COURSE: Architectural CAD	GRADES: 10 - 12
UNIT: World of Architecture	

NATIONAL STANDARDS: Standards 1, 2, 3: The Nature of Technology. Standards 4, 5, 6, 7: Technology and Society. Standards 8, 9, 10: Design. Standards 11, 12, 13: Abilities of a Technology World. Standards 14-20: The Designed World

STATE STANDARDS: **3.1.12** **3.2.12** **3.7.12** **3.8.12**	**UNIT OBJECTIVES:** After completing this unit, students will be able to: - Identify the historical influences that helped shape current home design - Recognize and describe the elements of contemporary dwellings - Discuss current trends in architecture
ACTIVITIES: Students will discuss, demonstrate and practice the topics to complete exercises that meet the above objectives. **RESOURCES:** - CAD Software - Computer Equipment	**ASSESSMENTS:** Students will be evaluated upon the following: - Solution of the problem - Identify different aspects of design **REMEDIATION:** **ENRICHMENT:**

COURSE: Architectural CAD	GRADE (S): 10 – 12
UNIT: Intro to Architectural AutoCAD	

NATIONAL STANDARDS: Standards 1, 2, 3: The Nature of Technology. Standards 4, 5, 6, 7: Technology and Society. Standards 8, 9, 10: Design. Standards 11, 12, 13: Abilities of a Technology World. Standards 14-20: The Designed World

STATE STANDARDS: **3.1.12** **3.2.12** **3.7.12** **3.8.12**	UNIT OBJECTIVES: After completing this unit, students will be able to: - Define Architectural Computer Aided Drafting - List the Advantages of CAD compared to manual drafting - Describe careers related to architectural drafting - Outline and explain the architectural design process - Identify the several professional organizations related to architecture -
ACTIVITIES: Students will discuss, demonstrate and practice the topics to complete exercises that meet the above objectives. **RESOURCES:** - CAD Software - Computer Equipment	**ASSESSMENTS:** Students will be evaluated upon the following: - Identify different aspects of design - Solution of the problem **REMEDIATION:** **ENRICHMENT:**

COURSE: Architectural CAD	GRADES: 10- 12
UNIT: Basic House Design	

NATIONAL STANDARDS: Standards 1, 2, 3: The Nature of Technology. Standards 4, 5, 6, 7: Technology and Society. Standards 8, 9, 10: Design. Standards 11, 12, 13: Abilities of a Technology World. Standards 14-20: The Designed World

STATE STANDARDS:	UNIT OBJECTIVES:
3.1.12 **3.2.12** **3.7.12** **3.8.12**	After completing this unit, students will be able to: - Recognize the four basic house design - List the chief advantages to each design - Map traffic circulation for maximum efficiency - Compare the relative cost of heating and cooling for each design
ACTIVITIES: Students will discuss, demonstrate and practice the topics to complete exercises that meet the above objectives. **RESOURCES:** - CAD Software - Computer Equipment	**ASSESSMENTS:** Students will be evaluated upon the following: - Solution of the problem - Identify different aspects of design **REMEDIATION:** **ENRICHMENT:**

COURSE: Architectural CAD	GRADES: 10 - 12
UNIT: Primary Considerations	

NATIONAL STANDARDS: Standards 1, 2, 3: The Nature of Technology. Standards 4, 5, 6, 7: Technology and Society. Standards 8, 9, 10: Design. Standards 11, 12, 13: Abilities of a Technology World. Standards 14-20: The Designed World

STATE STANDARDS: **3.1.12** **3.2.12** **3.7.12** **3.8.12**	**UNIT OBJECTIVES:** After completing this unit, students will be able to: - Evaluate a given site with respect to important considerations - Discuss key site considerations, restrictions, zoning and codes - Record topographical features of a site - List family needs that should be considered when planning a dwelling - Describe the basic construction drawings used to build a structure
ACTIVITIES: Students will discuss, demonstrate and practice the topics to complete exercises that meet the above objectives. **RESOURCES:** - CAD Software - Computer Equipment	**ASSESSMENTS:** Students will be evaluated upon the following: - Identify different aspects of design - Solution of the problem **REMEDIATION:** **ENRICHMENT:**

COURSE: Architectural CAD	GRADES: 10 - 12
UNIT: Drawing Basics	

NATIONAL STANDARDS: Standards 1, 2, 3: The Nature of Technology. Standards 4, 5, 6, 7: Technology and Society. Standards 8, 9, 10: Design. Standards 11, 12, 13: Abilities of a Technology World. Standards 14-20: The Designed World

STATE STANDARDS: **3.1.12** **3.2.12** **3.7.12** **3.8.12**	**UNIT OBJECTIVES:** After completing this unit, students will be able to: - Demonstrate skills in basic AutoCAD commands and techniques - Use line, erase, U, circle, arc, spline, polygon, rectangle, and ellipse commands
ACTIVITIES: Students will discuss, demonstrate and practice the topics to complete exercises that meet the above objectives. **RESOURCES:** - CAD Software - Computer Equipment	**ASSESSMENTS:** Students will be evaluated upon the following: - Neatness - Accuracy - Solution of the problem - Proper use of the above commands - Dimensioning **REMEDIATION:** **ENRICHMENT:**

COURSE: Architectural CAD	GRADE (S): 10 – 12
UNIT: Creating Accurate Drawings	

NATIONAL STANDARDS: Standards 1, 2, 3: The Nature of Technology. Standards 4, 5, 6, 7: Technology and Society. Standards 8, 9, 10: Design. Standards 11, 12, 13: Abilities of a Technology World. Standards 14-20: The Designed World

STATE STANDARDS: **3.1.12** **3.2.12** **3.7.12** **3.8.12**	**UNIT OBJECTIVES:** After completing this unit, students will be able to: - Utilize the object snap commands - Snap to specific angles with polar snap
ACTIVITIES: Students will discuss, demonstrate and practice the topics to complete exercises that meet the above objectives. **RESOURCES:** - CAD Software - Computer Equipment	**ASSESSMENTS:** Students will be evaluated upon the following: - Neatness - Accuracy - Solution of the problem - Proper use of the above commands - Dimensioning **REMEDIATION:** **ENRICHMENT:**

COURSE: Architectural CAD	GRADES: 10 - 12
UNIT: Layer Management	

NATIONAL STANDARDS: Standards 1, 2, 3: The Nature of Technology. Standards 4, 5, 6, 7: Technology and Society. Standards 8, 9, 10: Design. Standards 11, 12, 13: Abilities of a Technology World. Standards 14-20: The Designed World

STATE STANDARDS:
3.1.12
3.2.12
3.7.12
3.8.12

UNIT OBJECTIVES:
After completing this unit, students will be able to:
- Explain how layers are used in a drawing
- Create and manage layers
- Apply layer filters
- Modify object properties

ACTIVITIES:

Students will discuss, demonstrate and practice the topics to complete exercises that meet the above objectives.

RESOURCES:

- CAD Software
- Computer Equipment

ASSESSMENTS:

Students will be evaluated upon the following:
- Neatness
- Accuracy
- Solution of the problem
- Proper use of the above commands
- Dimensioning

REMEDIATION:

ENRICHMENT:

COURSE: Architectural CAD	GRADES: 10 - 12
UNIT: Basic Editing Commands	

NATIONAL STANDARDS: Standards 1, 2, 3: The Nature of Technology. Standards 4, 5, 6, 7: Technology and Society. Standards 8, 9, 10: Design. Standards 11, 12, 13: Abilities of a Technology World. Standards 14-20: The Designed World

STATE STANDARDS: **3.1.12** **3.2.12** **3.7.12** **3.8.12**	**UNIT OBJECTIVES:** After completing this unit, students will be able to: - Utilize the move, copy, rotate, scale, stretch, explode, break, trim, extend, lengthen and edit command
ACTIVITIES: Students will discuss, demonstrate and practice the topics to complete exercises that meet the above objectives. **RESOURCES:** - CAD Software - Computer Equipment	**ASSESSMENTS:** Students will be evaluated upon the following: - Neatness - Accuracy - Solution of the problem - Proper use of the above commands - Dimensioning **REMEDIATION:** **ENRICHMENT:**

COURSE: Architectural CAD	GRADE (S): 10 – 12
UNIT: Room Planning	

NATIONAL STANDARDS: Standards 1, 2, 3: The Nature of Technology. Standards 4, 5, 6, 7: Technology and Society. Standards 8, 9, 10: Design. Standards 11, 12, 13: Abilities of a Technology World. Standards 14-20: The Designed World

STATE STANDARDS: **3.1.12** **3.2.12** **3.7.12** **3.8.12**	**UNIT OBJECTIVES:** After completing this unit, students will be able to: - Discuss factors and plan appropriate sleeping, living and service areas - Use and apply sketching techniques in ¼" scale. - Design a sketch of a small building which is less than 2000 sq. ft.
ACTIVITIES: - Students will discuss, demonstrate and practice the topics to complete exercises that meet the above objectives. - Students will demonstrate using the ¼" scale by sketching a floor plan of a small building of their choice. - Students will explain how to properly arrange rooms. **RESOURCES:** - CAD Software - Computer Equipment	**ASSESSMENTS:** Floor plan is based on the following: - Neatness - Accuracy - Correct use of ¼" scale - Correct room sizing - Proper arrangement of rooms **REMEDIATION:** **ENRICHMENT:**

COURSE: Architectural CAD	GRADE (S): 10 – 12
UNIT: Creating a floor plan using Auto CAD	

NATIONAL STANDARDS: Standards 1, 2, 3: The Nature of Technology. Standards 4, 5, 6, 7: Technology and Society. Standards 8, 9, 10: Design. Standards 11, 12, 13: Abilities of a Technology World. Standards 14-20: The Designed World

STATE STANDARDS: **3.1.12** **3.2.12** **3.7.12** **3.8.12**	**UNIT OBJECTIVES:** After completing this unit, students will be able to: - Use Auto CAD software to design and draw a floor plan of a building that is less than 2000 square feet. - Select the proper types of windows and doors for their house. - Dimension a floor plan - Add appropriate thickness to walls, label rooms & place them in the correct areas as well dimension all rooms
ACTIVITIES: - Draw the floor plan on Auto CAD using appropriate size rooms, stairwells, hallways, doors and windows. - Demonstrate how to draw and dimension a floor plan using Auto CAD - Properly place windows and doors in the drawing and properly label each. **RESOURCES:** - CAD Software - Computer Equipment	**ASSESSMENTS:** Floor plan is based on the following: - Neatness - Accuracy - Proper arrangement of rooms - Proper size rooms, stairwells, hallways, doors and windows. **REMEDIATION:** **ENRICHMENT:**

COURSE: Architectural CAD	GRADE (S): 10 – 12
UNIT: Creating a window and door schedule	

NATIONAL STANDARDS: Standards 1, 2, 3: The Nature of Technology. Standards 4, 5, 6, 7: Technology and Society. Standards 8, 9, 10: Design. Standards 11, 12, 13: Abilities of a Technology World. Standards 14-20: The Designed World

STATE STANDARDS:
3.1.12
3.2.12
3.7.12
3.8.12

UNIT OBJECTIVES:
After completing this unit, students will be able to:
- Discuss and understand different types of windows and doors
- Discuss and understand the difference between a rough opening and a final opening for a window/door
- Students will list all the door and windows used in the window and door schedule
- Students will choose and list styles, sizes, quantities, and prices of both windows and doors.
- Students will label doors as D1, D2, D3, etc., and windows as W1, W2, W3, etc.

ACTIVITIES:
Demonstrate the proper layout of a window and door schedule that includes the following:
- Window/door number ex: W1, W2, D2, etc.
- Quantity
- A description
- Rough opening
- Final opening
- Unit price
- Total price

RESOURCES:
- CAD Software
- Computer Equipment

ASSESSMENTS:

Floor plan is based on the following:
- Neatness
- Accuracy
- Proper use and selection of the different types of windows and doors
- Proper placement of both windows and doors

REMEDIATION:

ENRICHMENT:

COURSE: Architectural CAD	GRADE (S): 10 – 12
UNIT: Creating a basement plan	

NATIONAL STANDARDS: Standards 1, 2, 3: The Nature of Technology. Standards 4, 5, 6, 7: Technology and Society. Standards 8, 9, 10: Design. Standards 11, 12, 13: Abilities of a Technology World. Standards 14-20: The Designed World

STATE STANDARDS:

3.1.12
3.2.12
3.7.12
3.8.12

UNIT OBJECTIVES:

After completing this unit, students will be able to:

- Discuss, understand, locate, and place footers, block/concrete walls, I beams, lolly columns, and pilasters in a basement plan.
- Students will layout a basic foundation plans using AutoCAD software.
- Students will select and label windows and doors on their basement plan using AutoCAD.
- Students will learn how to properly layout floor joists on a basement plan at 16" on center.

ACTIVITIES:

Demonstrate an understanding for the following by creating a basement plan that includes the following:

- A footer
- A concrete/block wall
- Lolly columns
- I beams
- Basement windows/doors
- Floor joists properly laid out

ASSESSMENTS:

Basement plan is based on the following:

- Neatness
- Accuracy
- Correct and proper layout of floor joists, I Beams, block walls, footers, and windows/doors.

RESOURCES:

- CAD Software
- Computer Equipment

REMEDIATION:

ENRICHMENT:

COURSE: Architectural CAD	**GRADE (S): 10 – 12**
UNIT: Drawing Rough Elevations with Auto CAD	

NATIONAL STANDARDS: Standards 1, 2, 3: The Nature of Technology. Standards 4, 5, 6, 7: Technology and Society. Standards 8, 9, 10: Design. Standards 11, 12, 13: Abilities of a Technology World. Standards 14-20: The Designed World

STATE STANDARDS:
3.1.12
3.2.12
3.7.12
3.8.12

UNIT OBJECTIVES:
After completing this unit, students will be able to:
- Develop rough elevations in CAD (showing studwork) for the four sides of a house.
- Demonstrate and determine proper location of size of windows and doors on a wall elevation.

ACTIVITIES:
- In CAD demonstrate the layout of height measurement in a rough elevation using projections from the floor plan.
- Demonstrate the proper locations for both windows and doors in CAD
- Define and locate the following parts in a rough elevation:
  - Footer
  - Basement wall
  - Sill plate
  - Sole plate
  - Floor joist
  - Sub floor
  - Studs
  - Cripple studs
  - Top plate
  - Headers
  - Gable end studding
  - Rafters
  - Ridge beam
    Collar ties

RESOURCES:
- CAD Software
- Computer Equipment

ASSESSMENTS:

Elevations are based on the following:
- Neatness
- Accuracy
- Accuracy of studs spaced 16” on center
- Correct leveling of all parts on rough elevation

REMEDIATION:

ENRICHMENT:

COURSE: Architectural CAD	GRADE (S): 10 – 12
UNIT: 3-D Kitchen Cabinet Plan Using Kohler.com	

NATIONAL STANDARDS: Standards 1, 2, 3: The Nature of Technology. Standards 4, 5, 6, 7: Technology and Society. Standards 8, 9, 10: Design. Standards 11, 12, 13: Abilities of a Technology World. Standards 14-20: The Designed World

STATE STANDARDS: **3.1.12** **3.2.12** **3.7.12** **3.8.12**	**UNIT OBJECTIVES:** After completing this unit, students will be able to: - Learn that a kitchen cabinet plan shows the proper location of cabinets and appliances needed to create a functional kitchen. - Identify appliances as well as base, wall, and corner cabinets by height (base cabinet is 36" tall; wall cabinet is 12" wide and 24" tall). - Figure for proper workspace and walk-in space using the work triangle to design an efficient kitchen.
ACTIVITIES: - Identify appliances, base, wall and corner cabinets. - Identify the proper sizes of wall and base cabinets. - Use a work triangle to create an efficient 3-D kitchen plan. - **RESOURCES:** - CAD Software - Computer Equipment	**ASSESSMENTS:** Kitchen plan is based on the following: - Proper location of different cabinets and appliances. **REMEDIATION:** **ENRICHMENT:**

COURSE: Architectural CAD	GRADES: 10 - 12
UNIT: Creating an Electrical Plan using Auto CAD	

NATIONAL STANDARDS: Standards 1, 2, 3: The Nature of Technology. Standards 4, 5, 6, 7: Technology and Society. Standards 8, 9, 10: Design. Standards 11, 12, 13: Abilities of a Technology World. Standards 14-20: The Designed World

STATE STANDARDS: **3.1.12** **3.2.12** **3.7.12** **3.8.12**	**UNIT OBJECTIVES:** After completing this unit, students will be able to: - Learn that an electrical plan shows the proper location of lights, switches, outlets, and doorbells on a floor plan. - Identify common electrical symbols. - Draw, locate, and properly label different electrical symbols on their floor plan - Construct an electrical symbol key to identify different electrical symbols on their electrical plan
ACTIVITIES: - Identify common electrical symbols - Identify the proper wall height for outlets and switches - Discuss and demonstrate the proper and accurate location of electrical symbols **RESOURCES:** - CAD Software - Computer Equipment	**ASSESSMENTS:** Model is assessed on the following: - Proper location of electrical symbols - Proper use of software's' electrical symbols - Neatness - Accuracy **REMEDIATION:** **ENRICHMENT:**

COURSE: Architectural CAD	**GRADE (S): 10 – 12**
UNIT: Creating a Plot Plan Using Auto CAD Software	

NATIONAL STANDARDS: Standards 1, 2, 3: The Nature of Technology. Standards 4, 5, 6, 7: Technology and Society. Standards 8, 9, 10: Design. Standards 11, 12, 13: Abilities of a Technology World. Standards 14-20: The Designed World

STATE STANDARDS: **3.1.12** **3.2.12** **3.7.12** **3.8.12**	**UNIT OBJECTIVES:** After completing this unit, students will be able to: - Properly position a house on a piece of land with respect to directional markings. - Properly use and identify septic systems, water sources, and trees and shrubs. - Accurately dimension the parcel of land.
ACTIVITIES: . - Explain proper dimensional markings in respect to the arrangement of a floor plan (ex: south side is tiled, living area is located). - Demonstrate the proper use of landscaping symbols using Auto CAD - Student will discuss, demonstrate and explain the proper layout for a water source and septic system. **RESOURCES:** - CAD Software - Computer Equipment	**ASSESSMENTS:** Plot plan is based on the following: - Neatness - Accuracy - Proper use of trees and shrubs - Proper placement of septic and water source - Proper use of dimensioning using Auto CAD. **REMEDIATION:** **ENRICHMENT:**

COURSE: Architectural CAD	GRADE (S): 10 – 12
UNIT: Stick Frame Modeling Project	

NATIONAL STANDARDS: Standards 1, 2, 3: The Nature of Technology. Standards 4, 5, 6, 7: Technology and Society. Standards 8, 9, 10: Design. Standards 11, 12, 13: Abilities of a Technology World. Standards 14-20: The Designed World

STATE STANDARDS: **3.1.12** **3.2.12** **3.7.12** **3.8.12**	**UNIT OBJECTIVES:** After completing this unit, students will be able to: - Construct a stick framed model. - Cut materials to exact size. - Then construct materials to form exterior walls. - Students will construct roof framework which includes: Ceiling joists, Rafters, Ridge beam, Collar ties, and the Gabeled end
ACTIVITIES: - Demonstrate proper use of a cutting mat and exacto knife for cutting materials. - Explain the framework of a house - Demonstrate proper sizing and positioning of wall length, stud length and thickness. **RESOURCES:** - CAD Software - Computer Equipment	**ASSESSMENTS:** Model is assessed on the following: - Good craftsmanship - Consistency of spacing of studs 16” o.c. - Accuracy of cuts and proper assembly. **REMEDIATION:** **ENRICHMENT:**