

**NEW MILFORD PUBLIC SCHOOLS**  
**New Milford, Connecticut**



**Architectural Drafting I**

May 2012

*Approved by the Board of Education  
June 12, 2012*

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## **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.

## **Architectural Drafting I**

This is a beginning course in drafting as it relates to residential architecture. Basic principles of drafting will be studied including proper use of instruments, templates, lines lettering, and dimensions. The construction of residential buildings is studied in detail from excavations to finishing materials. Principles of good house design are included. Each student will plan and draw a set of blueprints for a house, complete with specifications. Introduction to the basic functions of CAD (Computer-Aided Drafting) will also be explored. CAD applications and operational skills are developed across a variety of technical areas with emphasis on residential construction.

## Pacing Guide

Unit #	Title	Week(s)	Pages
<b>First Semester</b>			
1	Architectural Drafting Fundamentals	1	7 - 9
2	Indoor Living Areas	1	10 - 12
3	Outdoor Living Area	1	13 - 15
4	Traffic Areas and Patterns	1	16 - 18
5	Kitchens	1	19 - 21
6	General Service Areas	1	22 - 24
7	Sleeping Areas	1	25 - 27
8	Designing Floor Plans	3	28 - 30
9	Drawing Floor Plans	10	31 - 33
<b>Second Semester</b>			
10	Groundwork – AutoCAD	3	34 - 36
11	Drawing Aids and Controls	2	37 - 39
12	Drawing and Editing	3	40 - 42
13	Text and Tables	2	43 - 45
14	Preparing and Printing a Drawing	2	46 - 48
15	Basic Dimensioning	2	49 - 51
16	Groups and Details	2	52 - 54
17	Drawing and Modeling	2	55 - 57
18	Solid Modeling	2	58 - 60

## Common Core State Standard Key

### Connecticut Technology Education Standards Revised May, 2011

EKS.03.04	Knowledge and Skills	Arch.03	Architecture Technology
Arch.06.02	Architecture Technology	Arch.05	Architecture Technology
Arch.07.02	Architecture Technology	Arch.05.03	Architecture Technology
EKS.05	Knowledge and Skills	Arch.08.02	Architecture Technology
Arch.06.01	Architecture Technology	Arch.05.02	Architecture Technology
Arch.07	Architecture Technology	Arch.08.01	Architecture Technology
Arch.08.01	Architecture Technology	Arch.03.01	Architecture Technology
EKS.05.04	Knowledge and Skills	CADD.02	Knowledge and Skills
CADD.05.04	Knowledge and Skills	CADD.04	Knowledge and Skills
CADD.05.08	Knowledge and Skills	CADD.09	Knowledge and Skills
CADD.09	Knowledge and Skills	CADD.09.04	Knowledge and Skills
EKS.03.02	Knowledge and Skills	EKS.03.03	Knowledge and Skills
CADD.04.07	Knowledge and Skills	CADD.02.08	Knowledge and Skills
CADD.05.16	Knowledge and Skills	CADD.05.01	Knowledge and Skills
CADD.05.03	Knowledge and Skills	Arch.07.02	Knowledge and Skills
EKS.03.06	Knowledge and Skills	EKS.07	Knowledge and Skills
EKS.08	Knowledge and Skills		

# New Milford Public Schools

Committee Member: Joe Neff Unit 1: Architectural Drafting Fundamentals	Course/Subject: Architectural Drafting I Grade Levels: 9-12 # of Weeks: 1
<b>Identify Desired Results</b>	
<b>Technology Education Standards</b>	
<ul style="list-style-type: none"> <li>• EKS.03.04: Apply data and measurements to solve problems.</li> <li>• Arch.06.02: Draw and sketch by hand to communicate ideas effectively.</li> <li>• Arch.07.02: Create effective working drawings, and presentation drawings.</li> </ul>	
<b>Enduring Understandings</b> Generalizations of desired understanding via essential questions (Students will understand that ...)	<b>Essential Questions</b> Inquiry used to explore generalizations
<ul style="list-style-type: none"> <li>• There are different scales used in drafting.</li> <li>• Various drafting instruments are needed to complete a drawing.</li> <li>• Different types of paper and other drafting supplies are used.</li> <li>• Time-saving devices are needed.</li> </ul>	<ul style="list-style-type: none"> <li>• Why do we have different scales that we use in drawing plans?</li> <li>• Why are there two types of triangles?</li> <li>• Why does one use an erasing shield?</li> <li>• Why does one have both a t-square and triangles?</li> <li>• Why does one need templates?</li> </ul>
<b>Expected Performances</b> What students should know and be able to do	
<p>Students will know the following:</p> <ul style="list-style-type: none"> <li>• Different types of scales</li> <li>• Guides used for drawing straight lines</li> <li>• Instruments for curved lines</li> <li>• Drafting and lettering tools</li> <li>• The different types of papers and drawing surfaces</li> <li>• Correction equipment</li> <li>• Timesaving aids and devices for drafting</li> </ul> <p>Students will be able to do the following:</p> <ul style="list-style-type: none"> <li>• Use an architect's, civil engineer's, and metric scales</li> <li>• Use a t-square, parallel slide, triangles, and a protractor</li> <li>• Use a compass and dividers</li> <li>• Use a French curve</li> <li>• Be able to select the proper drafting pencil</li> <li>• Use an erasing shield and brush</li> <li>• Use a template, tapes, and overlays</li> <li>• Select the proper paper (type and size)</li> </ul>	

<b>Character Attributes</b>	
<ul style="list-style-type: none"> <li>• Cooperation</li> <li>• Perseverance</li> </ul>	
<b>Technology Competencies</b>	
<ul style="list-style-type: none"> <li>• Acquire employability skills, including academic and technical skills; demonstrate positive attitudes toward work, including acceptance of the necessity of making a living and an appreciation of the social value and dignity of work.</li> </ul>	
<b>Develop Teaching and Learning Plan</b>	
<p>Teaching Strategies:</p> <ul style="list-style-type: none"> <li>• Teacher lectures on the proper use of equipment.</li> <li>• Teacher lectures on the proper care of drafting equipment.</li> <li>• Teacher lectures on the proper technique used for lettering.</li> </ul>	<p>Learning Activities:</p> <ul style="list-style-type: none"> <li>• Students will complete a handout on measuring.</li> <li>• Students will complete a handout on using the equipment.</li> <li>• Students will complete a handout on lettering.</li> <li>• Students will draw the following four lines using a scale of <math>\frac{1}{4}'' = 1'-0''</math> <ul style="list-style-type: none"> <li>○ 5'-0''</li> <li>○ 7'-6''</li> <li>○ 9'-10''</li> <li>○ 11'-3''</li> </ul> </li> <li>• Students will convert the following dimensions to millimeters: 5'-6'', 6'-8'', 12'-2'', 25'-11''.</li> <li>• Students will practice drawing lines using all pencil grades on tracing paper and paper.</li> <li>• Students will complete handout on the use of different scales.</li> <li>• Students will complete handout on the proper use of drafting equipment.</li> <li>• Students will complete handout on the proper technique for lettering.</li> </ul>

<b>Assessments</b>	
<b>Performance Task</b>	<b>Other Evidence</b>
Authentic application to evaluate student achievement of desired results designed according to GRASPS (one per marking period)	Application that is functional in a classroom context to evaluate student achievement of desired results
<p><b>Goal:</b> To use an assortment of instruments and supplies to create a drawing</p> <p><b>Role:</b> Architect</p> <p><b>Audience:</b> Homeowner</p> <p><b>Situation:</b> Architect sits down with the homeowner to go over the various types of lettering and equipment used in drafting and has the homeowner pick out the one s/he wants on his/her plans.</p> <p><b>Product:</b> Various sheets of lettering for the homeowner to pick out</p> <p><b>Standards for Success:</b> Approval from the homeowner and departmental rubrics</p>	<ul style="list-style-type: none"> <li>• Completion of work sheets (measuring, equipment, and lettering)</li> <li>• Unit quiz</li> <li>• Successful completion of the exercise on using the equipment (Exercise #1)</li> <li>• Successful completion of the exercise on the proper technique of lettering</li> <li>• Observation of student work (Exercise #2)</li> </ul>
<b>Suggested Resources</b>	
<ul style="list-style-type: none"> <li>• Helper, Dana, Helper, Donald, Wallach, Paul. <u>Architecture Drafting and Design</u>. Peoria, IL: Glencoe/McGraw-Hill, 1998.</li> <li>• Handouts: <ul style="list-style-type: none"> <li>How to Use an Architect's Scale</li> <li>How to use a Civil Engineer's Scale</li> <li>Tools Used in Drafting</li> <li>How to Use the Tools in Drafting</li> <li>How to Letter</li> <li>Papers and Drawing Surfaces</li> <li>How to Use Templates</li> </ul> </li> <li>• Student worksheets: <ul style="list-style-type: none"> <li>Using the Right Scale</li> <li>Using the Proper Equipment</li> <li>Lettering - #1 - #3</li> <li>Exercise #1</li> <li>Exercise #2</li> </ul> </li> </ul>	

# New Milford Public Schools

Committee Member: Joe Neff Unit 2: Indoor Living Areas	Course/Subject: Architectural Drafting I Grade Levels: 9-12 # of Weeks: 1
<b>Identify Desired Results</b>	
<b>Technology Education Standards</b>	
<ul style="list-style-type: none"> <li>EKS.05: Employ critical thinking skills independently and in teams to solve problems and make decisions.</li> <li>Arch.06.01: Identify, research, develop, and explain architectural and construction plans, drawings, diagrams, and specifications.</li> </ul>	
<b>Enduring Understandings</b> Generalizations of desired understanding via essential questions (Students will understand that ...)	<b>Essential Questions</b> Inquiry used to explore generalizations
<ul style="list-style-type: none"> <li>Indoor living areas have different functions.</li> <li>The location, décor, size, and shape of indoor living areas are important to good house design.</li> <li>A room's orientation, walls, floors, windows, ceilings, lighting, and furniture can contribute to room function.</li> </ul>	<ul style="list-style-type: none"> <li>What are the functions one needs in a living room and why?</li> <li>What are the functions one needs in a dining room and why?</li> <li>What are the functions one needs in a family room and why?</li> <li>What are the functions one needs in a recreation room and why?</li> <li>What are the functions one needs in a special purpose room and why?</li> </ul>
<b>Expected Performances</b>	
What students should know and be able to do	
<p>Students will know the following:</p> <ul style="list-style-type: none"> <li>The function, location, orientation, type of décor, size, and shape of the following:               <ul style="list-style-type: none"> <li>Living room</li> <li>Dining room</li> <li>Family room</li> <li>Recreation room</li> <li>Special purpose room</li> </ul> </li> <li>The difference between an open and a closed floor plan</li> </ul> <p>Students will be able to do the following:</p> <ul style="list-style-type: none"> <li>Understand, design, and draw a living area</li> <li>Design a living room</li> <li>Design a dining room</li> <li>Design a family room</li> <li>Design a recreation room</li> <li>Design a special purpose room</li> <li>Complete a floor plan of a house</li> </ul>	

Character Attributes	
<ul style="list-style-type: none"> <li>• Courage</li> <li>• Honesty</li> </ul>	
Technology Competencies	
<ul style="list-style-type: none"> <li>• Demonstrate technical knowledge and skills, including planning, designing, organizing, coordinating, and constructing.</li> <li>• Use basic drafting tools.</li> </ul>	
Develop Teaching and Learning Plan	
<p>Teaching Strategies:</p> <ul style="list-style-type: none"> <li>• Teacher lectures on the proper features of an indoor living area.</li> <li>• Teacher hands out different home plans books for students to get ideas.</li> <li>• Teacher checks rough drafts and meets with each student to discuss their living area.</li> </ul>	<p>Learning Activities:</p> <ul style="list-style-type: none"> <li>• Students will design a living area using graph paper for a rough draft.</li> <li>• Students will draw a simple sketch of a living room.</li> <li>• Students will draw a simple sketch of a dining room.</li> <li>• Students will draw a simple sketch of a family room.</li> <li>• Students will draw a simple sketch of a recreation room.</li> <li>• Students will draw a simple sketch of a special purpose room.</li> </ul>
Assessments	
Performance Task	Other Evidence
<p>Authentic application to evaluate student achievement of desired results designed according to GRASPS (one per marking period)</p>	<p>Application that is functional in a classroom context to evaluate student achievement of desired results</p>
<p><b>Goal:</b> To understand how to design an indoor living area for a residential home</p> <p><b>Role:</b> Architect</p> <p><b>Audience:</b> Homeowner</p> <p><b>Situation:</b> Architect shows the homeowner various sketches on indoor living areas and has the client pick the one s/he likes for his/her set of house plans.</p> <p><b>Product:</b> Completion of a floor plan for an indoor living area</p> <p><b>Standards for Success:</b> Approval from the homeowner and departmental rubrics</p>	<ul style="list-style-type: none"> <li>• Sketches of various living area rooms to be turned in and graded: <ul style="list-style-type: none"> <li>○ Living room</li> <li>○ Dining room</li> <li>○ Family room</li> <li>○ Recreation room</li> <li>○ Special purpose</li> </ul> </li> <li>• Unit quiz</li> <li>• Completion of a floor plan (rough draft)</li> </ul>

## Suggested Resources

- Helper, Dana, Helper, Donald, Wallach, Paul. Architecture Drafting and Design. Peoria, IL: Glencoe/McGraw-Hill, 1998.
- Affordable Home Plans. Tucson, Arizona: Home Planners, 1997
- New England Sampler. Tucson, Arizona: Home Planners, 1997
- One-Story Homes. Tucson, Arizona: Home Planners, 1997
- Southern Home Plans. Tucson, Arizona: Home Planners, 1997
- Traditional Homes. Tucson, Arizona: Home Planners, 1997
- Vacation and Second Homes. Tucson, Arizona: Home Planners, 1997
- Western Home Plans. Tucson, Arizona: Home Planners, 1997
- 200 Budget-Smart Home Plans. Tucson, Arizona: Home Planners, 1997
- 200 Move-Up Home Plans. Tucson, Arizona: Home Planners, 1997
- 200 Small House Plans. Tucson, Arizona: Home Planners, 1997
- Handouts:
  - How to Plan an Indoor Living Area
  - How to Design a Living Room
  - How to Design a Family Room
  - How to Design a Dining Room
  - How to Design a Recreation Room
  - How to Design a Special Purpose Room
- Student worksheets on graph paper:
  - Living room
  - Family room
  - Dining room
  - Recreation room
  - Special purpose room

# New Milford Public Schools

Committee Member: Joe Neff Unit 3: Outdoor Living Areas	Course/Subject: Architectural Drafting I Grade Levels: 9-12 # of Weeks: 1
<b>Identify Desired Results</b>	
<b>Technology Education Standards</b>	
<ul style="list-style-type: none"> <li>• Arch.07: Employ appropriate media to communicate concepts and designs.</li> <li>• Arch.08.01: Research and collect data that relates to architectural drafting and design.</li> </ul>	
<b>Enduring Understandings</b> Generalizations of desired understanding via essential questions (Students will understand that ...)	<b>Essential Questions</b> Inquiry used to explore generalizations
<ul style="list-style-type: none"> <li>• A porch, patio, and lanai provide outdoor living space.</li> <li>• A swimming pool is becoming an integral part of a residential design.</li> </ul>	<ul style="list-style-type: none"> <li>• What is the function of porches and why do we need one?</li> <li>• What is the difference between a porch, a patio, and a lanai?</li> <li>• How does one calculate the area and volume of a 28' round pool?</li> </ul>
<b>Expected Performances</b> What students should know and be able to do	
<p>Students will know the following:</p> <ul style="list-style-type: none"> <li>• The function, location, orientation, type of décor, size, type, and shape of the following:               <ul style="list-style-type: none"> <li>○ Patio</li> <li>○ Lanai</li> <li>○ Swimming pool</li> <li>○ Porch</li> </ul> </li> </ul> <p>Students will be able to do the following:</p> <ul style="list-style-type: none"> <li>• Understand, design, and draw outdoor living areas</li> <li>• Complete a floor plan of a living area and the outdoor living area</li> </ul>	
<b>Character Attributes</b>	
<ul style="list-style-type: none"> <li>• Respect</li> <li>• Responsibility</li> </ul>	
<b>Technology Competencies</b>	
<ul style="list-style-type: none"> <li>• Evaluate ideas, proposals, and solutions to problems.</li> <li>• Identify, use, and maintain measuring layouts and measuring tools.</li> </ul>	

**Develop Teaching and Learning Plan**

<p>Teaching Strategies:</p> <ul style="list-style-type: none"> <li>• Teacher lectures on the proper functions of the outdoor living area.</li> <li>• Teacher hands out house plan books for students to get ideas of different outdoor living areas.</li> <li>• Teacher meets with each student and discusses his/her outdoor living area.</li> </ul>	<p>Learning Activities:</p> <ul style="list-style-type: none"> <li>• From catalogs, newspapers and magazines, students will cut out pictures of porch furniture that they like.</li> <li>• Students will plan a porch and/or patio from a house of their own design and sketch the basic outline and the facilities.</li> <li>• Students will draw a simple sketch of a porch.</li> <li>• Students will draw a simple sketch of a patio.</li> <li>• Students will draw a simple sketch of a lanai.</li> <li>• Students will design and draw a swimming pool.</li> <li>• Students will complete a rough draft of an outdoor living area.</li> <li>• Students will use graph paper and the rough draft of their living area to complete an outdoor living area.</li> </ul>
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**Assessments**

<b>Performance Task</b>	<b>Other Evidence</b>
<p>Authentic application to evaluate student achievement of desired results designed according to GRASPS (one per marking period)</p>	<p>Application that is functional in a classroom context to evaluate student achievement of desired results</p>
<p><b>Goal:</b> To understand how to design an outdoor living area for a residential home</p> <p><b>Role:</b> Architect</p> <p><b>Audience:</b> Homeowner</p> <p><b>Situation:</b> Architect shows the homeowner various sketches on outdoor living areas and has the client pick the one s/he likes for his/her set of house plans.</p> <p><b>Products:</b> Completion of a floor plan of an outdoor living area</p> <p><b>Standards for Success:</b> Approval from the homeowner and departmental rubrics</p>	<ul style="list-style-type: none"> <li>• Five different sketches of various outdoor living areas with a swimming pool to be turned in and graded</li> <li>• Unit quiz</li> <li>• Completion of floor plan (rough draft)</li> </ul>

## Suggested Resources

- Helper, Dana, Helper, Donald, Wallach, Paul. Architecture Drafting and Design. Peoria, IL: Glencoe/McGraw-Hill, 1998.
- Affordable Home Plans. Tucson, Arizona: Home Planners, 1997
- New England Sampler. Tucson, Arizona: Home Planners, 1997
- One-Story Homes. Tucson, Arizona: Home Planners, 1997
- Southern Home Plans. Tucson, Arizona: Home Planners, 1997
- Traditional Homes. Tucson, Arizona: Home Planners, 1997
- Vacation and Second Homes. Tucson, Arizona: Home Planners, 1997
- Western Home Plans. Tucson, Arizona: Home Planners, 1997
- 200 Budget-Smart Home Plans. Tucson, Arizona: Home Planners, 1997
- 200 Move-Up Home Plans. Tucson, Arizona: Home Planners, 1997
- 200 Small House Plans. Tucson, Arizona: Home Planners, 1997
- Handouts:
  - How to Plan an Outdoor Living Area
  - How to Design a Patio
  - How to Design a Porch
  - How to Design a Lanai
  - How to Design a Swimming Pool
- Student worksheets on graph paper:
  - Patio
  - Porch
  - Lanai
  - Swimming pool
  - Calculation of how many gallons of water are needed to fill a swimming pool 28' X 4' (round)

# New Milford Public Schools

Committee Member: Joe Neff Unit 4: Traffic Areas and Patterns	Course/Subject: Architectural Drafting I Grade Levels: 9-12 # of Weeks: 1
<b>Identify Desired Results</b>	
<b>Technology Education Standards</b>	
<ul style="list-style-type: none"> <li>• EKS.05.04: Create ideas, proposals, and solutions to problems.</li> <li>• Arch.03: Demonstrate an understanding of regulations in architectural design.</li> </ul>	
<b>Enduring Understandings</b> Generalizations of desired understanding via essential questions (Students will understand that ...)	<b>Essential Questions</b> Inquiry used to explore generalizations
<ul style="list-style-type: none"> <li>• There must be an effective traffic pattern in a house.</li> <li>• Hallways must function efficiently.</li> <li>• There are guidelines for designing stairs.</li> <li>• One needs to know how to calculate the correct space needed for stairways and stairwells.</li> <li>• There are different kinds and functions of entrances.</li> <li>• There are guidelines for entrance design.</li> </ul>	<ul style="list-style-type: none"> <li>• Why does one need a smooth traffic pattern?</li> <li>• What is function of a hallway and how does one calculate how much is needed?</li> <li>• Why does one need different types of stairs?</li> <li>• Why is an entrance area important to a good house design?</li> <li>• What factor does one need to take into consideration when designing an efficient foyer and entry hall?</li> </ul>
<b>Expected Performances</b> What students should know and be able to do	
<b>Character Attributes</b>	
<ul style="list-style-type: none"> <li>• Honesty</li> <li>• Perseverance</li> </ul>	
<b>Technology Competencies</b>	
<ul style="list-style-type: none"> <li>• Employ critical thinking skills independently and in teams to solve problems and make decisions.</li> <li>• Guide individuals through the process of recognizing concerns and making informed decisions.</li> </ul>	

<b>Develop Teaching and Learning Plan</b>	
<p>Teaching Strategies:</p> <ul style="list-style-type: none"> <li>• Teacher lectures on the proper functions of traffic patterns needed for a home.</li> <li>• Teacher hands out house plan books for students to get ideas of different traffic patterns, hallways, stairs, and entrances.</li> <li>• Teacher meets with each student and discusses his/her traffic patterns.</li> </ul>	<p>Learning Activities:</p> <ul style="list-style-type: none"> <li>• Using graph paper and the rough draft of their floor plan, students will complete the traffic areas needed for their home.</li> <li>• Students will sketch the floor plan of a home of their design planning the most efficient traffic pattern by tracing the route of their daily routine.</li> <li>• Students will sketch a plan view of a stair system and explain why different types of stairs are needed.</li> <li>• Students will draw a foyer to the plan of a house they are designing.</li> <li>• Students will draw a simple sketch of hallway.</li> <li>• Students will draw a simple sketch of a stairwell.</li> <li>• Students will draw a simple sketch of an entrance.</li> <li>• Students will add all of these traffic patterns to their floor plan.</li> </ul>
<b>Assessments</b>	
<b>Performance Task</b>	<b>Other Evidence</b>
<p>Authentic application to evaluate student achievement of desired results designed according to GRASPS (one per marking period)</p>	<p>Application that is functional in a classroom context to evaluate student achievement of desired results</p>
<p><b>Goal:</b> To design traffic areas and patterns for a residential home</p> <p><b>Role:</b> Architect</p> <p><b>Audience:</b> Homeowner</p> <p><b>Situation:</b> Architect shows the homeowner various sketches on traffic areas and has the client pick the one s/he likes for his/her set of house plans.</p> <p><b>Product:</b> Completed floor plan of traffic areas and patterns for a residential home</p> <p><b>Standards for Success:</b> Approval from the homeowner and departmental rubrics</p>	<ul style="list-style-type: none"> <li>• Five sketches of various traffic patterns to be turned in and graded</li> <li>• Unit quiz</li> <li>• Completion of a floor plan (rough draft)</li> </ul>

## Suggested Resources

- Helper, Dana, Helper, Donald, Wallach, Paul. Architecture Drafting and Design. Peoria, IL: Glencoe/McGraw-Hill, 1998.
- Affordable Home Plans. Tucson, Arizona: Home Planners, 1997
- New England Sampler. Tucson, Arizona: Home Planners, 1997
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- Western Home Plans. Tucson, Arizona: Home Planners, 1997
- 200 Budget-Smart Home Plans. Tucson, Arizona: Home Planners, 1997
- 200 Move-Up Home Plans. Tucson, Arizona: Home Planners, 1997
- 200 Small House Plans. Tucson, Arizona: Home Planners, 1997
- Handouts:
  - How to Plan a Proper Traffic Pattern in a Home
  - How to Design a Hallway
  - How to Design a Set of Stairs and What Type to Use
  - How to Design an Entrance Hallway
- Student worksheets on graph paper:
  - Traffic pattern
  - Hallway
  - Three different types of stairs
  - Entrance hallway

# New Milford Public Schools

Committee Member: Joe Neff Unit 5: Kitchens	Course/Subject: Architectural Drafting I Grade Levels: 9-12 # of Weeks: 1
<b>Identify Desired Results</b>	
<b>Technology Education Standards</b>	
<ul style="list-style-type: none"> <li>• Arch.05: Research, plan, and design functional structure.</li> <li>• Arch.05.03: Utilize commercial and residential suggestions and specifications to create functional floor plans.</li> </ul>	
<b>Enduring Understandings</b> Generalizations of desired understanding via essential questions (Students will understand that ...)	<b>Essential Questions</b> Inquiry used to explore generalizations
<ul style="list-style-type: none"> <li>• Guidelines are necessary for an efficient kitchen design.</li> <li>• The best shape, size, and location for the kitchens can vary.</li> <li>• A work triangle is an important aspect of all kitchens.</li> </ul>	<ul style="list-style-type: none"> <li>• What are the six types of kitchen shapes and give at least one advantage and one disadvantage of each?</li> <li>• Why does one need to design an efficient kitchen style?</li> <li>• What is a work triangle?</li> <li>• What are the major appliances in the kitchen?</li> </ul>
<b>Expected Performances</b>	
What students should know and be able to do	
<p>Students will know the following:</p> <ul style="list-style-type: none"> <li>• Kitchen design and considerations include various styles, types, function, décor, size, and shape</li> <li>• Proper kitchen planning guidelines</li> </ul> <p>Students will be able to do the following:</p> <ul style="list-style-type: none"> <li>• Understand, design, and draw a kitchen</li> <li>• Know the advantages and disadvantages of each kitchen style</li> <li>• Complete a floor plan of a house</li> </ul>	
<b>Character Attributes</b>	
<ul style="list-style-type: none"> <li>• Cooperation</li> <li>• Responsibility</li> </ul>	
<b>Technology Competencies</b>	
<ul style="list-style-type: none"> <li>• Demonstrate technical knowledge and skills, including planning, designing, organizing, coordinating, and drawing.</li> <li>• Assure that students accept personal responsibility for production and quality.</li> </ul>	

<b>Develop Teaching and Learning Plan</b>	
<p>Teaching Strategies:</p> <ul style="list-style-type: none"> <li>• Teacher lectures on the different types of kitchens and the pros and cons of each.</li> <li>• Teacher hands out house plan books for students to get ideas of different styles of kitchens.</li> <li>• Teacher meets with each student and discusses his/her kitchen plan.</li> </ul>	<p>Learning Activities:</p> <ul style="list-style-type: none"> <li>• Students will use graph paper and the rough draft of their living area to complete a kitchen for their home.</li> <li>• Students will sketch a family kitchen using any of the six kitchen types.</li> <li>• Students will sketch a floor plan of the kitchen in their own home.</li> <li>• Students will draw simple sketches of the six different kitchen styles.</li> <li>• Students will decide which kitchen design best fits their house plan.</li> <li>• Students will add the kitchen plan they have chosen to the rough draft of their floor plan.</li> </ul>
<b>Assessments</b>	
<b>Performance Task</b>	<b>Other Evidence</b>
<p>Authentic application to evaluate student achievement of desired results designed according to GRASPS (one per marking period)</p>	<p>Application that is functional in a classroom context to evaluate student achievement of desired results</p>
<p><b>Goal:</b> To design traffic areas and patterns for a kitchen</p> <p><b>Role:</b> Architect</p> <p><b>Audience:</b> Homeowner</p> <p><b>Situation:</b> Architect shows the homeowner various sketches of the six different types of kitchens and has the client pick the one s/he likes for his/her set of house plans.</p> <p><b>Product:</b> Completion of a floor plan for a traffic area and pattern in a kitchen</p> <p><b>Standards for Success:</b> Approval from the homeowner and departmental rubrics</p>	<ul style="list-style-type: none"> <li>• Sketches of the six different layouts for a kitchen to be turned in and graded</li> <li>• Completion of a floor plan (rough draft)</li> </ul>

## Suggested Resources

- Helper, Dana, Helper, Donald, Wallach, Paul. Architecture Drafting and Design. Peoria, IL: Glencoe/McGraw-Hill, 1998.
- Affordable Home Plans. Tucson, Arizona: Home Planners, 1997
- New England Sampler. Tucson, Arizona: Home Planners, 1997
- One-Story Homes. Tucson, Arizona: Home Planners, 1997
- Southern Home Plans. Tucson, Arizona: Home Planners, 1997
- Traditional Homes. Tucson, Arizona: Home Planners, 1997
- Vacation and Second Homes. Tucson, Arizona: Home Planners, 1997
- Western Home Plans. Tucson, Arizona: Home Planners, 1997
- 200 Budget-Smart Home Plans. Tucson, Arizona: Home Planners, 1997
- 200 Move-Up Home Plans. Tucson, Arizona: Home Planners, 1997
- 200 Small House Plans. Tucson, Arizona: Home Planners, 1997
- Handout: Kitchens and Their Design
- Student worksheet: Graph paper to design four different kitchen layouts

# New Milford Public Schools

Committee Member: Joe Neff Unit 6: General Service Areas	Course/Subject: Architectural Drafting I Grade Levels: 9-12 # of Weeks: 1
<b>Identify Desired Results</b>	
<b>Technology Education Standards</b>	
<ul style="list-style-type: none"> <li>• Arch.08.02: Select and organize appropriate examples that demonstrate knowledge, skills, and experience.</li> <li>• Arch.05.02: Produce preliminary designs, final sketches, and presentation drawings.</li> </ul>	
<b>Enduring Understandings</b> Generalizations of desired understanding via essential questions (Students will understand that ...)	<b>Essential Questions</b> Inquiry used to explore generalizations
<ul style="list-style-type: none"> <li>• There are different kinds of equipment included in a utility room.</li> <li>• It is important to find the best location for a utility room.</li> <li>• Storage facilities are an integral part of a good house design.</li> </ul>	<ul style="list-style-type: none"> <li>• What is the function of a utility room?</li> <li>• Why is a garage important to good house design?</li> <li>• Explain the proper layout for a storage area.</li> <li>• How much storage space is needed in a home?</li> </ul>
<b>Expected Performances</b> What students should know and be able to do	
<p>Students will know the following:</p> <ul style="list-style-type: none"> <li>• The function, size, shape, location, style and décor of utility rooms, garages, carports, driveways, storage areas and workshops.</li> </ul> <p>Students will be able to do the following:</p> <ul style="list-style-type: none"> <li>• Understand, design, and draw general service areas               <ul style="list-style-type: none"> <li>○ Draw a rough draft of a utility room</li> <li>○ Draw a rough draft of a garage /carport</li> <li>○ Draw a rough draft of a driveway</li> <li>○ Draw a rough draft of a workshop</li> <li>○ Draw a rough draft of a storage area</li> </ul> </li> <li>• Add a general service area to the rough draft of their FLOOR PLAN.</li> </ul>	
<b>Character Attributes</b>	
<ul style="list-style-type: none"> <li>• Integrity</li> <li>• Perseverance</li> </ul>	

<b>Technology Competencies</b>	
<ul style="list-style-type: none"> <li>Demonstrate appropriate employability traits and skills, including team work, custom service, responsibility, adaptability, and persistence.</li> </ul>	
<b>Develop Teaching and Learning Plan</b>	
<p><b>Teaching Strategies:</b></p> <ul style="list-style-type: none"> <li>Teacher lectures on the different types of general service areas and the pros and cons of each.</li> <li>Teacher hands out house plan books for students to get ideas of different types of general service areas.</li> <li>Teacher meets with each student and discusses their general service areas.</li> </ul>	<p><b>Learning Activities:</b></p> <ul style="list-style-type: none"> <li>Students will design a utility room including a complete laundry facility.</li> <li>Students will design a full double garage and driveway for the house they designed.</li> <li>Students will design a work area for the house they are planning.</li> <li>Students will add storage facilities to their house.</li> <li>Students will draw a simple sketch of a utility room.</li> <li>Students will draw a simple sketch of a garage and a carport.</li> <li>Students will draw a simple sketch of a driveway.</li> <li>Students will draw a simple sketch of a workshop and a storage area.</li> <li>Using graph paper and the rough draft of their floor plan, students will complete the general service areas needed for their home.</li> </ul>
<b>Assessments</b>	
<b>Performance Task</b>	<b>Other Evidence</b>
<p>Authentic application to evaluate student achievement of desired results designed according to GRASPS (one per marking period)</p>	<p>Application that is functional in a classroom context to evaluate student achievement of desired results</p>
<p><b>Goal:</b> To understand the different styles of general service areas</p> <p><b>Role:</b> Architect</p> <p><b>Audience:</b> Homeowner</p> <p><b>Situation:</b> Architect shows the homeowner various sketches on different styles of general service areas and has the client pick the one s/he likes for his/her set of house plans.</p> <p><b>Product:</b> Completion of floor plan for general service area</p>	<ul style="list-style-type: none"> <li>Sketches of a utility room, garage and a carport, driveway, workshop, and a storage area to be turned in and graded (two of each area)</li> <li>Completion of a floor plan (rough draft)</li> </ul>

**Standard for Success:** Completion of rough draft of general service areas added to their floor plans using departmental rubrics

### Suggested Resources

- Helper, Dana, Helper, Donald, Wallach, Paul. Architecture Drafting and Design. Peoria, IL: Glencoe/McGraw-Hill, 1998.
- Affordable Home Plans. Tucson, Arizona: Home Planners, 1997
- New England Sampler. Tucson, Arizona: Home Planners, 1997
- One-Story Homes. Tucson, Arizona: Home Planners, 1997
- Southern Home Plans. Tucson, Arizona: Home Planners, 1997
- Traditional Homes. Tucson, Arizona: Home Planners, 1997
- Vacation and Second Homes. Tucson, Arizona: Home Planners, 1997
- Western Home Plans. Tucson, Arizona: Home Planners, 1997
- 200 Budget-Smart Home Plans. Tucson, Arizona: Home Planners, 1997
- 200 Move-Up Home Plans. Tucson, Arizona: Home Planners, 1997
- 200 Small House Plans. Tucson, Arizona: Home Planners, 1997
- Handouts:
  - How to Plan a General Service Area
  - How to Design a Utility Room
  - How to Design a Garage and a Carport
  - How to Design a Driveway
  - How to Design a Storage Area
- Student worksheets on graph paper:
  - Utility room
  - Garage
  - Carport
  - Driveway
  - Storage area

# New Milford Public Schools

Committee Member: Joe Neff Unit 7: Sleeping Areas	Course/Subject: Architectural Drafting I Grade Levels: 9-12 # of Weeks: 1
<b>Identify Desired Results</b>	
<b>Technology Education Standards</b>	
<ul style="list-style-type: none"> <li>Arch.08.01: Research and collect data that relates to architectural drafting and design.</li> <li>Arch.05: Research, plan and design functional structure.</li> </ul>	
<b>Enduring Understandings</b> Generalizations of desired understanding via essential questions (Students will understand that ...)	<b>Essential Questions</b> Inquiry used to explore generalizations
<ul style="list-style-type: none"> <li>Both bedrooms and bathrooms should be located in a quiet part of the house,</li> <li>An efficient bathroom is an integral part of the house.</li> </ul>	<ul style="list-style-type: none"> <li>Why are bedrooms important in a home?</li> <li>What determines how many bedrooms are in a house?</li> <li>Why does the master bedroom have an adjacent bathroom?</li> <li>How does one determine how many bathrooms are in a home?</li> <li>How would one decide what is an efficient bathroom?</li> </ul>
<b>Expected Performances</b> What students should know and be able to do	
<p>Students will know the following:</p> <ul style="list-style-type: none"> <li>The function, location, types of décor, size, and shape of bedrooms and bathrooms</li> </ul> <p>Students will be able to do the following:</p> <ul style="list-style-type: none"> <li>Understand, design, and draw sleeping areas with bathrooms</li> <li>Complete a floor plan of a house</li> </ul>	
<b>Character Attributes</b>	
<ul style="list-style-type: none"> <li>Courage</li> <li>Honesty</li> </ul>	
<b>Technology Competencies</b>	
<ul style="list-style-type: none"> <li>Demonstrate attitudes and habits, including pride in good workmanship, dependability and regular attendance, that are valued in the workplace.</li> <li>Explore career and postsecondary educational opportunities through performance-based learning experiences.</li> </ul>	

<b>Develop Teaching and Learning Plan</b>	
<p>Teaching Strategies:</p> <ul style="list-style-type: none"> <li>• Teacher lectures on the different types of sleeping areas and the pros and cons of each.</li> <li>• Teacher hands out house plan books for students to get ideas of different types of sleeping areas.</li> <li>• Teacher meets with each student and discusses their sleeping areas.</li> </ul>	<p>Learning Activities:</p> <ul style="list-style-type: none"> <li>• Students will design a bedroom, 100 sq. ft. in size, for a six-year-old child.</li> <li>• Students will design a master bedroom with an adjoining bathroom.</li> <li>• Students will plan the bedroom areas for the home they are designing.</li> <li>• Students will draw a plan with a master bathroom and a central bathroom.</li> <li>• Students will draw a simple sketch of a master bedroom and bathroom.</li> <li>• Students will draw a simple sketch of a bedroom.</li> <li>• Students will draw a simple sketch of a central bathroom.</li> <li>• Using graph paper and the rough draft of their floor plan, students will complete the sleeping areas needed for their home.</li> </ul>
<b>Assessments</b>	
<b>Performance Task</b>	<b>Other Evidence</b>
<p>Authentic application to evaluate student achievement of desired results designed according to GRASPS (one per marking period)</p>	<p>Application that is functional in a classroom context to evaluate student achievement of desired results</p>
<p><b>Goal:</b> To understand the different styles of sleeping areas</p> <p><b>Role:</b> Architect</p> <p><b>Audience:</b> Homeowner</p> <p><b>Situation:</b> Architect shows the homeowner various sketches of bedrooms and baths and has the client pick the one s/he likes for his/her set of house plans.</p> <p><b>Product :</b> Completion of a floor plan of a sleeping area</p> <p><b>Standard for Success:</b> Completion of rough draft of sleeping area added to their floor plan using departmental rubrics</p>	<ul style="list-style-type: none"> <li>• Five different sketches of sleeping areas to be turned in and graded</li> <li>• Three sketches of various types of baths, both master and centrally located, to be turned in and graded</li> <li>• Completion of a floor plan (rough draft)</li> </ul>

## Suggested Resources

- Helper, Dana, Helper, Donald, Wallach, Paul. Architecture Drafting and Design. Peoria, IL: Glencoe/McGraw-Hill, 1998.
- Affordable Home Plans. Tucson, Arizona: Home Planners, 1997
- New England Sampler. Tucson, Arizona: Home Planners, 1997
- One-Story Homes. Tucson, Arizona: Home Planners, 1997
- Southern Home Plans. Tucson, Arizona: Home Planners, 1997
- Traditional Homes. Tucson, Arizona: Home Planners, 1997
- Vacation and Second Homes. Tucson, Arizona: Home Planners, 1997
- Western Home Plans. Tucson, Arizona: Home Planners, 1997
- 200 Budget-Smart Home Plans. Tucson, Arizona: Home Planners, 1997
- 200 Move-Up Home Plans. Tucson, Arizona: Home Planners, 1997
- 200 Small House Plans. Tucson, Arizona: Home Planners, 1997
- Handouts:
  - Bedrooms and Their Design
  - How to Design a Master Bedroom with Bath
  - Designing Bathrooms
- Student worksheets on graph paper:
  - Master bedroom
  - Three different layouts for a bathroom

# New Milford Public Schools

Committee Member: Joe Neff Unit 8: Designing Floor Plans	Course/Subject: Architectural Drafting I Grade Levels: 9-12 # of Weeks: 3
<b>Identify Desired Results</b>	
<ul style="list-style-type: none"> <li>• Arch.03: Demonstrate an understanding of regulations in architectural design.</li> <li>• Arch.03.01: Research and identify regulations and codes that are needed to establish a legal and safe design.</li> </ul>	
<b>Enduring Understandings</b> Generalizations of desired understanding via essential questions (Students will understand that ...)	<b>Essential Questions</b> Inquiry used to explore generalizations
<ul style="list-style-type: none"> <li>• Gathering information from a client (teacher) is needed to design a set of house plans.</li> <li>• Analyzing a building site is an integral part of design.</li> <li>• Floor plans are a necessary part of the design process.</li> </ul>	<ul style="list-style-type: none"> <li>• What are the steps necessary to design a residence?</li> <li>• Why is it important to prepare a situations statement and set goals and objectives for the house one is designing?</li> <li>• What is a proper building site for a house?</li> </ul>
<b>Expected Performances</b>	
What students should know and be able to do	
Students will know the following: <ul style="list-style-type: none"> <li>• Floor plan development</li> <li>• Design process</li> <li>• Functional space planning</li> <li>• Development of plans to accommodate special needs</li> </ul>	
Students will be able to do the following: <ul style="list-style-type: none"> <li>• Develop basic floor plans</li> <li>• Define a project</li> <li>• Develop a conceptual design</li> <li>• Evaluate a design</li> <li>• Understand design development</li> <li>• Plan space for rooms and areas</li> <li>• Begin to draw the final set of house plans</li> </ul>	
<b>Character Attributes</b>	
<ul style="list-style-type: none"> <li>• Integrity</li> <li>• Perseverance</li> </ul>	

<b>Technology Competencies</b>	
<ul style="list-style-type: none"> <li>• Demonstrate technical knowledge and skills, including planning, designing, organizing, coordinating, constructing, and maintaining construction technologies and design.</li> </ul>	
<b>Develop Teaching and Learning Plan</b>	
<p>Teaching Strategies:</p> <ul style="list-style-type: none"> <li>• Teacher lectures on the proper way to begin drawing floor plans. Teacher explains how to put together all of students' rough drafts to complete a final floor plan.</li> <li>• Teacher explains the basic requirements needed for the house they are designing.</li> <li>• Teacher meets with each student and discusses his/her overall plans.</li> </ul>	<p>Learning Activities:</p> <ul style="list-style-type: none"> <li>• Students will organize all of the rough drafts and put them into a basic set of house plans: <ul style="list-style-type: none"> <li>○ Rough draft – Window/door plan</li> <li>○ Rough draft – Electrical plan</li> <li>○ Rough draft – Furniture plan</li> <li>○ Rough draft – Foundation plan</li> <li>○ Rough draft – Plot plan</li> <li>○ Rough draft – Schedule sheet</li> <li>○ Rough draft – Wall section</li> <li>○ Rough draft – Cover sheet</li> </ul> </li> <li>• Students will begin to develop floor plans.</li> </ul>
<b>Assessments</b>	
<b>Performance Task</b>	<b>Other Evidence</b>
<p>Authentic application to evaluate student achievement of desired results designed according to GRASPS (one per marking period)</p>	<p>Application that is functional in a classroom context to evaluate student achievement of desired results</p>
<p><b>Goal:</b> To complete of a set of house plans</p> <p><b>Role:</b> Architect</p> <p><b>Audience:</b> Homeowner</p> <p><b>Situation:</b> Architect shows the homeowner the rough sketch of his/her complete floor plans for approval.</p> <p><b>Product :</b> Completion of floor plan for a house</p> <p><b>Standard for Success:</b> Organization of final set of floor plans using departmental rubrics</p>	<ul style="list-style-type: none"> <li>• Begin to complete of a set of house plans</li> <li>• Organize the rough drafts</li> </ul>

## Suggested Resources

- Helper, Dana, Helper, Donald, Wallach, Paul. Architecture Drafting and Design. Peoria, IL: Glencoe/McGraw-Hill, 1998.
- Affordable Home Plans. Tucson, Arizona: Home Planners, 1997
- New England Sampler. Tucson, Arizona: Home Planners, 1997
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- Traditional Homes. Tucson, Arizona: Home Planners, 1997
- Vacation and Second Homes. Tucson, Arizona: Home Planners, 1997
- Western Home Plans. Tucson, Arizona: Home Planners, 1997
- 200 Budget-Smart Home Plans. Tucson, Arizona: Home Planners, 1997
- 200 Move-Up Home Plans. Tucson, Arizona: Home Planners, 1997
- 200 Small House Plans. Tucson, Arizona: Home Planners, 1997
- Handouts:
  - Basic Requirements for a House
  - Plot Plan for the House (area allowed)

# New Milford Public Schools

Committee Member: Joe Neff Unit 9: Drawing Floor Plans	Course/Subject: Architectural Drafting I Grade Levels: 9-12 # of Weeks: 10
<b>Identify Desired Results</b>	
<b>Technology Education Standards</b>	
<ul style="list-style-type: none"> <li>• Arch.06: Develop technical drawings drafted by hand and computer-aided drafting and design.</li> <li>• Arch.07.01: Convey information using multi-dimensional drawings.</li> </ul>	
<b>Enduring Understandings</b> Generalizations of desired understanding via essential questions (Students will understand that ...)	<b>Essential Questions</b> Inquiry used to explore generalizations
<ul style="list-style-type: none"> <li>• Information obtained for a client is necessary to draw a complete set of house plans.</li> <li>• Using graphic symbols to communicate information on a floor plan is essential for good house design.</li> <li>• It is important to draw a floor plan according to a sequence of steps.</li> </ul>	<ul style="list-style-type: none"> <li>• What is the proper sequence for drawing floor plans and why do we have one?</li> <li>• Why does one need a set of house plans for the following?             <ul style="list-style-type: none"> <li>○ Window/door floor plan</li> <li>○ Electrical plan</li> <li>○ Furniture plan</li> <li>○ Foundation plan</li> <li>○ Plot plan</li> <li>○ Wall section</li> <li>○ Cover sheet</li> <li>○ Schedules</li> </ul> </li> </ul>
<b>Expected Performances</b>	
What students should know and be able to do	
Students will know the following: <ul style="list-style-type: none"> <li>• Different types of floor plans</li> <li>• Different types of floor plan symbols</li> <li>• The steps in drawing floor plans</li> <li>• How to complete the following floor plans:             <ul style="list-style-type: none"> <li>○ Window/door floor plan</li> <li>○ Electrical floor plan</li> <li>○ Furniture plan</li> <li>○ Foundation plan</li> <li>○ Plot plan</li> <li>○ Wall section</li> <li>○ Cover sheet</li> <li>○ Schedules</li> </ul> </li> </ul>	

Students will be able to do the following:

- Draw a floor plan
- Draw a foundation plan
- Draw an electrical plan
- Draw a furniture plan
- Draw a plot plan
- Draw a wall section
- Draw a cover sheet
- Draw a schedule sheet

**Character Attributes**

- Integrity
- Respect

**Technology Competencies**

- Employ critical thinking skills to solve problems and make decisions.
- Evaluate alternatives using a variety of problem-solving and critical thinking skills.

**Develop Teaching and Learning Plan**

Teaching Strategies:

- Teacher lectures on the proper way to draw floor plans and explains how to put together all of their rough drafts to complete a final floor plan.
- Teacher explains the proper size paper and scale used for each drawing.
- Teacher meets with each student and discusses his/her overall plans and makes sure students understand the assignment.

Learning Activities:

- Students will draw a complete set of house plans:
  - Window/door floor plan
  - Electrical plan
  - Furniture plan
  - Foundation plan
  - Plot plan
  - Wall section
  - Cover sheet
  - Schedules

<b>Assessments</b>	
<b>Performance Task</b>	<b>Other Evidence</b>
Authentic application to evaluate student achievement of desired results designed according to GRASPS (one per marking period)	Application that is functional in a classroom context to evaluate student achievement of desired results
<p><b>Goal:</b> To complete of a set of house plans</p> <p><b>Role:</b> Architect</p> <p><b>Audience:</b> Homeowner</p> <p><b>Situation:</b> With the approval from the homeowner, the architect begins to draw, complete, and plot the complete set of house plans.</p> <p><b>Product:</b> Complete set of house plans</p> <p><b>Standard for Success:</b> Completion of a final set of floor plans using departmental rubrics</p>	
<b>Suggested Resources</b>	
<ul style="list-style-type: none"> <li>• Helper, Dana, Helper, Donald, Wallach, Paul. <u>Architecture Drafting and Design</u>. Peoria, IL: Glencoe/McGraw-Hill, 1998.</li> <li>• <u>Affordable Home Plans</u>. Tucson, Arizona: Home Planners, 1997</li> <li>• <u>New England Sampler</u>. Tucson, Arizona: Home Planners, 1997</li> <li>• <u>One-Story Homes</u>. Tucson, Arizona: Home Planners, 1997</li> <li>• <u>Southern Home Plans</u>. Tucson, Arizona: Home Planners, 1997</li> <li>• <u>Traditional Homes</u>. Tucson, Arizona: Home Planners, 1997</li> <li>• <u>Vacation and Second Homes</u>. Tucson, Arizona: Home Planners, 1997</li> <li>• <u>Western Home Plans</u>. Tucson, Arizona: Home Planners, 1997</li> <li>• <u>200 Budget-Smart Home Plans</u>. Tucson, Arizona: Home Planners, 1997</li> <li>• <u>200 Move-Up Home Plans</u>. Tucson, Arizona: Home Planners, 1997</li> <li>• <u>200 Small House Plans</u>. Tucson, Arizona: Home Planners, 1997</li> </ul>	

# New Milford Public Schools

Committee Member: Joe Neff Unit 10: Groundwork – AutoCAD	Course/Subject: Architectural Drafting I Grade Levels: 9-12 # of Weeks: 3
<b>Identify Desired Results</b>	
<b>Technology Education Standards</b>	
<ul style="list-style-type: none"> <li>• CADD.02: Analyze the use of current CADD design technology.</li> <li>• CADD.04: Identify basic geometric elements (e.g., line, circle, rectangle, sphere, and cube).</li> </ul>	
<b>Enduring Understandings</b> Generalizations of desired understanding via essential questions (Students will understand that ...)	<b>Essential Questions</b> Inquiry used to explore generalizations
<ul style="list-style-type: none"> <li>• Basic commands are used to complete different types of drawings.</li> <li>• The user interface is used to pull down menus, toolbars, and the tools palettes.</li> <li>• The command entry is used to create and save a drawing file and to open a drawing.</li> <li>• One needs to be able to create circles, arcs, ellipses, donuts, rectangles, and polygons to complete various drawings.</li> </ul>	<ul style="list-style-type: none"> <li>• How does one start AutoCAD?</li> <li>• How does one exit AutoCAD?</li> <li>• How does one move a toolbar?</li> <li>• What is a cascading menu?</li> <li>• What appears when one rests the pointer on a button contained in a toolbar?</li> <li>• What is the purpose of the donut command?</li> </ul>
<b>Expected Performances</b> What students should know and be able to do	
<p>Students will know the following:</p> <ul style="list-style-type: none"> <li>• The components and functions of AutoCAD</li> </ul> <p>Students will be able to do the following:</p> <ul style="list-style-type: none"> <li>• Start AutoCAD</li> <li>• Open a drawing file</li> <li>• Exit AutoCAD</li> <li>• Use the pull-down menus</li> <li>• Know the difference between floating and docked toolbars</li> <li>• Use the tools palette</li> <li>• Be able to open, create, and save a drawing file</li> <li>• Be able to enter a command using the keyboard and tool bar</li> <li>• Understand the pick buttons on a toolbar</li> <li>• Re-enter the last command</li> <li>• Create curved objects such as circles, arcs, ellipses, and donuts</li> <li>• Create rectangles and other types of regular polygons</li> </ul>	

<b>Character Attributes</b>	
<ul style="list-style-type: none"> <li>• Cooperation</li> <li>• Perseverance</li> </ul>	
<b>Technology Competencies</b>	
<ul style="list-style-type: none"> <li>• Identify, describe, and utilize the basic hardware and operating systems used in CADD.</li> </ul>	
<b>Develop Teaching and Learning Plan</b>	
<p>Teaching Strategies:</p> <ul style="list-style-type: none"> <li>• Teacher lectures on the proper commands needed to create a simple drawing.</li> <li>• Teacher uses the data projector to show the students the various commands needed to draw a simple drawing.</li> <li>• Teacher uses active learning to help the students complete their assignments.</li> <li>• Teacher shows students about problem-based learning, a method that challenges students to “learn to learn” by working in groups to seek solutions to problems.</li> <li>• Teacher hands out drawing #1 to the group. When the drawing is finished, the teacher checks the drawing, so the students can move onto the next drawing.</li> </ul>	<p>Learning Activities:</p> <ul style="list-style-type: none"> <li>• Students will practice commands using the keyboard.</li> <li>• Students will practice using their pointing device.</li> <li>• Students will use the select file dialog.</li> <li>• Students will use the coordinate display to locate the position of various (X, Y) points in the drawing.</li> <li>• Students will work in groups to complete drawings #1 - #5.</li> </ul>

<b>Assessments</b>	
<b>Performance Task</b>	<b>Other Evidence</b>
Authentic application to evaluate student achievement of desired results designed according to GRASPS (one per marking period)	Application that is functional in a classroom context to evaluate student achievement of desired results
<p><b>Goal:</b> To enable students to create a basic 2D drawing in AutoCAD</p> <p><b>Role:</b> Draftsman</p> <p><b>Audience:</b> Client</p> <p><b>Situation:</b> Client has given the draftsman five drawings to complete to show him that he knows how to use the AutoCAD software.</p> <p><b>Product:</b> Correct completion of drawings #1 - #5 for the client to see</p> <p><b>Standard for Success:</b> Completion of drawings and approval from client</p>	<ul style="list-style-type: none"> <li>• Start AutoCAD by completing drawing #1</li> <li>• Show understanding of the basic layout of the AutoCAD screen by completing handout #1</li> <li>• Use the command line and keyboard with AutoCAD by completing drawing #2</li> <li>• Use pointing device in AutoCAD by completing drawing #2</li> <li>• Open an existing drawing by successfully opening drawing #1 or drawing #2</li> <li>• Show understanding about AutoCAD's Cartesian workspace by completing drawing #3</li> <li>• Draw lines, rectangles, and circles by completing drawing #4</li> <li>• Erase objects by completing drawing #5</li> <li>• Save work by saving drawing #5 successfully</li> <li>• Exit AutoCAD by shutting down the program</li> <li>• Self-check: Getting started with AutoCAD (7 questions)</li> <li>• Completion of drawings #1 - #5</li> <li>• Observation of student work</li> <li>• Unit quiz</li> </ul>
<b>Suggested Resources</b>	
<ul style="list-style-type: none"> <li>• AutoCAD software. Studica Inc. Autodesk Design Academy, Sanborn, NY.</li> <li>• Wohlers, Terry. <u>Applying AutoCAD</u>. Woodlands Hills, CA: Glencoe/McGraw Hill Company, 2008.</li> <li>• Student worksheets: Drawings #1 - #5</li> <li>• Handouts: Starting AutoCAD Toolbars</li> </ul>	

# New Milford Public Schools

Committee Member: Joe Neff Unit 11: Drawing Aids and Controls	Course/Subject: Architectural Drafting I Grade Levels: 9-12 # of Weeks: 2
<b>Identify Desired Results</b>	
<b>Technology Education Standards</b>	
<ul style="list-style-type: none"> <li>• CADD.03: Utilize measurement and annotation systems as they apply to CADD technology design.</li> <li>• CADD.05.08: Describe the process for setting and manipulating drawing elements.</li> </ul>	
<b>Enduring Understandings</b> Generalizations of desired understanding via essential questions (Students will understand that ...)	<b>Essential Questions</b> Inquiry used to explore generalizations
<ul style="list-style-type: none"> <li>• Object snap settings are a helpful drawing feature.</li> <li>• The use of construction aids, like snap grid, construction lines, rays, and the zoom command are helpful settings used in AutoCAD.</li> </ul>	<ul style="list-style-type: none"> <li>• Why do we need to know the coordinate display?</li> <li>• How does the zoom command work?</li> <li>• What is the purpose of the object snap command?</li> <li>• Why is the coordinate display so important?</li> </ul>
<b>Expected Performances</b>	
What students should know and be able to do	
Students will know the following: <ul style="list-style-type: none"> <li>• The components and functions of object snap modes</li> </ul> Students will be able to do the following: <ul style="list-style-type: none"> <li>• Use the alignment grid and snap grid</li> <li>• Apply object snaps that are not currently turned on</li> <li>• Change the object snap setting to increase productivity</li> <li>• Use the quick setup wizard</li> <li>• Use and change the display of coordinate information</li> <li>• Set and use AutoCAD's visual grid system</li> <li>• Zoom in on portions of a drawing to view or to add details</li> <li>• Draw construction lines and rays</li> <li>• Use orthographic projection</li> <li>• Use the various methods of zooming (extends, limits, all, previous, and window)</li> </ul>	
<b>Character Attributes</b>	
<ul style="list-style-type: none"> <li>• Integrity</li> <li>• Respect</li> </ul>	

Technology Competencies	
<ul style="list-style-type: none"> <li>• Explore career and postsecondary educational opportunities through performance-based learning experiences.</li> <li>• Operate a personal computer using the AutoCAD software.</li> </ul>	
Develop Teaching and Learning Plan	
<p>Teaching Strategies:</p> <ul style="list-style-type: none"> <li>• Teacher lectures on the proper commands needed to create a simple drawing.</li> <li>• Teacher uses the data projector to show the students the various commands needed to draw a simple drawing.</li> <li>• Teacher uses active learning to help the students complete their assignments.</li> <li>• Teacher explains about problem-based learning, a method that challenges students to “learn to learn” by working in groups to seek solutions to problems.</li> <li>• Teacher hands out drawing #6 to the students and then checks the drawing, so the students can move onto the next drawing.</li> </ul>	<p>Learning Activities:</p> <ul style="list-style-type: none"> <li>• Students will work in groups to complete drawings #6 - #9.</li> <li>• Students will be able draw with grid and snap.</li> <li>• Students will be able view a drawing with zoom and pan.</li> <li>• Students will be able undo commands.</li> <li>• Students will be able save their work.</li> <li>• Students will be able exit AutoCAD.</li> </ul>
Assessments	
Performance Task	Other Evidence
<p>Authentic application to evaluate student achievement of desired results designed according to GRASPS (one per marking period)</p>	<p>Application that is functional in a classroom context to evaluate student achievement of desired results</p>
<p><b>Goal:</b> To enable students to create a basic 2D drawing in AutoCAD</p> <p><b>Role:</b> Engineer</p> <p><b>Audience:</b> Client</p> <p><b>Situation:</b> Client has given the draftsman five drawings to complete to show him that he knows how to use the AutoCAD software.</p> <p><b>Product:</b> Correct completion of drawings #1 - #5 for the client to see</p> <p><b>Standard for Success:</b> Completion of drawings and approval from client</p>	<ul style="list-style-type: none"> <li>• Draw with grid and snap by completing drawing #6</li> <li>• View a drawing with zoom and pan by completing drawing #7</li> <li>• Undo commands by completing drawing #8</li> <li>• Save work by drawing and saving drawing #9</li> <li>• Exit AutoCAD</li> <li>• Self-check: Drawing aides with AutoCAD (10 questions)</li> <li>• Completion of drawings #6 - #9</li> <li>• Observation of student work</li> <li>• Unit quiz</li> </ul>

## Suggested Resources

- AutoCAD software Studica Inc. Autodesk Design Academy, Sanborn, NY.
- Wohlers, Terry. Applying AutoCAD. Woodlands Hills, CA: Glencoe/McGraw Hill Company, 2008.
- Student worksheets:
  - Drawings #6 - #9
- Handouts:
  - Drawing Different Types of Lines
  - Zoom Commands
  - Object Snap Commands

# New Milford Public Schools

Committee Member: Joe Neff Unit 12: Drawing and Editing	Course/Subject: Architectural Drafting I Grade Levels: 9-12 # of Weeks: 3
<b>Identify Desired Results</b>	
<b>Technology Education Standards</b>	
<ul style="list-style-type: none"> <li>• CADD.03: Utilize measurement and annotation systems as they apply to CADD technology design.</li> <li>• CADD.05.04: Use the concepts of geometric construction in the development of design drawings.</li> </ul>	
<b>Enduring Understandings</b> Generalizations of desired understanding via essential questions (Students will understand that ...)	<b>Essential Questions</b> Inquiry used to explore generalizations
<ul style="list-style-type: none"> <li>• It is important to be able to draw solid and curved objects, solid shapes, polylines, and spline curves.</li> <li>• One needs to know how to add and alter objects, create chamfers, break objects, create fillets and rounds, and offset objects to complete drawings.</li> <li>• Being able to move and duplicate objects; change object properties, and move, mirror, and copy objects is a valuable tool to use in AutoCAD.</li> <li>• Being able to modify, maneuver objects, stretch, scale, rotate, trim, and extend objects are commands important in drawing a 2D object.</li> <li>• Hatching and sketching are basic commands used in AutoCAD.</li> </ul>	<ul style="list-style-type: none"> <li>• What is the purpose of fill and how is it used?</li> <li>• What is a polyline?</li> <li>• What is the function of the chamfer command?</li> <li>• How does one set the fillet radius?</li> <li>• What is the purpose of the properties palette?</li> <li>• What are two types of arrays?</li> <li>• What is the purpose of the stretch command?</li> <li>• What is the purpose of the trim command?</li> <li>• Why are hatch patterns are important?</li> </ul>
<b>Expected Performances</b>	
What students should know and be able to do	
Students will know the following: <ul style="list-style-type: none"> <li>• Offset lines and circles</li> </ul> Students will be able to do the following: <ul style="list-style-type: none"> <li>• Draw solid objects and polylines</li> <li>• Draw spline curves</li> <li>• Create chamfers and fillets</li> </ul>	

- Break and offset objects
- Change object's properties
- Copy, rotate, mirror, and move objects
- Create polar and rectangular arrays
- Scale, stretch, trim, and extend lines
- Hatch objects
- Edit a hatch
- Create and edit multi-lines
- Stretch objects to change their overall shape
- Rotate objects to exact angles

#### Character Attributes

- Cooperation
- Perseverance

#### Technology Competencies

- Accept personal responsibility for production and quality.
- Respond constructively to constructive criticism.

### Develop Teaching and Learning Plan

#### Teaching Strategies:

- 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.
- Problem-based learning is a method that challenges students to "learn to learn" by working in groups to seek solutions to problems.
- Teacher hands out drawing #10 to the students and then checks the drawing, so the students can move onto the next drawing.

#### Learning Activities:

- Students will complete drawings #10 - #13.
- Students will be able draw solid, curved, polylines, and splines.
- Students will be able to add and alter drawings.
- Students will be able to move, offset, mirror, and stretch, rotate, and trim objects.
- Students will be able to hatch.
- Self-check: Drawing and editing with AutoCAD (12 questions)

<b>Assessments</b>	
<b>Performance Task</b>	<b>Other Evidence</b>
Authentic application to evaluate student achievement of desired results designed according to GRASPS (one per marking period)	Application that is functional in a classroom context to evaluate student achievement of desired results
<p><b>Goal:</b> To create a basic 2D drawing in AutoCAD</p> <p><b>Role:</b> Draftsman</p> <p><b>Audience:</b> ABC Toolmakers</p> <p><b>Situation:</b> ABC toolmakers have given the draftsman three drawings he needs to have done using the AutoCAD software, so he can machine the parts in the drawing.</p> <p><b>Product:</b> Correct completion of drawings (#10 - #13), so they can be machined</p> <p><b>Standard for Success:</b> Completion of drawings #10-#13 using departmental rubrics</p>	<ul style="list-style-type: none"> <li>• Completion of drawings #10 - #13</li> <li>• Solid, curved, polylines, and splines used in drawing #10</li> <li>• Add and alter drawings by completing drawing #11</li> <li>• Move, offset, mirror, stretch, rotate, and trim objects by completing drawing #12</li> <li>• Hatch by completing drawing #13</li> <li>• Self-check: Drawing and editing with AutoCAD (12 questions)</li> <li>• Observation of student work</li> <li>• Unit quiz</li> </ul>
<b>Suggested Resources</b>	
<ul style="list-style-type: none"> <li>• AutoCAD software Studica Inc. Autodesk Design Academy, Sanborn, NY.</li> <li>• Wohlers, Terry. <u>Applying AutoCAD</u>. Woodlands Hills, CA: Glencoe/McGraw Hill Company, 2008.</li> <li>• Student worksheets: Drawings #10 - #13</li> <li>• Handouts: Drawing Irregular Objects How to Hatch Basic Editing Commands</li> </ul>	

# New Milford Public Schools

Committee Member: Joe Neff Unit 13: Text and Tables	Course/Subject: Architectural Drafting I Grade Levels: 9-12 # of Weeks: 2
<b>Identify Desired Results</b>	
<b>Technology Education Standards</b>	
<ul style="list-style-type: none"> <li>• CADD.09: Identify various symbols to interpret and read technical drawings.</li> <li>• CADD.09.03: Interpret drawings, pictures, and symbols.</li> </ul>	
<b>Enduring Understandings</b> Generalizations of desired understanding via essential questions (Students will understand that ...)	<b>Essential Questions</b> Inquiry used to explore generalizations
<ul style="list-style-type: none"> <li>• One needs to know how to use notes and specifications, different types of text, how to import text, format text, and use different text styles and fonts to complete a drawing.</li> <li>• Text edit, spell check, creating special characters, and being able to use and create tables are special functions used in AutoCAD.</li> </ul>	<ul style="list-style-type: none"> <li>• What might be the benefit of using the mtext command?</li> <li>• What is the purpose of a title block?</li> <li>• Why might a character map be helpful?</li> <li>• What is a table in AutoCAD?</li> <li>• What command do you enter to create a new text style?</li> </ul>
<b>Expected Performances</b>	
What students should know and be able to do	
Students will know the following: <ul style="list-style-type: none"> <li>• The components and functions of text</li> </ul> Students will be able to do the following: <ul style="list-style-type: none"> <li>• Use different types of text</li> <li>• Import text in a drawing</li> <li>• Format text</li> <li>• Apply text in drawings</li> <li>• Create and edit text</li> <li>• Create special characters</li> <li>• Find and replace text</li> <li>• Use AutoCAD's spell checker</li> <li>• Create and edit tables</li> <li>• Apply styles to tables</li> </ul>	
<b>Character Attributes</b>	
<ul style="list-style-type: none"> <li>• Compassion</li> <li>• Honesty</li> </ul>	

Technology Competencies	
<ul style="list-style-type: none"> <li>• Explore career and postsecondary educational opportunities through performance-based learning experiences.</li> <li>• Identify resources to complete a job task.</li> </ul>	
Develop Teaching and Learning Plan	
<p>Teaching Strategies:</p> <ul style="list-style-type: none"> <li>• Teacher lectures on the proper commands needed to create a simple drawing.</li> <li>• Teacher uses the data projector to show the students the various commands needed to draw a simple drawing.</li> <li>• Teacher uses active learning to help the students complete their assignments.</li> <li>• Problem-based learning is a method that challenges students to “learn to learn” by working in groups to seek solutions to problems.</li> <li>• Teacher hands out drawing #14 to the students and then checks the drawing, so the students can move onto the next drawing.</li> </ul>	<p>Learning Activities:</p> <ul style="list-style-type: none"> <li>• Students will complete of drawings #14 - #18.</li> <li>• Students will be able to insert different types of text.</li> <li>• Students will be able to format text.</li> <li>• Students will be able apply text to drawings.</li> <li>• Students will be able to edit text.</li> <li>• Students will be able to use spellchecker.</li> <li>• Self-check: Text and tables (15 questions)</li> </ul>
Assessments	
Performance Task	Other Evidence
<p>Authentic application to evaluate student achievement of desired results designed according to GRASPS (one per marking period)</p>	<p>Application that is functional in a classroom context to evaluate student achievement of desired results</p>
<p><b>Goal:</b> To create a basic 2D drawing in AutoCAD</p> <p><b>Role:</b> Engineer</p> <p><b>Audience:</b> Neff’s Engineering Company</p> <p><b>Situation:</b> An engineer in Neff’s company needs to complete the five drawings given to him by the boss, so they have a drawing to use as a reference for the job they are starting.</p> <p><b>Product:</b> Correct completion of the drawings, so they can be used as a reference for a job</p>	<ul style="list-style-type: none"> <li>• Completion of drawings #14 - #18</li> <li>• Insert different types of text by completing drawing #14</li> <li>• Format text by completing drawing #14</li> <li>• Apply text to drawings by completing drawing #15</li> <li>• Edit text by completing drawing #16</li> <li>• Use spellchecker by completing drawing #18</li> <li>• Self-check: Text and tables (15 questions)</li> <li>• Observation of student work</li> <li>• Unit quiz</li> </ul>

<b>Standard for Success:</b> Completion of drawings and client's approval using departmental rubrics	
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<b>Suggested Resources</b>	
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| <ul style="list-style-type: none"><li>• AutoCAD software Studica Inc. Autodesk Design Academy, Sanborn, NY.</li><li>• Wohlers, Terry. <u>Applying AutoCAD</u>. Woodlands Hills, CA: Glencoe/McGraw Hill Company, 2008.</li><li>• Student worksheets:<ul style="list-style-type: none"><li>Using Text in AutoCAD</li></ul></li><li>• Handouts:<ul style="list-style-type: none"><li>Drawings #14 - #18</li></ul></li></ul> |  |
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# New Milford Public Schools

Committee Member: Joe Neff Unit 14: Preparing and Printing a Drawing	Course/Subject: Architectural Drafting I Grade Levels: 9-12 # of Weeks: 2
<b>Identify Desired Results</b>	
<b>Technology Education Standards</b>	
<ul style="list-style-type: none"> <li>• CADD.04.07: Identify the hardware requirements of a given CADD software package.</li> <li>• CADD.02.08: Export and import images/files in a variety of file formats.</li> <li>• CADD.05.16: Scale and print hard copy of output device.</li> </ul>	
<b>Enduring Understandings</b> Generalizations of desired understanding via essential questions (Students will understand that ...)	<b>Essential Questions</b> Inquiry used to explore generalizations
<ul style="list-style-type: none"> <li>• Using a template file is one way to set up a drawing.</li> <li>• Layers and linetypes make viewing multiple drawings easier.</li> <li>• Being able to preview and then plot a drawing is one way to show the client one's work.</li> </ul>	<ul style="list-style-type: none"> <li>• What is the purpose and value of template files?</li> <li>• Why do we need different types of layers?</li> <li>• What is the purpose of locking a layer?</li> <li>• Why is a plot preview is useful?</li> </ul>
<b>Expected Performances</b>	
What students should know and be able to do	
<p>Students will know the following:</p> <ul style="list-style-type: none"> <li>• The purpose of a template file and settings that are commonly included</li> <li>• The appropriate unit of measurement for a drawing</li> <li>• The appropriate sheet size and drawing scale</li> </ul> <p>Students will be able to do the following:</p> <ul style="list-style-type: none"> <li>• Use template files</li> <li>• Set up an initial template</li> <li>• Create new layers to control the appearance of objects</li> <li>• Assign colors</li> <li>• Assign linetypes</li> <li>• Work with layers</li> <li>• Lock layers</li> <li>• Preview a plot</li> <li>• Plot a drawing to scale</li> </ul>	
<b>Character Attributes</b>	
<ul style="list-style-type: none"> <li>• Cooperation</li> <li>• Honesty</li> </ul>	

Technology Competencies	
<ul style="list-style-type: none"> <li>Demonstrate attitudes toward work, including the acceptance of the necessity of making a living and an appreciation of the social value and dignity of work.</li> </ul>	
Develop Teaching and Learning Plan	
<p>Teaching Strategies:</p> <ul style="list-style-type: none"> <li>Teacher lectures on the proper commands needed to create a simple drawing.</li> <li>Teacher uses the data projector to show the students the various commands needed to draw a simple drawing.</li> <li>Teacher uses active learning to help the students complete their assignments.</li> <li>Problem-based learning is a method that challenges students to “learn to learn” by working in groups to seek solutions to problems.</li> <li>Teacher hands out drawing #22 to the students and then the teacher checks the drawing, so the students can move onto the next drawing.</li> </ul>	<p>Learning Activities:</p> <ul style="list-style-type: none"> <li>Students will complete drawings #19 - #22.</li> <li>Students will insert different types of templates.</li> <li>Students will create new layers.</li> <li>Students will add colors and change linetypes.</li> <li>Students will preview a plot.</li> <li>Students will plot a drawing.</li> <li>Self-check: Preparing to print a drawing (12 questions)</li> </ul>
Assessments	
Performance Task	Other Evidence
<p>Authentic application to evaluate student achievement of desired results designed according to GRASPS (one per marking period)</p>	<p>Application that is functional in a classroom context to evaluate student achievement of desired results</p>
<p><b>Goal:</b> To create a basic 2D drawing in AutoCAD</p> <p><b>Role:</b> Draftsman</p> <p><b>Audience:</b> Neff’s Machine Shop</p> <p><b>Situation:</b> A draftsman in Neff’s company needs to complete four drawings using layers and template so that the company can view the job using different layers.</p> <p><b>Product:</b> Correct completion of the drawings using layers, so the employees can view the drawings on different layers</p>	<ul style="list-style-type: none"> <li>Insert different types of templates by completing drawing #19</li> <li>Create new layers by completing drawing #20</li> <li>Add colors and change linetypes by completing drawing #21</li> <li>Preview a plot by completing drawing #22</li> <li>Plot a drawing by plotting drawing #22</li> <li>Self-check: Prepare to print a drawing (12 questions)</li> <li>Completion of drawings #19 - #22</li> <li>Observation of student work</li> <li>Unit quiz</li> </ul>

<b>Standard for Success:</b> Completion of drawings and client's approval using departmental rubrics	
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<b>Suggested Resources</b>	
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| <ul style="list-style-type: none"><li>• AutoCAD software Studica Inc. Autodesk Design Academy, Sanborn, NY.</li><li>• Wohlers, Terry. <u>Applying AutoCAD</u>. Woodlands Hills, CA: Glencoe/McGraw Hill Company, 2008.</li><li>• Student worksheets:<ul style="list-style-type: none"><li>Drawings #19 - #22</li></ul></li><li>• Handouts:<ul style="list-style-type: none"><li>Changing Layers</li><li>How to Plot a Drawing</li></ul></li></ul> |  |
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# New Milford Public Schools

Committee Member: Joe Neff Unit 15: Basic Dimensioning	Course/Subject: Architectural Drafting I Grade Levels: 9-12 # of Weeks: 2
<b>Identify Desired Results</b>	
<b>Technology Education Standards</b>	
<ul style="list-style-type: none"> <li>• CADD.05.01: Understand the commands and concepts necessary for producing drawings through traditional or computer-aided means.</li> <li>• CADD.05.03: Differentiate the various techniques for viewing objects.</li> </ul>	
<b>Enduring Understandings</b> Generalizations of desired understanding via essential questions (Students will understand that ...)	<b>Essential Questions</b> Inquiry used to explore generalizations
<ul style="list-style-type: none"> <li>• Basic dimensioning is used to show the size of a drawing.</li> </ul>	<ul style="list-style-type: none"> <li>• How does one specify a text style for dimension text?</li> <li>• Which dimension button does one use to dimension fillets, rounds, and holes? Explain when one would use each button.</li> <li>• What does a jog on a radius dimension represent?</li> </ul>
<b>Expected Performances</b> What students should know and be able to do	
<p>Students will know the following:</p> <ul style="list-style-type: none"> <li>• The function of dimensions</li> </ul> <p>Students will be able to do the following:</p> <ul style="list-style-type: none"> <li>• Set the dimension text style</li> <li>• Create linear dimensions using commands and shortcuts</li> <li>• Dimension round features</li> <li>• Dimension angles</li> <li>• Dimension arcs</li> <li>• Use other types of dimensioning</li> </ul>	
<b>Character Attributes</b>	
<ul style="list-style-type: none"> <li>• Integrity</li> <li>• Respect</li> </ul>	

**Technology Competencies**

- Explore career and postsecondary educational opportunities through performance-based learning experiences.
- Manage data and utilize problem-solving skills to make reasoned decisions about employment, societal, political, and economic issues.

**Develop Teaching and Learning Plan**

**Teaching Strategies:**

- 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.
- Problem-based learning is a method that challenges students to “learn to learn” by working in groups to seek solutions to problems.
- Teacher hands out drawing #20 to the students and then checks the drawing, so the students can move onto the next drawing.

**Learning Activities:**

- Students will work in groups to complete drawings #20 - #24.
- Students will dimension text.
- Students will create linear dimensions.
- Students will dimension round features.
- Students will dimension angles.
- Students will dimension arcs
- Self-check: Basic dimensioning (15 questions)

<b>Assessments</b>	
<b>Performance Task</b>	<b>Other Evidence</b>
Authentic application to evaluate student achievement of desired results designed according to GRASPS (one per marking period)	Application that is functional in a classroom context to evaluate student achievement of desired results
<p><b>Goal:</b> To create a basic 2D drawing in AutoCAD</p> <p><b>Role:</b> Engineer</p> <p><b>Audience:</b> Neff's Engineering Firm</p> <p><b>Situation:</b> An engineer in Neff's firm needs to have dimensions put on five drawings so that the machine shop can reproduce the parts for a job they are doing.</p> <p><b>Product:</b> Correct completion of the five drawings using dimensioning, so the parts can be machined</p> <p><b>Standard for Success:</b> Completion of drawings and client's approval using departmental rubrics</p>	<ul style="list-style-type: none"> <li>• Completion of drawings #20 - #24</li> <li>• Dimension text by completing drawing #20</li> <li>• Create linear dimensions by completing drawing #21</li> <li>• Dimension round features by completing drawing #22</li> <li>• Dimension angles by completing drawing #23</li> <li>• Dimension arcs by completing drawing #24</li> <li>• Self-check: Basic dimensioning (15 questions)</li> <li>• Observation of student work</li> <li>• Unit quiz</li> </ul>
<b>Suggested Resources</b>	
<ul style="list-style-type: none"> <li>• AutoCAD software Studica Inc. Autodesk Design Academy, Sanborn, NY.</li> <li>• Wohlers, Terry. <u>Applying AutoCAD</u>. Woodlands Hills, CA: Glencoe/McGraw Hill Company, 2008.</li> <li>• Student worksheets:     Drawings #20 - #24</li> <li>• Handouts:     Basic Dimensioning</li> </ul>	

# New Milford Public Schools

Committee Member: Joe Neff Unit 16: Groups and Details	Course/Subject: Architectural Drafting I Grade Levels: 9-12 # of Weeks: 2
<b>Identify Desired Results</b>	
<b>Technology Education Standards</b>	
<ul style="list-style-type: none"> <li>• CADD.09: Identify various symbols to interpret and read technical drawings.</li> <li>• EKS.03.02: Demonstrate knowledge of basic arithmetic operations such as: addition, subtraction, multiplication, and division.</li> </ul>	
<b>Enduring Understandings</b> Generalizations of desired understanding via essential questions (Students will understand that ...)	<b>Essential Questions</b> Inquiry used to explore generalizations
<ul style="list-style-type: none"> <li>• It is important to be able to insert groups and blocks into a drawing.</li> <li>• The Design Center has blocks (pre-designed products like furniture, kitchen, plumbing fixtures, and other designs) used in AutoCAD.</li> <li>• Using the symbol library and being able to create a library are important aspects to creating a drawing.</li> </ul>	<ul style="list-style-type: none"> <li>• What is the primary purpose of creating a library of symbols and details?</li> <li>• When one creates a library, on what layer should one create and store the blocks? Why?</li> <li>• What types of content does design center display?</li> </ul>
<b>Expected Performances</b> What students should know and be able to do	
<p>Students will know the following:</p> <ul style="list-style-type: none"> <li>• The components and functions of a symbols library</li> </ul> <p>Students will be able to do the following:</p> <ul style="list-style-type: none"> <li>• Create a library of symbols and details</li> <li>• Insert blocks</li> <li>• Insert layers, dimension styles, and other content from drawings using design center</li> </ul>	
<b>Character Attributes</b>	
<ul style="list-style-type: none"> <li>• Perseverance</li> <li>• Responsibility</li> </ul>	
<b>Technology Competencies</b>	
<ul style="list-style-type: none"> <li>• Embrace work and career as part of one's future.</li> <li>• Explore a range of careers and acquire specific knowledge or experience in the field of CADD.</li> </ul>	

<b>Develop Teaching and Learning Plan</b>	
<p>Teaching Strategies:</p> <ul style="list-style-type: none"> <li>• Teacher lectures on the proper commands needed to create a simple drawing.</li> <li>• Teacher uses the data projector to show the students the various commands needed to draw a simple drawing.</li> <li>• Teacher uses active learning to help the students complete their assignments.</li> <li>• Problem-based learning is a method that challenges students to “learn to learn” by working in groups to seek solutions to problems.</li> <li>• Teacher hands out drawing #25 to the students. When the drawing is finished, the teacher checks the drawing, so the students can move onto the next drawing.</li> </ul>	<p>Learning Activities:</p> <ul style="list-style-type: none"> <li>• Students will work in groups to complete of drawings #25 - #27.</li> <li>• Students will use the symbol library to insert blocks into the drawing.</li> <li>• Students will use design center to insert various symbols into the drawing.</li> <li>• Students will create their own symbol library.</li> <li>• Self-check: Groups and details (12 questions)</li> </ul>
<b>Assessments</b>	
<b>Performance Task</b>	<b>Other Evidence</b>
<p>Authentic application to evaluate student achievement of desired results designed according to GRASPS (one per marking period)</p>	<p>Application that is functional in a classroom context to evaluate student achievement of desired results</p>
<p><b>Goal:</b> To create a basic 2D drawing in AutoCAD</p> <p><b>Role:</b> Civil Engineer</p> <p><b>Audience:</b> ABC Landscaping Service</p> <p><b>Situation:</b> ABC service needs a civil engineer to complete three drawings showing the plot plan of the property they are going to landscape.</p> <p><b>Product:</b> Correct completion of the three drawings needed by the landscape service</p> <p><b>Standard for Success:</b> Completion of drawings and client’s approval using departmental rubrics</p>	<ul style="list-style-type: none"> <li>• Completion of drawings #25 - #27</li> <li>• Using the symbol library, insert blocks into the drawing by completing drawing #25</li> <li>• Using design center, insert various symbols into the drawing by completing drawing #26</li> <li>• Create one’s own symbol library by completing drawing #27</li> <li>• Self-check: Groups and details (12 questions)</li> <li>• Observation of student work</li> <li>• Unit quiz</li> </ul>

## Suggested Resources

- AutoCAD software Studica Inc. Autodesk Design Academy, Sanborn, NY.
- Wohlers, Terry. Applying AutoCAD. Woodlands Hills, CA: Glencoe/McGraw Hill Company, 2008.
- Student worksheets:
  - Drawings #25 - #27
- Handouts:
  - Inserting Blocks in AutoCAD
  - Design Center
  - How to Layer

# New Milford Public Schools

Committee Member: Joe Neff Unit 17: Drawing and Modeling	Course/Subject: Architectural Drafting I Grade Levels: 9-12 # of Weeks: 2
<b>Identify Desired Results</b>	
<b>Technology Education Standards</b>	
<ul style="list-style-type: none"> <li>EKS.03.02: Demonstrate mathematics knowledge and skills required to pursue the full range of post-secondary education and career opportunities.</li> <li>EKS.03.06: Construct charts/tables/graphs from functions and data.</li> </ul>	
<b>Enduring Understandings</b> Generalizations of desired understanding via essential questions (Students will understand that ...)	<b>Essential Questions</b> Inquiry used to explore generalizations
<ul style="list-style-type: none"> <li>To be effective in creating and using 3D objects, one must first have good 3D basic skills.</li> </ul>	<ul style="list-style-type: none"> <li>Why does one need two methods of changing from AutoCAD's standard drawing format to isometric drawing?</li> <li>How does one create isometric circles?</li> <li>What is the purpose of the VPOINT command?</li> <li>In practical terms, what happens when one changes the elevation from 0 to 5?</li> <li>What does a 3D face object look like?</li> </ul>
<b>Expected Performances</b>	
What students should know and be able to do	
Students will know the following: <ul style="list-style-type: none"> <li>An isometric drawing from a 2D drawing</li> </ul> Students will be able to do the following: <ul style="list-style-type: none"> <li>Set up an isometric drawing</li> <li>Create an isometric drawing</li> <li>Dimension an isometric drawing</li> <li>Create a basic 3D model</li> <li>Understand viewing options</li> <li>Use 3D orbit</li> <li>Draw 2D objects in 3D space</li> <li>Draw 3D drawing by coordinate entry</li> <li>Draw objects at different Z elevations</li> <li>Draw objects using coordinate entry</li> <li>Mirror objects in 3D</li> <li>Create 3D faces</li> </ul>	

<b>Character Attributes</b>	
<ul style="list-style-type: none"> <li>• Compassion</li> <li>• Courage</li> </ul>	
<b>Technology Competencies</b>	
<ul style="list-style-type: none"> <li>• Demonstrate technical knowledge and skills, including planning, designing, organizing, coordinating, constructing, and maintaining in the construction technologies and design.</li> </ul>	
<b>Develop Teaching and Learning Plan</b>	
<p>Teaching Strategies:</p> <ul style="list-style-type: none"> <li>• Teacher lectures on the proper commands needed to create a simple drawing.</li> <li>• Teacher uses the data projector to show the students the various commands needed to draw a simple drawing.</li> <li>• Teacher uses active learning to help the students complete their assignments.</li> <li>• Problem-based learning is a method that challenges students to “learn to learn” by working in groups to seek solutions to problems.</li> <li>• Teacher hands out drawing #28 to the students. When the drawing is finished, the teacher checks the drawing, so the students can move onto the next drawing.</li> </ul>	<p>Learning Activities:</p> <ul style="list-style-type: none"> <li>• Students will set up an isometric drawing.</li> <li>• Students will create an isometric drawing.</li> <li>• Students will dimension an isometric drawing.</li> <li>• Students will create a basic 3D model.</li> <li>• Students will understand viewing options.</li> <li>• Students will use 3D orbit to create a link rod (drawing #29)</li> <li>• Students will draw 2D objects in 3D space.</li> <li>• Students will work in groups to complete drawings #28 - #32.</li> </ul>

<b>Assessments</b>	
<b>Performance Task</b>	<b>Other Evidence</b>
Authentic application to evaluate student achievement of desired results designed according to GRASPS (one per marking period)	Application that is functional in a classroom context to evaluate student achievement of desired results
<p><b>Goal:</b> To create a basic 2D drawing in AutoCAD</p> <p><b>Role:</b> Engineer</p> <p><b>Audience:</b> Neff's Land Surveying Company</p> <p><b>Situation:</b> Neff's company needs the engineer to complete five drawings showing the current plot plan; then showing it in isometric form, and then in 3D, so that the surveyors can see what the three different views will look like before they start a landscaping job.</p> <p><b>Product:</b> Correct completion of the drawings for the surveying crew to look at before they start a job</p> <p><b>Standard for Success:</b> Completion of drawings and client's approval using departmental rubrics</p>	<ul style="list-style-type: none"> <li>• Set up an isometric drawing by completing drawing #28</li> <li>• Create an isometric drawing by completing drawing #29</li> <li>• Dimension an isometric drawing</li> <li>• Create a basic 3D model by completing drawing #30</li> <li>• Understand viewing options</li> <li>• 3d orbit by completing drawing #31</li> <li>• Draw 2D objects in 3D space</li> <li>• Create a 3D drawing by coordinate entry by completing drawing #32</li> <li>• Completion of drawings #28 - #32</li> <li>• Observation of student work.</li> <li>• Unit quiz</li> </ul>
<b>Suggested Resources</b>	
<ul style="list-style-type: none"> <li>• AutoCAD software Studica Inc. Autodesk Design Academy, Sanborn, NY.</li> <li>• Wohlers, Terry. <u>Applying AutoCAD</u>. Woodlands Hills, CA: Glencoe/McGraw Hill Company, 2008.</li> <li>• Student worksheets: Drawings #28 - #32</li> <li>• Handouts: Introduction to 3D drawing 3D Coordinates and Construction Editing 3D Objects</li> </ul>	

# New Milford Public Schools

Committee Member: Joe Neff Unit 18: Solid Modeling	Course/Subject: Architectural Drafting I Grade Level: 9-12 # of Weeks: 2
<b>Identify Desired Results</b>	
<b>Technology Education Standards</b>	
<ul style="list-style-type: none"> <li>• EKS.07: Employ leadership skills to accomplish organizational goals and objectives.</li> <li>• EKS.08: Identify and demonstrate positive work behaviors and personal qualities needed to be employable.</li> </ul>	
<b>Enduring Understandings</b> Generalizations of desired understanding via essential questions (Students will understand that ...)	<b>Essential Questions</b> Inquiry used to explore generalizations
<ul style="list-style-type: none"> <li>• By creating solid modeling, one can convert 3D drawings into solid primitives like cylinders, torus, cones, wedges, boxes, spheres, pyramids, and polysolids.</li> <li>• Using basic modeling, one can draw a revolution, extrusion, sweep, and a loft.</li> <li>• The benefits of solid modeling are that one can slice a pulley and can calculate mass properties and output data for additive fabrication.</li> </ul>	<ul style="list-style-type: none"> <li>• With what command can one create a football-shaped primitive?</li> <li>• With what command can one create solid walls?</li> <li>• What command(s) would one use to create a 3D model of a quart of oil?</li> <li>• What effect does the RULED surface control have on a lofted model?</li> <li>• What is the SLICE command?</li> <li>• What is the purpose of the STLOUT command?</li> </ul>
<b>Expected Performances</b> What students should know and be able to do	
<p>Students will know the following:</p> <ul style="list-style-type: none"> <li>• Solid modeling</li> </ul> <p>Students will be able to do the following:</p> <ul style="list-style-type: none"> <li>• Create a cylinder, torus, cone, wedge, box, sphere, pyramid, and a polysolid</li> <li>• Create a revolution, extrusion, sweeping, and lofting</li> <li>• Create a planar surface</li> <li>• Convert a surface to a solid</li> <li>• Slice a pulley</li> <li>• Calculate mass properties of a solid model</li> <li>• Output data for additive fabrication</li> <li>• Create a STL file of a solid model</li> <li>• Create models from 2D objects</li> <li>• Split a model in half</li> </ul>	

<b>Character Attributes</b>	
<ul style="list-style-type: none"> <li>• Cooperation</li> <li>• Integrity</li> </ul>	
<b>Technology Competencies</b>	
<ul style="list-style-type: none"> <li>• Explore career and postsecondary educational opportunities through performance-based learning experiences.</li> <li>• Respond constructively to constructive criticism.</li> </ul>	
<b>Develop Teaching and Learning Plan</b>	
<p><b>Teaching Strategies:</b></p> <ul style="list-style-type: none"> <li>• Teacher lectures on the proper commands needed to create a simple drawing.</li> <li>• Teacher uses the data projector to show the students the various commands needed to draw a simple drawing.</li> <li>• Teacher uses active learning to help the students complete their assignments.</li> <li>• Problem-based learning is a method that challenges students to “learn to learn” by working in groups to seek solutions to problems.</li> <li>• Teacher hands out drawing #33 to the students. When the drawing is finished, the teacher checks the drawing, so the students can move onto the next drawing.</li> </ul>	<p><b>Learning Activities:</b></p> <ul style="list-style-type: none"> <li>• The students will draw primitives to create the following: <ul style="list-style-type: none"> <li>○ Cylinder</li> <li>○ Torus</li> <li>○ Cone</li> <li>○ Wedge</li> <li>○ Box</li> <li>○ Sphere</li> <li>○ Pyramid</li> <li>○ Polysolid</li> </ul> </li> <li>• The students will use basic modeling to do the following: <ul style="list-style-type: none"> <li>○ Draw a revolution</li> <li>○ Draw an extrusion</li> <li>○ Sweep</li> <li>○ Loft</li> <li>○ Work with surfaces</li> </ul> </li> <li>• The students will know the benefits of solid modeling by doing the following: <ul style="list-style-type: none"> <li>○ Slice a pulley</li> <li>○ Calculate mass properties</li> </ul> </li> <li>• The students will gather output data for additive fabrication.</li> <li>• The students will complete drawings #33 - #40.</li> </ul>

<b>Assessments</b>	
<b>Performance Task</b>	<b>Other Evidence</b>
Authentic application to evaluate student achievement of desired results designed according to GRASPS (one per marking period)	Application that is functional in a classroom context to evaluate student achievement of desired results
<p><b>Goal:</b> To create a basic 2D drawing in AutoCAD</p> <p><b>Role:</b> Electrical Engineer</p> <p><b>Audience:</b> Neff's Electrical Service</p> <p><b>Situation:</b> Neff's Electrical Service needs its engineer to complete eight drawings for a job they are going to start by showing the contractors the job in solid modeling.</p> <p><b>Product:</b> Correct completion of solid modeling drawings for the contractors</p> <p><b>Standard for Success:</b> Completion of drawings and client's approval using departmental rubrics</p>	<ul style="list-style-type: none"> <li>• Create a cylinder, torus, cone, wedge, box, sphere, pyramid, and a polysolid by completing drawing #33</li> <li>• Create a revolution, extrusion, sweeping, and lofting by completing drawing #34</li> <li>• Create a planar surface by completing drawing #35</li> <li>• Convert a surface to a solid by completing drawing #36</li> <li>• Slice a pulley by completing drawing #37</li> <li>• Calculate mass properties by completing drawing #38</li> <li>• Output data for additive fabrication by completing drawing #39</li> <li>• Create a STL file by completing drawing #40</li> <li>• Completion of drawings #33 - #40</li> <li>• Observation of student work</li> <li>• Unit quiz</li> </ul>
<b>Suggested Resources</b>	
<ul style="list-style-type: none"> <li>• AutoCAD software Studica Inc. Autodesk Design Academy, Sanborn, NY.</li> <li>• Wohlers, Terry. <u>Applying AutoCAD</u>. Woodlands Hills, CA: Glencoe/McGraw Hill Company, 2008.</li> <li>• Student worksheets: Drawings #33 - #40</li> <li>• Handouts: Solid Modeling Constructing Solid Primitives Drawing Multiple Viewports 3D Constructions</li> </ul>	