SYLLABUS

DATE OF LAST REVIEW : 02/11/2013

CIP CODE: 47.0604

SEMESTER: Departmental Syllabus

COURSE TITLE: Electrical 1

COURSE NUMBER: AUTT0161

CREDIT HOURS: 3

INSTRUCTOR: Departmental Syllabus

OFFICE LOCATION: Departmental Syllabus

OFFICE HOURS: Departmental Syllabus

TELEPHONE: Departmental Syllabus

EMAIL : Departmental Syllabus

PREREQUISITE(S): AUTT0101, AUTT0102, or approval from instructor

REQUIRED TEXT AND MATERIALS: Please see bookstore for current textbook(s) and other required material.

COURSE DESCRIPTION: In this course students will: Complete service work orders; describe the relationship between voltage, ohms and amperage; perform basic electrical circuit repairs; identify electrical system faults; identify basic wiring diagram symbols, components, and legend information; perform basic electrical circuit measurements using a DVOM; describe basic circuit characteristics of series, parallel and series parallel circuits through a variety of classroom and shop learning and assessment activities.

METHOD OF INSTRUCTION: A variety of instructional methods may be used depending on content area. These include but are not limited to: lecture, multimedia, cooperative/collaborative learning, labs and demonstrations, projects and presentations, speeches, debates, and panels, conferencing, performances, and learning experiences outside the classroom. Methodology will be selected to best meet student needs.

COURSE OUTLINE: All students must comply with personal and environmental safety practices associated with clothing; eye protection; hand tools; power equipment;
proper ventilation; and the handling, storage, and disposal of chemicals/materials in accordance with local, state, and federal safety and environmental regulations.

I. Complete service work orders
   A. Work orders
   B. Vehicle identification
   C. Customer interview
   D. Service history
   E. Researching vehicle and service information, service precautions
   F. Technical service bulletins
   G. Locating vehicle and major component identification numbers

II. Relationships between voltage, ohms and amperage
   A. Diagnosing electrical/electronics using principles of electricity (Ohm’s Law)
      1. Series circuits
      2. Parallel circuits
      3. Series-parallel circuits
   B. Digital multi-meter (DMM)
   C. Electrical circuit problems
   D. Source voltage, voltage drop, current flow, and resistance.

III. Basic electrical circuit repairs
   A. Terminal replacement
   B. Solder repair of electrical wiring

IV. Electrical system faults
   A. Electrical/electronic system concerns
   B. Electrical circuit tests with a test light
   C. Fused jumper wires
   D. Fusible links, circuit breakers, and fuses
   E. Switches, connectors, relays, solid state devices

V. Basic wiring diagram symbols, components, and legend information
   A. Wiring diagrams
   B. Circuit problems
   C. Circuit logic

VI. Perform basic electrical circuit measurements using a DVOM
   A. Use of a digital multi-meter (DMM)
      1. Source voltage
      2. Voltage drop
      3. Current flow
      4. Resistance.
   B. Test lights
   C. Fused jumper wires
   D. Testing circuit protection
      1. Fusible links
      2. Circuit breakers
      3. Fuses
   E. Testing components
      1. Switches
2. Connectors
3. Relays
4. Solid state devices
5. Circuit wiring

VII. Describe basic circuit characteristics of series, parallel and series parallel circuits
   A. Identification and interpretation of electrical/electronic system concerns
   B. Use of Ohm’s law to diagnose electrical/electronic integrity
      1. Series circuits
      2. Parallel circuits
      3. Series-parallel circuits

EXPECTED LEARNER OUTCOMES:
A. The student will be able to complete service work orders
B. The student will be able to describe the relationship between voltage, ohms and amperage
C. The student will be able to perform basic electrical circuit repairs
D. The student will be able identify electrical system faults
E. The student will be able identify basic wiring diagram symbols, components, and legend information
F. The student will be able perform basic electrical circuit measurements using a DVOM
G. The student will be able describe basic circuit characteristics of series, parallel and series parallel circuits

COURSE COMPETENCIES:

The student will be able to complete service work orders
1. Complete work order to include customer information, vehicle identifying information, customer concern, related service history, cause, and correction
2. Research applicable vehicle and service information, such as electrical/electronic system operation, vehicle service history, service precautions, and technical service bulletins
3. Locate and interpret vehicle and major component identification numbers
   The student will be able to describe the relationship between voltage, ohms and amperage
4. Diagnose electrical/electronic integrity for series, parallel and series-parallel circuits using principles of electricity (Ohm’s Law)
5. Demonstrate the proper use of a digital multimeter (DMM) during diagnosis of electrical circuit problems including: source voltage, voltage drop, current flow, and resistance
   The student will be able to perform basic electrical circuit repairs
6. Remove and replace terminal end from connector; replace connectors and terminal ends
7. Perform solder repair of electrical wiring
   The student will be able to identify electrical system faults
8. Identify and interpret electrical/electronic system concern; determine necessary action
9. Check electrical circuits with a test light; determine necessary action
10. Check electrical circuits using fused jumper wires; determine necessary action
11. Inspect and test fusible links, circuit breakers, and fuses; determine necessary action. Inspect and test switches, connectors, relays, solid state devices, and wires of electrical/electronic circuits; perform necessary action
   The student will be able to identify basic wiring diagram symbols, components, and legend information
12. Use wiring diagrams during diagnosis of electrical circuit problems
   The student will be able to perform basic electrical circuit measurements using a DVOM
13. Demonstrate the proper use of a digital multimeter (DMM) during diagnosis of electrical circuit problems including: source voltage, voltage drop, current flow, and resistance
14. Check electrical circuits with a test light; determine necessary action
15. Check electrical circuits using fused jumper wires; determine necessary action
16. Inspect and test fusible links, circuit breakers, and fuses; determine necessary action. Inspect and test switches, connectors, relays, solid state devices, and wires of electrical/electronic circuits; perform necessary action
   The student will be able to describe basic circuit characteristics of series, parallel and series-parallel circuits
17. Identify and interpret electrical/electronic system concern; determine necessary action
18. Diagnose electrical/electronic integrity for series, parallel and series-parallel circuits using principles of electricity (Ohm’s Law)
19. Demonstrate use of short detectors
20. Identify the proper usage of inductive current probes
21. Explain how high/low current can effect troubleshooting routine

ASSESSMENT OF LEARNER OUTCOMES:
Assessment methods may include, but are not limited to, the following: Homework, Assignments, Quizzes, Class Participation, Chapter Tests, and Final Exam. The grading scale and the process for calculating the course grades are to be determined by the individual instructors. This information will be included in each instructor’s syllabus.

SPECIAL NOTES:
This syllabus is subject to change at the discretion of the instructor. Material included is intended to provide an outline of the course and rules that the instructor will adhere to in evaluating the student’s progress. However, this syllabus is not intended to be a legal contract. Questions regarding the syllabus are welcome any time.

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