1307
AUTOMOTIVE ELECTRICAL SYSTEMS

Course Description

An overview of automotive electrical systems including topics in operation and theory, testing, diagnosis, and repair of batteries, charging and starting systems, and electrical accessories. Emphasis on electrical schematic diagrams and service manuals. May be taught manufacturer specific.

Course Focus

This course includes a substantial amount of hands-on learning activities, which cannot be rescheduled. Regular attendance is mandatory for successful completion of the course.

Text and References

Automotive Laboratory Exercises: Shane Baxter
Selected Manufacturer Specific Materials/Publications

Course Goals

The following list of course goals will be addressed in the course. These goals are directly related to the performance objectives. (* Designates a CRUCIAL goal)

1. define electricity
2. define voltage
3. define amperage
4. define resistance
5. explain Ohm’s Law
6. explain series circuit operation
7. assemble series circuit
8. explain parallel circuit operation
9. assemble parallel circuit
10. explain series/parallel circuit operation
11. assemble series parallel circuit
12. demonstrate digital meter operation*
13. demonstrate analog meter operation*
14. measure parasitic draw*
15. measure voltage*
16. measure current flow*
17. measure resistance*
18. measure voltage drop*
19. explain common electrical circuit failures
20. define common electrical circuit components
21. explain circuit control device operation
22. list circuit protection devices
23. explain diode operation
24. explain transistor operation
25. identify common electrical schematic symbols
26. locate necessary service manual information*
27. apply necessary service manual information*
28. interpret electrical wiring diagrams*
29. explain electrical diagnostic procedures
30. repair common wiring problems
31. check relay operation
32. explain battery operation
33. demonstrate starting-charging system analyzer operation
34. analyze battery condition*
35. explain starting system operation
36. analyze starting system performance*
37. rebuild starter
38. explain charging system operation
39. analyze charging system performance*
40. rebuild alternator*
41. replace power window regulator
42. replace multifunction switch
43. troubleshoot lighting systems
44. explain lighting systems operation
45. explain washer/wiper system operation
46. troubleshoot washer/wiper system
47. explain power accessory systems operation
48. troubleshoot power accessory systems
49. troubleshoot open electrical circuits*
50. troubleshoot shorted electrical circuits*

Student Learning Outcomes

- Identify and explain the operation of high current automotive electrical system components
- Properly utilize common electrical diagnostic equipment on high current automotive electrical systems
- Analyze and understand the operation of high current automotive electrical circuits
- Troubleshoot and service high current automotive electrical system concerns in accordance with industry guidelines

Students Contributions

- Each student will spend at least ten hours per week preparing for class. **Attendance is critical in this class.**
- **All cell phones must be turned off or set on vibrate.** A cell phone that rings in class will result in a substantial grade reduction for that day for the student, and that student will have to either turn his/her phone off or leave the class, which will result in a zero for the day.
• You must wear your uniform or approved attire to class everyday. Jeans with holes are not allowed in class.
• You must wear closed toe shoes to class everyday.
• Once you receive your tools, you must bring them to class everyday.
• You must act like a professional everyday in class.

Financial Aid Statement

Students who are receiving any form of financial aid should check with the Financial Aid Office prior to withdrawing from classes. Withdrawals may affect your eligibility to receive further aid and could cause you to be in a position of repayment for the current semester.

Students who fail to attend or participate after the drop date are also subject to this policy.

Course Evaluation

Final grade is composed of:
33.3 % = Lab Grade
33.3 % = Quizzes
33.4 % = Final Exam (Written and or Practical)

Final Grade will be of letter type:
A = 90 to 100 points
B = 80 to 89 points
C = 70 to 79 points
F = below 70 points
I = Incomplete

Course Schedule

Basic Electricity
Electrical measurements
Ohm’s Law
Series circuits
Parallel circuits
Series/Parallel circuits
Circuit diagnosis

Circuit Components
Wires and wiring repair
Circuit protection devices
Switches Relays and solenoids
Diodes
Transistors

Automotive Electrical Systems
Starting systems
Charging Systems
Lighting systems
Wiper/Washer systems
Power accessory systems
GRADING POLICY

LAB GRADE

- The lab average, which consists of 33.3% of your grade, is comprised of your progress everyday in class.

- Your attitude
- Your ability to get along with others (Treating others with respect)
- Your attire
- Your productivity with the days workstations
- Your ability to stay quiet when the instructor is talking or performing a demo
- Cussing is not allowed in class!

NOTE: You start every day with 100 points; as long as there are no problems with the items listed above you will end the day with 100 points for a daily lab grade.

NOTE: If any of the problems listed above occurs, then points will be subtracted from the 100 points that day. The amount of the points subtracted will be up to the sole discretion of the instructor. If you have more point deductions than the 100 points for that day, then the points left over from that day of deductions will be subtracted from the next day.

- Since our classes lasts five and one half hours every day, missing one of our classes is like missing five regular college classes. Therefore anyone missing three days of an automotive course will fail the course no matter how good your quiz average and final test grades are. (There are exceptions to every rule for instance a family member-getting ill or passing away, but you must call the instructor to let him know the situation.)

- Fighting will result in all the students involved in the altercation being sent home for two days. After the two day cool off period a meeting will be arranged with the instructor and the dean to decide whether the student will be allowed back into the ASSET program or put on a one-year suspension. (This includes fighting anywhere on campus property)

- Racism or racial comments ARE NOT TOLLORATED!!!!!!

QUIZ GRADE

- The quiz average, which consists of 33.3% of your grade, is comprised of adding all the quizzes taken by the student during the course and dividing it by the number of quizzes given during the course. (This may include written quizzes, oral quizzes, hands-on quizzes, CBTs, and web based items.)
NOTE: If you are late for a quiz, that is you are not in your seat when the instructor hands out the quiz, then you will take a zero for that quiz. (Unless you have an excused tardy or absence that has been prearranged by the student with the instructor.)

**FINAL TEST**

- The final test, which consists of 33.4% of your grade, is comprised of the final test of the course that may include a written or practical or both.

**NOTE:** If you are late for the final test, that is not in your seat when the final test is handed out, then you will be able to take the test when you return, but fifteen points will be subtracted from your test for the tardiness.

**NOTE:** If you are absent for the final test you may not be able to make up the final test, therefore you will take a zero for the final test. The zero will be averaged in with your quiz average and lab average. (If you have an excused absence, then you will be able to take the final exam on a later date. An excused absence is one that the instructor has been told about by the student.)

**YOU CANNOT PASS THIS CLASS IF:**

- You do not complete all required web-based courses.
- You do not complete all required computer based courses.
- You are absent for three or more days.

**Receiving Your Final Semester Grades:**
End-of-semester grades will not be mailed to you by the college.

**INTERNET ACCESS TO GRADES**
Go to the Dallas County Community College District website (http://www.dcccd.edu).
1. Click on eConnect, then select ‘Current Credit Student Menu’
2. Under the heading ‘My eConnect Account’, select Log In.
3. Enter your seven-digit student ID number (not your Social Security number.)
4. Enter your password or, if this is your first time to use the system, enter your date of birth.
5. Under the heading ‘My Personal Information’, select Check My Grades.
6. Select the term and grade type that you wish to review, then click on ‘Submit’

**Americans with Disabilities Policy Statement** - If you feel you may need an academic adjustment (such as help with taking notes, etc.) because of any type of physical disability or learning difference, please talk with your instructor during office hours or by appointment before the end of the first week of classes. You may also contact Disability Services at (972) 860-4673 for advisement and counseling.

**Notification Of Absence Due To Religious Holy Day(s)** - Absences for observance of a
religious holy day are excused if you inform your instructor at the beginning of the course. A student whose absence is excused to observe a religious holy day is allowed to contract with the instructor to take a make-up examination or complete an assignment within a reasonable time after the absence.

Financial Aid Statement
Students who are receiving any form of financial aid should check with the Financial Aid Office prior to withdrawing from classes. Withdrawals may affect your eligibility to receive further aid and could cause you to be in a position of repayment for the current semester. Students who fail to attend or participate after the drop date are also subject to this policy.

Drop Policy - If you do not wish to complete this course, you are responsible for withdrawing yourself from the class. If you are unable to complete this course you must withdraw from it by June 25, 2014. Withdrawing from this course is a formal procedure which you must initiate. The instructor or instructional associate cannot do it for you. You may do this in admissions or counseling. If you stop attending and do not withdraw you will receive a performance grade, usually an "F". Students sometimes drop courses when help is available that would enable them to continue. If you feel the need to withdraw, please discuss your plans with the instructor or instructional associate.

STOP BEFORE YOU DROP
For students who enrolled in college level courses for the first time in the fall of 2007, Texas Education Code 51.907 limits the number of courses a student may drop. You may drop no more than 6 courses during your entire undergraduate career unless the drop qualifies as an exception. Your campus counseling/advising center will give you more information on the allowable exceptions. Remember that once you have accumulated 6 non-exempt drops, you cannot drop any other courses with a "W". Therefore, please exercise caution when dropping courses in any Texas public institution of higher learning, including all seven of the Dallas County Community Colleges. For more information, you may access: http://www.dcccd.edu/Why/Reg/Registration/Pages/Drop Withdraw.aspx

Repeating a Course-Effective for Fall Semester 2005, the Dallas County Community Colleges will charge additional tuition to students registering the third or subsequent time for a course. All third and subsequent attempts of the majority of credit and Continuing Education/Workforce Training courses will result in additional tuition to be charged. Developmental Studies and some other courses will not be charged a higher tuition rate. Third attempts include courses taken at any of the Dallas County Community Colleges since the Fall 2002 Semester. See Third Attempt to Enroll in a Course at http://www.dcccd.edu/pc/cost/3rdcrseattmpt/Pages/default.aspx

Academic dishonesty-Academic dishonesty is a violation of the Code of Student Conduct. Academic dishonesty includes, but is not limited to, cheating on a test, plagiarism, and collusion. As a college student, you are considered a responsible adult. Your enrollment indicates acceptance of the DCCCD Code of Student Conduct : https://www1.dcccd.edu/catalog/ss/code.cfm