

**I. COURSE DESCRIPTION:**

- A. Department Information:  
Division: Technical  
Department: Automotive  
Course ID: AUTO 084  
Course Title: General Automotive Technology  
Units: 4  
Lecture: 3 Hours  
Laboratory: 3 Hours  
Prerequisite: None
- B. Catalog and Schedule Description:  
General theory, principles, and service procedures relating to an introduction to automotive maintenance with emphasis on component identification, basic functions, minor maintenance, and service.

**II. NUMBER OF TIMES COURSE MAY BE TAKEN FOR CREDIT: One**

**III. EXPECTED OUTCOMES FOR STUDENTS:**

Upon completion of the course, the student will be able to:

- A. Demonstrate proper shop safety procedures.  
B. Describe the requirements for ASE certification as an automotive technician and a master auto technician.  
C. Identify components of the major vehicle systems.  
D. Describe the theory of operation of the major vehicle systems and components.  
E. Perform preventative maintenance services.  
F. Utilize industry manuals, "Mitchell on Demand" computer reference materials, and specialized tools and equipment.  
G. Perform a 27point inspection sheet and document needed repairs.  
H. Demonstrate proper use of automotive tools and equipment.

**IV. COURSE CONTENT:**

- A. Introduction to General Automotive Repair  
1. Course overview  
2. Assessment and certification overview  
3. Class and shop rules  
4. Career opportunities and continuing education  
5. Industry ethics
- B. Safety  
1. Shop and personal safety procedures  
2. Hazardous materials  
a. Types  
b. Storage  
c. Material Safety Data Sheets  
d. Handling  
e. Emergency procedures  
3. Vehicle specific procedures  
4. Power and hand tool safety  
5. Personal safety
- C. Introduction to Automotive Industry  
1. Overview of automotive industry  
2. Proper safety procedures  
3. Service consultants and accountant positions  
4. Technician, parts consultant, and management positions  
5. Employment and job retention skills

- D. Automotive Tools
  - 1. Overview of automotive tools
  - 2. Safety procedures
  - 3. Hand tools
  - 4. Air tools
  - 5. Welding tools
  - 6. Electronic diagnostic tools
  - 7. General shop equipment
- E. Diagnosing by Theories of Inspection
  - 1. Overview of theories of inspection
  - 2. Safety procedures
  - 3. Component location and inspection
  - 4. Checking leaks in engine compartment
  - 5. Checking leaks under vehicle
  - 6. Inspecting body mounted components
- F. Fasteners
  - 1. Overview of automotive fasteners
  - 2. Safety procedures
  - 3. Diagnostic equipment and special tools
  - 4. Identifying nuts and bolts
  - 5. Internal thread repair
  - 6. Stud and broken bolt removal
  - 7. Solderless connectors
  - 8. Electrical connectors
- G. Making and Reading Measurements
  - 1. Overview of automotive measurements
  - 2. Safety procedures
  - 3. Diagnostic equipment and special tools
  - 4. Feeler gauges
  - 5. Micrometer
  - 6. Dial indicator
  - 7. Vacuum gauge
  - 8. Compression gauge
  - 9. Multi-meter
- H. Servicing Bearings and Installing Sealants
  - 1. Overview of automotive sealants and bearings
  - 2. Safety procedures
  - 3. Diagnostic equipment and special tools
  - 4. Inspect, analyze symptoms, diagnose, and service sub-components and assemblies
    - a. Wheel bearings
    - b. Axle bearings
    - c. Hub and bearings
  - 5. Preparing and cleaning gasket surfaces
- I. Engine Service
  - 1. Overview of automotive engine operation
  - 2. Safety procedures
  - 3. Diagnostic equipment and special tools
  - 4. Inspect, analyze symptoms, diagnose, and service sub-components and assemblies
    - a. Upper engine
    - b. Lower engine
    - c. Cooling system
    - d. Auxiliary engine components
- J. Driveline Service
  - 1. Overview of automotive driveline operation

2. Safety procedures
  3. Diagnostic equipment and special tools
  4. Inspect, analyze symptoms, diagnose, and service sub-components and assemblies
    - a. Transmission
    - b. Propeller shaft
    - c. Differential
- K. Suspension and Steering Service
1. Overview of automotive suspension and steering
  2. Safety procedures
  3. Diagnostic equipment and special tools
  4. Inspect, analyze symptoms, diagnose, and service sub-components and assemblies
    - a. Front suspension components
    - b. Rear suspension components
    - c. Steering components
    - d. Tire and wheels
- L. Brake Service
1. Overview of brake system
  2. Safety procedures
  3. Diagnostic equipment and special tools
  4. Inspect, analyze symptoms, diagnose, and service sub-components and assemblies
    - a. Disc brake system
    - b. Drum brake system
    - c. Power brake assist system
    - d. ABS system
- M. Auxiliary Systems
1. Overview of automotive auxiliary systems
  2. Safety procedures
  3. Diagnostic equipment and special tools
  4. Inspect, analyze symptoms, diagnose, and service sub-components and assemblies
    - a. Warning lights
    - b. Gauges
    - c. Lighting system
    - d. Climate control
    - e. Anti-theft

**V. METHODS OF INSTRUCTION:**

Methods of instruction will vary from instructor to instructor but may include: Lecture, classroom discussion, small and large group projects, computer-based training, and laboratory "Task Sheet" demonstrations.

**VI. TYPICAL ASSIGNMENTS:**

- A. Read textbook and answer questions at the end of each chapter.  
Typical Question: Explain the four types of fires and the materials involved in each.
- B. Critical thinking and problem solving
  1. Review the manufactures procedures and write an overview of the procedures.
  2. Inspect and evaluate failed parts then write a report.
  3. Compare cost of a proper repair and a cut-rate repair; explain why cheaper is not economical.
- C. Lab assignments  
Complete task sheets per NATEF standards from shop workbook  
Typical Assignments:
  1. Complete a cover letter and resume.

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2. Locate the source of leak.
3. Restore damage external threads.

**VII. EVALUATION(S):**

- A. Methods of evaluation:
1. Chapter review questions  
Typical Questions:
    - a. List components in a wheel bearing.
    - b. Explain how a hydraulic clutch operates.
  2. Assigned laboratory projects
  3. Quizzes
  4. Midterm examination
  5. Final examination  
Typical Questions:
    - a. Define the difference between hazardous waste and hazardous material?
    - b. What is the purpose of a socket extension?
  6. Writing assignment  
Typical Assignments:
    - a. Research paper pertaining to automotive technology.
    - b. Create a work order detailing customer concerns.
- B. Frequency of evaluation:
1. Eight tests at the end of each unit
  2. Weekly essay questions on reading material
  3. Weekly quizzes - ASE sample test questions
  4. Weekly lab task sheet assignments
  5. One midterm examination
  6. One final examination
  7. One writing assignment

**VIII. TYPICAL TEXT(S):**

James Halderman/Chase Mitchell, Automotive Technology: Principles, Diagnosis and Service, 1st Edition, Prentice Hall, 1999

Tim Giles, Automotive Service, Delmar, 1999

Jack Erjavec, Automotive Technology, 3<sup>rd</sup> Edition, Delmar, 2000

Anthony E. Schwaller, Motor Automotive Technology, 3<sup>rd</sup> Edition, Delmar, 1999

**IX. OTHER SUPPLIES REQUIRED OF STUDENTS:**

Safety equipment