Unit 02: Urban Planning

Content Area: **Applied Technology**
Course(s):
Time Period: **Marking Period 1**
Length: **5 Weeks**
Status: **Published**

Brief Summary of Unit

Students will gain and develop foundational knowledge, technical skills, and conceptual understanding related to urban planning, zoning, land use, and community development principles. Students will design and create a detailed site plan drawing for a city block that incorporates a variety of building types, public spaces, and a park environment. The block plan will serve as the primary development site and foundational framework for student architectural and design projects completed throughout the duration of the course. Throughout the project, students will apply urban planning concepts, spatial organization, and design strategies to create a cohesive, functional, and visually effective urban environment that supports residential, commercial, recreational, and community needs.

Revision Date: July 2026

Essential Questions/Enduring Understandings

Essential Questions:

What systems keep people safe in high rise buildings?

What holds high rise buildings up?

What does a high rise building look like?

Enduring Understandings:

Means of egress describes a system for leaving a building in an emergency.

Steel and concrete are the major structural components in high-rise construction.

Students Will Know/Students Will Be Skilled At

Students Will Know:

Vocabulary associated with structural systems and curtain wall construction, i.e. girder, truss joist, wide flange, glazing.

Why means of egress is important in buildings.

Components of means of egress systems.

How to employ curtain wall systems from manufacturers

Historically important high rise buildings can influence the design

Students Will Be Skilled At:

Drafting plans, sections, and elevations of a high rise building

Developing the means of egress for a high rise building

Developing proposals for a high rise building that are considerate of functional and aesthetic concerns.

Write a technical description of systems in a building.

Learning Plan

- Introduce students to the principles of urban planning, zoning, and community development through research, design activities, lectures, and presentations.
- Explore the characteristics of successful and unsuccessful places to live, work, shop, play, and attend school. Discussions will examine how factors such as safety, accessibility, transportation, green space, noise, pollution, and public services affect quality of life within a community.
- Analyze how the placement of facilities such as chemical factories, banks, libraries, schools, and parks can positively or negatively impact surrounding neighborhoods and residents. Students will evaluate how land use decisions influence environmental quality, property values, public health, and community satisfaction.
- Identify the major stakeholders in a community, including residents, business owners, developers, planners, government officials, and environmental groups. Students will examine how the goals and interests of these stakeholders influence planning and development decisions.
- Examine the purpose and function of zoning ordinances and building codes. Students will learn that zoning ordinances regulate land use and development patterns, while building codes establish standards for structural safety, accessibility, and construction practices.
- Investigate the types of information communicated in zoning regulations, including land-use classifications, setbacks, building height limits, density requirements, parking regulations, and permitted property uses.
- Study the role of history in urban planning and city design by researching historically significant

planning movements, locations, and concepts. Students will analyze how historical developments continue to shape modern cities and communities.
- Design a city block that incorporates a variety of building types and public spaces. The city block will include designated areas for structures and environments studied throughout the course, such as apartment buildings, corporate offices, parks, retail spaces, and community facilities.
- Create and refine drawings using CAD software and other forms of digital media to communicate design solutions clearly and professionally.
- Develop a digital portfolio that will include the base drawing for the city block project. Students will continuously revise and expand their portfolio throughout the course as additional projects and design elements are completed.
- Conduct research on a historically significant urban planning location, movement, planner, or urban planning concept and present findings to the class in a formal presentation.
- Participate in a guest lecture or classroom presentation by an urban planner or instructor discussing careers, responsibilities, and current issues within the field of urban planning.
- Participate in lectures and demonstrations on integrating Photoshop with AutoCAD to create professional-quality presentation drawings, renderings, and visual layouts.
- Receive instruction on CAD functions and drafting techniques, including scale, hatching, layering, dimensioning, annotations, PDF printouts, and other technical drawing functions relevant to architectural and urban planning design.
- Complete formative assessments throughout the design and research process to monitor progress, encourage reflection, and provide opportunities for feedback and revision.
- Complete summative assessments evaluated by both the teacher and student using rubrics specifically aligned to the design problems, research assignments, and presentation objectives.
- Demonstrate understanding of key urban planning, zoning, and design concepts through a unit test or quiz.
- Respond to a writing prompt that encourages reflection on planning issues, community development, design choices, and the impact of urban environments on society and daily life.

Assessment

Formative

answer essential questions

exit ticket

meaningfully participate in guided question and answer sessions, group and individual discussions, and show an understanding of the purpose of the unit lesson(s), and their key terms and concepts.

Summative

Design and create presentation drawings for a building that demonstrates an understanding of means of egress, curtain wall, and steel construction. The presentation will include a written description that describes the technical aspects of the proposal. The presentation will be evaluated using teacher and student designed rubrics.

The presentation will be included in an electronic portfolio and assessed with a rubric.

Benchmark

Midterm Exam/Final Exam

Alternative Assessment

Present the project to peers and/or the community.

Complete writing prompt: What are the considerations for developing a presentation drawing?

Complete writing prompt. Examples: Explain strategies to keep people safe from fire in a building.

Materials

The CADD LAB-computers equipped with up-to-date AutoCAD and/or other design and drafting software, presentation software, productivity software, a scanner and printers/plotters.

Traditional drafting equipment and supplies-vellum, colored and graphite pencils, pen and ink, drawing boards, tape, scissors, t-squares, triangles etc.

Chip-board, X-acto knives and other model making supplies.

A computer with INTERNET based presentation software (i.e. Prezi and Google Slides) and Microsoft Powerpoint.

3-D printer and supplies

Safety glasses

INTERNET resources and tutorials on how to use CAD software.

Teacher e-board.

SmartBoard use for teacher presentation and interactive lessons

SmartBoard use for student presentations.

Model making materials, dependant on projects that used.

Standards

9.2.12.CAP	Career Awareness and Planning
9.4.12.CI	Creativity and Innovation
1	Developing Responsibility for Learning: Cultivating independence, self-reflection, and responsibility for one's own learning.
TECH.K-12.1.1	Empowered Learner
	There are strategies to improve one's professional value and marketability.
2	Adapting Communication: Adapting communication in response to the varying demands of audience, task, purpose, and discipline.
3	Valuing Evidence in Argumentation: Constructing viable claims and evaluating, defending, challenging, and qualifying the arguments of others.
TECH.K-12.1.1.a	articulate and set personal learning goals, develop strategies leveraging technology to achieve them and reflect on the learning process itself to improve learning outcomes.
4	Building Knowledge: Building strong content knowledge and connecting ideas across disciplines using a variety of text resources and media.
9.2.12.CAP.2	Develop college and career readiness skills by participating in opportunities such as structured learning experiences, apprenticeships, and dual enrollment programs.
	Innovative ideas or innovation can lead to career opportunities.
5	Leveraging Technology: Employing technology and digital media thoughtfully, strategically and capably to enhance reading, writing, speaking, listening, and language use.
9.2.12.CAP.3	Investigate how continuing education contributes to one's career and personal growth.
9.4.12.CI.2	Identify career pathways that highlight personal talents, skills, and abilities (e.g., 1.4.12prof.CR2b, 2.2.12.LF.8).
TECH.K-12.1.1.c	use technology to seek feedback that informs and improves their practice and to demonstrate their learning in a variety of ways.
	Career planning requires purposeful planning based on research, self-knowledge, and informed choices.
9.4.12.CI.3	Investigate new challenges and opportunities for personal growth, advancement, and transition (e.g., 2.1.12.PGD.1).
6	Understanding Self and Others: Using literacy as a vehicle to affirm all the aspects of one's own identity, as well as understand, connect to and respect other perspectives and cultures.
TECH.K-12.1.2	Digital Citizen
9.4.12.CT	Critical Thinking and Problem-solving
9.2.12.CAP.5	Assess and modify a personal plan to support current interests and post-secondary plans.
	Collaboration with individuals with diverse experiences can aid in the problem-solving process, particularly for global issues where diverse solutions are needed.
9.4.12.CT.1	Identify problem-solving strategies used in the development of an innovative product or practice (e.g., 1.1.12acc.C1b, 2.2.12.PF.3).
9.2.12.CAP.7	Use online resources to examine licensing, certification, and credentialing requirements at the local, state, and national levels to maintain compliance with industry requirements in areas of career interest.
9.4.12.CT.2	Explain the potential benefits of collaborating to enhance critical thinking and problem solving (e.g., 1.3E.12profCR3.a).

TECH.K-12.1.2.c	demonstrate an understanding of and respect for the rights and obligations of using and sharing intellectual property.
TECH.K-12.1.2.d	manage their personal data to maintain digital privacy and security and are aware of data-collection technology used to track their navigation online.
TECH.K-12.1.3	Knowledge Constructor
TECH.K-12.1.3.a	plan and employ effective research strategies to locate information and other resources for their intellectual or creative pursuits.
LA.RST.9-10	Reading Science and Technical Subjects
TECH.K-12.1.3.c	curate information from digital resources using a variety of tools and methods to create collections of artifacts that demonstrate meaningful connections or conclusions.
	Key Ideas and Details
TECH.K-12.1.3.d	build knowledge by actively exploring real-world issues and problems, developing ideas and theories and pursuing answers and solutions.
TECH.K-12.1.4	Innovative Designer
TECH.K-12.1.4.a	know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems.
TECH.K-12.1.4.b	select and use digital tools to plan and manage a design process that considers design constraints and calculated risks.
TECH.K-12.1.4.c	develop, test and refine prototypes as part of a cyclical design process.
9.4.12.GCA	Global and Cultural Awareness
TECH.K-12.1.6	Creative Communicator
TECH.K-12.1.6.a	choose the appropriate platforms and tools for meeting the desired objectives of their creation or communication.
TECH.K-12.1.6.b	create original works or responsibly repurpose or remix digital resources into new creations.
TECH.K-12.1.6.c	communicate complex ideas clearly and effectively by creating or using a variety of digital objects such as visualizations, models or simulations.
TECH.K-12.1.6.d	publish or present content that customizes the message and medium for their intended audiences.
9.4.12.TL	Technology Literacy
	Digital tools differ in features, capacities, and styles. Knowledge of different digital tools is helpful in selecting the best tool for a given task.
9.4.12.TL.1	Assess digital tools based on features such as accessibility options, capacities, and utility for accomplishing a specified task (e.g., W.11-12.6.).
	Engineering design is a complex process in which creativity, content knowledge, research, and analysis are used to address local and global problems. Decisions on trade-offs involve systematic comparisons of all costs and benefits, and final steps that may involve redesigning for optimization.
8.2.12.ED.1	Use research to design and create a product or system that addresses a problem and make modifications based on input from potential consumers.
	Collaborative digital tools can be used to access, record and share different viewpoints and to collect and tabulate the views of groups of people.
8.2.12.ED.2	Create scaled engineering drawings for a new product or system and make modification to increase optimization based on feedback.
8.2.12.ED.3	Evaluate several models of the same type of product and make recommendations for a new design based on a cost benefit analysis.

8.2.12.ED.4	Design a product or system that addresses a global problem and document decisions made based on research, constraints, trade-offs, and aesthetic and ethical considerations and share this information with an appropriate audience.
	Engineering design evaluation, a process for determining how well a solution meets requirements, involves systematic comparisons between requirements, specifications, and constraints.
8.2.12.ED.5	Evaluate the effectiveness of a product or system based on factors that are related to its requirements, specifications, and constraints (e.g., safety, reliability, economic considerations, quality control, environmental concerns, manufacturability, maintenance and repair, ergonomics).
ETW	Effects of Technology on the Natural World
	Development and modification of any technological system needs to take into account how the operation of the system will affect natural resources and ecosystems. Impacts of technological systems on the environment need to be monitored and must inform decision-making. Many technologies have been designed to have a positive impact on the environment and to monitor environmental change over time.
HS-ETS1	Engineering Design
HS-ETS1-1	Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.
	Asking Questions and Defining Problems
	Asking questions and defining problems in 9–12 builds on K–8 experiences and progresses to formulating, refining, and evaluating empirically testable questions and design problems using models and simulations.
ETS1.A	Delimiting Engineering Problems
	Criteria and constraints also include satisfying any requirements set by society, such as taking issues of risk mitigation into account, and they should be quantified to the extent possible and stated in such a way that one can tell if a given design meets them.
	Humanity faces major global challenges today, such as the need for supplies of clean water and food or for energy sources that minimize pollution, which can be addressed through engineering. These global challenges also may have manifestations in local communities.
HS-ETS1-2	Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.
	Constructing Explanations and Designing Solutions
ETS1.C	Optimizing the Design Solution

Integrated Accommodation and Modifications, Special Education students, English Language Learners, At-Risk Students, Gifted and Talented students, Career Education, and those with 504s