

# **Introduction to Drafting and Design**

## **Study Guide - Final Exam 2017**

### **Unit 1 & 2 -Introduction and Safety**

AC-IDD-2 - Identify the disciplines related to architectural and engineering professions.

- 2.1 Identify the professional and/or trade associations related to the architectural and engineering professions.
- 2.2 Identify related occupations within the architectural and engineering professions.
- 2.3 Identify the employment opportunities in the architectural and engineering professions.
- 2.4 Match architectural and engineering occupational job titles with qualifications and responsibilities.
- 2.5 Identify education and training required to work in the various architectural and engineering professions.
- 2.6 Participate in activities related to career interests.

AC-IDD-3-Demonstrate the knowledge and skills to properly use the tools and equipment safely in the drafting lab.

- 3.1 Maintain workstation and storage area.
- 3.2 Demonstrate and incorporate proper use of ergonomics in the drawing lab.
- 3.3 Follow class and lab rules.

Engineering drawing and design professions:

1. Architect
2. Mechanical Engineer
3. Civil Engineer
4. Electrical Engineer
5. Chemical Engineer
6. Aerospace Engineer
7. Agricultural Engineers
8. Environmental Engineer
9. Construction Engineer
10. Landscape Architect
11. Architectural Drafter
12. Mechanical Drafter
13. Code Official
14. Surveyor
15. Construction Inspector

Safety

- Identify what actions should occur in the case of an emergency?
- Where is the emergency floor plan information located?
- What elements make up the fire triangle?
- What are the different classes of fires?
- What are the characteristics of each class of fire?
- List 5 different classroom rules.
- List 5 rules specifically about safety.

### **Unit 3 –Equipment and Supplies**

AC-IDD-4-Demonstrate the correct use and management of all drafting tools and supplies.

- 4.1 Identify and demonstrate the correct operation and maintenance of manual drafting equipment.
- 4.2 Use correct lead selection to produce drawings.
- 4.3 Identify and use the proper type of media.
- 4.4 Promote responsible use of drafting supplies.

Drafting equipment

List each tool and give a brief description of each use:

- |                                |                         |
|--------------------------------|-------------------------|
| 1. Adjustable triangle         | 17. Eraser              |
| 2. Ames lettering guide        | 18. Erasing shield      |
| 3. Architect's scale           | 19. 45° triangle        |
| 4. Circle template<br>template | 20. House plan          |
| 5. Compass                     | 21. Irregular curve     |
| 6. Dividers                    |                         |
| 7. Drafting machine            | 23. Metric scale        |
| 8. Drafting table              | 24. Mylar               |
| 9. Drafting tape               | 25. Parallel bar        |
| 10. Drawing pencils            | 26. Protractor          |
| 11. Dusting brush              | 27. Sandpaper pad       |
| 12. Electric eraser            | 28. Skum x cleaning pad |
| 13. Electric pencil sharpener  | 29. Technical pens      |
| 14. Ellipse template           | 30. 30° - 60° triangle  |
| 15. Engineer's scale           | 31. Vellum              |
| 16. T-square                   |                         |

Drafting Practice

- What is the difference between the 30-60 Triangle and the 45 triangle?
- When would you use a curve instead of a compass?
- On days when we are using the drafting tools, what steps should you take before using your tools.
- Whose responsibility is it to take care of your drafting tools?

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### **Unit 4 Graphic Communications**

#### **AC-IDD-5 Create technical freehand sketches.**

- 5.1 Demonstrate orthographic sketches.
- 5.2 Demonstrate pictorial sketches.

AC-IDD-8 Students will demonstrate the use of proper line types.

Define Lettering.

#### Alphabet of Lines.-Definition and Identification

Visible (Object) Lines	Leader Lines
Hidden Lines	Cutting Plane Lines
Section Lines.	Viewing Plane Lines
Center lines	Short Break Lines
Dimension Lines	Long Break Lines
Extension Lines	Phantom Lines

### **Unit 5 Reading Scales**

#### Scale: Read and Draw proper measurements.

- Read an Architect's scale
- Identify the three types of scales and each unit of measurement
- Demonstrate how to measure using each scale.

### **Unit 6 – Computer Operations**

#### **AC-IDD-9- Demonstrate the knowledge and skills of computer operations.**

- 9.1 Demonstrate definitions and procedures for file management techniques: copying, deleting, finding, saving, and renaming, based on operating/applications systems.
- 9.2 Use an on-line help tutorial based on the application system.
- 9.3 Demonstrate the ability to open a drawing file and create a drawing.
- 9.4 Identify and use all major components of hardware associated with a CAD system

#### **Students should be able to identify the following:**

- Identify basic AutoCAD window and commands
- User interface
- Application Menu
- Draw Menu (basic commands within this menu)
- Modify Menu (basic commands within this menu)
- Command Window
- Command line
- Drawing Cursor
- Ribbon

### **Unit 7 – Single View Drawings**

#### **AC-IDD-10 Create and dimension single view drawings while applying geometric construction.**

- 10.1 Produce geometric shapes such as straight lines, geometric angles, plane figures, circles and arcs, and irregular geometric figures.
- 10.2 Demonstrate geometric construction techniques given size, orientation, and location specifications.
- 10.3 Apply center lines to drawings in correct size and location.
- 10.4 Apply correct dimensioning procedures.

#### **Students should be able to identify the following:**

- Explain the concept of a single view drawing
- Perform geometric construction techniques
- Produce a cohesive two-dimensional drawing
- Apply center lines to drawing in correct size and location
- Dimension using the correct procedure with correct size and location.

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**Unit 8 – Multi-view Drawings**

**AC-IDD-11 - Utilize orthographic projection to create and dimension multi-view drawings manually and using CADD.**

11.1 Draw an object that is described with two views.

11.2 Draw an object that is described with three views.

11.3 Select proper drawing scale, views, and layout.

11.4 Draw an object that has an inclined surface.

11.5 Draw an object containing circles and arcs.

11.6 Correctly identify views of an object.

11.7 Create orthographic projections utilizing the necessary views.

**Students should be able to identify the following:**

- Identify basic Inventor window and commands
- Identify types of inventor file extension
  - .ipt – part file,
  - .iam - assembly file,
  - .idw - drawing file
- Create a part using English(inches) or Metric(mm)
- Create an assembly
- Create a drawing sheet with dimensions, notes and parts list.
- Identify missing multi-views
- Match Isometric views with multi-views