

Pine Hill Public Schools Curriculum

Content Area:		Special Areas	
Course Title/ Grade Level:		Advanced Technology	
Unit 1:	Safety and Classroom Procedures	Duration:	1 Week
Unit 2:	Problem Solving and Brainstorming at Next Level	Duration:	2 Weeks
Unit 3:	Right Angle Geometry and the Transit	Duration:	2 Weeks
Unit 4:	Design and Construction of Fall Play	Duration:	5-6 Weeks
Unit 5:	Set Deconstruction	Duration:	1-2 Weeks
Unit 6:	Amusement Park Physics and Forces	Duration:	3 Weeks
Unit 7:	Advanced Technology Tech Challenge	Duration:	1 Week
Unit 8:	Lasers	Duration:	3 Weeks
Unit 9:	Transportation Systems	Duration:	3-4 Weeks
Unit 10:	Design and Construction of Spring Musical	Duration:	5-6 Weeks
Unit 11:	Set Deconstruction	Duration:	1-2 Weeks
Unit 12:	Transportation Systems- Part II	Duration:	3-4 Weeks
Unit 13:	Transportation Systems- Part IIB	Duration:	5-6 Weeks
BOE Approval Date:		August 28, 2012	

Pine Hill Public Schools
Advanced Technology Curriculum

Unit Title:	Review Safety and Classroom Procedures	Unit #: 1
Course or Grade Level:	Advanced Technology	Length of Time: 1 week
Pacing	September	
Essential Questions	<ul style="list-style-type: none"> • What is safety in and out of the classroom? How does safety affect the classroom environment? • Classroom procedures for a productive learning environment. 	
Content	<ul style="list-style-type: none"> • Safety procedures, classroom management • Classroom procedures including beginning and ending of daily work sessions 	
Skills	<ul style="list-style-type: none"> • Review safety procedures that they learned in Technology I. • Explain proper class work procedures including gathering materials and tools, in class procedures, and clean up processes. • Prepare safe work environments in the classroom. • Clean up and store tools and materials at the end of each day. 	
Assessments	<ul style="list-style-type: none"> • Safety quiz • Observation, summaries of work, tests, and quizzes • Edmodo as a weekly writing tool/assignment • Rubric- assess students on both individual and group basis as they apply 	
Interventions / differentiated instruction	<ul style="list-style-type: none"> • Pictures and graphics to portray safety rules for needed students • Teacher led instruction and guidance to individuals who are unfamiliar with a particular tool. 	
Inter-disciplinary Connections	<ul style="list-style-type: none"> • Computer animations and graphics • Web-based simulation programs 	
Lesson resources / Activities	<ul style="list-style-type: none"> • Internet resources, classroom worksheets, safety worksheets, poster paper, computer • Edmodo account 	

2009 NJCCCS

Standard: 9.4 Career/Tech Ed.

Strand(s): B. Architect/Construction

Content Statement(s): Career Cluster

CPI # / CPI(s): 9.4.12.B.(2).10

Safety Practice Procedure

21st Century Themes

Global Awareness		Financial, Economic, Business, and Entrepreneurial Literacy		Civic Literacy		Health Literacy
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21st Century Skills

Creativity and Innovation	X	Critical Thinking and Problem Solving	X	Communication and Collaboration		Information Literacy
Media Literacy		ICT Literacy	X	Life and Career Skills		

Pine Hill Public Schools
Advanced Technology Curriculum

Unit Title:	Problem Solving and Brainstorming at Next Level	Unit #:	2
Course or Grade Level:	Advanced Technology	Length of Time:	2 weeks
Pacing	September		
Essential Questions	<ul style="list-style-type: none"> • What can we learn from last year's projects to improve this year's class? • Why is documentation critically important in any and all aspects of technology? 		
Content	<ul style="list-style-type: none"> • Brainstorming solutions to problems • Problem solve issues to solutions to projects 		
Skills	<ul style="list-style-type: none"> • Design a complex machine to propel a paper football. • Use all available hand and power tools to complete project. • Storing of projects and materials. 		
Assessments	<ul style="list-style-type: none"> • Tool practice usage • Accuracy of football kicking machine • Observation of proper tool usage and work habits • Edmodo as a weekly writing tool/assignment • Summaries of work, tests, and quizzes • Rubric- assess students on both individual and group basis as they apply 		
Interventions / differentiated instruction	<ul style="list-style-type: none"> • Teacher led instruction and guidance to individuals who are unfamiliar with a particular tool. • Peer help from experienced students to assist students in tool usage. • Trial and error without any repercussion of mistakes or failure. Learn through failure to make changes in project as you would in any real world problem. 		
Inter-disciplinary Connections	<ul style="list-style-type: none"> • Mathematical calculations such as addition, fractional equivalents, distances, etc. • Physics- potential and kinetic energy applications to project. 		
Lesson resources / Activities	<ul style="list-style-type: none"> • Football kicking machine • Internet resources, classroom worksheets, computer • Tools and sketching • Websites and Smartboard notes 		

2009 NJCCCS

Standard: 9.4 Career/Tech Ed.

Strand(s): M. Manufacturing, B. Architect/Construction, O. STEM

Content Statement(s): Safety Health, Career Cluster, Technical Skills, Problem Solving/Critical Thinking

CPI # / CPI(s): 9.4.12.M.(6).7, 9.4.12.B.(1).8, 9.4.12.B.(2).17, 9.4.12.O.17, 9.4.12.O.(1).11

Safe Use of Equipment, Data Collection, Use Skills on Project, Problem Solving/ Individual & Team, Design Process

21st Century Themes

Global Awareness		Financial, Economic, Business, and Entrepreneurial Literacy		Civic Literacy		Health Literacy
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21st Century Skills

Creativity and Innovation	X	Critical Thinking and Problem Solving	X	Communication and Collaboration		Information Literacy
Media Literacy		ICT Literacy	X	Life and Career Skills		

Pine Hill Public Schools
Advanced Technology Curriculum

Unit Title:	Right Angle Geometry and the Transit	Unit #:	3
Course or Grade Level:	Advanced Technology	Length of Time:	2 weeks
Pacing	September-October		
Essential Questions	<ul style="list-style-type: none"> • What is right triangle geometry and where do we see it in engineering? • What is a transit, how do you set up and use one, and what careers might use this type of engineering tool? 		
Content	<ul style="list-style-type: none"> • Reviewing right triangle geometric applications • Setting up and shooting a transit outside to see real world applications. 		
Skills	<ul style="list-style-type: none"> • Set up and shoot various elevations and angular measurements. • Problem solve right triangle problems to engineering problems 		
Assessments	<ul style="list-style-type: none"> • Transit set up and use. • Edmodo as a weekly writing tool/assignment • Accuracy of elevations shooting transit. • Observation of proper tool usage and work habits. • Creating geometric projections using right triangle geometry calculations. • Rubric- assess students on both individual and group basis as they apply 		
Interventions / differentiated instruction	<ul style="list-style-type: none"> • Teacher led instruction and guidance to individuals who are unfamiliar with a particular tool. • Peer help from experienced students to assist students in tool usage. • Hands on examples and building of calculated geometry to show how the math can be used daily. 		
Inter-disciplinary Connections	<ul style="list-style-type: none"> • Mathematical calculations in right triangle geometry. • Careers- using a transit in a career and different occupations that use transit. 		
Lesson resources / Activities	<ul style="list-style-type: none"> • Shooting transit for elevations, right triangle geometry • Internet resources, classroom worksheets, computer • Data collection of elevations, tools • Websites and Smartboard notes 		

2009 NJCCCS

Standard: 9.4 Career/Tech Ed.

Strand(s): M. Manufacturing, B. Architect/Construction, O. STEM

Content Statement(s): Safety Health, Career Cluster, Technical Skills, Academic Foundation

CPI # / CPI(s): 9.4.12.M.(6).7, 9.4.12.B.(1).8, 9.4.12.B.(2).17, 9.4.12.O.(2).2, 9.4.12.O.(1).2

Safe Use of Equipment, Data Collection, Use Skills on Project, Apply Science Math to Project, Geometry, Algebra, Trigonometry

21st Century Themes

Global Awareness		Financial, Economic, Business, and Entrepreneurial Literacy		Civic Literacy		Health Literacy
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21st Century Skills

Creativity and Innovation	X	Critical Thinking and Problem Solving	X	Communication and Collaboration		Information Literacy
Media Literacy		ICT Literacy	X	Life and Career Skills		

Pine Hill Public Schools
Advanced Technology Curriculum

Unit Title:	Design and Construction of Fall Play	Unit #:	4
Course or Grade Level:	Advanced Technology	Length of Time:	5-6 weeks
Pacing	October-November		
Essential Questions	<ul style="list-style-type: none"> • What type of play is it? • Do the different scenes need moveable or stationary wagons? • Can we make the stage/setting safe yet pleasing to the audience's eye? 		
Content	<ul style="list-style-type: none"> • Construction and layout skills for set design and construction. • Keeping the theme of fall play consistent in the design and appearance of set. 		
Skills	<ul style="list-style-type: none"> • Build various frames, wagons, and vertical assemblies to represent different scenes within the play. • Sketching ideas, explaining ideas to classmates on how to accomplish the build. • Collaborate with peers as best way to construct set. • Drill, cut, and attach various components for set design. 		
Assessments	<ul style="list-style-type: none"> • Set design and construction • Sketching ideas before constructing projects • Observation, working with others. • Rubric- assess students on both individual and group basis as they apply • Edmodo as a weekly writing tool/assignment 		
Interventions / differentiated instruction	<ul style="list-style-type: none"> • Have inhibited students work with more competent and confident ones to increase their self-esteem and create a sense of pride and ownership of building something on such a grand scale. • Create student leaders to govern small groups of students working on set. 		
Inter-disciplinary Connections	<ul style="list-style-type: none"> • Mathematical calculations such as addition, fractional equivalents, distances, etc. • Art- sketching ideas • Communication- being able to communicate ideas and thoughts on how to build set. 		
Lesson resources / Activities	<ul style="list-style-type: none"> • Set design and construction • Drawings and plans • Sketches, tools 		

2009 NJCCCS

Standard: 9.4 Career/Tech Ed.

Strand(s): O. STEM, B. Architect/Construction

Content Statement(s): Problem Solving/Critical Thinking, Leadership/Teamwork, Technical Skills	CPI # / CPI(s): 9.4.12.O.17, 9.4.12.O.48, 9.4.12.B.(3).3, 9.4.12.O.(1).11
	Problem Solving/ Individual & Team, Teamwork Skills, Construction Skills, Design Process

[21st Century Themes](#)

Global Awareness		Financial, Economic, Business, and Entrepreneurial Literacy		Civic Literacy		Health Literacy
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[21st Century Skills](#)

Creativity and Innovation	X	Critical Thinking and Problem Solving	X	Communication and Collaboration		Information Literacy
Media Literacy		ICT Literacy	X	Life and Career Skills		

Pine Hill Public Schools
Advanced Technology Curriculum

Unit Title:	Set Deconstruction	Unit #:	5
Course or Grade Level:	Advanced Technology	Length of Time:	- 1-2 weeks
Pacing	November		
Essential Questions	<ul style="list-style-type: none"> • What is the safest and most effective way to disassemble while reusing most of the materials? • How can working in a group be better than individuals when moving overly large objects? 		
Content	<ul style="list-style-type: none"> • Take down wagons and flats • Store properly for future use • Be safe when moving large objects 		
Skills	<ul style="list-style-type: none"> • Rubric- assess students on both individual and group basis as they apply • Safe use of tools and moving lifts • Ladder safety • Loading and unloading wagons using safe lifting procedures 		
Assessments	<ul style="list-style-type: none"> • Daily work grade • Observation 		
Interventions / differentiated instruction	<ul style="list-style-type: none"> • Cooperative Learning- setting up groups that work well together to promote a safer working environment • Teacher led instruction and guidance on how to drive the scissor lift safely, allow for student practice 		
Inter-disciplinary Connections	<ul style="list-style-type: none"> • Theatre- set deconstruction • Careers- learning how to work in teams to accomplish tasks individuals cannot do • Physical Education- Lifting properly and moving heavy objects as to not injure one's self or others 		
Lesson resources / Activities	<ul style="list-style-type: none"> • Scissor lift • Tools, hand and power • Storing material in Woodshop storage area 		

2009 NJCCCS

Standard: 9.4 Career/Tech Ed.

Strand(s): B. Architect/Construction, O. STEM, M. Manufacturing,

Content Statement(s): Career Cluster, Leadership/Teamwork, Technical Skills, Safety Health	CPI # / CPI(s): 9.4.12.B.(1).1, 9.4.12.O.48, 9.4.12.O.68, 9.4.12.M.(6).7
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Communication Skills, Teamwork Skills, Planning Skills, Safe Use of Equipment

21st Century Themes

Global Awareness		Financial, Economic, Business, and Entrepreneurial Literacy		Civic Literacy		Health Literacy
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21st Century Skills

Creativity and Innovation	X	Critical Thinking and Problem Solving	X	Communication and Collaboration		Information Literacy
Media Literacy		ICT Literacy	X	Life and Career Skills		

Pine Hill Public Schools
Advanced Technology Curriculum

Unit Title: Amusement Park Physics and Forces		Unit #: 6	
Course or Grade Level: Advanced Technology		Length of Time: 3 weeks	
Pacing	November-December		
Essential Questions	<ul style="list-style-type: none"> • What forces do you encounter in riding many of the amusement rides today? • How do these forces affect the rider and where are they encountered? • How can a ride engineer manipulate these forces to make a better amusement ride? 		
Content	<ul style="list-style-type: none"> • Physics of roller coasters and other amusement park rides. • Understand how the forces affect the “fun factor” of amusement park rides. • Apply knowledge of forces in a scale model application. 		
Skills	<ul style="list-style-type: none"> • Sketch idea of roller coaster showing where the physics terms will apply (i.e., gravity, centrifugal force, etc.) • Design and build a scale model roller coaster using vinyl tubing, copper bb, and other materials. • Test bb roller coaster by measuring distance bb travels after exiting tubing. 		
Assessments	<ul style="list-style-type: none"> • BB roller coaster • Observation • Edmodo as a weekly writing tool/assignment • Worksheets, summaries, and sketches • Rubric- assess students on both individual and group basis as they apply 		
Interventions / differentiated instruction	<ul style="list-style-type: none"> • Collaborative learning groups chosen by students to achieve better quality of work because they will be comfortable with whom they are working 		
Inter-disciplinary Connections	<ul style="list-style-type: none"> • Engineering- designing loops and helix to slow momentum of BB to a stop • Science- understand forces affecting movement of BB • Art- design an aesthetic and fun roller coaster that people would want to ride 		
Lesson resources / Activities	<ul style="list-style-type: none"> • Internet, roller coaster simulation programs • Research activities • Tools • Materials- vinyl tubing, copper BB, wooden base 		
2009 NJCCCS			
Standard:	9.4 Career/Tech Ed.		
Strand(s): M. Manufacturing, B. Architect/Construction, O. STEM			
Content Statement(s): Safety Health, Career Cluster, Information Technology, Academic Foundation, Technical Skills		CPI # / CPI(s): 9.4.12.M.(6).7, 9.4.12.B.(1).3, 9.4.12.O.30, 9.4.12.O.(1).4, 9.4.12.O.(1).11	
		Safe Use of Equipment, Structural Building, Use Computer Applications, Newton's Laws of Physics, Design Process	
<u>21st Century Themes</u>			
	Global Awareness		Financial, Economic, Business, and Entrepreneurial Literacy
			Civic Literacy
			Health Literacy
<u>21st Century Skills</u>			
	Creativity and Innovation	X	Critical Thinking and Problem Solving
			Communication and Collaboration
	Media Literacy		ICT Literacy
		X	Life and Career Skills

Pine Hill Public Schools
Advanced Technology Curriculum

Unit Title:	Advanced Technology Tech Challenge	Unit #:	7
Course or Grade Level:	Advanced Technology	Length of Time:	1 week
Pacing	December		
Essential Questions	<ul style="list-style-type: none"> • What are various ways to get movement? • How can gears and cams create movement? 		
Content	<ul style="list-style-type: none"> • Different types of movement including cams, gears, rack and pinion, and levers. • Simple and complex machines. 		
Skills	<ul style="list-style-type: none"> • Use brainstorming skills to come up with several possible solutions to Tech Challenge. • Combine both simple and complex machines in confined space to create movement. • Work individually to complete assigned tasks. 		
Assessments	<ul style="list-style-type: none"> • Tech Challenge TLA • Observation • Edmodo as a weekly writing tool/assignment • Summaries of work, tests, and quizzes • Rubric- assess students on both individual and group basis as they apply 		
Interventions / differentiated instruction	<ul style="list-style-type: none"> • Advanced students can assist students in brainstorming and researching solutions • Allowing students to work with a partner if challenge is too difficult. 		
Inter-disciplinary Connections	<ul style="list-style-type: none"> • Engineering- making simple and complex machines work together to accomplish challenge. • Art- design that follows form follows function mantra. 		
Lesson resources / Activities	<ul style="list-style-type: none"> • Tech Challenge TLA • Research on internet about complex machines. • Tools 		

2009 NJCCCS

Standard: 9.4 Career/Tech Ed.

Strand(s): B. Architect/Construction, B. Architect/Construction, O. STEM, M. Manufacturing

Content Statement(s): Career Cluster, Technical Skills, Academic Foundation, Academic Foundation

CPI # / CPI(s): 9.4.12.B.(1).3, 9.4.12.B.(2).16, 9.4.12.O.2, 9.4.12.M.(6).7,

Structural Building, Building Systems, Math Knowledge, Safe Use of Equipment

21st Century Themes

	Global Awareness		Financial, Economic, Business, and Entrepreneurial Literacy		Civic Literacy		Health Literacy
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21st Century Skills

X	Creativity and Innovation	X	Critical Thinking and Problem Solving	X	Communication and Collaboration		Information Literacy
	Media Literacy		ICT Literacy	X	Life and Career Skills		

Pine Hill Public Schools
Advanced Technology Curriculum

Unit Title:	Lasers	Unit #:	8
Course or Grade Level:	Advanced Technology	Length of Time:	3 weeks
Pacing	January		
Essential Questions	<ul style="list-style-type: none"> • What does the acronym LASER mean? • How do lasers work and where are they used in today's society? • What types of careers use lasers and how? 		
Content	<ul style="list-style-type: none"> • LASER- light amplification stimulated emitted radiation • Properties of laser light. • Angles of Incidence, Angle of Reflection, Normal Line 		
Skills	<ul style="list-style-type: none"> • Build a laser reflecting device that will reflect the laser light several times to hit a target. • Determine the proper angles of incidence and reflection to accomplish task. • Bisect angles to produce a known distance and angle. • Use laser light to predict distances and angles using Trigonometry. 		
Assessments	<ul style="list-style-type: none"> • Laser Light TLA • Worksheets, summaries of work, tests, and quizzes • Observation • Edmodo as a weekly writing tool/assignment • Rubric- assess students on both individual and group basis as they apply 		
Interventions / differentiated instruction	<ul style="list-style-type: none"> • Advanced students can assist students in brainstorming and researching solutions • Allowing students to work with a partner if challenge is too difficult 		
Inter-disciplinary Connections	<ul style="list-style-type: none"> • Math- Choosing appropriate angles to reflect the laser light towards target • Art- design mirror holders to be functional and look good 		
Lesson resources / Activities	<ul style="list-style-type: none"> • Laser Reflection TLA • Research on internet about lasers • Laser levels, internet resources, protractors 		

2009 NJCCCS

Standard: 9.4 Career/Tech Ed.

Strand(s): B. Architect/Construction, B. Architect/Construction, O. STEM, M. Manufacturing

Content Statement(s): Career Cluster, Technical Skills, Academic Foundation, Safety Health

CPI # / CPI(s): 9.4.12.B.(1).9, 9.4.12.B.(2).17, 9.4.12.O.2, 9.4.12.M.(6).7,

CAD/Drafting Plans, Use Skills on Project, Math Knowledge, Safe Use of Equipment

21st Century Themes

Global Awareness		Financial, Economic, Business, and Entrepreneurial Literacy		Civic Literacy		Health Literacy
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21st Century Skills

Creativity and Innovation	X	Critical Thinking and Problem Solving	X	Communication and Collaboration		Information Literacy
Media Literacy		ICT Literacy	X	Life and Career Skills		

Pine Hill Public Schools
Advanced Technology Curriculum

Unit Title: Transportation Systems		Unit #: 9				
Course or Grade Level: Advanced Technology		Length of Time: 3-4 weeks				
Pacing	January, February					
Essential Questions	<ul style="list-style-type: none"> • What is the future of transportation in the United States and worldwide? • How can new transportation technology help solve other problems such as global warming? • What is magnetic levitation and can it be applied on a large scale in transportation? 					
Content	<ul style="list-style-type: none"> • Understand magnetic levitation as it applies to transportation • Understand the attraction/repulsion of magnets and how they can provide movement • Describe an electromagnet and where is it used 					
Skills	<ul style="list-style-type: none"> • Layout of magnets to create balance and repulsion so Maglev vehicle can move down the track • Create proper contacts to transfer electricity to Maglev so the DC motor can move car • Overcome torque issues to keep Maglev on track and moving 					
Assessments	<ul style="list-style-type: none"> • Rubric- assess students on both individual and group basis as they apply • Maglev testing for speed and aesthetics • Daily work grade • Edmodo as a weekly writing tool/assignment 					
Interventions / differentiated instruction	<ul style="list-style-type: none"> • Peer to peer instruction for struggling students • Advanced students can assist students in brainstorming and researching solutions 					
Inter-disciplinary Connections	<ul style="list-style-type: none"> • Engineering-overcoming torque for steady movement • Art- designing a fast but aesthetically pleasing Maglev vehicle • Math- calculating speed down the track 					
Lesson resources / Activities	<ul style="list-style-type: none"> • Internet, videos • Materials- magnets, balsa wood base, dc motors • Maglev vehicle challenge TLA 					
2009 NJCCCS						
Standard:	9.4 Career/Tech Ed.					
Strand(s):	B. Architect/Construction, O. STEM, M. Manufacturing,					
Content Statement(s): Safety, Academic Foundation, Safety Health	CPI # / CPI(s): 9.4.12.B.(2).10, 9.4.12.O.(1).3, 9.4.12.M.(6).7					
	Safety Practice Procedure, Convert Measurement, Safe Use of Equipment					
<u>21st Century Themes</u>						
	Global Awareness	Financial, Economic, Business, and Entrepreneurial Literacy	Civic Literacy	Health Literacy		
<u>21st Century Skills</u>						
	Creativity and Innovation	X	Critical Thinking and Problem Solving	X	Communication and Collaboration	Information Literacy
	Media Literacy		ICT Literacy	X	Life and Career Skills	

Pine Hill Public Schools
Advanced Technology Curriculum

Unit Title:	Design and Construction of Spring Musical	Unit #: 10
Course or Grade Level:	Advanced Technology	Length of Time: 5-6 weeks
Pacing	February/March	
Essential Questions	<ul style="list-style-type: none"> • What type of play is it? • Do the different scenes need moveable or stationary wagons? • Can we make the stage/setting safe yet pleasing to the audience's eye? 	
Content	<ul style="list-style-type: none"> • Construction and layout skills for set design and construction. • Keeping the theme of fall play consistent in the design and appearance of set. 	
Skills	<ul style="list-style-type: none"> • Build various frames, wagons, and vertical assemblies to represent different scenes within the play. • Sketching ideas, explaining ideas to classmates on how to accomplish the build. • Collaborate with peers as best way to construct set. • Drill, cut, and attach various components for set design. 	
Assessments	<ul style="list-style-type: none"> • Set design and construction • Sketching ideas before constructing projects • Observation, working with others. • Rubric- assess students on both individual and group basis as they apply • Edmodo as a weekly writing tool/assignment 	
Interventions / differentiated instruction	<ul style="list-style-type: none"> • Have inhibited students work with more competent and confident ones to increase their self-esteem and create a sense of pride and ownership of building something on such a grand scale. • Create student leaders to govern small groups of students working on set. 	
Inter-disciplinary Connections	<ul style="list-style-type: none"> • Mathematical calculations such as addition, fractional equivalents, distances, etc. • Art- sketching ideas • Communication- being able to communicate ideas and thoughts on how to build set. 	
Lesson resources / Activities	<ul style="list-style-type: none"> • Set design and construction • Drawings and plans • Sketches, tools 	

2009 NJCCCS

Standard: 9.4 Career/Tech Ed.

Strand(s): O. STEM, B. Architect/Construction

Content Statement(s): Problem Solving/Critical Thinking, Leadership/Teamwork, Technical Skills	CPI # / CPI(s): 9.4.12.O.17, 9.4.12.O.48, 9.4.12.B.(3).3, 9.4.12.O.(1).11
	Problem Solving/ Individual & Team, Teamwork Skills, Construction Skills, Design Process

21st Century Themes

Global Awareness	Financial, Economic, Business, and Entrepreneurial Literacy	Civic Literacy	Health Literacy
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21st Century Skills

Creativity and Innovation	X	Critical Thinking and Problem Solving	X	Communication and Collaboration	Information Literacy
Media Literacy		ICT Literacy	X	Life and Career Skills	

Pine Hill Public Schools
Advanced Technology Curriculum

Unit Title: Set Deconstruction	Unit #: 11
Course or Grade Level: Advanced Technology	Length of Time: 1-2 weeks
Pacing	March/April
Essential Questions	<ul style="list-style-type: none"> • What is the safest and most effective way to disassemble while reusing most of the materials? • How can working in a group be better than individuals when moving overly large objects?
Content	<ul style="list-style-type: none"> • Take down wagons and flats • Store properly for future use • Be safe when moving large objects
Skills	<ul style="list-style-type: none"> • Rubric- assess students on both individual and group basis as they apply • Safe use of tools and moving lifts • Ladder safety • Loading and unloading wagons using safe lifting procedures
Assessments	<ul style="list-style-type: none"> • Daily work grade • Observation
Interventions / differentiated instruction	<ul style="list-style-type: none"> • Cooperative Learning- setting up groups that work well together to promote a safer working environment • Teacher led instruction and guidance on how to drive the scissor lift safely, allow for student practice
Inter-disciplinary Connections	<ul style="list-style-type: none"> • Theatre- set deconstruction • Careers- learning how to work in teams to accomplish tasks individuals cannot do • Physical Education- Lifting properly and moving heavy objects as to not injure one's self or others
Lesson resources / Activities	<ul style="list-style-type: none"> • Scissor lift • Tools, hand and power • Storing material in Woodshop storage area

2009 NJCCCS

Standard: 9.4 Career/Tech Ed.

Strand(s): B. Architect/Construction, O. STEM, M. Manufacturing,

Content Statement(s): Career Cluster, Leadership/Teamwork, Technical Skills, Safety Health	CPI # / CPI(s): 9.4.12.B.(1).1, 9.4.12.O.48, 9.4.12.O.68, 9.4.12.M.(6).7
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Communication Skills, Teamwork Skills, Planning Skills, Safe Use of Equipment

[21st Century Themes](#)

Global Awareness		Financial, Economic, Business, and Entrepreneurial Literacy		Civic Literacy		Health Literacy
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[21st Century Skills](#)

Creativity and Innovation	X	Critical Thinking and Problem Solving	X	Communication and Collaboration		Information Literacy
Media Literacy		ICT Literacy	X	Life and Career Skills		

Pine Hill Public Schools
Advanced Technology Curriculum

Unit Title:	Transportation Systems- Part II	Unit #:	12
Course or Grade Level:	Advanced Technology	Length of Time:	3-4 weeks
Pacing	April/May		
Essential Questions	<ul style="list-style-type: none"> • How does thrust provide speed for a vehicle? • Is aerodynamic design the most important aspect in building a fast vehicle? • What makes something faster than something else? 		
Content	<ul style="list-style-type: none"> • CO2 race cars- how they move • Using a propellant safely moving a vehicle • Design elements to create an eye-catching but also fast CO2 car 		
Skills	<ul style="list-style-type: none"> • Sketch out design and try to keep true to drawing • Manipulating balsa wood to create a fast CO2 car • Sanding smoothly to provide a solid base for the paint 		
Assessments	<ul style="list-style-type: none"> • Daily work grade • Aesthetics and speed of CO2 car • Observation • Rubric- assess students on both individual and group basis as they apply • Edmodo as a weekly writing tool/assignment 		
Interventions / differentiated instruction	<ul style="list-style-type: none"> • Peer to peer instruction for struggling students • Graphic organizers to show steps in making the car 		
Inter-disciplinary Connections	<ul style="list-style-type: none"> • Math- calculating speed of cars • Art- aesthetics and design of cars • Engineering- creating balance and frictionless cars to make them as fast as possible 		
Lesson resources / Activities	<ul style="list-style-type: none"> • CO2 car speed and design • Balsa wood blanks, CO2 cartridges, wheels, axles, eyehooks • Sketches, tools 		

2009 NJCCCS

Standard: 9.4 Career/Tech Ed.

Strand(s): O. STEM, B. Architect/Construction

Content Statement(s): Problem Solving/Critical Thinking, Academic Foundation, Technical Skills, Technical Skills	CPI # / CPI(s): 9.4.12.O.17, 9.4.12.O.2, 9.4.12.B.(3).3, 9.4.12.O.(1).11
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Problem Solving/ Individual & Team, Math Knowledge, Construction Skills, Design Process

21st Century Themes

Global Awareness		Financial, Economic, Business, and Entrepreneurial Literacy		Civic Literacy		Health Literacy
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21st Century Skills

Creativity and Innovation	X	Critical Thinking and Problem Solving	X	Communication and Collaboration		Information Literacy
Media Literacy		ICT Literacy	X	Life and Career Skills		

Pine Hill Public Schools
Advanced Technology Curriculum

Unit Title:	Transportation Systems- Part IIB	Unit #:	13
Course or Grade Level:	Advanced Technology	Length of Time:	5-6 weeks
Pacing	May/June		
Essential Questions	<ul style="list-style-type: none"> • What is Bernoulli's Principle and how does it affect airfoils? • What are all of the factors that affect the way a plane flies? • What are some of the historically significant types of airplanes and how did they affect the design of modern airplanes? 		
Content	<ul style="list-style-type: none"> • Understand Bernoulli's Principle as it applies to airplane flight • Researching airplane design to help choose which airplane to build • Creating lift from everyday materials 		
Skills	<ul style="list-style-type: none"> • Sketch out design and try to keep true to drawing • Manipulating Styrofoam to create a leading and trailing edge to the airfoil to create lift • Cutting out the fuselage to accommodate the wings and motor 		
Assessments	<ul style="list-style-type: none"> • Daily work grade • Aesthetics and flight of airplane • Observation • Rubric- assess students on both individual and group basis as they apply • Edmodo as a weekly writing tool/assignment 		
Interventions / differentiated instruction	<ul style="list-style-type: none"> • Peer to peer instruction for struggling students • Graphic organizers to show steps in making the plane 		
Inter-disciplinary Connections	<ul style="list-style-type: none"> • Science- shaping airfoil to create the lift needed to fly plane • Art- aesthetics and design of airplanes • Engineering- locating engine and wheels for proper balance 		
Lesson resources / Activities	<ul style="list-style-type: none"> • Airplane design • Styrofoam, wood, wheels, Flying pole • Sketches, tools 		

2009 NJCCCS

Standard: 9.4 Career/Tech Ed.

Strand(s): O. STEM, B. Architect/Construction

Content Statement(s): Technical Skills, Academic Foundation, Technical Skills, Technical Skills	CPI # / CPI(s): 9.4.12.O.68, 9.4.12.O.2, 9.4.12.B.(3).3, 9.4.12.O.(1).11
	Planning Skills, Math Knowledge, Construction Skills, Design Process

[21st Century Themes](#)

Global Awareness		Financial, Economic, Business, and Entrepreneurial Literacy		Civic Literacy		Health Literacy
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[21st Century Skills](#)

Creativity and Innovation	X	Critical Thinking and Problem Solving	X	Communication and Collaboration		Information Literacy
Media Literacy		ICT Literacy	X	Life and Career Skills		

Revised: August 26,2014