DOCUMENT RESUME

ED 092 708 CE 001 437

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|---|---|
| TITLE | Automotive History and Development of the Automobile; Automotive Mechanics I: 9043.01. |
| INSTITUTION | Dade County Public Schools, Miami, Fla. |
| PUB DATE | Apr 73 |
| NOTE | 22p.; An Authorized Course of Instruction for the Quinmester Program. Page 14 is missing |
| EDRS PRICE | MF-$0.75 HC-$1.50 PLUS POSTAGE |
| DESCRIPTORS | *Auto Mechanics; Course Content; Course Objectives; *Curriculum Guides; *History; Performance Criteria; *Technical Education; Trade and Industrial Education |
| IDENTIFIERS | Florida; *Quinmester Program |

ABSTRACT

The automotive history and development of the automobile course is designed to familiarize the beginning student with basic concepts common to the automobile history and general information that is required for successful advancement in the automotive mechanics field. A course outline is provided and seven pages of post-tests are included in the appendix. (DS)

CE



# AUTHORIZED COURSE OF INSTRUCTION FOR THE QUINMESTER PROGRAM

Course Outline
AUTOMOTIVE MECHANICS 1 - 9043
(Automotive History and Development of the Automobile)
Department 48 - Quin 9043.01



DADE COUNTY PUBLIC SCHOOLS
DIVISION OF INSTRUCTION • 1973

D A D E  C O U N T Y  P U B L I C  S C H O O L S

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M I A M I,  F L O R I D A  33132

Course Outline

# AUTOMOTIVE MECHANICS 1 - 9043
(Automotive History and Development of the Automobile)

Department 48 - Quin 9043.01

county office of

VOCATIONAL AND ADULT EDUCATION

THE SCHOOL BOARD OF DADE COUNTY

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Dr. E. L. Whigham, Superintendent of Schools
Dade County Public Schools
Miami, Florida 33132

April, 1973

Published by the School Board of Dade County

# Course Description

| 9043 | 48 | 9043.01 | Automotive History and Development of the Automobile |
|---|---|---|---|
| State Category Number | County Dept. Number | County Course Number | Course Title |

The main objective of this course is to familiarize the beginning student with the history and development of the automobile with basic concepts common to the automobile history and general information that is required for successful advancement in the automotive mechanics field. This is a one quinmester course.

Indicators of Success: An eighth grade equivalency score in reading comprehension, a basic knowledge of arithmetic fundamentals, and an aptitude for mechanical achievement.

Clock Hours: 45

# PREFACE

The following quinmester course outline is a guide to present students with the general information regarding the history and development of the automobile including the career opportunities available, and the knowledge and abilities required for advancement in the automotive mechanics field.

This course is designed as an introductory course for the automotive mechanic. This outline consists of six blocks of instruction which are subdivided into several units each. The course is 45 hours in length. It is the first quin of a series of quin outlines designed for the complete automotive mechanics course.

Indicators of success in this course are as follows: an eighth grade equivalency score in reading comprehension, a basic knowledge of arithmetic fundamentals, and an aptitude for mechanical achievement.

Instruction will consist of demonstrations, lectures, group discussions, audiovisual aids and resource people from industry. Instruction will be flexible in order to meet individual needs and abilities.

The bibliography appearing on the last page of the outline lists several basic references along with supplementary references and audio-visual aids.

This outline was developed through the cooperative efforts of the instructional and supervisory personnel, the Quinmester Advisory Committee, and the Vocational Curriculum Materials Service, and has been approved by the Dade County Vocational Curriculum Committee.

TABLE OF CONTENTS
with Suggested Hourly Breakdown

# GOALS

The student must be able to demonstrate:

1. An increase in interest level in the automotive occupational field.
2. Positive attitudes regarding the value and dignity of work.
3. A knowledge of the varied career opportunities available within this broad occupational field.
4. A knowledge of the various skills and technical knowledge necessary for a successful career in the automotive field.
5. An incentive to continue with more advanced training within this occupational field.

## SPECIFIC BLOCK OBJECTIVES

### BLOCK I - ORIENTATION

The student must be able to:

1. State his responsibilities regarding safety and use of equipment.
2. List at list three qualifications for successful employment.
3. Discuss the understanding for opportunities that are available for careers in the automotive field.

### BLOCK II - THE AUTOMOBILE AND THE AUTOMOTIVE INDUSTRY

The student must be able to:

1. Describe orally or in writing the first gasoline automobiles and their foreign inventors.
2. Name in writing the inventors of the first successful American car and the other successful inventors to follow.
3. Explain in writing how standardization and mass production lowered the cost of the automobile.
4. Describe orally or in writing the related industries in the automotive industry.
5. List three areas where engine powered equipment is used.
6. Name orally the big four automotive manufacturers and four foreign manufacturers.

### BLOCK III - CAREERS IN THE AUTOMOTIVE INDUSTRY

The student must be able to:

1. Describe orally or in writing a minimum of seven automotive specialty classifications.
2. Describe orally or in writing at least six opportunities that are available for careers in automotive mechanical occupations.

### BLOCK IV - COMPONENTS OF THE AUTOMOBILE

The student must be able to:

1. List four basic components of the automobile.
2. Describe orally or in writing four separate accessory systems required for the operation of the engine.
3. Describe orally or in writing the five components of the power train.

### BLOCK V - DRIVER'S MAINTENANCE

The student must be able to:

1. List at least three factors that contribute to tire wear.
2. List at least six checks made under the hood for preventive maintenance.

BLOCK VI - QUINMESTER POST-TEST

The student must be able to:

1. Satisfactorily complete the quinmester post-test.

Course Outline

AUTOMOTIVE MECHANICS 1 - 9043
(Automotive History and Development of the Automobile)

Department 48 - Quin 9043.01

I. ORIENTATION

A. Objectives of the Course
   1. Standards
   2. Methods of evaluation
      a. Written tests
      b. Oral
   3. Teaching methods
      a. Lectures
      b. Demonstration
      c. Audiovisual equipment

B. Student Benefits
   1. Opportunities for employment
      a. Scope of the trade
      b. Job opportunities
   2. Qualifications for employment
      a. Attitude
      b. Dependability
      c. Job competency
      d. Foundation for more education and training
      e. Experience

C. Student Responsibilities
   1. School policies
   2. Safety precautions
      a. Care of hand tools
      b. Use and care of equipment
      c. Housekeeping
      d. Reporting loss of equipment
      e. Reporting defective equipment

II. THE AUTOMOBILE AND THE AUTOMOTIVE INDUSTRY

A. The First Gasoline Automobiles
   1. Lenoir
   2. Daimler and Benz
   3. Daimler and Panhard

B. The First Successful American Car Inventors
   1. Duryea Brothers
   2. Henry Ford
   3. Ramson Olds
   4. Alexander Winton
   5. Charles King

C. Production of the Automobile
   1. Interchangeability
      a. Identical parts
      b. Standardization
   2. Mass production
      a. Assembly line
      b. Conveyor belts

D. The Automotive Industry
   1. Direct employment of millions
   2. Employment in related industries
      a. Steel
      b. Cloth
      c. Glass
      d. Rubber
   3. Yearly production of automobile
   4. Engine powered equipment
      a. Agriculture
      b. Construction
      c. Manufacturing operations
      d. Lawn mowers
      e. Power saws
      f. Snow removers

E. Servicing the Automobile and Equipment
   1. Trained people
   2. Satisfying career
   3. Automobile manufacturers
      a. General Motors
      b. Ford Motor Co.
      c. Chrysler Motors, Corp.
      d. American Motors
      e. Imports

F. Employer-Employee Relations
   1. Keeping working area clean
   2. Repairing of equipment
   3. Assist with public relations
   4. Offer suggestions and ideas
      a. Keep up to date with the new development in the trade
      b. Offer constructive criticism

III. CAREERS IN THE AUTOMOTIVE INDUSTRY

A. Automotive Mechanic Classifications
   1. General mechanic
   2. Specialty mechanic
      a. Tune-up
      b. Automatic transmissions
      c. Front-end alignment
      d. Heavy repair mechanic
      e. Light repair mechanic
      f. Air conditioning

III. CAREERS IN THE AUTOMOTIVE INDUSTRY (Contd.)

g. Brake specialist
h. Electrical repair specialist

B. Service Manager and Administrative Jobs
1. Service salesman
2. Shop foreman
3. Parts manager
4. Parts salesman
5. Jobber salesman
6. Operator-service stations-speciality
7. Vehicle salesman
8. Vehicle sales manager
9. Automobile dealer

IV. COMPONENTS OF THE AUTOMOBILE

A. The Engine
1. Fuel system
a. Fuel pump
b. Carburetor
c. Tank and fuel lines
2. Ignition system
3. Cooling system
a. Water pump
b. Radiator
c. Fan
4. Lubricating system
a. Oil pan
b. Oil pump

B. Frame and Chassis
1. Springs
2. Shock absorbers
3. Steering system
4. Brakes
5. Tires

C. Power Train
1. Clutch
2. Transmission
3. Propeller shaft
4. Differential
5. Rear axles

D. The Body
1. Accessories
a. Radio
b. Air conditioning
2. Upholstering

V. DRIVER'S MAINTENANCE

A. Indications of Tire Wear
   1. Excessive camber
   2. Excessive toe-in or toe-out
   3. Over-inflation
   4. Under-inflation
   5. Out of balance
   6. Tire rotation
      a. Checking tire pressure
      b. Changing a tire
      c. Safety precautions

B. Under the Hood Maintenance
   1. Cooling system
      a. Methods of checking
      b. Safety precautions
   2. Checking oil
      a. Transmission
      b. Engine
      c. Power steering
   3. Changing oil and filter
   4. Checking drive belts
   5. Checking master cylinder brake fluid
   6. Battery maintenance
      a. Safety precautions
      b. Filling the battery
      c. Checking battery cables and connections
   7. Servicing air cleaner filter

C. Engine Oil Leaks
   1. Valve covers
   2. Push rod cover gasket
   3. Crankcase gasket
   4. Fuel pump gasket
   5. Oil sending unit

D. Servicing Lights
   1. Head
   2. Tail
   3. Stop and signal
   4. Interior lights

VI. QUINMESTER POST-TEST SAMPLE

BIBLIOGRAPHY
(Automotive History and Development of the Automobile)

Basic References:


1. Crouse, William H. Automotive Mechanics. 5th ed. New York: Webster Division, McGraw-Hill Book Company, 1965. Pp. 616.

2. Glenn, Harold T. Automechanics. Peoria, Illinois: Charles A. Bennett Co., Inc., 1962. Pp. 478.


Manufacturer's Booklets:


3. Career Opportunities in Automotive Service. Detroit, Michigan: Automobile Manufacturers Association, Inc., n.d. n.p.

4. Retail Automobile Business, The. Detroit, Michigan: General Motors Corporation, n.d. Pp. 38.


Sources of Materials:

1. Ford Film Library
   The American Road
   Dearborn, Michigan 48121
   a. The Automobile Engine
   b. Styling and the Experimental Car
   c. The American Road
   d. The Rouge
   e. The World of Henry Ford

2. Modern Pictures
   Attention: Mr. Thomas L. Gunther
   714 Spring Street, Northwest
   Atlanta, Georgia

3. Sterling Movies
   43 West 61 Street
   New York, New York 10023

4. Technical Literature Department
   Delco-Remy
   Division of General Motors Corp.
   Anderson, Indiana

5. Technical Service Department
   Hagerstown Distribution Center
   P. O. Box 500
   Hagerstown, Indiana 47346

# A P P E N D I X

Quinmester Post-Test Sample

Quinmester Post-Test

Name _____ Date _____ Score ____

Multiple-Choice Test Items

Each statement needs a word, a figure or a phrase to make it correct. Only one of the choices listed is correct. Place the letter of the choice you make in the space provided at the left edge of the sheet.

____ 1. Perhaps the first automobile propelled by a gas engine was made in 1863 and the inventor was:

a. Daimler
b. Benz
c. Lenior
d. Panhard

____ 2. In 1885, a vehicle that ran on liquid fuel similar to gasoline was built by:

a. Daimler and Benz
b. Lenior
c. Henry Ford
d. Ramson Olds

____ 3. The first successful American car was built in 1893 by:

a. Alexander Winton
b. Charles King
c. Henry Ford
d. Duryea Brothers

____ 4. Two of the most important ideas in the manufacturing of automobiles that the early inventors developed were:

a. Hand made and expertly fitted
b. Interchangeability and mass production
c. Maximum fitting and separately made
d. None of these

____ 5. Interchangeability in the automotive industry means:

a. Each part hand made
b. Each part carefully fitted
c. Each part different from the other
d. Parts identical to each other

____ 6. The first manufacturer to use the conveyor belt in an assembly line was:

a. Ramson Olds
b. Henry Ford
c. Duryea
d. Charles King

____ 7. Excessive toe-in will cause tire wear that is:

a. Smooth
b. Rough with flat spots
c. Feathered edge treads
d. None of these

____ 8. Over-inflation causes tires to wear:

a. On the outer edge
b. On the inner edge
c. In the middle
d. On both edges

____ 9. Excessive camber causes the tire to wear:

a. In the middle
b. On both edges
c. On either edge
d. None of these

## Completion Test Items

1. Name four related industries in the automotive field.

a.

b.

c.

d.

2. Name three areas where engine powered equipment is used.

a.

b.

c.

3. Name the big four American automotive manufacturers and four foreign manufacturers.

   a.

   b.

   c.

   d.

   e.

   f.

   g.

   h.

4. Name at least seven automotive specialty classifications.

   a.

   b.

   c.

   d.

   e.

   f.

   g.

5. Name at least six opportunities that are available for careers in automotive mechanical occupations.

   a.

   b.

   c.

   d.

   e.

   f.

6. Name the four basic components of the automobile.

   a.

   b.

   c.

   d.

7. Name the four accessory systems required for the operation of the automotive engine.

   a.

   b.

   c.

   d.

8. Name the five components of the power train.

   a.

   b.

   c.

   d.

   e.

9. Name at least six checks made under the hood for preventative maintenance.

   a.

   b.

   c.

   d.

   e.

   f.

10. Name four gaskets that may cause an engine oil leak.

    a.

    b.

    c.

    d.

11. Name at least three different lights on the automobile.

a.

b.

c.

ANSWER KEY TO QUINMESTER POST-TEST

Multiple Choice

1. c
2. b
3. d
4. b
5. d
6. b
7. c
8. c
9. c

1. Steel
   Cloth
   Glass
   Rubber

2. Agriculture
   Construction
   Manufacturing
   Lawn mowers
   Power saws
   Snow removers

3. General Motors
   Ford
   Chrysler
   American Motors

   Foreign

   Fiat
   Toyota
   Volkswagon
   Datsun
   Renault
   Opel
   M.G.

4. Tune-up
   Automatic transmissions
   Front-end alignment
   Heavy repair mechanic
   Light repair mechanic
   Air conditioning
   Brake specialist
   Repair specialist

5. Service salesman
   Shop foreman
   Parts manager
   Part salesman
   Jobber salesman
   Service station operator
   Vehicle salesman
   Vehicle sales manager
   Automobile dealer

6. The engine
   Frame and chassis
   Power train and body

7. Fuel
   Ignition
   Cooling
   Lubricating

8. Clutch
   Transmission
   Propeller shaft
   Differential
   Rear axles

9. Cooling system
   Engine oil
   Brake fluid
   Battery
   Transmission oil
   Drive belts
   Power steering oil
   Air filter

10. Valve cover
Push rod cover
Crankcase gasket
Fuel pump gasket
Oil sending unit

11. Head lights
Tail lights
Dome light
Stop and signal lights
Courtesy lights