Course: Architectural Design **Unit #2: Construction and Framing**	**Year of Implementation: 2019-2020**

Curriculum Team Members: Jason Pitner jpitner@lrhsd.org, Carl Kralik ckralik@lrhsd.org, Stefani Kirk skirk@lrhsd.org

Stage One - Desired Results

Link(s) to New Jersey Student Learning Standards for this course:
https://www.state.nj.us/education/cccs/2014/career/CareerReadyPractices.pdf

https://www.state.nj.us/education/aps/cccs/career/

Unit Standards:
8.1 Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.
A. Technology Operations and Concepts: Students demonstrate a sound understanding of technology concepts, systems and operations.
B. Creativity and Innovation: Students demonstrate creative thinking, construct knowledge and develop innovative products and process using technology.
C. Communication and Collaboration: Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others
D. Digital Citizenship: Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior.
E: Research and Information Fluency: Students apply digital tools to gather, evaluate, and use information.
F: Critical thinking, problem solving, and decision making: Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources
8.2 Technology Education, Engineering, Design, and Computational Thinking - Programming: All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the individual, global society, and the environment.
A. The Nature of Technology: Creativity and Innovation Technology systems impact every aspect of the world in which we live
B. Technology and Society: Knowledge and understanding of human, cultural and societal values are fundamental when designing technological systems and products in the global society.
C. Design: The design process is a systematic approach to solving problems.

D. Abilities for a Technological World: The designed world is the product of a design process that provides the means to convert resources into products and systems.

9.2 Career Awareness, Exploration, and Preparation
9.2.4.A.1 Identify reasons why people work, different types of work, and how work can help a person achieve personal and professional goals.
9.2.8.B.1 Research careers within the 16 Career Clusters® and determine attributes of career success.
9.2.8.B.6 Demonstrate understanding of the necessary preparation and legal requirements to enter the workforce.
9.2.12.C.1 Review career goals and determine steps necessary for attainment.

9.3.AR Visual Arts (AR-VIS)
9.3.12.AR-VIS.1 Describe the history and evolution of the visual arts and its role in and impact on society.
9.3.12.AR-VIS.2 Analyze how the application of visual arts elements and principles of design communicate and express ideas.
9.3.12.AR-VIS.3 Analyze and create two and three-dimensional visual art forms using various media.

9.3.ST Engineering & Technology Career Pathway (ST-ET)
9.3.ST-ET.1 Use STEM concepts and processes to solve problems involving design and/or production.
9.3.ST-ET.2 Display and communicate STEM information.
9.3.ST-ET.3 Apply processes and concepts for the use of technological tools in STEM.
9.3.ST-ET.4 Apply the elements of the design process.
9.3.ST-ET.5 Apply the knowledge learned in STEM to solve problems.
9.3.ST-ET.6 Apply the knowledge learned in the study of STEM to provide solutions to human and societal problems in an ethical and legal manner.

Career Ready Practices:
CRP2. Apply appropriate academic and technical skills.
CRP4. Communicate clearly and effectively and with reason.
CRP6. Demonstrate creativity and innovation.
CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.
CRP9. Model integrity, ethical leadership and effective management.
CRP10. Plan education and career paths aligned to personal goals.
CRP11. Use technology to enhance productivity.

Transfer Goal(s): Students will be able to independently use their learning to apply standard building practices to architectural drawings and models.

Enduring Understandings	*Essential Questions*
Students will understand that. . . EU 1 common building practices exist for a reason. EU 2 accurate drawings and models are needed to frame a structure.	EU1 ● Why are construction standards important and necessary? ● How does safety affect common building practices? EU2 ● How can different drawings aid in construction? ● Why are different types of drawings beneficial to a builder?
Knowledge Students will know. . . EU1 ● current standard practices in building construction. ● building codes promote safe construction. ● the components of residential house framing. EU2 ● the CAD commands and functions needed to create framing drawings. ● how to create design plans such as: wall section, wall framing, floor framing, foundations, etc. ● various framing model techniques. ● how to pick out the appropriate materials for a model.	*Skills* Students will be able to. . . EU1 ● apply building practices and codes to drawings and models. ● identify and describe the purpose of house framing such as wall framing, floor framing, roof framing, foundation, etc. EU2 ● use CAD to create architectural drawings such as wall section, wall framing, floor framing, roof framing, foundations, etc. ● use architectural drawings to construct a framing model. ● demonstrate proper tool usage when making models. ● demonstrate proper material selection for model making.

Stage Two - Assessment

Other Evidence:

- Quizzes/Tests on:
  - components of a foundation, wall section and a wood framed wall.
  - CAD commands and functions.
  - components of a roofing system.
- Observation of the student during the learning activities.
- Self-Assessment by student of their learning activities.

Stage Three - Instruction

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.**

- Discuss evolution of common building practices. (**A, EU1)**
- Discuss common building standards **(A, EU1)**
- Discuss common building codes **(A, EU1)**
- View instructional videos on construction and framing. (**A, EU1)**
- Use the internet to research current common building practices for your home town. (**A, M, EU1)**
- Sketch and label a wall section. (**M, EU2)**
- Use CAD to create a wall framing drawing. (**M, T, EU2)**
- Discussion of material selection for model making **(A, EU2)**
- Safety practices for model making **(A, EU2)**
- Pick and analyze appropriate materials for a framed model. **(M, T, EU2)**