Course Title – Home Improvement

Implement start year – 2017-2018

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Unit #2 - Parts of a Building

Transfer Goal –

Students will be able to independently acquire and apply essential technical skills to design, construct, and evaluate structures in real world situations.

Stage 1 – Desired Results

Established Goals	**21st Century Themes (www.21stcenturyskills.org)**
2009 NJCCC Standard(s), Strand(s)/CPI # (http://www.nj.gov/education/cccs/2009/final.htm) **Common Core Curriculum Standards for Math and English** (http://www.corestandards.org/) 8.2 Technology Education, Engineering, and Design	___ Global Awareness ___Financial, Economic, Business and Entrepreneurial Literacy ___Civic Literacy ___Health Literacy ___Environmental Literacy

All students will develop an understanding of the nature and impact of technology, engineering, technological design, and the designed world, as they relate to the individual, global society, and the environment. G. The Designed World: The designed world is the product of a design process that provides the means to convert resources into products and systems. • 8.2.12.G.1 Analyze the interactions among various technologies and collaborate to create a product or system demonstrating their interactivity. CCSS.ELA-LITERACY.RST.9-10.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks, attending to special cases or exceptions defined in the text. CCSS.ELA-LITERACY.WHST.9-10.2.F Provide a concluding statement or section that follows from and supports the information or explanation presented (e.g., articulating implications or the significance of the topic). 9.1 21st-Century Life & Career Skills All students will demonstrate the creative, critical thinking, collaboration, and problem-solving skills needed to function successfully as both global citizens and workers in diverse ethnic and organizational cultures. 9.1.12.A.1 Apply critical thinking and problem-solving strategies during structured learning experiences.	**21st Century Skills** Learning and Innovation Skills: _x__Creativity and Innovation _x__Critical Thinking and Problem Solving _x__Communication and Collaboration Information, Media and Technology Skills: _x__Information Literacy _x__Media Literacy _x__ICT (Information, Communications and Technology) Literacy Life and Career Skills: _x__Flexibility and Adaptability _x__Initiative and Self-Direction _x__Social and Cross-Cultural Skills _x__Productivity and Accountability _x__Leadership and Responsibility

Enduring Understandings:	**Essential Questions:**
Students will understand that . . . *EU 1* the structural components of a building are designed to rely on each other in order to remain functioning.	*EU 1* • What are the implications of a singular component in a structure failing? • How are structural loads transferred through the components? • Why do load forces affect the design of a structure?
EU 2 building codes provide standards to protect society.	*EU 2* • What can happen if building codes are ignored? • How does location affect building codes? • How are people protected through building codes?
EU 3 designing a structure requires reverse engineering.	*EU 3* • How do you begin to reverse engineer a product? • Why is reverse engineering important as a contractor or a designer?

Knowledge: *Students will know . . .*	**Skills:** *Students will be able to . . .*
EU 1 • the characteristic properties of various building materials and how they are selected based on environment and design. • that environment will affect the design of a structure. • what load forces are. • how load forces effect the design of a structure. • how loads transfer through a structure to support it. • how the Pythagorean theorem is used in construction. • how to select building materials to create a completed structure to withstand a given force. • how to select proper sizes of sheetrock, wiring, sheathing, plumbing, insulation, and roofing.[CK2]	*EU 1* • identify basic internal structural components in a wall, floor, ceiling, and roof. • explain how load forces are transferred throughout a structure. • describe the relationship between the major components of a structure. • install sheetrock, wiring, sheathing, plumbing, insulation, and roofing.[CK4]
EU 2 • where to locate local building codes. • why building codes are affected by environment. • when to adhere to building codes. • why building codes exist.	*EU 2* • interpret building codes. • locate national and local building codes. • describe the responsibilities of a building inspector.
EU 3 • how to begin to reverse engineer a product. • how to read an orthographic projection. • how to read a blueprint. • why it is important to envision a completed structure and all of it's components.	*EU 3* • build a structure using reverse engineering. • read an orthographic projection of a wall. • use a blueprint.

Stage 2 – Assessment Evidence

Other Recommended Evidence:

- Quiz/Test
- Discussions
- Drawings
- Structure building

Stage 3 – Learning Plan

Suggested Learning Activities to Include Differentiated Instruction and Interdisciplinary Connections: *Each learning activity listed must be accompanied by a learning goal of A= Acquiring basic knowledge and skills, M= Making meaning and/or a T= Transfer.*

- Teacher led discussions/demonstrations on structural components including framing, sheetrock, wiring, sheathing, plumbing, insulation, and roofing. (A, M)
- Student led demonstration of framing, sheetrock, wiring, sheathing, plumbing, insulation, and roofing. (M,T)
- Teacher/ Student led demonstration on how Pythagorean theorem is used in construction (M,T)
- Teacher led discussions on loads and how they affect structures (A)
- Student created drawings on how loads are transferred through a structure (M)
- Student created blueprints of wall sectionals. (M)
- Create a full scale layout of footers and batter boards of an outbuilding. (M,T)
- Teacher led discussion on building codes. (A)
- Student research on different building codes and how they are affected by region. (M)
- Student project on how super storm Sandy affected building codes in our region. (T)
- Videos on construction of residential and commercial structures. (A)
- Build a dog house or shed. (M,T)
- Repair created holes in sheet rocked wall (M,T)