

ARIZONA WESTERN COLLEGE
SYLLABUS

AIM-202 Artificial Intelligence for Computer Vision

Credit Hours: 3 Lec 2 Lab 2

PREREQUISITE: AIM-103

COURSE DESCRIPTION

Course offers a comprehensive exploration of how computers interpret and analyze visual information. Students will start by examining the fundamentals of image recognition and representation, focusing on how images are transformed into matrices for computational processing. Additional topics include various computer vision models and their applications, emphasizing the development of sustainable solutions through practical implementation. Throughout the course, students will gain hands-on experience solving common computer vision problems using a variety of computer vision algorithms. Additionally, students will evaluate and utilize pre-trained models from open source machine learning platforms gaining insights into advanced tools for enhancing their computer vision projects.

1. COURSE GOAL

This course covers the latest developments in vision AI, with a sharp focus on advanced deep learning methods, specifically convolutional neural networks, that enable smart vision systems to recognize, reason, interpret and react to images with improved precision. This course is a deep dive into the details of deep learning architectures with a focus on learning end-to-end models for these tasks, particularly image classification.

2. OUTCOMES

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

- 2.1 Describe the significance of fundamental concepts and applications in computer vision
- 2.2 Describe the significance of low-level image processing methods such as filtering and edge detection
- 2.3 Describe the significant knowledge of high-level vision tasks such as object recognition, scene recognition, face detection and human motion categorization
- 2.4 Describe the practical skills necessary to build highly-accurate, advanced computer vision applications

3. METHODS OF INSTRUCTION

- 3.1 Lecture
- 3.2 Lab demonstrations
- 3.3 Problem-solving sessions

4. LEARNING ACTIVITIES

- 4.1 Lab exercises
- 4.2 Programing assignments
- 4.3 Group challenges

5. EVALUATION

- 5.1 Quizzes/Exams
- 5.2 Lab assignments
- 5.3 Final project

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