Systems Technology occupational internship structured to provide occupational experiences; supervised by an industry employer and coordinated by faculty.
Su, Au, Sp. Arr. Prereq: CPHR 2.0 or above, and permission of instructor. A grade of C or better is required to meet graduation requirements. Repeatable to a maximum of 4 cr hrs.

2193T Individual Studies  U 1-3
Designed to give an individual student an opportunity to pursue special studies not offered in other courses.
Au, Sp. Prereq: Permission of instructor. Repeatable to a maximum of 10 hr or 10 completions. This course is graded S/U.

2194T Group Studies  U 1-3
Designed to give groups of students an opportunity to pursue special studies not offered in other courses.
Prereq: Permission of instructor. Repeatable to a maximum of 10 cr hrs or 10 completions. This course is graded S/U.

2214T Fundamentals of Fluid Power and Components  U 4
An introduction to the fluid power industry and the principles of fluid power system operation. Characteristics of operation and performance are investigated for pumps, motors, and valves.
Au. 3 cl, 1 2 hr. Prereq: GenMath 1030T or Math placement level S or higher. A grade of C or better required to meet graduation requirements for Hydraulic Power and Motion Control. This course is available for EM credit.

2221T Component Rebuilding  U 2
Supervised laboratory experience with emphasis on developing and improving hydraulic component and service competencies related to classroom and career activities.
Sp. 2 2-hr labs. Prereq: 2214T (262T or 270T). Prereq or concur: 2224T (274T) and 2336T (273T). Not open to students with credit for 289.03T.

2224T Fluids, Filtration, and Fluid Conveyance  U 2
Characteristics of hydraulic fluids; methods of filtering oils and of conveying pressurized fluids.
Sp. 1 cl, 1 2 hr lab. Prereq: 2214T (262T or 270T). Not open to students with credit for 274T. This course is available for EM credit.

2226T Components and Hydraulic Circuits  U 2
A study of advanced hydraulic component topics and of how fluid power components are integrated into a complete system, including performance characteristics and energy efficiency.
Sp. 1 cl, 1 2 hr lab. Prereq: 2221T. Prereq or concur: GenMath 1145T. A grade of C or better required to meet graduation requirements for Hydraulic Power and Motion Control. This course is available for EM credit.

2234T Basic Pneumatic Systems  U 2
Principles, operation, maintenance, service, and application of pneumatic components and systems used for control and automation on industrial equipment.
Au. 1 cl, 1 3 hr lab. Prereq or concur: GenMath 1145T. This course is available for EM credit.

2238T Electrohydrodynamics and System Design  U 3
A study of the interface and design applications of electricity and electronics with fluid power components integrated into a complete system, including performance characteristics and energy efficiency.
Au. 2 cl, 1 2 hr lab. Prereq: 2226T (272T). Not open to students with credit for 278T. A grade of C or better required to meet graduation requirements for Hydraulic Power and Motion Control. This course is available for EM credit.

2240T Welding Technology  U 3
A study of basic welding including materials, equipment, and techniques.
Au. Sp. 1 cl, 2 2 hr labs. Prereq: Not open to students with credit for 250T. This course is available for EM credit. Course fee: $50

2242T Metals and Metal Manufacturing  U 2
Introduction to metals and metal manufacturing; including materials, equipment, processes, and products.
Sp. 1 cl, 1 2 hr lab. Prereq: GenMath 1040T or Math 1050 or Math placement level R or higher. This course is available for EM credit.

2248T Instrumentation and Control Systems  U 4
Techniques and equipment used for instrumentation of fluid power systems for the purposes of data acquisition and control.
Sp. 3 cl, 1 2 hr lab. Prereq: 2238T (278T). Not open to students with credit for 279T. This course is available for EM credit.

2301T Building Science: Electrical and Lighting Systems  U 3
Principles, equipment, and applications of building electrical and lighting systems with emphasis on energy and resource conservation and sustainability.
Au. 2 cl, 1 2 hr lab. Prereq: TecPhys 1150T. Not open to students with credit for 2150T.

2312T Engineering Technology Fundamentals  U 3
An introduction to basic scientific and engineering concepts commonly encountered by engineering technicians emphasizing calculations, measurements, and instrumentation.
Au. 2 cl, 1 2 hr lab. This course is available for EM credit. Course fee: $20

2314T Introduction to Power Equipment  U 3
An introduction to the off-road machinery industries, their past and future, and the application of engineering principles to the associated equipment.
Au. 2 cl, 1 3 hr lab. Prereq: GenMath 1030T or Math placement level S or higher. This course is available for EM credit.

2322T Basic Electricity and Electronics  U 3
Principles of AC and DC electricity and electronics with emphasis on components, operations, and applications.
Sp. 2 cl, 1 2 hr lab. Prereq: GenMath 1040T or Math 1050 or Math placement level R or higher. This course is available for EM credit.

2324T Engine Diagnosis and Repair  U 3
An advanced study of multiple cylinder diesel engine diagnostic techniques including repair and rebuilding procedures.
Sp. 1 cl, 1 rec, 2 2 hr labs. Prereq: 2011T (240T) or 2314T (241T). Not open to students with credit for 245T. A grade of C or better required to meet graduation requirements for Power Equipment. This course is available for EM credit.

2325T Analog and Digital Electronics  U 3
An introduction to analog and digital electronics with emphasis on industry applications.
Au. 2 cl, 1 2 hr lab. Prereq: 2322T (202T). Not open to students with credit for 203T. A grade of C or better required to meet graduation requirements for Hydraulic Power and Motion Control. This course is available for EM credit. Course fee: $35

2331T Distributor Management  U 2
Organization and operation of distributor marketing of mobile equipment and fluid power components and systems; emphasis on service and parts distribution.
Sp. 2 cl. Prereq or concur: BusTec 1151T or AedEcon 2001. This course is available for EM credit.

2332T Mobile Heating and Air Conditioning  U 1
Principles, operation, maintenance, service, and repair of mobile heating and air conditioning components and systems.
Au. 1 2 hr lab. Prereq: GenMath 1030T or Math placement level S or higher. This course is available for EM credit.

2334T Vehicle Electrical and Electronic Systems  U 2
A study of electrical and electronic systems utilized in off-road machinery.
Au. 1 cl, 1 2 hr lab. Prereq: 2322T (202T). Prereq or concur: TecPhys 1150T (102T). Not open to students with credit for 205T. A grade of C or better required to meet graduation requirements for Power Equipment. This course is available for EM credit.

2336T Methods of Power Transmission  U 2
Comparison and evaluation of power transmission by mechanical, electrical, and fluidic means.
Au. 1 cl, 1 2 hr lab. Prereq: GenMath 1030T or Math placement level S or higher. Prereq or concur: 2312T. This course is available for EM credit.
2338T Diesel Engine Systems U 3
A study of the principles, operation, and service of diesel engine systems with emphasis on fuel systems and engine controls.
Au., 2 cl, 1 3-hr lab. Prereq: 2324T. Prereq or concur: 2334T and TecPhys 1150T. This course is available for EM credit.

2345T Building Science: Mechanical Systems U 3
Principles, equipment, and applications of building mechanical systems with emphasis on energy and resource conservation and sustainability.
Sp. 2 cl, 1 2-hr lab. Prereq: TecPhys 1150T. Not open to students with credit for 2150T. This course is available for EM credit.

2348T Performance of Mobile Power Units U 2
A study of operator comfort and safety, ballast, traction, stability, hitching, engine power ratings, fuel efficiency and other factors affecting the performance and application of mobile power units.
Sp. 1 cl, 1 2-hr lab. Prereq: 2336T (237T), 2338T (248T), TecPhys 1150T (102T); Completion of tractor/mobile equipment safety certification process. Not open to students with credit for 249T. A grade of C or better required to meet graduation requirements for Power Equipment. This course is available for EM credit.

2440T Site Development and Surveying U 4
Principles of hydrology, soil mechanics, and surveying as applied to residential and commercial construction.
Au. 2 1½-hr cl, 1 3-hr lab. Prereq or concur: 2110T or HortTec 2320T (235T); GenMath 1145T (101T) or Math Placement Level L, M, or N. Not open to students with credit for 253T. This course is available for EM credit.

2600T Construction Safety & Health U 2
Health and construction safety awareness; focusing on OSHA 30-hour training and certification, OSHA mandated recordkeeping, and corporate health plan development.
Sp. 1 cl, 1 2-hr lab. Prereq: English 1110.01.

Environmental Sciences Technology (ENVSTCT)
1201T Exploring Environmental Sciences U 0.5
Promotes student success in college and preparation for a career; explores personal and career interests, needs, goals, and the support services available for student success.
Au. 1 cl.

General Studies (GENSTDS)
1201T College Orientation U 0.5
Promotes student success in college and preparation for a career; explores personal and career interests, needs, goals, and the support services available for student success.
Au., Sp. 1 cl. Prereq: Not open to students with credit for 201T or FAES 100.

General Studies: Biology (GENBIOL)
1200T General Biology U 4
A basic course intended to provide a biological foundation, with supporting chemistry concepts, emphasizing principles and applications of biology.
Au., Sp. 3 cl, 1 2-hr lab. Prereq: Not open to students with credit for 120T or Biology 1113 (113). This course is available for EM credit. Course fee: $50

1250T General Botany with Applications U 4
Introduction to the fundamental structures and processes of plants, including plant anatomy, physiology, morphology, reproduction, and genetics.
Au., Sp. 3 cl, 1 2-hr lab. Prereq: Not open to students with credit for 125T or HCS 300 or PnmBio 300. This course is available for EM credit. Course fee: $50

2194T Group Studies U 1-3
Designed to give groups of students an opportunity to pursue special studies not offered in other courses.
Prereq: Permission of instructor. Repeatable to a maximum of 10 cr hrs or 10 completions.

General Studies: Chemistry (GENCHEM)
1100T Introduction to General Chemistry U 3
Develops the basic concepts of atomic structure, bonding theory, molecular structure, chemical reactions, solutions, equilibrium, and acid-base chemistry.
Au., Sp. 3 cl. Prereq: GenMath 1040T or Math 1050 or Math placement level R of higher. Not open to students with credit for Chem 1110 or 1210. This course is available for EM credit.

11150T Introduction to Organic Chemistry U 3
Emphasizes the structure, nomenclature, and physical and chemical properties of organic and biological molecules.
Sp. Prereq: 1100T (131T) or Chem 1110 (101). Not open to students with credit for 132T or Chem 102. This course is available for EM credit.

2194T Group Studies U 1-3
Designed to give groups of students an opportunity to pursue special studies not offered in other courses.
Prereq: Permission of instructor. Repeatable to a maximum of 10 cr hrs or 10 completions.

General Studies: Communication Skills (GENCOMM)
1201T Exploring Agricultural Communication, Education and Leadership U 0.5
Promotes student success in college and preparation for a career; explores personal and career interests, needs, goals, and the support services available for student success.
Au. 1 cl.

2115T Technical and Business Writing U 3
Principles of technical and business communication in the global setting with emphasis on practical applications for professional and business environments involving correct usage and documentation in writing, reading, speaking and listening.
Au., Sp. 3 cl. Prereq: English 1110.01 or 1110.03. Not open to students with credit for AgrComm 2367. This course is available for EM credit.

2194T Group Studies U 1-3
Designed to give groups of students an opportunity to pursue special studies not offered in other courses.
Prereq: Permission of instructor. Repeatable to a maximum of 10 cr hrs or 10 completions.

General Studies: Humanities (GENHUM)
1190.01T Humanities as a Window on Cultural Pluralism: The Arts in Ghana U 3
An introduction to specific arts and cultural contexts of Ghana, West Africa, leading to a four-week study abroad, IntStds 5797.
Au., Sp. 3 cl. Prereq: Permission of instructor, Concur: IntStds 5797. Not open to students with credit for 190T.

1190.02T Humanities as a Window on Cultural Pluralism: Global Arts U 3
An introduction to specific visual arts and cultural contexts of four societies: Japan, Ghana, France, USA.
Au. 3 cl. This course is available for EM credit.

2193T Individual Studies U 1-3
Designed to give an individual student an opportunity to pursue special studies not offered in other courses.
Au., Sp. Prereq: Permission of instructor. Repeatable to a maximum of 10 cr hrs or 10 completions. This course is graded S/U.

2194T Group Studies U 1-3
Designed to give groups of students an opportunity to pursue special studies not offered in other courses.
Prereq: Permission of instructor. Repeatable to a maximum of 10 cr hrs or 10 completions.
2140T Horticultural Photography U 1
Introductory digital photography and image editing course emphasizing composition, lighting, and exposure. Digital correction and editing with emphasis on horticultural marketing and portfolio development.
Au. 1 3-hr lab. Prereq: Not open to students with credit for 270T. This course is available for EM credit. Course fee: $50

2150T Horticultural Root Media U 2
Study of horticultural root media, including functions, texture, structure, ingredients, preparation, pasteurization, pore spaces, water and nutrient holding capacity, pH, irrigation practices and containers.
Sp. 2 cl, 2-2-hr labs. (7-wk offering) This course is available for EM credit. Course fee: $25

2189.10T Practicum in Floral Design U 1-2
Supervised experiences in floral design and flower shop work.
Su, Au. Sp. Arr. Prereq: 2600T. A grade of C or better is required to meet graduation requirements. Repeatable to a maximum of 4 cr hrs or 4 completions. Course fee: $50

2189.21T Practicum in Greenhouse Management U 1
Supervised experiences in greenhouse crop production.
Su, Au, Sp. Arr. A grade of C or better is required to meet graduation requirements. Repeatable to a maximum of 4 cr hrs.

2189.30T Practicum in Landscape Horticulture U 1-2
Supervised experiences in landscape maintenance work.
Su, Au, Sp. Arr. A grade of C or better is required to meet graduation requirements. Repeatable to a maximum of 4 cr hrs or 4 completions.

2189.50T Turfgrass Management Practicum U 1
Practical experience in supervised horticultural/turfgrass laboratories, with emphasis on developing and improving competencies related to classroom, laboratory and career activities.
Su, Au, Sp. Arr. Prereq: Open to Turfgrass Management majors. A grade of C or better is required to meet graduation requirements. Repeatable to a maximum of 3 cr hrs.

2190.10T Practical Leadership in Floral Design U 1-2
Supervised experiences in flower shop leadership and management.
Sp. Arr. Prereq: 2189.10T (264T and 268T). A grade of C or better is required to meet graduation requirements. Repeatable to a maximum of 2 cr hrs or 2 completions. Course fee: $50

2190.21T Practical Leadership in Greenhouse Management U 1
Supervised experiences in greenhouse leadership and management.
Au. Sp. Arr. Prereq: 2189.21T. A grade of C or better is required to meet graduation requirements. Repeatable to a maximum of 2 cr hrs. Course fee: $50

2191.10T Floral Design and Marketing Internship U 1-2
Employment in the floral industry, structured to provide varied occupational experiences, supervised by an industry employer, and coordinated by faculty.
Su, Au, Sp. Arr. Prereq: 1201T and 2620T (264T). A grade of C or better is required to meet graduation requirements. Repeatable to a maximum of 4 cr hrs or 4 completions.

2191.21T Greenhouse Management Internship U 1-3
Employment in the greenhouse industry, structured to provide varied occupational experiences, supervised by an industry employer, and coordinated by faculty.
Su, Au, Sp. Arr. Prereq: 1201T, 2189.21T, and 2500T. A grade of C or better is required to meet graduation requirements. Repeatable to a maximum of 6 cr hrs or 2 completions.

2192.22T Nursery Management Internship U 3
Employment in the nursery industry, structured to provide varied occupational experiences, supervised by an industry employer, and coordinated by faculty.
Su, Au, Sp. Arr. Prereq: 1201T and 2189.22T. A grade of C or better is required to meet graduation requirements. Repeatable to a maximum of 6 cr hrs.
2191.23T Greenhouse Engineering Technology Internship U 3
Experience of employment in the greenhouse industry, structured to provide varied occupational experiences supervised by an industry employer, and coordinated by faculty.
Su, Au, Sp. Arr. Prereq: 1201T, 2189.21T, and 2500T. A grade of C or better is required to meet graduation requirements for Greenhouse and Nursery Management Greenhouse Engineering Technology specialization. Repeatable to a maximum of 6 cr hrs.

2191.30T Landscape Horticulture Internship U 3
Employment in the landscape industry structured to provide varied occupational experiences. Supervised by an industry employer and coordinated by faculty.
Su, Au, Sp. Arr. Prereq: 1201T (230T); a grade of C or above in 2110T (244T); GPA 2.0 or above. A grade of C or better is required to meet graduation requirements. Repeatable to a maximum of 6 cr hrs.

2191.50T Turfgrass Management Internship U 3
Employment in turfgrass management industry at an approved facility structured to provide varied occupational experiences. Supervised by an industry professional and coordinated by faculty.
Su, Au, Sp. Arr. Prereq: A grade of C or above in 2225T (289.05T and EngTech 219T), 2230T (223T) and 2250T (225T), and CPHR 2.0 or above. A grade of C or better required to meet graduation requirements. Repeatable to a maximum of 6 cr hrs.

2191.55T Turfgrass Equipment Manager Internship U 2
Employment in turfgrass equipment management industry at an approved facility structured to provide varied occupational experiences. Supervised by an industry professional and coordinated by faculty.
Su, Au, Sp. Arr. Prereq: A grade of C or above in 2225T and 2227T. A grade of C or better required to meet graduation requirements.

2193T Individual Studies U 1-3
Designed to give an individual student an opportunity to pursue special studies not offered in other courses.
Su, Au, Sp. Prereq: Permission of instructor. Repeatable to a maximum of 10 cr hrs or 10 completions. This course is graded S/U.

2194T Group Studies U 1-3
Designed to give groups of students an opportunity to pursue special studies not offered in other courses.
Su, Au, Sp. Arr. Prereq: Permission of instructor. Repeatable to a maximum of 10 cr hrs or 10 completions.

2225T Turf Equipment Operation and Maintenance U 3
Principles and practices of turf facilities organization and management, equipment maintenance, operation, safety and fleet management.
Au. 2 cl, 1 3-hr lab. Prereq or concur: GenMath 1040T or Math 1050 or math placement level R or higher. A grade of C or better required to meet graduation requirements for Turfgrass Management. Course fee: $15

2227T Turfgrass Reel Mower Maintenance U 3
Theory, configuration, and maintenance of turfgrass reel mower cutting units, including a study of the bedknife attitude, spin vs relief grinding, backlapping, bedknife selection.
Sp. 4 cl, 2 3-hr labs. (7-wk offering)

2230T Fundamentals of Turfgrass Science and Management U 3
Identification, growth and development characteristics and responses, uses, and fundamental practices essential to the production and management of fine quality turf.
Au. 2 cl, 1 2-hr lab. Prereq or concur: GenBioI 1250T and GenMath 1040T or Math 1050 or math placement level R or higher. A grade of C or better required to meet graduation requirements for Landscape Horticulture and Turfgrass Management. This course is available for EM credit. Course fee: $20

2240T Golf Course and Sports Turf Irrigation and Drainage U 3
Principles of design, selection, installation, maintenance, and operation of equipment and materials used in golf course and sports turfgrass irrigation and drainage systems.
Sp. 4 cl, 2 3-hr labs. (7-wk offering) Prereq: GenMath 1040T or Math 1050 or math placement level R or higher. A grade of C or better required to meet graduation requirements for Turfgrass Management. Course fee: $15

2250T Turfgrass Cultural Systems and Practices U 3
A study of cultural and environmental factors related to maintaining fine turfgrasses with special emphasis on mathematical calculations and materials applications.
Sp. 4 cl, 2 3-hr labs. (7-wk offering) Prereq: 2225T (EngTech 219T), 2230T (223T). Not open to students with credit for 225T. A grade of C or better required to meet graduation requirements for Turfgrass Management. Course fee: $15

2260T Sports Turf Operations Organization and Management U 3
Specialized course in sports turf management including the organization, design, construction, equipment, field surface quality, safety, personnel, finances, renovation, and maintenance of a sports turf facility.
Au. 2 cl, 1 3-hr lab. Prereq: 2191.50T (290.05T), BioTech 2218T (218T). Prereq or concur: 2890T (272T) or 2890T (274T). A grade of C or better required to meet graduation requirements for Turfgrass Management.

2270T Golf Course Organization and Management U 3
Specialized course in golf course management including the organization, design, construction, equipment, personnel, finances, and maintenance of the golf course.
Au. 2 cl, 1 3-hr lab. Prereq: 2191.50T (290.05T), BioTech 2218T (218T). Prereq or concur: 2890T (272T) or 2890T (274T). Not open to students with credit for 227T. A grade of C or better required to meet graduation requirements for Turfgrass Management. Course fee: $15

2320T Landscape Construction U 3
Techniques for building, pricing, bidding and installing various landscape plantings, features and structures including (but not limited to): pavers, retaining walls and wooden structures.
Au. 2 cl, 1 3-hr lab. Prereq: GenMath 1040T or Math 1050 or math placement level R or better. A grade of C or better required to meet graduation requirements for Landscape Horticulture. This course is available for EM credit. Course fee: $40

2380T Landscape Design U 3
Introduction to landscape drafting, CAD, design and planning emphasizing the design program, form composition, drafting techniques, design representation and 2 and 3-dimensional CAD.
Sp. 1 cl, 2 3-hr labs. Prereq or concur: 2110T. Not open to students with credit for 231T. A grade of C or better required to meet graduation requirements for Landscape Horticulture. Course fee: $50

2410T Sustainable Nursery Management and Production U 4
Principles of sustainable nursery management, marketing and production operations with an emphasis on nursery facilities and practices necessary to produce field grown and container nursery stock.
Sp. 2 cl, 2 3-hr labs. Prereq or concur: 2120T; and GenBioI 1250T (125T) or Biology 1113 (113). Not open to students with credit for 241T and 242T.

2420T Garden Center Management U 2
Principles of retail garden center management including sales, marketing, advertising, personnel management, customer relations and management of product lines, stock and displays.
Sp. 2 cl, 2 2-hr labs. (7-wk offering) Prereq: 2120T. Not open to students with credit for 248T.

2500T Greenhouse Environment Control U 4
Principles and practices of sustainable greenhouse operation and management. Topics include glazings, frames, heating, cooling, energy conservation, nutrition, irrigation, light, plant growth and operations management.
Au. 3 cl, 1 3-hr lab. Prereq: Not open to students with credit for 251T. A grade of C or better required to meet graduation requirements in Greenhouse and Nursery Management Nursery Specialization. This course is available for EM credit.

2520T Greenhouse Perennial Production U 3
Principles and practices of greenhouse perennial plant production, including propagation, vernalization, photoperiodic treatments, production technologies, integrated pest and plant health management, and post-harvest marketing.
Au. 2 cl, 1 3-hr lab. Prereq: 2500T (251T). Not open to students with credit for 251T. This course is available for EM credit. Course fee: $50
2540T Greenhouse Production of Annuals  U 3
Principles and practices of greenhouse bedding and flowering container plant production, including propagation, transplanting, nutrition, environmental requirements, height control, harvesting, pests, pathogens and post-harvest marketing.
Sp. 2 cl, 1 hr 45-minute lab. Prereq: 2500T. Course fee: $50

2560T Greenhouse Vegetable Production  U 3
Principles and practices of greenhouse vegetable crop production, including propagation, production systems, nutrition, environmental requirements, management practices, harvesting, pests, pathogens, food safety and post-harvest handling.
Au. 2 cl, 1 2 hr 45-minute lab. Prereq: 2500T.

2600T Commercial Floral Design  U 4
A basic course introducing the elements and principles of floral design as they relate to the construction of saleable flower arrangements and corsages.
Au. 2 cl, 2 3 hr labs. Prereq: Not open to students with credit for 262T and 264T. This course is available for EM credit.
Course fee: $50

2620T Retail Flower Shop Operation  U 2
Principles and practices of management and operation of a retail flower shop with emphasis on purchasing, pricing, merchandising, selling, delivery and wire services.
Sp. 2 cl, 2 3 hr labs. Prereq: 2600T. This course is available for EM credit.
Course fee: $25

2640T Flowers for Celebrations  U 4
A specialized course dealing with consulting, planning, organizing and creating floral designs and decor for wedding ceremonies and receptions, parties, and celebrations of life.
Au. 2 cl, 2 3 hr labs. Prereq: 2600T (262T and 264T). Not open to students with credit for 265T and 269T. This course is available for EM credit.
Course fee: $50

2660T Post-Harvest Flower Care  U 2
Principles and practices of post-harvest flower care from producer to consumer with emphasis on identification and proper care and handling at the retail level.
Sp. 2 cl. Prereq: 2640T. Concur: 2680T. Not open to students with credit for 263T. This course is available for EM credit.

2680T Contemporary Floral Design  U 3
An advanced course emphasizing the artistic nature of floral design with a global perspective of contemporary styles, techniques and trends.
Sp. 1 cl, 2 3 hr labs. Prereq: 2640T. Concur: 2660T. Not open to students with credit for 267T.
Course fee: $50

2720T Arboriculture  U 3
Principles of proper tree culture, management and care emphasizing planting, maintenance, evaluation, and diagnosis and care of tree problems.
Sp. 2 cl, 1 3 hr lab. Prereq: 2110T (243T or 249T); and GenBiol 1250T (125T) or Biology 1113 (113). Not open to students with credit for 278T.

2740T Plant Propagation  U 4
Principles, techniques, skills, materials, and facilities used to propagate herbaceous and woody plants with emphasis on commercial propagation methods.
Sp. 3 cl, 1 2 hr 45-minute lab. Prereq: GenBiol 1250T or Biology 1113 or HCS 2202. Course fee: $25

2880T Principles of Weed Science  U 3
A study of weed classification, ecology, plant competition, herbicide formulation, properties and uses of herbicides and weed management in horticultural crops.
Au. Sp. 2 cl. 1 2 hr lab. Prereq: GenBiol 1250T (125T). Prereq or concur: GenChem 1100T (113T). Not open to students with credit for 272T or CrpSoil 2242T (266T). A grade of C or better required to meet graduation requirements for Landscape Horticulture and Turfgrass Management. This course is available for EM credit.
Course fee: $25

2890T Plant Diseases of Ornamentals and Turf  U 3
Principles and practices in diagnosing and treating plant diseases on woody ornamentals and turf.
Sp. 2 cl. 1 2 hr lab. Prereq: 2110T or 2120T or 2230T; GenBiol 1250T. A grade of C or better required to meet graduation requirements for Landscape Horticulture and Turfgrass Management. This course is available for EM credit.
Course fee: $25

3550T Components of Greenhouse Technologies  U 3
A study of selected components of modern greenhouse technology, including electric motors, automated material handling and watering controls, pesticide application, and supplemental lighting.
Au. 2 cl. 1 3 hr lab. Prereq: 2500T; GenMath 1145T; EngTech 2512T and 2522T. This course is available for EM credit.

3560T Integrated Greenhouse Climate Control  U 4
Computerized climate control for greenhouse plant production, including data acquisition and control basics, use of the data, and climate control strategies for improved production efficiency.
Sp. 3 cl. 1 3 hr lab. Prereq: 2500T and 3550T. This course is available for EM credit.

Renewable Energy (RNEWNRG)

12025T Solar Energy Systems  U 3
This course encompasses solar energy systems including the underlying principles and concepts, system components, common system configurations, siting, design, environmental considerations, economic analysis and grid integration.
2 cl, 1 2 hr lab. Prereq: 2010T. This course is available for EM credit.
Course fee: $50

12035T Wind Energy Systems  U 3
This course encompasses wind energy systems including the underlying principles and concepts, system components, common system configurations, siting, design, environmental considerations, economic analysis and grid integration.
2 cl, 1 2 hr lab. Prereq: 2010T. This course is available for EM credit.
Course fee: $50

Technical Physics (TECPHYS)

1150T Technical Physics  U 5
Principles and applications of forces, motion, energy, matter, heat, thermodynamics, electricity, mechanical waves, and electromagnetic radiation.
Au. Sp. 4 cl, 1 2 hr lab. Prereq: GenMath 1145T (145T) or Math 1148 (148) with a grade of C- or better. Not open to students with credit for 101T or 102T. This course is available for EM credit.

2194T Group Studies  U 1-3
Designed to give groups of students an opportunity to pursue special studies not offered in other courses. Prereq: Permission of instructor. Repeatable to a maximum of 10 cr or 10 hrs or 10 completions.
Associate of Science Courses

Agricultural Communication (AGRCOMM)

2367 Agricultural Issues in Contemporary Society U 3
This course helps students develop a critical understanding of agricultural, environmental and related issues facing the United States and the world while improving their writing skills. This is a second writing course.
Au, Sp. 2 cl, 1 2-hr lab. Prereq: First writing course. Not open to students with credit for 367. GE writing and comm: level 2 and diversity soc div in the US course.

3130 Oral Expression in Agriculture U 3
An introductory public speaking course that will analyze the communication process and prepare students enrolled to write and deliver speeches for various occasions and purposes.
Au, Sp. 3 cl, 1 1-hr lab. Not open to students with credit for 390.

Agricultural, Environmental, and Development Economics (AEDECON)

2001 Principles of Food and Resource Economics U 3
Microeconomic principles applied to allocation issues in the production, distribution, and consumption of food and natural resource use.
Au, Sp. 3 cl. Not open to students with credit for 2001H or Econ 2001. This course is available for EM credit. GE soc sci human, nat, and econ resources course.

2105 Managerial Records and Analysis U 3
Nature and need for business records, analysis and interpretation of essential records from manager/owner viewpoint; their use in small business practices.
Au, Sp. 3 cl, 1 1-hr lab. Prereq: 2001 or 2001H or Econ 2001.01, 2001.02 or 2001.03H. Not open to students with credit for AcctMIS 2200 or 2200.

3141 Agricultural Cooperatives U 2
Basic principles of cooperatives including types of organizations, legal aspects, governance, membership relations, debt and equity financing, organization and inter-cooperative problems, and distribution of earnings.

Agriscience Education (ASE)

2189 Early Experience in Agriscience Education U 1
The early experience program is designed to help students explore careers and gain experience in Agriscience Education.
Au, Arr. Not open to students with credit for AEE 280.

Animal Science (ANIMSCI)

2200.01 Introductory Animal Sciences U 3
A study of the basic principles of genetics, breeding, reproduction, nutrition, behavior, and biotechnology as it applied to the molecular, cellular, and physical underpinnings of domesticated animal form and function. The online course is not open to students with a declared AnimSci major.
Au, 3 cl. Prereq: Not open to students with credit for 2300H. GE nat sci bio course.

12367 Animals in Society U 3
Introduction to the historical, social, cultural, economic and legal frameworks within which current human-animal relationships have evolved.
2 cl, 1 2-hr lab. Prereq: English 1110 (110) or 111, or equiv. Not open to students with credit for 240. GE writing and comm: level 2 and soc sci indivs and groups course.

Biology (BIOLOGY)

1101 Introductory Biology U 4
Basic principles of biology; topics include the nature of science, organismal diversity, evolution, ecology, genetics, reproduction, and cellular structure and function. Not intended students majoring in one of the biological sciences.
Au, Sp. 3 cl, 1 3-hr lab. Prereq: Not open to students with credit for 1101E, 1113 (113), 1113H (115H), 101, Entmgy 1111 (101), or MolGen 1101 (PntBio101). This course is available for EM credit. GE nat sci bio course. Course fee: $80 (WST campus)

1113 Biological Sciences: Energy Transfer and Development U 4
Exploration of biology and biological principles; evolution and the origin of life, cellular structure and function, bioenergetics, and genetics. A broad introduction to biology comprises both Biology 1113 and 1114.
Au, Sp. 3 cl, 1 3-hr lab. Prereq: Math 1130 (130), 1148, 1150, or above, or Math Placement Level L or M. Prereq or concor: Chem 1110 (101), 1210 (121), 1610, or 1910H (201H), or permission of course coordinator. Not open to students with credit for 113. This course is available for EM credit. GE nat sci bio course. NS Admis Cond course. Course fee: $50 (WST campus)

1114 Biological Sciences: Form, Function, Diversity, and Ecology U 4
Exploration of biology and biological principles; evolution and specialization, diversity in structure, function, behavior, and ecology among prokaryotes and eukaryotes. A broad introduction to biology comprises both Biology 1113 and 1114.
Sp. 3 cl, 1 3-hr lab. Prereq: Math 1130 (130), 1148, or 1150 or above, or Math Placement Level L or M. Prereq or concor: Chem 1110 (101), 1210 (121), 1610, or 1910H (201H), or permission of course coordinator. Not open to students with credit for 114. This course is available for EM credit. GE nat sci bio course. NS Admis Cond course. Course fee: $50 (WST campus)

Chemistry (CHEM)

1110 Elementary Chemistry U 5
Introductory chemistry for non-science majors, including dimensional analysis, atomic structure, bonding, chemical reactions, states of matter, solutions, chemical equilibrium, acids and bases, along with topics in organic and biological chemistry.
Au, Sp. 3 cl, 1 rec, 1 3-hr lab. Prereq: Math 1073, 1074, 1075 or above; Math Placement Level L, M, N, or R; or ACT Math subscore of 22 or higher that is less than 2 years old. Not open to students with credit for 1210, 1250, 1610, 1910H. This course is available for EM credit. GE nat sci phys course. NS Admis Cond course. Course fee: $50

1210 General Chemistry I U 5
First course for science majors, covering dimensional analysis, atomic structure, the mole, stoichiometry, chemical reactions, thermodynamics, electron configuration, bonding, organic molecular structure, gases, liquids, and solids.
Au, Sp. 3 cl, 1 rec, 1 3-hr lab. Prereq: One unit of high school chemistry, and Math Placement Level L or M; or a grade of C- or above in Math 1130 (130), 1131 (131), 1148 (148), 1150 (150), or above. Not open to students with credit for 1220 (123), 1620 (162), 1920H (202H), 1250 (125), 1610, or 1910H (202H). This course is available for EM credit. GE nat sci phys course. NS Admis Cond course. WST campus course fee: $50

1220 General Chemistry II U 5
Continuation of 1210 for science majors, covering solutions, kinetics, chemical equilibrium, solubility and ionic equilibria, qualitative analysis, thermodynamics, electrochemistry, descriptive chemistry, coordination compounds, and nuclear chemistry.
Sp. 3 cl, 1 rec, 1 3-hr lab. Prereq: 1210, 1215, 1250, 1610 (162), 1910H (202H), or 122, and Math Placement Level L or M; or a grade of C- or above in Math 1130 (130), 1131 (131), 1148 (148), or 1150 (150), or above. Not open to students with credit for 1620 (163), 1920H (203H), 23, 2310, 2510 (251), 2610, or 2910H (251H). This course is available for EM credit. GE nat sci phys course. NS Admis Cond course. WST campus course fee: $50
2510 Organic Chemistry I  U 4
Introduction to structure, nomenclature, physical properties, preparation and reactions of alkanes, alkenes, alkyynes, alcohols, ethers, epoxides, aldehydes and ketones. Other topics include stereochemistry, acids, bases, and reaction mechanisms. Au. 3 cl, 1 rec. Prereq: 1220 (123), 1620 or 1920H (203H). Not open to students with credit for 252.

2520 Organic Chemistry II  U 4
Continuation from 2510, including aromatic systems, carboxylic acids, carboxylic acid derivatives, amines, carbon-carbon bond-forming reactions, polymers, carbohydrates and amino acids. Sp. 3 cl, 1 rec. Prereq: 2510, 2610 (252) or 2910H (252H). Not open to students with credit for 2620 (253) or 2920H.

Community Leadership (COMLDR)

2189 Early Experience in Community and Extension Education  U 1
The early experience program is designed to help students explore careers and gain experience in Community and Extension Education. Sp. Arr. Prereq: Permission of Instructor. Not open to students with credit for AEE 280.

2530 Introduction to Agricultural Communication, Education, and Leadership  U 2
Creating an awareness and understanding of the agricultural communication, education and leadership profession. The class will provide a basis for educating, communicating, and leading by synthesizing theoretical knowledge with practical application. Sp. 2 cl. Not open to students with credit for AEE 230 or AgrComm 200.

3530 Foundations of Personal and Professional Leadership  U 3
Leadership theories, principles, and concepts. Research-based theories, methods of social scientific inquiry, individual strengths, personal leadership philosophy and vision, concepts of diversity and ethics, and professional development plan. Au. Sp. 2 1/2-hr cl. Not open to students with credit for AEE 342.

3537 Data Analysis in the Applied Sciences  U 3
The purpose of this course is to develop an overview and basic understanding of descriptive and inferential statistics. Au. 2 1/2-hr cl, 1 2-hr lab. Prereq: Math 1130 (130) or 1148 (148). Not open to students with credit for AEE 387. GE data-anly course. MA Admin Cond course.

Comparative Studies (COMPSTD)

2301 Introduction to World Literature  U 3
Analysis of oral and written literatures of diverse cultures and historical periods. Au. Sp. 3cl. Prereq: English 1110 (110), or equiv. Not open to students with credit for 273. GE lit and diversity global studies course.

English (ENGLISH)

1109 Writing & Reading  U 4
Provides intensive practice in integrating academic reading and writing. Credit may not count toward graduation in some degree programs. Au. Sp. 4 cl. Prereq: English Placement Test score of 6. Not open to students with credit for 1110.01 (110.01), 1110.01H (110.01H), 1110.02 (110.02), 1110.02H (110.02H), 052, 060, or 1110.03, or equiv. 1110.01H (110.01H), 1110.02 (110.02), 1110.02H (110.02H), 1110.03 (110.03), 1167H (167H), 110.01. GE writing and comm course: level 1.

1110.03 First-Year English Composition  U 3
Intensive practice in fundamentals of expository writing illustrated in the student's own writing and essays of professional writers; offered in a small class setting and linked with an individual tutoring component in its concurrent course, 1193. Au. Sp. 3 cl. Prereq: 1109 or English Placement Level 5 (Placement Level 4 allowed if student requests service). Concur: 1193. Not open to students with credit for 1110.01 (110.01), 1110.01H (110.01H), 1110.02 (110.02), 1110.02H (110.02H), 1167H (167H), 110.03, or equiv. This course is available for EM credit only through the AP program. GE writing and comm course: level 1.

1193 Individual Studies  U 1-4
Intensive practice in fundamentals of expository writing. Au. Sp. Prereq: Permission of Director of First-Year Writing. Concur: 1110.03. Repeatable to a maximum of 6 cl or 6 hr completions. This course is graded S/U.

Environment and Natural Resources (ENR)

2100 Introduction to Environmental Science  U 3
Introduction to environmental science, the ecological foundation of environmental systems, the ecological impacts of environmental degradation by humans, and strategies for sustainable management of environment and natural resources. Au. 3 cl. Not open to students with credit for 201. This course is available for EM credit. GE nat sci bio course.

2300 Society and Natural Resources  U 3
Introduction to interactions between humans, natural resources, and ecosystems from a social science perspective. Au. 2 1½-hr cl. Prereq: Not open to students with credit for 203. GE soc sci human, nat, and econ resources course.

2367 Communicating Environmental and Natural Resources Information  U 3
Concepts, skills development, and practice in accessing and communicating information about the environment and natural resources to varied audiences; emphasis on written and oral communication. Sp. 2 cl, 1-hr lab. Prereq: English 1110 (110) or 111. Not open to students with credit for 367 or LArch 367. GE writing and comm course: level 2.

History (HISTORY)

1152 American Civilization since 1877  U 3
The political, constitutional, social and economic development of the United States from the end of Reconstruction to the present. Au. Sp. 2 1½-hr cl. Prereq or concur: English 1110.xx. Not open to students with credit for 1150, 2002, or 152. GE historical study course.

Horticulture and Crop Science (HCS)

2201 Ecology of Managed Plant Systems  U 4
Origin, diversification, and biogeography of plants inhabiting managed landscapes. Sp. 3 cl, 1 2-hr lab. GE nat sci bio course.

2202 Form and Function in Cultivated Plants  U 4
An introduction to plant growth and development with special emphasis on structure function relationships important to productivity and quality in cultivated plants. Sp. 3 cl, 1 2-hr lab. Not open to students with credit for 300, 300E, 310, 315, or PntBio 300. GE nat sci bio course.

2250 Introduction to Professional Golf Management  U 2
Acquaints students with the PGM program, including program facilities and resources, components of the PGA/PGM Program, golf history, PGA Constitution, Career Enhancement, Golf Operations, and Customer Relations. Sp. 1 cl, 1 rec. Not open to students with credit for 250 or 350.04.
3100 Introduction to Agronomy U 3
An introductory course of row crop and forage agricultural production (agronomy). This course introduces students to row and forage crop species common in Ohio and surrounding states, and provides fundamental information on how these crops are managed in the region. Management aspects include site preparation, seasonality of management activities, and fundamentals of nutrient and pest management.
Sp. 2 cl, 1 2-hr lab. Prereq: 2201, 2201E, 2202, or 2202E.

3488.02 PGM Player Development U 1
Focus on assisting students who have not passed the PGA of America's Playing Ability Test. Encompasses golf skills evaluation, mental approach, development of a corrective action plan and re-evaluation of skills progress.
Au. 1 3-hr lab. Prereq: Permission of instructor. Repeatable to a maximum of 3 cr hrs. This course is graded S/U.

4191.02 PGM Internship U 1
Real world job experience at golf courses, clubs, or resorts. Students are mentored by the on-site PGA professional and must complete specified written Work Experience Activities. Must be enrolled while on internship.
Su. Arr. Prereq: 2250 (250), and enrollment in Pre-Professional or Professional Golf Management majors. Repeatable to a maximum of 5 completions.

Mathematics (MATH)

1050 Precollege Mathematics I U 5
Fractions and decimals, basic algebra, graphing lines, factoring, systems of equations. Credit for this course will not count toward graduation in any degree program.
Au. Sp. 5 cl. Prereq: 1040 (40) or 50, or Math Placement Level T, or permission of department. Not open to students with credit for any Math course above 1050 (50). This course is available for EM credit.

1075 Precollege Mathematics II U 4
Algebraic, rational, and radical expressions; functions and graphs; quadratic equations; absolute value; inequalities; and applications.
Au. Sp. 3 cl. 1 rec. Prereq: 1074 or 075; or a grade of C- or above in 1050; or Math Skills Assessment Level R or S; or ACT math subcore of 22 or higher that is less than 2 years old. Not open to students with credit for any Math course above 1050. Except for 1116; or for any quarter-class system above 075, except for 1116. Credit for this course will not count toward graduation in any degree program. This course is available for EM credit. GE quant reason basic computation course.

1130 College Algebra for Business U 4
Algebraic, exponential, and logarithmic functions. Matrix algebra. Applications to business.
Sp. 4 cl. Prereq: A grade of C- or above in 1075, or credit for 104, or Math Placement Level M or N, or ACT math subcore of 22 or higher that is less than 2 years old. Not open to students with credit for 1131 (131), or for any Math course numbered 1149 (150) or above. This course is available for EM credit. GE quant reason math and logical anly course.

1131 Calculus for Business U 5
Survey of calculus of one and several variables; applications to business.
Au. 5 cl. Prereq: A grade of C- or above in 1130, 1144, 1148, or 1150, or credit for 130, 148, or 150, or Math Placement Level L. Not open to students with credit for 1151 (151) or above, or 1134 (132). This course is available for EM credit. GE quant reason math and logical anly course.

1148 College Algebra U 4
Functions; polynomial, rational, radical, exponential, and logarithmic. Introduction to right-angle trigonometry. Applications.
Au. Sp. 4 cl. Prereq: A grade of C- or above in 1075, or credit for 104 or 148, or Math Placement Level N, or ACT math subcore of 22 or higher that is less than 2 years old, or permission of department. Not open to students with credit for 1144, or for Math courses numbered 1150 (150) or above. This course is available for EM credit. GE quant reason math and logical anly course.

1149 Trigonometry U 3
Trigonometric functions and their properties. Vectors, polar coordinates and complex numbers.
Au. Sp. 3 cl. Prereq: A grade of C- or above in 1148, or permission of department. Not open to students with credit for 1144, or for any Math course numbered 1150 (150) or above. This course is available for EM credit. GE quant reason math and logical anly course.

1150 Precalculus U 5
Functions: polynomial, rational, radical, exponential, logarithmic, trigonometric, and inverse trigonometric. Applications.
Au. 5 cl. Prereq: Math Placement Level M. Not open to students with credit for 1144, 1148, or for 1149 or above, or for any quarter Math course numbered 150 or above. This course is available for EM credit. GE quant reason math and logical anly course.

1151 Calculus I U 5
Differential and integral calculus of one real variable.
Sp. 5 cl. Prereq: A grade of C- or above in 1148 and 1149, or in 1144, 1150, or 150, or Math Placement Level L. Not open to students with credit for 1152 or 152.xx. or above. This course is available for EM credit. GE quant reason math and logical anly course.

Meat Science (MEATSCI)

2010 Bar-B-Que Science U 2
Investigating methods to prepare various meat products. Students will gain experience in matching proper cooking methods with different muscles to produce wholesome and palatable products. Students will be introduced to product sensory techniques.
Au. Sp. 1 cl, 1 3-hr lab.

3110 Introductory Meat Science U 3
Analysis of the principles of meat science as related to meat animal value factors, processing technology, and merchandising systems affecting the producer, processor, and consumer.
Sp. 3 cl. Prereq: Biology 1101 or 1113. Not open to students with credit for AnimSci 3110. Cross-listed in AnimSci.

Microbiology (MICROBIO)

4000.01 Basic and Practical Microbiology U 4
Provides an understanding of microorganisms and their interaction with the human experience.
Sp. 3 cl. 1 3-hr lab. Prereq: 3 cr hrs in Biology. Not open to students with credit for 4000 or 4000.02. GE nat sci bio course. Course fee: $50 (WST campus)

Music (MUSIC)

2250 Music Cultures of the World U 3
A survey of musical cultures outside the Western European tradition of the fine arts.
Au. Sp. 2 1½ -hr cl, 1 rec. Prereq: Not open to students with credit for 250. GE VPA and diversity global studies course. VSP Admis Cond course.

Physics (PHYSICS)

1200 Mechanics, Kinematics, Fluids, Waves U 5
Algebra-based introduction to classical physics: Newtons laws, fluids, waves.
Sp. 2 cl, 2 rec, 1 3-hr lab. Prereq: A grade of C- or above in Math 1148 (148), or Math Placement Level M. Not open to students with credit for 111. This course is available for EM credit. GE nat sci phy course. NS Admis Cond course. Course fee: $50 (WST campus)

1201 E&M, Optics, Modern Physics U 5
Algebra-based introduction to electricity and magnetism, simple optics, overview of modern physics including special relativity and quantum mechanics.
Au. 2 cl, 2 rec, 1 3-hr lab. Prereq: 1200 (111). Not open to students with credit for 112. This course is available for EM credit. NS Admis Cond course. GE nat sci physical course. Course fee: $50 (WST campus)
Plant Pathology (PLNPTH)

3001 General Plant Pathology Lecture  U 3
An introduction to plant diseases caused by fungi, bacteria, viruses, nematodes and parasitic higher plants. Video-linked to Wooster.
Au. 3 cl. Prereq: Biology 1101 (101), 1113 (113), 1115H (115H), or Entomgy 1101 (Entomol 101). Not open to students with credit for 401 or 6001.

3002 General Plant Pathology Lab  U 2
The lab portion of general plant pathology. Lab work will include experiments involving fungi, bacteria, viruses, nematodes and parasitic higher plants. Video-linked to Wooster.
Au. 2 1½-hr labs. Prereq: Biology 1101 (101), 1113 (113), 1115H (115H), or Entomgy 1101 (Entomol 101). Concur: 3001 (401). Not open to students with credit for 6001 or 401.

Psychology (PSYCH)

1100 Introduction to Psychology  U 3
A prerequisite to advanced courses; a broad survey of psychological science. Application of the scientific method to the empirical study of behavior with emphasis on individual and cultural differences.
Au., Sp. 2 1½-hr cl. Prereq: Not open to students with credit for 100, 1100H (100H), or 1100E (100E). This course is available for EM credit. GE soc sci indivs and groups and diversity soc div in the US course.

Religious Studies (RELSTDS)

2370 Introduction to Comparative Religion  U 3
Introduction to the academic study of religion through comparison among major traditions (Judaism, Christianity, Islam, Hinduism, Buddhism, etc.) and smaller communities.
Au, Sp. 3 cl. Prereq: English 1110 (110) or equiv. Not open to students with credit for 2370 or CompStd 2370 (270). GE cultures and ideas and diversity global studies course.

Rural Sociology (RURLSOC)

1500 Introduction to Rural Sociology  U 3
Principles of society, major social institutions, and social change; emphasizes social changes in rural life, rural organizations, population, and family living.
Au., Sp. 3 cl. Prereq: Not open to students with credit for 105, Sociol 1101 (101), or 201. GE soc sci orgs and politics and diversity soc div in the US course. SS Admis Cond course.
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Index

Academic opportunities, 3-4
Agribusiness, 20
Agricultural Communication, 21
Agricultural Systems Management, 22
Agriscience Education, 23
Agronomy, 24
Animal Sciences, 25-30
Associate of Applied Science (AA), 3, 6, 7-19
Associate of Science (AS), 3, 6, 20-37
Associate of Technical Study (AT), 3, 6
Biochemical Sciences, 31
Bioenergy and Biological Waste Management, 7
Bioenergy certificate, 39
Business Management, 8
Business Training and Educational Services, 4
Certificate programs, 3-4, 6, 39-41
Community Leadership, 32
Construction Management, 9
Construction Systems Management, 33
Course offerings, 42-56
Credit by examination, 6
Crop Management and Soil Conservation, 10
Dairy Cattle Production and Management, 11
Environment and Natural Resources, 34
Faculty and staff, 57
Fees and expenses, 4-5
  Acceptance fee, 4
  Application fee, 4
  Books, 5
  Course fees, 5
  Housing, 4-5
  Learning Technology, 4
  Orientation Day fee, 4
  Publication fee, 4
  Safety and Security fee, 4
  Student health insurance, 5
  Tuition, 5
  University fees, 5
Food Business Management, 35
Floral Design and Marketing, 12
General information, 2
Graduation requirements, 6
Greenhouse and Nursery Management, 13
Horse Production and Management, 14
Horticultural Science, 36
Hydraulic Power and Motion Control, 15
Hydraulic Service and Repair certificate, 40
Internship and practicum, 6
Landscape Horticulture, 16
Livestock Production and Management, 17
Mission, 2
1 + 3 Program, 3, 38
Phone numbers, 59
Power Equipment, 18
Professional Golf Management, 3, 38
Sustainable Agriculture, 37
Transition to Columbus campus, 4
Turfgrass Equipment Manager certificate, 41
Turfgrass Management, 19
Undeclared majors, 3
University Calendar, 59
Web sites, 59
University Calendar — Subject to change

Autumn Semester 2018
August 18-20 Welcome Days (Sat. – Mon.)
August 21 Classes begin (Tue.)
September 3 Labor Day – no classes, offices closed (Mon.)
October 11-12 Fall Break – no classes (Thurs. – Fri.)
November 12 Veterans’ Day observed – no classes, offices closed (Mon.)
November 22-23 Thanksgiving Break – no classes (Wed. – Fri.), offices closed (Thurs. – Fri.)
December 5 Last day of regularly scheduled classes (Wed.)
December 7-13 Final examinations (Fri. – Thurs.)
December 16 Autumn commencement (Sun.) – Columbus Campus
December 24 President’s Day observed – offices closed (Mon.)
December 25 Christmas – offices closed (Tue.)

Spring Semester 2019
January 7 Classes begin (Mon.)
January 21 Martin Luther King Day – no classes, offices closed (Mon.)
March 11-15 Spring Break (Mon. – Fri.)
April 22 Last day of regularly scheduled classes (Mon.)
April 24-30 Final examinations (Wed. – Tues.)
May 4 ATI commencement (Sat.) – Fisher Auditorium, OARDC
May 5 Spring commencement (Sun.) – Columbus Campus

Summer Term/Sessions 2018
May 8 – July 26 Summer Term (12 weeks)
May 8 – June 3 4-week Session #1
June 4 – June 28 4-week Session #2
July 1 – July 26 4-week Session #3
May 8 – June 17 6-week Session #1
June 18 – July 26 6-week Session #2
May 8 – June 28 8-week Session #1
June 4 – July 26 8-week Session #2
May 27 Memorial Day – no classes, offices closed (Mon.)
July 4 Independence Day – no classes, offices closed (Thur.)
July 29-31 Term Final examinations (Mon.-Wed.)
August 4 Summer commencement (Sun.) – Columbus Campus

Autumn Semester 2019
August 17-19 Welcome Days (Sat. – Mon.)
August 20 Classes begin (Tues.)
September 2 Labor Day – no classes, offices closed (Mon.)
November 11 Veterans’ Day – no classes, offices closed (Mon.)
November 27-29 Thanksgiving Break – no classes (Wed. – Fri.), offices closed (Thurs. – Fri.)
December 4 Last day of regularly scheduled classes (Wed.)
December 6-12 Final examinations (Fri. – Thurs.)
December 15 Autumn commencement (Sun.) – Columbus Campus
December 24 President’s Day observed – offices closed (Tue.)
December 25 Christmas – offices closed (Wed.)

Phone numbers and web sites

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330-287-1327

Academic Records
330-287-1303

Fees & Deposits
330-287-1264

Financial Aid
330-287-1214
http://ati.osu.edu/currentstudents/moneymatters

Residence Life
330-287-7504
http://ati.osu.edu/futurestudents/admitted-students/campus-housing

Student Success Services
330-287-1340

Business Training/Educational Services
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330-287-7511
http://ati.osu.edu/btes

Columbus campus Office of Undergraduate Admissions
Student Academic Services Building
281 West Lane Avenue
Columbus, OH 43210
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http://undergrad.osu.edu/

College of Food, Agricultural, and Environmental Sciences
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www.cfaes.ohio-state.edu

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http://contactbuckeyelink.osu.edu/

Columbus campus Office for Disability Services
614-292-3307
www.ods.ohio-state.edu

Columbus campus Office of Military and Veterans Services
614-247-VETS (8387)
http://veterans.osu.edu/

Master Schedule of Classes
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