DE ANZA COLLEGE
AUTOMOTIVE TECHNOLOGY
A.T. 92C - AUTOMOTIVE ELECTRONIC CHASSIS CONTROLS
GREEN SHEET

AUTOMOTIVE TECHNOLOGY 92C

I. Catalog Information

AUTO 92C Automotive Electronic Chassis Controls 1 1/2 Units

Prerequisite: Automotive Technology 92A

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

Three hours lecture-laboratory per week

Thirty-six hours lecture-laboratory per quarter

Computer controlled automotive suspension and steering systems, including repair, maintenance, troubleshooting, and service procedures.

II. Course Objectives

The student will:

A. Define the basic design and operation of electronic controlled suspension and steering systems.

B. Classify the different types of systems.

C. Describe the accepted industry techniques for troubleshooting, maintenance, and repair of these systems.

D. Demonstrate the ability to troubleshoot and repair these systems.

III. Essential Student Materials

A. Safety glasses

B. Required hand tools

IV. Essential College Facilities

Automotive chassis area

V. Expanded Description: Content and Form

A. Basic design and operation of ECC systems
   1. ECC components — their general purpose
   2. Complete ECC system
   3. Basic operating principles

B. Basic design and operation of electronic control
   1. Computer input
   2. Computer output
   3. Sensors/switches, relays
   4. Wiring diagrams

C. ECC types
   1. Air supported system (ASS)
   2. Electronic level control (ELC)
   3. Electronic variable shock absorber (EVSA)
   4. Electronic controlled suspension (ECS)
   5. Auto adjust suspension (AAS)

D. Air compressor/drier
   1. Air compressor type and construction
   2. Air compressor operation
   3. Air compressor maintenance and repair
   4. Air compressor diagnosis/troubleshooting

E. Height sensor
   1. Height sensor type and construction
   2. Height sensor operation
   3. Height sensor maintenance and repair
   4. Height sensor diagnosis/troubleshooting

F. Electronic control module (ECM)
   1. ECM type and construction
   2. ECM operation
   3. ECM maintenance and repair
   4. ECM diagnosis/troubleshooting

G. Actuator systems
   1. Actuator type and construction
   2. Actuator maintenance and repair
   3. Actuator operation
   4. Actuator diagnosis/troubleshooting

H. Electronic circuit testing
   1. Compressor circuit check
   2. ECM circuit checks
   3. Actuator circuit checks
   4. Accelerator switch checks
   5. Angle sensor circuit checks
   6. Speed sensor circuit checks
   7. Brake fluid pressure sensor circuit checks
   8. G sensor circuit checks
   9. Height sensor circuit checks
   10. Solenoid valve circuit check
   11. Stepper motor circuit checks
   12. Throttle-position sensor checks

I. Self diagnosis
   1. On-board trouble codes
   2. Scanners
   3. Voltage waveforms
   4. Trouble code identification

J. Introduction to electronic steering systems (ESS)
   1. ESS components — their general purpose
   2. Complete ESS system
   3. Basic operating principles

K. Principles of electronic controls
   1. Computer input
   2. Computer output
   3. Sensors/switches/relays
   4. Wiring diagrams

L. ESS basics
   1. Steering wheel positions sensor
   2. Mechanical with sensor input
   3. Four-wheel steering
   4. Electronic rack and pinion
   5. Electronic variable steering ratios
   6. Sensors

VI. Assignments

A. Reading from text and handouts
B. Journal of lab activities

VII. Methods of Evaluating Objectives

A. Satisfactory completion of required course notebook and laboratory activities **(50 Pts)**

Notebooks are due @ 12:10 PM Thursday February 5th

B. Objective and written quizzes **(50 Pts)**

C. Final examination **(100 Pts)**

VIII. Texts and Supporting References

Texts:
A. Prentice-Hall, *Automotive Chassis Systems 6th ed,* Halderman, Englewood Cliffs, New Jersey
References:
Manufacturers service manuals as required

Reading Assignments: As required

IX. Other Related Information

1. Instructor: Randy Bryant

2. Office: E14b

3. Office hour: 12:20 - 1:20 and by appointment

4. Telephone: (408) 864-8840 Office

5. E-mail: bryantrandy@fhda.edu

6. Grading standards:

A = 94 - 100 percent
A- = 90 – 93 percent
B+ = 87 – 89 percent
B = 84 – 86 percent
B- = 80 – 83 percent
C+ = 77 - 79 percent
C = 70 - 76 percent
D+ = 67 - 69 percent
D = 64 - 66 percent
D- = 60 – 63 percent
F = 00 – 59 percent

7. *Student Behavior* - Students are expected to abide by the policies listed in the De Anza Winter schedule of Classes 2015 Student behavior, which violates these standards, may be cause for removal from this course. Students should obtain a copy of the *"De Anza College Resource Guide",* if they desire more information.

8. *Classroom and Laboratory conduct* –

   a. Students will be dismissed from class for disruptive behavior per college policy.
   b. Students will wear safety glasses, coveralls, and work shoes for the duration of lab activity.
   c. Students must have all required hand tools available for lab activity; basic hand tools will not checked out from the tool room after the first six weeks. Random spot checks of tools will be made.
   d. Students are to remain in assigned areas through clean up. Punch out on time cards only after clean up has been completed. (***Your instructor will determine if clean up is complete!***)
   e. There is one 20 minute break between lecture and lab. Your instructor will check roll at the start of lab activity. Do not leave campus while on break!
   f. It is expected that lab activity will be completed with pride and craftsmanship and that students will perform warranty services. If overtime is required, consider it the equivalent of homework.
   g. All *"LIVE"* lab work must be entered on a repair order, estimated, authorized by the customer and initialed by the instructor.

9. Attendance

Just as on the job, regular, punctual attendance is required. Always call in if you are going to be absent. The following limits and conditions apply per department policy:

A. Students must record attendance on a time card. Punch in prior to 7.30AM (start of class) and out not before 12:10 (end of class).
B. For each tardy, there is a 1-hour penalty. *7:30AM is tardy.*
C. Forgetting to punch in or out will constitute a 1-hour penalty.
D. Up to 5 hours (each 6 weeks) can be made up providing the student calls in. Missed time cannot be made up if the student does not call in prior to class. Hours not made up will be deducted from total class points at the rate of 1% per hour. The instructor will specify terms and conditions for make-up.
E. Hours must be made up prior to midterm and finals week.
F. Incomplete grades may be given in instances of long-term illness or injury.
G. To drop without penalty, a drop form must be filed by the date specified in the schedule of classes.
H. Do NOT ever punch in or out for another student. If I find out that you do, you will have the next day off (5 HRS lost without make-up time).

10. *Rules of Engagement* – As a class we will decide on a code of conduct. List all of the agreed upon rules.

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Tear off page

I have read and understand the course outline and instructor policies

Date*:* _____

Name:_____

Phone #: _____

Signature: _____