DE ANZA COLLEGE
APPLIED TECHNOLOGIES DIVISION
COURSE OUTLINE

Degree Applicable

Automotive Technology 53A — Effective Quarter Fall 2003

I. Catalog Information

Auto 53A — Automotive Mechanisms — 3 Units

Prerequisite: Completing course work towards a Degree or Certificate in Manufacturing & CNC Technology.

Advisories: English Writing 100B and Reading 100 (or Language Arts 100), or English as a Second Language 24 and 72 (English as a Second Language 4); Mathematics 101

Six hours lecture-laboratory per week

Seventy-two hours lecture-laboratory per quarter

The application of physical principles to the operation of mechanical, hydraulic, and hydromechanical systems, using an applied physics technique.

II. Course Objectives

The student will:

A. Identify and explain the physical principles surrounding the operation of both simple and compound machines.

B. Employ a logical, scientific approach to the analysis of systems problems.

C. Interpret test equipment readouts and troubleshooting data while testing and diagnosing machine systems, hydraulic systems, and control systems problems.

III. Essential Student Materials

Scientific calculator (T.I. 30 or equivalent)

IV. Essential College Facilities

Appropriate laboratory

V. Expanded Description: Content and Form

A. Motion and equilibrium
   1. Inertia — momentum
   2. Friction

B. Lever systems and applications
   1. 1st, 2nd, and 3rd class levers

2. Calculations of gains vs. losses
3. Identification and uses

C. The incline plane
1. Calculations of gains vs. losses
2. Applications
3. Use of the screw-thread

D. The pulley
1. Use as a 1st, 2nd, or 3rd class lever
2. Calculations of gains vs. losses
3. Applications

E. Gear sets
1. Gear trains and types
2. Transfer of power
3. Compounding
4. Planetary gear applications
5. Calculations of gains vs. losses
6. Applications

F. Hydraulics and pneumatics
1. Pascal's Law
2. Fluid pressures
3. Pressure measuring systems and meters
4. Static fluid systems
5. Dynamic fluid systems
6. Calculations of gains vs. losses
7. Applications

G. Compound and complex machines
1. Identification procedures
2. Calculations of gains vs. losses

H. Mechanics of heat transfer and the states of matter
1. Conduction, convection, radiation
2. Evaporation, condensation

VI. Assignments

A. Reading from texts
B. Research project

VII. Methods of Evaluating Objectives

A. Problem-solving quizzes
B. Objective midcourse examinations
C. A comprehensive and objective final examination
D Attendance per department policy

VIII. Texts and Supporting References

A. Texts:
   1. Bohn, Ralph C. and Angus J. MacDonald. *Power, Mechanics of Energy Control*. Bloomington, Ind: McKnight, 1991.

   2. Bohn, Ralph C. and Angus J. MacDonald. *Power Systems Workbooks*. Bloomington, Ind: McKnight, 1991.