

Glendale Unified School District

High School

May 23, 2017

Department: Career Technical Education

Course Title: Drafting & Basic Design – ARCH 101 (Formerly CADD 1)

Course Code: 5424

Grade Level(s): 10-12

Course Credits: 10

Recommended
Prerequisite: Principals of Engineering 1-2

Recommended
Textbook: Wakita, Osama, Richard M. Linde and Nagy R. Bakhoum The Professional Practice of Architectural Working Drawings 4th Edition
New York: John Wiley, 2011. ISBN: 0-470-61815-9.

Course Overview: Drafting & Basic Design is a study in the fundamentals of drafting techniques used in architectural drawing, and the basic design procedure relative to good residential planning. The course studies residential building codes, drafting of working drawings, scale drawing of construction details, framing concepts, and proper dimensioning techniques.

Course Entry Expectations

1. While enrolled in the course, the student should be able to:
2. Apply the concepts of 2d and 3d design by the completion of projects on paper media;
3. Understand the critique process of evaluating design projects;
4. Recognize the importance and purpose of a portfolio;
5. Demonstrate a command of grammar, diction, syntax, and mechanics sufficient for college level work: control of standard English at the sentence level, with few major errors in grammar and punctuation;
6. Summarize, analyze, and synthesize information, express and apply standards for Judgments, compare and contrast, and evaluate evidence in order to form and state reasoned opinions.

Course Exit Standards

Upon successful completion of the required coursework, the student should be able to:

1. Describe the meaning of basic architectural vocabulary terms;
2. Demonstrate proficiency in drawing on vellum and in the use of drawing instruments by the completion of various drawing assignments;
3. Describe limited examples of the use of the Uniform Building Code as it applies to residential construction.

Course Content:

I. Introduction to the Study of Architecture (lecture 4 hours, lab 1 hour)

1. Function and design of a residential structure: Basic purpose of shelter; Room sizes; Traffic patterns within the home; Building code requirements
2. Architectural terminology
3. Styles of architecture: Past/Historic styles; Present trends
4. Architectural practice; Drafter/designer; Architect; Engineer; Importance of Computer Aided Design (CAD)

II. Use of the Drafting Tools and Equipment (lecture 4 hours, lab 4 hours)

1. Reading the architectural scale
2. Use and care of drafting equipment: Personal tools: Drafting machine; Parallel straightedge; Drafting table surfaces

III. Architectural Symbols (lecture 1 hour, lab 4 hours)

1. Material symbols: Interior section symbology; Exterior materials; Electrical and plumbing symbols; Door and window types and symbols

IV. Projection Methods (lecture 2 hour, lab 5 hours)

1. Visualization practice
2. Orthographic projection Isometric projection
3. Discussion of perspective projection

V. Architectural Lettering (lecture 1 hour, lab 4 hours)

1. Lettering styles and practice
2. Dimensioning

VI. Construction Techniques (lecture 3 hours, lab 4 hours)

1. Wood framing methods
2. Concrete foundation
3. Application of finish materials
4. Roughing in plumbing and electrical fixtures

VII. Building code requirements - Building Materials and Components (lecture 2 hours, lab 6 hours)

1. Wood, stone, steel, concrete, brick, adobe uses
2. Limitations Reference manufacturer sources
3. Sweet's catalog Other manufacturer's sources Use of the Internet for search

VIII. Orientation of the Home (lecture 1 hours, lab 4 hours)

1. Effects of weather and sunlight
2. Setback and size limitations
3. Zoning and economics

IX. Architectural Working Drawings (lecture 4 hours, lab 34 hours)

1. Title sheet
2. Site plan
3. Floor plan
4. Foundation plan
5. Foundation details
6. Section views
7. Electric plan
8. Framing plan
9. Exterior elevations

X. Architectural Renderings (lecture 1 hour, lab 2 hours)

1. Proper use of pencils and other media used in architecture
2. Sketching and delineation of architectural forms
3. Landscape forms

XI. Presentation of Final Project (lecture 1 hour, lab 4 hours)

1. Portfolio of completed drawings
2. Rendering of display drawings
3. Purpose of architectural models
 - a. Study models
 - b. Finished models
 - c. Computer models
4. Final critique

Methods of Instruction

The following instructional methodologies may be used in the course: lecture; multimedia; guest speakers; individual and group projects.

Out of Class Assignments

The following out of class assignments may be used in the course: individual research projects (e.g. write a description of job requirements for a drafter/designer and explain why these are necessary); group projects (e.g. complete a design project such a kitchen including cabinetry design).

Methods of Evaluation

The following methods of evaluation may be used in the course:

1. Vocabulary quizzes. (e.g. eight quizzes of 10 terms each);
2. Midterm examination and performance test. (e.g. timed drawing test of a basic architectural project);
3. Final individual project. (e.g. drawings of a two-bedroom project with eight sheets of working drawings);
4. Final examination and performance test. (e.g. timed drawing test of a small residential project consisting of a floor plan, elevation and foundation detail).

Student Learning Outcomes

Upon successful completion of the required coursework, students will be able to:

1. Complete assignments in basic drafting fundamentals;
2. Complete basic residential working drawings;
3. Use limited technical vocabulary;
4. Demonstrate proficiency in an architectural style of lettering;
5. Demonstrate proficiency in drawing on vellum and in the use of drawing instruments;
6. Apply a limited portion of the uniform building code.