Course Outline

DAB 106 Introduction to Artificial Intelligence

Course ID: 030277 **Academic Year:** 2021/22

Course Description:

This course provides students with a high-level overview of the broad field of Artificial Intelligence (AI). Students will explore some basic definitions and concepts and will learn to distinguish between the various branches that make up AI. This course outlines the history of AI, focusing on major developments and reasons behind its current resurgence. The bulk of the course will be spent on understanding the core elements of AI systems.

Pre-Requisites:	None	**Category:**	Vocational
Co-Requisites:	None	**Course Credits:**	3.00
Special Conditions:	None	**Academic Level:**	Credit (Post Sec)

Instructional Hours:	Classroom Instruction	30
	Laboratory/Workshops	15
	Other	0
	Total Hours	**45**

Academic Department:

Windsor: Zekelman School of Information Technology
Chair:
Chatham:
Chair:

Revised By: Harpreet Virk

Last Revision: 2022/01/20

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Required Tools, Equipment, and Learning Resources:

- Intel I7 or AMD A10 processor or better with chipset that must support virtualization
· 16 GB of RAM
· 1 TB hard drive
· Ethernet Network Card
· Wireless Network Card
· One USB 3.0 port (two preferred)
· 3 Yr comprehensive parts and labour (Recommended)

The text book(s) will be part of the course material.

Software requirements

· Windows 10 Professional Edition

Essential Employability Skills (EES):

	Description	Teach	Assess
1)	Communication: Communicate clearly, concisely and correctly in the written, spoken, and visual form that fulfills the purpose and meets the needs of the audience.	✔	✔
2)	Communication: Respond to written, spoken, or visual messages in a manner that ensures effective communication		
3)	Numeracy: Execute mathematical operations accurately		
4)	Critical Thinking: Apply a systematic approach to solve problems	✔	✔
5)	Critical Thinking: Use a variety of thinking skills to anticipate and solve problems	✔	✔
6)	Information Management: Locate, select, organize, and document information using appropriate technology and information systems		
7)	Information Management: Analyze, evaluate and apply relevant information from a variety of sources	✔	✔
8)	Interpersonal: Show respect for the diverse opinions, values, belief systems, and contributions of others	✔	✔
9)	Interpersonal: Interact with others in groups or teams in ways that contribute to effective working relationships and the achievement of goals	✔	✔
10)	Personal: Manage the use of time and other resources to complete projects	✔	✔
11)	Personal: Take responsibility for one's own actions, decision and consequences		

Course Learning Outcomes (CLO):

Upon successful completion of this course, the student will be able to:
(EKS = Embedded Knowledge and Skills)

- Examine the key components of Artificial Intelligence (AI) systems (CLO #1)
  EKS:
  - Provide definitions, Concepts, Terminology, and examples of artificial intelligence
  - Explain What AI is, why it's important, and how AI will impact the different industry sectors and society as a whole.
  - Discuss the tools, technology, and trends driving the AI revolution.
  - Discuss intelligent agent, environment, and state
  - Describe applications of AI and what it takes to introduce AI to an organization successfully.

- Summarize the fundamental philosophical/ethical issues, strategy, workloads, and considerations related to the development and application of Artificial Intelligence (CLO #2)
  EKS:
  - Identify features of common AI workloads
  - Discuss explainable AI (XAI) and it is the importance
  - Explain the importance of ethical implementations and how to avoid bias in AI
  - Identify guiding principles for responsible AI

- Describe fundamental principles of machine learning (CLO #3)
  EKS:
  - Identify common machine learning types
  - Describe core machine learning concepts
  - Identify core tasks in creating a machine learning solution
  - Describe capabilities of no-code machine learning with Azure Machine Learning studio

- Describe features of computer vision, Natural Language Processing, and conversational workloads on Azure (CLO #4)
  EKS:
  - Discuss common types of the computer vision solution
  - Explain Azure tools and services for computer vision tasks
  - Identify features and uses for key phrase extraction, entity recognition, sentiment analysis, translation
  - Identify tools and services capabilities of the Text Analytics service, LUIS, Speech service and Translator Text service
  - Discuss everyday use cases for conversational AI
  - Identify Azure services for conversational AI

- Analyze current applications of Artificial Intelligence (CLO #5)

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EKS:

- Outline the problem being solved
- Describe the AI solution
- Explain the core AI concepts being implemented
- Gauge the impact of this solution on the business or organization

Teaching/Learning Activities:

Lecture / Discussion
Individual / Group Classroom Exercises

Assessment:

Standard/Traditional Delivery

Overall Assessment Notes: Lecture / Discussion
Individual / Group Classroom Exercises

- Assignments 20.00%

Frequency: 4-6
Description: Independent/group research, writing, or coding assignments whereby the student can demonstrate an appropriate understanding of the course concepts.
Outcomes Assessed: 1, 2, 3, 4, 5
EES Assessed: 1, 5, 7, 8, 9, 10

- Exam 1 25.00%

Frequency: 1
Description: The exam will contain application exercises, including multiple-choice questions, true/false, and short answer questions.
Outcomes Assessed: 1, 2, 3
EES Assessed: 1, 5, 7

- Final Exam 25.00%

Frequency: 1
Description: A final exam that covers all the concepts presented throughout the semester. Multiple choice and short answer.
Outcomes Assessed: 1, 2, 3, 4, 5
EES Assessed: 1, 5, 7

- Project 20.00%

Frequency: 2
Description: Independent/group hands-on project that involves implementing elements of artificial intelligence in code and/or hardware. Student(s) will demonstrate an appropriate level of understanding of the course concepts by writing a detailed project report.
Outcomes Assessed: 1, 2, 3, 4, 5
EES Assessed: 1, 5, 7, 9, 10

- Quizzes 10.00%

Frequency: 5-7

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Description: Short in-class assignments/questions based on lecture content, assigned reading, and homework on a given topic will be administered in class; 3-5 questions.
Outcomes Assessed: 1, 2, 3, 4, 5
EES Assessed: 1, 5, 7

100%

Note: The assessment listed in this outline represents the planned assessment method for this course. Unanticipated conditions during the delivery of the course may necessitate changes to the planned assessment. Students will receive reasonable advance notice should any changes be necessary.

Grading:

A=80-100%
B=70-79%
C=60-69%
D=50-59%
F=Less than 50%

Course Content:

"Academic misconduct, including cheating of any form, will not be tolerated. Consequences may include, but are not limited to, a warning, a grade of "0" on the assignment/test/examination, or a failing grade in the course."

(Code of Students Rights and Responsibilities: Section 7.1.6)

All students and employees of this College have a right to study and work in an environment that is free from harassment and discrimination.

Accommodation Statement

The College will provide supports and services to all students with disabilities, both temporary and permanent, with valid supporting documentation. Interim accommodation requests will be received in good faith and can be provided pending receipt of medical documentation. Retroactive accommodations will be considered based on the unique circumstances of the individual matter. The College will give all Human Rights Code-related requests for accommodation meaningful consideration.

Procedure: The student is responsible to meet with a counsellor in Accessibility Services to discuss their functional limitations and accommodation needs and provide Accessibility Services with supporting documentation. Students are not required under the Ontario Human Rights Code to disclose their disability diagnosis (with the exception of Learning Disabilities) to receive accessibility supports and services and/or academic accommodations. Students are encouraged to meet with a counsellor prior to the start of a semester to provide information and arrange accommodations.