

ARIZONA WESTERN COLLEGE  
SYLLABUS

## ECT 223 ADVANCED ELECTRICAL SYSTEMS LEVEL 2

Credit Hours: 3 Lec 2 Lab 2

PREREQUISITE: None

COURSE DESCRIPTION

The operation and troubleshooting of Heating, Ventilation and Air Conditioning equipment. Introduction to maintenance, testing and cleaning of motors.

1. COURSE GOALS

- 1.1 Prepares learners to describe a basic overview of HVAC systems and their controls.
- 1.2 Develops in students the skills to accomplish generator maintenance.

2. OUTCOMES

Upon satisfactory completion of this course, students will be able to:

- 2.1 Identify programmable and non-programmable solid-state and timing relays.
- 2.2 Describe solid-state and conventional motor starting methods.
- 2.3 Explain precautions and preventive maintenance procedures associate with solid-state controls.
- 2.4 Identify selection and operation of adjustable-frequency drives.
- 2.5 Describe dynamic and friction motor braking methods.
- 2.6 Explain how to troubleshoot motor controls.
- 2.7 Describe the basic principles of HVAC systems.
- 2.8 Identify various types of control components and how to install them.
- 2.9 Describe NEC requirements for HVAC controls and equipment.
- 2.10 Explain heat-tracing controls, installation, monitoring and troubleshooting.
- 2.11 Identify roof, gutter and downspout de-icing systems and selection of components.
- 2.12 Describe snow-melting and anti-icing systems and related components.
- 2.13 Explain domestic hot water systems and floor heating systems
- 2.14 Describe motor characteristics, maintenance and common causes of electric motor failure.
- 2.15 Describe the guidelines for installing and commissioning electric motors, along with startup procedures.

3. METHODS OF INSTRUCTION

- 3.1 Lecture
- 3.2 Demonstrations
- 3.3 Discussion
- 3.4 Assignments

4. LEARNING ACTIVITIES

- 4.1 Discussion

5. EVALUATION

- 5.1 Examinations

6. STUDENT RESPONSIBILITIES

- 6.1 Under AWC Policy, students are expected to attend every session of class in which they are enrolled.
- 6.2 Classroom Assignments: Students are responsible for work missed and for completing all work before the next class meeting. Students are responsible for participating in all oral drills and for taking all exams.
- 6.3 If a student is unable to attend the course or must drop the course for any reason, it will be the responsibility of the student to withdraw from the course. Students who are not attending as of the 45th day of the course may be withdrawn by the instructor. If the student does not withdraw from the course and fails to complete the requirements of the course, the student will receive a failing grade.
- 6.4 Americans with Disabilities Act Accommodations: Arizona Western College provides academic accommodations to students with disabilities through AccessABILITY Resource Services (ARS). ARS provides reasonable and appropriate accommodations to students who have documented disabilities. It is the responsibility of the student to make the ARS Coordinator aware of the need for accommodations in the classroom prior to the beginning of the semester. Students should follow up with their instructors once the semester begins. To make an appointment call the ARS front desk at (928) 344-7674 or ARS Coordinator at (928) 344-7629, in the College Community Center (3C) building, next to Advising.
- 6.5 Academic Integrity: Any student participating in acts of academic dishonesty including, but not limited to, copying the work of other students, using unauthorized “crib notes”, plagiarism, stealing tests, or forging an instructor’s signature—will be subject to the procedures and consequences outlined in AWC’s Student Code of Conduct.
- 6.6 Textbooks and materials: Students are required to bring notebook or looseleaf book, pens, pencils, dictionaries, and purchase textbook required for class.
- 6.7 Arizona Western College students are expected to attend every class session in which they are enrolled. To comply with Federal Financial Aid regulations (34 CFR 668.21), Arizona Western College (AWC) has established an Attendance Verification process for "No Show" reporting during the first 10 days of each semester. Students who have enrolled but have never attended class may be issued a “No Show” (NS) grade by the professor or instructor and receive a final grade of “NS” on their official academic record. An NS grade may result in a student losing their federal financial aid.

For online classes, *student attendance in an online class is defined as the following* (FSA Handbook, 2012, 5-90):

- Submitting an academic assignment
- Taking an exam, an interactive tutorial or computer-assisted instruction
- Attending a study group that is assigned by the school
- Participating in an online discussion about academic matters
- Initiating contact with a faculty member to ask a question about the academic subject studied in the course