East Penn School District
Secondary Curriculum

A Planned Course Statement
for

Power Technology II

Course # **909** Grade(s) 9,10,11,12

Department: Technology Education

Length of Period (mins.) 42 Total Clock Hours: 63

Periods per Cycle: 6 Length of Course (yrs.) 0.5

Type of Offering: _____ required ___√___ elective

Credit: 0.5

Adopted: 4/23/07

Developed by:

Scott Ramson

Description of Course #909

Course Title: Power Technology II

Description: This course is an extension of Power Technology I. Problems involving internal and external combustion theory, electric motors and transportation may be studied. In addition, students will learn the principles of alternative energy sources, hydraulics, pneumatics metal fabrication and machining.

Goals:
- To give students a better understanding of technology.
- To give students an understanding of alternative energy sources.
- To give students an understanding of metal manufacturing processes.

Requirements:
- Power Technology I

Text:
Teacher created materials

Key to Levels of Achievement (Listed with each learning objective)

Awareness (A):	Students are introduced to concepts, forms, and patterns.
Learning (L):	Students are involved in a sequence of steps and practice activities which involved further development and allow evaluation of process.
Understanding (U):	Students demonstrate ability to apply acquired concepts and skills to individual assignments and projects on an independent level.
Reinforcement (R):	Students maintain and broaden understanding of concepts and skills to accomplish tasks at a greater level of sophistication.

Unit	Num	Objective	Level	Content	Evaluation	Standard
I. Safety Review	1	Students will learn about personal safety in the Engineering lab.	R	• Protective eyewear • Proper dress • Appropriate footwear • Long hair • Jewelry	• Safety quiz • Teacher observation	3.7A
	2	Students will learn about the safe operation of the tools and machines in the Technology lab.	R	• Safety rules specific to each tool and machine used in the Engineering tech lab	• Ongoing teacher observation	3.7A
	3	Students will learn how to safely handle hazardous materials.	R	• Lecture and discussion of MSDS designations and product labels	• Ongoing teacher observation	3.7A
	4	Students will learn how to safely handle hazardous and flammable liquids/chemicals.	R	• Lecture and discussion of MSDS designations and product labels	• Ongoing teacher observation	3.7A
	5	Students will learn how to safely work with and around electricity.	R	• Lecture and discussion pertaining to electric shock, burns, fire and electrocution	• Ongoing teacher observation	3.7A
II. Electric Motors/Generators/ Magnetism	6	Students will gain an understanding of how generators/alternators work.	L	• Converting mechanical energy to electrical energy • Direct current • Alternating current • Permanent magnets • Electro magnets • Field structure • Armature • Transformers	• Quizzes • Worksheets • Lab work	3.6
	7	Students will make a working model electric motor.	A	• Direct current • Permanent magnets • Field structure • Armature	• Lab work	3.6 3.7
III. Alternative Sources of Energy	8	Students will gain an understanding of solar energy.	L	• Uses of solar energy • Passive solar • Active solar • Photo voltaic	• Quizzes • Worksheets • Lab work	3.6
	9	Students will gain an understanding of wind power.	L	• Uses of wind power • Turbines • Savonius • Airfoils	• Quizzes • Worksheets • Lab work	3.6 3.7
IV. Fluid Power	10	Students will learn the basic	A	• Liquids	• Quizzes	3.6

Unit	Num	Objective	Level	Content	Evaluation	Standard
		principles of hydraulics.		• Pressure • Force • Power transfer • Power multiplication	• Lab work	
	11	Students will learn the basic principles of pneumatics.	A	• Gasses • Pressure • Force • Power transfer	• Quizzes • Lab work	3.6
V. Metal Fabricating/ Machining	12	Students will learn to layout, drill and cut metal.	L	• Measuring • Scribing • Lay out dyes (bluing) • Sawing Bandsaw Hacksaw • Abrasive wheels • Oxy fuel cutting (burning)	• Quizzes • Lab work	3.7
	13	Students will learn to identify and use a variety of mechanical fasteners.	L	• Nuts/bolts • Screws • Rivets	• Quizzes • Lab work	3.7
	14	Students will learn to fasten metal using adhesive bonds.	L	• Soft solder • Silver solder • Brazing	• Quizzes • Lab work	3.6
	15	Students will learn to fasten metal using cohesive bonds (welding).	L	• Oxyacetylene • SMAW (arc) • MIG • TIG	• Quizzes • Lab work	3.6 3.7
	16	Students will learn basic machining processes.	A	• Lathe turning • Milling • Drilling • Tapping • Reaming	• Quizzes • Lab work	3.7