COURSE TITLE & NUMBER: ASES 1019: Starting and Charging Systems
CREDITS: 2 (1 lec / 1 lab)
PREREQUISITES: Instructor approval

CATALOG DESCRIPTION:
Starting and Charging Systems covers the theory and operation of starting motors and alternators. This includes the identification of components and electrical circuits used in starting and charging systems. The student services, repairs, and tests these components.

OUTLINE OF MAJOR CONTENT AREAS:
1. Electricity review
2. Starting systems
   A. Design and components
   B. Control circuits
   C. Testing and starter service
3. Charging systems
   A. Design and components
   B. Control circuits
   C. Testing and alternator service
4. System wiring schematics
5. Test equipment
   A. On-car testing
   B. Diagnosis of various systems

COURSE GOALS/OBJECTIVES/OUTCOMES:
1. Students will demonstrate knowledge of electrical/electronic series, parallel, and series-parallel circuits using principles of electricity (Ohm’s Law).
2. Students will demonstrate proper use of a digital multimeter (DMM) when measuring source voltage, voltage drop (including grounds), current flow and resistance.
3. Students will use wiring diagrams during the diagnosis (troubleshooting) of electrical/electronic circuit problems.
4. Students will remove and install starter in a vehicle.
5. Students will inspect and test switches, connectors, and wires of starter control circuits; determine necessary action.
6. Students will diagnose (troubleshoot) charging system for causes of undercharge, no-charge, or overcharge conditions.
7. Students will remove, inspect, and re-install generator (alternator).

MNTC GOALS AND COMPETENCIES MET: N/A
HCC COMPETENCIES MET:
Working Productively and Cooperatively
Communicating Clearly and Effectively

**STUDENT CONTRIBUTIONS:**
The student will be expected to
- A. attend all class sessions.
- B. participate in class activities and discussions.
- C. request assistance when needed.
- D. complete and hand in assigned work when due.

Attendance is critical: if the student is not present they cannot participate in or, contribute to the learning process.

**ADDITIONAL INFORMATION:**
- Automotive Electricity and Electronics, Barry Hollembeak, Delmar Publishers
- Handouts and other materials will be provided in class.
- Factory and aftermarket service manuals will be used for reference.
- Hazardous Waste Policy: proper handling practices will be used.
- Safety Eyeglass Policy: safety glasses will be worn at all time while working in the labs.
- Shop Safety Policy: safe shop working practices must be followed.

Violations of the above policies will be verbal or documented warnings and will be handled on a case-by-case basis.

**METHODS FOR EVALUATING STUDENT LEARNING:**
Student assessment shall take place using instruments selected/developed by the course instructor.

*Curriculum Committee Approval Date: December 4, 2018*

**AASC APPROVAL DATE: December 19, 2018**
**REVIEW DATE: December 2023**