NEW MILFORD PUBLIC SCHOOLS
New Milford, Connecticut

Basic AutoCAD

March 2012

New Milford's Mission Statement

The mission of the New Milford Public Schools, a collaborative partnership of students, educators, family and community, is to prepare each and every student to compete and excel in an ever-changing world, embrace challenges with vigor, respect and appreciate the worth of every human being, and contribute to society by providing effective instruction and dynamic curriculum, offering a wide range of valuable experiences, and inspiring students to pursue their dreams and aspirations.

Basic AutoCAD

This course is an introductory course that provides students with experience in the use of the AutoCAD computer software program. The project-orientated approach used in this course provides a sequence of carefully designed projects which move from a simple title block to complicated 2D CAD drawings in a series of easily mastered steps. The student spends time studying the communication of ideas through orthographic and pictorial drawings, geometric, sections, and blueprints. This course is designed for students who are interested in learning the AutoCAD software by using a wide variety of applications and operational skills developed across a variety of technical areas with emphasis on machine and architectural drafting. Students will use computers as they apply to the field of architecture and engineering.

Pacing Guide

Unit	Title	Weeks	Pages
1	Creating a Simple Drawing	3	7 - 10
2	Making Drawings More Precise	3	11 - 13
3	Drawing Organization and Information	3	14 - 16
4	Creating More Complex Drawings	3	17 - 19
5	Preparing to Print	3	20 - 22
6	Annotating One's Drawing	5	23 - 26

Connecticut Technology Education Standards Key
Revised May, 2011

EKS.02.01	Knowledge and Skills
EKS.05	Essential Knowledge and Skills
EKS.05.01	Essential Knowledge and Skills
EKS.05.03	Essential Knowledge and Skills
EKS.05.05	Essential Knowledge and Skills
EKS.05.06	Essential Knowledge and Skills
EKS.05.08	Essential Knowledge and Skills
EKS.05.11	Essential Knowledge and Skills
EKS.08	Essential Knowledge and Skills
EKS.08.02	Essential Knowledge and Skills
EKS.08.07	Essential Knowledge and Skills
EKS.09	Essential Knowledge and Skills

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Committee Member: Joe Neff Unit 1: Creating a Simple Drawing	Course/Subject: Basic AutoCAD Grade Levels: 9-12 # of Weeks: 3
Identify Desired Results	
Connecticut Technology Education Standards	

- EKS.02: Demonstrate language arts knowledge and skills required to pursue the full range of post-secondary education and career opportunities.
- EKS.08: Identify and demonstrate positive work behaviors and personal qualities needed to be employable.

Enduring Understandings Generalizations of desired understanding via essential questions (Students will understand that …)	**Essential Questions** Inquiry used to explore generalizations
- Students will understand how to use the following: - AutoCAD software - Know the screen layout - Use the command line and keyboard - Use the Pointing device - Open an existing drawing - Use the Cartesian workspace - Students will know the following basic drawing and editing commands: - Be able to draw lines - Be able to erase objects - Use direct distance entry - Use polar tracking - Draw various rectangles and polygons - Draw circles, using the five different ways - Draw using GRID and SNAP - Save one's work - Exit AutoCAD	- What are the eight main areas of an AutoCAD graphics screen? - How does one switch from a drawing window to a text window? - Name all of the buttons on the pointing device. Explain the use of each one. - How does one cancel a command at the keyboard? - How are points specified in AutoCAD's Cartesian workspace?

Expected Performances
What students should know and be able to do

Students will know the following:

- The AutoCAD workspace and user interface
- Basic drawing, editing, and viewing tools
- The organization of drawing objects on layers
- Inserting reusable symbols (blocks)
- Preparing a layout to be plotted
- Adding text, hatching, and dimensions

Students will be able to do the following:

- Learn how to start AutoCAD
- Learn the basic layout of the AutoCAD screen
- Learn how to use the command line and keyboard with AutoCAD
- Learn how to use a pointing device in AutoCAD
- Learn how to open an existing drawing
- Learn about AutoCAD's Cartesian workspace
- Draw lines, rectangles, and circles
- Erase objects
- Draw with GRID and SNAP
- View a drawing with Zoom and PAN
- Undo commands
- Save one's work
- Exit AutoCAD

Character Attributes

- Respect
- Responsibility

Technology Competencies

- Students collaborate with peers and others to solve problems and to develop solutions using technology tools and resources.

Develop Teaching and Learning Plan	
Teaching Strategies:	Learning Activities:
- Teacher lectures on the proper commands needed to create a simple drawing. - Teacher uses the data projector to show the students the various commands needed to draw a simple drawing. - Teacher uses active learning to help the students complete their assignments.	- Students will practice commands using the keyboard. - Students will practice using their pointing device. - Students will use the Select File Dialog. - Students will use the coordinate display to locate the position of various (X, Y) points in a drawing. - Using the computer and by listening to the lecture, students will begin work on completing their drawings.

• Teacher hands out drawing #1 to the students. When the drawing is finished, the teacher checks the drawing and then the students can move onto the next drawing.	• Problem-Based Learning is a method that challenges students to "learn to learn" by working in groups to seek solutions to problems. The students will work in groups to complete the drawings assigned. (#1 - #8)

Assessments

Performance Task Authentic application to evaluate student achievement of desired results designed according to GRASPS (one per marking period)	Other Evidence Application that is functional in a classroom context to evaluate student achievement of desired results
Goal: Enable students to create a basic 2D drawing in AutoCAD **Role**: Instructor/teacher **Audience**: Students in basic AutoCAD classes **Situation**: Students are given drawings to complete that show the teacher they understand the basic commands needed to complete the drawing. **Product**: 2D drawings (#1 - #20) **Standards for Success**: Completion of drawings #1-#20 using departmental rubrics	• Students will learn how to start, save, and exit AutoCAD by completing drawing #1. • Students know the basic layout of the AutoCAD screen by completing a handout (#1-AutoCAD screen). • Students know how to use the command line, pointing device, and keyboard with AutoCAD by completing drawing #2. • Students know how to open an existing drawing by opening a saved drawing (drawing #1 or #2). • Students know about AutoCAD's Cartesian workspace by completing drawing #3. • Students can draw lines, rectangles, and circles by completing drawing #4. • Students can erase objects by completing drawing #5. • Students can draw with GRID and SNAP by completing drawing #6. • Students can view a drawing with Zoom and PAN by completing drawing #7. • Students can undo commands by completing drawing #8. • Students can save their work by using the quick save icon, shutting the program down, and then re-opening it and see if they saved their work properly. • Students can exit AutoCAD by logging off, shutting down the machine, and then restarting the computer and the AutoCAD

	- Self Check: Getting Started with AutoCAD (7 questions) - Unit quiz - Observation of student work

Suggested Resources
- Madsen, David; Shumaker, Terence. <u>AutoCAD and Its Application-Basic.</u> Tinley Park, Illinois: The Goodheart-Wilcox Company, 2001.   - AutoCAD Desktop 2011 software   - Supplemental worksheets   - Drawings #1 - #8

New Milford Public Schools

Committee Member: Joe Neff Unit 2: Making Drawings More Precise	Course/Subject: Basic AutoCAD Grade Levels: 9-12 # of Weeks: 3

Identify Desired Results

Connecticut Technology Education Standards

- EKS.02.01: Model behaviors that demonstrate active listening.
- EKS.05.05: Evaluate ideas, proposals, and solutions to problems.

Enduring Understandings Generalizations of desired understanding via essential questions (Students will understand that …)	Essential Questions Inquiry used to explore generalizations
- Students will draw the following items with precision in AutoCAD: - Using Object Snap - Object Snap Overrides - Polar Tracking Settings - Object Snap Tracking - Students will make changes to the following objects in their drawings: - Selecting objects for editing - Moving objects - Copying objects - Rotating objects - Scaling objects	- Why do we need to use object snap? - How would one set Polar tracking so it snaps to different degrees and what is the advantage of it? - What settings on the status bar need to be turned on to use object snap tracking? - MOVE, COPY, ROTATE, and SCALE all use a base point. What is a base point? - What are the basic steps when editing an object regardless of command?

Expected Performances
What students should know and be able to do

Students will know the following:
- How to snap to exact points on objects using OSNAP
- How to use object snap overrides
- How to draw lines at specific angles with polar tracking
- How to specify distances with polar snap
- How to find exact locations with object snap tracking
- How to select objects for editing
- How to move objects
- How to copy objects
- How to rotate objects
- How to scale objects

Students will be able to do the following:
- Set object snaps and use them to draw a fence line and rooflines

- Use a variety of object snaps in conjunction with the LINE and CIRCLE commands
- Use the parallel and extension object snaps
- Adjust the polar tracking settings
- Use object snap tracking to draw process lines in a schematic diagram
- Use several techniques to select objects for use of the ERASE command
- Use the MOVE command
- Use the COPY command
- Use the ROTATE command
- Use the COPY and SCALE commands

Character Attributes

- Cooperation
- Honesty

Technology Competencies

- Identify, describe, and utilize the basic hardware and operating systems used in CADD.

Develop Teaching and Learning Plan

Teaching Strategies:
- Teacher lectures on the proper way to use the basic editing commands using the AutoCAD software.
- Teacher lectures on the proper use of the Object Snap dialog box.
- Teacher uses the data projector to show the students how to use the basic editing commands.
- Teacher assigns drawings for students to do using the basic editing commands.
- Teacher gives the students exercises that demonstrate how to use the various commands.
- Teacher integrates technology by having the students use the computer and software to complete the assignments (drawings #9 - #15).

Learning Activities:
- Students will create a top view of a part by tracking the locations from the existing front and side views.
- Students will use object snap tracking to draw process lines.
- Students will use several techniques to select objects for use with the ERASE command.
- Students will use the MOVE command to place furniture into position in a floor plan.
- Students will rotate a chair and PC and then COPY the entire set of furniture to other locations.

Assessments	
Performance Task Authentic application to evaluate student achievement of desired results designed according to GRASPS (one per marking period)	**Other Evidence** Application that is functional in a classroom context to evaluate student achievement of desired results
	• Students will create a top view of a part by tracking the locations from the existing front and side views (drawing #9). • Students will use Object Snap Tracking to draw process lines by completing drawing #10. • Students will use several techniques to select objects for use with the ERASE command by completing drawing #11. • Students will use the MOVE command to place furniture into position in a floor plan by completing drawing #12. • Students will rotate a chair and PC and then COPY the entire set of furniture to other locations by completing drawing # 13-#15. • Self-Check: Making Changes to Your Drawing (4 questions) • Unit quiz • Observation of student work

Suggested Resources

- Madsen, David; Shumaker, Terence. AutoCAD and Its Application-Basic. Tinley Park, Illinois: The Goodheart-Wilcox Company, 2001.
- AutoCAD Desktop 2011 software
- Supplemental worksheets
- Drawings #9 - #15

New Milford Public Schools

Committee Member: Joe Neff Unit 3: Drawing Organization and Information	Course/Subject: Basic AutoCAD Grade Levels: 9-12 # of Weeks: 3

Identify Desired Results

Connecticut Technology Education Standards

- EKS.05.06: Use structured problem-solving methods when developing proposals and solutions.
- EKS.08.02: Demonstrate flexibility and willingness to learn new knowledge and skills.

Enduring Understandings Generalizations of desired understanding via essential questions (Students will understand that …)	Essential Questions Inquiry used to explore generalizations
- Students will be able to create new drawings with templates. - Students will be able to use layers to organize their drawings. - Students will be able to change the layer of an object drawing arcs. - Students will be able to draw polylines. - Students will be able to convert polylines to lines and arcs. - Students will be able to measure distances. - Students will be able to measure areas. - Students will have information about objects.	- Why do we need different ways to draw arcs? - Why do we need polylines and how are they different from standard lines? - What does the EXPLODE command do? - What is the difference between a layer that is frozen and a layer that is off? - Why would we want to move an existing object to a different layer?

Expected Performances
What students should know and be able to do

Students will know the following:
- How to create a new drawing with template
- How to make a layer current
- How to draw on specific layers
- How to control the state of a layer
- How to change the layer of an object
- How to draw arcs
- How to draw polylines
- How to convert polylines to lines and arcs
- How to convert line and arcs to polylines

Students will be able to do the following:
- Use the dialog to select a template
- Set the current layer
- Change an object's layer
- Organize a drawing with layers
- Draw arcs
- Draw polylines
- Convert polylines to arcs and lines
- Convert arcs and lines to polylines

Character Attributes

- Perseverance
- Respect

Technology Competencies

- Analyze the use of current CADD design technology. (CADD.02)

Develop Teaching and Learning Plan

Teaching Strategies:
- Teacher lectures using the AutoCAD software showing the students the proper techniques for layering.
- Teacher lectures on the proper commands used for drawing arcs, circles, and polylines.
- Teacher uses the data projector to summarize the various techniques used to complete the drawings assigned.
- Teacher gives the students exercises that demonstrate how to use the various commands.
- Teacher integrates technology by using the computers to complete the assignments (drawings #15 - #20).

Learning Activities:
- Students will start drawings using different template files.
- Students will change the state of layers using the icons in the toolbar.
- Students will use the layers toolbar and match properties to move objects to different layers.
- Students will draw door swings in a floor plan using the ARC command.
- Students will construct several polylines as symbols to be used in a flow chart.
- Students will edit polylines to join arcs and lines into a polyline and change the width.
- Students will measure distances in a floor plan.
- Students will find the areas of objects in a drawing.
- Students will start a new drawing based on the MECH-INCHES DWG template.
- Students will work in small groups to show each other the proper commands needed to complete the assignments.

Assessments	
Performance Task Authentic application to evaluate student achievement of desired results designed according to GRASPS (one per marking period)	**Other Evidence** Application that is functional in a classroom context to evaluate student achievement of desired results
	• Start drawings using different template files by opening a new drawing, drawing #15. • Change the state of layers using the icons in the toolbar by completing drawing #16. • Use the layers toolbar and match properties to move objects to different layers by completing drawing #16. • Draw door swings in a floor plan using the ARC command by competing drawing #17. • Construct several polylines as symbols to be used in a flow chart by completing drawing #18. • Edit polylines to join arcs and lines into a polyline and change the width by completing drawing #18. • Measure distances in a floor plan by completing drawing #19. • Find the areas of objects in a drawing by completing drawing #20. • Start a new drawing based on the MECH-INCHES DWG template by completing drawing #20. • Self-Check – Getting Information from your Drawing (8 questions) • Unit quiz • Observation of student work

Suggested Resources

- Madsen, David; Shumaker, Terence. AutoCAD and Its Application-Basic. Tinley Park, Illinois: The Goodheart-Wilcox Company, 2001.
- AutoCAD Desktop 2011 software
- Supplemental worksheets
- Drawings #16 - #20

New Milford Public Schools

Committee Member: Joe Neff Unit 4: Creating More Complex Drawings	Course/Subject: Basic AutoCAD Grade Levels: 9-12 # of Weeks: 3

Identify Desired Results

Connecticut Technology Education Standards

- EKS.08.07: Identify positive work-qualities typically desired in each career.
- EKS.09: Guide individuals through the process of recognizing concerns and making informed decisions.

Enduring Understandings Generalizations of desired understanding via essential questions (Students will understand that …)	Essential Questions Inquiry used to explore generalizations

- Students will know when to use the following advanced editing commands:
  o Trim and extend
  o Stretch
  o Fillet and chamfer
- Students will be able to use the following duplication commands:
  o Offsetting
  o Mirroring
  o Arrays
- Students will know what blocks are and how to insert them from the tool palette and with the insert command.
	- Why is it important to use to use the MIRROR command?
	- What are the two types of arrays one can create?
	- Why do we need to know how to insert blocks from the tools palette?
	- What are some advantages of using blocks?
	- What methods can be used to specify the dimensions of a chamfer?
	- What does one need to set before applying a fillet in a drawing?

Expected Performances
What students should know and be able to do

Students will know the following:
- How to trim and extend objects
- How to stretch objects
- Fillet and chamfer objects
- Offset objects
- Mirror objects
- How to create arrays of objects
- What blocks are
- How to insert blocks using the tool palette's window
- How to insert blocks with the INSERT command

Students will be able to do the following:
- Use the TRIM command

- Use the EXTEND and TRIM command to complete drawings
- Use the STRETCH command to increase the size of an object
- Use the FILLET command to round the outer corners of an object
- Use the CHAMFER commands to create angled corners on an object
- Use OFFSET to construct parallel or concentric objects
- Use MIRROR to duplicate the other half of an object
- Create a rectangular and polar ARRAY
- Insert a block from the tools palettes

Character Attributes

- Cooperation
- Responsibility

Technology Competencies

- Identify, describe, and utilize the basic hardware and operating systems used in CADD.
- Define and apply computer technology.

Develop Teaching and Learning Plan

Teaching Strategies:	Learning Activities:
- Teacher lectures on the proper use of advanced editing commands. - Teacher lectures on how to trim, extend, stretch, fillet, and round. - Teacher lectures on how to offset, mirror, and array. - Teacher lectures on blocks and how they are used. - Teacher uses inquiry-guided learning to help students build research skills from what they have already learned. - Teacher uses the data projector to show the students how to use the advanced editing skills. - Teacher hands out drawings #21 - #25 to complete in class using the advanced editing techniques.	- Students will use the TRIM and EXTEND command to complete a drawing. - Students will use the STRETCH command to increase the width of a drawing. - Students will use FILLET to round the outer corners of a part with two different radius sizes. - Students will use the CHAMFER command with several different distances to create angled edges on a part. - Students will use OFFSET on polylines, lines, and arcs to create walls and steps. They will use rectangluar and polar ARRAY to make copies of the workstation. - Students will will add furniture blocks from the tools paletts window into a floor plan. - Students will work together in collaborative/cooperative learning groups to accomplish the goal of advanced editing techniques.

Assessments

Performance Task Authentic application to evaluate student achievement of desired results designed according to GRASPS (one per marking period)	Other Evidence Application that is functional in a classroom context to evaluate student achievement of desired results
Goal: To use drawing organization and information to create more complex drawings **Role**: Instructor/teacher **Audience**: Students in Basic AutoCAD classes **Situation**: Students are given drawings to complete that show the teacher they understand the more complex commands needed to complete the drawings. **Product**: Correct completion of 2D drawings (#21 - #25) **Standards for Success**: Completion for drawing #21-#25 using departmental rubrics	• Use the TRIM command by completing drawing #21. • Use the TRIM and EXTEND command to complete a drawing by completing drawing #21. • Use the STRETCH command to increase the width of a drawing by completing drawing #21. • Use FILLET to round the outer corners of a part with two different radius sizes by completing drawing #22. • Use the CHAMFER command with several different distances to create angled edges on a part by completing drawing #23. • Use OFFSET on polylines, lines, and arcs to create walls and steps. Use rectangluar and polar ARRAY to make copies of the workstation by completing drawing #24. • Add furniture blocks from the tools paletts window into a floor plan by completing drawing #25. • Self Check: Creating Complex Objects (8 questions) • Unit quiz • Observation of student work

Suggested Resources

- AutoCAD Desktop 2011 software
- Madsen, David; Shumaker, Terence. <u>AutoCAD and its applications-Basics.</u> Tinley Park, Illinois: The Goodheart-Willcox Company, 2001.
- Supplemental worksheets
- Drawings #21 - #25

New Milford Public Schools

Committee Member: Joe Neff Unit 5: Preparing to Print	Course/Subject: Basic AutoCAD Grade Levels: 9-12 # of Weeks: 3

Identify Desired Results

Connecticut Technology Education Standards

- EKS.05.08: Critically analyze information to determine value to the problem-solving task.
- EKS.05: Employ critical thinking skills independently and in teams to solve problems and make decisions (e.g., analyze, synthesize, and evaluate).

Enduring Understandings Generalizations of desired understanding via essential questions (Students will understand that …)	Essential Questions Inquiry used to explore generalizations
- Setting up a layout involves the following steps: - Printing concepts - Working in layouts - Paper space and model space - Creating and scaling viewports - Creating a new layout - Copying a layout - Guidelines for layouts - Printing a drawing includes the following: - Plot command - Plot settings - Plot preview	- How many different layouts are in AutoCAD? - Why do we need both paper space and model space? - What are the differences between working in paper space and model space? - How do you know what scale should be used in the plot scale area of the dialog box? Explain. - Are settings such as paper size and plot orientation saved with the drawing, saved with the layout, or not saved at all? - What are some key differences between plotting from the model tab and plotting a layout?

Expected Performances
What students should know and be able to do

Students will know the following:
- How to switch between paper space and model space
- How to create viewports in a layout
- How to scale viewports
- How to manipulate viewports
- How to set up a new drawing
- How to copy a layout
- How to choose what to print or plot
- How to choose a plotter
- How to preview a printed drawing

Students will be able to do the following:
- Model space printing
- Print a paper space layout
- Work in layouts
- Switch between paper space and model space
- Create, scale, and manipulate viewports
- Create and copy a layout
- Use the PLOT command
- Preview the PLOT

Character Attribute

- Cooperation
- Respect

Technology Competencies

- Organize and provide a compact disc, website and/or other digital media for use in demonstrating knowledge, skills, and experience.
- Define and apply computer technology.

Develop Teaching and Learning Plan

Teaching Strategies:	Learning Activities:
- Teacher lectures on how to prepare to print. - Teacher lectures on layouts: paper space, model space, viewports, and settings. - Teacher gives the students exercises that demonstrate how to use the various commands. - Teacher explains how to do a print preview. - Teacher uses the data projector to show the students how to print. - Teacher shows critical thinking by completing the drawings (#26-#35) to help the students understand the commands and help them to clarify what was taught. - Teacher models active earning by working on drawings and doing hands-on, which helps students understand the information and develop critical thinking. - Teacher hands out drawings #26 - #35 to complete in class using the advanced editing techniques.	- Students will view the difference between model space and layouts. - Students will create, scale, and lock viewports in a layout. - Students will create two new layouts: one based on an existing page setup and another based on a new page setup that students define. - Students will copy an exsiting layout and modify the copy. - Students will plot a layout to a file. - Students will set up a drawing in a new layout. They will create and scale viewports and adjust the view in each viewport.

• Teacher uses problem-based learning by giving students drawings to complete to show the teacher that they understand the commands.	

Assessments

Performance Task Authentic application to evaluate student achievement of desired results designed according to GRASPS (one per marking period)	Other Evidence Application that is functional in a classroom context to evaluate student achievement of desired results
	• Students will view the difference between model space and layouts. • Students will create, scale, and lock viewports in a layout by completing drawings #26 - #28. • Students will create two new layouts: one based on an existing page setup and another based on a new page setup that one defines by completing drawings #29 & #30. • Students will copy an exsiting layout and modify the copy by completing drawing #31. • Students will plot a layout to a file by completing drawing #32. • Students will be able to set up a drawing in a new layout. They will create and scale viewports and adjust the view in each viewport by completing drawings #33 - #35. • Self-Check: How to Print Your Drawing (10 questions) • Unit quiz • Observation of student work • Completion of Drawings #26 - #35

Suggested Resources

- AutoCAD Desktop 2011 software
- Madsen, David; Shumaker, Terence. AutoCAD and its applications-Basics. Tinley Park, Illinois: The Goodheart-Willcox Company, 2001.
- Supplemental worksheets
- Drawings #26 - #35

New Milford Public Schools

Committee Member: Joe Neff Unit 6: Annotating One's Drawing	Course/Subject: Basic AutoCAD Grade Levels: 9-12 # of Weeks: 5

Identify Desired Results

Connecticut Technology Education Standards

- EKS.05.03: Describe the value of using problem-solving and critical thinking skills to improve a situation or process.
- EKS.05.01: Identify common tasks that require employees to use problem-solving skills.
- EKS.05.011: Evaluate alternatives using a variety of problem-solving and critical thinking skills.

Enduring Understandings Generalizations of desired understanding via essential questions (Students will understand that …)	Essential Questions Inquiry used to explore generalizations
- Students will know how to add, format, and edit multi-line text. - Students will know how to apply and edit hatching. - Students will know about dimensions: concepts, placing single and multiple dimensions, editing, and selecting a style.	- Why is it important to know the steps for putting multi-line text in a drawing? - What is the advantage to changing the line length of multi-line text in your drawing? - Which button should one use in the Boundary Hatch dialog to specify the area of the drawing one wants to hatch? - What must be true of an area in a drawing in order for one to hatch it? - What is the best way to import text into the multi-line text editor? - How is ALIGNED DIMENSION different than LINEAR DIMENSION? - What is a leader and how is it used? - Where in the AutoCAD software can you set the current dimension style?

Expected Performances
What students should know and be able to do

Students will know the following:
- How to create multi-line text
- How to format multi-line text
- How to edit text
- How to hatch areas of a drawing
- How to edit applied hatching

- How to place single dimensions
- How to place multiple dimensions
- How to add leaders
- How to edit dimensions
- How to select a dimension style
- How to hatch areas of your drawing
- How to edit applied hatching
- How to add a single dimension
- How to use continue and baseline to create a series of linear dimensions
- How to use aligned and angular dimensions with continued and baseline to create a series of dimensions
- How to add dimensions to a drawing using Quick Dimensions
- How to add leaders to annotate features in a mechanical drawing
- How to edit several dimensions
- How to change the current dimension style and see the effects of a different style

Students will be able to do the following:
- Use multi-line to place text on a title block
- Use formatting options in the multi-line text editor
- Make corrections to text in a detailed drawing

Character Attributed

- Integrity
- Perseverance

Technology Competencies

- Identify and demonstrate positive work behaviors and personal qualities needed to be employable.
- Demonstrate self-discipline, self-worth, positive attitude, and integrity in a work situation.

Develop Teaching and Learning Plan

Teaching Strategies:	Learning Activities:
- Teacher lecture on the different ways to annotate drawings including: - Using multi-line text - Being able to hatch an area - Using single and multi-line dimensions - Teacher uses the data projector to show the students how to use the various commands in AutoCAD software. - Teacher demonstrates how to plot a drawing using the plotter. - Teacher gives the students	- Students will add multi-line text. - Students will import text. - Students will format multi-line text. - Students will edit multi-line text. - Students will hatch. - Students will apply a hatch with BHATCH. - Students will set up a hatch pattern. - Students will hatch with the tools palette. - Students will edit a hatch pattern. - Students will add single line dimensions. - Students will use other dimension tools.

| | • Students will use Quick dimensioning.
• Students will add leaders.
• Students will edit dimensions.
• Students will select a dimension style. |

- Teacher models experiential learning, which is the approach by which the students "learn by doing." Teacher gives the students drawings to complete to show the teacher that they understand and can perform the software command.
- Teacher integrates technology by having the students complete a drawing using the computer, the plotter, and the AutoCAD software.

Assessments

Performance Task Authentic application to evaluate student achievement of desired results designed according to GRASPS (one per marking period)	Other Evidence Application that is functional in a classroom context to evaluate student achievement of desired results
Goal: Using drawing organization and information to create more complex drawings **Role**: Instructor/teacher **Audience**: Students in Basic AutoCAD classes **Situation**: CAD classroom **Product**: 2D drawings #21- #42 **Standards for Success**: Finish drawings #21- #40 using the departmental rubrics	• Students will add multi-line text by completing drawing #36. • Students will import text by completing drawing #36. • Students will format multi-line text by completing drawing #37. • Students will edit multi-line text by completing drawing #37. • Students will hatch by completing drawing #38. • Students will apply a hatch with BHATCH by completing drawing #38. • Students will set up a hatch pattern by completing drawing #39. • Students will hatch with the tools palette by completing drawing #39. • Students will edit a hatch pattern by completing drawing #39. • Students will dimension concepts by completing drawing #40. • Students will add single line dimensions by completing drawing #40. • Students will use other dimension tools by completing drawing #41. • Students will use Quick dimensioning by completing drawing #41. • Students will add leaders by completing drawing #41.

	• Students will edit dimensions by completing drawing #42.
	• Students will select a dimension style by completing drawing #42.
	• Self-Check – Annotating Your Drawing (15 questions)
	• Unit quiz
	• Observation of student work

Suggested Resources

- AutoCAD Desktop 2011 software
- Madsen, David; Shumaker, Terence. AutoCAD and its applications-Basics. Tinley Park, Illinois: The Goodheart-Willcox Company, 2001.
- Supplemental worksheets
- Drawings #36 - #42