Civil Engineering & Architecture Honors
Project Lead The Way
Course # 1262

General Information

Credits: 1.0
Weighted: Yes
Prerequisite: 1250

Length: Full Year
Format: Meets Daily
Grade: 10-12

Course Description

This course provides an overview of the fields of Civil Engineering and Architecture, while emphasizing the interrelationship and dependence of both fields on each other. Students use state-of-the-art software to solve real-world problems and communicate solutions to hands-on projects and activities. This course covers topics such as the roles of civil engineering and architecture, project planning, site planning, building design, and project documentation and presentations.

UNIT: 1— Overview of Civil Engineering and Architecture
UNIT: 2— Residential Design
UNIT: 3— Commercial Applications
UNIT: 4— Commercial Building

COURSE WIDE SCIENCE AND TECHNOLOGY AND ENGINEERING EDUCATION STANDARDS
3.4.10.A2: Interpret how **systems** thinking applies logic and creativity with appropriate comprises in complex real-life problems.
3.4.12.A2: Describe how management is the process of planning, organizing, and controlling work.
3.4.10.B2: Demonstrate how humans devise **technologies** to reduce the negative consequences of other **technologies.**
3.4.12.B2: Illustrate how, with the aid of **technology**, various aspects of the environment can be monitored to provide information for decision making.
3.4.10.C1: Apply the components of the technological design process.
3.4.10.C2: Analyze a **prototype** and/or create a working model to test a design concept by making actual observations and necessary adjustments.
3.4.12.C2: Apply the concept that engineering design is influenced by personal characteristics, such as relativity, resourcefulness, and the ability to visualize and think abstractly.
3.4.10.C3: Illustrate the concept that not all problems are technological and not every problem can be solved using **technology.**
3.4.12.C3: Apply the concept that many technological problems require a multidisciplinary approach.
3.4.10.D1: Refine a design by using **prototypes** and modeling to ensure quality, efficiency, and productivity of a final product.
3.4.10.D3: Synthesize data, analyze trends, and draw conclusions regarding the effect of **technology** on the individual, society, and the environment.
3.4.12.E7: Analyze the **technologies** of prefabrication and new structural materials and processes as hey
pertain to constructing the modern world.
3.4.10.E7: Evaluate structure design as related to function, considering such factors as style, convenience, safety, and efficiency.
3.4.10.E4: Evaluate the purpose and effectiveness of information and communication **systems.**

COURSE WIDE COMMON CORE STANDARDS FOR READING IN SCIENCE AND TECHNOLOGY
CC.3.5.9-10.A. Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions.
CC.3.5.9-10.C. 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.

CC.3.5.9-10.D. Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to *grades 9–10 texts and topics.*

CC.3.5.9-10.E. Analyze the structure of the relationships among concepts in a text, including relationships among key terms (e.g., *force, friction, reaction force,energy*).

CC.3.5.9-10.G. Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words.

CC.3.5.11-12.G. Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.

CC.3.5.11-12.I. Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.

COURSE WIDE COMMON CORE STANDARDS FOR WRITING IN SCIENCE AND TECHNOLOGY

CC.3.6.9-10.A. Write arguments focused on *discipline-specific content.*

CC.3.6.9-10.B. Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments, or technical processes.

CC.3.6.9-10.C. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

CC.3.6.9-10.E. Use technology, including the Internet, to produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically.

CC.3.6.9-10.F. Conduct short as well as more sustained research projects to answer a question (including a selfgenerated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.

CC.3.6.9-10.A. Write arguments focused on *discipline-specific content.*

CC.3.6.9-10.B. Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments, or technical processes.