



Design Technology

Architectural Design 2

The first instructional course in a sequence of courses that prepares individuals with an emphasis in architectural drafting to apply technical knowledge and skills to develop working drawings for architectural and related construction projects. Includes instruction in basic layout and designs, architectural blueprint interpretation, calculations of building materials, and prepare elevation drawings. The current building code should be in applied in the various units.

USOE
7/21/2008

ARCHITECTURAL DESIGN 2

Levels:	Grades 10-12
Units of Credit:	1.0 or could be split into two 0.5 credit courses
CIP Code:	15.1303
11 Digit Code:	40-10-00-00-001
11 Digit DE Code:	40-10-00-13-001
Test #:	544
License:	CTE/Secondary
Endorsement:	Drafting/CAD
Prerequisite:	None

COURSE DESCRIPTION

This is the second instructional course in a sequence of courses that prepares individuals with knowledge of residential architectural and related construction. This course includes instruction in building materials, building codes, typical wall sections, interior elevations, plot plans, Specifications, electrical plans, architectural renderings, and Computer-Aided Design (CAD) software with a major emphasis on 3D.

Instructors should be cautioned to limit the size of the dwelling to 1,600 square feet on the main floor.

STANDARD 1

Students will be able to understand room and space planning.

Objective 1: Understand architectural design fundamentals.

- Identify the historical influences that helped shape today's home designs.
- Recognize and describe the elements of contemporary dwellings.
- Discuss current trends in architecture.
- List family needs that should be considered when planning a dwelling.

Objective 2: Understand and apply architectural room planning for the sleeping, living, and service areas.

- Be acquainted with factors that are important in the design of bedrooms, bathrooms, and closets. Apply those design elements to sketches and drawings.
- Discuss factors that are important in the design of living rooms, entryways, foyers, porches, and courts. Apply those design elements to sketches and drawings.
- Discuss factors that are important in the design of kitchens, clothes care centers, and garages. Apply those design elements to sketches and drawings.
- Discuss home construction costs using the cost per square foot. Discuss cost per type of construction, affordability, and the cost of amenities.
- Discuss accessibility requirements and the cost impact.

Objective 3: Understand how to design a residential floor plan.

- a. List the information required on a typical floor plan.
- b. Represent typical materials using standard architectural symbols.
- c. Design and draw (to scale) a residential floor plan using the accepted symbols and techniques.
- d. Draw the dimensions of a floor plan in a clear and precise manner which complies with architectural standards.
- e. Recognize the difference between a good and poor drawing of a floor plan.
- f. Discuss accessibility requirements for good functional utility.

Objective 4: Understand basic regulations concerning home design and construction.

- a. Discuss the Uniform Building Code (UBC) for a residence.
- b. Discuss FHA minimum standards for a residence.
- c. Discuss local zoning restrictions for a residence.

STANDARD 2

Students will be able to understand plot plans and foundation systems.

Objective 1: Understand how to analyze, calculate, and design footings and foundations.

- a. List the major considerations when designing a footing for a residential foundation.
- b. Describe the procedure for staking out a house location.
- c. Analyze a typical floor plan to determine the appropriate foundation.
- d. Discuss the design considerations for wood, concrete, and masonry foundation walls.
- e. Calculate the load to be supported by a beam.
- f. Discuss different design requirements for basements, crawl spaces, or slabs on grade construction.

Objective 2: Understand how to layout plot plans.

- a. Draw a plot plan or site plan for a residence.
- b. Show grade elevations against the home, the contours of the lot, and corners of the lot for drainage away from the home.
- c. Show water, power, gas, and sewer lines and/or septic tank, and the drainage field where appropriate.
- d. Show walks, driveways, patios, and other onsite improvements.
- e. Show the relationship of the finished floor elevation of the home and the finished grade around the home.

STANDARD 3

The students will understand Construction Systems as they relate to a residence.

Objective 1: Students will be able to understand how to layout wall construction.

- a. Name the components of a typical frame wall.
- b. Explain the methods of frame wall construction.
- c. Interpret the information shown on a ceiling joist span data chart and trusses.
- d. Draw a typical wall section and full cross sections.

Objective 2: Students will be able to understand how to layout stair details.

- a. Draw interior and exterior stair details appropriate to those found in a home.
- b. Stair details should comply with applicable building codes.
- c. Show hand rails, guards rails, and other safety features.
- d. Use and label correct materials in stair details.

Objective 3: Layout electrical plans.

- a. Draw electric plans for all floors of your architectural design to comply with National Electrical Code (NEC).
- b. Use correct architectural and national electrical code symbols.
- c. Show the correct location of smoke detectors in the dwelling as per code.

Objective 4: Complete a door, window, and finishing schedules.

- a. Draw a window schedule that would include window size, make, material, and type of glazing.
- b. Draw a door schedule that would include door size, style, type of lockset, special features, and jamb size.
- c. Draw a finish schedule that would include different types of wall and ceiling finishes, types of floor coverings, special wainscot wall finishes, etc.

Objective 5: Write specifications and description of materials for a set of residential plans.

- a. Prepare a specification index utilizing standard CSI 16-division format.
- b. Prepare an outline specification utilizing the 3-part section format.
- c. Write a complete specification sector using the imperative language format.

STANDARD 4

The students will understand how to create presentation drawings.

Objective 1: Layout exterior and interior elevations and millwork details.

- a. List features that should be included on an exterior elevation.
- b. Identify the dimensions commonly shown on elevations.
- c. Illustrate symbols that are often found on elevations.
- d. Draw a typical exterior elevation which demonstrates proper techniques.
- e. Draw millwork elevations and special details for kitchen cabinets, bathroom cabinets, and linen, wardrobe, and utility closets and cabinets.
- f. Draw details for special built-ins.
- g. Use proper architectural call-outs.

Objective 2: Layout perspectives.

- a. Create one-point perspective drawings of a room.
- b. Create two-point perspective drawings of a residence.

STANDARD 5

Students will enhance their understanding of Design Technology as a profession and will develop professional skills for the workplace.

Objective 1 As a participating member of the SkillsUSA student organization, complete the SkillsUSA Level 2 Professional Development Program.

- a. Measure/modify short-term goals.
- b. Identify stress sources.
- c. Select characteristics of a positive image.
- d. Demonstrate Government awareness.
- e. Demonstrate awareness of professional organizations.
- f. Apply team skills to a group project.
- g. Observe and critique team skills at a local professional meeting.
- h. Demonstrate business meeting skills.
- i. Explore workplace ethics: codes of conduct.
- j. Demonstrate social etiquette.
- k. Complete survey for employment opportunities.
- l. Review a professional journal and develop a three- to five-minute speech.
- m. Complete a job application.
- n. Assemble an employment portfolio.
- o. Explore supervisory and management roles in an organization.
- p. Conduct a worker interview.
- q. Perform a self-evaluation of proficiency in program competencies.

Objective 2 Serve in the school's SkillsUSA chapter as a committee member.

Objective 3 Display a professional attitude toward the instructor and peers.

Objective 4 As a participating member of the SkillsUSA student organization, complete the SkillsUSA Level 3 Professional Development Program.

- a. Evaluate your career and training goals.
- b. Market your career choice.
- c. Develop personal financial skills
- d. Serve as a volunteer in the community.
- e. Plan and develop a business.
- f. Conduct a worker interview.
- g. Develop a résumé and write a cover letter.
- h. Demonstrate interviewing skills.
- i. Understand the cost of customer service.
- j. Identify and apply conflict resolution skills.
- k. Demonstrate evaluation skills.
- l. Examine workplace ethics: the role of values in making decisions.
- m. Perform a skill demonstration.
- n. Learn what is contained in Material Safety Data Sheets (MSDS).
- o. Perform a self-evaluation of proficiency in program competencies.

Objective 5 Serve as an officer in the school's chapter of SkillsUSA

Objective 6 Participate in an authorized SkillsUSA drafting competition.

Objective 7 Display a professional attitude toward the instructor and peers.