Automotive Engine Repair

Class
AUMT 1319

Fundamentals of engine operation, diagnosis, and repair, including lubrication systems and cooling systems. Emphasis on overhaul of selected engines, identification and inspection, measurements, and disassembly, repair, and reassembly of the engine. May be taught manufacturer-specific.

STUDENT BEHAVIOR/CLASSROOM DECORUM: Students are encouraged to discuss, inquire, and express their thoughts and views during class. Classroom behavior that interferes with either the instructor's ability to conduct the class or the ability of students to benefit from the instruction is not acceptable. Students are required to turn off all cell phones or similar electronic devices (or place them on silent mode) before coming into the classroom. The instructor reserves the right to assign no credit for work on that day if a student talks or texts on a cell phone or similar electronic device. The classroom is not a place for children, and students are not to bring their family members into the classroom.

NETIQUETTE POLICY: This term is used to describe accepted, proper behavior on the Internet. Remember the following when communicating online (messages, discussion board, etc.):

- Never post profanity, racist, or sexist messages
- Be respectful of fellow students and instructors
- Never insult any person or their message content
- Never plagiarize or publish intellectual property
- Do not use text messaging abbreviations or slang
- Do not type in all CAPS (this is considered online yelling)

PROGRAM DRESS CODE:

Your appearance in the program must model industry expectations on a daily basis. The entire dress code will be covered during safety training. The following items are the minimum requirements for this course:

1. Belt, if required, to hold your pants up; should not have a metal buckle
2. No loose-fitting clothing
3. No wallet chains, keys, cell phone holders
4. Remove jewelry
5. Tie long hair back or keep it under a shop-type cap
6. Appropriate work boots/shoes are recommended

If you are caught without safety glasses, you will lose your daily points for the day as your first warning (you will not be allowed in the shop). On the second warning, you will be dismissed from class for that day. On the third warning, you will have to report to the Dean to discuss why you are not complying with this important safety rule.

Course Learning Objectives
Students completing this course will be able to utilize safety procedures; explain engine operating principles; demonstrate engine diagnostic procedures; and repair cylinder heads, valve trains, block assemblies, lubrication, and cooling systems.

Learning outcomes are linked to SCANS requirements. Specific SCANS requirements are linked to the class schedule.

1. The student will demonstrate the ability to diagnose and repair engine mechanical problems. The student will be able to

    1. Demonstrate the ability to diagnose engine noises and evaluate engine condition (1a, 1b, 2c, 2d, 2e);
    2. Disassemble an engine (1a, 1b, 2c, 2d, 2e);
    3. Visually inspect engine components for wear and damage (1a, 1b, 2c, 2d, 2e);
    4. Use precision measuring instruments to determine wear (1a, 1b, 2c, 2d, 2e).

2. The student will assemble an engine using appropriate tools and specifications. The student will be able to
    1. Assemble an engine (1a, 1b, 2c, 2d, 2e);
    2. Utilize special tools and manufacturer's specifications (1a, 1b, 2c, 2d, 2e).
3. The student will demonstrate the ability to diagnose and repair cooling and lubrication systems. The student will be able to
    1. Diagnose cooling systems and lubrication systems (1a, 1b, 2c, 2d, 2e);
    2. Repair cooling systems and lubrication systems (1a, 1b, 2c, 2d, 2e).
4. The student will demonstrate an understanding of personal and laboratory safety. The student will be able to
    1. Explain the practices necessary to ensure a minimal chance of personal injury or property damage (1b, 1c, 2a, 2e);
    2. Practice proper safety procedures in the classroom and laboratory (1b, 1c, 2a, 2e).

Required Textbooks

Today's Technician: Basic Automotive Service and Systems, Classroom Manual, and Shop Manual 6th edition

By Chris Hadfield, John Witthauer

E-book included with Cengage Unlimited subscription, required for all AUMT courses.

SUPPLIES AND EQUIPMENT: Tool list to be provided by the instructor.

COPYRIGHT POLICY: Unless a student has obtained permission from the copyright holder, it is a violation of Copyright Law to print or photocopy chapters from a textbook that the student did not purchase. If the course requires the use of an electronic textbook, a student must look for a statement that allows for photocopying and/or printing of the eTextbook.

Evaluation Standards

Periodic tests, both objective and skill-based, allow the student to demonstrate their level of achievement in each competency.

Student success is measured by assessment techniques aligned to course goals and learning outcomes. A variety of techniques may be used, including but not limited to objective exams, written reports, performance charts, portfolios, oral presentations or demonstrations, and group projects. Individual faculty members are responsible for designing evaluation instruments to measure student mastery of course goals and learning outcomes and for indicating the nature of such instruments in the instructor's class requirements.

Drop Date

If you intend to withdraw from the course or resign from the college, you must initiate the action by logging into Coyote Connect. The instructor will not withdraw you automatically.

Absences

ATTENDANCE POLICY: It is the student's responsibility to maintain regular contact with instructors. Class attendance is the responsibility of the student. All students must be officially enrolled in any course that they attend. It is expected that students attend all classes and be on time. If an absence occurs, it is the responsibility of the student to make up examinations, obtain lecture notes, and otherwise compensate for what may have been missed. Students who stop attending class and do not officially drop, withdraw, or resign from the college may receive a grade of "F" for all coursework missed. Absences affect performance in this course and do not reflect well on participation. No student may substitute the attendance of another student.

Students should frequently check Canvas (Learning Management System) for notifications and updates to the course. Students are expected to use the online resources provided by WC to:

1. Track course assignments and progress

2. Discuss topics and issues with fellow students

3. Turn in assignments, quizzes, and tests

4. Check for any updates, changes, or alterations to the course

5. Access all course materials to include presentations, assignments, quizzes, and tests.

Instructional Methods
Lecture, demonstrations, lab esperiences.

Disabilities
ADA Statement:

Any student with a documented disability (e.g. learning, psychiatric, vision, hearing, etc.) may contact the Office on the Weatherford College Weatherford Campus to request reasonable accommodations. *Phone:* 817-598-6350 *Office Location:* Office Number 118 in the Student Services Building, upper floor. *Physical Address:* Weatherford College 225 College Park Drive Weatherford, TX.

Academic Integrity
Academic Integrity is fundamental to the educational mission of Weatherford College, and the College expects its students to maintain high standards of personal and scholarly conduct. Academic dishonesty of any kind will not be tolerated. Academic dishonesty includes, but is not limited to, cheating on an examination or other academic work, plagiarism, collusion, and the abuse of resource materials including unauthorized use of Generative AI. Departments may adopt discipline specific guidelines on Generative AI usage approved by the instructional dean. Any student who is demonstrated to have engaged in any of these activities will be subject to immediate disciplinary action in accordance with institutional procedures.

Program Learning Outcomes
Upon completion of the program, graduates will be able to:

- Perform tasks to diagnose and repair components of electrical/electronic systems, and heating, ventilation and air conditioning systems.
- Perform tasks to diagnose and repair automotive engine and power train systems.
- Perform tasks to diagnose and repair components of automotive suspension and steering systems.
- Perform tasks to diagnose and repair components of hydraulic and anti-lock brake systems.

SCANS
The Secretary's Commission on Achieving Necessary Skills (SCANS) identified competencies in the areas of Resources, Interpersonal, Information, Systems, and Technology; and foundation skills in the areas of Basic Skills and Personal Qualities. This course is part of a program in which each of these competencies and skills are integrated. For the application of specific SCANS competencies and skills in this course.

SCANS Competencies and Foundations			
Automotive Engine Repair			
RESOURCES			
C1 Allocates Time			
C2 Allocates Money			
C3 Allocates Material & Facility Resources	X		
C4 Allocates Human Resources			
INFORMATION			
C5 Acquires & Evaluates Information	X		
C6 Organizes & Maintains Information	X		
C7 Interprets & Communicates Information	X		
C8 Uses Computers to Process Information			
INTERPERSONAL			

C9 Participates as a Member of a Team	**X**
C10 Teaches Others	**X**
C11 Serves Clients Customers	
C12 Exercises Leadership	**X**
C13 Negotiates to Arrive at a Decision	
C14 Works with Cultural Diversity	**X**
SYSTEMS	
C15 Understands Systems	**X**
C16 Monitors & Corrects Performance	**X**
C17 Improves & Designs Systems	
TECHNOLOGY	
C18 Selects Technology	**x**
C19 Applies Technology	**x**
C20 Maintains & Troubleshoots Technology	**x**
BASIC SKILLS	
F1 Reading	**X**
F2 Writing	
F3 Arithmetic	**X**
F4 Mathematics	
F5 Listening	**X**
F6 Speaking	**X**
THINKING SKILLS	
F7 Creative Thinking	**X**
F8 Decision Making	**X**
F9 Problem Solving	**X**
F10 Seeing Things in the Mind's Eye	
F11 Knowing How to Learn	**X**
F12 Reasoning	**X**
PERSONAL QUALITIES	
F13 Responsibility	**X**
F14 Self-Esteem	**X**
F15 Social	
F16 Self-Management	**X**
F17 Integrity/Honesty	**X**

	Resources: Identifies, organizes, plans, and allocates resources.
	C1 Time: Selects goal-relevant activities, ranks them, allocates time, and prepares and follows schedules.
	C2 Money: Uses or prepares budgets, makes forecasts, keeps records, and makes adjustments to meet objectives.
	C3 Materials and Facilities: Acquires, stores, allocates, and uses materials or space efficiently.
	C4 Human Resources: Assesses skills and distributes work accordingly, evaluates performance and provides feedback.
	Information: Acquires and uses information.

	C5 Acquires and evaluates information.
	C6 Organizes and maintains information.
	C7 Interprets and communicates information.
	C8 Uses computers to process information.
	Interpersonal: Works with others.
	C9 Participates as a member of a team: Contributes to group effort.
	C10 Teaches others new skills.
	C11 Serves Clients/Customers: Works to satisfy customers' expectations.
	C12 Exercises Leadership: Communicates ideas to justify position, persuades and convinces others, and responsibly challenges existing procedures and policies.
	C13 Negotiates: Works toward agreements involving the exchange of resources; resolves divergent interests.
	C14 Works With Diversity: Works well with men and women from diverse backgrounds.
	Systems: Understands complex interrelationships.
	C15 Understands Systems: Knows how social, organizational, and technological systems work and operate effectively with them.
	C16 Monitors and Corrects Performance: Distinguishes trends, predicts impacts on system operations, diagnoses system performance, and corrects malfunctions.
	C17 Improves or Designs Systems: Suggests modifications to existing systems and develops new or alternative systems to improve performance.
	Technology: Works with a variety of technologies.
	C18 Selects Technology: Chooses procedures, tools, or equipment, including computers and related technologies.
	C19 Applies Technology to Task: Understands overall intent and proper procedures for setup and operation of equipment.
	C20 Maintains and Troubleshoots Equipment: Prevents, identifies, or solves problems with equipment, including computers and other technologies.
	Basic Skills: Reads, writes, performs arithmetic and mathematical operations, listens, and speaks.
	F1 Reading: Locates, understands, and interprets written information in prose and in documents such as manuals, graphs, and schedules.
	F2 Writing: Communicates thoughts, ideas, information, and messages in writing; creates documents such as letters, directions, manuals, reports, graphs, and flow charts.
	F3 Arithmetic: Performs basic computations; uses basic numerical concepts such as whole numbers, etc.
	F4 Mathematics: Approaches practical problems by choosing appropriately from a variety of mathematical techniques.
	F5 Listening: Receives, attends to, interprets, and responds to verbal messages and other cues.
	F6 Speaking: Organizes ideas and communicates orally.
	Thinking Skills: Thinks creatively, makes decisions, solves problems, visualizes, knows how to learn, and reasons.
	F7 Creative Thinking: Generates new ideas.
	F8 Decision Making: Specifies goals and constraints, generates alternatives, considers risks, and evaluates and chooses the best alternative.
	F9 Problem Solving: Recognizes problems and devises and implements plan of action.
	F10 Seeing Things in the Mind's Eye: Organizes and processes symbols, pictures, graphs, objects, and other information.
	F11 Knowing How to Learn: Uses efficient learning techniques to acquire and apply new knowledge and skills.
	F12 Reasoning: Discovers a rule or principle underlying the relationship between two or more objects and applies it when solving a problem.
	Personal Qualities: Displays responsibility, self-esteem, sociability, self-management, integrity, and honesty.

	F13 Responsibility: Exerts a high level of effort and perseveres toward goal attainment.
	F14 Self-Esteem: Believes in own self-worth and maintains a positive view of self.
	F15 Sociability: Demonstrates understanding, friendliness, adaptability, empathy, and politeness in group settings.
	F16 Self-Management: Assesses self accurately, sets personal goals, monitors progress, and exhibits self-control.
	F17 Integrity/Honesty: Chooses ethical courses of action.