Agricultural Power and Equipment Technician
32-070-1 Technical Diploma

Program Overview
This program consists of practical knowledge and shop management skills to help you master installation, service, assembly, adjustment, repair, and operation of various types of machinery and tractors. You will also learn how to work with hydraulics, transmissions, electrical systems, and air conditioning.

Student Profile
As a student in the Agricultural Power and Equipment Technician program, you should be able to:

- Manipulate tools and equipment skillfully
- Communicate ideas verbally
- Be organized
- Be willing to work with precise limits and standards
- Walk and move around in shop and field assignments
- Lift and carry 50 pounds
- See and hear well (normal or corrected)
- Distinguish colors

Please discuss any limitations you may have with a Student Success Center counselor.

Preparation for Admission
The following experiences will help you prepare for this program:

- Agriculture
- Welding
- Keyboarding
- Electronics
- Drafting
- Auto Mechanics
- English, Speech
- Basic Math, Algebra
- Physics
- Computers
- Power Technology
- Machine Shop
- Print Reading

Program Outcomes
Employers will expect you, as an Agricultural Power and Equipment Technician, to be able to:

- Apply principles of gasoline and diesel engine operation.
- Repair hydraulic and electrical systems.
- Service and repair transmissions.
- Demonstrate skills in human relations, applied math, and communications.

Career Outlook
Agricultural Power and Equipment Technicians are in demand because they can handle a variety of mechanical situations. The typical positions available to you after graduation include:

- Equipment Mechanic
- Construction Mechanic
- Diesel Mechanic
- Lawn and Garden Equipment Mechanic

Curriculum

<table>
<thead>
<tr>
<th>Number</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>31461310</td>
<td>Introduction to 12-Volt Electrical Theory</td>
<td>1</td>
</tr>
<tr>
<td>31461311</td>
<td>Introduction to Power Trains</td>
<td>1</td>
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<tr>
<td>31461312</td>
<td>Introduction to Mobile Hydraulics</td>
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<tr>
<td>31461313</td>
<td>Introduction to Diesel Engines</td>
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<tr>
<td>32070326</td>
<td>Gas Engines</td>
<td>5</td>
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<tr>
<td>32070358</td>
<td>Power Trains 1</td>
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<td>Mobile Hydraulics 1</td>
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<td>Diesel Engines</td>
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<td>Power Trains 2</td>
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<td>32070366</td>
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<td>32070367</td>
<td>12-Volt Electrical 2</td>
<td>5</td>
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<tr>
<td>32442307</td>
<td>Welding for Mechanics</td>
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Offered at: New Richmond

Program Requirements

▲ This course requires a prerequisite and/or corequisite, and must be completed with a grade of “C-” or better.
Course Descriptions

31461310  
Introduction to 12-Volt Electrical Theory - Credits: 1  
This course is designed for the learner to understand basic 12-volt electrical circuits, wiring diagrams, starting, charging, and lighting systems. Classroom trainers will be used to apply electrical theory. Using hands-on activities, this course will help the learner to better understand basic 12-volt electrical systems.

31461311  
Introduction to Power Trains - Credits: 1  
This course will provide a general overview of clutches, sliding gear, and hydrostatic drives. Design, operation, adjustment, and maintenance will be discussed.

31461312  
Introduction to Mobile Hydraulics - Credits: 1  
This course will provide a practical understanding of mobile hydraulic components. Their design, application, operation and maintenance will be studied. A hydraulic training bench will be used in the classroom.

31461313  
Introduction to Diesel Engines - Credits: 1  
This course will provide the learner with a basic understanding of the diesel engine. The design and operating principles of the engine, cooling, fuel, and lubrication systems will be examined.

32070326  
Gas Engines - Credits: 5  
This course provides students with the theory of operation, repair, and adjustment of four-cycle gasoline engines. Attention is focused on the rebuilding, checkout, and specifications associated with these engines. Equipment is used to analyze engine performance in a lab setting. Service procedures are also included in the course.

32070358  
Power Trains 1 - Credits: 5  
This course will provide an in-depth study of hydraulically operated and controlled transmissions as they are found on various types of farm tractors. You will learn transmission operation by studying manufacturers’ service manuals as well as a prepared text. Lab projects will allow hands-on training. COREQUISITE: 31461311 Introduction to Power Trains.

32070359  
Mobile Hydraulics 1 - Credits: 5  
This course will provide a broad, general, and practical coverage of fluid power components and their design, application, operation, and maintenance. You will learn hydraulics operation by studying manufacturer’s service manuals as well as a prepared text. Lab projects will allow hands-on training. COREQUISITE: 31461312 Introduction to Mobile Hydraulics.

32070360  
12-Volt Electrical 1 - Credits: 4  
This course is designed to study the construction, operation, adjustments, and repairs of electrical components used in tractors and farm implements. Classroom and lab activities will include reading and interpreting wiring diagrams, troubleshooting electrical circuits, and performing repairs on alternators, generators, starters, and regulators. Monitors are also included in this course. COREQUISITE: 31461310 Introduction to 12-Volt Electrical Theory.

32070361  
Diesel Engines - Credits: 5  
This course provides the student with both a theoretical and practical background in the basic operating principles of diesel engines. The course includes practical experience in rebuilding, testing, troubleshooting, and tuning diesel engines. Additionally, the student will gain experience in the proper use of tools and equipment. If prerequisite courses have not been completed, student must have consent of instructor to enroll. COREQUISITES: 32070326 Gas Engines and 31461313 Introduction to Diesel Engines.

32070364  
Power Trains 2 - Credits: 5  
This course provides an opportunity to work on clutches, transmission torque amplifiers, torque converters, differentials, final drives, and power take-off units. Lab time is spent on disassembly, parts identification, operation, and repair of these units. COREQUISITES: 32070358 Power Trains 1 and 31461311 Introduction to Power Trains.

32070366  
Mobile Hydraulics 2 - Credits: 5  
This course provides an in-depth study on how the basic fluid power components are incorporated into a tractor hydraulic system. This lecture- and lab-based course includes demonstration and practice opportunities. If prerequisite courses have not been completed, student must have consent of instructor to enroll. COREQUISITES: 32070359 Mobile Hydraulics 1 and 31461312 Introduction to Mobile Hydraulics.

32070367  
12-Volt Electrical 2 - Credits: 5  
This is an advanced electrical course to meet the demands of today’s newer equipment. Learners will receive training on electronic service tools, pulse width modulation solenoids, can bus controllers, and terminator networks. Additional topics will include yield monitors and auto guidance systems. COREQUISITES: 31461310 Introduction to 12-Volt Electrical Theory and 32070361 12-Volt Electrical 1.

32442307  
Welding for Mechanics - Credits: 2  
Instruction in safe setup and operation of oxyacetylene cutting (OAC), SAW (Stick), GMAW (Mig), FCAW, and/or GTAW (Tig) welding in applications related to general industry practices. Selection of appropriate welding processes with a specific emphasis on typical repair situations including metal identification will be stressed.

Graduate Employment Information  
(WITC Graduate Survey Responses 2005-2006)

<table>
<thead>
<tr>
<th>Number of graduates</th>
<th>Number employed</th>
<th>% employed in WITC district</th>
<th>Range of yearly salary</th>
<th>Average yearly salary</th>
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<tbody>
<tr>
<td>13</td>
<td>7</td>
<td>67%</td>
<td>$23,000-$40,000</td>
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<tr>
<td>12</td>
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<tr>
<td>9</td>
<td>6</td>
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