ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING CERTIFICATE

40 Semester Credit Hours; Curriculum: 0157

This certificate provides students with the essential knowledge and skills in Artificial Intelligence and Machine Learning technologies and their application in business and industry. Students will sharpen their skills in prompt engineering, study machine learning models, natural language processing and computer vision algorithms, and gain hands-on experience with popular programming languages, tools and platforms used in AI development. Graduates of this program will be prepared to develop intelligent systems that automate processes, enhance decision-making, and optimize operational efficiency across various industries.

Code	Title	Hours
Courses for a Certificate		
CIS 102	Job Search Principles and Tools [1]	1
CIS 112	AI Ethics	3
CIS 119	Prompt Engineering	3
CIS 143	Introduction to SQL	3
or CIS 241	Database Management	
CIS 206	Software Cybersecurity	3
or CIS 219	Advanced Prompt Engineering	
CIS 212	No Code Machine Learning	3
CIS 225	Natural Language Processing	4
CIS 229	Machine Learning Using Python	4
CIS 240	Data Visualization Using Tableau	3
CIS 250	Artificial Intelligence for Computer Vision	4
CIS 271	AI for Business Solutions	3
CSC 157	Python Computer Science I	3
CSC 180	Introduction to Artificial Intelligence	3
Total Hours		**40**

Internship (recommended):
An internship is vital for an Artificial Intelligence and Machine Learning Certificate as it provides hands-on real-world experience, allowing students to apply their theoretical knowledge, gain practical skills, and build a professional network crucial for launching a successful career in the field. In addition to finding internships on their own, students are welcome to use Oakton's Internship program for assistance. Visit www.oakton.edu/internships or email internships@oakton.edu for more information.

[1] *It is recommended to take this course nearing the completion of the certificate.*

Artificial Intelligence and Machine Learning Certificate Pathway

The following Pathway is recommended for students pursuing the Artificial Intelligence and Machine Learning Certificate.

First Year

Semester One		Hours
CIS 119	Prompt Engineering	3
CIS 143	Introduction to SQL	3
or CIS 241	or Database Management	
CIS 212	No Code Machine Learning	3
CSC 157	Python Computer Science I	3
	Hours	**12**
Semester Two		
CIS 112	AI Ethics	3
CIS 225	Natural Language Processing	4
CIS 229	Machine Learning Using Python	4
CSC 180	Introduction to Artificial Intelligence	3
	Hours	**14**
Second Year		
Semester One		
CIS 102	Job Search Principles and Tools	1
CIS 206	Software Cybersecurity	3
or CIS 219	or Advanced Prompt Engineering	
CIS 240	Data Visualization Using Tableau	3
CIS 250	Artificial Intelligence for Computer Vision	4
CIS 271	AI for Business Solutions	3
	Hours	**14**
	Total Hours	**40**

Note: Pathway is a recommended sequence and selection of courses. Part-time students should contact the department chair to discuss a part-time pathway as well as course prerequisites and recommendations.

Program Learning Outcomes

1. Evaluate foundational principles of artificial intelligence, machine learning and natural language processing (NLP), including distinctions between supervised, unsupervised and reinforcement learning.

2. Design machine learning models, including neural networks, decision trees and clustering algorithms for real-world applications.

3. Integrate AI solutions into various business functions, such as customer service, marketing, finance and operations to improve efficiency and innovation.

4. Analyze data using machine learning techniques and visualization tools to support data-driven decision-making.

5. Evaluate the ethical implications of AI deployment, including such issues as fairness, transparency, accountability and privacy.

6. Create advanced natural language processing applications and machine learning models using Python libraries and AI tools.

7. Lead AI projects, ensuring ethical standards and alignment with business objectives, while optimizing AI models.

8. Utilize job search principles and tools to enhance employability.