

**PALOMAR COLLEGE**  
**COURSE OUTLINE OF RECORD FOR**  
**DEGREE CREDIT COURSE**

  X   Transfer Course   X   A.A. Degree Applicable Course  
(check all that apply)

**COURSE NUMBER AND TITLE:** AT 135      Front End Alignment and Wheel Service

**UNIT VALUE:** (3)      **MINIMUM NUMBER OF SEMESTER HOURS:** 96

**BASIC SKILLS REQUIREMENT:**

Appropriate language and computational skills.

**ENTRANCE REQUIREMENTS:**

**PREREQUISITE:** None.

**COREQUISITE:** None.

**RECOMMENDED PREPARATION:** None.

**SCOPE OF COURSE:**

The repair and adjustment of the undercarriage of the automobile. Included are such areas as steering, geometry, turn radius, ball joints, toe track, camber, caster, suspension, bearing service, wheel balance, and tire wear identification. Preparation for the State Lamp License.

**SPECIFIC COURSE OBJECTIVES:**

Upon completion, students will be able to:

1. Apply principles of shop safety.
2. Identify worn suspension components.
3. Compare and contrast methods for measuring alignment angles both on and off vehicles.
4. Evaluate the proper use of special tools.
5. Apply principles of repair necessary to pass state licensing exam in lamp adjusting.
6. Analyze testing procedures required for four-wheel alignment.

**CONTENT IN TERMS OF SPECIFIC BODY OF KNOWLEDGE:**

Instruction includes: Suspension types and components, malfunction diagnosis and repair, individual part replacement, use of test equipment, and practice on vehicles. Preparation for state of California Lamp Adjuster's Test and ASE Tests on suspension and alignment.

- I. Introduction and Fundamental Principles
  - A. Gravity
  - B. Pressure
  - C. Friction
  - D. Hydraulics
  
- II. Automotive chassis
  - A. Components of the Chassis
  - B. Diagnosis of Chassis Troubles
  - C. Suspension Systems
  
- III. Front End Alignment
  - A. Preliminary Checks
  - B. Alignment Testers
  - C. Caster Angle
  - D. Camber Angle
  - E. Toe
  - F. Turning Radius
  - G. Steering Axis Inclination
  
- IV. Tires and Tire Service
  
- V. Chassis Lubrication
  - A. Periodic Schedule
  - B. Manufacturer's Specifications
  
- VI. Wheel Balance
  - A. Static
  - B. Dynamic
  - C. Diagnosis of Balance and Tire Wear

**REQUIRED READING:**

California State Lamp Adjuster's Manual. Sacramento, CA: State of California Publication, 1989.

Front End Service Manual. Cambridge, MA: Moog Publishers Inc., 1987.

Automotive Steering, Suspension, & Wheel Alignment. San Jose, CA: Check Chart, N.M. Gousha Company, 1992.

**SUGGESTED READING:**

Trade journals, manufacturer's manuals, and vehicle service manuals.

**REQUIRED WRITING:**

Students will write one five-page report on a particular alignment problem.

**OUTSIDE ASSIGNMENTS:**

**Students are expected to spend a minimum of three hours per unit per week in class and on outside assignments, prorated for short term classes.**

Students must apply for state test for lamp adjustment exam and study state lamp handbook which may require two hours per week.

**INSTRUCTIONAL METHODOLOGY:**

Lecture, demonstration and laboratory practice are primary methods of instruction. Filmstrips, slides, videos, and overhead are incorporated.

**Check all that apply:**

- lecture
- laboratory
- lecture-laboratory combination
- directed study

**This course may be offered as a distance education course and meets Title 5 regulations 55370, 55372, 55374, 55376, 55378, and 55380.**

Yes  No

**If yes, check all that apply.** (See guidelines for preparation for definitions.)

- telecourse
- mediated instruction
- computer assisted instruction

**GRADING POLICY AND STANDARDS** (include methods for determining whether the stated

objectives have been met by students):

- 40% Three written exams each constituting 13% are given throughout the semester and are intended to measure the students level of progress throughout the course.
- 50% Two practical lab exams given each constituting 25% will be given half way through the semester are intended to measure students proficiency on motor vehicle repairs.
- 10% Participation: students are expected to participate in each class meeting.

**IS COURSE REPEATABLE FOR REASON(S) OTHER THAN DEFICIENT GRADE?**

     Yes   X   No                      Number of times course may be taken for credit: 1.

If yes, identify specific provision of Title 5 Division 2 section(s) 55761-55763 and 58161 which qualifies course as repeatable:

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**SIGNATURES:**

<b>SIGNATURES ON FILE</b>
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