

# Architectural Print Interpretation

## Course Outcome Summary

### Course Information

Organization	Madison Area Technical College
Developers	Richard Wandschneider
Development Date	6/7/2006
Course Number	10-614-140
Instructional Level	Associate Degree
Potential Hours of Instruction	36
Total Credits	2

### Description

Students demonstrate how to interpret residential and commercial plans and specifications.

### Types of Instruction

Instruction Type	Contact Hours	Credits
Classroom Presentation	36	2

### Textbooks

James A. S. Fatzinger. *Blueprint Reading for Construction*. Pearson/Prentice Hall. 2004.

### Learner Supplies

Calculator.

### Exit Learning Outcomes

#### Core Abilities

- A. Communication
- B. Critical thinking
- C. Mathematics

#### Program Outcomes

- A. Demonstrate CAD skills using Industry-standard software commensurate with an AEC project
- B. Interpret construction drawings and specifications
- C. Demonstrate basic knowledge and understanding of building codes and their applications to ensure the health, safety, and welfare of the building occupants
- D. Communicate technical/design information clearly and professionally to peers, supervisors and clients
- E. Ability to draw commonly accepted architectural details and sections for various materials
- F. Apply math skills commensurate with performing basic design and structural calculations and material take offs

- G. Apply general computer skills: word processing, spreadsheets, file management, and other programs as applied to architectural work
- H. Work as a team member by demonstrating good communication and listening skills, cooperation, and providing a supportive environment
- I. Apply a working knowledge of structural, heating, plumbing, electrical and other mechanical systems within a building
- J. Communicate clearly and professionally in both written and oral communications to peers, supervisors, and clients, using positive interpersonal skills including but not limited to, empathy, active listening, and flexibility

## **Competencies**

### **A. Interpret blueprints**

#### **Linked Core Abilities**

Critical thinking

#### **You will demonstrate your competence:**

- A.1. on a written evaluation
- A.2. by submitting end-of-chapter exercises

#### **Your performance will be successful when:**

- A.1. you interpret line types on construction documents
- A.2. you interpret abbreviations on construction documents
- A.3. you interpret symbols on construction documents
- A.4. you interpret keynotes on construction documents
- A.5. you use an architectural scale to scale a drawing
- A.6. you use an engineering scale to scale a drawing
- A.7. exercises are complete
- A.8. exercise answers are correct
- A.9. exercise answers are legible
- A.10. exercises are submitted by the due date

### **B. Interpret surveys**

#### **Linked Core Abilities**

Critical thinking

#### **You will demonstrate your competence:**

- B.1. on a written evaluation
- B.2. by submitting end-of-chapter exercises

#### **Your performance will be successful when:**

- B.1. you draw a metes and bounds plan
- B.2. you differentiate contours on a drawing
- B.3. you identify drainage paths around a structure
- B.4. you determine range, township, section, and quarter section
- B.5. exercises are complete
- B.6. exercise answers are correct
- B.7. exercise answers are legible
- B.8. exercises are submitted by the due date

### **C. Interpret off-site and site improvements for a residence**

#### **Linked Core Abilities**

Critical thinking

**You will demonstrate your competence:**

- C.1. on a written evaluation
- C.2. by submitting end-of-chapter exercises
- C.3. by submitting the alternative energy report

**Your performance will be successful when:**

- C.1. you interpret the excavating and grading symbols and abbreviations on a plan
- C.2. you identify the position of the utilities in a structure
- C.3. exercises are complete
- C.4. exercise answers are correct
- C.5. alternative energy report incorporates proper grammar, spelling and is typed
- C.6. alternative energy report includes describes kinds of alternative energy systems
- C.7. alternative energy report includes examples of alternative energy installations in the state
- C.8. alternative energy report includes future trends for using alternative energy
- C.9. alternative energy report includes savings acquired by using alternative energy
- C.10. alternative energy report is submitted by the due date

**D. Investigate foundations and below-grade construction for a residence**

**Linked Core Abilities**

Critical thinking

**You will demonstrate your competence:**

- D.1. on a written evaluation
- D.2. by submitting end-of-chapter exercises
- D.3. by submitting detailed foundation drawing

**Your performance will be successful when:**

- D.1. you distinguish between concrete masonry and concrete foundations
- D.2. you investigate moisture protection for foundation walls
- D.3. exercises are complete
- D.4. exercise answers are correct
- D.5. exercise answers are legible
- D.6. exercises are submitted by the due date
- D.7. foundation drawing includes proper materials, symbols and notes
- D.8. foundation drawing is drawn to scale
- D.9. foundation drawing is neat, accurate and uses proper line weights
- D.10. foundation drawing is submitted on time

**E. Distinguish between the above grade structures of a residence**

**Linked Core Abilities**

Critical thinking

**You will demonstrate your competence:**

- E.1. on a written evaluation
- E.2. by submitting end-of-chapter exercises
- E.3. by submitting detailed wall section drawing

**Your performance will be successful when:**

- E.1. you determine structural loads

- E.2. you investigate engineered lumber
- E.3. you distinguish between platform and balloon framing
- E.4. you distinguish between the types of insulation
- E.5. you distinguish between the various types of roofing
- E.6. exercises are complete
- E.7. exercise answers are correct
- E.8. exercise answers are legible
- E.9. exercises are submitted by the due date
- E.10. wall section drawing includes proper materials, symbols and notes
- E.11. wall section drawing is drawn to scale
- E.12. wall section drawings neat, accurate and uses proper line weights
- E.13. wall section drawing is submitted on time

**F. Examine the interior structure of a residence**

**Linked Core Abilities**

Critical thinking

**You will demonstrate your competence:**

- F.1. on a written evaluation
- F.2. by submitting a report on an environmentally friendly building material
- F.3. by submitting end-of-chapter exercises

**Your performance will be successful when:**

- F.1. you differentiate between various door types including their symbols
- F.2. you differentiate between various windows types including their symbols
- F.3. you investigate door hardware
- F.4. you distinguish between various types of wall finishes
- F.5. you distinguish between various types of floor coverings
- F.6. you investigate painting and wall coverings
- F.7. report includes a description of the selected material
- F.8. report includes a description of where to find the material
- F.9. report includes a discussion of the impact of embodied energy to produce material
- F.10. report includes a discussion of how the material impacts the environment
- F.11. report exhibits correct grammar, spelling, punctuation, word usage
- F.12. report is word processed
- F.13. exercises are complete
- F.14. exercise answers are correct
- F.15. exercise answers are legible
- F.16. exercises are submitted by the due date

**G. Identify the plumbing, mechanical, electrical systems of a residence**

**Linked Core Abilities**

Critical thinking

Mathematics

**You will demonstrate your competence:**

- G.1. on a written evaluation
- G.2. by submitting end-of-chapter exercises

**Your performance will be successful when:**

- G.1. you interpret plumbing symbols
- G.2. you interpret mechanical symbols
- G.3. you interpret electrical symbols
- G.4. you identify parts of a plumbing system
- G.5. you identify parts of a mechanical system
- G.6. you identify parts of a electrical system
- G.7. exercises are complete
- G.8. exercise answers are correct
- G.9. exercise answers are legible
- G.10. exercises are submitted by the due date

**H. Synthesize the plans and specifications of a residence**

**Linked Core Abilities**

Communication

Critical thinking

Mathematics

**You will demonstrate your competence:**

- H.1. on a written evaluation
- H.2. by submitting end-of-chapter exercises

**Your performance will be successful when:**

- H.1. you determine applicable codes and ordinances as identified on the plan
- H.2. you explore types of specifications as identified on the plan
- H.3. you interpret finish door and window schedules as identified on the plan
- H.4. you verify structural materials as identified on the plan
- H.5. you verify structural foundation construction as identified on the plan
- H.6. you verify structural foundation moisture protection as identified on the plan
- H.7. you verify insulation as identified on plans and details
- H.8. you verify plumbing as identified on plans and details
- H.9. you verify mechanical systems as identified on plans and details
- H.10. you verify electrical systems as identified on plans and details
- H.11. exercises are complete
- H.12. exercise answers are correct
- H.13. exercise answers are legible
- H.14. exercises are submitted by the due date

**I. Examine commercial construction documentation**

**Linked Core Abilities**

Critical thinking

**You will demonstrate your competence:**

- I.1. on a written evaluation
- I.2. by submitting end-of-chapter exercises

**Your performance will be successful when:**

- I.1. you identify the contents of the contract documents
- I.2. you examine the bidding process
- I.3. you examine the agreement between the owner and contractor

- I.4. you examine the written specifications for the project
- I.5. you examine the contents of the project manual
- I.6. exercises are complete
- I.7. exercise answers are correct
- I.8. exercise answers are legible
- I.9. exercises are submitted by the due date

**J. Investigate commercial construction structural systems**

**Linked Core Abilities**

Critical thinking

**You will demonstrate your competence:**

- J.1. on a written evaluation
- J.2. by submitting end-of-chapter exercises

**Your performance will be successful when:**

- J.1. you examine structural foundations (masonry and poured concrete)
- J.2. you distinguish between pre- and post-tensioning of concrete
- J.3. you examine structural steel building components
- J.4. you differentiate between gauges of steel framing including welding symbols
- J.5. you examine various roofing types
- J.6. exercises are complete
- J.7. exercise answers are correct
- J.8. exercise answers are legible
- J.9. exercises are submitted by the due date

**K. Interpret off-site and site improvements for a commercial structure**

**Linked Core Abilities**

Critical thinking

**You will demonstrate your competence:**

- K.1. on a written evaluation
- K.2. by submitting end-of-chapter exercises

**Your performance will be successful when:**

- K.1. you interpret site details (curb and gutter, catch basins, asphalt surfacing)
- K.2. you interpret retaining walls (masonry and poured concrete)
- K.3. you identify types of site lighting
- K.4. exercises are complete
- K.5. exercise answers are correct
- K.6. exercise answers are legible
- K.7. exercises are submitted by the due date

**L. Estimate quantities of materials used in construction**

**Linked Core Abilities**

Communication

Critical thinking

Mathematics

**You will demonstrate your competence:**

- L.1. on a written evaluation
- L.2. by submitting end-of-chapter exercises

L.3. by submitting a cost estimate sheet

**Your performance will be successful when:**

L.1. you calculate the cubic yards of concrete in a building foundation

L.2. you calculate the amount of roofing required

L.3. you calculate the slope and design of a handicapped ramp

L.4. you calculate the amount of lumber and/or steel required for a structure

L.5. you calculate the amount of finishing materials required for a structure

L.6. you determine the cost of mechanical systems for a structure

L.7. cost estimate includes estimates for plumbing systems for a structure

L.8. cost estimate includes estimates for HVAC systems for a structure

L.9. cost estimate includes estimates for electrical systems for a structure

L.10. exercises are complete

L.11. exercise answers are correct

L.12. exercise answers are legible

L.13. exercises are submitted by the due date