

DESE Model Curriculum

GRADE LEVEL/UNIT TITLE: 9-12 / Core — Trade Introductions

Course Code: CONSTRUCTION

COURSE INTRODUCTION: Core

These lessons are designed to give construction-trades students a firm skill and knowledge basis to build upon in later courses. Students will learn basic job and interpersonal skills applicable in all construction trades. Students will also be introduced to the four construction trades covered by this model curriculum: carpentry, masonry, electrical, and HVAC. Units in this course include:

1. Job Skills
2. Interpersonal Skills
3. Trade Introductions

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| <p>UNIT DESCRIPTION: Trade Introductions These lessons were designed to introduce the construction-trades student to the histories and modern manifestations of four different construction trades: carpentry, masonry, electrical, and HVAC.</p> | | <p>SUGGESTED UNIT TIMELINE: 4 lessons Lesson 1: Carpentry Lesson 2: Masonry Lesson 3: Electrical Lesson 4: HVAC CLASS PERIOD (min.): 90 minutes</p> | | | | |
|---|--|--|----|--|----------|---------|
| <p>ESSENTIAL QUESTIONS:</p> <ol style="list-style-type: none"> 1. What skills and aptitudes are required of a professional carpenter? 2. What is it like to be a professional carpenter? 3. What skills and aptitudes are required of a professional mason? 4. What is it like to be a professional mason? 5. What skills and aptitudes are required of a professional electrician? 6. What is it like to be a professional electrician? 7. What skills and aptitudes are required of a professional HVAC technician? 8. What is it like to be a professional HVAC technician? | | | | | | |
| ESSENTIAL MEASURABLE LEARNING OBJECTIVES | CCSS LEARNING GOALS (Anchor Standards/Clusters) | CROSSWALK TO STANDARDS | | | | |
| | | GLEs/CLEs | PS | CCSS | NCCER | DOK |
| 1. Students will describe the basic attributes and experiences of a professional carpenter. | | | | L 9-10.1 L 9-10.2 L 11-12.1 L 11-12.2 | 27101-04 | Level 1 |
| 2. Students will describe the basic attributes and experiences of a professional mason. | | | | L 9-10.1 L 9-10.2 L 11-12.1 L 11-12.2 | 28101-04 | Level 1 |
| 3. Students will describe the basic attributes and experiences of a professional electrician. | | | | L 9-10.1 L 9-10.2 L 11-12.1 L 11-12.2 | 26101-08 | Level 1 |

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|---|---|--|--|--|--|---------|
| 4. Students will describe the basic attributes and experiences of a professional HVAC technician. | | | | L 9-10.1 L 9-10.2 L 11-12.1 L 11-12.2 | 03204-07 03304-08 03403-09 03404-09 03408-09 | 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>Students will demonstrate their understanding of content and ability to apply learned skills by:</p> <ul style="list-style-type: none"> • Completing “interest quizzes” regarding the four different trades represented (Summative) <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. # | INSTRUCTIONAL STRATEGIES (research-based): (Teacher Methods) | | | | | |
| 1, 2, 3, 4 | Direct: Instructor and guest lectures | | | | | |
| 1, 2, 3, 4 (alt.) | Indirect: Instructor provides materials to guide student learning (alternative) | | | | | |
| Obj. # | INSTRUCTIONAL ACTIVITIES: (What Students Do) | | | | | |
| 1, 2, 3, 4 | Quiz | | | | | |
| <p>UNIT RESOURCES: (include Internet addresses for linking)</p> <p>Support documents:</p> <ul style="list-style-type: none"> • [INTEREST QUIZ] • [INTEREST QUIZ RUBRIC] <p>Internet resources:</p> <ul style="list-style-type: none"> • https://www.youtube.com/watch?v=3-X5hCxdaLc • https://www.youtube.com/watch?v=KuhnRP6REco • https://www.youtube.com/watch?v=dTOXB_tYveo • https://www.youtube.com/watch?v=dFziGVutlQc <p>Resources available from MCCE free loan library (www.mcce.org):</p> | | | | | | |

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- **Career Ideas For Teens in Architecture and Construction**
Diane Lindsey Reeves, Gail Karlitz, Don Rauf, NEW YORK, NY, FERGUSON, 2005. BOOK — Construction and architecture form one of the largest industries in the United States. From planning, drafting, and building to maintenance and operations, this field offers a broad range of exciting, hands-on careers. Careers profiled include: Architect; Brick mason; Carpenter; Civil engineer; Demolition engineer; Electrician; Estimator; General contractor Interior designer; Landscape architect Preservationist; Urban planner.
- **Building Trades II: Design & Planning**
Shopware, LAWRENCEVILLE, NJ, FILMS MEDIA, 2004. DVD ROM — This program is designed for students planning on entering the building trades, but it offers all students a comprehensive overview of the home construction process. It shows students whether it's a country cottage or a Tudor mansion, all homes are built on paper, what kinds of considerations drive many of the decisions and choices, and how to read the blueprints. 14 minutes.
- **Homes: Today and Tomorrow**
Ruth F. Sherwood, NEW YORK, NY, GLENCOE, 2002. KIT — Kit includes student textbook, workbook, transparency package and CD ROM that examine the theory and history of house design, construction, and furnishing, as well as factors to be considered when buying a house.
- **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.
- **Sustainability in Construction**
Einstein Network Ltd, PETERBOROUGH, UK, EINSTEIN NETWORK LTD, 2003. VIDEO — Sustainability is one of the most important issues challenging the construction industry today. This program looks at how being sustainable involves a commitment to economic, environmental, and social sustainability. It introduces the concept of sustainability in construction and examines the key drivers. 18 minutes.
- **Why Buildings Fall Down**
Matthys Levy, Mario Salvadori, NEW YORK, NY, WW NORTON & CO, INC, 2001. BOOK — Journey through the history of architectural and structural disasters, from the Parthenon and Coliseum through the 20th Century. This book is a feast of architectural flops and flummoxes, caused by natural disaster and human error.

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- **Why Buildings Stand Up**
Mario Salvadori, NEW YORK, NY, WW NORTON & CO, INC, 2002. BOOK — Between a nomad's tent and the Sears Tower lies a revolution in the technology and materials of building as well as the way buildings look. This book outlines the alliance between architecture and structure.
- **Deconstruction: The Science of Building a House-Foundation to Roof**
Discovery Channel University, LAWRENCEVILLE, NJ, SHOPWARE, 2004. 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 sawmill to see how computerized cutting and sorting are done. 50 minutes.
- **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.