

**COMPETENCY ASSESSMENT**

for

**AUTOMOTIVE SERVICE, SALES AND MARKETING (AK)**

Associate Degree/AAS

**AUTOMOTIVE SERVICE TECHNICIAN (AM)**

Certificate

**AUTOMOTIVE SERVICE TECHNOLOGY (AU)**

Associate Degree/AAS

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This document contains a list of courses, its description, primary concepts taught and job skills taught in the first year of the automotive programs. Please assess each applicable course by recommending or not recommending the student for advanced placement (please do not exceed 12 credits of advanced placement), sign, date and return this form to:

Pennsylvania College of Technology  
Office of Admissions  
One College Avenue  
Williamsport, PA 17701-5799

_____	_____
Student	Student ID Number
_____	_____
School	Date

H – Highly skilled, able to work independently  
M – Moderately skilled – requires minimum supervision  
L – Limited skills – requires full supervision  
N – Not covered in instruction or work experience

***For students / instructors in the State of Maryland.***

- (a) For students in Certified Maryland Career and Technology (CTE) Programs of Study, skip pages 2-5 and complete the form located on page 6 of this document.***
- (b) For students not in certified programs complete pages 2-5 of this form.***

## **AMT 111 – Manual Transmission and Transaxle Principles**

Theory and basic service techniques including power flow of standard transmissions/transaxles, clutches, universal and C-V joints, drive shafts, axles and differentials. 3 Credits (105 Hours).

### **Primary theoretical concepts taught:**

H M L N	Operation and nomenclature of clutches
H M L N	Operation and powerflow of standard transmissions
H M L N	Operation and powerflow of standard transaxles
H M L N	Purpose and operation of U-joints and C-V joints
H M L N	Purpose and operation of differentials
H M L N	Nomenclature of a common transmission
H M L N	Nomenclature of a common transaxle
H M L N	Nomenclature of a common differential
H M L N	Basic operation of an automatic transmission

### **Major areas of job skills taught**

H M L N	Clutch replacement and adjusting
H M L N	Overhaul of a common standard transaxle
H M L N	Overhaul of a common standard transmission
H M L N	Overhaul of a common differential
H M L N	Differential adjustment
H M L N	Disassemble, clean, and inspect transmission (rear wheel drive)
H M L N	Disassemble, clean, and inspect transaxle assembly
H M L N	Assemble transmission (rear wheel drive)
H M L N	Assemble transaxle
H M L N	Disassemble, clean and reassemble a constant velocity joint

\_\_\_\_\_ **I recommend advanced placement**

Student possesses knowledge and competence in these subjects and skill areas.

\_\_\_\_\_ **I do not recommend advanced placement**

Student does not possess knowledge and competence in these subjects and skill areas.

## **AMT 112 – Brake Systems**

Fundamentals of brake hydraulics, theory and operation of servo and non-servo drum brakes. Disc and drum brake machining, operation of disc brakes, theory of operation of power assist brakes, introduction to electronic anti-skid brakes. 3 Credits (80 Hours).

### **Primary theoretical concepts taught:**

H M L N	Basic hydraulic brake principles
H M L N	Mechanical energy to heat energy principles in braking
H M L N	Disc and drum brake nomenclature
H M L N	Drum brake operation principles (servo and non-servo action)
H M L N	Hydraulic operation principles
H M L N	Hydraulic mechanical advantage principles
H M L N	Dual master cylinder theory of operation
H M L N	Operation of hydraulic proportioning and metering valves
H M L N	Operation of pressure differential valve
H M L N	Disc brake operation principles
H M L N	Disassembly and assembly of drum brake assembly
H M L N	Disassembly and assembly of disc brake assembly
H M L N	Brake adjustment principles
H M L N	Hydraulic brake system bleeding principles
H M L N	Resurfacing brake drum and rotor
H M L N	Power brake system principles
H M L N	Electric and hydraulic operation of ABS

### **Major areas of job skills taught**

H M L N	Check master cylinder for internal and external leaks and proper operation; determine needed repairs
H M L N	Remove, bench bleed, and replace master cylinder
H M L N	Reset brake pressure differential valve
H M L N	Bleed (manual, pressure, vacuum, or surge) and/or flush hydraulic system
H M L N	Check and adjust master cylinder fluid levels
H M L N	Mount brake drum on lathe and machine braking surface
H M L N	Remove and reinstall/replace wheel cylinders
H M L N	Disassemble and clean wheel cylinder assembly; inspect parts for wear, rust, scoring, and damage; hone cylinder (if necessary and recommended by manufacturer)
H M L N	Replace all cups, boots, and any damaged or worn parts
H M L N	Test pedal free travel with and without engine running; check power booster operation
H M L N	Inspect the vacuum-type power booster unit for vacuum leaks; inspect the check valve for proper operation; repair or replace parts as necessary
H M L N	Diagnose wheel bearing noises, wheel shimmy and vibration problems; determine needed repairs

- H M L N Remove, clean, inspect, repack, or replace and pack wheel bearings, replace seals and adjust wheel bearings
- H M L N Check parking brake system; inspect cables and parts for wear, rusting binding and corrosion; clean or replace parts as necessary; lubricate assembly; adjust parking brake
- H M L N Test, adjust, repair or replace brake stop light switch and wiring

\_\_\_\_\_ **I recommend advanced placement**

Student possesses knowledge and competence in these subjects and skill areas.

\_\_\_\_\_ **I do not recommend advanced placement**

Student does not possess knowledge and competence in these subjects and skill areas.

### **AMT 113 – Steering and Suspension**

Principles of operation of steering and suspension, rack and pinion steering gears, and conventional steering gears with theory of operation of power steering gears, steering geometry, wheel alignment principles, and static and dynamic wheel balancing. 3 Credits (80 Hours).

#### **Primary theoretical concepts taught:**

- H M L N Different types of suspension systems
- H M L N Principles of suspension system operation
- H M L N Suspension system nomenclature
- H M L N Steering geometry
- H M L N Wheel alignment angles
- H M L N Four wheel alignment procedures
- H M L N Effects of misalignment on wheels
- H M L N Principles of wheel balance; static and dynamic
- H M L N Wheel balancing procedures and equipment
- H M L N Types of steering gears
- H M L N Types of steering linkage systems
- H M L N Steering gear and linkage nomenclature
- H M L N Power steering principles of operation

#### **Major areas of job skills taught**

- H M L N Diagnose steering and suspension problems
- H M L N Service wheel bearings
- H M L N Troubleshoot steering and suspension problems
- H M L N Remove and replace manual/power rack and pinion steering gear
- H M L N Adjust manual/power rack and pinion steering gear
- H M L N Inspect and replace manual/power rack and pinion steering gear inner tie rod ends (sockets) and bellows boots
- H M L N Inspect and replace McPherson strut cartridge or assembly

- H M L N      Inspect and replace front McPherson strut coil spring and insulators
- H M L N      Inspect and replace shock absorbers
- H M L N      Dismount, inspect, repair, and remount tire on wheel
- H M L N      Reinstall wheel, torque lug nuts
- H M L N      Perform a four wheel alignment

\_\_\_\_\_ **I recommend advanced placement**  
 Student possesses knowledge and competence in these subjects and skill areas.

\_\_\_\_\_ **I do not recommend advanced placement**  
 Student does not possess knowledge and competence in these subjects and skill areas.

**AMT 242 – Vehicle Safety Inspection**

Does the student possess a current PA Vehicle Safety Inspection License?

\_\_\_\_\_ Yes                      Comments:

\_\_\_\_\_ No

**COMMENTS AND/OR CLARIFICATIONS** (include any pertinent information or qualifications regarding skills, attitudes, etc.)

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**CERTIFICATION AND RECOMMENDATION**

I have reviewed the above competencies and believe, to the best of my knowledge; my assessment is fair and accurate. I recommend \_\_\_\_\_, recommend with qualifications, \_\_\_\_\_, do not recommend \_\_\_\_\_ this student for advanced placement.

\_\_\_\_\_  
 Name of High School Program

\_\_\_\_\_  
 Name

\_\_\_\_\_  
 Title

**Competency Assessment  
for  
Automotive Courses in State of Maryland**

Per the Statewide Articulation Agreement between Pennsylvania College of Technology and Maryland State Department of Education on behalf of local school systems, I certify that \_\_\_\_\_ has satisfactorily completed NATEF approved  
*(name of student)*

coursework and should receive advanced credit at Penn College for the following courses (please check all that apply):

_____	AMT-113 Steering Suspension	3-credit
_____	AMT-112 Brake Systems	3-credit
_____	AMT-109 Automotive Electrical Fundamentals	3-credit
_____	AMT-126 Engine Electrical Systems	4-credit
_____	AMT-121 Automotive Fuel and Emission Control Systems	2-credit
_____	<b>Total Credits Checked</b>	

I certify that the above named student has successfully completed student outcomes associated courses named above, and the student is scheduled for or has completed NATEF diagnostic examinations in these subjects.

Date or expected date of NATEF / NAT35A examination: \_\_\_\_\_ Please submit scores if already taken or forward to Penn College after scores are received. Scores must be received prior to July 1<sup>st</sup> of the year entering Penn College.

\_\_\_\_\_  
*Instructors Signature*

\_\_\_\_\_  
*Date signed*

CTE Director: I certify that our automotive program currently meets standards set forth for NATEF certification.

\_\_\_\_\_  
CTE Director Name

\_\_\_\_\_  
CTE Director Signature

\_\_\_\_\_  
Date