Geneva CUSD 304 Content-Area Curriculum Frameworks Grades 6-12 Industrial Technology

Mission Statement	As an industrial technology department our mission is:
	To motivate all students to develop problem solving skills that will promote
	creative thinking and create a safe working environment.
	To teach all students the proper and safe manner to use tools and equipment
	to learn and use practical life skills through a variety of hands on activities.
Course Sequence	Computer Aided Drafting I: Open to all students 9 - 12 th grade students.
(Grades 6-12)	
	Computer Aided Drafting II: Open to all 9 - 12 th grade students who successfully complete CAD I.
	Computer Aided Drafting III: Open to 10 - 12 th grade students who successfully complete CAD II.
	Computer Aided Drafting IV: Open to 10 - 12 th grade students who successfully complete CAD III.
	Architectural Drafting: Open to all 9-12 th grade students who successfully complete CAD I.
	Woods I: Open to all 9 - 12 th grade students.
	Woods II: Open to all $9 - 12^{th}$ grade students who successfully complete Woods I.
	Woods III: Open to all $10 - 12^{\text{th}}$ grade students who successfully complete Woods II and have a pre-approved project from the instructor.
	Woods IV: Open to all $10 - 12^{\text{th}}$ grade students who successfully complete Woods II and have a pre-approved project from the instructor.
	Industrial Technology: Open to all $9 - 12^{th}$ grade students

Course Framework

Course Title	Industrial Technology
Grade Level	9 - 12
Semesters (1-2-3-4)	
Prerequisite	None
Course Description	This course is designed to give students some insight into selected areas of industrial technology and to provide hands on applied experiences in the areas of communication, transportation, energy and production (Illinois Plan). Instruction will be delivered through the use of Modular Technology Education (MTE) units; students will work in pairs to complete each of the MTE programs. Students will rotate through different modules including 3D Modeling, 4 Stroke Engines, CNC Lathe, CNC Mill, Residential Wiring, Non Linear Video Production, Flight Simulator, Graphic Design, Plastics, and Robotics. Students will explore each MTE in hopes of identifying career areas that they may wish to specialize in later. (VALEES #1125)
District-approved Materials and/or Resources	Engineer structure software Bridge builder Depco Class Plus

Unit of Study: major topics	Engineering Structures	Resources that will support instruction

Industrial Technology August 2008

Illinois Learning	1.A Apply word analysis and vocabulary skills to comprehend selections.
Standards, Benchmarks,	1.A.3b Analyze the meaning of words and phrases in their context.
	1.B.3d Read age-appropriate material with fluency and accuracy.
	1.B.4c Read age-appropriate material with fluency and accuracy.
	1.B.5d Read age-appropriate material with fluency and accuracy.
	26 A 4d
	Music: Demonstrate the ability to read written notation for a vocal or instr
	umental nart
	26 B 3d Visual Arts: Demonstrate knowledge and skills to create 2-
	and 3 dimensional works
	and 5-dimensional works
	10 A Appenresent
	10.A.4akepiesein
	and organize data by creating lists, charts, tables, frequency distributions,
	graphs,
	scatterplots and box-plots.
	Design and conduct simulations (e.g., waiting times at restaurant, probabil
	ities of births,
	likelihood of game prizes),
	with and without the use of technology.
	7.B.5
	Estimate perimeter, area, volume, and capacity of irregular shapes, region
	s and solids
	and explain the reasoning supporting the estimate.
	7.C.4c
	Convert within and between measurement systems and monetary systems
	using technology
	where appropriate.
	7.C.5a
	Use dimensional analysis to determine units and check answers in applied
	measurement
	problems.
	7.C.5b
	Determine how changes in one measure may affect other measures (e.g.,
	what happens to
	the volume
	and surface area of a cube when the side of the cube is halved).
	8.A.4a Use algebraic methods to convert repeating decimals to fractions.
	8.D.5
	Formulate and solve nonlinear equations and systems including problems
	involving
	inverse variation and exponential and logarithmic growth and decay.
	9.A.4a Construct a model of a three-dimensional figure from a two-
	dimensional pattern. Science
	11.A.3c
	Collect and record data accurately using consistent measuring and recordi
	ng techniques
	and media.
	11.A.3g
	Report and display the process and results of a scientific investigation.
	11.A.4c Collect, organize and analyze data accurately and precisely.
	11.B
	Know and apply the concepts, principles and processes of technological d
Industrial Technology	esign. Page 5 of 26
August 2008	11.B.3b
	Sketch, propose and compare design solutions to the problem considering
	available materials,

Unit Frameworks

Unit of	Robotics	Resources that will	
Study:		support instruction	
major topics			
5 1			
Illinois	1.A Apply word analysis and vocabulary skills to comprehend sele	ections.	
Learning	1.A.3b Analyze the meaning of words and phrases in their context.		
Standards,	1.B.3c		
Benchmarks,	Continuously check and clarify for understanding (e.g., in addition	to previous skills,	
	draw comparisons to other readings).		
	1.B.3d Read age-appropriate material with fluency and accuracy.		
	1.B.4c Read age-appropriate material with fluency and accuracy.		
	1.B.5d Read age appropriate material with fluency and accuracy.		
	1.C.3f Interpret tables that display textual information and data in	visual formats.	
	1.C.4f Interpret tables, graphs and maps in conjunction with relate	ed text.	
	10.A.4a		
	Represent and organize data by creating lists, charts, tables, freque	ncy distributions,	
	graphs, scatter plots and box plots.		
	10.C.4b		
	Design and conduct simulations (e.g., waiting times at restaurant, probabilities of births,		
	likelihood of game prizes), with and without the use of technology.		
	7.C.5aUse dimensional analysis to determine units and check answers in applied measurem		
	ent		
	problems.		
	7.C.5b Determine how changes in one measure may affect other m	easures (e.g., what	
	happens to the volume and surface area of a cube when the side of	the cube is halved).	
	8.A.4a Use algebraic methods to convert repeating decimals to frac	ctions.	
	8.D Use algebraic concepts and procedures to represent and solve	problems.	
	9.A.4a Construct a model of a three-dimensional figure from a two	o-dimensional pattern.	
	9.A.4bMake perspective drawings, tessellations and scale drawing	s, with and without the us	
	e of		
	technology.		
	9.C.4b Construct and communicate convincing arguments for geor	netric situations.	
		. 1 . 1 1	
	Analyze and solve problems involving triangles (e.g., distances whe directly) using trigonometric ratios. Science	hich cannot be measured	
	11.A.3c Collect and record data accurately using consistent measured	ring and recording	
	techniques and media.	-	
	11.A.4cCollect, organize and analyze data accurately and precisely	<i>.</i>	
	11.B Know and apply the concepts, principles and processes of tec	hnological design.	
	11.B.3b Sketch, propose and compare design solutions to the problem	lem considering	
	available materials, tools, cost effectiveness and safety.		
	11.B.3c Select the most appropriate design and build a prototype o	r simulation.	

	11.B.3d
	Test the prototype using available materials, instruments and technology and record the dat
	a.
	11.B.3eEvaluate the test results based on established criteria, note sources of error and
	recommend improvements.
	11.B.4eDevelop and test a prototype or simulation of the solution design using available
	materials, instruments and technology.
	11.B.4fEvaluate the test results based on established criteria, note sources of error and recommend improvements.
	11.B.5cBuild and test different models or simulations of the design solution using
	suitable materials, tools and technology.
	11.B.5dChoose a model and refine its design based on the test results.
	11.B. SeApply established criteria to evaluate the suitability, acceptability, benefits,
	drawbacks and consequences for the tested design solution and recommend modification
	n a physical system
	12 R 5a Assass how scientific and technological progress has affected other fields
	of study, careers and job markets and aspects of everyday life
	of study, careers and job markets and aspects of everyday me.
Objectives	Identify the major parts of a robot system.
5	Locate the parts of robot.
	Further develop manipulative skills with the robot.
	Set and use the positions of the robot arm.
	Identify some of the hazardous tasks for which robots are used.
	Describe the Cartesian coordinate system used by the Scorbot.
	Design a simple flow chart.
	Identify uses for speed control and pauses.
	Apply your programming skills to solve a problem.
Assessments	Performance Tasks
	Students will take a pre-test on the first day of the rotation to establish a baseline for the
	information covered in the unit. This is not a graded activity but should give students
	an idea of what the unit is about. Students begin using the activity guide to learn about
	the subject and to challenge daily response quizzes over the material in the activity
	guide and on the media pulse software. After completion of 9 activities the student will
	take a vocabulary test and a post test to complete the unit. All unit tests build a question
	bank for the final exam that is unique to each individual student in the class. All test are
	completed on the computer system and are graded immediately for feedback to the
	student. The student will always know his/her grade at anytime during the class.

Unit of Study:	Flight Transportation	Resources that will support instruction	
major topics			
Illinois Learning	1.A Apply word analysis and vocabulary skills to	comprehend selections.	
Standards,	1.A.3b Analyze the meaning of words and phrase	es in their context.	
Benchmarks,	1.B.3c Continuously check and clarify for unders	tanding (e.g., in addition to previous skills,	
	draw comparisons to other readings).1.B.3dRead	age-	
National	appropriate material with fluency and accuracy.		
Standards	1.B.4c Read age-appropriate material with fluenc	ey and accuracy.	
Assessment	1.B.5d Read age-appropriate material with fluence	ey and accuracy.	
Frameworks, or	3.C Communicate ideas in writing to accomplish	a variety of purposes.	
other standards	10.A.4a		
that will be taught	Represent and organize data by creating lists, cha	arts, tables, frequency distributions, graphs,	
in this unit	scatterplots and box plots.		
	10.A.4b		
	Analyze data using mean, median, mode, range, v	variance and standard deviation of a data set,	
	with and without the use of technology.		
	10.C.4b		
	Design and conduct simulations (e.g., waiting tim	nes at restaurant, probabilities of births,	
	likelihood of game prizes), with and without the	use of technology.	
	10.C.5b		
	Compute probabilities in counting situations invo	olving permutations and combinations.	
	6.C.3b Show evidence that computational results	using whole numbers, fractions, decimals,	
	percents and proportions are correct and/or that e	stimates are reasonable.	
	8.C Solve problems using systems of numbers an	d their properties.	
	9.A.4a Construct a model of a three-dimensional	figure from a two-dimensional pattern.	
	9.C.4b Construct and communicate convincing an	rguments for geometric situations.	
	9.D.4 Analyze and solve problems involving trian	ngles (e.g., distances which cannot be	
	measured directly) using trigonometric ratios.		
	12.D.4b Describe the effects of electromagnetic a	and nuclear forces including atomic and	
	molecular bonding, capacitance and nuclear reac	tions.	
	12.D.5a Analyze factors that influence the relativ	e motion of an object (e.g., friction,	

	wind shear, cross currents, potential differences). 12.D.5b Analyze the effects of gravitational, electromagnetic and n physical system.	uclear forces on a
Objectives (What will students know and be able to do as a result of their learning?) Conceptual Factual Procedural 	Discuss aspects of the history of flight Discuss the aerodynamic principles of flight Understand the primary controls for aircraft. Learn and perform basic preflight checks Learn the instruments and controls of an aircraft Learn and perform basic straight and level flight Demonstrate the principles of a coordinated turn Perform a coordinated two-minute turn Explain Headings or directions of travel Explain the importance of maintaining altitude control Explain the meanings of trim and angle of attack and how to ap Perform various flight maneuvers using this new knowledge Explain what constitutes and good landing Understand the purpose of a flight pattern Study an assigned flight pattern Discuss various wind events Explain stalls and spins Discuss the effects of weather on flight Discuss the problems associated with unusual light conditions	ply them
Assessments (What assessments, standardized, local, and/or performance- based will be used to measure learning and to drive instructional changes? How will we know whether or not they have learned? Can they demonstrate understanding and	Performance Tasks Students will take a pre-test on the first day of the rotation to establish a baseline for the information covered in the unit. This is not a graded activity but should give students an idea of what the unit is about. Students begin using the activity guide to learn about the subject and to challenge daily response quizzes over the material in the activity guide and on the media pulse software. After completion of 9 activities the student will take a vocabulary test and a post test to complete the unit. All unit tests build a question bank for the final exam that is unique to each individual student in the class. All test are completed on the computer system and are graded immediately for feedback to the student. The student will always know his/her grade at anytime during the class.	Other Evidence

Unit of Study: major topics	Global Positioning Systems	Resources that will support instruction	
Illinois Learning	1 A Apply word analysis and vocabulary skills to	comprehend selections	
Standards	1 A 3bA palyze the meaning of words and phrase	es in their context	
Benchmarks	1 B 3dRead age-appropriate material with fluence	ev and accuracy.	
Deneminarity,	1.B.4c Read age-appropriate material with fluen	cy and accuracy.	
National	1.B.5d Read age-appropriate material with fluen	cy and accuracy.	
Standards	1.C.4c		
Assessment	Interpret, evaluate and apply information from a	variety of sources to other situations (e.g.,	
Frameworks, or	academic, vocational, technical, personal).		
other standards	3.B Compose well-organized and coherent writin	ng for specific purposes and audiences.	
that will be taught	10.A.4a Represent and organize data by creating	g lists, charts, tables, frequency distributions,	
in this unit	graphs, scatterplots and box-plots.		
	10.A.4b Analyze data using mean, median, mode, range, variance and standard deviation		
	of a data set, with and without the use of technology.		
	10.C.4b		
	Design and conduct simulations (e.g., waiting times at restaurant, probabilities of births, likelihood of game prizes), with and without the use of technology		
	Interinood of game prizes), with and without the	e use of technology.	
	6.C.3b Show evidence that computational results	s using whole numbers, fractions, decimals,	
	percents and proportions are correct and/or that	estimates are reasonable.	
	7.C.5a Use dimensional analysis to determine ur	nits and check answers in applied	
	measurement problems.		
	7.C.5b		
	Determine how changes in one measure may aff	ect other measures (e.g., what happens to the	
	volume and surface area of a cube when the side	e of the cube is halved).	
	8.A.4a Use algebraic methods to convert repeating	ng decimals to fractions.	
	8.C Solve problems using systems of numbers and	nd their properties.	
	8.D Use algebraic concepts and procedures to re	present and solve problems.	
	9.A.4a Construct a model of a three-dimensional	l figure from a two-dimensional pattern.	
	9.C.4b Construct and communicate convincing a	arguments for geometric situations.	

	 9.D.4Analyze and solve problems involving triangles (e.g., distance directly) using trigonometric ratios. 11.A.3cCollect and record data accurately using consistent measuring and recording techniques and media. 11.A.4c Collect, organize and analyze data accurately and precisel 	ees which cannot be measured
Objectives (What will students know and be able to do as a result of their learning?)	Describe early navigational techniques Identify early navigational tools Understand how latitude and longitude are determined Locate the sun and moon phases using GPS receiver Understand the technology that makes GPS work Locate towns and their location on a map Use the index and map legend to identify features and populati Understand and use trilateration techniques Launch and navigate the MapSource software Identify the tools required to operate the software Understand how to find geographic coordinates Understand and operate a GPS receiver Use the GPS receiver to identify waypoints Understand and define the elements of precision farming Identify crop yield throughout a field Understand different ways GPS is used for transportation and n Solve a crime using the clues supplied and file a report Plan a trip using the atlas, the software, and the GPS receiver Create waypoints, a map, and a route to download	ons of areas
Assessments (What assessments, standardized, local, and/or performance- based will be used to measure learning and to drive instructional changes? How will we know whether or not they have learned? Can they demonstrate understanding and apply the essential	Performance Tasks Students will take a pre-test on the first day of the rotation to establish a baseline for the information covered in the unit. This is not a graded activity but should give students an idea of what the unit is about. Students begin using the activity guide to learn about the subject and to challenge daily response quizzes over the material in the activity guide and on the media pulse software. After completion of 9 activities the student will take a vocabulary test and a post test to complete the unit. All unit tests build a question bank for the final exam that is unique to each individual student in the class. All test are completed on the computer system and are graded immediately for feedback to the student. The student will always know his/her grade at anytime during the class.	Other Evidence

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Unit of Study: major topics	Graphic Design	Resources that will support instruction	
Illinois Learning Standards, Benchmarks, National Standards	 1.A Apply word analysis and vocabulary skills to comprehend selections. 1.A.3bAnalyze the meaning of words and phrases in their context. 1.B.3cContinuously check and clarify for understanding (e.g., in addition to previous skills, drav comparisons to other readings). 1.B.3dRead age-appropriate material with fluency and accuracy. 1.B.4cRead age-appropriate material with fluency and accuracy. 		
Frameworks, or other standards that will be taught in this unit	 3.B.4bProduce, edit, revise and format work for sub (e.g., manuscript form, appropriate citation of source 3.CCommunicate ideas in writing to accomplish a volume of 3.C.3aCompose narrative, informative, and persuasis writings, literature reviews, instructions, news article 3.C.3bUsing available technology, produce composes specified audiences. 3.C.4bUsing available technology, produce composes specified audiences. 3.C.5aCommunicate information and ideas in narrate writing with clarity and effectiveness in a variety of 7.C.5aUse dimensional analysis to determine units a measurement problems. 7.C.5bDetermine how changes in one measure may (e.g., what happens to the volume and surface area of 8.A.4aUse algebraic methods to convert repeating d 11.BKnow and apply the concepts, principles and p 	ge-appropriate material with fluency and accuracy. ge-appropriate material with fluency and accuracy. e, edit, revise and format work for submission and/or publication ript form, appropriate citation of sources) using contemporary technology. Icate ideas in writing to accomplish a variety of purposes. ose narrative, informative, and persuasive writings (e.g., in addition to previous rature reviews, instructions, news articles, correspondence) available technology, produce compositions and multimedia works for iences. available technology, produce compositions and multimedia works for liences. unicate information and ideas in narrative, informative and persuasive clarity and effectiveness in a variety of written forms. mensional analysis to determine units and check answers in applied problems. nine how changes in one measure may affect other measures appens to the volume and surface area of a cube when the side of the cube is halved gebraic methods to convert repeating decimals to fractions.	
Objectives (What will	Define graphic design		
students know and	Recognize graphic designs in your daily life		

be able to do as a	Identify basic CorelDRAW tools	
result of their	Use the Zoom, Pan, Rectangle, and Outline tools	
learning?)	Create basic shapes	
	Use the freehand, ellipse, spiral, and rectangle tools	
o Conceptual	Copy, paste, duplicate, and rotate objects	
o Factual	Use keyboard shortcuts for file menu commands	
o Procedural	Create a series of lines and curves using the Bezier tool	
	Group and ungroup objects	
	Create a graph	
	Identify primary, secondary, and tertiary colors	
	Create matching color combinations	
	Use color fills Explain basic rules of good typography	
	Explain basic fules of good typography Experiment with fonts, sizes, and styles	
	Use the Artistic Media Tool	
	Demonstrate the fading of two colors using Fountain Fill Tool	
	Explore pattern and texture fill tools	
	Import graphics from other software	
	Create thumbnail sketches	
	Open a saved drawing	
	Complete a design of your own that you can proudly display on	a T-shirt
Assessments	Performance Tasks	Other Evidence
Assessments (What	Performance Tasks	Other Evidence
Assessments (What assessments,	Performance Tasks Students will take a pre-test on the first day of the rotation to	Other Evidence
Assessments (What assessments, standardized,	Performance Tasks Students will take a pre-test on the first day of the rotation to establish a baseline for the information covered in the unit. This is not a graded activity but should give students on idea of what	Other Evidence
Assessments (What assessments, standardized, local, and/or performance	Performance Tasks Students will take a pre-test on the first day of the rotation to establish a baseline for the information covered in the unit. This is not a graded activity but should give students an idea of what the unit is about. Students begin using the activity guide to learn	Other Evidence
Assessments (What assessments, standardized, local, and/or performance- based will be used	Performance Tasks Students will take a pre-test on the first day of the rotation to establish a baseline for the information covered in the unit. This is not a graded activity but should give students an idea of what the unit is about. Students begin using the activity guide to learn about the subject and to	Other Evidence
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Assessments (What assessments, standardized, local, and/or performance- based will be used to measure learning and to drive instructional	Performance Tasks Students will take a pre-test on the first day of the rotation to establish a baseline for the information covered in the unit. This is not a graded activity but should give students an idea of what the unit is about. Students begin using the activity guide to learn about the subject and to challenge daily response quizzes over the material in the activity guide and on the media pulse software. After completion of 9 activities the student will take a vocabulary test and a post test to	Other Evidence
Assessments (What assessments, standardized, local, and/or performance- based will be used to measure learning and to drive instructional changes? How	Performance Tasks Students will take a pre-test on the first day of the rotation to establish a baseline for the information covered in the unit. This is not a graded activity but should give students an idea of what the unit is about. Students begin using the activity guide to learn about the subject and to challenge daily response quizzes over the material in the activity guide and on the media pulse software. After completion of 9 activities the student will take a vocabulary test and a post test to complete the unit. All unit tests build a question bank for the	Other Evidence
Assessments (What assessments, standardized, local, and/or performance- based will be used to measure learning and to drive instructional changes? How will we know	Performance Tasks Students will take a pre-test on the first day of the rotation to establish a baseline for the information covered in the unit. This is not a graded activity but should give students an idea of what the unit is about. Students begin using the activity guide to learn about the subject and to challenge daily response quizzes over the material in the activity guide and on the media pulse software. After completion of 9 activities the student will take a vocabulary test and a post test to complete the unit. All unit tests build a question bank for the final exam that is unique to each individual student in the class.	Other Evidence
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Assessments (What assessments, standardized, local, and/or performance- based will be used to measure learning and to drive instructional changes? How will we know whether or not they have learned?	Performance Tasks Students will take a pre-test on the first day of the rotation to establish a baseline for the information covered in the unit. This is not a graded activity but should give students an idea of what the unit is about. Students begin using the activity guide to learn about the subject and to challenge daily response quizzes over the material in the activity guide and on the media pulse software. After completion of 9 activities the student will take a vocabulary test and a post test to complete the unit. All unit tests build a question bank for the final exam that is unique to each individual student in the class. All test are completed on the computer system and are graded immediately for feedback to the student. The student will always	Other Evidence
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Assessments (What assessments, standardized, local, and/or performance- based will be used to measure learning and to drive instructional changes? How will we know whether or not they have learned? Can they demonstrate	Performance Tasks Students will take a pre-test on the first day of the rotation to establish a baseline for the information covered in the unit. This is not a graded activity but should give students an idea of what the unit is about. Students begin using the activity guide to learn about the subject and to challenge daily response quizzes over the material in the activity guide and on the media pulse software. After completion of 9 activities the student will take a vocabulary test and a post test to complete the unit. All unit tests build a question bank for the final exam that is unique to each individual student in the class. All test are completed on the computer system and are graded immediately for feedback to the student. The student will always know his/her grade at anytime during the class.	Other Evidence
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Assessments (What assessments, standardized, local, and/or performance- based will be used to measure learning and to drive instructional changes? How will we know whether or not they have learned? Can they demonstrate understanding and apply the essential skills?)	Performance Tasks Students will take a pre-test on the first day of the rotation to establish a baseline for the information covered in the unit. This is not a graded activity but should give students an idea of what the unit is about. Students begin using the activity guide to learn about the subject and to challenge daily response quizzes over the material in the activity guide and on the media pulse software. After completion of 9 activities the student will take a vocabulary test and a post test to complete the unit. All unit tests build a question bank for the final exam that is unique to each individual student in the class. All test are completed on the computer system and are graded immediately for feedback to the student. The student will always know his/her grade at anytime during the class.	Other Evidence
Assessments (What assessments, standardized, local, and/or performance- based will be used to measure learning and to drive instructional changes? How will we know whether or not they have learned? Can they demonstrate understanding and apply the essential skills?)	Performance Tasks Students will take a pre-test on the first day of the rotation to establish a baseline for the information covered in the unit. This is not a graded activity but should give students an idea of what the unit is about. Students begin using the activity guide to learn about the subject and to challenge daily response quizzes over the material in the activity guide and on the media pulse software. After completion of 9 activities the student will take a vocabulary test and a post test to complete the unit. All unit tests build a question bank for the final exam that is unique to each individual student in the class. All test are completed on the computer system and are graded immediately for feedback to the student. The student will always know his/her grade at anytime during the class.	Other Evidence

Unit of Study:	Landscape design	Resources that will support instruction	
major topics			
Illinois Learning	1.A Apply word analysis and vocabulary s	skills to comprehend selections.	
Standards,	1.A.3b Analyze the meaning of words and	l phrases in their context.	
Benchmarks,	1.B.3d Read age-appropriate material with	n fluency and accuracy.	
	1.B.4c Read age-appropriate material with	n fluency and accuracy.	
National Standards	1.B.5d Read age-appropriate material with	n fluency and accuracy.	
Assessment	4.B Speak effectively using language appr	ropriate to the situation and audience.	
Frameworks, or other	10.A.4a Represent and organize data by cr	reating lists, charts, tables, frequency	
standards that will be	distributions, graphs, scatterplots and box-	-plots.	
taught in this unit	10.A.4b Analyze data using mean, mediar	n, mode, range, variance and standard	
	deviation of a data set, with and without the	ne use of technology.	
	10.C.5b Compute probabilities in counting	g situations	
	involving permutations and combinations.		
	6.C.3b Show evidence that computational	results using whole numbers, fractions,	
	decimals, percents and proportions are correct and/or that estimates are reasonable.		
	8.C Solve problems using systems of numbers and their properties		
Objectives	Discuss how landscaping is part of the	ornamental horticulture industry	
(What will students	Explain how landscaping focuses on the beautification of outdoor terrain, while		
know and be able to	now and be able to combining the principle of art and science of growing plants.		
do as a result of their	Discuss the three components of landscape design: the client, the site and the		
learning?)	designer		
	Understand and define hardscapes and	lsoftscapes	
 Conceptual 	Explain the elements of design, color,	form, line, scale, and texture	
o Factual	Understand the principles of design		
 Procedural 	Explain how to select plants according	g to a client's needs	
	Discuss the possible roles of plants in	a landscape design	
	Learn about the maintenance needs of	landscapes	

	Explain the purpose of adding lights to a landscape design Use software to create a two-dimensional drawing of a lands Explain the purpose of a proposal and a quote for a landscap	cape design e design
Assessments (What assessments, standardized, local, and/or performance- based will be used to measure learning and to drive instructional changes? How will we know whether or not they have learned? Can they demonstrate understanding and apply the essential skills?)	Performance Tasks Students will take a pre-test on the first day of the rotation to establish a baseline for the information covered in the unit. This is not a graded activity but should give students an idea of what the unit is about. Students begin using the activity guide to learn about the subject and to challenge daily response quizzes over the material in the activity guide and on the media pulse software. After completion of 9 activities the student will take a vocabulary test and a post testto complete the unit. All unit tests build a question bank for the final exam that is unique to each individual student in the class. All test are completed on the computer system and are graded immediately for feedback to the student. The student will always know his/her gradeat anytime during the class.	Other Evidence

Unit of Study:	Meteorology	Resources that will support instruction	
major topics			
Illinois Learning	1.A Apply word analysis and vocabulary skill	ls to comprehend selections.	
Standards,	1.A.3b Analyze the meaning of words and ph	rases in their context.	
Benchmarks,	1.B.3c Continuously check and clarify for un	derstanding (e.g., in addition to previous	
	skills, draw comparisons to other readings).		
National	1.B.3d Read age-appropriate material with flu	ency and accuracy.	
Standards	1.B.4c Read age-appropriate material with flu	ency and accuracy.	
Assessment	1.B.5d Read age-appropriate material with flu	ency and accuracy.	
Frameworks, or	1.C.3f Interpret tables that display textual info	ormation and data in visual formats.	
other standards	1.C.4f Interpret tables, graphs and maps in co	njunction with related text.	
that will be taught	3.C Communicate ideas in writing to accomp	lish a variety of purposes.	
in this unit	4.A Listen effectively in formal and informal	situations.	
	4.A.4a Apply listening skills as individuals ar	nd members of a group in a variety	
	of settings (e.g., lectures, discussions, conversations, team projects, presentations)		
	4.A.4b Apply listening skills in practical settings (e.g., classroom note taking,		
	interpersonal conflict situations, giving and receiving directions, evaluating persuasive		
	10.A.4a Represent and organize data by creating lists, charts, tables, frequency		
	distributions, graphs, scatterplots and box-plots.		
	10.A.4b Analyze data using mean, median, m	ode, range, variance and standard	
	deviation of a data set, with and without the u	se of technology.	
	10.C.5b Compute probabilities in counting sit	tuations involving	
	permutations and combinations.		
	6.C.3b Show evidence that computational res	ults using whole numbers, fractions,	
	decimals, percents and proportions are correct and/or that estimates are reasonable.		
	6.D Solve problems using comparison of quantities, ratios, proportions and percents.		
	6.D.3 Apply ratios and proportions to solve p	ractical problems.	
	8.B.5 Use functions including exponential, po	olynomial, rational, parametric,	
	logarithmic, and trigonometric to describe nu	merical relationships.	
	8.CSolve problems using systems of numbers	and their properties.	
	8.D Use algebraic concepts and procedures to	represent and solve problems.	

Objectives	 8.D.4Formulate and solve linear and quadratic equations and linear inequalities algebraically and investigate nonlinear inequalities using graphs, tables, and calculators 8.D.5Formulate and solve nonlinear equations and systems including problems involving inverse variation and exponential and logarithmic growth and decay. 9.A.4 Demonstrate and apply geometric concepts involving points, lines, planes and space. 9.A.4a Construct, develop and communicate logical arguments (informal proofs) about geometric figures and patterns.9.C.3bDevelop and solve problems using geometric relationships and models, with and without the use of technology. 9.C.4bConstruct and communicate convincing arguments for geometric situations. 9.C.4cDevelop and communicate intermetical proofs (e.g., two-column, paragraph, indirect) and counter examples for geometric statements. 9.C.5a Perform and describe an original investigation of a geometric problem and verify the analysis and conclusions to an audience. 9.D.4Analyze and solve problems involving periodic patterns (e.g., sound waves, tide variations) using circular functions and communicate results orally and in writing. 11.A.3cCollect and necord data accurately using consistent measuring and recording techniques and media. 11.A.4cCollect, organize and analyze data accurately and precisely. 12.D.4bDescribe the effects of electromagnetic and nuclear forces including atomic and molecular bonding, capacitance and nuclear reactions. 12.D.5Analyze factors that influence the relative motion of an object (e.g., friction, wind shear, cross currents, potential differences). 12.D.5bAnalyze the effects of gravitational, electromagnetic and nuclear forces on a physical system.
(What will students know and be able to do as a	Launch the Weatherlink software and record your first weather station readings Define temperature Explain different conditions that affect temperature
result of their	Convert Fahrenheit and Celsius temperature scales
learning?)	Define pressure

 Conceptual Factual Procedural 	Understand a brief history of barometers Create and measure pressure changes in Microclimates Understand the origins of surface winds Learn about anemometers Construct an anemometer Measure wind speed with your anemometer Define relative humidity Describe humidity sensors called hygrometers Describe what produces thunder. lighting, and tornados Know the nature of fronts, air masses, and storm cells Recognize and understand the Fujita-Pearson scale Observe and analyze data on the temperature, pressure, and rel Understand what heat index and wind chill readings are.	ative humidity
Assessments (What assessments, standardized, local, and/or performance- based will be used to measure learning and to drive instructional changes? How will we know whether or not they have learned? Can they demonstrate understanding and apply the essential skills?)	Performance Tasks Students will take a pre-test on the first day of the rotation to establish a baseline for the information covered in the unit. This is not a graded activity but should give students an idea of what the unit is about. Students begin using the activity guide to learn about the subject and to challenge daily response quizzes over the material in the activity guide and on the media pulse software. After completion of 9 activities the student will take a vocabulary test and a post test to complete the unit. All unit tests build a question bank for the final exam that is unique to each individual student in the class. All test are completed on the computer system and are graded immediately for feedback to the student. The student will always know his/her gradeat anytime during the class.	Other Evidence

Unit of Study:	CNC Lathe	Resources that will support instruction
major topics		
-		
Illinois Learning	1.A Apply word analysis and vocabulary sk	ills to comprehend selections.
Standards,	1.A.3b Analyze the meaning of words and p	hrases in their context.
Benchmarks,	1.B.3c.Continuously check and clarify for u	nderstanding (e.g., in addition to previous skills,
	draw comparisons to other readings).	
National	1.B.3d Read age-appropriate material with f	luency and accuracy.
Standards	1.B.4c Read age-appropriate material with f	luency and accuracy.
Assessment	1.B.5d Read age-appropriate material with f	luency and accuracy.
Frameworks, or	10.C.4b	
other standards	Design and conduct simulations (e.g., waitin	ng times at restaurant, probabilities of births,
that will be taught	likelihood of game prizes), with and withou	t the use of technology.
in this unit	8.D Use algebraic concepts and procedures	to represent and solve problems.
	9.A.4a Construct a model of a three-dimensi	ional figure from a two-dimensional pattern.
	11.B Know and apply the concepts, principl	es and processes of technological design.
Objectives	Understand and demonstrate good safety practices	
(What will	Identify and locate the important parts of a G	CNC lathe
students know and	Initialize the control software and verify the	NC code on screen
be able to do as a	Load a piece of stock in the CNC lathe	
result of their	Manually control the CNC lathe to set the initial tool start position	
learning?)	Machine a sample part with the CNC lathe	
	Define and explain how the Cartesian coord	inate system is used in our everyday lives
o Conceptual	List the importance of the Cartesian coordin	ate system
 Factual 	Explain the difference between absolute and	l relative coordinate positioning
o Procedural	Explain tool paths and show how they are used	
	Describe the differences between rapid and	cutting moves
	Describe the difference between rough and t	finish cuts
	Demonstrate the process of locating points a	along a tool path
	Generate an NC program on your own	
	Troubleshoot an NC program to remove error	ors in the code
	Demonstrate the various processes involved	with CNC manufacturing

Assessments	Performance Tasks	Other Evidence
(What		
assessments,	Students will take a pre-test on the first day of the rotation to	
standardized,	establish a baseline for the information covered in the unit.	
local, and/or	This is not a graded activity but should give students an idea	
performance-	of what the unit is about. Students begin using the activity	
based will be used	guide to learn about the subject and to challenge daily	
to measure	response quizzes over the material in the activity guide and on	
learning and to	the media pulse software. After completion of 9 activities the	
drive instructional	student will take a vocabulary test and a post test	
changes? How	to complete the unit. All unit tests build a question bank for	
will we know	the final exam that is unique to each individual student in the	
whether or not	class. All test are completed on the computer system and are	
they have learned?	graded immediately for feedback to the student. The student	
Can they	will always know his/her gradeat anytime during the class.	
demonstrate		
understanding and		
apply the essential		
skills?)		

Unit of Study:	Plastics Technology	Resources that will support instruction	
major topics			
T11' ' T '			
Illinois Learning	1. AApply word analysis and vocabulary ski	lls to comprehend selections.	
Standards,	1.A.3bAnalyze the meaning of words and pl	hrases in their context.	
Benchmarks,	1.B.3cContinuously check and clarify for un	iderstanding (e.g., in addition to	
National	previous skills, draw comparisons to other for 1 D 2dDood occ appropriate material with fil	eadings).	
Standarda	1.B. 30 Read age appropriate material with fi	uency and accuracy.	
Assessment	1.B.5dPaad age appropriate material with fl	luency and accuracy.	
Framoworks or	2 CCommunicate ideas in writing to accomm	alich a variaty of purposes	
other standards	ΔI isten effectively in formal and informa	l situations	
that will be taught	4 A 4a Apply listening skills as individuals a	and members of a group in a variety of	
in this unit	settings (e.g. lectures discussions converse	ations team projects presentations	
	4 A 4bApply listening skills in practical set	ings (e.g., classroom note taking	
	interpersonal conflict situations giving and receiving directions evaluating persuasive		
	10.A.4aRepresent and organize data by creating lists, charts, tables, frequency		
	distributions, graphs, scatterplots and box-plots.		
Objectives	Identify common plastic symbols		
(What will	Identify common abbreviations		
students know and	Describe common strengths and weaknesses	s of specific plastics	
be able to do as a	Define Thermoplastic and thermosetting pla	ISTICS	
result of their	Explain the history of plastics	1	
learning?)	Demonstrate various methods of forming ac	rylic	

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			Use proper safety rules to complete and activity	
	0	Conceptual	Explain several steps involved in finishing acrylic	
	0	Factual	Develop career awareness about the plastics industry	
	0	Procedural	Follow safety rules when using power equipment	
			Identify basic machine parts	
			Explain the function of each machine	
			List common plastic adhesives	
			Identify common plastic processes	
			Operate an injection molder, vacuum former, and strip heater	
			Develop creativity and problem solving skills	
			Explain different coating processes	
			Explain advantages and disadvantages of injection molding	
			List common injection molded products	
			Describe four classifications of adhesives	
			List common compression molded products	
			Explain two types of plastic adhesion	
			Describe the plastic forming process	
			Develop skills in staving on task and following directions	
	Assess	ments	Performance Tasks	Other Evidence
	(What	sinents		
	966666	ments	Students will take a pre-test on the first day of the rotation	
	standar	rdized	to establish a baseline for the information covered in the	
	local	and/or	unit. This is not a graded activity but should give students	
	norfor	mance	an idea of what the unit is about. Students begin using the	
	based y	will be used	activity guide to learn about the subject and to challenge	
	to mon		deily response quizzes over the meterial in the activity	
	lonnin	isuic	ually response quizzes over the material in the activity	
	duises in	ig and to	guide and on the media pulse software. After completion	
	arive ii		of 9 activities the student will take a vocabulary lest and a	
	change	es? How	post test to complete the unit. All unit tests build a	
	WIII We	e know	question bank for the final exam that is unique to each	
	whethe	er or not	individual student in the class. All tests are completed on	
	they ha	ave learned?	the computer system and are graded immediately for	
	Can the	ey	reedback to the student. The student will always know	
	demon	strate	his/her grade at anytime during the class.	
L	1	· 1' 1		
	unders	tanding and		
	unders apply t	tanding and the essential		
	unders apply t skills?)	tanding and the essential)		
	unders apply t skills?)	tanding and the essential)		

Unit of Study:	Residential Wiring	Resources that will support instruction	
major topics			
Illinois Learning	1.A Apply word analysis and vocabulary s	skills to comprehend selections.	
Standards,	1.A.3b Analyze the meaning of words and	l phrases in their context.	
Benchmarks,	1.B.3c Continuously check and clarify for	understanding (e.g., in addition to	
	previous skills, draw comparisons to other	r readings).	
National Standards	1.B.3d Read age-appropriate material with	n fluency and accuracy.	
Assessment	1.B.4c Read age-appropriate material with	n fluency and accuracy.	
Frameworks, or other	1.B.5d Read age appropriate material with	n fluency and accuracy.	
standards that will be	3.C Communicate ideas in writing to acco	mplish a variety of purposes.	
taught in this unit	6.D.3 Apply ratios and proportions to solv	ve practical problems.	
	9.C.4b Construct and communicate convin	ncing arguments for geometric situations.	
	9.C.4cDevelop and communicate mathem	atical proofs (e.g., two-	
	column, paragraph,		
	indirect) and counter examples for geometry	tric statements.	
	9.C.5a Perform and describe an original ir	vestigation of a geometric problem	
	and verify the analysis and conclusions to	an audience.	
	9.D.4 Analyze and solve problems involvi	ing triangles (e.g., distances which	
	cannot be measured directly) using trigon	ometric ratios.	
	9.D.5 Analyze and solve problems involving periodic patterns (e.g., sound		
	waves, tide variations) using circular functions and communicate		
	results orally and in writing.		
Objectives Describe the need for safety when working with electricity		g with electricity	
(What will students	(What will students Identify and describe the basic tools used in residential wiring		
know and be able to	ow and be able to Discuss the different types of electric components		
do as a result of their	do as a result of their Discuss the use of electric components		
learning?)	Discuss wire size and uses		
	Discuss the proper mounting of electrical components		
 Conceptual 	Demonstrate the proper wiring of electrical components		
o Factual	Discuss the difference between 120V and 220V		
o Procedural	Procedural Demonstrate the proper wiring of low voltage components		

	Discuss careers associated with residential wiring	
Assessments (What	Performance Tasks	Other Evidence
assessments,		
standardized, local,	Students will take a pre-test on the first day of the rotation to	
and/or performance-	establish a baseline for the information covered in the unit.	
based will be used to	This is not a graded activity but should give students an idea	
measure learning and	of what the unit is about. Students begin using the activity	
to drive instructional	guide to learn about the subject and to challenge daily	
changes? How will	response quizzes over the material in the activity guide and on	
we know whether or	the media pulse software. After completion of 9 activities the	
not they have	student will take a vocabulary test and a post test	
learned? Can they	to complete the unit. All unit tests build a question bank for	
demonstrate	the final exam that is unique to each individual student in the	
understanding and	class. All test are completed on the computer system and are	
apply the essential	graded immediately for feedback to the student. The student	
skills?)	will always know his/her gradeat anytime during the class.	

Unit of Study:	CNC Mill	Resources that will support instruction	
major topics			
Illinois Learning	1.A Apply word analysis and vocabulary skills to comprehend selections.		
Standards,	1.A.3bAnalyze the meaning of words and phrases in their context.		
Benchmarks,	1.B.3cContinuously check and clarify for understanding (e.g., in addition to		
	previous skills, draw comparisons to other	readings).	
National Standards	1.B.3dRead age-appropriate material with fluency and accuracy.		
Assessment	1.B.4cRead age-appropriate material with fluency and accuracy.		
Frameworks, or other	1.B.5dRead age-appropriate material with fluency and accuracy.		
standards that will be	3.CCommunicate ideas in writing to accomplish a variety of purposes.		
taught in this unit	3.C.4bUsing available technology, produce compositions and multimedia works		
	for specified audiences.		
	3.C.5aCommunicate information and ideas in narrative,		
	informative and persuasive writing with clarity and effectiveness in a variety of		
	written forms.		
	10.A.4aRepresent and organize data by		
	creating lists, charts, tables, frequency distributions, graphs, scatter plots and box-		
	plots.		
	9.C.4b Construct and communicate convincing arguments for geometric situations. Q D A Analyze and solve problems involving triangles (e.g., distances which		
	cannot be measured directly) using trigonometric ratios		
	11 B Know and apply the concepts, principles and processes of		
	technological design	pies and processes of	
	teennologiear design.		
Objectives	Understand and demonstrate good safety t	practices	
(What will students	Identify and locate the important parts of	a CNC mill	
know and be able to	Initialize the control software and verify the NC code on screen		
do as a result of their	Load a piece of stock in the CNC mill		
learning?)	Manually control the CNC mill to set the initial tool start position		
	Machine a sample part with the CNC mill	-	
 Conceptual 	Explain how the Cartesian coordinate syst	em is used in our everyday lives	

o Factual	List the importance of the Cartesian coordinate system		
 Procedural 	Explain the difference between absolute and relative coordinate positioning		
	Explain tool paths and show how they are used		
	Describe the differences between rapid and cutting moves		
	Describe the difference between rough and finish cuts		
	Demonstrate the process of locating points along a tool path		
	Generate an NC program on your own		
	Troubleshoot an NC program to remove errors in the code		
Assessments (What	Performance Tasks	Other Evidence	
assessments,			
standardized, local,	Students will take a pre-test on the first day of the rotation to		
and/or performance-	establish a baseline for the information covered in the unit.		
based will be used to	This is not a graded activity but should give students an idea		
measure learning and	of what the unit is about. Students begin using the activity		
to drive instructional	guide to learn about the subject and to challenge daily		
changes? How will	response quizzes over the material in the activity guide and on		
we know whether or	the media pulse software. After completion of 9 activities the		
not they have	student will take a vocabulary test and a post test		
learned? Can they	to complete the unit. All unit tests build a question bank for		
demonstrate	the final exam that is unique to each individual student in the		
understanding and	class. All test are completed on the computer system and are		
apply the essential	graded immediately for feedback to the student. The student		
skills?)	will always know his/her gradeat anytime during the class.		