San Bernardino Valley College
Curriculum Approved: May 6, 2002
Last Updated: April 30, 2002

**New Course Checklist**

1. NEED FOR THIS COURSE:

   a. Diesel truck technology has changed tremendously over the past decade. Students wishing to enter the field of diesel truck service and repair need a broad understanding of the new technologies. It is imperative that we expose our students to new technologies as much possible as to ensure their successful transition into the labor force. Technician certification programs are in great demand as the demand for qualified technicians far exceeds supply. Students completing this course will be ready to meet the challenge of the certification tests.

   b. Some documented evidence of the need for this course include:

      - Direct contact with Mr. Bill Johnson, Mr. Dave Flaming, Mr. Mike Koehler, and Mr. Don Snow of Johnson Machinery. These representatives of Johnson Machinery, the local CAT dealer and repair/sales center of Riverside, indicated their strong commitment to support this training by providing much needed expertise, equipment, training materials, and most importantly, job placement for our successful students.
      - Recent and rapid growth in the rail transport industries – Santa Fe Railroad's newly expanded Intermodial Transport Depot in San Bernardino and the expansion of various truck/warehouse facilities throughout the inland valley communities has created much needed employment opportunities for individuals entering the heavy-duty truck repair/service industry.

   c. This course will provide our students the needed skills and training to enter this newly created job market in this rapidly expanding career field.

2. CULTURAL DIVERSITY:

   This course is technical in nature and is culturally neutral.

3. RATIONALE FOR OTHER REQUESTS:

   a. Course Repeatability: Not Applicable
   b. Credit/No Credit Grading Only: Not Applicable
   c. Cross-listed Courses: Not Applicable

4. FEASIBILITY—BUDGET IMPLICATIONS:

   a. Is new equipment needed? No
   b. Will new faculty need to be hired? No
   c. Are facilities adequate? Yes

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## I. CATALOG DESCRIPTION:

A. Department Information:

| | |
|---|---|
| Division: | Technical |
| Department: | Automotive |
| Course ID: | DIESEL 030 |
| Course Title: | Advance Heavy-Duty Truck Systems |
| Units: | 4 |
| Lecture: | 3 Hours |
| Laboratory: | 3 Hours |
| Prerequisite: | DIESEL 028 |

B. Catalog and Schedule Description:
Advance level theory and practical workshop in maintenance, air conditioning, ABS, computers, and operations of the heavy-duty truck and semi-tractors systems.

## II. NUMBER OF TIMES COURSE MAY BE TAKEN FOR CREDIT: One

## III. EXPECTED OUTCOMES FOR STUDENTS:

Upon completion of the course students should be able to:

A. Identify the safe use and care of tools, precision tools, and the correct protective clothing and safety gear for various situations.
B. Identify and order new service parts, lubrications and oils as required.
C. Describe the design, operation, and components of the heavy-duty truck and semi-tractor systems.
D. Perform advanced servicing of the heavy-duty trucks and semi-tractor systems and components in a manner consistent with accepted industry standards.
E. Demonstrate college level writing competency by completing maintenance service logs, service documents, homework, written test, etc.
F. Develop advanced hypothesis from examining a variety of new, used and failed truck components; determine needed repairs; and write failure, damage report.
G. Develop needed skills to repair a variety of truck components.

## IV. COURSE CONTENT:

A. Review of heavy-duty truck systems
   1. General shop safety
   2. Electrical fundamentals
   3. Clutches
   4. Transmission
   5. Drive-shafts
   6. Steering systems
   7. Drive axel
   8. Wheels and tires
   9. Truck classification
B. Advance electrical
   1. Basic computers
   2. Chassis electrical circuits
   3. Charging and cranking circuits
   4. Diagnosis and repair of electrical circuits
C. Truck Brake Systems (ABS)
   1. ABS and EBS
   2. Air brake systems
   3. Hydraulic brake systems
   4. Maintenance and safety
D. Truck chassis frame

1. Basic design
2. Repair of frame

E. Heating and ventilation systems
1. Heaters
2. Air conditioning principles
3. Repair of air conditioning systems
4. Testing and safety of A/C systems

F. Heavy-duty truck trailers
1. Vans
2. Flat
3. Refrigerated
4. Other types and designs

G. Maintenance programs
1. PM programs
2. Safety programs

**V. METHODS OF INSTRUCTION:**

Methods of instruction include but are not limited to:

A. Class lecture
B. Direct laboratory demonstration by instructor
C. Guided laboratory practice by the instructor and field experts

**VI. TYPICAL ASSIGNMENTS:**

A. Diagnosis and repair an electrical short in a truck or trailer.
B. Diagnosis and repair a failure in air-conditioning systems.
C. Write a brief narrative describing the function, purpose, and recommended service requirements of a specific truck system or component.

**VII. EVALUATION(S):**

A. Methods of evaluation:
1. Successful completion of labor tasks
2. Weekly assignments from study or workbooks
3. Mid-term examination
4. Final examination
Typical Questions:
a) What part of the air brake system connects the air system to the foundation brakes?
b) Which part of the air conditioning system removes heat from the circulating refrigerant?

B. Frequency of evaluation:
1. Weekly assignments
2. One Mid-term examination
3. One Final examination
4. Approximately 14 labor tasks

**VIII. TYPICAL TEXT(S):**

John A. Corinchock, Andrew Norman, Robert Scharff, Heavy-Duty Truck Systems, Third Edition, Delmar, Albany, New York, 2001
No other books found at this time.

**IX. OTHER SUPPLIES REQUIRED OF STUDENTS:** Safety glasses

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**Step 3, Form A**

**Content Review Form**
**PREREQUISITE COURSE**

**Target Course:** DIESEL 030: Advance Heavy-Duty Truck Systems

**Prerequisite Course:** DIESEL 028: Heavy-Duty Truck Preventive Maintenance Service

**Instructions:**
1. List exit competencies (skills) from Prerequisite Course. These skills are listed in the "Student Outcomes" section of the Course Outline ("upon completion of the course, the student should be able to…")
2. Indicate which of the listed exit competencies (skills) are necessary entry skills needed for success in the target course. Mark with an "X" each needed skill.
3. Indicate the degree of importance of each needed entry skill for course success, using the following rating scale:
   1=Critical 2=Very Helpful 3=Desirable

**Skills Analysis**

| Exit Skills in Prerequisite Course | Entry Skills Needed for Success in Target Course (Mark with an X if needed.) | Degree of Importance (Rate 1 – 3) |
|---|---|---|
| 1. Identify the safe use and care of tools, chemicals, and the correct protective clothing and safety gear for various situations | X | 1 |
| 2. Identify and order new service parts, lubricants, and oils as required | X | 1 |
| 3. Describe the design, operation, and components of the heavy-duty truck and semi-tractor | X | 1 |
| 4. Perform routine servicing of the heavy-duty truck and semi-tractor systems and components in a manner consistent with accepted industry standards | X | 1 |
| 5. Demonstrate college level writing competency by writing comprehensive preventive maintenance service logs and narrative reports | X | 1 |
| 6. Contrast and compare the preventive maintenance service requirements of light duty trucks to heavy-duty trucks | X | 1 |
| 7. Calculate the cost of operating a fleet of trucks, including service, maintenance, drivers' wages based on data supplied by Dalton Trucking Company | X | 1 |
| 8. Write a service maintenance agreement document | X | 1 |
| 9. Develop a hypothesis from examining a variety of failed diesel truck components; determine needed repairs, and write a failure/damage report | X | 1 |

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