MONROE TOWNSHIP PUBLIC SCHOOLS
WILLIAMSTOWN, NEW JERSEY

Williamstown High School

Home Improvement

September 2014

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Monroe Township Public Schools
Williamstown, New Jersey

Philosophy of Education

The administration, faculty, and staff of Monroe Township Public Schools, in cooperation with parent and the community, and with active participation of the students, are committed to viewing each other as individuals, respecting each person's uniqueness, and setting high expectations for all students. The school system will assist each student to become a contributing member of our society by providing a learning environment that is responsive to the needs of the individual student, community, and changing society by providing a learning environment that nurtures values and morals. This environment will be conducive to acquisition of knowledge, as well as to the development of problem solving, critical thinking, and organizational skills. We will provide a learning environment that is responsive to the needs of the individual student, community, and changing society. We will aid our students in developing responsible behavior, a positive attitude toward themselves and others, the necessary life skills to become productive citizens and lifetime learners. We accept the challenge and responsibility of accomplishing these goals.

Revised: August, 1996

Williamstown High School
Williamstown, New Jersey

Mission Statement

Williamstown High School provides an atmosphere where our students become responsible, productive citizens, and life-long learners.

BELIEFS

Students are responsible for their education and are accountable for their actions and decisions.

Students and staff respect all people regardless of race, color, creed, religion, gender, and sexual orientation.

Students, regardless of learning styles and abilities, need to be challenged and inspired in order to achieve their full potential.

Students and staff are provided a safe and supportive environment in which they can pursue their educational goals.

High expectations are communicated to the students from all members of the school's community.

Effective education is a student, staff, and community partnership, which prepares students for the future in a technologically changing society.

High school personnel serve as catalysts for academic and personal success for all students.

Revised: 2004

Williamstown High School
Williamstown, New Jersey

Industrial Technology Education Department

Philosophy

The Industrial Technology is an area of study that helps students become technologically literate. Through classroom lessons and lab activities, students learn about eh technical, social and cultural impacts of technology in our world. Students acquire a new vocabulary that helps them to better express their knowledge of technology. Likewise, their hands-on experiences in technology education teach them how to use tools and equipment while applying safety principles to accomplish technical tasks. Students will use critical thinking, decision making and problem solving skills to create drawings and products. Students will be exposed to various careers and develop workplace readiness skills. The goal of the Industrial Technology Education Department is to also develop self-management skills and self-pride in each student. Students should be convinced of what they will need to know for the next century and be prepared to enter the work force directly with marketable skills or to further their education when they graduate.

Williamstown High School
Williamstown, New Jersey

COURSE PROFICIENCY REQUIREMENTS

Course: Home Improvement
Teacher: Staff
Credits: 2.5
Weighted for Class Rank: No
Pursuant to the High School Graduation Standards Act (NJSA 18A, et. Seq) successful completion of this course will require:

A. Regular attendance as mandated by Board Policy
B. Mastery of the below content/objectives and achievement of the proficiencies required.

PURPOSE

Home Improvement is designed to give students a working knowledge of how to make household repairs through the introduction of hand and power tools and techniques needed for basic home maintenance. The fundamentals of electricity, plumbing, carpentry, masonry and appliance trouble –shooting and repairs will be explored. Students will also review fundamental methods in repairing common household items such as furniture, cabinets, and framing. The understanding of blueprints and its importance in trouble- shooting problems in equipment and solving problems buried within a wall structure will be covered.

PROFICIENCY

1. Understand the fundamentals of electrical current and safely work with electricity..
2. Identify how an open and closed loop system works.
3. Identify government and private organizations that set the standards for a safe working environment. Basic safety applications and rules in both the work environment and the school lab.
4. Be able to diagram a simple switch.
5. Distinguish the difference between direct current and alternating current.
6. Identify and read common measurement systems, methods, and tools used in the home repair industry.
7. Identify parallel and series wiring.
8. Identify the various circuit breakers found in residential wiring.
9. Identify the various electrical boxes and their specific use.
10. Identify the various types of wires and their appropriate application for different circuit breakers.
11. Understand the current codes and procedures for wiring a house from circuit breaker to light switch.
12. Be able to wire a household device that uses a 3 way switch.
13. Demonstrate how to wire a GFCI switch.
14. Calculate the amount of amps on a given breaker and determine the maximum safe amount that can be added.
15. Identify how a closed and open loop plumbing system works.
16. Identify materials used for plumbing a house.
17. Calculate volume and feed rate.
18. Identify the materials needed to solder copper pipes.
19. Explain the procedure in preparing copper pipes for soldering.
20. Demonstrate how to solder copper joints.
21. Describe new technologies being used in connecting waterlines.
22. Demonstrate the safety precautions while working with plumbing tools.
23. Identify PVC piping and the application for joining the materials together.
24. Demonstrate the procedures in installing a sink, faucet, and valves ii a cabinet.
25. Identify the various drainage systems used in homes.
26. Identify how to repair a broken tile.
27. Demonstrate safe use of power tools in cutting materials.
28. Demonstrate two different methods in laying out a given room for tile installation.
29. Demonstrate proper techniques in mixing thin-set and grout.
30. Use proper procedures when installing tile on a floor.
31. Identify the material in concrete, mortar, and thin-set.
32. Describe the appropriate application of each.
33. Demonstrate how to mix and apply mortar to repair bricks and or cinder block.
34. Identify the procedures on how to install engineered stone.
35. Identify the difference between ceramic and stone tile.
36. Demonstrate safe use of hand held and power tools.
37. Identify various types of finishes on current antique furniture.

38. Define how to remove a finish and prepare for a new application of finish.
39. Identify the types of stains being used on furniture including exterior finishes.
40. Identify the different types of hardwood and softwood species.
41. Demonstrate the ability to apply the appropriate finish to a given piece of furniture.
42. Procedures for installing cabinets.
43. Identify the difference between oil base and water based finishes.
44. Identify the advantages and disadvantages of each.
45. Describe the different glues available today and their specific application.

CAREER/OBJECTIVES:

Explore career opportunities in the field of home repair and related areas.

MEASUREMENT OF STUDENT ACHIEVEMENT:

Achievement in Home Repair is measured by tests, quizzes, assignments, homework, and manual performance. The letter grade will be according to Board Policy.

SCOPE AND SEQUENCE

Safety

DEVELOPMENT SKILLS
***=CORE PROFICIENCY**
****=CONTENT STANDARD**

	Home Improvement
Introduction to Safety **	**I**
Accident Prevention **	**I**
Safety Attitudes **	**I**
General Safety Rules **	**I**
Emergency Switches **	**I**
Machine Usage **	**I**
Concentration **	**I**
Clean Work Area **	**I**
Eye Safety **	**I**
Clothing **	**I**
Hearing Protection **	**I**
Respiratory Protection **	**I**
Lifting **	**I**
Obey Rules **	**I**
Courteous & Respect **	**I**
Accident Reporting **	**I**
Right To Know (RTK) **	**I**

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SCOPE AND SEQUENCE

Safety

DEVELOPMENT SKILLS
***=CORE PROFICIENCY**
****=CONTENT STANDARD**

	Home Improvement
Tool & Equipment Safety **	**I**
Receive Proper Instruction **	**I**
Proper Intent & Use **	**I**
Handling & Care **	**I**
Carrying & Storage **	**I**
Electrical Cords **	**I**
Electrical Plugs **	**I**
Unplug for Adjustments **	**I**
Water & Electricity **	**I**

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SCOPE AND SEQUENCE

Safety

DEVELOPMENT SKILLS
***=CORE PROFICIENCY**
****=CONTENT STANDARD**

	Home Improvement
Fire Safety **	**I**
Prevention **	**I**
Storage Equipment **	**I**
Storage of Materials **	**I**
Flammable Materials **	**I**
Location of Fire Extinguishers **	**I**
Types of Fires **	**I**
Fire Alarms **	**I**
If Your Clothing Catches on Fire ***	**I**
First Aid **	**I**
Who to Notify **	**I**
Types of Injuries **	**I**
Types of Actions to be Taken **	**I**

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SCOPE AND SEQUENCE

Layout & Measurement

DEVELOPMENT SKILLS
***=CORE PROFICIENCY**
****=CONTENT STANDARD**

	Home Improvement
Measure in 1/16" scale **	**I**
Bench Rule **	**I**
Tape Measure **	**I**
Layout Centers with Tape **	**I**
Use a 100" Tape **	**I**
Use a Folding Rule **	**I**
Measuring with Squares **	**I**
Using sliding T-Bevel **	**I**
Using the Tri-Square **	**I**
Using the Combination Square **	**I**
Using the Speed Square **	**I**
Using the Carpenter Square **	**I**
Using the For Squaring Operations **	**I**
To Layout A Rafter **	**I**
To Layout a Stair Stringer **	**I**
Using a Marking Gauge **	**I**
Using Dividers **	**I**
Using Inside/Outside Calipers **	**I**

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SCOPE AND SEQUENCE

Layout and Measurement

DEVELOPMENT SKILLS
***=CORE PROFICIENCY**
****=CONTENT STANDARD**

	Home Improvement
Using Levels **	**I**
2' Shop Level/For Level **	**I**
2' Shop Level/For Plumb **	**I**
Using a Line Level **	**I**
Using a Torpedo Level **	**I**
Using a 4' Level **	**I**
Using a 6' Level **	**I**
Using a Level to Slope Drain Pipes **	**I**
Using a Level to Slope Flatwork **	**I**
Marking & Cutting **	**I**
Using tools to Mark **	**I**
Use Tools to Square **	**I**
Making Square Cuts **	**I**
Making Miter Cuts **	**I**
Making Square Corners **	**I**
Making Parallel Sides **	**I**

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SCOPE AND SEQUENCE

Computations

DEVELOPMENT SKILLS
***=CORE PROFICIENCY**
****=CONTENT STANDARD**

	Home Improvement
Add, Subtract, Multiply and Divide Fractions **	**I**
Decimals **	**I**
Calculate Area (Square foot) **	**I**
Calculate Board Footage **	**I**
Volume Computation **	**I**
The Materials List **	**I**
Calculate Materials **	**I**
Solo in Square (100 sq. ft.)	**I**
Siding **	**I**
Roofing **	**I**
Sheet Goods *	**I**
Estimate Quantities of **	**I**
Framing Materials **	**I**
Using 12', 16', 19.2' & 24' on Centers	**I**

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SCOPE AND SEQUENCE

Wood
Nature & Characteristics

DEVELOPMENT SKILLS
***=CORE PROFICIENCY**
****=CONTENT STANDARD**

	Home Improvement
Parts of a Tree **	**I**
Cell Structure **	**I**
Hardwoods/Softwoods **	**I**
Growth Rings **	**I**
Characteristics **	**I**
Properties **	**I**
Cutting Methods **	**I**
Decorative Features **	**I**
Seasoning **	**I**
Shrinking of Lumber **	**I**
Cell Size & Characteristics **	**I**
Lumber Defects **	**I**
Species **	**I**
Wood Grading **	**I**
Ordering Lumber **	**I**

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SCOPE AND SEQUENCE

Plans & Prints

DEVELOPMENT SKILLS
***=CORE PROFICIENCY**
****=CONTENT STANDARD**

	Home Improvement
Blueprint Interpretation **	**I**
6 Views of Orthographic **	**I**
Projection **	**I**
Pictorials **	**I**
Perspective **	**I**
Isometric Drawing **	**I**
Sketching **	**I**
Working Drawing **	**I**
Introduce & Learn Construction Symbols **	**I**
Framing Symbols **	**I**
Using Templates **	**I**
Using Patterns **	**I**

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SCOPE AND SEQUENCE

Safe Use of Hand Tools

DEVELOPMENT SKILLS
***=CORE PROFICIENCY**
****=CONTENT STANDARD**

	Home Improvement
Fastening & Prying Tools **	**I**
Hammers **	**I**
Hatchet **	**I**
Staplers **	**I**
Leather/Wood/Rubber Mallet **	**I**
Pliers **	**I**
Wrenches **	**I**
Ripping Bar **	**I**
Hail Claw **	**I**
Wonder/Flat Bar **	**I**

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SCOPE AND SEQUENCE

Safe Use of Cutting Tools

DEVELOPMENT SKILLS
***=CORE PROFICIENCY**
****=CONTENT STANDARD**

	Home Improvement
Wood Chisels **	**I**
Saws Rip **	**I**
Crosscut **	**I**
Combination **	**I**
Compass **	**I**
Key Hole **	**I**
Back Saw **	**I**
Dove Tail Saw **	**I**
Coping Saw **	**I**
Hack Saw **	**I**

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SCOPE AND SEQUENCE

Boring & Clamping Tools

DEVELOPMENT SKILLS
***=CORE PROFICIENCY**
****=CONTENT STANDARD**

	Home Improvement
Brace & Bit **	**I**
Push Drills **	**I**
Hand Drills **	**I**
Twist Drills **	**I**
Auger Bits **	**I**
Forsner Bits **	**I**
Adj. Expansion Drill **	**I**
Spade Bits **	**I**
Carbide Masonry Bits **	**I**
Combination Drills **	**I**
Bead Point Wood Bit **	**I**
Hole Saws **	**I**
Clamping Tools **	**I**
Wood/Metal Vices **	**I**
C-Clamps **	**I**
Quik-Clamps (TM) **	**I**
Hand Screw **	**I**

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SCOPE AND SEQUENCE

Clamping Tools

DEVELOPMENT SKILLS
***=CORE PROFICIENCY**
****=CONTENT STANDARD**

	Home Improvement
Vice Grip Clamps **	**I**
Bar Clamps **	**I**
Strap Clamps **	**I**
Spring Type Clamps **	**I**
Corner Clamps **	**I**
Use of Smoothing Tools	**I**
Plans **	**I**
Scrapers **	**I**
Rasps **	**I**
Modern Serrated Forming tools **	**I**

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SCOPE AND SEQUENCE

Portable Powers Tools

DEVELOPMENT SKILLS
***=CORE PROFICIENCY**
****=CONTENT STANDARD**

	Home Improvement
Portable Circular Saw **	**I**
Types of **	**I**
Sizes of **	**I**
Types of Cuts **	**I**
Types of Materials **	**I**
Types of Blades **	**I**
Changing the Blades **	**I**
Safe Use of **	**I**
Reciprocating Saw **	**I**
Types of **	**I**
Sizes of **	**I**
Types of Cuts **	**I**
Types of Materials **	**I**
Types of Blades **	**I**
Changing blades **	**I**
Safe Use of **	**I**

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SCOPE AND SEQUENCE

Portable Power Tools

DEVELOPMENT SKILLS
***=CORE PROFICIENCY**
****=CONTENT STANDARD**

Home Improvement

Saber Saw **	**I**
Types of **	**I**
Sizes of **	**I**
Types of Cuts **	**I**
Types of Materials **	**I**
Types of Blades **	**I**
Safe Use of **	**I**
Router **	**I**
Types of **	**I**
Sizes of **	**I**
Types of Cuts **	**I**
Types of Materials **	**I**
Types and Nomenclature of cutters **	**I**
Set-up & Use	**I**

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SCOPE AND SEQUENCE

Portable Power Tools

DEVELOPMENT SKILLS
***=CORE PROFICIENCY**
****=CONTENT STANDARD**

	Home Improvement
Biscuit Joiner **	**I**
Types of **	**I**
Sizes of **	**I**
Types of Joints **	**I**
The Biscuit Types/Sizes **	**I**
Safe Use of **	**I**
Drills (Pistol) **	
Types of **	**I**
Sizes of **	**I**
All About Chucks **	**I**
Uses (Boring Operations) **	**I**
Uses (Other than Boring) **	**I**
Safe Use of **	**I**

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SCOPE AND SEQUENCE

Portable Power Tools

DEVELOPMENT SKILLS
***=CORE PROFICIENCY**
****=CONTENT STANDARD**

	Home Improvement
Screw Shooters **	
Types of (Include AC/DC) **	**I**
Sizes of **	**I**
Uses **	**I**
Materials (Fasteners) **	**I**
Safe Use of **	**I**
Palm Sanders **	
Types of Sizes **	**I**
Changing Abrasives **	**I**
Safe Use of **	**I**
Belt Sanders **	
Types & Sizes **	**I**
Changing Abrasives **	**I**
Safe Use of **	**I**

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SCOPE AND SEQUENCE

Stationary Power Tools
Power Plane

DEVELOPMENT SKILLS
***=CORE PROFICIENCY**
****=CONTENT STANDARD**

	Home Improvement
Types of Materials **	**I**
Safe Use of **	**I**
Installation of Cutters **	**I**
Jointer **	
Types of **	**I**
Sizes of **	**I**
Types of Materials **	**I**
Insulation of Cutters **	**I**
Safe Use of **	**I**
Shaper **	
Types of **	**I**
Sizes of **	**I**
Types of Materials **	**I**
Types of Cutters **	**I**
Changing Cutters **	**I**
Safe Use of **	**I**

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SCOPE AND SEQUENCE

Stationary Power Tools
Bandsaw

DEVELOPMENT SKILLS
***=CORE PROFICIENCY**
****=CONTENT STANDARD**

	Home Improvement
Safe Use of **	
Miter Box Saw **	**I**
Types of **	**I**
Sizes of **	**I**
Types of Cuts **	**I**
Types of Materials **	**I**
Types of Blades **	**I**
Safe Use of **	**I**
Frame & Trim Saw (Saw Buck) **	**I**
Types of **	
Types of Cuts **	**I**

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SCOPE AND SEQUENCE

The Use of Stationary Power Tools

DEVELOPMENT SKILLS
***=CORE PROFICIENCY**
****=CONTENT STANDARD**

	Home Improvement
Sizes of **	**I**
Types of Cuts **	**I**
Accessories Other Than Sawing **	**I**
Ripping (Ploughing) **	**I**
Safe Use of **	**I**
Table Saw **	
Types of **	**I**
Sizes of **	**I**
Types of Cuts **	**I**
Types of Material Cut **	**I**
Safe Use of **	**I**
Band Saw **	
Types of **	**I**
Sizes of **	**I**
Types of Cuts **	**I**
Types of Materials **	**I**

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SCOPE AND SEQUENCE

Stationary Power Tools

DEVELOPMENT SKILLS
***=CORE PROFICIENCY**
****=CONTENT STANDARD**

	Home Improvement
Wood Lath **	**I**
Types of **	**I**
Sizes of **	**I**
Types of Turnings **	**I**
Types of Materials **	**I**
Duplicating **	**I**
Safe Use of **	**I**
Disc Sander **	**I**
Types of **	**I**
Sizes of **	**I**
Changing the Disc **	**I**
Safe Use of **	**I**
Belt Sander **	
Types of **	**I**
Sizes of **	**I**
Changing the Belt **	**I**
Safe Use of **	**I**

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SCOPE AND SEQUENCE

Stationary Power Tools

DEVELOPMENT SKILLS
***=CORE PROFICIENCY**
****=CONTENT STANDARD**

	Home Improvement
Oscillating Drum Sander **	**I**
Types of **	**I**
Sizes of **	**I**
Types of Sanding Sleeves **	**I**
Changing Sleeves **	**I**
Safe Use of **	**I**
Types & Sizes of **	**I**
Parts of (Nomenclature) **	**I**
Types of Cuts **	**I**
Types of Materials **	**I**
Making Identical Parts **	**I**
Safe Use of **	**I**
Bench/Pedestal Grinder **	**I**
Types & Sizes of **	**I**
Parts of (Nomenclature) **	**I**
Types of Wheels **	**I**
Safe Use of **	**I**

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SCOPE AND SEQUENCE

Maintenance & Machine Set-Up

DEVELOPMENT SKILLS
***=CORE PROFICIENCY**
****=CONTENT STANDARD**

	Home Improvement
Making Machine Set-Ups **	
Using Fixtures **	**I**
Making Fixtures **	**I**
Using Templates **	**I**
Making Templates **	**I**
Performance/Equipment Maintenance **	**I**
Abrasive Removal/Installation **	**I**
Cleaning **	**I**

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SCOPE AND SEQUENCE

Project Construction

DEVELOPMENT SKILLS
***=CORE PROFICIENCY**
****=CONTENT STANDARD**

	Home Improvement
Building of Projects **	**I**
Selection & Handling Wood **	**I**
Design **	**I**
Work with Plans **	**I**
Following Instructions/Directions **	**I**
Shaping Components parts **	**I**
Using Set-Ups/Fixtures **	**I**
Interchangeable Parts **	**I**
Use Sequential Assembly **	**I**
Individual Projects **	**I**
Team Projects **	**I**
Group Projects **	**I**

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SCOPE AND SEQUENCE

Construction Materials

DEVELOPMENT SKILLS
***=CORE PROFICIENCY**
****=CONTENT STANDARD**

	Home Improvement
Introduce Concrete **	**I**
Ingredients of Concrete **	**I**
Characteristics of Concrete **	**I**
Uses & Applications **	**I**
How to Apply & Finish **	**I**
Wood **	**I**
Types of **	**I**
Composites for Products **	**I**
Composites for Structures **	**I**
Dimension Lumber **	**I**
Fiberboard **	**I**
Hardboard **	**I**
Laminates **	**I**
Laminates Beams & Joist **	**I**
Paneling **	**I**
OSI Board **	**I**
Uses of Metal in Construction **	**I**

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SCOPE AND SEQUENCE

Construction Materials

DEVELOPMENT SKILLS
***=CORE PROFICIENCY**
****=CONTENT STANDARD**

	Home Improvement
Adhesives **	**I**
Kinds of Adhesives **	**I**
Selecting Adhesives **	**I**
Gluing Procedures **	**I**
Clamping Devices **	**I**
Gluing Problems **	**I**
Fasteners (Nails) **	**I**
Sizing System **	**I**
Types of **	**I**
Uses & Installation **	**I**
Fasteners (Screws)	**I**
Sizing System **	**I**
Types of **	**I**
Uses & Installation **	**I**
Fastener (Other) **	**I**
Nuts & Bolts/Size, Type **	**I**
Framing Anchors/Size, Type **	**I**
Specialty **	**I**

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SCOPE AND SEQUENCE

Career Planning

DEVELOPMENT SKILLS
***=CORE PROFICIENCY**
****=CONTENT STANDARD**

	Home Improvement
Develop Workplace Readiness **	**I**
Employability/Work Habits **	**I**
Personal Skills & Attitudes **	**I**
Identify Personal Interest **	**I**
Develop Career Plans **	**I**
Identify Transferable Skills **	**I**
Selection of Appropriate Courses **	**I**
Describe Occupational Skills **	**I**
Demonstrate Occupational Skills **	**I**
Identify Job Openings **	**I**
Prepare A Resume **	**I**
Develop Interview Skills **	**I**

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Suggested Assessment

1. Teacher Observations
2. Class Discussion
3. Class Assignments
4. Question and Answer
5. Objective Test
6. Subjective Test
7. Skills Test
8. Written Test
9. Drawings
10. Student Participation
11. Projects
12. Teacher Review
13. Timing/Drills
14. Class Survey
15. Personal Assessment
16. Essays
17. Open Ended Questions
18. Other_____

Monroe Township Public Schools
Curriculum Guide Overview

Essential Questions

Course Name: **Home Improvement**	
New Jersey CCCS	Corresponding Essential Question(s)
9.4	What are the fundamental principles of electrical wiring in a residential house and what are the current safety codes?
9.4	How does basic plumbing work in a residential house and what are the procedures in repairing plumbing problems?
9.4	How to properly build and repair various types of stone and masonry decorations?
9.4	How to repair a broken piece of furniture-old and new?
9.4	How is a house designed and built from the ground up?

MONROE TOWNSHIP PUBLIC SCHOOLS INSTRUCTIONAL PLAN

Focus Topic #1 Student will demonstrate knowledge of: Electricity two way and three way lighting circuits, repair lamps, replace electrical cords, and will be introduced to electrical building code requirements. Identify the appropriate locations for and installing GFCI outlets as well as replacing circuit breakers in modern houses.
Standard: 9.4 Career and Technical Education All students who complete a career and technical education program will acquire academic and technical skills for careers in emerging and established professions that lead to technical skill proficiency, credentials, certificates, licenses, and/or degrees.
Essential Question: What are the fundamental principles of electrical wiring in a residential house and what are the current safety codes?

Content Standard CPI	**Established Goals Content Objectives Measurable Skills** The Student will:	**Suggested Instructional Strategies/Activities** 1. Problem Based Learning 2. Teacher Directed 3. Study Groups 4. Technology 5. Demonstration 6. Cooperative Groups 7. Literature Circles 8. Participation & Discussion 9. Reading 10. Application 11. Lab (report) 12. Homework 13. Field Trip 14. Projects 15. Other (explain)	**Measurable Performance Assessments & Evidences** 1. Multiple Choice 2. Essay 3. Fill-In-Blanks 4. Academic Prompts 5. Writing Samples 6. Lab Report 7. Problem Solving 8. Oral Presentation 9. Self-Assessment 10. Class Survey 11. Rubrics 12. Reflective Discussion 13. Performance Tasks 14. Teacher Observation 15. Portfolio 16. Other (explain)	**Materials, Technology Resources** 1. Textbooks 2. Technology Software 3. Technology Hardware 4. Graphic Organizers 5. AVA/Video 6. Primary Sources 7. Resource People 8. Internet Resources
9.1.12.A.1-4,9.4.12.B.(2).9-13,9.4.12.B.(3).2-6	Understand the fundamentals of electrical current and safely work with electricity..	1,2,4,5,6,8,9,10,14	1,6,7,9,11,13,14,15	1,2,3,5,7,8
9.4.12.B.30-34	Identify how an open and closed loop system works.	1,2,4,5,6,8,9,10,14	1,6,7,9,,11,13,14,15	1,2,3,5,7,8
9.4.12.B.74	Be able to diagram a simple switch.	5, 10, 12	5,8,9,13,14	1,2,3,5,7,8
9.4.12.B.74 75,9.4.12.B.(2).6	Distinguish the difference between direct and alternating current.	1,2,4,5,6,8,9,10,14	1,6,7,9,11,13,14,15	1,2,3,5,7,8
9.4.12.B.(2).69.4.12.B 93).2,9.4.12.B.(3).1	Identify parallel and series wiring.	1,2,4,5,6,8,9,10,14	1,6,7,9,11,13,14,15	1,2,3,5,7,8
9.4.12.B.26,9.4.12.B.40,9.4.12.B.72-74	Identify the various circuit breakers found in residential community.	1,2,4,5,6,8,9,10,14	1,6,7,9,11,13,14,15	1,2,3,5,7,8
9.4.12.B.(1).10	Identify the various electrical boxes and their specific use.	1,2,4,5,6,8,9,10,14	1,6,7,9,11,13,14,15	1,2,3,5,7,8

MONROE TOWNSHIP PUBLIC SCHOOLS INSTRUCTIONAL PLAN

Focus Topic #1 Student will demonstrate knowledge of: Electricity, two way and three way lighting circuits, repair lamps, replace electrical cords, and will be introduced to electrical building code requirements. Identify the appropriate locations for and installing GFCI outlets as well as replacing circuit breakers in modern houses.
Standard: 9.4 Career and Technical Education All students who complete a career and technical education program will acquire academic and technical skills for careers in emerging and established professions that lead to technical skill proficiency, credentials, certificates, licenses, and/or degrees.
Essential Question: What are the fundamental principles of electrical wiring in a residential house and what are the current safety codes?

Content Standard CPI	**Established Goals Content Objectives Measurable Skills** The Student will:	**Suggested Instructional Strategies/Activities** 1. Problem Based Learning 2. Teacher Directed 3. Study Groups 4. Technology 5. Demonstration 6. Cooperative Groups 7. Literature Circles 8. Participation & Discussion 9. Reading 10. Application 11. Lab (report) 12. Homework 13. Field Trip 14. Projects 15. Other (explain)	**Measurable Performance Assessments & Evidences** 1. Multiple Choice 2. Essay 3. Fill-In-Blanks 4. Academic Prompts 5. Writing Samples 6. Lab Report 7. Problem Solving 8. Oral Presentation 9. Self-Assessment 10. Class Survey 11. Rubrics 12. Reflective Discussion 13. Performance Tasks 14. Teacher Observation 15. Portfolio 16. Other (explain)	**Materials, Technology Resources** 1. Textbooks 2. Technology Software 3. Technology Hardware 4. Graphic Organizers 5. AVA/Video 6. Primary Sources 7. Resource People 8. Internet Resources
9.4.12.B.(3).1-6	Identify the various types of wires and their appropriate application for different circuit breakers.	1,2,4,5,6,8,9,10,14	1,6,7,9,11,13,14,15	1,2,3,5,7,8
9.4.12.B.(3).1,-6	Understand the current codes and procedures for wiring a house from circuit breaker to light switch.	1,2,4,5,6,8,9,10,14	1,6,7,9,11,13,14,15	1,2,3,5,7,8
9.4.12.B.(3).1-6	Be able to wire a household device that incorporates a 3 way switch.	5, 10, 12	5,8,9,13,14	1,2,3,5,7,8
9.4.12.B.(3).1-6	Be able to wire a GFCI switch.	1,2,4,5,6,8,9,10,14	1,6,7,11,13,14,15	1,2,3,5,7,8
9.4.12.B.(3).1-6	Calculate the amount of amps on a given breaker and determine the maximum amount that can be added	1,2,4,5,6,8,9,10,14	1,6,7,9,11,13,14,15	1,2,3,5,7,8
9.4.12.B.(3).1-6	Identify government and private organizations that set the standards for a safe working environment. Basic safety applications and rules in both the work environment and the school lab	1,2,4,5,6,8,9,10,14	1,6,7,9,11,13,14,15	1,2,3,5,7,8

MONROE TOWNSHIP PUBLIC SCHOOLS INSTRUCTIONAL PLAN

Focus Topic #2 Students will demonstrate knowledge of: Plumbing- Students will be able to replace valves, cut pipe, sweat copper pipes, and be introduced to new plumbing technologies as flexible water lines and repair fittings. Students will be able to install a vanity, sink and faucet.
Standard: Standard: 9.4 Career and Technical Education All students who complete a career and technical education program will acquire academic and technical skills for careers in emerging and established professions that lead to technical skill proficiency, credentials, certificates, licenses, and/or degrees.
Essential Question: How does basic plumbing work in a residential house and what are the procedures in repairing plumbing problems?

Content Standard CPI	**Established Goals Content Objectives Measurable Skills** The Student will:	**Suggested Instructional Strategies/Activities** 1. Problem Based Learning 2. Teacher Directed 3. Study Groups 4. Technology 5. Demonstration 6. Cooperative Groups 7. Literature Circles 8. Participation & Discussion 9. Reading 10. Application 11. Lab (report) 12. Homework 13. Field Trip 14. Projects 15. Other (explain)	**Assessment Strategies** 1. Multiple Choice 2. Essay 3. Fill-In-Blanks 4. Academic Prompts 5. Writing Samples 6. Lab Report 7. Problem Solving 8. Oral Presentation 9. Self-Assessment 10. Class Survey 11. Rubrics 12. Reflective Discussion 13. Performance Tasks 14. Teacher Observation 15. Portfolio 16. Other (explain)	**Materials, Technology Resources** 1. Textbooks 2. Technology Software 3. Technology Hardware 4. Graphic Organizers 5. AVA/Video 6. Primary Sources 7. Resource People 8. Internet Resources
9.4.12.B.(3).1-6	Identify how a closed and open loop plumbing system works.	1,2,4,5,6,8,9,10,14	1,6,7,9,11,13,14,15	1,2,3,4,5,7,8
9.4.12.B.(3).1-6	Identify old and new materials used for plumbing a house.	1,2,4,5,6,8,9,10,14	1,6,7,9,11,13,14,15	1,2,3,5,7,8
9.4.12.B.(3).1-6, 9.4.12.B.(2).6	Calculate volume and flow rate.	1,2,4,5,6,8,9,10,14	1,6,7,9,11,13,14,15	1,2,3,4,5,7,8
9.4.12.B.(3).1-10	Identify the materials needed to solder copper pipes together.	1,2,4,5,6,8,9,10,14	1,6,7,9,11,13,14,15	1,2,3,5,7,8
9.4.12.B.(3).1-6	Explain the procedures in preparing copper pipes for soldering..	1,2,4,5,6,8,9,10,14	1,6,7,9,11,13,14,15	1,2,3,5,7,8
9.4.12.B.(3).1-6	Demonstrate how to solder copper joints without developing a leak..	1,2,4,5,6,8,9,10,14	1,6,7,9,11,13,14,15	1,2,3,5,7,8
9.4.12.B.(3).1-6	Describe new technologies being used to connect water lines together.	1,2,4,5,6,8,9,10,14	1,6,7,9,11,13,14,15	1,2,3,4,5,7,8
9.4.12.B.(3).1-6	Demonstrate the safety precautions while working with plumbing tools	1,2,4,5,6,8,9,10,14	1,6,7,9,11,13,14,15	1,2,3,4,5,7,8
9.4.12.B.(3).1-6	Identify PVC piping and the application for joining material together.	1,2,4,5,6,8,9,10,14	1,6,7,9,11,13,14,15	1,2,3,5,7,8
9.4.12.B.(3).1-6	Demonstrate the procedures in installing a sink, faucet and valves in a cabinet.	1,2,4,5,6,8,9,10,14	1,6,7,9,11,13,14,15	1,2,3,4,5,7,8
9.4.12.B.(3).1-6	Identify the various drainage systems used in today's homes..	1,2,4,5,6,8,9,10,14	1,6,7,9,11,13,14,15	1,2,3,5,7,8

MONROE TOWNSHIP PUBLIC SCHOOLS INSTRUCTIONAL PLAN

Focus Topic #3 Student will demonstrate knowledge of: Masonry, working with concrete, mortar, brick, block and stone, students will learn to plan masonry/tile work and will experience the preparation and use of mixes to set and lay material.
Standard: Standard: 9.4 Career and Technical Education All students who complete a career and technical education program will acquire academic and technical skills for careers in emerging and established professions that lead to technical skill proficiency, credentials, certificates, licenses, and/or degrees.
Essential Question: How to properly build and repair various types of stone and masonry decorations?

Content Standard CPI	**Established Goals Content Objectives Measurable Skills** The Student will:	**Suggested Instructional Strategies/Activities** 1. Problem Based Learning 2. Teacher Directed 3. Study Groups 4. Technology 5. Demonstration 6. Cooperative Groups 7. Literature Circles 8. Participation & Discussion 9. Reading 10. Application 11. Lab (report) 12. Homework 13. Field Trip 14. Projects 15. Other (explain)	**Assessment Strategies** 1. Multiple Choice 2. Essay 3. Fill-In-Blanks 4. Academic Prompts 5. Writing Samples 6. Lab Report 7. Problem Solving 8. Oral Presentation 9. Self-Assessment 10. Class Survey 11. Rubrics 12. Reflective Discussion 13. Performance Tasks 14. Teacher Observation 15. Portfolio 16. Other (explain)	**Materials, Technology Resources** 1. Textbooks 2. Technology Software 3. Technology Hardware 4. Graphic Organizers 5. AVA/Video 6. Primary Sources 7. Resource People 8. Internet Resources
9.4.12.B.(3).1-6	Identify the material in concrete, mortar, and thin set.	1,2,4,5,6,8,9,10,11,12,13,14	1,2,3,6,7,8,9,11,13,14,15	1,2,3,4,5,6,7,8
9.4.12.B.(3).1-6	Describe the appropriate application of the above material.	1,2,4,5,6,8,9,10,11,12,13,14	1,2,3,6,7,8,9,11,13,14,15	1,2,3,4,5,6,7,8
9.4.12.B.(3).1-6	Demonstrate how to mix and apply mortar to repair bricks or cinder block.	1,2,4,5,6,8,9,10,11,12,13,14	1,2,3,6,7,8,9,11,13,14,15	1,2,3,4,5,6,7,8
9.4.12.B.(3).1-6	Identify the procedure to install engineered stone.	1,2,4,5,6,8,9,10,11,12,13,14	1,2,3,6,7,8,9,11,13,14,15	1,2,3,4,5,6,7,8
9.4.12.B.(3).1-6	Identify the difference between ceramic and stone tile	1,2,4,5,6,8,9,10,11,12,13,14	1,2,3,6,7,8,9,11,13,14,15	1,2,3,4,5,6,7,8
9.4.12.B.(3).1-6	Demonstrate safe use of power tools in cutting materials	1,2,4,5,6,8,9,10,11,12,13,14	1,2,3,6,7,8,9,11,13,14,15	1,2,3,4,5,6,7,8
9.4.12.B.(3).1-6	Demonstrate two different methods in laying out a given room for installation.	1,2,4,5,6,8,9,10,11,12,13,14	1,2,3,6,7,8,9,11,13,14,15	1,2,3,4,5,6,7,8
9.4.12.B.(3).1-6	Demonstrate proper techniques in mixing thin set and grout.	1,2,4,5,6,8,9,10,11,12,13,14	1,2,3,6,7,8,9,11,13,14,15	1,2,3,4,5,6,7,8
9.4.12.B.(3).1-6	Use proper procedures when installing tile on a floor.	1,2,4,5,6,8,9,10,11,12,13,14	1,2,3,6,7,8,9,11,13,14,15	1,2,3,4,5,6,7,8

MONROE TOWNSHIP PUBLIC SCHOOLS INSTRUCTIONAL PLAN

Focus Topic #4 Student will demonstrate knowledge of: Carpentry, students will review the method for cabinetry installation. Fixing scratches, dents, and broken legs on furniture including antique furniture will be explored.. Students will also learn all aspects of traditional framing from start to finish including sheet rock and spackle.
Standard: Standard: 9.4 Career and Technical Education All students who complete a career and technical education program will acquire academic and technical skills for careers in emerging and established professions that lead to technical skill proficiency, credentials, certificates, licenses, and/or degrees.
Essential Question: How to repair a broken piece of furniture-old and new?

Content Standard CPI	**Established Goals Content Objectives Measurable Skills** The Student will:	**Suggested Instructional Strategies/Activities** 1. Problem Based Learning 2. Teacher Directed 3. Study Groups 4. Technology 5. Demonstration 6. Cooperative Groups 7. Literature Circles 8. Participation & Discussion 9. Reading 10. Application 11. Lab (report) 12. Homework 13. Field Trip 14. Projects 15. Other (explain)	**Assessment Strategies** 1. Multiple Choice 2. Essay 3. Fill-In-Blanks 4. Academic Prompts 5. Writing Samples 6. Lab Report 7. Problem Solving 8. Oral Presentation 9. Self-Assessment 10. Class Survey 11. Rubrics 12. Reflective Discussion 13. Performance Tasks 14. Teacher Observation 15. Portfolio 16. Other (explain)	**Materials, Technology Resources** 1. Textbooks 2. Technology Software 3. Technology Hardware 4. Graphic Organizers 5. AVA/Video 6. Primary Sources 7. Resource People 8. Internet Resources
9.4.12.B.(3).1-6	Demonstrate safe use of hand and power tools.	1,2,4,5,6,8,9,10,11,12,13,14	1,2,3,6,7,8,9,11,13,14,15	1,2,3,4,5,6,7,8
9.4.12.B.(3).1-6	Identify various types of finishes on current antique furniture.	1,2,4,5,6,8,9,10,11,12,13,14	1,2,3,6,7,8,9,11,13,14,15	1,2,3,4,5,6,7,8
9.4.12.B.(3).1-6	Define how to remove a finish and prepare for a new application of finish.	1,2,4,5,6,8,9,10,11,12,13,14	1,2,3,6,7,8,9,11,13,14,15	1,2,3,4,5,6,7,8
9.4.12.B.(3).1-6	Identify the types of stains being used on furniture including exterior finishes.	1,2,4,5,6,8,9,10,11,12,13,14	1,2,3,6,7,8,9,11,13,14,15	1,2,3,4,5,6,7,8
9.4.12.B.(3).1-6	Identify the different types of hardwoods and softwood species.	1,2,4,5,6,8,9,10,11,12,13,14	1,2,3,6,7,8,9,11,13,14,15	1,2,3,4,5,6,7,8
9.4.12.B.(3).1-6	Demonstrate the ability to apply the appropriate finish to a given piece of furniture.	1,2,4,5,6,8,9,10,11,12,13,14	1,2,3,6,7,8,9,11,13,14,15	1,2,3,4,5,6,7,8
9.4.12.B.(3).1-6	Identify the procedures for installing cabinets	1,2,4,5,6,8,9,10,11,12,13,14	1,2,3,6,7,8,9,11,13,14,15	1,2,3,4,5,6,7,8
9.4.12.B.(3).1-6	Identify the difference between oil base and water based finishes.	1,2,4,5,6,8,9,10,11,12,13,14	1,2,3,6,7,8,9,11,13,14,15	1,2,3,4,5,6,7,8
9.4.12.B.(3).1-6	Identify the benefits of oil base and water based finishes.	1,2,4,5,6,8,9,10,11,12,13,14	1,2,3,6,7,8,9,11,13,14,15	1,2,3,4,5,6,7,8
9.4.12.B.(3).1-6	Describe the different glues available today and their specific applications	1,2,4,5,6,8,9,10,11,12,13,14	1,2,3,6,7,8,9,11,13,14,15	1,2,3,4,5,6,7,8

MONROE TOWNSHIP PUBLIC SCHOOLS INSTRUCTIONAL PLAN

Focus Topic #5 Student will demonstrate knowledge of: Carpentry, students will review the method for cabinetry installation. Fixing scratches, dents, and broken legs on furniture including antique furniture will be explored.. Students will also learn all aspects of traditional framing from start to finish including sheet rock and spackle.
Standard: 9.4 Career and Technical Education All students who complete a career and technical education program will acquire academic and technical skills for careers in emerging and established professions that lead to technical skill proficiency, credentials, certificates, licenses, and/or degrees.
Essential Question: How is a house designed and built from the ground up?

Content Standard CPI	**Established Goals Content Objectives Measurable Skills** The Student will:	**Suggested Instructional Strategies/Activities** 1. Problem Based Learning 2. Teacher Directed 3. Study Groups 4. Technology 5. Demonstration 6. Cooperative Groups 7. Literature Circles 8. Participation & Discussion 9. Reading 10. Application 11. Lab (report) 12. Homework 13. Field Trip 14. Projects 15. Other (explain)	**Assessment Strategies** 1. Multiple Choice 2. Essay 3. Fill-In-Blanks 4. Academic Prompts 5. Writing Samples 6. Lab Report 7. Problem Solving 8. Oral Presentation 9. Self-Assessment 10. Class Survey 11. Rubrics 12. Reflective Discussion 13. Performance Tasks 14. Teacher Observation 15. Portfolio 16. Other (explain)	**Materials, Technology Resources** 1. Textbooks 2. Technology Software 3. Technology Hardware 4. Graphic Organizers 5. AVA/Video 6. Primary Sources 7. Resource People 8. Internet Resources
9.4.12.B.(3).1-6	Identify the steps in creating forms and footings	1,2,4,5,6,8,9,10,11,12,13,14	1,2,3,6,7,8,9,11,13,14,15	1,2,3,4,5,6,7,8
9.4.12.B.(3).1-6	Calculate square feet, linear feet, cubic feet, and board feet in relationship to a residential house.	1,2,4,5,6,8,9,10,11,12,13,14	1,2,3,6,7,8,9,11,13,14,15	1,2,3,4,5,6,7,8
9.4.12.B.(3).1-6	Determine the exact price for materials needed.	1,2,4,5,6,8,9,10,11,12,13,14	1,2,3,6,7,8,9,11,13,14,15	1,2,3,4,5,6,7,8
9.4.12.B.(3).1-6	Identify proper procedure for laying block using mortar.	1,2,4,5,6,8,9,10,11,12,13,14	1,2,3,6,7,8,9,11,13,14,15	1,2,3,4,5,6,7,8
9.4.12.B.(3).1-6	Describe how a typical wall structure is built.	1,2,4,5,6,8,9,10,11,12,13,14	1,2,3,6,7,8,9,11,13,14,15	1,2,3,4,5,6,7,8
9.4.12.B.(3).1-6	Demonstrate proper techniques installing sheet rock.	1,2,4,5,6,8,9,10,11,12,13,14	1,2,3,6,7,8,9,11,13,14,15	1,2,3,4,5,6,7,8
9.4.12.B.(3).1-6	Repair sheet rock using spackle and tape.	1,2,4,5,6,8,9,10,11,12,13,14	1,2,3,6,7,8,9,11,13,14,15	1,2,3,4,5,6,7,8
9.4.12.B.(3).1-6	Demonstrate cutting crown a base molding including miters and corners.	1,2,4,5,6,8,9,10,11,12,13,14	1,2,3,6,7,8,9,11,13,14,15	1,2,3,4,5,6,7,8
9.4.12.B.(3).1-6	Demonstrate proper coping techniques on molding.	1,2,4,5,6,8,9,10,11,12,13,14	1,2,3,6,7,8,9,11,13,14,15	1,2,3,4,5,6,7,8
9.4.12.B.(3).1-6	Distinguish between oil base and water base primer and paints.	1,2,4,5,6,8,9,10,11,12,13,14	1,2,3,6,7,8,9,11,13,14,15	1,2,3,4,5,6,7,8
9.4.12.B.(3).1-6	Demonstrate how to apply paint.	1,2,4,5,6,8,9,10,11,12,13,14	1,2,3,6,7,8,9,11,13,14,15	1,2,3,4,5,6,7,8

Content Area 21st-Century Life and Careers Standard 9.4 Career and Technical Education All students who complete a career and technical education program will acquire academic and technical skills for careers in emerging and established professions that lead to technical skill proficiency, credentials, certificates, licenses, and/or degrees. (For descriptions of the 16 career clusters, see the Career Clusters Table.) **Strand B. Architecture & Construction Career Cluster**

Bye the end of grade	Content Statement	CPI#	Cumulative Progress Indicator (CPI)
12	**Academic Foundations:** Academic concepts lay the foundation for the full range of career and postsecondary education opportunities within the career cluster.	9.4.12.B.1	*Demonstrate language arts knowledge and skills required to pursue the full range of postsecondary education and career opportunities*
		9.4.12.B.2	*Demonstrate mathematics knowledge and skills required to pursue the full range of postsecondary education and career opportunities.*
		9.4.12.B.3	*Demonstrate science knowledge and skills required to pursue the full range of postsecondary education and career opportunities.*
		9.4.12.B.4	Perform math operations, such as estimating and distributing materials and supplies, to complete classroom/workplace tasks.
		9.4.12.B.5	Apply principles of physics, as they relate to worksite/jobsite situations, to work with materials and load applications.
	Communication Skills: All clusters rely on effective oral and written communication strategies for creating, expressing, and interpreting information and ideas that incorporate technical terminology and information.	9.4.12.B.6	*Select and employ appropriate reading and communication strategies to learn and use technical concepts and vocabulary in practice.*
		9.4.12.B.7	*Demonstrate use of the concepts, strategies, and systems for obtaining and conveying ideas and information to enhance communication.*
		9.4.12.B.8	*Locate, organize, and reference written information from various sources to communicate with others.*
		9.4.12.B.9	*Evaluate and use information resources to accomplish specific occupational tasks.*
		9.4.12.B.10	*Use correct grammar, punctuation, and terminology to write and edit documents.*
		9.4.12.B.11	*Develop and deliver formal and informal presentations using appropriate media to engage and inform audiences.*
		9.4.12.B.12	*Interpret verbal and nonverbal cues/behaviors to enhance communication.*
		9.4.12.B.13	*Apply active listening skills to obtain and clarify information.*
		9.4.12.B.14	*Develop and interpret tables, charts, and figures to support written and oral communications.*
		9.4.12.B.15	*Listen to and speak with diverse individuals to enhance communication skills.*
		9.4.12.B.16	Exhibit public relations skills in order to increase internal and external customer satisfaction.
		9.4.12.B.17	Use vocabulary and visual cues commonly used in design and

			construction to communicate successfully.
	Problem-Solving and Critical Thinking: Critical and creative thinking strategies facilitate innovation and problem-solving independently and in teams.	9.4.12.B.18	*Employ critical thinking skills (e.g., analyze, synthesize, and evaluate) independently and in teams to solve problems and make decisions.*
		9.4.12.B.19	*Employ critical thinking and interpersonal skills to resolve conflicts.*
		9.4.12.B.20	*Identify, write, and monitor performance goals to guide progress in assigned areas of responsibility and accountability.*
		9.4.12.B.21	*Conduct technical research to gather information necessary for decision-making.*
		9.4.12.B.22	Create and implement project plans to accomplish realistic planning in design and construction situations, considering available resources and requirements of a project/problem.
		9.4.12.B.23	Describe how design and construction project plans and schedules respond to unexpected events and conditions.

APPENDIX

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E. Woodworking Processes, Glencoe ,2011

F. Carpentry and Building Construction, Glencoe 2010.

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2. Time-Life Books Complete Home Improvement and Renovation Manual
   Time-Life Books (Editor), Bob Vila (Contributor)

3. Basic Wiring (Home Repair and Improvement, Updated Series)
   Time-Life Books

4. Plumbing (Home Repair and Improvement (Updated Series))
   Time-Life Books (Author)

5. Walls and Ceilings (Home Repair and Improvement)
   Time-Life Books

6. Repairing Furniture (Home Repair and Improvement (Updated Series)) [Hardcover]
   Time-Life Books

7. Bathrooms (Home Repair and Improvement, Updated Series) [Spiral-bound]
   Time-Life Books (Author)

8. Advanced Masonry (Home Repair and Improvement, Updated Series) [Spiral-bound]
   Time-Life Books (Editor)

MONROE TOWNSHIP PUBLIC SCHOOLS

CURRICULUM MAP

Grades 9-12
Home Improvement

2011 – 2012

New Jersey Core Curriculum Content Standards
Technology

INTRODUCTION

Technology in the 21st Century

Technology is uniquely positioned to transform learning, to foster critical thinking, creativity, and innovation, and to prepare students to thrive in the global economy. As engaged digital learners, students are able to acquire and apply content knowledge and skills through active exploration, interaction, and collaboration with others across the globe, challenging them to *design the future* as envisioned in the statements that follow:

Mission: *Technology enables students to solve real world problems, enhance life, and extend human capability as they meet the challenges of a dynamic global society.*

Vision: The systematic integration of technology across the curriculum and in the teaching and learning process fosters a population that leverages 21st century resources to:

- Apply information-literacy skills to access, manage, and communicate information using a range of emerging technological tools.
- Think critically and creatively to solve problems, synthesize and create new knowledge, and make informed decisions that affect individuals, the world community, and the environment.
- Gain enhanced understanding of global interdependencies as well as multiple cultural perspectives, differing points of view, and diverse values.
- Employ a systemic approach to understand the design process, the designed world, and the interrelationship and impact of technologies.
- Model digital citizenship.

Intent and Spirit of the Technology Standards

All students acquire content area knowledge and skills in: (1) Visual and Performing Arts, (2) Comprehensive Health and Physical Education, (3) Language Arts Literacy, (4) Mathematics, (5) Science, (6) Social Studies, (7) World Languages, (8) Educational Technology, Technology Education, Engineering, and Design, and (9) 21st Century Life and Careers. As they do so, they are supported by the ongoing, transparent, and systematic integration of technology from preschool to grade 12 in preparation for postsecondary education and the workplace.

In **Preschool**, technology offers versatile learning tools that can support children's development in all domains. For example, electronic storybooks can "read" stories to children in multiple languages; adventure games foster problem-solving skills; story-making programs encourage literacy and creativity; math-related games can help children count and classify; and science activities promote inquiry and an understanding of the world through the eyes of a child. When preschoolers are encouraged to work together with electronic devices and computers, social skills are tapped as children negotiate turn-taking. However, technology should not replace the concrete, real-life experiences that are critical to a young child's learning; it must always be used in balance with other meaningful activities and routines. Technology should be embedded into children's learning centers and should enhance their learning and development during choice time as well as in small-group experiences.

In grades **K-2,** students are formally introduced to the basic features and functions of computers and demonstrate understanding that technology enables them to communicate beyond the classroom on a variety of topics. K-2 students are also exposed to elements of the design process, design systems, and a variety of technology resources, and understand the importance of safety when using technological tools.

In grades **3-4**, students understand the purpose of, and are able to use, various computer applications. They continue to develop information-literacy skills and increasingly use technology to communicate with others in support of learning, while also recognizing the need for cyber safety and

acceptable use policies. Students in grades 3-4 also investigate the impact of technology systems, understand the design process, and use it for problem solving.
In grades **5-8**, students expand their capacity to use operations and applications, apply information-literacy skills, and select the appropriate tools and resources to accomplish a variety of tasks, as they develop digital citizenship. As students participate in online learning communities, collaborating in the design of products that address local and global issues across the curriculum, they build understanding of the perspectives of learners from other countries. Students at this level can apply the design process in the development of products; understand impact constraints, trade-offs, and resource selection; and solve a design challenge and/or build a prototype using the design process. Students can explain why human-designed systems, products, and environments need to be monitored, maintained, and improved, and they recognize the interdependence of subsystems as parts of a system.
In grades **9-12,** students demonstrate advanced computer operation and application skills by publishing products related to real-world situations (e.g., digital portfolios, digital learning games and simulations), and they understand the impact of unethical use of digital tools. They collaborate adeptly in virtual environments and incorporate global perspectives into problem solving at home, at school, and in structured learning experiences, with the growing realization that people in the 21st century are interconnected economically, socially, and environmentally and have a shared future.
High School Specialization in technology enables students to design, create, and reverse-engineer technology products or systems, document the application of the design process, and understand its impact—including ethical considerations, costs, trade-offs, risks, benefits, and choice of resources. Students develop products that address local and global issues and challenges, which are disseminated for peer review.

Revised Standards
The 2009 standards provide the foundation for creating local curricula and authentic performance assessments and emulate the philosophy and goals contained in documents produced by national technology organizations, including the Partnership for the 21st Century Skills and the New Jersey Educational Technology Plan. The organization of the strands in standards 8.1 and 8.2, as well as the content and skills within each strand, has been reconceptualized to address emerging technologies and technological applications that are needed for life and work in the global age.

- Standard 8.1, Educational Technology, is aligned to the International Society for Technology in Education (ISTE) standards and the Partnership for the 21st Century Skills framework.

- Standard 8.2, formerly Technology Education, is renamed Technology Education, Engineering, and Design and is aligned with the goals of the International Technology Education Association (ITEA) and the Partnership for 21st Century Skills framework.

Link to 2009 NJCCC Standards: http://www.state.nj.us/education/cccs/2009/final.htm

Monroe Township Public Schools
Williamstown, NJ

Course Title/Grade: Home Improvement Department/Subject: Industrial Technology

	Unit 1 - September	Unit 2 - October	Unit 3 – November/December
Essential Questions	• Why are following safety precautions in the classroom and operating machinery so necessary? • What are the fundamental principles of electrical wiring in a residential house and what are the current safety codes?	• How does basic plumbing work in a residential house and what are the procedures in repairing plumbing problems	• How to properly build and repair various types of stone and masonry decorations? • How to repair a broken piece of furniture – old and new?
Content	! Understand the fundamentals of electrical current. ! Identify how an open and closed-loop system works. ! Be able to diagram a simple switch. ! Distinguish the difference between direct current and alternating current. ! Identify parallel and series wiring. ! Identify the various circuit breakers found in residential community. ! Identify the various electrical boxes and their specific use. ! Identify the various types of wires and their appropriate application for different circuit breakers. ! Understand the current codes and procedures for wiring a house from circuit breaker to light switch.	! Identify how a closed and open loop plumbing system works. ! Identify old and new materials used for plumbing a house. ! Calculate volume and flow rate. ! Identify the materials needed to solder copper pipes together. ! Explain the procedures in preparing copper pipes for soldering. ! Demonstrate how to solder copper joints without developing a leak. ! Describe new technologies being used in connecting water lines together. ! Demonstrate the safety precautions while working with plumbing tools. ! Identify PVC piping and the application for joining the material together. ! Demonstrate the procedures in installing a sink, faucet, and valves in a given cabinet. ! Identify the various drainage systems used in today's homes.	! Identify the material in concrete, mortar, and thin-set. ! Describe the appropriate application of each. ! Demonstrate how to mix and apply mortar to repair bricks and or cinder block. ! Identify the procedures on how to install engineered stone. ! Identify how to repair a broken tile. ! Identify the difference between ceramic and stone tile. ! Demonstrate safe use of power tools in cutting materials. ! Demonstrate two different methods in laying out a given room for tile installation. ! Demonstrate proper techniques in mixing thin-set and grout. ! Use proper procedures when installing tile on a floor. ! Demonstrate safe use of hand held and power tools. ! Identify various types of finishes on current antique furniture.

	! Be able to wire a household device that incorporates a 3-way switch. ! Demonstrate how to wire a GFCI switch. ! Calculate the amount of amps on a given breaker and determine the maximum amount to be added		! Define how to remove a finish and prepare for a new application of finish. ! Identify the types of stains being used on furniture including exterior finishes. ! Identify the different types of hardwood and softwood species. ! Demonstrate the ability to apply the appropriate finish to a given piece of furniture. ! Procedures for installing cabinets. ! Identify the difference between oil base and water based finishes. ! Identify the advantages and disadvantages of each. ! Describe the different glues available today and their specific application.
Skills	• :**Principles of Electricity** Direct current vs alternating current Terminology, Amperage, Watts, Resistors • **Circuits** Open and closed loops. Diodes. Circuit breakers. AFCI circuit breakers. Switches. GFCI. Types of wires. Safety precautions. • **Codes** Standard safety codes. Procedures for wiring. Distinguish the path of wiring from panel to room. Calculations for watts and amperage. • **Procedures for wiring**	• **Open and closed loop system** Types of heating units Water Heaters. • **Joining Material** Copper piping. Pex piping PVC pipe Methods of fastening materials. How to join elbow, street elbows, & couplings together. Attaching pex lines to copper lines. How to glue PVC together Connecting plastic to metal piping. Testing for breaches. Safety precautions using torches. Soldering Black pipe usage-gas • **Installation** Cabinet Install Sink and faucet install. Line install in studded wall. • **Water Flow**	• **Material identification and application** Mortar compound Concrete PSI rating for concrete Thin-set vs. mortar When to use each material • **The application of material** Troweling mortar Screening of concrete Pointing bricks Cutting material using wet saw Installing tile Grouting procedures • **Safe use of tools** Power tool safety precautions Hand held tools • **Stains** Identify various finishes Mixing of various stains for matching colors How to apply a penetrating oil finish

	Safety precautions. How to place wire in walls. How to hook up GFI and switches. Locating wires in a wall	Control valves Ball valves • **Calculations** PVC size required for drainage and venting Adding multiple drains to existing system Calculate flow required in a given pipe Pipe pitch	furniture How to apply urethanes to furniture • **Repairs** Methods of repairing scratches, nicks, and dents How to repair supporting structures of furniture Repairing aprons, tops, leg structures Glue procedures for a given application
NJ CCCS/CPI's and Enduring Understanding	9.1.12.A.1-4,9.4.12.B.(2).9-13,9.4.12.B.(3).2-6, 9.4.12.B.(3).1-6 9RTTIT, 9CC1-3, 9RRLTC-10, 9KID1-3, 8.1,8.2, N-RN 1and 2, N-Q 1-3	9.1.12.A.1-4,9.4.12.B.(2).9-13,9.4.12.B.(3).2-6, 9.4.12.B.(3).1-6 9RTTIT, 9CC1-3, 9RRLTC-10, 9KID1-3,8.1,8.2, N-RN 1and 2, N-Q 1-3	9.1.12.A.1-4,9.4.12.B.(2).9-13,9.4.12.B.(3).2-6, 9.4.12.B.(3).1-6 9RTTIT, 9CC1-3, 9RRLTC-10, 9KID1-3, 8.1,8.2, N-RN 1and 2, N-Q 1-3
Assessments • Benchmark/Common • Teacher Made Assessments • Project Based Units	• Worksheets, • Projects • Quizzes, • Student Project Evaluation	• Worksheets, • Projects • Quizzes, • Student Project Evaluation	• Worksheets, • Projects • Quizzes, • Student Project Evaluation
Resources	• Textbook • Websites, Internet • Guest Speakers from Technical Schools and Colleges • Life Skills and Career Planning	• Textbook • Websites, Internet • Guest Speakers from Technical Schools and Colleges Life Skills and Career Planning	• Textbook • Websites ,Internet • Guest Speakers from Technical Schools and Colleges Life Skills and Career Planning
Interdisciplinary Connections	• Mathematics (Geometry) • Language Arts Literacy	• Mathematics (Geometry) • Language Arts Literacy • Science	• Mathematics (Geometry) • Language Arts Literacy – Reading for a purpose • Science (STEM)

Unit 4 - January

Essential Questions	• Continue with Unit 3 Essential Questions. How a house is designed and built from the ground up?
Content	! Identify the steps in creating forms and footings. ! Calculate square feet, linear feet, cubic feet, and board feet in relationship to a residential house. ! Determine the exact price for materials needed. ! Identify proper procedures in laying bricks and cinder block using mortar. ! Describe how a typical wall structure is built. ! Demonstrate proper techniques installing sheet rock. ! Repair sheet rock using spackle and tape. ! Demonstrate cutting crown a base molding including miters and corners. ! Demonstrate proper coping techniques on molding. ! Distinguish between oil base and water base primer and paints. ! Demonstrate how to apply paint.
Skills	• **Architect plans** How to read architect blue prints Understand dimensions and scaling Read electrical diagrams Read plumbing diagram Understand glossary terms Read structural load • **Material Calculations** Determine cubic yards in concrete for footings Calculate blocks needed for foundation Calculate studding and plywood needed Determine material cost for a given set of plans. • **Wall repair** Frame a wall section Identify types of wall board Repair techniques for sheet rock Spackling procedures Wall preparation for painting Identify oil and water based primers Coping techniques and miter joints
NJ CCCS/CPI's and Enduring Understanding	9.1.12.A.1-4,9.4.12.B.(2).9-13,9.4.12.B.(3).2-6, 9.4.12.B.(3).1-6 9RTTIT, 9CC1-3, 9RRLTC-10, 9KID1-3, 8.1,8.2, N-RN 1and 2, N-Q 1-3

Assessments • Benchmark/Common • Teacher Made Assessments • Project Based Units	• Worksheets, • Projects • Quizzes, • Student Project Evaluation
Resources	• Textbook • Websites, Internet • Guest Speakers from Technical Schools and Colleges • Life Skills and Career Planning
Interdisciplinary Connections	• Mathematics(Geometry) • Language Arts Literacy –Informational text • Business • Science (Stem)