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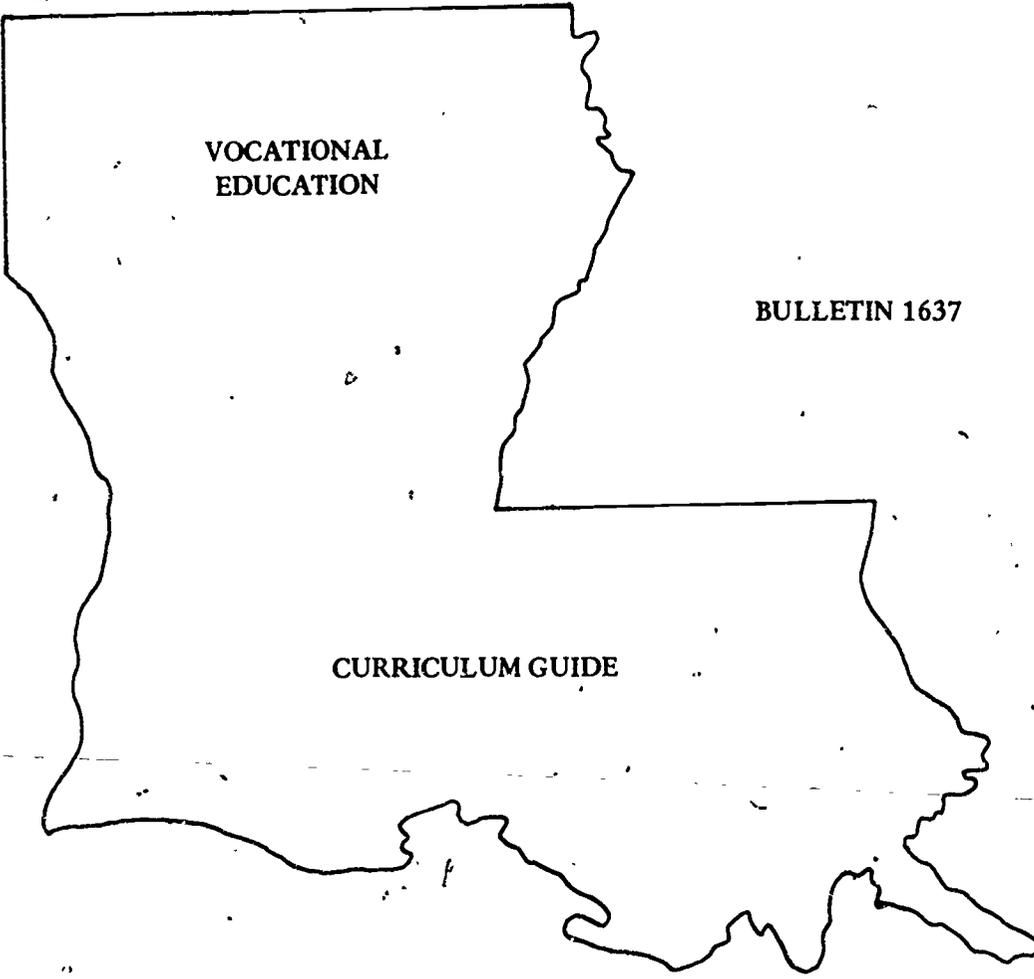
This curriculum outline for secondary automotive mechanics is structured around Louisiana's Vocational-Technical Automotive Mechanics Curriculum. The curriculum is composed of 16 units of instruction, covering the following topics: benchwork, fundamentals of automotive engines, preventive maintenance, automotive brakes, steering and front suspension, drive train and rear suspension, manual transmissions, automatic transmissions, fuel systems, accessories, complete automotive service, welding, and mathematics. The outline lists the instructional units to be taught for each year of a four-year secondary automotive mechanics program for either two-hour block or three-hour block courses. The curriculum outline also describes the curriculum and lists related study assignments and job sheets that are to be used with each unit. In addition, a list of required texts and resource materials is included. The curriculum outline was prepared to provide continuity between the secondary automotive mechanics program and automotive mechanics programs on the postsecondary levels. (KC)

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AUTOMOTIVE MECHANICS CURRICULUM OUTLINE FOR SECONDARY SCHOOLS

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Issued By

Louisiana State Department of Education

J. KELLY NIX
State Superintendent

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STATE OF LOUISIANA
DEPARTMENT OF EDUCATION

BULLETIN 1637

AUTOMOTIVE MECHANICS
CURRICULUM OUTLINE
SECONDARY

Issued by

Office of Vocational Education

N. J. Stafford, Jr., Ed.D.
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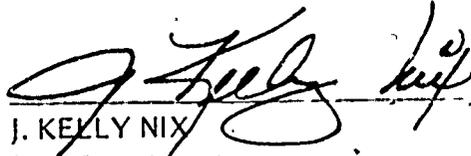
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FOREWORD

In our highly technical and rapidly changing industrial world of today, reference books, materials and techniques constantly become outdated. Keeping vocational curricula current with industry needs is imperative if vocational education is to meet its objectives.

In order to eliminate duplication of time and effort, this curriculum guide was developed to articulate the secondary and post-secondary automotive mechanics programs.



J. KELLY NIX
State Superintendent

ACKNOWLEDGMENTS

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INTRODUCTION

The following curriculum outline for Secondary Automotive Mechanics is structured around Louisiana's Vocational-Technical Automotive Mechanics Curriculum. This curriculum is composed of sixteen (16) units of instruction. The outline lists the instructional units to be taught for each year of a Secondary Automotive Mechanics program for either a Two-Hour Block or Three-Hour Block Program. By utilizing the available curriculum materials, the instructor has an opportunity to provide better instruction to students by following a proven curriculum.

ABOUT THE CURRICULUM

Each unit contains Related Study Assignments, Assignment Tests, Test Answers and Job Sheets. These are structured as follows:

Related Study Assignment: Contains an assignment objective, introduction listing technical information, list of resource reading assignments, and study questions that help meet the objective.

Assignment Test: Written test to measure student's achievement of the Related Study Assignment objective.

Test Answers: Provided for each assignment test for the instructor's use only.

Job Sheets: Job sheets are an important segment of each unit. The instructor should be able to, and in most situations should, demonstrate the skills outlined in the job sheets. Procedures outlined in the job sheets give direction to the skill being taught and allow both student and instructor to check student progress toward the accomplishment of the skill. A job objective, along with the necessary tools, materials and equipment and safety precautions, are also given. Job sheets provide a ready outline for a student to follow if he/she has missed a demonstration. Job sheets also furnish potential employers with a picture of the skills being taught and the performances she/he might reasonably expect from a person who has had this training.

The materials are primarily designed to be used as individualized instructional materials or for group structured teaching. A curriculum structured around these materials will provide continuity between secondary and post-secondary programs.

AUTOMOTIVE MECHANICS SECONDARY CURRICULUM

	<u>3-Hour Block</u>	<u>2-Hour Block</u>
<u>FIRST YEAR</u>		
Unit I	Benchwork 60	40
Unit II	Fundamentals of Automotive Engines 60	40
Unit III	Preventive Maintenance 120	80
Unit IV	Automotive Brakes 60	40
Unit IX	Fuel Systems 110	60
Unit X	Electrical Systems (Fundamentals) 115	90
Unit XV:	Mathematics (Integrated as Needed) 15	10
	540	360

SECOND YEAR

Unit X	Electrical Systems 245	160
Unit VI	Drive Train and Rear Suspension R.S.A. 2 (only)	
Unit VII	Manual Transmissions R.S.A. 1- and R.S.A. 2 (only)	
Unit VIII	Automatic Transmissions R.S.A. 1 (only) 90	60
Unit XIV	Complete Automotive Service 30	30
Unit IV	Automotive Brakes 60	40
Unit IX	Fuel Systems 100	60
Unit XVI	Mathematics 15	10
	540	360

THIRD YEAR

Unit V	Steering and Front Suspension 60-120	60
Unit XII	Air Conditioning and Heating Systems 60	40
Unit VI	Drive Train and Rear Suspension 120	50
Unit XI	Engine Repair	
Unit XIII	Accessories 240	
	Selective Studies	210
	540	360

FOURTH YEAR

Advanced Systems—Must be approved by State Department of Education	540	360
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LOUISIANA VOCATIONAL-TECHNICAL EDUCATION
AUTOMOTIVE MECHANICS CURRICULUM
Unit Outline

- Unit I Benchwork
- Unit II Fundamentals of Automotive Engines
- Unit III Preventive Maintenance
- Unit IV Automotive Brakes
- Unit V Steering and Front Suspension
- Unit VI Drive Train and Rear Suspension
- Unit VII Manual Transmissions
- Unit VIII Automatic Transmissions
- Unit IX Fuel Systems
- Unit X Electrical Systems
 - Part A Basic Electricity
 - Part B Ignition Systems
 - Part C Starting Systems
 - Part D Charging Systems
 - Part E Chassis Electrical Systems
- Unit XI Engine Repairs
- Unit XII Air-Conditioning and Heating Systems
- Unit XIII Accessories
- Unit XIV Complete Automotive Service
- Unit XV Welding
- Unit XVI Mathematics

**LOUISIANA VOCATIONAL-TECHNICAL EDUCATION
AUTOMOTIVE MECHANICS CURRICULUM
Detailed Outline**

UNIT I—BENCHWORK

- R.S.A. 1 Orientation and Safety in the Shop (Safety Test)

- R.S.A. 2 Hand Tools
Job 2 Identify Hand Tools

- R.S.A. 3 Measuring Devices
Job 3 Use of Measuring Devices

- R.S.A. 4 Fastening Devices
Job 4 Identify Fastening Devices

- R.S.A. 5 Grinding and Sharpening Tools
Job 5 Drill Grinding Gauge
Job 5A Sharpen a Twist Drill
Job 5B Grinding and Sharpening Tools

- R.S.A. 6 Drilling Equipment
Job 6 Drilling Exercises

- R.S.A. 7 Taps and Dies
Job 7 Make Internal Thread Block
Job 7A Make Steering Wheel Puller (Optional)

- R.S.A. 8 Installation and Removal of Studs
Job 8 Remove a Broken Stud

- R.S.A. 9 Repair of Damaged Internal Threads
Job 9 Install Insert
Job 9A Install Heli-Coil (Optional)

- R.S.A. 10 Soldering
Job 10 Solder Wire Splice
Job 10A Solder Job (Instructor's Choice)

- R.S.A. 11 Tubing
Job 11 Bending, Cutting, and Flaring Tubing

UNIT II—FUNDAMENTALS OF AUTOMOTIVE ENGINES

- R.S.A. 1 Fundamentals of Engines
Job 1 Identify Engine Parts

- R.S.A. 2 Measurement and Performance of Engines
Job 2 Measure Engine Parts

UNIT III—PREVENTIVE MAINTENANCE

- R.S.A. 1 Engine Lubricating Systems
Job 1 Lift an Automobile With Jacks
Job 1A Drain Crankcase, Replace Filter and Refill Crankcase
- R.S.A. 2 Drive Train Lubricants
Job 2 Check Drive Train Lubricant Levels
- R.S.A. 3 Chassis Lubrication
Job 3 Lubricate Automobile
- R.S.A. 4 Battery Service
Job 4 Service Battery and Battery Box
- R.S.A. 5 Air Cleaners
Job 5 Service Air Cleaners
- R.S.A. 6 Cooling Systems
Job 6 Test and/or Replace Antifreeze
Job 6A Service Fan Belt and Fan Clutch
Job 6B Service Cooling System Hoses, Thermostat, and Water Pump
Job 6C Pressure Test Radiator and Cap and Service as Needed
- R.S.A. 7 Positive Crankcase Ventilation System
Job 7 Service PCV Valve System
Job 7A Service Emission Control Hoses
- R.S.A. 8 Heat Control Valve
Job 8 Service Heat Control Valve and Exhaust Gasket Flange
- R.S.A. 9 Mufflers and Tail Pipes
Job 9 Install Mufflers and Tail Pipes and Adjust Brackets
- R.S.A. 10 Headlights and Taillights
Job 10 Install Sealed Beam Headlights and Aim
Job 10A Install Dimmer Switch (Optional)
Job 10B Install Taillight Bulb
Job 10C Install Stoplight Switch
Job 10D Service Turn Signal and Backup Lightbulbs
Job 10E Check and Install Fuse
- R.S.A. 11 Front Wheel Service
Job 11 Service Front Wheel Bearings—Drum
Job 11A Service Front Wheel Bearings—Disc
- R.S.A. 12 Automotive Tires
Job 12 Tire Service
Job 12A Static Balance Tires

UNIT IV—AUTOMOTIVE BRAKES

- R.S.A. 1 Principles of Hydraulic Brake Systems
- Job 1 Bleed Hydraulic Brake System and Replenish Brake Fluid (Manual)
- Job 1A Bleed Hydraulic Brake System and Replenish Brake Fluid (Pressure)
- Job 1B Bleed Hydraulic Brake System and Replenish Brake Fluid (Bleed Disc Brakes)

- R.S.A. 2 Hydraulic Brake Components and Skid Control
- Job 2 Disassemble and Reassemble Single and Dual Master Cylinder (Mock Up)
- Job 2A Remove and Recondition a Master Cylinder (Single)
- Job 2B Remove and Recondition a Master Cylinder (Dual)
- Job 2C Remove, Recondition and Replace Wheel Cylinder
- Job 2D Replace Broken Brake Lines

- R.S.A. 3 Brake Shoes and Linings
- Job 3 Replace Brake Shoes of an Automobile

- R.S.A. 4 Brake Drums
- Job 4 Recondition Brake Drums

- R.S.A. 5 Power Brakes
- Job 5 Become Familiar with a Power Brake Unit (Mock Up)

- R.S.A. 6 Disc Brakes
- Job 6 Overhaul a Complete Disc Brake System (Hydraulic System Included)
- Job 6A Recondition Disc of Disc Brakes

- R.S.A. 7 Complete Brake System
- Job 7 Overhaul a Complete Brake System

UNIT V—STEERING AND FRONT SUSPENSION

- R.S.A. 1 Steering Linkage and Front-End Suspension Assemblies
- Job 1 Remove and Replace Tie Rod Assemblies
- Job 1A Remove and Replace Idler Arm
- Job 1B Remove and Replace Front Coil Spring
- Job 1C Remove and Replace Torsion Bar and Adjust Riding Height
- Job 1D Disassemble, Service and Reassemble Front-End Suspension Systems

- R.S.A. 2 Operating Principles of Shock Absorbers and Stabilizers
- Job 2 Remove and Replace Front Shock Absorbers
- Job 2A Remove and Replace Front Stabilizers

- R.S.A. 3 Principles of Front-End Geometry
- Job 3 Check Suspension Components and Wheel Runout
- Job 3A Align Front End

- R.S.A. 4 Wheel Balancing
- Job 4 Balance Wheels On Vehicle
- Job 4A Balance Wheels Off Vehicle

UNIT V—STEERING AND FRONT SUSPENSION: Continued

- R.S.A. 5 Manual Steering Gear Principles
- Job 5 Adjust Steering Gear Lash
- Job 5A Remove, Overhaul and Replace Steering Gear

- R.S.A. 6 Power Steering Principles
- Job 6 Test Power Steering Assembly
- Job 6A Remove, Overhaul, Replace and Adjust Integral Power Steering Unit
- Job 6B Test and Repair Linkage-Type Power Steering System

UNIT VI—DRIVE TRAIN AND REAR SUSPENSION

- R.S.A. 1 Rear Suspension Systems
- Job 1 Remove, Service and Replace Coil Springs, Bushings and Shock Absorbers
- Job 1A Remove, Service and Replace Rear Leaf Springs

- R.S.A. 2 Universal Joints and Drive Shafts
- Job 2 Remove, Repair and Replace Universal Joint (Cross and Two-Yoke Type)
- Job 2A Remove, Repair and Replace Universal Joint (Constant Velocity Type)
- Job 2B Check Drive Shaft Alignment (Per Manufacturer's Specifications)

- R.S.A. 3 Principles of the Differential
- Job 3 Remove and Replace Rear Axle Seals and Bearings (Removable Carrier Type)
- Job 3A Remove and Replace Rear Axle Seals and Bearings (Integral Housing Type)
- Job 3B Disassemble, Reassemble and Adjust Differential (Removable Carrier Type)
- Job 3C Disassemble, Reassemble and Adjust Differential (Integral Housing Type)

- R.S.A. 4 Differential Service
- Job 4 Overhaul Differential (Instructor's Option)

- R.S.A. 5 Limited Slip Differential
- Job 5 Overhaul Limited Slip Differential

UNIT VII—MANUAL TRANSMISSIONS

- R.S.A. 1 Principles of the Clutch
- Job 1 Adjust Clutch Pedal Free-Play
- Job 1A Repair, Bleed and Adjust Hydraulic Clutch

- R.S.A. 2 Clutch Service
- Job 2 Remove and Replace Clutch

- R.S.A. 3 Principles of Syncromesh Transmissions
- Job 3 Adjust Gearshift Linkage
- Job 3A Disassemble and Assemble 3-Speed Syncromesh Transmission
- Job 3B Disassemble and Assemble 4-Speed Syncromesh Transmission

- R.S.A. 4 Manual Transaxles
- Job 4 Remove, Disassemble, Assemble and Replace Manual Transaxle

UNIT VIII—AUTOMATIC TRANSMISSIONS

- R.S.A. 1 Automatic Transmission Principles
Job 1 Adjust Linkage/Perform Pressure Test, Change Fluid, Filter and Adjust Bands
- R.S.A. 2 Power Glide
Job 2 Disassemble, Assemble and Adjust Power Glide Transmission
- R.S.A. 3 Turbo-Hydromatic
Job 3 Disassemble, Assemble and Adjust Turbo-Hydromatic Transmission
- R.S.A. 4 C-4 Ford
Job 4 Disassemble, Assemble and Adjust C-4 Ford Transmission
- R.S.A. 5 C-6 Ford
Job 5 Disassemble, Assemble and Adjust C-6 Ford Transmission
- R.S.A. 6 Torque Flite
Job 6 Disassemble, Assemble and Adjust Torque Flite Transmission
- R.S.A. 7 Automatic Transaxles
Job 7 Remove, Disassemble, Assemble and Replace Automatic Transaxle

UNIT IX—FUEL SYSTEMS

- R.S.A. 1 Automotive Fuel
- R.S.A. 2 Fuel Tanks, Fuel Lines and Fuel Strainers or Filters
Job 2 Perform Maintenance on Fuel Lines and Fuel Tanks
- R.S.A. 3 Fuel Pumps
Job 3 Test Fuel Pump (Use Vacuum Gauge and Tachometer)
Job 3A Remove and Replace Fuel Pump
- R.S.A. 4 Principles of Carburetion
Job 4 Disassemble and Assemble a Mock-Up Carburetor (Dead Job)
- R.S.A. 5 Special Devices
Job 5 Identify Special Devices
- R.S.A. 6 Single-Barrel Carburetors
Job 6 Overhaul Single-Barrel Carburetor
- R.S.A. 7 Two-Barrel Carburetors
Job 7 Overhaul Two-Barrel Carburetor
- R.S.A. 8 Four-Barrel Carburetors
Job 8 Overhaul Four-Barrel Carburetor
- R.S.A. 9 Variable-Venturi Carburetors
Job 9 Overhaul Variable-Venturi Carburetor

UNIT IX—FUEL SYSTEMS: Continued

- R.S.A. 10 Fuel Injection Systems
Job 10 Check Operation of Fuel Injection System
- R.S.A. 11 Introduction to Emissions Control Test Equipment
Job 11 To Adjust CO and HC Levels to Specifications
- R.S.A. 12 Emission Control Systems
Job 12 Clean and Check Thermostatic Air Cleaner
Job 12A Test and Replace PCV Valve and Check Hose
Job 12B Test and Replace EGR Valve
Job 12C Test, Remove and Replace Air Injection Pump
Job 12D Test Fuel Evaporation System and Over-Fill Limiting Valve
- ~~R.S.A. 13~~ Catalytic Converters
Job 13 R & R Catalytic Converter
Job 13A Recharge Catalytic Converter
- R.S.A. 14 Turbo Chargers

UNIT X—ELECTRICAL SYSTEMS

Part A: Basic Electricity

- R.S.A. 1 Fundamentals of Electricity and Magnetism
Job 1 Identify Conductors and Insulators
- R.S.A. 2 Electromagnetic Induction, Capacitors, Test Meters and Test Problems
Job 2 Use a Voltmeter, Ammeter and Ohmmeter
- R.S.A. 3 Electrical Diagrams
Job 3 Identify Codes, Symbols and Size of Wire
Job 3A Trace Electrical Circuits
- R.S.A. 4 Batteries
Job 4 Make Battery Capacity Test

Part B: Ignition Systems

- R.S.A. 1 Primary Ignition Circuit (Conventional System)
Job 1 Remove and Replace Ignition Points, Test Coil and Condenser, and Set Dwell and Timing
- R.S.A. 2 Secondary Ignition Circuit (Conventional System)
Job 2 Service Sparkplugs, High Tension Wires, Distributor Cap, Coil and Rotor
Job 2A Check Ignition Compression
- R.S.A. 3 Electronic Ignition
Job 3 Test and Service an Electronic Ignition System

UNIT X—ELECTRICAL SYSTEMS: Continued

- R.S.A. 4 Automotive Oscilloscope
Job 4 Interpret Automotive Oscilloscope Waveforms
- R.S.A. 5 Ignition Advance and Retard
Job 5 Check Spark Advance and Retard Mechanisms
- R.S.A. 6 Primary Circuit Resistance
Job 6 Check Ignition Resistor
Job 6A Check Primary Circuit for Excessive Resistance
Job 6B Remove and Replace Ignition Switch
- R.S.A. 7 Manifold Vacuum
Job 7 Check Engine Manifold Vacuum—Gauge Interpretation
- R.S.A. 8 Complete Diagnostic Tune-Up
Job 8 Perform Complete Diagnostic Tune-Up (Electronic Engine Tester)

Part C: Starting Systems

- R.S.A. 1 Starting Motor Principles and Basic Circuits
Job 1 Test a Starter Circuit for Amperage, Insulation and Connection Resistance
Job 1A Remove and Replace Starter
Job 1B Test and Recondition an Automotive Starter
- R.S.A. 2 Starter Drives
Job 2 Remove and Replace Starter Drive
- R.S.A. 3 Starter Controls
Job 3 Service Starter Solenoid and Cables
Job 3A Test Starter Circuit from Switch
Job 3B Replace and Adjust Starter Neutral Switch

Part D: Charging Systems

- R.S.A. 1 Operating Principles of AC Generators and Regulators
Job 1 Read Schematics
- R.S.A. 2 Generating Systems
Job 2 Test AC Generator Output
Job 2A Remove, Disassemble, Test, Repair and Replace Alternator
Job 2B Check and Adjust Mechanical Voltage Regulator Assembly
Job 2C Check and Service Transistor and/or Electronic Regulator Assembly
Job 2D Check and Service Integral Regulator Assembly
- R.S.A. 3 Charge Indicator Principles
Job 3 Check and Service Charge Indicator System

UNIT X—ELECTRICAL SYSTEMS—Continued

Part E—Chassis Electrical Systems

- | | | |
|--------|-----|---|
| R.S.A. | 1 | Headlights—Wiring Diagrams and Circuits |
| Job | 1 | Install and Focus a Sealed Beam Headlight—Test for Voltage |
| Job | 1A | Service Headlight Doors |
| R.S.A. | 2 | Dimmer Switches |
| Job | 2 | Remove and Replace Dimmer Switch—Check for Voltage |
| R.S.A. | 3 | Headlight Switches |
| Job | 3 | Test for Voltage—Remove and Replace Headlight Switch—Replace High-Beam Indicator Bulb |
| R.S.A. | 4 | Taillight Circuits—Wiring Diagrams |
| Job | 4 | Check for Voltage and Short Circuits—Replace Bulb(s) In Taillight Circuit |
| R.S.A. | 5 | Stoplight Circuits—Wiring Diagrams |
| Job | 5 | Troubleshoot Stoplight Circuit |
| Job | 5A | Remove, Replace and Adjust Stoplight Switch |
| R.S.A. | 6 | Turn Signal/Hazard Circuits—Wiring Diagrams |
| Job | 6 | Troubleshoot Turn Signal/Hazard Lighting Circuit |
| Job | 6A | Remove and Replace Turn Signal Switch |
| R.S.A. | 7 | Horns and Horn Circuits |
| Job | 7 | Troubleshoot and Repair a Horn Circuit |
| R.S.A. | 8 | Engine Indicator Circuits—Wiring Diagrams |
| Job | 8 | Troubleshoot Oil Pressure, Alternator and Temperature Indicating Circuits |
| R.S.A. | 9 | Fuel Level Indicator Systems |
| Job | 9 | Test and Service Fuel Level Indicator System |
| R.S.A. | 10 | Windshield Wipers and Washers |
| Job | 10 | Service a Windshield Wiper/Washer Assembly |
| Job | 10A | Check Voltage in Windshield Wiper Circuit |
| Job | 10B | Remove and Replace Windshield Wiper Arms and Transmissions |

UNIT XI—ENGINE REPAIRS

- | | | |
|--------|---|---|
| R.S.A. | 1 | Engine Fundamentals and Components |
| Job | 1 | Disassemble and Reassemble a Mock-Up Engine |

UNIT XI—ENGINE REPAIRS: Continued

- R.S.A. 2 Gaskets and Oil Seals
Job 2 Remove and Replace Valve Cover Gaskets
Job 2A Remove and Replace Intake Manifold Gaskets
Job 2B Remove and Replace Oil Pan Gasket (Engine in Car)
Job 2C Remove and Replace Rear Main Oil Seal (Engine in Car)
Job 2D Remove and Replace Front Cover Seal and/or Gasket
- R.S.A. 3 Valve Train Mechanisms
Job 3 Adjust Valves—Mechanical
Job 3A Adjust Valves—Hydraulic
Job 3B Service Rocker Arm Assembly
Job 3C Replace Valve Stem Seals (Engine in Car)
Job 3D Service Valve Lifters
- R.S.A. 4 Valve Reconditioning
Job 4 Recondition Valves, Valve Seats and Check Valve Guides Condition
- R.S.A. 5 Valve Timing Mechanisms
Job 5 Remove and Replace Timing Chain or Gears
Job 5A Remove and Replace Overhead Cam Timing Chain or Belt
Job 5B Remove and Replace Cam Shaft
- R.S.A. 6 Engine Mounts
Job 6 Remove and Replace Engine Mount (Engine in Car)
Job 6A Remove and Replace Engine
- R.S.A. 7 Engine Bearings
Job 7 Remove and Replace Connecting Rod Bearing (Check Clearances)
Job 7A Remove and Replace Main Bearings (Check Clearances)
Job 7B Service Engine Oil Pump
Job 7C Remove and Replace Cam Bearings
- R.S.A. 8 Cylinders, Pistons and Rings
Job 8 Check Cylinder and Piston Wear
Job 8A Check Wrist Pin Wear, Connecting Rod Alignment
Job 8B Remove and Replace Piston Rings
Job 8C Recondition Cylinders (Instructor's Choice)
- R.S.A. 9 Engine Overhaul
Job 9 Complete Engine Overhaul

UNIT XII—AIR CONDITIONING AND HEATING SYSTEMS

- R.S.A. 1 Air Conditioning Fundamentals (Diagnosis)
Job 1 Check for Leaks and Perform Pressure Test
Job 1A Discharge, Evacuate, Charge, and Leak Test
Job 1B Remove and Replace Receiver Dryer—Evacuate and Recharge
Job 1C Check and Service Evaporator Pressure Regulator Control Devices.

UNIT XII—AIR CONDITIONING AND HEATING SYSTEMS: Continued

- R.S.A. 2 Compressors
 - Job 2 Service Compressor
 - Job 2A Remove and Replace Compressor Seal
 - Job 2B Remove and Replace Compressor Hoses
 - Job 2C Service Compressor Clutch

- R.S.A. 3 Evaporators and Condensers
 - Job 3 Remove and Replace Evaporator—Evacuate and Charge—Test for Leaks
 - Job 3A Remove and Replace Condensers—Evacuate and Charge—Test for Leaks

- R.S.A. 4 Heaters
 - Job 4 Remove and Replace Water Control Valve
 - Job 4A Remove and Replace Heater Core

- R.S.A. 5 Electrical, Mechanical and Vacuum Control Devices
 - Job 5 Check Voltage at Fuse Box
 - Job 5A Check Voltage at Switch—Remove and Replace Switch
 - Job 5B Check Voltage at Blower Motor—Remove and Replace Motor
 - Job 5C Check and Adjust Air Doors and Controls
 - Job 5D Service Vacuum Servos

UNIT XIII—ACCESSORIES

- R.S.A. 1 Speedometer and Speedometer Drives
 - Job 1 Remove, Clean, Lubricate and Replace Speedometer Cable
 - Job 1A Remove and Replace Speedometer Cable and Housing
 - Job 1B Remove and Replace Speedometer

- R.S.A. 2 Power Seats
 - Job 2 Diagnose and Troubleshoot Power Seats
 - Job 2A Remove and Replace Power Seat Control Switch—Check for Voltage
 - Job 2B Check for Voltage at Motor
 - Job 2C Remove and Replace Power Seat Motor
 - Job 2D Lubricate Power Seat Mechanism

- R.S.A. 3 Power Windows and Door Locks
 - Job 3 Diagnose and Troubleshoot Power Windows and Door Locks
 - Job 3A Check for Voltage and Remove and Replace Power Window Master Switch
 - Job 3B Check for Voltage and Remove and Replace Power Window Door Switch
 - Job 3C Remove and Replace Power Window Motor and Regulator

- R.S.A. 4 Speed Controls
 - Job 4 Diagnose and Troubleshoot Speed Controls
 - Job 4A Test and Repair Speed Control

- R.S.A. 5 AM and FM Radios, Tape Players and Speakers
 - Job 5 Check Voltage at Radio
 - Job 5A Check Antenna and/or Speaker
 - Job 5B Remove and/or Replace Radio

UNIT XIV—COMPLETE AUTOMOTIVE SERVICE

- R.S.A. 1 Automotive Safety Inspection
Job 1 Perform Automotive Safety Inspection
- R.S.A. 2 Complete Automotive Engine Analysis
Job 2 Perform Complete Automotive Engine Analysis
- R.S.A. 3 Seasonal Maintenance
Job 3 Perform Summer Season Service
Job 3A Perform Winter Season Service
- R.S.A. 4 Customer Relations and Job Hunting
Job 4 Fill Out a Personal Resume'
Job 4A Participate in a Mock Job Interview

UNIT XV—WELDING

- R.S.A. 1 Oxyacetylene Welding
Job 1 Setting Up Oxyacetylene Welding Apparatus
- R.S.A. 2 Welding Steel
Job 2 Run Beads, Flat Position 1/8" Material
Job 2A Flat Position Butt Weld 1/8" Material
- R.S.A. 3 Flame Cutting
Job 3 Hand Cut 1/2" Material
- R.S.A. 4 Bronze Welding
Job 4 Flat Position Bronze Butt Welding 1/8" Material
Job 4A Bronze Weld Cast Iron Plate
- R.S.A. 5 Oxyacetylene Soldering
Job 5 Repair Radiator
- R.S.A. 6 Electric Arc Welding
Job 6 Set Up Welding Machine and Strike Arc
Job 6A Run Continuous Stringer Beads, Flat Position 1/4" Material
Job 6B Lap Joint, Weld Flat Position 1/4" Material

UNIT XVI—MATHEMATICS

AUTOMOTIVE MECHANICS CURRICULUM

Required Textbook

TITLE

William H. Crouse
AUTOMOTIVE MECHANICS, 1980 Ed.

SOURCE

Gregg/McGraw-Hill Book Company

Required Resource References

TITLE

Martin Stockel
AUTO MECHANICS FUNDAMENTALS
1978 Ed.

SOURCE

Goodheart-Willcox Co., Inc.

Martin Stockel
AUTO SERVICE AND REPAIR, 1978 Ed.

Goodheart-Willcox Co., Inc.

Toboldt and Johnson
AUTOMOTIVE ENCYCLOPEDIA
1981 Ed.

Goodheart-Willcox Co., Inc.

AUTOMOTIVE MANUFACTURERS'
SERVICE MANUALS

CHILTON'S AUTO REPAIR MANUALS

MOTOR'S AUTO REPAIR MANUALS

MOTOR'S TRUCK REPAIR MANUALS

MITCHELL MANUALS

William H. Crouse
AUTOMOTIVE ELECTRONICS &
ELECTRICAL EQUIPMENT, 9th Ed.

Gregg/McGraw-Hill Book Company