

**Wallingford Public Schools - HIGH SCHOOL COURSE OUTLINE**

<b>Course Title:</b> Agricultural Mechanics / Turf Management 2	<b>Course Number:</b> 8763
<b>Department:</b> Agriculture Education	<b>Grade(s):</b> 10
<b>Level(s):</b> Academic	<b>Credit(s):</b> 1.5
<b>Course Description</b> Sophomore course work continues to build a foundation for students interested in agricultural mechanics and turf management. Topics studied include: athletic field maintenance, principles of electricity, welding, small gasoline engines, operation and maintenance of landscape equipment, and golf course management. Students will continue to participate in the Lyman Hall Chapter of the national organization, FFA. Students will continue the development of their portfolio and skills to prepare for future careers in agricultural mechanics and turf management.	
<b>Required Instructional Materials</b> Sufficient Hands-on Materials	<b>Completion/Revision Date</b> Approved by Board of Education October 15, 2007

**Mission Statement of the Curriculum Management Team**

The mission of the Career and Technical Education Curriculum Management Team is to ensure that students, as a result of their experiences in K-12, will demonstrate transferable skills, knowledge, and attributes for successful life management, employment, career development, post-secondary educational opportunities, and life long learning.

**Enduring Understandings for the Course**

- Self-reflection of learning experiences, in and out of school, fosters the development of a life long learner. Life long learners are able to apply and refine skills as they prepare for their post-high school endeavors.
- Proper maintenance of sports fields helps to foster safe and fair competition.
- Accurate identification of turf pests and diseases afflicting healthy turf is essential in prescribing control.
- To secure safe electrical connections students must follow the National Electrical code or the local electrical codes if they are stricter.
- Circuits are built on basic principles that are governed by the movement of charged particles moving through conductors.
- Skilled and safe use of materials and equipment will result in quality construction and a satisfied client.
- Learned skills and safety procedures will transfer to allow students to confidently operate many different types of equipment.
- All organizations, including the FFA, have standardized procedures for operation to help ensure smooth and efficient meetings.
- As leadership changes occur, the standardized operational procedures aid in smooth transitions and encourage participation by all members.

<ul style="list-style-type: none"><li>• Successful preparation for employment and the ability to present yourself professionally will set you apart from other applicants.</li></ul>
<ul style="list-style-type: none"><li>• Basic engine principles learned on small gas engines can be applied to large engines thus allowing the mechanic to diagnose, repair and maintain many types of engines.</li></ul>
<ul style="list-style-type: none"><li>• Systematic diagnosis and various problem solving skill are applied for the identification of mechanical failures and repair techniques.</li></ul>
<ul style="list-style-type: none"><li>• Organization is essential to complete simple to complex and multi-step tasks efficiently and accuracy, such as disassembling and assembling mechanical components.</li></ul>
<ul style="list-style-type: none"><li>• Most accidents are a result of unsafe practices and actions by people.</li></ul>
<ul style="list-style-type: none"><li>• Establishing and maintaining healthy turf grass is a multi-variable process which is influenced by man, weather and the sport.</li></ul>
<ul style="list-style-type: none"><li>• Integrated Pest Management (IPM) techniques can reduce pests while also reducing risks associated with pest management practices (such as pesticides, fertilizers, etc.).</li></ul>

**LEARNING STRAND**

1.0 Transferable Skills

**ENDURING UNDERSTANDING(S)**

- Self-reflection of learning experiences, in and out of school, fosters the development of a life long learner. Life long learners are able to apply and refine skills as they prepare for their post-high school endeavors.

**ESSENTIAL QUESTION(S)**

- What is the importance of maintaining a portfolio?
- What are the qualities of an effective oral presentation?
- What safety precautions do I have to follow?
- What can I do differently next time?
- What does a cooperative group require to function successfully?
- How can I assess the situation and implement change?
- What are the characteristics of an organized person? What do I need to do to be more organized?
- How can I manage informational research, organize the information, and present it professionally?
- What is a leader?

**LEARNING OBJECTIVES** The students will:

- 1.1 Demonstrate public speaking skills using appropriate visuals and tailoring the presentation to specific audiences.
- 1.2 Communicate in writing about a topic using different formats applying relevant vocabulary, supporting evidence and clear logic.
- 1.3 Self-assess transferable skills and reflect on areas of strengths and improvement.
- 1.4 Identify and use the appropriate tools and equipment safely.
- 1.5 Work cooperatively with fellow peers, teachers, and employers to complete a task.
- 1.6 Apply problem solving skills to critically approach a situation and work through the steps to solve the problem.
- 1.7 Develop organizational skills that assist with data collection, data analysis and synthesis.
- 1.8 Apply research skills to collect information, summarize the findings and to cite the sources used.
- 1.9 Recognize leadership skills such as:

**INSTRUCTIONAL SUPPORT MATERIALS**

- See other learning strands for integration

**SUGGESTED INSTRUCTIONAL STRATEGIES**

- See other learning strands for integration

**SUGGESTED ASSESSMENT METHODS**

- See other learning strands for integration

<p>motivating others, negotiating, participating in meetings, gaining confidence, and gaining self-awareness, etc.</p> <p>1.10 Apply computer-based tools such as PowerPoint, Word, Excel, and Access, to organize and present information.</p> <p>1.11 Demonstrate self expression and creativity through different projects.</p> <p>1.12 Develop a positive attitude and become an independent learner in order to prepare for the future.</p> <p>1.13 Organize and maintain a four year portfolio including a compilation of student products and reflections.</p> <p>1.14 Document SAE (Supervised Agricultural Experience) monthly. This includes recording hours, expenses, income, tasks and applied skills.</p>	
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<p><b><u>LEARNING STRAND</u></b></p> <p>2.0 Athletic Field Maintenance</p> <ul style="list-style-type: none"> <li>Approximately 5 weeks</li> </ul>	
<p><b><u>ENDURING UNDERSTANDING(S)</u></b></p> <ul style="list-style-type: none"> <li>Proper maintenance of sports fields helps to foster safe and fair competition.</li> <li>Accurate identification of turf pests and diseases afflicting healthy turf is essential in prescribing control.</li> </ul>	<p><b><u>ESSENTIAL QUESTION(S)</u></b></p> <ul style="list-style-type: none"> <li>How do you effectively use field grooming equipment?</li> <li>How do you ensure that a playing field is in the ultimate playing condition?</li> <li>What/how maintenance must be performed on a machine to ensure peak performance?</li> <li>What are the identifying characteristics of individual weeds, insects, and/or diseases?</li> </ul>
<p><b><u>LEARNING OBJECTIVES</u></b> The students will:</p> <p>2.1 Demonstrate safe and efficient use of field maintenance equipment, including:</p> <ul style="list-style-type: none"> <li>Toro 5020 infield groomer</li> <li>Zero turn riding mower</li> <li>Walk-behind mower</li> <li>Athletic field marker</li> <li>Gas engine edger</li> <li>Skid steer-mounted power rake</li> <li>Three point hitch-mounted aerator</li> </ul> <p>2.2 Perform necessary equipment maintenance and repair including:</p> <ul style="list-style-type: none"> <li>Oil changes</li> <li>Lubricating</li> <li>Sharpen blades</li> <li>etc.</li> </ul> <p>2.3 Identify common turf weeds.</p> <p>2.4 Identify common insects that adversely affect turf grass and how they affect turf health. Insects may include:</p> <ul style="list-style-type: none"> <li>Grubs</li> <li>Chinch bug</li> <li>Army worm</li> <li>Weevils</li> <li>Wasps</li> <li>Ants</li> </ul> <p>2.5 Identify common diseases and conditions that affect turf grasses and how they affect turf health. They may include:</p> <ul style="list-style-type: none"> <li>Fairy ring</li> <li>Snow mold</li> </ul>	<p><b><u>INSTRUCTIONAL SUPPORT MATERIALS</u></b></p> <ul style="list-style-type: none"> <li>Assorted athletic field grooming equipment</li> <li>Maintenance/repair tools and supplies</li> <li>Availability of athletic fields</li> <li>Reference texts for insect, weed, and disease identification</li> <li>Plant pressing materials – presses, contact paper</li> <li>Sample pressed turf weeds including: Crabgrass, Common plantain, Narrowleaf plantain, Dandelion, Poa annua, Chickweed, Carpetweed, Clover, Barnyard grass, Purslain, Wood sorrel, Nut sedge, Pigweed</li> </ul> <p><b><u>SUGGESTED INSTRUCTIONAL STRATEGIES</u></b></p> <ul style="list-style-type: none"> <li>Demonstrate proper use of field grooming equipment</li> <li>Hands-on learning using the equipment to perform maintenance and repair work</li> <li>Demonstrate proper weed collection and pressing techniques</li> <li>Model use of reference material in identification of weeds, insects, and diseases</li> <li>Collect sample turf weeds and insects to identify</li> </ul> <p><b><u>SUGGESTED ASSESSMENT METHODS</u></b></p> <ul style="list-style-type: none"> <li>Quiz on the correct terminology and function of the equipment parts</li> <li>Equipment operation checklists</li> </ul>

- Summer patch
- Leaf spot
- Compaction
- Rust
- Winter kill
- Dollar spot

- Rubric for weed collection and identification
- Rubric for insect and disease identification
- Portfolio items may include:
  - Skill sheet
  - Work sample picture and caption

<b>LEARNING STRAND</b>	
3.0 Electricity <ul style="list-style-type: none"> <li>Approximately 4 weeks</li> </ul>	
<b>ENDURING UNDERSTANDING(S)</b> <ul style="list-style-type: none"> <li>To secure safe electrical connections students must follow the National Electrical code or the local electrical codes if they are stricter.</li> <li>Circuits are built on basic principles that are governed by the movement of charged particles moving through conductors.</li> </ul>	<b>ESSENTIAL QUESTION(S)</b> <ul style="list-style-type: none"> <li>How do electricians ensure safe working conditions?</li> <li>How do electricians ensure safe working circuits?</li> <li>How do you install and/or update electrical switches, outlets and/or lights?</li> <li>What is “code”?</li> </ul>
<b>LEARNING OBJECTIVES</b> The students will: <ol style="list-style-type: none"> <li>3.1 Explain the purpose of the National Electrical Code.</li> <li>3.2 Summarize safety procedures when using wiring electrical circuits and using related tools.</li> <li>3.3 Demonstrate safe procedures when preparing wires for connection.</li> <li>3.4 Demonstrate the installation of a plug, single pole switch, luminaries, 3-way switch, 4-way switch, and duplex receptacle (outlet).</li> <li>3.5 Demonstrate problem solving skills by troubleshooting to recognize electrical problems and repair circuits.</li> <li>3.6 Identify commonly used electrical symbols.</li> <li>3.7 Calculate properly sized boxes and determine box fill according to NEC requirements.</li> <li>3.8 Install GFCI devices in a residence correctly.</li> <li>3.9 Plan an electrical circuit including: <ul style="list-style-type: none"> <li>One light and one switch</li> <li>Switch located second in the circuit</li> <li>Two lights and one switch and an outlet</li> <li>Three way switch, one light and another three way switch</li> <li>Three way switch, four way switch, light</li> <li>Explain why and where grounding is required</li> <li>Estimate wiring costs</li> </ul> </li> </ol>	<b>INSTRUCTIONAL SUPPORT MATERIALS</b> <ul style="list-style-type: none"> <li>Assorted electrical wire and fixtures</li> <li>Hand tools including wire strippers, diagonal pliers, cable rippers, screwdrivers</li> <li>Electric drill and bits</li> <li>Mounting boards</li> <li>Circuit tester</li> <li>Fuses</li> <li>Sample wiring plans</li> </ul> <b>SUGGESTED INSTRUCTIONAL STRATEGIES</b> <ul style="list-style-type: none"> <li>Identify name and function of electrical tools</li> <li>Prepare directions for installing switches and lights in kitchen</li> <li>Model safe procedures</li> <li>Define terms commonly used in the NEC</li> <li>Various hands-on circuit building</li> <li>Model how to install a plug, single pole switch, luminaries, 3-way switch, 4-way switch, and duplex.</li> <li>Students use small boards to attach fixtures for wiring and create model circuits. For example, students may be asked to wire a series and parallel circuit with 2 lights and 1 switch and an outlet.</li> <li>Attach different upright boxes to a board and wire the boxes</li> <li>Discuss GFCI code, where these outlets should be located, and why they are required</li> <li>Discuss the importance of a fuse that needs to be installed on each wired project</li> <li>Discuss the role of different colored wires</li> </ul>

<p>3.10 Interpret wiring plans.</p> <p>3.11 Describe the flow of electrical energy in different circuits and the role of the different wires.</p>	<ul style="list-style-type: none"><li>• Discuss the difference between fuses and circuit breakers</li><li>• Business letter – You are a building inspector and your friend wants to purchase a house that was built in 1930. The house has original wiring. Explain the wiring situation you found in the house, what needs to be updated, and what they should ensure that the electrical contractor does to ensure a quality job and to meet code requirements.</li></ul> <p><b><u>SUGGESTED ASSESSMENT METHODS</u></b></p> <ul style="list-style-type: none"><li>• Scoring rubrics for projects</li><li>• Test and quizzes</li><li>• Portfolio pieces may include:<ul style="list-style-type: none"><li>• Work sample</li><li>• Writing assignment – building inspector</li><li>• Inspection score sheets</li></ul></li></ul>
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<b><u>LEARNING STRAND</u></b>	
4.0 Welding 2 <ul style="list-style-type: none"> <li>Approximately 4 weeks</li> </ul>	
<b><u>ENDURING UNDERSTANDING(S)</u></b> <ul style="list-style-type: none"> <li>Skilled and safe use of materials and equipment will result in quality construction and a satisfied client.</li> <li>Learned skills and safety procedures will transfer to allow students to confidently operate many different types of equipment.</li> </ul>	<b><u>ESSENTIAL QUESTION(S)</u></b> <ul style="list-style-type: none"> <li>What safety precautions must be used in a shop setting?</li> <li>How are different tools used to cut and shape metal?</li> <li>What different types of welders can be used to weld mild steel?</li> </ul>
<b><u>LEARNING OBJECTIVES</u></b> – The students will: <ol style="list-style-type: none"> <li>Weld multiple pieces of mild steel together using a variety of welds.</li> <li>Construct a multi-step welding project.</li> <li>Demonstrate how to safely weld vertically and horizontally.</li> <li>Evaluate which type of weld would be most appropriate for the specified application.</li> <li>Demonstrate appropriate techniques to grind and/or buff metal surfaces.</li> </ol>	<b><u>INSTRUCTIONAL SUPPORT MATERIALS</u></b> <ul style="list-style-type: none"> <li>Appropriate equipment and materials including: bench grinder, horizontal bandsaw, oxy-acetylene torch, plasma cutter, arc welder, MIG welder, angle grinder, and tap set.</li> <li>Appropriate safety equipment and attire including goggles, welding helmet, gloves, leggings, and aprons</li> <li>Sample welded materials</li> </ul> <b><u>SUGGESTED INSTRUCTIONAL STRATEGIES</u></b> <ul style="list-style-type: none"> <li>Review appropriate and safe use of metal/welding tools and techniques such as: <ul style="list-style-type: none"> <li>Bench grinder</li> <li>Horizontal bandsaw</li> <li>Oxy-acetylene torch</li> <li>Plasma cutter</li> <li>Arc welder</li> <li>MIG welder</li> <li>Angle grinder</li> <li>Tap set</li> </ul> </li> <li>Weld a closed box that contains water and does not leak</li> <li>Model different welding and grinding techniques</li> <li>Sample welding projects may include: book ends, horse shoe “decorative” art, coat rack, saddle rack, bridle rack, etc.</li> <li>Writing assignment – Procedural writing assignment - explain how to recreate your welding project, including: <ul style="list-style-type: none"> <li>problems you encountered and how</li> </ul> </li> </ul>

- you solved them
- how you would improve your project if you did it again

**SUGGESTED ASSESSMENT METHODS**

- Project checklists
- Peer assessments
- Teacher observation of techniques
- Portfolio may include:
  - Skill sheet
  - Photo of student and completed project
  - Writing assignment

**LEARNING STRAND**

5.0 FFA Leadership Organization - Chapter Degree

- Approximately 2 weeks

**ENDURING UNDERSTANDING(S)**

- All organizations, including the FFA, have standardized procedures for operation to help ensure smooth and efficient meetings.
- As leadership changes occur, the standardized operational procedures aid in smooth transitions and encourage participation by all members.

**ESSENTIAL QUESTION(S)**

- What are the operational procedures that civic organizations utilize?
- How are official meetings conducted?
- What is the rationale for conducting parliamentary correct meetings?
- What are the qualities of an effective oral presentation?

**LEARNING OBJECTIVES** – The students will:

5.1 Meet the criteria for the FFA Chapter Degree. This includes:

- Demonstrate basic parliamentary abilities
- Demonstrate five parliamentary procedures in a mock meeting format
- Deliver a 15 minute oral presentation on an agricultural topic
- Other SAE minimum requirements

**INSTRUCTIONAL SUPPORT MATERIALS**

- FFA manual
- [www.FFA.org](http://www.FFA.org)
- Paraphernalia such as gavel, officer symbols, jacket, *Robert's Rules of Order*, etc.

**SUGGESTED INSTRUCTIONAL STRATEGIES**

- Complete application for the Chapter Degree
- Discuss organizations such as the BOE, wetlands, parliament, and other commissions also use parliamentary procedures
- Create a PowerPoint presentation or design a tri-fold board as a visual aid for the oral presentation
- Create an informational hand-out to aid the oral presentation
- Conduct mock meetings and experience different roles (president, secretary, members, etc.) during these mock meetings
- Type a script to simulate the meeting
- Discuss effective oral presentation skills
- Discuss how to create an outline for an oral presentation

**SUGGESTED ASSESSMENT METHODS**

- Score 80% or higher on FFA unit test
- Meet criteria for Chapter Degree and complete written application
- Rubric for oral presentation
- Portfolio products may include:
  - Skill sheet
  - Samples of visual aids from presentation

	<p>(photo of tri-fold board or PowerPoint)</p> <ul style="list-style-type: none"><li>• Writing sample – script of meeting</li><li>• Outline of oral presentation</li><li>• Informational hand-out</li></ul>
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**LEARNING STRAND**

6.0 School to Career Preparation – Applying for a Job

- Approximately 2 weeks

**ENDURING UNDERSTANDING(S)**

- Successful preparation for employment and the ability to present yourself professionally will set you apart from other applicants.

**ESSENTIAL QUESTION(S)**

- How should you prepare and apply for employment?
- What can non-verbal communication tell a future employer about you?

**LEARNING OBJECTIVES** – The students will:

6.1 Prepare to apply for an entry level position.

This may include:

- a. Compare and contrast the differences between a job and a career
- b. Compile personal information that will aid in accurately completing a job application
- c. Identify and locate potential employment opportunities
- d. Complete a mock job application accurately to emphasize your positive attributes
- e. Identify the procedures for securing working papers and explain why/when they are required
- f. Explain how to professionally request, secure, and thank a person for a letter of recommendation
- g. Demonstrate professional phone skills when seeking employment
- h. Explain how to impress a potential employer through non-verbal communication skills
- i. Identify employer expectations such as effective working habits and discuss how to emphasize these characteristics when preparing to secure employment

**Note:**

Employment and other related experiences outside of the classroom can be applied towards the SAE requirements.

**INSTRUCTIONAL SUPPORT MATERIALS**

- Videos on preparing for jobs by Creative Educational Videos
- Personal information form
- Mock job application
- Newspapers, trade journals and magazines
- [www.monster.com](http://www.monster.com)
- [www.ctcareerbuilder.com](http://www.ctcareerbuilder.com)
- *Choices* software program
- Phones

**SUGGESTED INSTRUCTIONAL STRATEGIES**

- Guest speakers:
  - Human resources representative to discuss employer expectations
  - School employee who oversees the working papers procedures
  - Guidance counselor to discuss career, job and post secondary preparation
- Job shadowing and/or interning
- Utilize *Choices* program to complete interest surveys, etc.
- Role model professional phone skills
- Write a phone script for requesting an application
- Model and role play professional non-verbal communication skills
- Write a request asking for a letter of recommendation
- Write a business letter to thank someone for a letter of recommendation
- Discuss differences between job and career
- Use standardized form to collect personal information
- Use newspaper, trade magazines and Internet to locate sources that list potential jobs

- Model how to accurately complete a job application and troubleshoot potential errors or omissions

**SUGGESTED ASSESSMENT METHODS**

- Portfolio products may include:
  - Skill sheet
  - Personal information form
  - Completed job application
  - Letter of recommendation
  - Letter asking for recommendation
  - Thank you letter for recommendation
  - Surveys collected from *Choices* program

<b><u>LEARNING STRAND</u></b>	
<p>7.0 Small Gasoline Engines (SGE)</p> <ul style="list-style-type: none"> <li>• Approximately 5 weeks</li> </ul>	
<p><b><u>ENDURING UNDERSTANDING(S)</u></b></p> <ul style="list-style-type: none"> <li>• Basic engine principles learned on small gas engines can be applied to large engines thus allowing the mechanic to diagnose, repair and maintain many types of engines.</li> <li>• Systematic diagnosis and various problem solving skills are applied for the identification of mechanical failures and repair techniques.</li> <li>• Organization is essential to complete simple to complex and multi-step tasks efficiently and accuracy, such as disassembling and assembling mechanical components.</li> </ul>	<p><b><u>ESSENTIAL QUESTION(S)</u></b></p> <ul style="list-style-type: none"> <li>• How does an engine function?</li> <li>• Why is maintenance critical to engine performance?</li> <li>• What safety precautions must be used in a shop setting?</li> <li>• How do you correctly disassemble and assemble a SGE?</li> <li>• What maintenance must be performed on a SGE to ensure peak performance?</li> </ul>
<p><b><u>LEARNING OBJECTIVES</u></b> The students will:</p> <p>7.1 Describe the basic operating principles of a four stroke L head small gas engine (fuel intake, compression, power and exhaust).</p> <p>7.2 Identify the basic components and their functions of a small gas engine.</p> <p>7.3 Demonstrate how to use a service manual to select parts or gather information on a small gasoline engine.</p> <p>7.4 Disassemble and reassemble an L head small gas engine accurately.</p> <p>7.5 Diagnose wear or breakage on small gas engine parts.</p> <p>7.6 Demonstrate how to properly torque the bolts on a small gas engine.</p> <p>7.7 Adjust a small gas engine to start and run smoothly. (Carburetor, gap sizes, etc.)</p> <p>7.8 Troubleshoot and repair common malfunctions of a small gas engine including:</p> <ul style="list-style-type: none"> <li>• Check spark</li> <li>• Check compression</li> <li>• Check fuel system</li> </ul>	<p><b><u>INSTRUCTIONAL SUPPORT MATERIALS</u></b></p> <ul style="list-style-type: none"> <li>• 5 hp L head Briggs and Stratton engine</li> <li>• Various small engine tools supplies</li> <li>• Service manuals</li> <li>• Appropriate safety eyewear</li> </ul> <p><b><u>SUGGESTED INSTRUCTIONAL STRATEGIES</u></b></p> <ul style="list-style-type: none"> <li>• Locate the engine model, serial number, and type number</li> <li>• Review and model shop safety procedures and rules including the use of safety equipment such as eye washes, fire blanket, showers, emergency shut off valves, etc.</li> <li>• Discuss correct disposal of liquids, hazardous fuels and fire hazards</li> <li>• Service and repair accessory equipment</li> <li>• Organize and chart engine components during disassembly</li> <li>• Use repair manuals to disassemble and assemble engines</li> <li>• Class discussions</li> <li>• Cooperative learning and peer assistance</li> <li>• Demonstrations include: <ul style="list-style-type: none"> <li>○ lap valves and diagnose proper seating patterns</li> <li>○ engine measuring and testing tools and equipment</li> <li>○ torque wrench use</li> </ul> </li> </ul>

- piston ring compression tool
- engine compression check
- ignition spark test
- carburetor adjustments

**SUGGESTED ASSESSMENT METHODS**

- Teacher observations
- Participation
- Written responses to questions
- Quizzes and test
- Evidence of smooth-running rebuilt engine
- Portfolio products may include:
  - Work sample picture and caption
  - Writing assignment – explanation of the four stroke process
  - Skill sheet



<b><u>LEARNING STRAND</u></b>	
8.0 Equipment Operation <ul style="list-style-type: none"> <li>• Approximately 5 weeks</li> </ul>	
<b><u>ENDURING UNDERSTANDING(S)</u></b> <ul style="list-style-type: none"> <li>• Most accidents are a result of unsafe practices and actions by people.</li> <li>• Learned skills and safety procedures will transfer to allow students to confidently operate many different types of equipment.</li> </ul>	<b><u>ESSENTIAL QUESTION(S)</u></b> <ul style="list-style-type: none"> <li>• What safety precautions must be used in a shop setting?</li> <li>• How are different machines used to accomplish different landscape jobs?</li> <li>• What adjustments and maintenance can be made to maximize a machine's performance?</li> <li>• How are landscape machines used efficiently and safely?</li> </ul>
<b><u>LEARNING OBJECTIVES</u></b> – The students will: <p>8.1 Operate power equipment safely efficiently including:</p> <ul style="list-style-type: none"> <li>• Tractor and loaders</li> <li>• Backhoe</li> <li>• Rotary mowers – zero-turn and walk behind</li> <li>• String trimmer</li> <li>• Tractor towing two- and four-wheel wagons</li> <li>• Lawn dethatcher, aerators and rollers to perform yearly lawn maintenance</li> <li>• Skid steer mounted power rake</li> </ul> <p>8.2 Adjust power equipment settings for different environmental conditions and purposes.</p> <p>8.3 Calibrate the settings on a spreader, based on the calculations, to accurately spread material. (three-point mounted and walk behind spreaders)</p> <p>8.4 Recognize how hay is harvested: mowing, tedding, raking, and baling</p> <p>8.5 Perform routine machine maintenance including sharpening lawn mower blades.</p> <p>8.6 Demonstrate how to paint line boundaries on a baseball field using an athletic field line painter.</p>	<b><u>INSTRUCTIONAL SUPPORT MATERIALS</u></b> <ul style="list-style-type: none"> <li>• Various power equipment such as tractor and loaders, backhoe, rotary mowers – zero-turn and walk behind, string trimmer, tractor towing two- and four-wheel wagons, lawn dethatcher, aerators, spreader, grinding machine, athletic field line painter, skid steer mounted power rake</li> <li>• Service manuals</li> <li>• Appropriate safety equipment</li> <li>• Various maintenance supplies</li> <li>• Suitable athletic fields and related driving areas</li> </ul> <b><u>SUGGESTED INSTRUCTIONAL STRATEGIES</u></b> <ul style="list-style-type: none"> <li>• Review and model safety procedures and rules</li> <li>• Model safe equipment operating procedures</li> <li>• Demonstrations include: <ul style="list-style-type: none"> <li>• Proper machine adjustments</li> <li>• Proper machine maintenance and repair</li> <li>• Proper machine operation</li> </ul> </li> <li>• Class discussions</li> <li>• Collaborative learning and peer assistance</li> <li>• Use neighboring elementary school baseball field to maintain turf and paint lines</li> <li>• Visit local farm to harvest hay</li> </ul> <b><u>SUGGESTED ASSESSMENT METHODS</u></b> <ul style="list-style-type: none"> <li>• Teacher observations</li> <li>• Participation</li> </ul>

- Portfolio products may include:
  - Work sample picture and caption
  - Skill Sheet

<b><u>LEARNING STRAND</u></b>	
<p>9.0 Golf Course Management</p> <ul style="list-style-type: none"> <li>Approximately 5 weeks</li> </ul>	
<p><b><u>ENDURING UNDERSTANDING(S)</u></b></p> <ul style="list-style-type: none"> <li>Establishing and maintaining healthy turf grass is a multi-variable process which is influenced by man, weather and the sport.</li> <li>Integrated Pest Management (IPM) techniques can reduce pests while also reducing risks associated with pest management practices (such as pesticides, fertilizers, etc.).</li> </ul>	<p><b><u>ESSENTIAL QUESTION(S)</u></b></p> <ul style="list-style-type: none"> <li>When should different machines be used to perform turf maintenance?</li> <li>What are the qualities of an effective power point presentation?</li> <li>What are the qualities of an effective web page presentation?</li> <li>How can I manage informational research, organize the information, and present it professionally?</li> <li>What steps are necessary to establish and maintain a healthy turf on a golf course?</li> <li>What unique qualities of the golf game make golf turf maintenance different from other athletic field turfs?</li> </ul>
<p><b><u>LEARNING OBJECTIVES</u></b> – The students will:</p> <p>9.1 Develop maintenance schedule for turf grass and golf course equipment.</p> <p>9.2 Perform scheduled maintenance on turf grass and golf course equipment.</p> <p>9.3 Read and interpret grass seed labels, fertilizer labels, and pesticide labels.</p> <p>9.4 Test soil for pH, nitrogen, phosphorous, and potassium levels.</p> <p>9.5 Analyze soil test results and select appropriate fertilizer based on data.</p> <p>9.6 Apply computer-based tools such as PowerPoint and FrontPage web design to organize and present turf grass information.</p> <p>9.7 Explain turf grass establishment and maintenance techniques including:</p> <ul style="list-style-type: none"> <li>Preparation, planting and germination of turf grass</li> <li>Watering and fertilizing practices</li> <li>Mowing schedules</li> <li>Purpose of lawn dethatching and aeration</li> <li>Over-seeding an established lawn</li> <li>Spreader calibration</li> </ul> <p>9.8 Evaluate local golf courses</p> <ul style="list-style-type: none"> <li>Identify turf grasses found on golf courses</li> </ul>	<p><b><u>INSTRUCTIONAL SUPPORT MATERIALS</u></b></p> <ul style="list-style-type: none"> <li>Various landscape equipment</li> <li>Service manuals</li> <li>Appropriate safety equipment</li> <li>Various maintenance supplies</li> <li>Suitable athletic fields</li> <li>FrontPage web page design and PowerPoint</li> <li>Soil test kits</li> <li>MSDS sheets</li> <li>Assorted labels from seed bags, fertilizers and pesticides</li> <li>Assorted turf references</li> </ul> <p><b><u>SUGGESTED INSTRUCTIONAL STRATEGIES</u></b></p> <ul style="list-style-type: none"> <li>Review and model shop safety procedures and rules including safe and efficient operation of turf grass and golf course equipment</li> <li>Use service manuals to construct a maintenance schedule for different types of equipment</li> <li>Class discussions on reading labels</li> <li>Review how to conduct soil tests and analyze results</li> <li>Mini-lessons on PowerPoint and web design</li> <li>Model: <ul style="list-style-type: none"> <li>Lawn dethatching and aeration</li> </ul> </li> </ul>

<ul style="list-style-type: none"><li>• Explain individual turf maintenance practices used at different golf courses</li><li>• Describe the elements of the sport of golf as related to turf practices</li><li>• Evaluate integrated pest management (IPM) and pest control practices</li></ul>	<ul style="list-style-type: none"><li>•How to over-seed an established lawn</li><li>•How to calibrate a spreader</li><li>• Collaborative learning and peer assistance (web page, PowerPoint)</li><li>• Visit local golf courses for presentations by course superintendents</li></ul> <p><b><u>SUGGESTED ASSESSMENT METHODS</u></b></p> <ul style="list-style-type: none"><li>• Teacher observation of equipment operation and service</li><li>• Scoring rubric for web page and PowerPoint design and content</li><li>• Portfolio product may include:<ul style="list-style-type: none"><li>• Work sample picture and caption</li><li>• Skill sheet</li><li>• PowerPoint slide example</li><li>• Web page sample slide</li></ul></li></ul>
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