



Advance Automotive Technology (2 Credits)

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Classroom: D110

Course Description

Program Overview

Advance Automotive Technology is a two year program. Instruction is designed to provide job specific training for entry-level employment in the automotive repair and services career field. This is a NATEF Certified Program. We use the National Automotive Technician Education Foundation (NATEF) standards as a base on which to design our curriculum. The goal of this program is to provide all of our students the knowledge and experience needed to successfully pass the G-1, General (Automotive Service Excellence) certification exams.

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GRADE: 12

In this advanced level course students will explore safety, equipment, tools, and career opportunities. The fall semester focuses Shop Equipment, Safety, Engine Repair, Automatic Transmission and Transaxle, and Manual Drive Train and Axles. While the Spring Semester covers Engine Performance and Heating and Air Conditioning.

Automotive Maintenance & Light Repair by Rob Thompson is our textbook. We keep a classroom sets in each classroom.

Course Requirements

Students must successfully complete *Automotive Technology* before they will be considered for this advanced course.

Partnerships

- James Wood Chevrolet
 - Toyota of Denton
 - Brookhaven College
 - Eastfield College
 - Tommy's High Tech
 - Bill Utter Ford
 - Gentry's Muffler
 - Hunter Equipment
 - Advanced Auto Repair
 - Pro-Tech Automotive
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Material & Fees

This program mirrors the automotive repair industry. Professional dress and items of safety are required everyday. Students will not be allowed to participate unless they are properly dressed and have all materials needed for the days activities.

- Lanyard, ID, Parking
- Approved Safety Glasses {Clear Lenses Only}
- Automotive Technology Work Shirt

A \$78.00 fee is due upon acceptance into the Advanced Automotive Technology program. Scholarships are available to those students on the free or reduced lunch program. For more information about the fee scholarships contact Ms. Sherrill at 940-369-4854.

Students must also wear pants in keeping with the ATC student code of conduct and approved closed toed shoes that they will not mind getting dirt or grease on.

Additional cost for Skills USA dues and competition travel expenses will be required for those students wanting to compete at the Skills USA district and state level.

Grading

Automotive Technology is a Performance Based course with stringent Federal and State Objectives and Guidelines. Final Grades will be calculated as follows:

- Minor Summative: **30%** [Knowledge based assessments; i.e. quizzes, exams, projects]
- Major Summative: **70%** [Performance based assessments and Employability skills]

It is the student's responsibility to obtain and complete all missed assignments. Additionally, NATEF requires 540 contact hours for certification. It is the student's responsibility to arrange make-up times in order to meet this requirement.

Organizations

NTHS - National Technical Honor Society

Students at the ATC have the opportunity to be a part of the Nation Technology Honor Society. NTHS goals are to honor student achievement and leadership, promote educational excellence, and enhance career opportunities for the NTHS membership. To be a part of this organization you must meet the following criteria: 1. Student must have a 3.0 GPA. 2. Be a member of an ATC organization. 3. Letter of Recommendation from an instructor. 4. Have good attendance.

Skills USA

Skills USA is a national student leadership organization that holds district, state, and national competitions in Automotive Technology as well as general leadership. Students can win several thousands of dollars in scholarships.

Classroom Expectations and Rules

Classroom

This program area encompasses over 8000 sq. ft. of space with seven rooms. The nature of this program and the national standards that we are held to as a NATEF training facility makes it impossible for us to corral our students and expect them to complete the requirements of this class without opening up all of our resources everyday. A successful student is one who is able to exercise self-control, work alone as well as in groups and attends class everyday. They must attend everyday or make arrangements to come after school to make up their missed tasks. Most of what we do on a daily basis can not be completed anywhere besides our shop. Attendance is the most important key to success.

- Attend class everyday

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- Professional dress is required everyday no matter what the days activity may be
 - Safety Glasses are to be worn, as intended by the manufacturer, at all times while in designated areas
 - All Safety Glasses must be approved
 - All shoes worn to class must be approved
 - No loose baggy clothing
 - No long dangling ear rings or necklaces
 - No large metal belt buckles
 - Do not sit or lean on any car even if you own it
 - Strictly follow all Safety Procedures at all times
 - Inform Mr. Keith or Mr. Howard of any Medications, **prescription or over the counter**, before entering the shop or operating any equipment or tools.
 - "Zero Tolerance" on any form of "Horse Play" or any other behavior that may jeopardize the safety and well being of yourself or others
 - Respect all persons and property
 - Respect the diverse cultures
 - Follow all Campus, District, State, and Federal Rules and Laws
 - If you Spill it, Clean it up
 - If you Drop it, Pick it up
 - If you Get it out, Put it up
 - If you Open it, Close it
 - Stay out of all customer vehicles unless required for the repair {even if you own it}
 - Students shall surrender the keys to any vehicle brought into the shop area
 - Park in designated student parking areas
 - Be where you are supposed to be when you are supposed to be there. Do not interrupt the other Auto Tech class
 - Do not enter the instructors' offices without permission
 - Absolutely no food or drinks will be allowed in the computer lab or around any electronic tool or equipment in the facility
 - No Computer Games or outside disks will be permitted

These class rules are intended for the safety of all students, instructors, and visitors as well as the preservation of the facility and equipment. These rules are subject to change as events require. Please do your part to insure a safe and productive school year.

Computer Lab

We are fortunate to have our own computer lab within our program area. It is open and accessible to our students almost every day. Students must exercise self-control. Losing computer access could have a devastating effect on a student's ability to succeed in this program as our only technical information data base is located on our computers.

- Students shall not enter chat rooms.
- Students shall not enter morally questionable areas. [If a student should accidentally encounter an area of which they are unsure, the teacher should be immediately notified to assist in making the decision.]
- Students shall not print without permission
- Students shall not use the Internet without permission
- Students shall not download from the Internet without permission
- Students shall not use e-mail or any form of messaging, incoming or outgoing, without permission

The Internet Rules are intended for the proper use and preservation of the facility's computer equipment. Any violations of these rules may result in a loss of computer privileges. Any assignments requiring the use of a computer after a loss of privileges has occurred will require an alternate source of equipment. i.e. home, public library, parent's office, student's work. All Internet Rules are subject to change as events require.

Other Considerations

- The classroom environment associated with this course includes a complete Automotive Repair Shop. The equipment in this facility is of the same type and quality found in the majority of the dealerships and repair shops across the country.
- The students will be exposed to various chemicals and agents. A complete set of Material Safety Data Sheets on all chemicals is available for your inspection at any time or for use in case of emergency. If you have any

concerns about allergic reactions or any other health related issues please call or email Mr. Keith with these concerns.

- Students will be trained on the safe use of all equipment and chemicals used in this program. All Safety rules and guidelines will be strictly enforced. Any violations will result in immediate disciplinary action including possible removal from this class.
- Students may bring their personal vehicles for repair by appointment only. All repairs must be appropriate and align with this course curriculum. There will be **no** vehicle modifications.

Outline of Class

Advanced Automotive Technology

Week 1	Shop and Personal Safety
Week 2	Engine Repair, A. General
Week 3	Engine Repair, A. General
Week 4	Engine Repair, A. General
Week 5	Engine Repair, A. General
Week 6	Engine Repair, B. Cylinder Head and Valve Train
Week 7	Engine Repair, B. Cylinder Head and Valve Train
Week 8	Engine Repair, C. Lubrication and Cooling Systems
Week 9	Engine Repair, C. Lubrication and Cooling Systems
Week 10	Automatic Transmission and Transaxle, A. General
Week 11	Automatic Transmission and Transaxle, B. In-Vehicle Transmission/Transaxle
Week 12	Automatic Transmission and Transaxle, C. Off-Vehicle Transmission/Transaxle
Week 13	Manual Drive Train and Axles, A. General
Week 14	Manual Drive Train and Axles, B. Clutch
Week 15	Manual Drive Train and Axles, C. Transmission/Transaxle
Week 16	Manual Drive Train and Axles, D. Drive Shaft, Half Shafts, Universal and CV Joints
Week 17	Manual Drive Train and Axles, E. Differential Case Assembly
Week 18	Manual Drive Train and Axles, F. Four-Wheel Drive/All-Wheel Drive

Advanced Automotive Technology

Spring Semester

Week 1	Engine Performance, A. General
Week 2	Engine Performance, A. General
Week 3	Engine Performance, A. General
Week 4	Engine Performance, A. General
Week 5	Engine Performance, A. General
Week 6	Engine Performance, A. General
Week 7	Engine Performance, A. General
Week 8	Engine Performance, A. General
Week 9	Engine Performance, B. Computerized Controls
Week 10	Engine Performance, B. Computerized Controls
Week 11	Engine Performance, B. Computerized Controls
Week 12	Engine Performance, C. Fuel, Air Induction, and Exhaust Systems
Week 13	Engine Performance, C. Fuel, Air Induction, and Exhaust Systems
Week 14	Engine Performance, D. Emission Control Systems
Week 15	Heating and Air Conditioning, A. General

Week 16	Heating and Air Conditioning, B. Refrigeration System Components
Week 17	Heating and Air Conditioning, C. Heating, Ventilation, and Engine Cooling Systems
Week 18	Heating and Air Conditioning, D. Operating System

Classroom TEKS

§130.397. Advanced Automotive Technology (Two Credits).

Units of Study:

Introduction automotive services: Knowledge and Skills

Automotive Shop Safety. The student knows the functions and applications of the tools, equipment, technologies, and materials used in automotive services. The student is expected to:

- (A) demonstrate knowledge of the technical knowledge and skills related to health and safety in the workplace, as specified by appropriate government regulations
- (B) discuss the proper handling and disposal of environmentally hazardous materials used in servicing vehicles; and
- (C) safely use hand and power tools and equipment commonly employed in the maintenance and repair of vehicles.

Careers and certification: Knowledge and Skills

(1) The student knows the employability characteristics of a successful worker in the modern workplace. The student is expected to:

- (A) identify employment opportunities, including entrepreneurship, and certification requirements for the field of automotive or diesel services;
- (B) demonstrate the principles of group participation and leadership related to citizenship and career preparation;
- (C) identify employers' expectations and appropriate work habits;
- (D) apply the competencies related to resources, information, systems, and technology;
- (E) demonstrate knowledge of the technical knowledge and skills related to health and safety in the workplace, as specified by appropriate government regulations;
- (F) discuss ethics in a variety of workplace scenarios.

(2) The student relates academic skills to the requirements of automotive or diesel services. The student is expected to demonstrate effective oral and written communication skills with individuals from varied cultures such as fellow workers, management, and customers;

(3) The student knows the technical knowledge and skills that form the knowledge of automotive or diesel services. The student is expected to:

- (A) describe the function of the major components of powered vehicles such as engines, fuel, lubrication, cooling, electrical, and air conditioning systems;
- (B) describe the function of the automotive or diesel chassis components such as braking, steering, transmission, and suspension systems;
- (C) locate, read, and interpret documents such as schematics, charts, diagrams, graphs, parts catalogs, and service-repair manuals and bulletins;

Tools & fasteners: Knowledge and Skills

(4) The student knows the functions and applications of the tools, equipment, technologies, and materials used in automotive or diesel services. The student is expected to:

- (A) Safely use hand and power tools and equipment commonly employed in the maintenance and repair of
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vehicles;

(B) discuss the proper handling and disposal of environmentally hazardous materials used in servicing vehicles;

(C) demonstrate knowledge of new and emerging automotive or diesel technologies.

Shop operations: Knowledge and Skills

(5) The student applies the technical knowledge and skills of the trade-to-work situations. The student is expected to:

(A) order, stock, and locate parts;

(B) remove, repair, and replace engine components;

(C) service and repair braking, steering, and suspension systems;

(D) service and repair electrical and electronic systems;

(E) service and repair air-conditioning, heating, and accessory systems;

(F) inspect, service, and repair chassis and power train components and systems;

(G) service and repair cooling and lubrication systems.

Introductory Electrical: Knowledge and Skills

(3) The student knows the technical knowledge and skills that form the knowledge of automotive services. The student is expected to:

(C) locate, read, and interpret documents such as schematics, charts, diagrams, graphs, parts catalogs, and service-repair manuals and bulletins;

(5) The student applies the technical knowledge and skills of the trade-to-work situations. The student is expected to:

(D) service and repair electrical and electronic systems;

(E) service and repair air-conditioning, heating, and accessory systems;

(F) inspect, service, and repair chassis and power train components and systems.

Introductory Brakes: Knowledge and Skills

(3) The student knows the technical knowledge and skills that form the knowledge of automotive or diesel services. The student is expected to:

(A) describe the function of the major components of powered vehicles such as engines, fuel, lubrication, cooling, electrical, and air conditioning systems;

(B) describe the function of the automotive or diesel chassis components such as braking, steering, transmission, and suspension systems;

(C) locate, read, and interpret documents such as schematics, charts, diagrams, graphs, parts catalogs, and service-repair manuals and bulletins;

(5) The student applies the technical knowledge and skills of the trade-to-work situations. The student is expected to:

(C) service and repair braking, steering, and suspension systems;

(F) inspect, service, and repair chassis and power train components and systems;

(H) perform regular audits and inspections to maintain compliance with safety, health, and environmental regulations.

Introductory to steering suspension: Knowledge and Skills

(3) The student knows the technical knowledge and skills that form the knowledge of automotive or diesel

services. The student is expected to:

- (A) describe the function of the major components of powered vehicles such as engines, fuel, lubrication, cooling, electrical, and air conditioning systems;
- (B) describe the function of the automotive or diesel chassis components such as braking, steering, transmission, and suspension systems;
- (C) locate, read, and interpret documents such as schematics, charts, diagrams, graphs, parts catalogs, and service-repair manuals and bulletins;
- (D) perform precision measurements to diagnose component wear, compare to published specifications, and determine necessary repair;

(5) The student applies the technical knowledge and skills of the trade-to-work situations. The student is expected to:

- (C) service and repair braking, steering, and suspension systems;
- (F) inspect, service, and repair chassis and power train components and systems;
- (H) perform regular audits and inspections to maintain compliance with safety, health, and environmental regulations.

Introductory Engine Performance: Knowledge and Skills

(3) The student knows the technical knowledge and skills that form the knowledge of automotive or diesel services. The student is expected to:

- (A) describe the function of the major components of powered vehicles such as engines, fuel, lubrication, cooling, electrical, and air conditioning systems;
- (C) locate, read, and interpret documents such as schematics, charts, diagrams, graphs, parts catalogs, and service-repair manuals and bulletins;
- (D) perform precision measurements to diagnose component wear, compare to published specifications, and determine necessary repair;

(5) The student applies the technical knowledge and skills of the trade-to-work situations. The student is expected to:

- (B) remove, repair, and replace engine components;
 - (D) service and repair electrical and electronic systems;
 - (E) service and repair air-conditioning, heating, and accessory systems;
 - (G) service and repair cooling and lubrication systems;
 - (H) perform regular audits and inspections to maintain compliance with safety, health, and environmental regulations.
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Parent Signature

Please sign the following sheet and return to your teacher. A signature indicates that you have read the course policies and understand them.

Student Name _____

Student Signature _____

Parent Name _____

Parent Signature _____

Date _____