Indiana Department of Education  
Academic Standards Course Framework  

ARCHITECTURAL DRAFTING AND DESIGN I

Architectural Drafting and Design I gives students a basic understanding of the detailing skills commonly used by drafting technicians. Areas of study include: lettering, sketching, proper use of equipment, geometric constructions with emphasis on orthographic (multi-view) drawings that are dimensioned and noted to ANSI standards. This course includes the creation and interpretation of construction documents. Methods of geometric construction, three dimensional drawing techniques, and sketching will be presented as well as elementary aspects of residential design and site work. Areas of emphasis will include print reading and drawing. This course also provides students with a basic understanding of the features and considerations associated with the operation of a computer-aided design (CAD) system. Students will gain valuable hands-on experience with Auto CAD. They will be expected to complete several projects relating to command topics. Topics include: 2D drawing commands, coordinate systems, editing commands, paper and model space, inquiry commands, layers, plotting, text, and basic dimensioning.

- DOE Code: 5640
- Recommended Grade Level: Grade 11-12
- Recommended Prerequisites: Computers in Design and Production
- Credits: 2-3 credits per semester, maximum of 6 credits
- Counts as a Directed Elective or Elective for the General, Core 40, Core 40 with Academic Honors and Core 40 with Technical Honors diplomas
- This course is aligned with postsecondary courses for Dual Credit
  - Ivy Tech
    - DESN 102- Technical Graphics
    - DESN 103- CAD Fundamentals
  - Vincennes University
    - ARCH 102- Architectural Drawing
    - ARCH 141- Introduction to Architectural CAD

Dual Credit
This course provides the opportunity for dual credit for students who meet postsecondary requirements for earning dual credit and successfully complete the dual credit requirements of this course.

Application of Content and Multiple Hour Offerings
Intensive laboratory applications are a component of this course and may be either school based or work based or a combination of the two. Work-based learning experiences should be in a closely related industry setting. Instructors shall have a standards-based training plan for students participating in work-based learning experiences. When a course is offered for multiple hours per semester, the amount of laboratory application or work-based learning needs to be increased proportionally.

Career and Technical Student Organizations (CTSOs)
Career and Technical Student Organizations are considered a powerful instructional tool when integrated into Career and Technical Education programs. They enhance the knowledge and skills students learn in a course by allowing a student to participate in a unique program of career and leadership development. Students should be encouraged to participate in SkillsUSA, the CTSO for this area.
Content Standards

Domain – Utilizing the Design Process in Architectural Drafting

Core Standard 1 Students apply and adapt the design process to challenges found in architectural drafting scenarios.

Standards
ADDI-1.1 Identify and utilize the design process
ADDI-1.2 Recognize that budget constraints and customer needs are part of the design process
ADDI-1.3 Interpret demographics in an given area and relate it to the design process

Domain – Drawing Concepts in Architectural Drafting

Core Standard 2 Students integrate architectural concepts to produce industry standard drawings.

Standards
ADDI-2.1 Use various architectural and construction terminology correctly
ADDI-2.2 Show familiarity with conventional drafting standards
ADDI-2.3 Identify and demonstrate proper use of drafting equipment
ADDI-2.4 Identify pictorial, isometric, and orthographic drawing types
ADDI-2.5 Sketch proportionately and recognizably a given object
ADDI-2.6 Demonstrate advanced design sketching
ADDI-2.7 Demonstrate vertical Gothic lettering to quality standards
ADDI-2.8 Interpret scaled detailed drawings
ADDI-2.9 Identify and utilize drafting symbols
ADDI-2.10 Demonstrate acceptable line work and construction techniques
ADDI-2.11 Use and interpret sectioning techniques involving numerous line types
ADDI-2.12 Interpret residential planning and bubble diagrams
ADDI-2.13 Read an architectural scale
ADDI-2.14 Understand how to make a drawing to-scale

Domain – Utilization of CAD Software in Architecture

Core Standard 3 Students select specific commands to develop drawings to meet industry standards.

Standards
ADDI-3.1 Demonstrate competence in the use of CAD software through assignments
ADDI-3.2 Correctly use word processing and CAD file exporting commands when completing assignments
ADDI-3.3 Identify and use multiple input methods to select commands on the CAD system
ADDI-3.4 Retrieve and use help commands
ADDI-3.5 Navigate through and identify various parts of the CAD environment
ADDI-3.6 Modify drawing elements using editing commands
ADDI-3.7 Complete assignments using specific software commands and processes
ADDI-3.8 Explain coordinate systems

Domain – Solving Design Challenges in Architectural Drafting

Core Standard 4 Students synthesize architectural knowledge to design and create solutions.
Standards
ADDI-4.1 Develop and draw a floor plan
ADDI-4.2 Draw a site plan
ADDI-4.3 Draw a foundation plan
ADDI-4.4 Interpret roof framing and calculations
ADDI-4.5 Draw wall sections
ADDI-4.6 Read construction documents
ADDI-4.7 Develop elevations
ADDI-4.8 Interpret schedules
ADDI-4.9 Interpret and apply required codes, standards, specifications, and cross-referencing

Domain – Careers in Architectural Drafting
Core Standard 5 Students evaluate architectural careers to prepare for future training and employment opportunities.

Standards
ADDI-5.1 Research architectural drafting careers
ADDI-5.2 Find architectural drafting opportunities offered by a technical school or college
ADDI-5.3 Determine architectural drafting occupation wages/salaries
ADDI-5.4 Research architectural drafting job outlook information