

ARIZONA WESTERN COLLEGE  
SYLLABUS

## MFG 201 INDUSTRIAL VALVE AND PUMP MAINTENANCE AND REPAIR

Credit Hours: 4 Lec 2 Lab 3

PREREQUISITE: None

COURSE DESCRIPTION

Procedures associated with hydraulic, pneumatic and mechanical actuated valves and electrical motor driven pumps for diagnostics, repair and parts replacement utilized in industrial settings. A study in the use of systematic preventative and reliability maintenance methods associated with the operation of such equipment in the manufacturing environment to reduce failure of mechanical systems components and maintain operational readiness.

1. COURSE GOALS

- 1.1 Develop the basic knowledge of motor driven pump operations, maintenance and repair.
- 1.2 Develop the basic knowledge of hydraulic, pneumatic, and mechanical actuated valve operations, maintenance and repair.

2. OUTCOMES

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

- 2.1 Identify the various components of a motor driven pump assembly as presented on the training simulator.
- 2.2 Explain the various motor to pump drive coupler assembly operations as presented on the training simulator.
- 2.3 Explain the steps associated with the maintenance of the drive motor, the pump coupler, the pump seals and impeller as presented on the training simulator.
- 2.4 Demonstrate ability to diagnose common motor driven pump failures and recommended remedies as presented on the training simulator.
- 2.4 Demonstrate ability to disassemble and re-assemble a motor driven pump assembly as presented on the training simulator.
- 2.5 Identify the various valve components used with motor driven pump assemblies as presented on the training simulator.
- 2.6 Explain the function of valve components as used with motor driven pump assemblies as presented on the training simulator.
- 2.6 Explain the steps associated with the maintenance and replacement of hydraulic, pneumatic and mechanical valves on pump assemblies as presented on the training simulator.
- 2.7 Demonstrate ability to disassemble and re-assemble various valve types used with motor driven pump assemblies as presented on the training simulator.
- 2.8 Complete related written examinations with a score of 70% or better and satisfactory completion of the related performance task as supervised by the instructor pass/fail.

3. METHODS OF INSTRUCTION

- 3.1 Lecture
- 3.2 Use of simulators and hands on instruction
- 3.3 Multi-media Presentations

- 3.4 Group Discussions
  - 3.5 Other methods as deemed appropriate
4. LEARNING ACTIVITIES
- 4.1 Experiential training with simulators
  - 4.2 Individual and group lab activities
  - 4.3 Instructor lead demonstrations and oral presentations
  - 4.4 Classroom demonstrations, team work assignments
  - 4.5 Other activities as deemed appropriate
5. EVALUATION
- 5.1 Quizzes/Exams
  - 5.2 Assignments
  - 5.3 Performance task evaluations
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 loose-leaf 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