

BERTHA-HEWITT HIGH SCHOOL
Fall Semester Curriculum Map 2015-16
Steve Pauly – Instructor
Course Length: 18 weeks (90 hours)
Program code: 019901
Course code: 52

Academic Standard Area: **Elective** *Course Title/Strand:* **Technical Science**

Grade Level: **10-12**

Textbook & Copyright: **Principles of Technology 2nd Edition 1990**

WEEK #	TIMELINE	CONTENT/UNIT/SUB-STRAND	PROCESS/ACTIVITY/STANDARD	GOALS/BENCHMARK	ASSESSMENT	RESOURCES
1	5 days	Subunit 1: Force in Mechanical systems	Student exercises, Math skills laboratory(working with vectors/substituting in formulas, Lab activity- Mechanical stress and measuring forces	Describe what is force, name the units of force, balanced forces, unbalanced forces, scalar, vectors, weight, mass,	Student exercises Math skills Lab activity End of unit test	Principles of Technology Unit 1 – force Second edition 1994
2	5 days	Subunit 2: Pressure in Fluid systems	Student exercises, math skills laboratory: substituting in formulas. Lab activity: Measuring specific gravity, Measuring pressure	Differences between hydraulic and pneumatic systems. Find density of substances. Determine specific gravity. Define buoyant force. Define pressure. Define atmospheric pressure. $P = \rho \times h$. Explain how manometers are used to measure pressures.	Student exercises Math skills Lab activity End of unit test	Principles of Technology Unit 1 – Force Second edition 1994
3	5 days	Subunit 3: voltage in electrical systems	Student exercises, math skills laboratory: working with graphs, Lab activity: Measuring voltages and electrical circuits	Differentiate between AC and DC current, Common source of DC voltage. Describe the sequence for connecting DC circuit in series. Identify three components of a circuit. Describe hertz in AC circuits. Describe voltage. Describe three types of voltmeters	Student exercises Math skills Lab activities End of unit test	Principles of technology Unit 1 – force Second edition 1994
4	5 days	Subunit 4: Temperature in Thermal systems	Student exercises, Math skills laboratory: Using formulas to calculate temperature. Lab	Use a formula to calculate the Fahrenheit temperature, given the	Student exercises Math skills Lab activities	Principles of Technology

			activity measuring temperatures with thermometers and thermocouples.	Celsius temperature. Calculate the Celsius temperature given the Fahrenheit temperature.	End of unit test	Unit 1 – Force Second edition 1994
5	5 days	Subunit 1: Work in Mechanical systems	Student exercises, math skills laboratory: Measuring angles in Radians/solving mechanical work problems. Lab activity: Work done by pulley's Work done by winch	Define work done by a force in mechanical systems. solve work problems given force and distance. Explain efficiency relating on input and output work. Torque and angle information in finding work in a mechanical system.	Student exercises Math skills Lab activities End of unit test	Principles of Technology Unit 2 – Work Second Edition 1990
6	5 days	Subunit 2: Work in Fluid systems	Student exercises, math skills laboratory: Reading Voltage Scales on multimeters /solving electrical work problems. Lab activity: Work done by a motor. Work done by a water Pump	Describe how open and closed systems are different. Describe how work is done in a fluid system. Work = Constant Pressure X Fluid volume moved. Work = Pressure Difference X Volume moved.	Student exercises Math skills Lab activities End of unit test	Principles of Technology Unit 2 – Work Second edition 1990
7	5 days	Subunit 3: Work in electrical systems	Student exercises, Math skills laboratory: Measuring angles in radians/solving mechanical work problems. Lab activity: Work done by a motor, and work done by a solenoid.	Work= voltage x Electrical charge moved. Basic charge is 1 coulomb. Solve electrical work problems, Identify work done on electrical systems	Student exercises Math skills Lab activities End of unit test	Principle of Technology Unit 2 – Work Second Edition 1990
8	5 days	Subunit 1: Rate in mechanical systems	Student exercises, Math skills laboratory: Rearranging symbols in rate equations to isolate certain unknowns/solving mechanical rate problems. Lab activity: Measuring rates on a conveyor belt and measuring angular rate with a stroboscope.	Distinguish between linear motion and rotational motion. Calculate average speed for non uniform motion over a distance. Calculate linear and angular rates by using the correct rate equations	Student exercises Math skills Lab activities End of unit test	Principles of Technology Unit 3 – Rate Second edition 1990
9	5 days	Subunit 2: Rate in Fluid Systems	Student exercises, Math skills laboratory, Lab activities: Measuring liquid flow-rate in a channel, Measuring gas-flow rate with an orifice.	Describe volume-flow rate. Describe a Mass-flow rate. Measuring rates in fluid systems	Student exercises Math skills Lab activities End of unit test	Principles of Technology Unit 3 – rate Second edition 1990

10	5 days	Subunit 3: Rate in electrical systems	Student exercises, Math skills laboratory, Lab activities: Measuring current and measuring frequency	Describe charge-flow rates. Explain the meaning of rate in electrical systems. distinguish between DC and AC current. Distinguish between frequency and period. Measuring rates in electrical systems	Student exercises Math skills Lab activities End of unit test	Principles of Technology Unit 3 – Rate Second edition 1990
11-12	10 days	Subunit 4: Rate in thermal systems	Student exercises, math skills laboratory, lab activities: Setting up steady state heat flow conditions. Measuring heat flow rate	Describe heat flow rate as heat energy moved per unit. Define rate units for thermal systems, using both English and SI measure. Explain the difference between sensible and latent heat	Student exercises Math skills Lab activities End of unit test	Principles of technology Unit 3 – rate Second edition 1990
13-14	10 days	Subunit 1: Resistance in Mechanical systems	Student exercises, Math Skills laboratory, Lab activity 4M1 and 4M2	Identify sources of resistance in mechanical systems. Kinetic and static friction, drag force, identify workplace applications	Student exercises Math skills Lab activities End of unit test	Principles of technology Unit 4 – resistance Second edition 1990
15 -18	20 days	Subunit 2: Resistance in Fluid systems Subunit 3 and 4 resistance in electrical and thermal systems.	Student exercises, Math skills laboratory, Lab activity 4F1 and 4F2	Resistance in fluid systems, streamline and turbulent flow, measure fluid resistance.	Student exercises Math skills Lab activities End of unit test	Principles of technology Unit 4 – resistanc Second edition 1990

Week 16 -18 15 days Subunit 3 and 4 in resistance in electrical systems thermal systems

Check the MN Dept of Ed website for Academic Standard information