Anoka-Hennepin Secondary Curriculum Unit Plan

Department:	Career and Technical Education	Course:	Advanced Automotive I: Brakes	Unit 3 Title:	Automotive Brake Systems	Grade Level(s):	11-12
Assessed Trimester:		Pacing:		Date Created:		Last Revision Date:	11/2014

Course Understandings: *Students will understand:*

- Specified academic and technical content, make connections, and apply in the automotive industry.
- The various levels of effective communication and its integral role in working with people and technology.
- How problem solving is a scientific process that translates into both personal and business situations.
- The automotive industry as a multifaceted system integrating policies and procedures at many levels.
- Resource management and obtaining information within diverse situations.

DESIRED RESULTS (Stage 1) - WHAT WE WANT STUDENT TO KNOW AND BE ABLE TO DO?

Established Goals

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Transfer

Students will be able to independently use their learning to: (product, high order reasoning)

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Meaning

Unit Understanding(s):	Essential Question(s):
Students will understand that: ● Essential laws of physics, motion, forces, hydraulics, thermodynamics, and chemical reactions and how these principles apply to the operation and diagnosis of automotive brake systems ● Principles and the use of equipment that is fundamental to brake systems and antilock brake systems (ABS) in the automotive industry ● Complex hydraulic braking and computer-controlled antilock systems through the contextual learning principles of transferring, relating, application, cooperation, and experience ● The theories of mechanics and physics and will build on the introductory work in technology systems and service technology done in the prerequisite courses	**Students will keep considering:** ●

Acquisition

Knowledge - Students will:	Skills - Students will:
● How to identify, describe, and perform basic types of chemical reactions synthesis, redox, addition, displacement, and decomposition ● Physical and chemical properties of matter ● The meaning of basic physics concepts of mechanics, forces, thermodynamics, heat, electricity, magnetism, optics, wave motion, acoustics, and atomic and nuclear physics ● The components of hydraulic brake system, drum/disc brakes, and power-assist units ● How to identify and interpret the anti-lock brake system ● How to verify a speaker's message	● Classify and analyze chemical reactions in a laboratory setting to apply in a real-world situation ● Connect molecular structure and chemical properties ● Apply the laws of motion, conservation of energy, types of forces, concepts of levers and torque, angular momentum, and gravitational forces ● Diagnose and repair malfunctions in a hydraulic brake system, drum/disc brakes, and power-assist units

● How to respond appropriately to anticipate needs, continue a process, or maintain a level of acceptability ● The purposes of the U.S. Occupational Safety and Health Act ● Effective work-ethic attitudes and behaviors that support the ability to be successful in job performance ● Employer expectations for maintaining a job ● Written information in prose and documents – including manuals, graphs, and schedules to perform tasks ● Proper safety procedures and hazard recognition when removing, cleaning, and inspecting master cylinders, calipers, wheel cylinders, brake pads and shoes, springs, pins, clips, levers, adjusters and self-adjusters, other related brake hardware, and backing support plates **Reasoning - Students will:** ●	● Diagnose and repair malfunctions in anti-lock brake system ● Interpret and verify customer concerns regarding the proper operation of the hydraulic brake system and antilock brake system (ABS) ● Perform tests and inspection to determine and make corrections to the causes for those concerns ● Discover personal interests in relationship to academic and vocational/technical skills and educational and occupational information. ● Apply this information to career choices within the context of the global economy ● Follow original equipment manufacturer's (OEM) procedures when diagnosing and servicing hydraulic, mechanical, and antilock brake components ● Demonstrate an understanding of and comply with relevant OSHA safety standards ● Demonstrate understanding of the role of a professional automotive technician and other dealership personnel and how effective communication processes and individuals contribute to the organization ● Display the ability to adjust behavior as appropriate to the dynamics of a situation, listening and responding with empathy and respect for the rights of others ● Model effective, open-minded, and equitable work attitudes and behaviors in both personal and professional settings with an awareness of the impact of learning, perceptions, beliefs, and interest on the value of work ● Implement methods of preventing accidents in a production service, and/or laboratory environment ● Analyze self-concept and develop skills in maintaining self-concept

Common Misunderstandings	**Essential new vocabulary**
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