SAN DIEGO COMMUNITY COLLEGE DISTRICT
CONTINUING EDUCATION
COURSE OUTLINE

SECTION I

SUBJECT AREA AND COURSE NUMBER

AUTO 509

COURSE TITLE

FLEET SERVICE TECHNICIAN

TYPE COURSE

NON-FEE VOCATIONAL

CATALOG COURSE DESCRIPTION

This is an open entry/exit course designed to prepare students for employment as a fleet service technician. Instruction includes; safety procedures; vehicle maintenance; engine theory and minor repair; introduction to electrical systems; braking system service; front and rear suspensions; fuel delivery systems; tune up and drivability; introduction to transmission and driveline components. Instruction will take place in a simulated work environment and where appropriate, instructions will meet National Automotive Technician Education Foundation Standards. (FT)

LECTURE HOURS	LABORATORY HOURS
126	144

ADVISORY

California Driver's License

RECOMMENDED SKILL LEVEL

Eighth grade reading level, ability to communicate effectively in the English language, and a knowledge of general math.

INSTITUTIONAL STUDENT LEARNING OUTCOMES

1. Social Responsibility
   SDCE students demonstrate interpersonal skills by learning and working cooperatively in a diverse environment.
2. Effective Communication
   SDCE students demonstrate effective communication skills.

INSTITUTIONAL STUDENT LEARNING OUTCOMES (CONTINUED)

3. Critical Thinking
   SDCE students critically process information, make decisions, and solve problems independently or cooperatively.
4. Personal and Professional Development
   SDCE students pursue short term and life-long learning goals, mastering necessary skills and using resource management and self-advocacy skills to cope with changing situations in their lives.

COURSE GOALS

To provide instruction in the operational theory and maintenance of minor repair procedures for today's automotive systems; to develop problem solving techniques in order to diagnose various automotive problems; to enhance the student's reading, writing, math and communication skills so that they may interact successfully with employers and customers; to provide work experience in a simulated work environment representative of those encountered in the automotive repair industry today. This experience will include instruction in common business practices, ethics, and integrity. Students who successfully complete the course will qualify for an entry level position as a fleet service technician in the automotive repair industry.

COURSE OBJECTIVES

Students will demonstrate through practical applications, written and oral communications skills their ability to:

1. Apply general safety practices and procedures related to the automotive industry.
2. Select and properly use the correct hand power tools and diagnostic equipment required to repair today's automobiles.
3. Demonstrate competence in diagnosing and repairing minor malfunctions in the gasoline engine and its electrical ignition, fuel and emission control systems to meet appropriate NATEF standards.
4. Demonstrate competence by diagnosing and repairing minor malfunctions in a vehicle's, drivetrain, suspension and brake systems, to meet appropriate NATEF standards.
5. Perform prescribed preventive maintenance to a vehicle, as outlined by the manufacturer's recommended schedule.
6. Demonstrate professional ethics, personal integrity, good business practices, and customer relation skills which meet the standards of the California Department of Consumers Affairs.

SECTION II

COURSE CONTENT AND SCOPE

All modules of the program contain the following:

1. Systems Description
2. Theory of Operation
3. Component Functions
4. Diagnostic Procedures
5. System/component Test and Repair Procedures
6. Related Technology

COURSE CONTENT AND SCOPE (CONTINUED)

UNIT I

Math review for this unit will cover the following areas: addition; subtraction; multiplication and division of whole numbers; fractions; and decimals; simple algebraic expressions and the metric system.

Module I 7 Hrs.
Safety

1. Program Orientation
2. Facilities Orientation
   - 2.1. Safety equipment
   - 2.2. Types
   - 2.3. Locations
3. Common Types Of Injuries
   - 3.1. Burns
   - 3.2. Asbestos hazards
   - 3.3. Chemical hazards
   - 3.4. Traffic hazards
4. Tool Safety
   - 4.1. Hand tools
   - 4.2. Electrical tools
   - 4.3. Hydraulic tools
   - 4.4. Pneumatic tools
5. Fire Safety

UNIT II

Math review for this unit will cover the following areas: addition; subtraction; multiplication and division of whole numbers; fractions and decimals; simple algebraic expressions; the metric system; prefixes, linear measurements; graphs; ratios; degrees and angles; percentages; reading dial-gages; volume; measures; liquid measurement; weigh and mass.

Module II 30 Hrs.
Suspension and Steering

1. Suspension Function, Diagnosis and Minor Repair
    1.1. Front suspension systems
    1.2. Rear suspensions system
    1.3. Preventive maintenance services
2. Front and Rear Wheel Alignment Theory
3. Tire and Wheel Service
4. Steering Systems Operation and Minor Repair
    4.1. Steering columns and manual steering gears
    4.2. Power assisted steering systems
    4.3. Steering and suspension system

COURSE CONTENT AND SCOPE (CONTINUED)

5. Steering and Suspension System Lubrication and Maintenance Service

Module III 80 Hrs.
Brakes

1. Hydraulic Brake System Operation and Minor Service
    1.1. Master cylinder
    1.2. Fluids, lines, hoses
    1.3. Valves and switches
    1.4. Bleeding, flushing, and leak testing
2. Drum Brake Operation, Service
3. Disc. Brake Operation, Service
4. Power Assisted Units

Module IV 10 Hrs.
Business Procedures and Customer Relations

1. Business Conduct and Ethics
    1.1. Consumer affairs
2. Repair Orders and Job Scheduling
3. Phone Skills
4. Oral and Written Communications
5. Keyboarding Skills and Computer Literacy For Use in this Field

UNIT III

Math review for this unit will cover the following areas: addition; subtraction; multiplication and division of whole numbers, fractions and decimals; simple algebraic expressions; the metric system; prefixes; linear measurements; graphs; ratios; degrees and angles; percentages; reading dial gages; volume measures; liquid measurements; weight and mass.

Module V 80 Hrs.
Engine Theory and Minor Repair

1. General Engine Diagnosis
2. Lubrication and Cooling System Function and Diagnosis and Minor Repair

3. Ignition System Function
4. Fuel and Exhaust Systems Function
5. Battery Starting and Charging System Function

Module VI 15 Hrs.
Automatic Transmission/Transaxle

1. General Transmission/Transaxle Function, Diagnosis and Minor Repair
2. Transmission/Transaxle Maintenance and Adjustments
3. Drive (half) Shafts and Universal Joint Function, Diagnosis and Service

COURSE CONTENT AND SCOPE (CONTINUED)

Module VII 15 Hrs.
Manual Drivetrain/Rear Axles

1. Clutch Function, Adjustment, Diagnosis and Minor Repair
   1.1. Manual and hydraulic
2. Transmission Function, Diagnosis
3. Driveshaft and Universal Joint Functions Diagnosis and Minor Repair
4. Rear Axle and Differential Function, Diagnosis and Minor Repair

Module VIII 15 Hrs.

Electrical/Electronics Systems

1. General Electrical Systems Diagnosis, Battery Function, Service and Diagnosis
2. Starting System Function Diagnosis and Repair
3. Charging System Function, Diagnosis and Repair
4. Overview of the Chassis and Accessory System
5. Use of Diagnostic and Testing Equipment

Unit IV

Math review or this unit will cover the following areas: addition; subtraction; multiplication and division of whole numbers; fractions and decimals; simple algebraic expressions; the metric system; prefixes; linear measures; graphs; ratios; degrees and angles; percentages; reading dial-gages; volume measures; liquid measurement; weigh and mass.

Module IX 18 Hrs.
Engine Tune and Performance

1. General Engine Diagnosis
2. Ignition Systems Operation, Service, Minor Adjustments and Repairs
3. Fuel Systems Operation, Service, Minor Adjustments and Repairs

APPROPRIATE READINGS

1. *Getting Started in Electronics*, Mims, 1992
2. *Manual Transmission and Transaxles*, Jalk Erjavec, 1992
3. *Brake Handbook*, Brotch, Verlag, and Utobrunn/Munchen, 1990
4. *Principles of Wheel Alignment Service*, Bacon, 1992

WRITING ASSIGNMENTS

Typical writing assignments may include:

1. Completing assigned reports.
2. Providing written answers to assigned questions.
3. Performing arithmetic calculation as assigned.
4. Completing repair orders.

OUTSIDE ASSIGNMENTS

Students are expected to spend a minimum of two hours per day outside of class in practice and preparations for each day in class. Appropriate assignments may include, but are not limited to:

1. Appropriate readings.
2. Preparing research reports.
3. Preparing appropriate writing assignments.
4. Studying as needed to perform successfully in class.

APPROPRIATE ASSIGNMENTS THAT DEMONSTRATE CRITICAL THINKING

Students will perform analysis and evaluation of reading and or classroom material utilizing the analysis in classroom discussion, writing assignments, and performing laboratory activities. Students must select and use appropriate methods and materials needed to complete laboratory assignments.

EVALUATION

A student's grade will be based on multiple measures of performance. The assessment will measure development of independent critical thinking skills and will include evaluation of the student's ability to:

1. Perform the manipulative skills of the craft, as required, to NATEF standards.
2. Apply theory to laboratory assignments.
3. Perform on written, oral, or practical examinations.
4. Contribute to class discussions.
5. Maintain attendance per current policy.

Satisfactory completion of the course requires completion of a culminating activity, which may include, but is not limited to one of the following:

EVALUATION (CONTINUED)

1. Written reports.
2. Classroom presentation.
3. Research project.
4. Industry involvement.

The culminating activity will require the student to utilize the new skills that he/she acquired during the course.

The student will receive an evaluation at the end of each module or when requested by the student. A grade point average of 2.0 or grade C or better must be achieved for satisfactory completion.

Upon satisfactory completion of all modules a course Certificate Of Completion will be issued.

NOTE: If a student's goal is to complete one or more of the individual modules, upon satisfactory completion of that module a Certificate Of Achievement may be issued.

METHOD OF INSTRUCTION

Classroom lectures, demonstrations, laboratory, audio-visual presentations and computer assisted instruction. Group and individual instruction. Field trips, job shadowing and internships may be utilized.

TEXTS AND SUPPLIES

Texts:

Automotive Technology, 2nd ed., Anthony Schawller, 1993
Automotive Technology Workbook, 2nd ed,, Anthony Schawller, 1993

PREPARED BY Terry Conners DATE February, 1996

REVISED BY Instructional Services, SLOs added DATE March 8, 2017

Instructors must meet all requirements stated in Policy 3100 (Student Rights, Responsibilities and Administrative Due Process), and the Attendance Policy set forth in the Continuing Education Catalog.

REFERENCES:

San Diego Community College District Policy 3100
California Community Colleges, Title 5, Section 55002
Continuing Education Catalog