COURSE: ADVANCED 3D CAD	GRADES: 10 - 12
UNIT: Basic AutoCAD Review	

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 mastery of basic AutoCAD drawing and editing Commands
ACTIVITIES: Students will discuss, demonstrate and practice the AutoCAD commands 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 **REMEDIATION:** **ENRICHMENT:**

COURSE: ADVANCED 3D CAD	GRADES: 10- 12
UNIT: Advanced Page Set ups	

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:
- Create Mechanical and Architectural page set up
- Create Mechanical and Architectural borders

ACTIVITIES:

Students will discuss, demonstrate and practice the AutoCAD commands 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

REMEDIATION:

ENRICHMENT:

COURSE: ADVANCED 3D CAD	GRADES: 10- 12
UNIT: AutoCAD Practice	

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 mastery of AutoCAD skills by completing advanced flat plate drawings or one dimensional objects

ACTIVITIES:

Students will discuss, demonstrate and practice the AutoCAD commands 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: ADVANCED 3D CAD	GRADES: 10- 12
UNIT: Orthographic Projection	

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 mastery in creating three view drawings (top, front and side views)
- Develop visualization skills needed to draw complex orthographic drawings
- Review proper layout of orthographic projections
- Review using construction, hidden and center lines as well as dimensions to complete orthographic projections

ACTIVITIES:

Students will discuss, demonstrate and practice the AutoCAD commands 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: ADVANCED 3D CAD	GRADES: 10 - 12
UNIT: Isometric Projections Using 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:
- Create, visualize and layout an Isometric object(s)
- Create an ellipse on an Isometric plane
- Master the process of centering an Isometric drawing
- Utilize AutoCAD commands to dimension Isometric drawings

ACTIVITIES:

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

ASSESSMENTS:

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

RESOURCES:

- CAD Software
- Computer Equipment

REMEDIATION:

ENRICHMENT:

COURSE: ADVANCED 3D CAD	GRADES: 10 - 12
UNIT: Sectional Drawings using 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: - Properly layout a sectional drawing using AutoCAD - Review and master the process of hatching - Understand the importance of using/creating a cutting plane line and using material symbols with respect to a sectional drawing in AutoCAD - Learn that different sectional drawings are needed when it is difficult to show the inside of a detailed part or object with hidden lines and that a section drawing shows an object cut apart, by using an imaginary cutting plane line.
ACTIVITIES: Students will discuss, demonstrate and practice the AutoCAD commands 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 - Proper use of a cutting plane line & material symbols **REMEDIATION:** **ENRICHMENT:**

COURSE: ADVANCED 3D CAD	GRADES: 10 - 12
UNIT: Auxiliary Drawings using 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: - Learn that an auxiliary drawing is when a portion of an object is situated at an angle with the plane of projection and does not appear in its true size in any view. It is necessary to assume a direction perpendicular to the plane in order to show the correct size of the view. - Understand, demonstrate, and master using/drawing auxiliary projections in CAD. - Explain the importance of an auxiliary drawing - Explain and draw the three views of an auxiliary drawing that include: top view, front view, & auxiliary view.
ACTIVITIES: Students will discuss, demonstrate and practice the AutoCAD commands 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: ADVANCED 3D CAD	GRADES: 10 - 12
UNIT: Threads and Fasteners using 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:
- List methods used to fasten material
- Identify the important parts of a screw thread
- Use thread tables to specify or draw threaded fasteners
- Draw simplified, schematic, or detailed representations of threads and threaded fasteners.

ACTIVITIES:

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

ASSESSMENTS:

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

RESOURCES:

- CAD Software
- Computer Equipment

REMEDIATION:

ENRICHMENT:

COURSE: ADVANCED 3D CAD	GRADES: 10 - 12
UNIT: Assembly and Working Drawings using 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:
- Describe the major components of a complete set of working drawings
- Describe the types of assembly drawings
- Demonstrate their ability to use AutoCAD skills to complete different types of drawings learned in the course to complete an assembly drawing
- Describe how part numbers are assigned in assembly drawings
- List important information in a title block and parts list

ACTIVITIES:

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

Students will also complete a major assembly drawing that encompasses all unit 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
- Difficulty of the product drawn

REMEDIATION:

ENRICHMENT:

COURSE: ADVANCED 3D CAD	GRADES: 10- 12
UNIT: 3D Solid Modeling	

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: - Understand the concept of 3D Solid Modeling - Understand the difference between Wireframe, Surface and Solid Modeling - Demonstrate understand of Solid Primitives - Demonstrate mastery of Solid Drawing and Editing commands - Create multiple Wireframe and Solid Models with unique characteristics - Slice a Solid Model in half - Shade and render a Solid Model - View, Rotate and Print a 3D object
ACTIVITIES: Students will discuss, demonstrate and practice the AutoCAD commands to complete exercises that meet the above objectives. Students will also complete a major assembly drawing that encompasses all unit 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:**