

Course Title:	Architectural Design I
Grade(s):	9-12

Course Description
This course is designed to introduce concepts of architectural design. Throughout the semester, students will explore the fundamentals of designing residential homes, methods of construction, and building codes. Students will complete a house design of their choice using widely recognized industry standard computer-aided drafting (CAD) software to the specifications created by the National Association of Home Builders.
Approved Curricular Materials/Textbook(s)

Unit Title	Unit Description (Include Unit Objectives)	Unit Pacing
Unit 1: Computer Software	Students will develop proficiency in architectural design software used by industry professionals. Through guided practice and design projects, students will learn to create, modify, and present architectural drawings and models using computer-aided design (CAD) and building design software. Students will be able to: • Navigate the interface of architectural design software. • Create and modify architectural drawings using industry-standard tools. • Apply drawing standards, layers, dimensions, and annotations. • Produce accurate floor plans and building models. • Utilize software features to improve design efficiency. • Save, organize, and manage project files. • Generate professional-quality design presentations.	Ongoing

	• Demonstrate digital drafting skills consistent with industry practices.	
Unit 2: Career Pathways—Architecture/ Construction Cluster	Students will explore careers within the Architecture and Construction Career Cluster. Emphasis is placed on educational requirements, professional responsibilities, industry certifications, and opportunities within architecture, engineering, construction, and related fields. Students will be able to: • Identify careers within the Architecture and Construction Career Cluster. • Describe the roles and responsibilities of architecture and construction professionals. • Research education and training requirements for various careers. • Explain industry certifications and professional organizations. • Evaluate career opportunities based on personal interests and skills. • Investigate current trends within the architecture and construction industries. • Develop a career plan aligned with personal goals. • Demonstrate professional workplace skills and expectations.	Ongoing
Unit 3: Zoning and Site Design	Students will examine how zoning regulations, building codes, and site conditions influence architectural design. Students will analyze properties and develop site plans that consider land use, setbacks, circulation, utilities, and environmental factors. Students will be able to: • Explain the purpose of zoning regulations and land-use planning. • Interpret zoning requirements and building restrictions. • Analyze site characteristics that affect building placement. • Create site plans that include property boundaries, setbacks, and easements. • Evaluate environmental and sustainability considerations in site	2 weeks

	design. • Plan vehicle and pedestrian circulation patterns. • Incorporate utility and infrastructure considerations into site layouts. • Present site design solutions using professional drafting techniques.	
Unit 4: Residential Drawing and Specifications (Plan views)	Students will create residential architectural drawings that communicate building layouts and construction information. Focus is placed on floor plans, room arrangement, dimensions, symbols, and architectural drafting standards. Students will be able to: • Identify common residential floor plan components. • Draw accurate residential floor plans using architectural conventions. • Apply proper dimensioning and annotation techniques. • Use architectural symbols and abbreviations correctly. • Develop room layouts that meet functional requirements. • Interpret and create residential construction specifications. • Produce professional-quality plan view drawings. • Evaluate residential floor plans for efficiency and usability.	4 weeks
Unit 5: Residential Drawing and Specifications (Elevation views)	Students will develop elevation drawings that communicate the exterior appearance and construction details of residential structures. Students will explore architectural styles, materials, roof systems, and visual presentation techniques. Students will be able to: • Explain the purpose of elevation drawings. • Create front, rear, and side elevation views. • Apply architectural drafting standards to elevation drawings. • Select appropriate exterior materials and finishes. • Illustrate rooflines, windows, doors, and architectural details accurately.	2 weeks

	• Communicate building height and exterior design features. • Interpret elevation drawings and specifications. • Present residential designs using professional drawing techniques.	
Unit 6: Green Building	Students will investigate sustainable design principles and environmentally responsible construction practices. Topics include energy efficiency, renewable resources, indoor environmental quality, and sustainable building materials. Students will be able to: • Define principles of sustainable and green building design. • Evaluate the environmental impact of construction materials. • Identify energy-efficient building systems and technologies. • Analyze building orientation and its effect on energy use. • Incorporate sustainable design features into architectural projects. • Research green building certifications and standards. • Compare traditional and sustainable construction methods. • Develop design solutions that reduce environmental impact.	2 weeks
Unit 7: 3-D Drawing and Specifications	Students will create three-dimensional architectural models and visualizations that communicate building form, space, and design intent. Emphasis is placed on modeling techniques, rendering, and presentation quality. Students will be able to: • Create three-dimensional architectural models using design software. • Convert two-dimensional drawings into three-dimensional representations. • Apply materials, textures, and finishes to digital models. • Generate rendered views and walkthrough presentations. • Evaluate the relationship between form and function. • Identify potential design conflicts using 3-D visualization tools.	2 weeks

	• Communicate design concepts through professional presentations. • Produce accurate and detailed project documentation.	
Unit 8: NKBA National Design Standards	Students will explore the National Kitchen and Bath Association (NKBA) design standards used by industry professionals. Students will apply these standards to create safe, functional, and aesthetically pleasing kitchen and bathroom designs. Students will be able to: • Explain the purpose of NKBA design standards. • Apply NKBA guidelines to kitchen layouts and designs. • Apply NKBA guidelines to bathroom layouts and designs. • Design functional work zones and circulation pathways. • Select appropriate fixtures, cabinetry, and appliances. • Evaluate designs for accessibility, safety, and efficiency. • Create professional kitchen and bath design plans. • Justify design decisions using NKBA standards.	3 weeks
Unit 9: Commercial Design (3-D)	Students will apply architectural design principles to commercial building projects using three-dimensional modeling software. Students will consider client needs, building function, accessibility requirements, and professional presentation techniques while creating commercial design solutions. Students will be able to: • Identify characteristics of commercial building design. • Analyze client needs and project requirements. • Create three-dimensional commercial building models. • Apply building code and accessibility considerations to designs. • Design functional interior and exterior spaces. • Incorporate sustainable and efficient design strategies. • Prepare professional renderings and presentations. • Evaluate commercial designs based on functionality, aesthetics, and	3 weeks

	user experience. • Present and defend design solutions using architectural terminology and industry standards. • Demonstrate proficiency in professional architectural design workflows.	
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