American Public University System
American Military University | American Public University

CSCI484

Course Summary

Course : CSCI484 **Title :** Introduction to Artificial Intelligence
Length of Course : 8 **Faculty :**
Prerequisites : CSCI381 **Credit Hours :** 3

Description

Course Description:

This course provides students with in-depth knowledge and skills in computer science, including the history of AI and the processes involved in training machines to learn. It covers various search methods and why they are important to AI as well as specific AI applications Topics covered enable students to continue their study of artificial intelligence. Through readings, assignments, and laboratories in which they learn to conduct analyses to meet specified objectives, students gain hands-on experience. (Prerequisite: CSCI381)

Course Scope:

This course invites students to explore the various aspects of Artificial Intelligence (AI) from different angles using tools that are industry standards. The course also helps students to understand the foundations of AI, their make-up and the various applications. Furthermore the course ties AI with machine learning by exploring some of the tools that are used in both fields. Overall the course sets students up for success in future AI/ML studies.

Objectives

- CO-1:Describe artificial intelligence's (AI) current techniques, applications, and AI's potential for the future.
- CO-2:Explain artificial intelligence concepts such as machine learning, neural networks, and deep learning.
- CO-3:Research future trends in artificial intelligence.
- CO-4:Analyze the role of artificial intelligence in business decision-making.
- CO-5:Examine issues and ethical concerns surrounding artificial intelligence.

Outline

Week 1: Overview of Artificial Intelligence

Learning Outcomes

- CO-1: Describe artificial intelligence's (AI) current techniques, applications, and AI's potential for the future.
    - LO-1.1: Define intelligence and artificial intelligence (AI).
    - LO-1.2: Compare strong and weak AI.
    - LO-1.3: Identify common AI applications.

Assignments

- Welcome Discussion
    - W1 Discussion

Week 2: Artificial Intelligence Related-Fields

Learning Outcomes

- CO-1: Describe artificial intelligence's (AI) current techniques, applications, and AI's potential for future.
    - LO-1.4: Compare artificial intelligence vs. other related disciplines.
- CO-2: Explain artificial intelligence concepts such as machine learning, neural networks, and deep learning.
    - LO-2.1: Identify applications that fit different data-oriented field.

Assignments

- W2 Paper

Week 3: Machine Learning

Learning Outcomes

- CO-2: Explain artificial intelligence concepts such as machine learning, neural networks, and deep learning.
    - LO-2.2: Survey different types of machine learning.
    - LO-2.3: Identify different ways a machine learns.
    - LO-2.4: Evaluate the suitable algorithms for machine learning programs.

Assignments

- W3 Presentation

Recommended Optional Reading
Recommended Media

Week 4: Hands on with machine learning

Learning Outcomes

- CO-2: Explain artificial intelligence concepts such as machine learning, neural networks, and deep learning.
    - LO-2.5: Use tools to create machine learning models
    - LO-2.6: Exercise the different phases of the machine learning workflow

Assignments

- W4 Discussion

Week 5: Artificial Neural Networks

Learning Outcomes

- CO-1: EDescribe artificial intelligence's (AI) current techniques, applications, and AI's potential for the future.
  - LO-1.5: Identify the different parts of any artificial neural network.
- CO-2: Explain artificial intelligence concepts such as machine learning, neural networks, and deep learning.
  - LO-2.7: Distinguish between the different types of activation functions.
  - LO-2.8: Examine practical uses for classification and clustering.

Assignments

- W5 Paper

Week 6: Hands on with ANNs

Learning Outcomes

- CO-2: Explain artificial intelligence concepts such as machine learning, neural networks, and deep learning.
  - LO-2.9: Use tools to create artificial neural networks
  - LO-2.10: Exercise the different architectures for artificial neural networks.

Assignments

- W6 Discussion

Recommended Optional Reading
Recommended Media

Week 7: PUTTING ARTIFICIAL INTELLIGENCE TO WORK

Learning Outcomes

- CO-1: Describe artificial intelligence's (AI) current techniques, applications, and AI's potential for the future.
  - LO-1.6: Identify key components for natural language processing (NLP) tools.
- CO-4: Analyze the role of artificial intelligence in business decision-making.
  - LO-4.1: Evaluate tools for building virtual agents.
  - LO-4.2: Evaluate the pros and cons of automated decision-making systems.

Assignments

- W7 Infographic

Week 8: Ethics and AI future trends

Learning Outcomes

- CO-3: Research future trends in artificial intelligence.
  - LO-3.1: Compare human intelligence to machine learning intelligence.
- CO-5: Examine issues and ethical concerns surrounding artificial intelligence.
  - LO-5.1: Discuss ethical issues regarding the use of data.

Assignments

- W8 Discussion

Evaluation

Discussion: 40%

Assignment: 60%

Grading:

Name	Grade %

Materials

Please see the readings and resources link in the classroom. A specific text is not needed for this course.

Course Guidelines

Please communicate early and often! I am happy to meet you where you are, but your advanced notice and communication is appreciated.

Communications

Student Communication

To reach the instructor, please communicate through the MyClassroom email function accessible from the Classlist of the Course Tools menu, where the instructor and students email addresses are listed, or via the Office 365 tool on the Course homepage.

- In emails to instructors, it's important to note the specific course in which you are enrolled. The name of the course is at the top center of all pages.
- Students and instructors communicate in Discussion posts and other learning activities.
- All interactions should follow APUS guidelines, as noted in the Student Handbook, and maintain a professional, courteous tone.
- Students should review writing for spelling and grammar.
- Tips on Using the Office 365 Email Tool

Instructor Communication

The instructor will post announcements on communications preferences involving email and Instant Messaging and any changes in the class schedule or activities.

- Instructors will periodically post information on the expectations of students and will provide feedback on assignments, Discussion posts, quizzes, and exams.
- Instructors will generally acknowledge student communications within 24 hours and respond within 48 hours, except in unusual circumstances (e.g., illness).

- The APUS standard for grading of all assessments (assignments, Discussions, quizzes, exams) is five days or fewer from the due date.
- Final course grades are submitted by faculty no later than seven days after the end date of the course or the end of the extension period.

University Policies

Consult the Student Handbook for processes and policies at APUS. Notable policies:

- Drop/Withdrawal Policy
- Extension Requests
- Academic Probation
- Appeals
- Academic Dishonesty / Plagiarism
- Disability Accommodations
- Student Deadlines
- Video Conference Policy

Mission

The mission of American Public University System is to provide high quality higher education with emphasis on educating the nation's military and public service communities by offering respected, relevant, accessible, affordable, and student-focused online programs that prepare students for service and leadership in a diverse, global society.

Minimum Technology Requirements

- Please consult the catalog for the minimum hardware and software required for undergraduate and graduate courses.
- Although students are encouraged to use the Pulse mobile app with any course, please note that not all course work can be completed via a mobile device.

Disclaimers

- Please note that course content – and, thus, the syllabus – may change between when a student registers for a course and when the course starts.
- Course content may vary from the syllabus' schedule to meet the needs of a particular group.