BUTTE COLLEGE
COURSE OUTLINE

I. **CATALOG DESCRIPTION**

AUT 20 - Automotive Brakes/Suspension and Steering Systems Lecture **3 Unit(s)**

Prerequisite(s): AUT 41 (or concurrent enrollment)
Co-requisite(s): AUT 21
Recommended Prep: AUT 1

Transfer Status: CSU
50 hours Lecture

This course introduces the theory, operation, and repair in the areas of base brake systems, anti-lock brake systems, and steering and suspension systems. Topics include: the application of Pascal's Law, disk brake systems and their related components, drum brake systems, anti-lock brake system operation and repair, suspension system operation and repair including electronic suspension and steering systems.

II. **OBJECTIVES**

Upon successful completion of this course, the student will be able to:

A. Describe the process used to diagnose and repair disk brake systems.
B. Describe the process used to diagnose and repair drum brake systems.
C. Describe the process used to diagnose and repair anti-lock brake systems.
D. Describe the process used to diagnose and repair suspension systems.
E. Describe the process used to diagnose and repair steering systems.
F. Describe the process used to diagnose and repair electronic suspension/steering systems.

III. **COURSE CONTENT**

A. **Unit Titles/Suggested Time Schedule**

Lecture

Topics	Hours
1. Brake operation, diagnosis and repair.	5.00
2. Hydraulics as they relate to master and secondary cylinders, including piping, fittings and brake assist systems.	5.00
3. Disc, drum and parking type braking systems.	5.00
4. Electronic brake systems including anti-lock brakes, traction controls, stability assist, brake mitigation systems, diagnosis and repair.	5.00
5. Steering, suspension systems, diagnosis and repair.	5.00
6. Tires, wheels, wheel bearings, diagnosis and repair.	5.00
7. Shock absorbers and strut dampening systems.	2.00
8. Short-Long Arm (SLA), multi-link and MacPherson strut type suspension systems; industry recognised diagnosis and repair procedures.	5.00
9. Four-wheel alignment and diagnostic alignment angles.	8.00
10. Computer controlled suspension systems, rack and pinion steering gears and four-wheel steering systems; industry recognized diagnosis and repair procedure.	5.00
Total Hours	50.00

IV. **METHODS OF INSTRUCTION**

A. Lecture
B. Instructor Demonstrations
C. Homework: Students are required to complete two hours of outside-of-class homework for each hour of lecture
D. Discussion
E. Demonstrations
F. Reading Assignments
G. Multimedia Presentations

V. **METHODS OF EVALUATION**

A. Exams/Tests
B. Quizzes
C. Demonstration
D. Class participation
E. Final Examination

VI. **EXAMPLES OF ASSIGNMENTS**

A. Reading Assignments
    1. Read industry recognized procedures on proper alignment practices and be prepared to discuss in class.
    2. Read the assigned chapters on disc and drum brakes then complete the related test.
B. Writing Assignments
    1. Following the lecture and discussion on steering gears, fill in the steering section of the key notes book.
    2. Complete the reading assignment on alignment procedures and write a one-page summary.
C. Out-of-Class Assignments
    1. Complete the Mechanical Safety portion of the SP2 safety test with a score of 80% or better. Prior to working in lab, you must complete the following areas: Introduction, Fires, Slips & Falls, Power Tools, Lifts, Operating Vehicles, Jump Starting, Chemicals and the MSDS.
    2. Complete the 17 self-study modules assigned by American Honda. Your instructor will confirm that you have completed the required modules.

VII. **RECOMMENDED MATERIALS OF INSTRUCTION**

Textbooks:

A. Schnubel, M. Automotive Steering and Suspension Systems. 6th Edition. Cengage, 2015.
B. Pickerill, K. Automotive Brake Systems. 6th Edition. Cengage, 2015.

Created/Revised by: Doug Conrad
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