

DESE Model Curriculum

GRADE LEVEL/COURSE TITLE: Carpentry, Introductory Craft Skills –
Module 27104-06 Reading Plans and Elevations

Course Code:

COURSE INTRODUCTION:

17003 Carpentry

Carpentry courses provide information related to the building of wooden structures, enabling students to gain an understanding of wood grades and construction methods and to learn skills such as laying sills and joists; erecting sills and rafters; applying sheathing, siding, and shingles; setting door jambs; and hanging doors. Carpentry courses may teach skills for rough construction, finish work, or both. Students learn to read blueprints, draft, use tools and machines properly and safely, erect buildings from construction lumber, perform finish work inside of buildings, and do limited cabinet work. Carpentry courses may also include career exploration, good work habits, and employability skills.

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UNIT (#) TITLE: Carpentry, Introductory Craft Skills (27104-06) – Reading Plans and Elevations [This module reviews and builds on the construction drawing (blueprint) material introduced in the Core Curriculum and introduces new information and techniques relevant to the carpentry trade for reading construction drawings and specifications.]		SUGGESTED UNIT TIMELINE: CLASS PERIOD (min.):				
ESSENTIAL QUESTIONS: 1. How are different systems (e.g., electrical, mechanical, plumbing) represented in construction drawings? 2. What tools, activities, and/or skills can make it easier for workers to read construction drawings?						
ESSENTIAL MEASURABLE LEARNING OBJECTIVES	CCSS LEARNING GOALS (Anchor Standards/Clusters)	CROSSWALK TO STANDARDS				
		GLEs/CLEs	PS	CCSS	OTHER	DOK
1. Describe the types of drawings usually included in a set of plans, and list the information found on each type.				RST 11-12.3	27104-06	Level 1
2. Identify the different types of lines used on construction drawings.				SL 11-12.1.c, RST 11-12.2, L 11-12.6, N-Q 1, N-Q 2, N-Q 3	27104-06	Level 1
3. Identify selected architectural symbols commonly used to represent materials on plans.				SL 11-12.1.c, RST 11-12.2, G-CO 6, G-SRT 2, G-GMD 4	27104-06	Level 1
4. Identify selected electrical, mechanical, and plumbing symbols commonly used on plans.				RST 11-12.3	27104-06	Level 1
5. Identify selected abbreviations commonly used on plans.				RST 11-12.3, L 11-12.6	27104-06	Level 1
6. Read and interpret plans, elevations, schedules, sections, and details contained in basic construction drawings.				RST 11-12.3, G-CO 5, G-SRT 2	27104-06	Level 2
7. State the purpose of written specifications.				S-IC 6	27104-06	Level 2

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8. Identify and describe the parts of a specification.			RST 11-12.3, L 11-12.6	27104-06	Level 1
9. Demonstrate or describe how to perform a quantity takeoff for materials.			N-Q 1, N-Q 2, N-Q 3, N-VM 7, A-SSE 1, A-SSE 2, A-SSE 3, A- CED 1, A-CED 4, A- REI 1, A-REI 2, A-REI 3, F-BF 1, F-LE 1b	27104-06	Level 2, Level 1
<p>ASSESSMENT DESCRIPTIONS*: (Write a brief overview here. Identify Formative/Summative. Actual assessments will be accessed by a link to PDF file or Word doc.)</p>					
<p>*Attach Unit Summative Assessment, including Scoring Guides/Scoring Keys/Alignment Codes and DOK Levels for all items. Label each assessment according to the unit descriptions above (i.e., Grade Level/Course Title/Course Code, Unit #).</p>					
Obj. # 1-9	<p>INSTRUCTIONAL STRATEGIES (research-based): (Teacher Methods)</p> <p><input checked="" type="checkbox"/> Direct <input type="checkbox"/> Indirect <input type="checkbox"/> Experiential <input type="checkbox"/> Independent Study <input type="checkbox"/> Interactive Instruction</p>				
Obj. # 1-9	<p>INSTRUCTIONAL ACTIVITIES: (What Students Do)</p> <p>1. 2. 3.</p>				
<p>UNIT RESOURCES: (include Internet addresses for linking)</p> <p>(MCCE Resource) TE VIDEO 72 Collapse: Failure by Design Discovery Channel School BETHESDA, MD, DISCOVERY COMMUNICATIONS, INC., 2001. VIDEO When builders use innovative materials or implement creative design, sometimes the result is disastrous. Explore the flaws of four</p>					

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structures that failed the test of integrity and collapsed. Grades 6 - 12. 25:50 minutes.

(MCCE Resource) TE DVD ROM 13

The Future of Home Construction: New Techniques, New Technologies

Meridian Education Corporation

MONMOUTH JCT., NJ, MERIDIAN EDUCATION CORPORATION, 2001.

VIDEO This program travels to the National Association of Home Builders' Research Center to study four townhouses constructed using some of today's most innovative building materials and energy-saving technologies. Filmed at each stage of construction, these houses showcase foundations made of precast, pre-insulated, high-strength reinforced concrete or insulating concrete forms; walls made of ICFs, Hebel blocks, or steel framing; exterior finishes that incorporate thermally elastic stucco; and standing seam steel roofs. Photovoltaic roofing panels, a natural gas heat pump that uses a non-CFC

refrigerant, an electronic home energy management system, gas fireplaces, doors made from sawmill residue and wood scraps, a geothermal heat pump, a pellet stove, and a combined space heating and water heating system are also featured. 11 minutes.

(MCCE Resource) T&I DVD ROM 12.1

Green Architecture: Environmentally Friendly Housing

Films for the Humanities & Sciences

HAMILTON, NJ, FILMS FOR THE HUMANITIES & SCIENCES, 2008.

DVD ROM This program tracks the teams from the University of Maryland, MIT, The University of Texas at Austin, and Lawrence Technological University as they seek out corporate sponsors, research available materials, and hone their construction skills to create appealing living spaces that require zero energy. 31 minutes.

(MCCE Resource) FCS DVD ROM 63.2

Home Performance: The First Step to Green

Shopware

HAMILTON, NJ, FILMS MEDIA, 2010.

DVD ROM This program takes viewers through a home performance audit and shows how insights into the thermal envelope, energy footprint, and structural soundness can guide the remodeler and homeowner through the first steps toward creating a greener home. An overview of high-efficiency HVAC and geothermal technologies and the role they play in a house's energy efficiency is also explored. 40 minutes.

(MCCE Resource) TE DVD ROM 10

Deconstruction: The Science of Building a House-Foundation to Roof

Discovery Channel University

LAWRENCEVILLE, NJ, SHOPWARE, 2004.

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DVD ROM

This video highlights scientific aspects of concrete, steel, wood, and nails and the forces that impact them. Experiments done on the building site and at materials testing labs investigate the strengths of concrete, rebar, and engineered lumber; the chemical properties of Portland cement and galvanized nails; and the effects of dead load and live load, torque and shear induced by wind and earthquakes, and Bernoulli's Principle as it relates to the effects of tornadoes on roofs. Microscope and infrared imaging plus animations give extra angles of insight. So do field trips to a concrete batch plant, a tree farm to study silviculture, and a saw mill to see how computerized cutting and sorting are done. 50 minutes.

(MCCE Resource) TE DVD ROM 11

Deconstruction: The Science of Building a House-Plumbing to Paint

Discovery Channel University

LAWRENCEVILLE, NJ, SHOPWARE, 2004.

DVD ROM

A home is more than a house; technologically speaking, it's an engineered habitat. This video explains how electrical, plumbing, and HVAC systems work with selected parts of the building envelope — building wrap, windows, fiberglass insulation, gypsum wallboard, and paint — to keep the weather out and comfort in. Animated diagrams, microscopic and thermal imaging, on-site demonstrations, and off-site tests are used to show how things like circuit breakers and P-traps work; to define U-factor, R-value, permeance, and other technical terms and concepts; to demonstrate color-matching and paint-making; and to isolate envelope failures leading to moisture infiltration and mold. A visit to a USG wallboard plant is also included. 50 minutes.