Unit 3 Commercial Applications, Lesson 3.1 Commercial Building Systems Lesson Plan

COURSE:	TEACHER:	DURATION:
Civil Engineering and Architecture (Honors)	Jason D. Redd	13 Days

STANDARDS:

This course connects to standards in the following:

- Common Core State Standards for English Language Arts Anchor Standards
- Common Core Standards for Mathematics
- Common Core English Language Arts Standards
- Next Generation Science Standards
- Standards for Technological and Engineering Literacy

- Use technical documents to communicate effectively using accepted engineering practices.

Understandings

Students will understand that:

- Commercial building systems differ from residential building systems in many significant ways.
- Codes and building regulations define and constrain all aspects of building design and construction including the structure, site design, utilities, and building usage.
- Zoning regulations are used to control land use and development.
- Wall, roof, floor, and framing systems for commercial facilities are chosen based on many factors.

Knowledge and Skills

Knowledge: Students will:

- Identify typical commercial wall systems/materials and differentiate between load-bearing and non-load bearing walls.
- Identify common commercial building framing systems.
- Identify the pros and cons to the use of a green roof in a commercial building design.
- Identify the types of requirements that pertain to site development and are typically included in Land Use Regulations.
- Identify typical commercial roofing systems and differentiate between roofing materials appropriate for pitched roofs and roofing materials appropriate for low-slope roofs.

Skills: Students will:

- Identify applicable building codes and regulations that apply to a given development.
- Classify a building according to its use, occupancy, and construction type using the International Building Code.
- Research Land Use regulations to identify zoning designations and allowable uses of property.
- Comply with specifications, regulations, and codes during a design process.
- Compare a variety of commercial wall systems and select an appropriate system for a given commercial application based on materials, strength, aesthetics, durability, and cost.
- Compare a variety of commercial low-slope roof systems and select an appropriate system for a given commercial application based on materials, strength, durability, and cost.
- Incorporate sustainable building practices, especially a green roof, into the design of a commercial building.
- Use 3D architectural design software to incorporate revisions for the redesign of a building.
- Use 3D architectural design software to create appropriate documentation to communicate a commercial building design.
- Calculate the structural efficiency of a structure.
- Use load-span tables to design structural elements.

ESSENTIAL QUESTIONS:

Students will keep considering:

- What is the difference between land use regulations and building code requirements?
- How do land development regulations help or hinder development in a community?
- Fill in the blanks to describe the overall difference between residential construction and commercial construction: _____ versus _____. Support your answer with specific examples of construction practices.
- Are building code requirements too strict to allow creativity and unconventional design solutions?

Guided Practice

The teacher will:

- Review agenda, learning objectives, and essential questions daily.
- Lead students to recall prior knowledge / experience to make connections to new content.
- Introduce content to be learned.
- Clarify and check for understanding by asking open-ended questions (or by some other type of formative assessment) throughout instruction. Reteach material as needed.
- Pace the classroom instruction to clarify misunderstanding and provide opportunities for student feedback.
- Introduce new content to be learned and how it connects to learning objectives and answers some (or all) of the essential questions.
- Demonstrate skill practices students will gain from this lesson.
- Demonstrate assignment(s) outcome expectations.
- Review resources and equipment needed to problem-solve student assignments.
- Share safety instructions to students. *Safety Instructions: Students should only utilize equipment they have been fully trained to use.*
- Provide review material / resources for students to prepare for summative assessments.

Transition

☒ Classroom Expectations / Routines
☒ Review Questioning
☒ Stimulus or Signal (Example: etc.)
☒ Student Reflection
☒ Timer

Independent Practice (Varied Learning)

The students will:

- Participate in teacher-led discussions / presentations.
- Complete assigned assignment(s) in class.
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- Complete *Project 3.1.5 Structural Efficiency*.
- Complete the *Project 3.1.5 Structural Efficiency Report*.
- Complete *Activity 3.1.6 Commercial Floor Systems*.
- Complete the *Lesson 3.1 Test*.

Homework

The students will:

- Complete assignments that were not completed in class.
- Conduct research as needed for assignments.
- Review the lesson/unit concepts, content, and skills as needed to prepare for lesson/unit assessments.

ASSESSMENTS:

Checks for Understanding (Formative and/or Summative):

- ☒ Bell Ringer(s)
- ☒ Check Class Assignment(s) / Homework
- ☒ Class Participation
- ☐ Group Activity
- ☒ Hands On / Lab Activity
- ☒ Independent Practice
- ☐ Interview
- ☒ Oral Responses
- ☒ Peer Evaluation / Reflection
- ☐ Performance-Based (Skills) Assessment
- ☒ Project / Presentation
- ☒ Student Reflection
- ☒ Teacher Observation
- ☒ Test / Quiz
- ☐ Other:

TEACHER REFLECTION / ADDITIONAL NOTES: