

Wallenpaupack Area School District

COURSE: Building Construction 2

GRADE LEVEL: 11

LENGTH OF COURSE: Wiring 120 days; Plumbing 60 days

TEXT: Modern Residential Wiring

PUBLISHER: Goodheart-Willcox Company, Inc.

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COURSE DESCRIPTION:

Residential Wiring

Repairs, maintains, and installs electrical systems and equipment, such as switches, receptacles, and transformers. Locates and determines electrical malfunctions, using test instruments, such as volt meter, continuity tester, and test lamp. Repairs malfunction by such methods as replacing burnt-out elements, fuses, switches, receptacles, or replacing defective wiring using hand tools. Test electrical equipment, such as heaters, for safety and efficiency, using standard test equipment. Installs fixtures and other electrical equipment and makes adjustments. Inspects circuits and wiring for specified shielding and grounding and repairs systems according to building codes and safety regulations. May plan layout and wire new installations. May be required to hold license.

Plumbing

Carpenters need to know how to use and maintain hand and power tools. They need to know the kinds, grades, and characteristics of the materials with which they work-how each can be cut, shaped, and most satisfactorily joined. Carpenters must be familiar with the many different fasteners available and choose the best for each task. Carpenters must know how to lay-out and frame floors, walls, stairs, and roofs. They must know how to install windows and doors, and how to apply numerous kinds of interior and exterior finish. They must use good judgment to decide on proper procedures to do the job at hand in the most efficient and safest manner.

CURRICULUM WRITING TEAM:

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DATE OF REVISION:

2007

**Building Construction Occupations
Overall Philosophy of Vocational Education**

The vocational educational program is directed to certain primary goals. These are the gainful employment of a student and the ability to perform a certain skilled craft at the entry level of the craft. The vocational education program deals primarily with the preparation of a student for a specifically skilled trade(s) in the world of work for one or more of four distinct and precise occupations.

The vocational industrial education program is not exclusively a day school program. It includes the training and retraining of workers in displaced or changing jobs or can be used for the sake of broadening one saleable skills.

The vocational education school program also includes general subject matter that relates to the trade: such as, reading, writing, math and technical language for the trade.

The vocational student will be able to solve problems common to the industrial vocation. They will have developed required skills and knowledge in an industrial vocation so that after graduation they will be prepared for entry into the trade for which they have been trained.

**Building Construction Occupations
Statement of Course Philosophy for Secondary Education**

The course in Building Construction Occupations will serve the needs of students who plan on entering the construction industry as apprentices or learners and those who can become better citizens in the community with the benefit of knowledge in the Building Trades. This course will offer an opportunity for students to develop skills, knowledge and attitudes most desirable for entering the construction industry.

Special emphasis will be placed on the development of good attitudes in employer-employee as well as fellow worker relationships, safety and a feeling for the dignity of work.

Through course arrangement and scheduling, students will be afforded an opportunity to progress at the rate at which they are most capable.

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Grade Level: Grade 11

Unit: Residential Wiring

PA Standards: 13.1
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Topics:	Skills:
<p>Wiring: 120V</p> <ul style="list-style-type: none"> • Tools and materials <ul style="list-style-type: none"> ○ Hand and power ○ 2wire ○ 3wire ○ outlet boxes • Receptacles <ul style="list-style-type: none"> ○ Constantly hot ○ Split • Switches <ul style="list-style-type: none"> ○ Single pole ○ Dimmer ○ Three way ○ Four way • Luminaries <ul style="list-style-type: none"> ○ Porcelain ○ Incandescent ○ Fluorescent ○ Fan/light combinations • Door chimes <ul style="list-style-type: none"> ○ Bell ○ Buzzer • Special 120V outlets • 35 120V wiring Schematics 	<p>Students will perform all of the assigned tasks in the classroom and demonstrate an acceptable skill level in the shop area</p>
Activities:	Performance Assessments:
<p>Lecture Demonstrations Perform specified competencies in Electric Shop</p>	<p>Class Participation Class Attendance Shop Assessment <ul style="list-style-type: none"> • Objective • Subjective Written Tests Skill Demonstration Tests</p>

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Topics:	Skills:
Residential Wiring 240V <ul style="list-style-type: none">• Range receptacle 50 amp• Dryer receptacle 30 amp• Electrical/water heater 30 amp• Electrical/water heater timer• Baseboard heat 20 amp<ul style="list-style-type: none">○ In-line thermostat○ Wall unit thermostat	Students will perform all of the assigned tasks in the classroom and demonstrate an acceptable skill level in the shop area
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Topics:	Skills:
Distribution Panel <ul style="list-style-type: none">• Breakers• Grounding<ul style="list-style-type: none">○ Ground rods• Meter box• Entrance cable<ul style="list-style-type: none">○ Overhead entrance○ Underground entrance• Service connectors• Inspection	Students will perform all of the assigned tasks in the classroom and demonstrate an acceptable skill level in the shop area
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Topics:	Skills:
<p>Rough and Finish Wiring</p> <ul style="list-style-type: none"> • Branch Circuits <ul style="list-style-type: none"> ○ General split ○ Individual • Layout <ul style="list-style-type: none"> ○ Symbols ○ Specifications ○ Working drawings • Mounting boxes <ul style="list-style-type: none"> ○ Plastic ○ Metal ○ Box depth gauge • Drill holes <ul style="list-style-type: none"> ○ Auger ○ Speed bore • Pull cable • Anchor cable • Rough connections <ul style="list-style-type: none"> ○ Ground wire ○ Twist caps • Finish wire <ul style="list-style-type: none"> ○ Install fixtures ○ Cover plates 	<p>Students will perform all of the assigned tasks in the classroom and demonstrate an acceptable skill level in the shop area</p>
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Topics:	Skills:
<p>Conduit</p> <ul style="list-style-type: none"> • Cutting thin-wall and rigid • Threading rigid <ul style="list-style-type: none"> ○ Hand threading ○ Machine threading • Bending <ul style="list-style-type: none"> ○ Offset ○ Exact 90 degree stub ○ Kick • Installing connectors <ul style="list-style-type: none"> ○ Compression ○ Set screw • Running materials <ul style="list-style-type: none"> ○ Crawl space ○ Basement ○ Garage 	<p>Students will perform all of the assigned tasks in the classroom and demonstrate an acceptable skill level in the shop area</p>
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Topics:	Skills:
<p>½" and ¾" Steel pipe</p> <ul style="list-style-type: none"> • Cutting with pipe cutter <ul style="list-style-type: none"> ○ Manual ○ Machine • Reaming with pipe reamer • Threading with pipe dies <ul style="list-style-type: none"> ○ Manual ○ Machine • Make up fitting sequence • Seal threads with pipe dope/ Teflon tape • Test pipe under pressure 	<p>Students will perform all of the assigned tasks in the classroom and demonstrate an acceptable skill level in the shop area</p>
Activities:	Performance Assessments:
<p>Lecture Demonstrations Perform specified competencies in Plumbing Shop</p>	<p>Class Participation Class Attendance Shop Assessment <ul style="list-style-type: none"> • Objective • Subjective Written Tests Skill Demonstration Tests</p>

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Topics:	Skills:
<p>Waste Disposal System</p> <ul style="list-style-type: none"> • Waste and soil pipes • Waste and soil vents • Plastic waste pipe <ul style="list-style-type: none"> ○ DWC ○ PVC • Proper measurement sequence • Proper layout • Cutting and reaming <ul style="list-style-type: none"> ○ Hacksaw ○ Crosscut saw ○ Power tool • Dry-fit • Assemble with solvent • Test drainage system 	<p>Students will perform all of the assigned tasks in the classroom and demonstrate an acceptable skill level in the shop area</p>
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Topics:	Skills:
<p>Fresh Water Distribution</p> <ul style="list-style-type: none"> • Tools and materials <ul style="list-style-type: none"> ○ Hand tools ○ Power tools • Cut and ream copper tubing K,L,M • Copper fittings • Light and use propane torch • Set-up, light and use acetylene torch • Sweat copper pipe and fittings • Bend flexible copper tubing • Layout • Disassembly and reassembly of valves <ul style="list-style-type: none"> ○ Gate ○ Globe ○ Stop and waste ○ Check • Install and tighten union • Disassemble and reassemble a common compression faucet • Install Aqua Pex • Install Pex 	<p>Students will perform all of the assigned tasks in the classroom and demonstrate an acceptable skill level in the shop area</p>
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Topics:	Skills:
<p>Install China Fixtures</p> <ul style="list-style-type: none"> • Install Bracket and hang lavatory • Connect lavatory trap • Install lavatory fixtures • Connect lavatory supplies • Install counter top sink • Install sink basket strainers • Install continuous waste • Clear a clogged drain with sewer ram • Install sink faucet with spray • Disassemble and reassemble a ball faucet • Disassemble and reassemble a single lever faucet 	<p>Students will perform all of the assigned tasks in the classroom and demonstrate an acceptable skill level in the shop area</p>
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Topics:	Skills:
Install Water Closet <ul style="list-style-type: none"> • Bowl • Tank • Supply • Disassemble and reassemble a tank flash valve • Install a full flow valve 	Students will perform all of the assigned tasks in the classroom and demonstrate an acceptable skill level in the shop area
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Topics:	Skills:
Electric Water Heater <ul style="list-style-type: none">• Test tank elements using a volt meter• Replace heating element• Replace thermostat• Disassemble tank and re-build using wiring schematic	Students will perform all of the assigned tasks in the classroom and demonstrate an acceptable skill level in the shop area
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Topics:	Skills:
Bath Tub <ul style="list-style-type: none">• Rough in bath and shower• Install standard 5 foot tub unit• Install overflow and drain assembly• Install faucet and shower fixture	Students will perform all of the assigned tasks in the classroom and demonstrate an acceptable skill level in the shop area
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