

# *Wallenpaupack Area School District*

**COURSE:** Exploring Building Construction and Power Mechanics

**GRADE LEVEL:** 9

**LENGTH OF COURSE:** 45 days

**TEXT:** Small Engine Technology; Modern Carpentry

**PUBLISHER:** Delmar Publishers; Goodheart-Wilson Company, Inc.

**COPYRIGHT:** 1999; 2003

**COURSE DESCRIPTION:**

This program is designed to let the student explore and experience first hand what is being offered in the Building Construction and Power Mechanics Curriculum. This first year orientation is required for admittance into either level one program. A student must then be selected based on performance, attendance and cooperation. During this first year orientation, the students are introduced to the different areas in the trades.

Our philosophy of Career Awareness is one in which we provide an opportunity for the individual to explore multiple careers in a number of occupations. The trades have sufficient commonalties in human requirements and kinds of work to permit a high degree of mobility within the occupations associated with the shops we have here at Wallenpaupack Area.

**CURRICULUM WRITING TEAM:**

Kevin McCue

**DATE OF REVISION:**

2007

# Wallenpaupack Area School District

**Course:** Exploring Building Construction  
and Power Mechanics

**Grade Level:** Grade 9

**Unit:** Orientation

**PA Standards:** 13.1  
13.2  
13.3  
13.4

<b>Topics:</b>	<b>Skills:</b>
Familiarize the student with the Building Construction and Power Mechanics Course's	Active listening strategies Drawing inferences Following directions
<b>Activities:</b>	<b>Performance Assessments:</b>
Class Lecture Shop Tour	Teacher Observation Oral/Written Response to questions Self-evaluation

# Wallenpaupack Area School District

**Course:** Exploring Building Construction  
and Power Mechanics

**Grade Level:** Grade 9

**Unit:** Shop Safety

**PA Standards:** 13.1  
13.2  
13.3  
13.4

<b>Topics:</b> Rules and Regulations	<b>Skills:</b> Demonstrate knowledge of safety practices in the use of hand tools, power equipment, and in performing job tasks and procedures
<b>Activities:</b> Lecture Shop demonstration View Smart board presentation	<b>Performance Assessments:</b> Written Test

# Wallenpaupack Area School District

**Course:** Exploring Building Construction  
and Power Mechanics

**Grade Level:** Grade 9

**Unit:** Career Exploration

**PA Standards:** 13.1  
13.2  
13.3  
13.4

<b>Topics:</b> Encourage students to think seriously about work and the important part it will play in their lives	<b>Skills:</b> Defining career identity, job lifestyles, and work Listen to Lecture Discussion Participation Take Notes Listen to others <ul style="list-style-type: none"><li>• Ask probing questions</li><li>• Analyze information, ideas, and opinions to determine relevance</li></ul>
<b>Activities:</b> Lecture View Smart board presentation Open discussion Class debate	<b>Performance Assessments:</b> Teacher Observation Oral/Written Response to questions Self-evaluation

# Wallenpaupack Area School District

**Course:** Exploring Building Construction  
and Power Mechanics

**Grade Level:** Grade 9

**Unit:** Career Exploration

**PA Standards:** 13.1  
13.2  
13.3  
13.4

<p><b>Topics:</b></p> <p>Identify their goals, values and aptitudes</p>	<p><b>Skills:</b></p> <p>Identify and rate the importance of values to select a career goal Identify their individual interests Listen to Lecture Discussion Participation Listen to others</p> <ul style="list-style-type: none"> <li>• Ask probing questions</li> <li>• Analyze information, ideas, and opinions to determine relevance</li> <li>• Take notes when needed</li> </ul>
<p><b>Activities:</b></p> <p>Lecture View Smart board presentation Board demonstrations Open discussion Class debate Guided practice Shop demonstration Supervised shop work Group projects and individual projects Cooperative learning groups Homework</p>	<p><b>Performance Assessments:</b></p> <p>Teacher Observation Oral/Written Response to questions Self-evaluation</p>

# Wallenpaupack Area School District

**Course:** Exploring Building Construction  
and Power Mechanics

**Grade Level:** Grade 9

**Unit:** Career Exploration

**PA Standards:** 13.1  
13.2  
13.3  
13.4

<b>Topics:</b>	<b>Skills:</b>
Make students aware of attitudes and skills needed to be successful on the job	Listen to Lecture Discussion Participation Listen to others <ul style="list-style-type: none"> <li>• Ask probing questions</li> <li>• Analyze information, ideas, and opinions to determine relevance</li> <li>• Take notes</li> </ul>
<b>Activities:</b>	<b>Performance Assessments:</b>
Lecture View Smart board presentation Board demonstrations Open discussion Class debate Guided practice Shop demonstration Supervised shop work Group projects and individual projects Cooperative learning groups Homework	Teacher Observation Oral Response to questions Self-evaluation of their attitude toward others

# Wallenpaupack Area School District

**Course:** Exploring Building Construction  
and Power Mechanics

**Grade Level:** Grade 9

**Unit:** Wiring

**PA Standards:** 13.1  
13.2  
13.3  
13.4

<p><b>Topics:</b></p> <p>Residential Wiring 120V Theory Residential Wiring 120V materials</p> <ul style="list-style-type: none"> <li>• 14-2, 14-3; 12-2, 12-3 wire</li> <li>• Wire nuts</li> <li>• Receptacle boxes</li> </ul>	<p><b>Skills:</b></p> <p>Identify basic safety procedures Understand the effects of electrical shock Describe conditions likely to affect severity of electrical shock Maintain Safety during installation Describe steps to help a shock victim Explain conductors and insulating materials Define basic electrical terms Describe the makeup of an electrical circuit Discuss the four types of boxes Discuss box mounting systems</p>
<p><b>Activities:</b></p> <p>Lecture View Smart board presentation Board demonstrations Open discussion Class debate Guided practice Shop demonstration Supervised shop work Group projects and individual projects Cooperative learning groups Homework</p>	<p><b>Performance Assessments:</b></p> <p>Shop Observation Oral Questioning Quizzes Written Test</p>

# Wallenpaupack Area School District

**Course:** Exploring Building Construction  
and Power Mechanics

**Unit:** Wiring

**Grade Level:** Grade 9

**PA Standards:** 13.1  
13.2  
13.3  
13.4

<b>Topics:</b> Residential Wiring 120V Tools	<b>Skills:</b> Identify basic safety procedures Identify tools used Understand proper application of tools Identify various problems, diagnosis and service tips and procedures
<b>Activities:</b> Lecture View Smart board presentation Board demonstrations Open discussion Class debate Guided practice Shop demonstration Supervised shop work Group projects and individual projects Cooperative learning groups Homework	<b>Performance Assessments:</b> Shop Observation Oral Questioning Quizzes Written Test

# *Wallenpaupack Area School District*

**Course:** Exploring Building Construction  
and Power Mechanics

**Grade Level:** Grade 9

**Unit:** Wiring

**PA Standards:** 13.1  
13.2  
13.3  
13.4

<b>Topics:</b>	<b>Skills:</b>
Wire a receptacle	Understanding Simple circuits Identifying Service entrance Recognize the basics of distribution panels Identifying colors, grounds and terminals Understand how to install Romex Demonstrate the proper method for attaching conductors to devices and fixtures
<b>Activities:</b>	<b>Performance Assessments:</b>
Lecture View Smart board presentation Board demonstrations Open discussion Class debate Guided practice Shop demonstration Supervised shop work Group projects and individual projects Cooperative learning groups Homework	Shop Observation Oral Questioning Quizzes Written Test

# Wallenpaupack Area School District

**Course:** Exploring Building Construction  
and Power Mechanics

**Grade Level:** Grade 9

**Unit:** Wiring

**PA Standards:** 13.1  
13.2  
13.3  
13.4

<b>Topics:</b>	<b>Skills:</b>
Wire a Switch to Light Wire a Light to Switch	Understand the basic wiring principles needed to run a simple circuit Understand Wiring terminology Identify basic rules for wiring
<b>Activities:</b>	<b>Performance Assessments:</b>
Lecture View Smart board presentation Board demonstrations Open discussion Class debate Guided practice Shop demonstration Supervised shop work Group projects and individual projects Cooperative learning groups Homework	Shop Observation Oral Questioning Quizzes Written Test

# Wallenpaupack Area School District

**Course:** Exploring Building Construction  
and Power Mechanics

**Grade Level:** Grade 9

**Unit:** Wiring

**PA Standards:** 13.1  
13.2  
13.3  
13.4

<b>Topics:</b> Wire a Switch to Light to a Constantly hot Receptacle	<b>Skills:</b> Understand the basic wiring principles needed to run a simple circuit Understand Wiring terminology Identify basic rules for wiring
<b>Activities:</b> Lecture View Smart board presentation Board demonstrations Open discussion Class debate Guided practice Shop demonstration Supervised shop work Group projects and individual projects Cooperative learning groups Homework	<b>Performance Assessments:</b> Shop Observation Oral Questioning Quizzes Written Test

# *Wallenpaupack Area School District*

**Course:** Exploring Building Construction  
and Power Mechanics

**Grade Level:** Grade 9

**Unit:** Carpentry

**PA Standards:** 13.1  
13.2  
13.3  
13.4

<b>Topics:</b>	<b>Skills:</b>
Hand tools	Understanding proper hand tool safety Identifying and using hand tools <ul style="list-style-type: none"> <li>• Measuring and layout tools</li> <li>• Saws</li> <li>• Planing, Smoothing, Shaping</li> <li>• Drilling, Boring</li> <li>• Fastening</li> <li>• Prying</li> <li>• Clamping</li> <li>• Storage</li> </ul>
<b>Activities:</b>	<b>Performance Assessments:</b>
Lecture View Smart board presentation Board demonstrations Open discussion Class debate Guided practice Shop demonstration Supervised shop work Group projects and individual projects Cooperative learning groups Homework	Shop Observation Oral Questioning Quizzes Written Test

# *Wallenpaupack Area School District*

**Course:** Exploring Building Construction  
and Power Mechanics

**Grade Level:** Grade 9

**Unit:** Carpentry

**PA Standards:** 13.1  
13.2  
13.3  
13.4

<p><b>Topics:</b></p> <p>Multiple wood joint project</p> <ul style="list-style-type: none"> <li>• Lap joint</li> <li>• Miter joint</li> <li>• Dado</li> <li>• Cut Radii</li> <li>• Drill to specifications</li> </ul>	<p><b>Skills:</b></p> <p>Cognitive and manipulative development to follow blueprints Listen to Lecture Participation Differentiate sequences Determine lengths Perform independence practice Lay out geometric shapes for cutting Take notes</p>
<p><b>Activities:</b></p> <p>Lecture View Smart board presentation Board demonstrations Open discussion Class debate Guided practice Shop demonstration Supervised shop work Group projects and individual projects Cooperative learning groups Homework</p>	<p><b>Performance Assessments:</b></p> <p>Shop Observation Oral Questioning Quizzes Written Test</p>

# *Wallenpaupack Area School District*

**Course:** Exploring Building Construction  
and Power Mechanics

**Grade Level:** Grade 9

**Unit:** Carpentry

**PA Standards:** 13.1  
13.2  
13.3  
13.4

<p><b>Topics:</b></p> <p>Workbench</p> <ul style="list-style-type: none"> <li>• Design</li> <li>• Layout</li> <li>• Cut multiple angles</li> <li>• Let-in legs</li> <li>• Assemble with fasteners</li> </ul>	<p><b>Skills:</b></p> <p>Cognitive and manipulative development to follow blueprints Listen to Lecture Participation Differentiate sequences Determine lengths Perform independence practice Lay out geometric shapes for cutting Take notes</p>
<p><b>Activities:</b></p> <p>Lecture View Smart board presentation Board demonstrations Open discussion Class debate Guided practice Shop demonstration Supervised shop work Group projects and individual projects Cooperative learning groups Homework</p>	<p><b>Performance Assessments:</b></p> <p>Shop Observation Oral Questioning Quizzes Written Test</p>

# *Wallenpaupack Area School District*

**Course:** Exploring Building Construction  
and Power Mechanics

**Grade Level:** Grade 9

**Unit:** Carpentry

**PA Standards:** 13.1  
13.2  
13.3  
13.4

<p><b>Topics:</b></p> <p>Scaled-down structure</p> <ul style="list-style-type: none"> <li>• Floors</li> <li>• Walls</li> <li>• Roof system</li> </ul>	<p><b>Skills:</b></p> <p>Cognitive and manipulative development to follow blueprints Listen to Lecture Participation Differentiate sequences Determine lengths Perform independence practice Lay out geometric shapes for cutting Take notes</p>
<p><b>Activities:</b></p> <p>Lecture View Smart board presentation Board demonstrations Open discussion Class debate Guided practice Shop demonstration Supervised shop work Group projects and individual projects Cooperative learning groups Homework</p>	<p><b>Performance Assessments:</b></p> <p>Shop Observation Oral Questioning Quizzes Written Test</p>

# Wallenpaupack Area School District

**Course:** Exploring Building Construction  
and Power Mechanics

**Grade Level:** Grade 9

**Unit:** Automotive

**PA Standards:** 13.1  
13.2  
13.3  
13.4

<p><b>Topics:</b></p> <p>Basic car care</p> <ul style="list-style-type: none"> <li>• Fluids</li> <li>• Tires</li> <li>• Electrical</li> <li>• Belts and hoses</li> </ul>	<p><b>Skills:</b></p> <p>Understand the basic safety of the shop</p> <p>Understand and identify the purpose of the fluids under the hood</p> <p>Understand the workings of the automobiles belts</p> <p>Understand and identify the basics of lights and fuses</p> <p>Understand the basics of tires, tire rotation and spare tires.</p> <p>Define the basic design of the automobile, including the body, frame, engine, drive train, running gear, and suspension</p> <p>Identify the importance and influence of the automobile within our society and environment</p> <p>Categorize the many careers with the industry</p>
<p><b>Activities:</b></p> <p>Lecture</p> <p>View Smart board presentation</p> <p>Board demonstrations</p> <p>Open discussion</p> <p>Class debate</p> <p>Guided practice</p> <p>Shop demonstration</p> <p>Supervised shop work</p> <p>Group projects and individual projects</p> <p>Cooperative learning groups</p> <p>Homework</p>	<p><b>Performance Assessments:</b></p> <p>Shop Observation</p> <p>Oral Questioning</p> <p>Quizzes</p> <p>Written Test</p>

# Wallenpaupack Area School District

**Course:** Exploring Building Construction  
and Power Mechanics

**Grade Level:** Grade 9

**Unit:** Automotive

**PA Standards:** 13.1  
13.2  
13.3  
13.4

<b>Topics:</b>	<b>Skills:</b>
Basic Engine Components	<ul style="list-style-type: none"> <li>Identify the major parts of a motor</li> <li>List parts</li> <li>Recognize the basic understanding of function of parts</li> <li>Identify cylinder block differences</li> <li>Identify the difference between in-line, V, slant, and opposed arrangement</li> <li>Identify the differences between 4, 6, 8, cylinders</li> <li>Identify various problems, diagnosis and services tips and procedures</li> </ul>
<b>Activities:</b>	<b>Performance Assessments:</b>
<ul style="list-style-type: none"> <li>Lecture</li> <li>View Smart board presentation</li> <li>Board demonstrations</li> <li>Open discussion</li> <li>Class debate</li> <li>Guided practice</li> <li>Shop demonstration</li> <li>Supervised shop work</li> <li>Group projects and individual projects</li> <li>Cooperative learning groups</li> <li>Homework</li> </ul>	<ul style="list-style-type: none"> <li>Shop Observation</li> <li>Oral Questioning</li> <li>Quizzes</li> <li>Written Test</li> </ul>

# Wallenpaupack Area School District

**Course:** Exploring Building Construction  
and Power Mechanics

**Grade Level:** Grade 9

**Unit:** Small Engine

**PA Standards:** 13.1  
13.2  
13.3  
13.4

<p><b>Topics:</b></p> <p>Lawn Mower</p> <ul style="list-style-type: none"> <li>• Assemble and disassemble of deck/motor assembly</li> <li>• Diagnosis any problems to be fixed in future units</li> </ul>	<p><b>Skills:</b></p> <p>Understand cognitive and manipulative development needed to assemble a mower Use and identify proper tools</p>
<p><b>Activities:</b></p> <p>Lecture View Smart board presentation Board demonstrations Open discussion Class debate Guided practice Shop demonstration Supervised shop work Group projects and individual projects Cooperative learning groups Homework</p>	<p><b>Performance Assessments:</b></p> <p>Shop Observation Oral Questioning Quizzes Written Test</p>

# Wallenpaupack Area School District

**Course:** Exploring Building Construction  
and Power Mechanics

**Grade Level:** Grade 9

**Unit:** Small Engine

**PA Standards:** 13.1  
13.2  
13.3  
13.4

<b>Topics:</b>	<b>Skills:</b>
Disassembly and identification of the lubrication system Reassembly	Understand cognitive and manipulative development needed to disassemble a mower Use and identify proper tools Identify how to diagnose and repair any problems
<b>Activities:</b>	<b>Performance Assessments:</b>
Lecture View Smart board presentation Board demonstrations Open discussion Class debate Guided practice Shop demonstration Supervised shop work Group projects and individual projects Cooperative learning groups Homework	Shop Observation Oral Questioning Quizzes Written Test

# Wallenpaupack Area School District

**Course:** Exploring Building Construction  
and Power Mechanics

**Grade Level:** Grade 9

**Unit:** Small Engine

**PA Standards:** 13.1  
13.2  
13.3  
13.4

<b>Topics:</b>	<b>Skills:</b>
Disassembly and identification of the governor system Reassembly	Understand cognitive and manipulative development needed to disassemble a mower Use and identify proper tools Identify how to diagnose and repair any problems
<b>Activities:</b>	<b>Performance Assessments:</b>
Lecture View Smart board presentation Board demonstrations Open discussion Class debate Guided practice Shop demonstration Supervised shop work Group projects and individual projects Cooperative learning groups Homework	Shop Observation Oral Questioning Quizzes Written Test

# Wallenpaupack Area School District

**Course:** Exploring Building Construction  
and Power Mechanics

**Grade Level:** Grade 9

**Unit:** Small Engine

**PA Standards:** 13.1  
13.2  
13.3  
13.4

<b>Topics:</b>	<b>Skills:</b>
Disassembly and identification of the ignition system Reassembly	Understand cognitive and manipulative development needed to disassemble a mower Use and identify proper tools Identify how to diagnose and repair any problems
<b>Activities:</b>	<b>Performance Assessments:</b>
Lecture View Smart board presentation Board demonstrations Open discussion Class debate Guided practice Shop demonstration Supervised shop work Group projects and individual projects Cooperative learning groups Homework	Shop Observation Oral Questioning Quizzes Written Test

# *Wallenpaupack Area School District*

**Course:** Exploring Building Construction  
and Power Mechanics

**Grade Level:** Grade 9

**Unit:** Small Engine

**PA Standards:** 13.1  
13.2  
13.3  
13.4

<b>Topics:</b>	<b>Skills:</b>
<p>Disassembly and identification of the fuel Reassembly</p>	<p>Understand cognitive and manipulative development needed to disassemble a mower Use and identify proper tools Identify how to diagnose and repair any problems</p>
<b>Activities:</b>	<b>Performance Assessments:</b>
<p>Lecture View Smart board presentation Board demonstrations Open discussion Class debate Guided practice Shop demonstration Supervised shop work Group projects and individual projects Cooperative learning groups Homework</p>	<p>Shop Observation Oral Questioning Quizzes Written Test</p>

# Wallenpaupack Area School District

**Course:** Exploring Building Construction  
and Power Mechanics

**Grade Level:** Grade 9

**Unit:** Small Engine

**PA Standards:** 13.1  
13.2  
13.3  
13.4

<b>Topics:</b>	<b>Skills:</b>
<ul style="list-style-type: none"> <li>Disassembly and identification of the valve components</li> <li>Timing</li> <li>Reassembly</li> </ul>	<ul style="list-style-type: none"> <li>Understand cognitive and manipulative development needed to disassemble a mower</li> <li>Use and identify proper tools</li> <li>Identify how to diagnose and repair any problems</li> </ul>
<b>Activities:</b>	<b>Performance Assessments:</b>
<ul style="list-style-type: none"> <li>Lecture</li> <li>View Smart board presentation</li> <li>Board demonstrations</li> <li>Open discussion</li> <li>Class debate</li> <li>Guided practice</li> <li>Shop demonstration</li> <li>Supervised shop work</li> <li>Group projects and individual projects</li> <li>Cooperative learning groups</li> <li>Homework</li> </ul>	<ul style="list-style-type: none"> <li>Shop Observation</li> <li>Oral Questioning</li> <li>Quizzes</li> <li>Written Test</li> </ul>

# Wallenpaupack Area School District

**Course:** Exploring Building Construction  
and Power Mechanics

**Grade Level:** Grade 9

**Unit:** Small Engine

**PA Standards:** 13.1  
13.2  
13.3  
13.4

<b>Topics:</b>	<b>Skills:</b>
Disassembly and identification of the compression system Reassembly	Understand cognitive and manipulative development needed to disassemble a mower Use and identify proper tools Identify how to diagnose and repair any problems
<b>Activities:</b>	<b>Performance Assessments:</b>
Lecture View Smart board presentation Board demonstrations Open discussion Class debate Guided practice Shop demonstration Supervised shop work Group projects and individual projects Cooperative learning groups Homework	Shop Observation Oral Questioning Quizzes Written Test

# Wallenpaupack Area School District

**Course:** Exploring Building Construction  
and Power Mechanics

**Grade Level:** Grade 9

**Unit:** Final

**PA Standards:** 13.1  
13.2  
13.3  
13.4

<b>Topics:</b>	<b>Skills:</b>
Wrap-up written test	Writing Discussion
<b>Activities:</b>	<b>Performance Assessments:</b>
A question and answer period to answer any concerns the students may have about the course or Vocational Education in general	Written Test