

EXPERT SYSTEMS: AUTOMATION, MACHINE LEARNING, AND ROBOTICS CERTIFICATE

Program Description

The Computer Information Systems: Expert Systems certificate is designed to prepare the student, via hands-on training, for employment as an entry-level technician in the field of artificial intelligence. The program helps students develop general problem-solving and troubleshooting skills that can be applied to automation, machine learning, robotics, and business intelligence environments. Further, this certificate adds hands-on training in Python; the ethics of AI; reinforcement, supervised, unsupervised, and deep learning; natural language processing (NLP); computer vision; and data science for AI.

Program Outcomes

Students who successfully complete the Expert Systems certificate will:

1. Apply the fundamental principles of computer programming including requirements analysis, algorithm design and verification, documentation and implementation, and testing
2. Analyze real-world problems to identify, cost justify and specify practical AI computing solutions
3. Develop AI applications that demonstrate learning, analysis, goal setting, autonomy and control system rigor for machine learning, deep learning, natural language processing, computer vision, and business uses

Career Considerations

An Artificial Intelligence (AI) Specialist is a professional who specializes in creating, developing, and implementing AI systems and technologies. They work to design intelligent algorithms and models that can learn from data and make predictions or decisions based on that learning.

Program Course Requirements

Course	Title	Credits
First Year		
First Term		
AI 120	Intro to AI	4
		Credits
		4
Second Year		
First Term		
AI 210	Machine Learning	3
		Credits
		3
Second Term		
AI 220	Natural Language Processing	4
AI 230	Computer Vision	4
		Credits
		8
Third Term		
AI 240	AI Data Science	4
AI 280	CWE - AI	4
		Credits
		8
		Total Minimum Credits
		23

Advising Notes

- Only AI 120-Intro to AI will be offered in the 2023-24 school year. The remaining required courses will begin Fall 2024. Students should take AI 120 in their first year as they complete other prerequisites and begin the remaining courses in their second year. If students choose to vary from this suggested sequence, then prerequisites and term availability must be watched closely.
- Students may pursue an AAS-General Studies by completing the (few) remaining requirements to earn that degree. Please speak with a UCC advisor for specific details. Courses needed to complete AGS include:
 - Arts & Letters (3-5 credits): COM 111z or 218z recommended; students must complete WR 121z as part of AGS core.
 - Sciences or math or computer science (4-5 credits): Already met by taking MTH 112z; MTH 111z required as part of AGS core.
 - Social Sciences (3-5 credits): ECON 201, GIS 234, PSY 201, or SOC 204 recommended; students must also complete PSY 101 as part of AGS core.
- Students **must** consult with a UCC faculty member listed below before being admitted into the program:
 - Faculty Advisor: John Blackwood, 541-440-7686, john.blackwood@umpqua.edu
 - Faculty Advisor: Vincent Yip, 541-440-7886, vincent.yip@umpqua.edu