Course Outline

Transportation

REVISED: August/2017

Job Title
Auto Technician

Career Pathway:
Systems Diagnostics and Service

Industry Sector:
Transportation

O*NET-SOC CODE:
49-3023.02

CBEDS Title:
Automotive Service

CBEDS No.:
5668

79-90-83

Technology/1: Automotive Systems

Credits: 5          Hours: 90

Course Description:
This competency-based course is the first in a sequence of two designed to introduce automotive systems. It provides students with project-based experiences in automotive technologies including alternative and green vehicle technology. Instruction includes an orientation, classroom and workplace policies and procedures, resource management, measurements, tools and equipment, and employability skills. Emphasis is placed on domestic car engine designs, engine cooling systems, engine lubrication systems, automotive electricity, charging systems, and starting systems. The competencies in this course are aligned with the California High School Academic Content Standards and the California Career Technical Education Model Curriculum Standards.

Prerequisites:
Enrollment requires a reading level of 6.0 as measured by the TABE D 9/10.

NOTE: For Perkins purposes this course has been designated as an introductory/concentrator course.

This course cannot be repeated once a student receives a Certificate of Completion.
A course outline reflects the essential intent and content of the course described. Acceptable course outlines have six components. (Education Code Section 52506). Course outlines for all apportionment classes, including those in jails, state hospitals, and convalescent hospitals, contain the six required elements:

(EC 52504; SCCR 10508 [b]; Adult Education Handbook for California [1977], Section 100)

**COURSE OUTLINE COMPONENTS**

**LOCATION**

**GOALS AND PURPOSES**

The educational goals or purposes of every course are clearly stated and the class periods are devoted to instruction. The course should be broad enough in scope and should have sufficient educational worth to justify the expenditure of public funds.

The goals and purpose of a course are stated in the COURSE DESCRIPTION. Course descriptions state the major emphasis and content of a course, and are written to be understandable by a prospective student.

**PERFORMANCE OBJECTIVES OR COMPETENCIES**

Objectives should be delineated and described in terms of measurable results for the student and include the possible ways in which the objectives contribute to the student’s acquisition of skills and competencies.

Performance Objectives are sequentially listed in the COMPETENCY-BASED COMPONENTS section of the course outline. Competency Areas are units of instruction based on related competencies. Competency Statements are competency area goals that together define the framework and purpose of a course. Competencies fall on a continuum between goals and performance objectives and denote the outcome of instruction.

Competency-based instruction tells a student before instruction what skills or knowledge they will demonstrate after instruction. Competency-based education provides instruction which enables each student to attain individual goals as measured against pre-stated standards.

Competency-based instruction provides immediate and continual repetition and in competency-based education the curriculum, instruction, and assessment share common characteristics based on clearly stated competencies. Curriculum, instruction and assessment in competency-based education are: explicit, known, agreed upon, integrated, performance oriented, and adaptive.
COURSE OUTLINE COMPETENCY-BASED COMPONENTS

COURSE OUTLINE COMPONENTS

INSTRUCTIONAL STRATEGIES

Instructional techniques or methods could include laboratory techniques, lecture method, small-group discussion, grouping plans, and other strategies used in the classroom.

Instructional strategies for this course are listed in the TEACHING STRATEGIES AND EVALUATION section of the course outline. Instructional strategies and activities for a course should be selected so that the overall teaching approach takes into account the instructional standards of a particular program, i.e., English as a Second Language, Programs for Adults with Disabilities.

UNITS OF STUDY, WITH APPROXIMATE HOURS ALLOTTED FOR EACH UNIT

The approximate time devoted to each instructional unit within the course, as well as the total hours for the course, is indicated. The time in class is consistent with the needs of the student, and the length of the class should be that it ensures the student will learn at an optimum level.

Units of study, with approximate hours allotted for each unit are listed in the COMPETENCY AREA STATEMENT(S) of the course outline. The total hours of the course, including work-based learning hours (community classroom and cooperative vocational education) is listed on the cover of every CBE course outline. Each Competency Area listed within a CBE outline is assigned hours of instruction per unit.

EVALUATION PROCEDURES

The evaluation describes measurable evaluation criteria clearly within the reach of the student. The evaluation indicates anticipated improvement in performances as well as anticipated skills and competencies to be achieved.

Evaluation procedures are detailed in the TEACHING STRATEGIES AND EVALUATION section of the course outline. Instructors monitor students’ progress on a continuing basis, assessing students on attainment of objectives identified in the course outline through a variety of formal and informal tests (applied performance procedures, observations, and simulations), paper and pencil exams, and standardized tests.

REPETITION POLICY THAT PREVENTS PERPETUATION OF STUDENT ENROLLMENT

After a student has completed all the objectives of the course, he or she should not be allowed to reenroll in the course. There is, therefore, a need for a statement about the conditions for possible repetition of a course to prevent perpetuation of students in a particular program for an indefinite period of time.
ACKNOWLEDGMENTS

Thanks to PAUL PIDOUX and MARCELA BAKER for developing and editing this curriculum. Acknowledgment is also given to ERICA ROSARIO for designing the original artwork for the course covers.

ANA MARTINEZ
Specialist
Career Technical Education

ROSARIO GALVAN
Administrator
Division of Adult and Career Education

APPROVED:

JOE STARK
Executive Director
Division of Adult and Career Education
1.0 Academics
Analyze and apply appropriate academic standards required for successful industry sector pathway completion leading to postsecondary education and employment. Refer to the Transportation academic alignment matrix for identification of standards.

2.0 Communications
Acquire and accurately use Transportation sector terminology and protocols at the career and college readiness level for communicating effectively in oral, written, and multimedia formats.

3.0 Career Planning and Management
Integrate multiple sources of career information from diverse formats to make informed career decisions, solve problems, and manage personal career plans.

4.0 Technology
Use existing and emerging technology to investigate, research, and produce products and services, including new information, as required in the Transportation sector workplace environment.

5.0 Problem Solving and Critical Thinking
Conduct short, as well as more sustained, research to create alternative solutions to answer a question or solve a problem unique to the Transportation sector using critical and creative thinking, logical reasoning, analysis, inquiry, and problem-solving techniques.

6.0 Health and Safety
Demonstrate health and safety procedures, regulations, and personal health practices and determine the meaning of symbols, key terms, and domain-specific words and phrases as related to the Transportation sector workplace environment.

7.0 Responsibility and Flexibility
Initiate, and participate in, a range of collaborations demonstrating behaviors that reflect personal and professional responsibility, flexibility, and respect in the Transportation sector workplace environment and community settings.

8.0 Ethics and Legal Responsibilities
Practice professional, ethical, and legal behavior, responding thoughtfully to diverse perspectives and resolving contradictions when possible, consistent with applicable laws, regulations, and organizational norms.

9.0 Leadership and Teamwork
Work with peers to promote divergent and creative perspectives, effective leadership, group dynamics, team and individual decision making, benefits of workforce diversity, and conflict resolution as practiced in the SkillsUSA career technical student organization.

10.0 Technical Knowledge and Skills
Apply essential technical knowledge and skills common to all pathways in the Transportation sector, following procedures when carrying out experiments or performing technical tasks.

11.0 Demonstration and Application
Demonstrate and apply the knowledge and skills contained in the Transportation anchor standards, pathway standards, and performance indicators in classroom, laboratory, and workplace settings, and through the SkillsUSA career technical student organization.
C. Systems Diagnostics and Service Pathway
The Systems Diagnostics and Service pathway prepares students for postsecondary education and employment in the transportation industry, which includes but is not limited to motor vehicles, rail systems, marine applications, and small-engine and specialty equipment.

Sample occupations associated with this pathway:
- Service Technician/Maintenance Worker/Shop Foreman
- Technical Writer
- Dispatcher
- Engineer
- Investigator/Inspector

C1.0 Demonstrate the practice of personal and occupational safety and protecting the environment by using materials and processes in accordance with manufacturer and industry standards.

C2.0 Practice the safe and appropriate use of tools, equipment, and work processes.

C3.0 Use scientific principles in relation to chemical, mechanical, and physical functions for various engine and vehicle systems.

C4.0 Perform and document maintenance procedures in accordance with the recommendations of the manufacturer.

C5.0 Apply and understand appropriate business practices.

C6.0 Demonstrate the application, operation, maintenance, and diagnosis of engines, including but not limited to two- and four-stroke and supporting subsystems.

C7.0 Demonstrate the function, principles, and operation of electrical and electronic systems using manufacturer and industry standards.

C8.0 Demonstrate the function and principles of automotive drivetrain, steering and suspension, brake, and tire and wheel components and systems in accordance with national industry standards.
CBE  
Competency-Based Education

COMPETENCY-BASED COMPONENTS  
for the Technology/1: Automotive Systems Course

<table>
<thead>
<tr>
<th>COMPETENCY AREAS AND STATEMENTS</th>
<th>MINIMAL COMPETENCIES</th>
<th>STANDARDS</th>
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</thead>
<tbody>
<tr>
<td><strong>A. ORIENTATION AND SAFETY</strong></td>
<td>1. Describe the scope and purpose of the course.</td>
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<td>2. Describe the overall course content as a part of the Linked Learning Initiative.</td>
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<td>3. Describe classroom policies and procedures.</td>
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<td>4. Identify classroom and workplace first aid and emergency procedures.</td>
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<td>5. Describe the different occupations in the Transportation Industry Sector which have an impact on the role of the auto technician.</td>
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<td>6. Describe the California Occupational Safety and Health Administration (Cal/OSHA) workplace requirements for auto technicians.</td>
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<td>7. Describe the opportunities available for promoting gender equity and the representation of non-traditional populations in automotive science.</td>
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<td>8. Explain the impact of Environmental Protection Agency (EPA) legislation on Transportation Industry Sector practices in protecting and preserving the environment.</td>
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<td></td>
<td>9. Explain the impact of California Air Resources Board (ARB) legislation on Transportation Industry Sector practices in protecting and preserving the environment.</td>
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<td></td>
<td>10. State the Bureau of Automotive Repair (BAR) standards for safety and environmental protection.</td>
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<td>11. Describe and demonstrate the use of the Material Safety Data Sheet (MSDS) as it applies to the automotive industry.</td>
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<td>12. Identify the safety items required by federal, state, and local regulations.</td>
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<td>13. Describe the role of the National Automotive Technicians Education Foundation (NATEF) in auto technician training.</td>
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<td></td>
<td>14. Describe and demonstrate the NATEF standards regarding proper use of protective clothing and gloves in an auto shop.</td>
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<td>15. Describe and demonstrate the NATEF standards regarding proper use of protective respiratory gear in an auto shop.</td>
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<td>16. Describe and demonstrate the NATEF standards regarding proper use of protective eye gear in an auto shop.</td>
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<td></td>
<td>17. Describe and demonstrate the NATEF standards regarding proper ventilation in an auto shop.</td>
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<td></td>
<td>18. Describe and demonstrate NATEF standards regarding proper handling, storage, and disposal of chemicals and materials used in an auto shop.</td>
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<td>19. Pass the safety exam with 100% accuracy.</td>
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(2 hours)

Career Ready Practice: 7, 9, 12

CTE Anchor:  
Career Planning and Management: 3.4
Health and Safety: 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7
Ethics and Legal Responsibilities: 8.2, 8.3, 8.5, 8.6
Leadership and Teamwork: 9.5, 9.6, 9.7
Technical Knowledge and Skills: 10.1, 10.2, 10.4

CTE Pathway:  
C1.1, C1.2, C1.4, C1.5, C4.2

(79-90-83)
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<tbody>
<tr>
<td><strong>B. RESOURCE MANAGEMENT</strong></td>
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</table>
| Understand, apply, and evaluate the resource management principles and techniques in the auto repair and maintenance business. | 1. Define the following:  
   a. resources  
   b. management  
   c. sustainability | Career Ready Practice:  
   1, 2, 12  
   CTE Anchor:  
   Career Planning and Management: 3.7  
   Responsibility and Flexibility: 7.1, 7.2, 7.4, 7.6  
   Technical Knowledge and Skills: 10.1, 10.2  
   Demonstration and Application: 11.1  
   CTE Pathway:  
   C1.1, C5.2, C5.3, C5.4 |
|                                 | 2. Describe the management of the following resources in the auto repair and maintenance business:  
   a. time  
   b. materials  
   c. personnel |           |
|                                 | 3. List specific examples of effective management of the following in the auto repair and maintenance business:  
   a. time  
   b. materials  
   c. personnel |           |
|                                 | 4. Describe the benefits of effective resource management in the auto repair and maintenance business:  
   a. profitability  
   b. sustainability  
   c. company growth |           |
|                                 | 5. Describe the economic benefits and liabilities of managing resources in an environmentally responsible way. |           |
| (1 hours)                       |                       |           |
| **C. MEASUREMENTS**             |                       |           |
| Understand, apply, and evaluate the principles of precision measurement and the use of precision measuring instruments. | 1. Take measurement pre-test.  
   2. Identify and describe the features and functions of the following automotive measuring tools:  
      a. steel ruler  
      b. Vernier calipers  
      c. combination square  
      d. inside calipers  
      e. outside calipers  
      f. micrometer depth gauges  
      g. telescoping gauges  
      h. hole gauges  
      i. plastic gauges | Career Ready Practice:  
   1, 5  
   CTE Anchor:  
   Technical Knowledge and Skills: 10.1  
   CTE Pathway:  
   C2.4, C2.5, C2.7 |
|                                 | 3. Describe and demonstrate the following:  
   a. proper use of a conversion chart  
   b. measuring to 1/64 inch with a steel ruler  
   c. measuring to 1/100 inch with a steel ruler  
   d. measuring to .5mm with a steel ruler  
   e. measuring to .005 with micrometers  
   f. measuring to 1/100mm with micrometers  
   g. measuring to 1/1000 mm with Vernier calipers  
   h. measuring to .05mm with Vernier calipers  
   i. qualifying, setting up, and reading dial indicators |           |
<p>| (5 hour)                        |                       |           |</p>
<table>
<thead>
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</table>
| **D. TOOLS AND EQUIPMENT**       | 1. Identify and describe the features and functions of the most common automotive hand tools.  
                                 | 2. Describe and demonstrate the following:  
                                 |   a. selection of the appropriate hand tool for each job  
                                 |   b. procedures for checking out hand tools from the tool room  
                                 |   c. safe use of the most common hand tools  
                                 | 3. Identify and describe the features and functions of the most common power tools and equipment.  
                                 | 4. Describe and demonstrate the following:  
                                 |   a. selection of the appropriate power tools and equipment for each job  
                                 |   b. procedures for checking out power tools and equipment from the tool room  
                                 |   c. safe use of power tools and equipment |
|                                  | (5 hours)             | **Career Ready Practice:**  
                                 |                                   | 1, 11 |
|                                  |                      | **CTE Anchor:**  
                                 |                                   | Problem Solving and Critical Thinking:  
                                 |                                   | 5.1, 5.2  
                                 |                                   | Health and Safety:  
                                 |                                   | 6.3, 6.4  
                                 |                                   | Technical Knowledge and Skills:  
                                 |                                   | 10.2  
                                 |                                   | Demonstration and Application:  
                                 |                                   | 11.1 |
|                                  |                      | **CTE Pathway:**  
                                 |                                   | C1.4, C2.2 |
| **E. ENGINE DESIGNS: DOMESTIC**  | 1. Identify and describe the features and functions of the following:  
                                 |   a. major parts of an automobile engine  
                                 |   b. different types of cylinder configurations  
                                 |   c. valve arrangements  
                                 |   i. overhead valve  
                                 |   ii. overhead cam  
                                 |   iii. double overhead cam  
                                 |   iv. multiple valve heads  
                                 | 2. Define four-stroke cycle.  
                                 | 3. Explain advantages and disadvantages of the various cylinder configurations of domestic vehicles. |
|                                  | (10 hours)            | **Career Ready Practice:**  
                                 |                                   | 1, 11 |
|                                  |                      | **CTE Anchor:**  
                                 |                                   | Problem Solving and Critical Thinking:  
                                 |                                   | 5.1, 5.2, 5.3, 5.4 |
|                                  |                      | **CTE Pathway:**  
                                 |                                   | C1.5, C3.1, C6.1,  
                                 |                                   | C6.2, C6.3, C6.4 |
| **F. ENGINE COOLING SYSTEMS**    | 1. Identify and describe the features and functions of the following cooling systems:  
                                 |   a. air cooling system  
                                 |   b. liquid cooling system  
                                 | 2. Identify and describe the features and functions of the following liquid cooling system components:  
                                 |   a. radiator  
                                 |   b. radiator cooling fans  
                                 |   c. pressure cap  
                                 |   d. reserve tank  
                                 |   e. water pump  
                                 |   f. thermostat  
                                 |   g. bypass system |
|                                  |                      | **Career Ready Practice:**  
                                 |                                   | 1, 4, 11 |
|                                  |                      | **CTE Anchor:**  
                                 |                                   | Problem Solving and Critical Thinking:  
                                 |                                   | 5.2, 5.3, 5.4 |
|                                  |                      | Technical Knowledge and Skills:  
                                 |                                   | 10.1, 10.2 |
### COMPETENCY AREAS AND STATEMENTS

#### MINIMAL COMPETENCIES

<table>
<thead>
<tr>
<th>h. freeze plugs</th>
<th>i. head gaskets</th>
</tr>
</thead>
<tbody>
<tr>
<td>j. intake manifold gaskets</td>
<td>k. heater core</td>
</tr>
<tr>
<td>l. hoses</td>
<td><strong>STANDARDS</strong></td>
</tr>
<tr>
<td><strong>G. ENGINE LUBRICATION SYSTEMS</strong></td>
<td><strong>CTE Pathway:</strong></td>
</tr>
<tr>
<td>Understand, apply, and evaluate the principles and procedures used for lubrication systems.</td>
<td>C3.2, C3.7, C6.1, C6.2, C7.5, C8.6</td>
</tr>
<tr>
<td>3. Describe the function of antifreeze/coolant.</td>
<td><strong>Career Ready Practice:</strong></td>
</tr>
<tr>
<td>4. Describe and demonstrate the following:</td>
<td>1, 4, 11</td>
</tr>
<tr>
<td>a. diagnosing common cooling system problems and their symptoms</td>
<td><strong>CTE Anchor:</strong></td>
</tr>
<tr>
<td>b. replacing faulty cooling system components</td>
<td>Problem Solving and Critical Thinking:</td>
</tr>
<tr>
<td>(15 hours)</td>
<td>5.2, 5.3, 5.4</td>
</tr>
<tr>
<td><strong>H. BASIC AUTOMOTIVE ELECTRICITY</strong></td>
<td><strong>CTE Pathway:</strong></td>
</tr>
<tr>
<td>Understand, apply, and evaluate the principle of automotive electricity.</td>
<td>C3.7, C5.6, C6.2</td>
</tr>
<tr>
<td>1. Define the following:</td>
<td><strong>Career Ready Practice:</strong></td>
</tr>
<tr>
<td>a. Electricity</td>
<td>1, 4, 5</td>
</tr>
<tr>
<td>b. Current</td>
<td><strong>CTE Anchor:</strong></td>
</tr>
<tr>
<td>c. alternating current (AC)</td>
<td>Problem Solving and Critical Thinking:</td>
</tr>
<tr>
<td>d. direct current (DC)</td>
<td>5.1, 5.2, 5.3, 5.4</td>
</tr>
<tr>
<td>e. conductor</td>
<td><strong>Note:</strong> WeAreDACE.Org - 10 -</td>
</tr>
<tr>
<td>COMPETENCY AREAS AND STATEMENTS</td>
<td>MINIMAL COMPETENCIES</td>
</tr>
<tr>
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</tr>
<tr>
<td>1. Identify and describe the features and functions of the charging system.</td>
<td>a. Alternator</td>
</tr>
<tr>
<td>2. Identify and describe the features and functions of the following charging system components:</td>
<td>b. voltage regulator</td>
</tr>
<tr>
<td>3. Describe how the AC current from the alternator is changed to DC current.</td>
<td>c. charging system gauge or warning light</td>
</tr>
<tr>
<td>4. Describe and demonstrate the following:</td>
<td>d. diagnosing charging system malfunctions</td>
</tr>
<tr>
<td>5. repairing charging system malfunctions</td>
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**I. CHARGING SYSTEMS**

Understand, apply, and evaluate the principles and procedures used for charging systems.

(10 hours)

<table>
<thead>
<tr>
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<th>STANDARDS</th>
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<tbody>
<tr>
<td>1. Identify and describe the features and functions of the starting system.</td>
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<tr>
<td>2. Identify and describe the features and functions of the following starting system components:</td>
<td>a. battery</td>
<td>CTE Pathway: C3.7, C6.3, C6.4, C8.6</td>
</tr>
<tr>
<td>3. Describe and demonstrate the following:</td>
<td>b. ignition switch</td>
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<td>4. diagramming a simple starting system circuit</td>
<td>c. neutral safety switch</td>
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<td>5. diagnosing common starting system problems</td>
<td>d. starter relay</td>
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<tr>
<td>6. removing and replacing a starter motor</td>
<td>e. starter solenoid</td>
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<tr>
<td>7. battery cables</td>
<td>f. battery cables</td>
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<tr>
<td>8. starter motor</td>
<td>g. starter motor</td>
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**J. STARTING SYSTEMS**

Understand, apply, and evaluate the principles and procedures used for starting systems.

(10 hours)
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<th>STANDARDS</th>
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</table>
| K. EMPLOYABILITY SKILLS          | 1. Summarize employer requirements for the following:  
|                                  | a. Punctuality  
|                                  | b. Attendance  
|                                  | c. attitude toward work  
|                                  | d. quality of work  
|                                  | e. teamwork  
|                                  | f. timeliness  
|                                  | g. communication skills  
|                                  | h. computer skills and software applications  
|                                  | 2. Identify potential employers through traditional and internet sources.  
|                                  | 3. Describe the role of electronic social networking in job search.  
|                                  | 4. Design sample résumés and cover letters.  
|                                  | 5. Describe the importance of filling out a job application legibly, with accurate and complete information.  
|                                  | 6. Complete sample job application forms correctly.  
|                                  | 7. Describe the importance of enthusiasm on a job.  
|                                  | 8. Describe the importance of appropriate appearance on the job.  
|                                  | 9. Describe the importance of the continuous upgrading of job skills.  
|                                  | 10. Describe customer service as a method of building permanent relationships between the organization and the customer.  
|                                  | 11. Describe and demonstrate appropriate interviewing techniques.  
|                                  | 12. Identify the informational materials and resources needed to be successful in an interview.  
|                                  | 14. Describe and demonstrate appropriate follow-up procedures.  
|                                  | (2 hours) |  
|                                  | | Career Ready Practice:  
|                                  | | 1, 2, 3, 4, 8  
|                                  | | CTE Anchor:  
|                                  | | Communications:  
|                                  | | 2.4  
|                                  | | Career Planning and Management:  
|                                  | | 3.1, 3.2, 3.3  
|                                  | | Health and Safety:  
|                                  | | 6.2  
|                                  | | Responsibility and Flexibility:  
|                                  | | 7.2, 7.3, 7.7  
|                                  | | Ethics and Legal Responsibilities:  
|                                  | | 8.3, 8.4  
|                                  | | Leadership and Teamwork:  
|                                  | | 9.2, 9.3, 9.4  
|                                  | | Demonstration and Application:  
|                                  | | 11.2  
|                                  | | CTE Pathway:  
|                                  | | C5.4, C5.5  

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SUGGESTED INSTRUCTIONAL MATERIALS and OTHER RESOURCES

TEXTBOOKS


RESOURCES

Employer Advisory Board members

Foundation Standards
http://www.cde.ca.gov/be/st/ss/documents/ctestandards.doc

Automotive Retailing Today (ART) 8400 Westpark Dr., MS 2, McLean, VA 22102. Phone: (703) 556-8578.

Automotive Youth Educational Systems (AYES) 50 W. Big Beaver, Suite 145, Troy, MI 48084. Phone: (248) 526-1750. Fax: (248) 526-1751.

National Automobile Dealers Association (NADA) Public Relations Dept., 8400 Westpark Dr., McLean, VA 22102-3591. Phone: (703) 821-7000.

National Automotive Technicians Education Foundation (NATEF) 101 Blue Seal Dr. SE, Suite 101, Leesburg, VA 20175. Phone: (703) 669-6650. Fax: (703) 669-6125. www.natef.org

National Institute for Automotive Service Excellence (ASE) 101 Blue Seal Dr. SE, Suite 101, Leesburg, VA 20175. Phone: (703) 669-6600.

SkillsUSA P.O. Box 3000, Leesburg, VA 20177-0300. Phone: (703) 777-8810. Fax: (703) 777-8999. www.skillsusa.org

www.familycar.com

www.freeonlineautorepair.com/automotive_fuel_system.html
www.fueleconomy.gov

COMPETENCY CHECKLIST
TEACHING STRATEGIES and EVALUATION

METHODS AND PROCEDURES

A. Lecture and discussion
B. Multimedia presentations
C. Visual aids
D. Projects
E. Individualized instruction

EVALUATION

SECTION A – Orientation and Safety – Pass the safety test with 100% accuracy.

SECTION B – Resource Management – Pass all assignments and exams on principles of resource management with a minimum score of 80% or higher.

SECTION C – Measurements – Pass all assignments and exams on measurements with a minimum score of 80% or higher.

SECTION D – Tools and Equipment – Pass all assignments and exams on tools and equipment with a minimum score of 80% or higher.

SECTION E – Engine Designs: Domestic – Pass all assignments and exams on engine designs: domestic with a minimum score of 80% or higher.

SECTION F – Engine Cooling Systems – Pass all assignments and exams on engine cooling systems with a minimum score of 80% or higher.

SECTION G – Engine Lubrication Systems – Pass all assignments and exams on engine lubrication systems with a minimum score of 80% or higher.

SECTION H – Basic Automotive Electricity – Pass all assignments and exams on basic automotive electricity with a minimum score of 80% or higher.

SECTION I – Charging Systems – Pass all assignments and exams on charging systems with a minimum score of 80% or higher.

SECTION J – Starting Systems – Pass all assignments and exams on starting systems with a minimum score of 80% or higher.

SECTION K – Employability Skills – Pass all assignments and exams on employability skills with a minimum score of 80% or higher.
DEFINITIONS OF TECHNICAL TERMS

ADJUST - to bring components to specified operational settings.

ALIGN - to restore the proper position of components.

ANALYZE - to assess the condition of a component or system.

ASSEMBLE (REASSEMBLE) - to fit together the components of a device or system.

BALANCE - to establish correct linear, rotational or weight relationship.

BLEED - to remove air from a closed system.

CAN – Controller Area Network. CAN is a network protocol (SAE J2284/ISO 15765-4) used to interconnect a network of electronic control modules

CHARGE - to bring to a specified state, e.g., battery or air conditioning system.

CHECK - to verify condition by performing an operational or comparative examination.

CLEAN - to rid component of foreign matter for the purpose of reconditioning, repairing, measuring or reassembling.

DEGLAZE – to remove a smooth glossy surface.

DETERMINE - to establish the procedure to be used to perform the necessary repair.

DETERMINE NECESSARY ACTION – indicates that the diagnostic routine(s) is the primary emphasis of a task. The student is required to perform the diagnostic steps and communicate the diagnostic outcomes and corrective actions required addressing the concern or problem. The training program determines the communication method (worksheet, test, verbal communication, or other means deemed appropriate) and whether the corrective procedures for these tasks are actually performed.

DIAGNOSE - to identify the cause of a problem.

DISASSEMBLE - to separate a component’s parts as a preparation for cleaning, inspection or service.

DISCHARGE - to empty a storage device or system.

EVACUATE - to remove air, fluid or vapor from a closed system by use of a vacuum pump.

FLUSH - to internally clean a component or system.

HIGH VOLTAGE – voltages of 50 volts and higher.

HONE - to restore or resize a bore by using rotating cutting stones.

JUMP START - to use an auxiliary power supply to assist a battery to crank an engine.
LOCATE – to determine or establish a specific spot or area.

MEASURE - to determine existing dimensions/values for comparison to specifications.

NETWORK - a system of interconnected electrical modules or devices.

ON-BOARD DIAGNOSTICS (OBD) - diagnostic protocol which monitors computer inputs and outputs for failures.

PARASITIC DRAW - electrical loads which are still present when the ignition circuit is OFF.

PERFORM - to accomplish a procedure in accordance with established methods and standards.

PERFORM NECESSARY ACTION – indicates that the student is to perform the diagnostic routine(s) and perform the corrective action item. Where various scenarios (conditions or situations) are presented in a single task, at least one of the scenarios must be accomplished.

PURGE - to remove air or fluid from a closed system.

REMOVE - to disconnect and separate a component from a system.

REPAIR - to restore a malfunctioning component or system to operating condition.

REPLACE - to exchange a component; to reinstall a component.

RESURFACE – to restore correct finish.

SERVICE - to perform a procedure as specified in the owner’s or service manual.

TEST - to verify condition through the use of meters, gauges or instruments.

TORQUE - to tighten a fastener to specified degree or tightness (in a given order or pattern if multiple fasteners are involved on a single component).

VERIFY - to confirm that a problem exists after hearing the customer’s concern; or, to confirm the effectiveness of a repair.

VOLTAGE DROP - a reduction in voltage (electrical pressure) caused by the resistance in a component or circuit.
Statement for Civil Rights

All educational and vocational opportunities are offered without regard to race, color, national origin, gender, or physical disability.