

2010/2011 Auto Technology I
PTT302 - 36 weeks
DoDEA Course Description and Competencies

About the Program

Auto Technology I prepares students for careers in the Transportation, Distribution and Logistics industry. The course sequence focuses on duties and tasks performed by professionals in Facility and Mobile Equipment Maintenance as well as pre-employment and employment skills.

Major Concepts/Content: The automotive mechanics course is designed to provide students with entry-level job skills for occupations in the automotive service trade. The emphasis is on the service and repair of the following types of systems: transmission; ignition; fuel; cylinder block; cylinder head; brake; suspension, and electrical.

Major Instructional Activities: Instructional activities used in an automotive laboratory setting will provide hands-on experiences with automotive tools, equipment, and materials related to the course content. Students will: complete automotive servicing and repair activities; investigate content-related occupations; make visits to information centers and automotive-related industries; present ideas and information orally and in writing; and assume leadership roles within the framework of the classroom setting. Emphasis will be placed on self-concepts, values, decision-making skills, employer expectations, and work skills.

Major Evaluative Techniques: Students will be required to pass laboratory safety tests as well as content- and process-related tests. Automotive service and repair activities will be evaluated for completeness and accuracy. Written and oral reports will be evaluated for content and form. Class participation will be evaluated using criteria such as working conscientiously on a project, using materials properly, conscientiously assisting others, working independently, offering solutions to problems, and completing projects.

The table below is a competency list for the Auto Technology I course. The competencies are considered essential and are required of all students.

PTT302 36 weeks	Automotive Technology I TASKS/COMPETENCIES
Implementing DoDEA's CTE Course Requirements	
• 001	Demonstrate DoDEA's Workplace Readiness Skills in course activities.
• 002	Identify issues related to this field of study that affect the environment and impact local and global communities.
• 003	Identify Internet safety issues and procedures for complying with acceptable use standards.
Applying Safety Practices on the Job	
• 004	Identify the safe use of chemicals.
• 005	Identify the safe use and maintenance of hand tools.
• 006	Identify the safe use and maintenance of power tools.
• 007	Identify the safe use of protective clothing and equipment.
• 008	Identify the safe use of fire protection equipment.
• 009	Identify the safe use of shop equipment (including hydraulics).
• 010	Identify safe under-hood practices.

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• 011	Follow Environmental Protection Agency (EPA) and Occupational Safety and Health Act (OSHA) regulations.
Performing Shop Operations	
• 012	Communicate with customers, co-workers, and supervisors orally and in writing.
• 013	Generate a work order.
• 014	Obtain service information from shop manuals.
• 015	Practice clean and orderly work habits.
Practicing Job and Career Basics	
• 016	Identify basic functions and operations of vehicle mechanical components.
• 017	Identify the duties of an automotive technician.
• 018	Identify career opportunities in the automotive technology field.
Diagnosing and Servicing Battery	
• 019	Clean and inspect battery clamps, cables, and connectors.
• 020	Perform battery condition tests.
• 021	Jump start a vehicle.
• 022	Charge and install a battery.
• 023	Identify how to service and troubleshoot special battery applications (e.g., for electric car).
Diagnosing and Repairing General Engine	
• 024	Remove and replace engine.
Diagnosing and Repairing Cylinder Head and Valve Train	
• 025	Remove cylinder head(s).
• 026	Install cylinder head(s).
• 027	Recondition cylinder head(s).
• 028	Inspect and replace cam and related components.
Diagnosing and Repairing Short Block	
• 029	Inspect and replace pans, covers, gaskets, and seals.
• 030	Disassemble, inspect, and clean short block assembly.
• 031	Check and record short block measurements.
• 032	Check and record component measurements.
• 033	Clean and prep block and components for reassembly.
• 034	Reassemble short block, using correct lubricants, gaskets, sealers, and torque specifications.
Completing Engine Assembly and Initiating Start-up Procedure	
• 035	Complete engine assembly and pre-lube.
• 036	Start engine, and set fuel and ignition system to manufacturer's specifications.
Diagnosing and Repairing Lubrication and Cooling System	
• 037	Inspect, replace, and adjust drive belts and hoses.
• 038	Replace cooling system components (e.g., thermostat, radiator, controllers).
• 039	Inspect coolant, drain, flush, and refill cooling system with recommended coolant (recycling as appropriate).
• 040	Perform oil and lube service on normally aspirated and turbo-charged engines.
Diagnosing and Repairing Suspension and Steering System	

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• 041	Diagnose and determine needed repairs on steering system.
• 042	Clean/inspect power and manual rack and pinion steering.
• 043	Reassemble/adjust/install power/manual rack and pinion.
• 044	Inspect and replace steering linkage components.
• 045	Inspect, repair, and replace power steering pumps.
Diagnosing and Repairing Tire and Wheel	
• 046	Diagnose steering and tire wear problems, and determine needed repairs.
• 047	Identify how to adjust, camber, caster and toe adjustments on front, rear and all wheel drive vehicles.
• 048	Rotate and balance tire and wheel assemblies.
Diagnosing and Repairing Hydraulic Brake System	
• 049	Diagnose and determine needed repairs on hydraulic brake system.
• 050	Inspect and repair or replace master cylinders and lines of the hydraulic system.
Diagnosing and Repairing Drum Brakes	
• 051	Diagnose and determine needed repairs on drum brake systems.
• 052	Remove, clean, and inspect drum brake assemblies.
• 053	Repair, replace, and adjust drum brake components.
Diagnosing and Repairing Disc Brakes	
• 054	Diagnose and determine needed repairs on disc brake systems.
• 055	Remove, clean, and inspect disc brake components.
• 056	Repair, replace, and adjust disc brake components.
Diagnosing and Repairing Power-Assist Brakes	
• 057	Diagnose and determine needed repairs on power-assist brakes.
• 058	Repair or replace power brake components.
Developing Career Exploration and Employability Skills	
• 059	Identify characteristics of a successful automotive technician.
• 060	Investigate career opportunities.
• 070	Create or update a portfolio containing representative samples of student work.