Technology & Visual Arts

# **AIDI 1010 - Emerging Technologies (Winter 2023)**

# Mondays 7:00PM (EST), Online

# Course Description:

Artificial Intelligence (AI) is a rapidly expanding and dynamic field with new applications and opportunities being discovered every day. An AI specialist must be able to identify the potential benefits of new technology, evaluate the feasibility of implementation and apply new technologies. Students will learn how to design and implement the latest Artificial Intelligence tools to solve these challenges.

# Resources:

# Blackboard: <https://gc.blackboard.com>

# Instructor:

# **Jahanzeb Abbas (Nickname: JB)**

[jahanzeb.abbas@georgiancollege.ca](mailto:jahanzeb.abbas@georgiancollege.ca)

<https://www.linkedin.com/in/jahanzebabbas/>

# Office Hours:

Available on Microsoft Teams, or  
Saturdays/Sundays 11:00am - 12:00pm (EST)

# Course Learning Outcomes (CLO):

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| --- | --- |
| **CLO#** | **DESCRIPTION** |
| CLO1 | Evaluate the suitability and feasibility of the application of AI to a given scenario |
| CLO2 | Evaluate Emerging Artificial Intelligence (AI) technologies |
| CLO3 | Evaluate the application of AI to diverse industries |
| CLO4 | Analyze applications through peer-reviewed ML research studies |
| CLO5 | Apply Coding & Machine Learning (ML) practices to Emerging AI technologies |
| CLO6 | Analyze evaluation requirements of Emerging AI Technologies |
| CLO7 | Demonstrate & Explain real-world issues with Emerging AI Technology solutions |
| CLO8 | Implement, with a collaborative approach, various Emerging AI Technologies in a range of real-world scenarios |

# Evaluation:

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| --- | --- |
| Pre-Course Survey | -- |
| Group Assignment 1 (Inception) | 20% |
| Test 1 (Mid-term Exam) | 15% |
| Group Assignment 2 (Prototype Presentation) | 20% |
| Test 2 (End-term Exam) | 15% |
| Group Assignment 3 (Project) | 30% |

# Schedule of Activities:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **WEEK** | **LESSON** | **SESSION DATE** | **XTRA  DAY** | **EVALUATION DUE** |
| **1** | **Course Learning Outcome:** N/A  **Topics:**   * Course Introduction   + Pre-Course-Survey   + Overview / Outline   + Delivery Method / Structure   + Groups   **Resources & References:**   * Blackboard | 9-Jan-23 | - | - |
| **2** | **Course Learning Outcome:**  CLO1, CLO2, CLO6  **Topics:**   * Introduction to Google Colaboratory   + Setting up Google Colab   + Using virtual resources   + Mounting Google Drive   **Resources & References:**  Blackboard & Google Colab | 16-Jan-23 | - | **\***Pre-Course-Survey |
| **3** | **Course Learning Outcome:**  CLO1, CLO2, CLO3, CLO4, CLO5, CLO6, CLO7  **Topics:**   * Introduction to **AutoML** * Evaluation Rubric & Review * Group Share Schedule * Research Emerging Tech   **Resources & References:**  Blackboard, Google, Medium, Kaggle etc. | 23-Jan-23 | - | -- |
| **4** | **Course Learning Outcome:**  CLO2, CLO3, CLO5, CLO6  **Topics:**   * **Auto-ML: auto-sklearn**   + Estimators & Hyperparameters   + Syntax   + Pros & Cons   **Resources & References:**  Blackboard, Google, Medium, Kaggle etc. | 30-Jan-23 | - | -- |
| **5** | **Course Learning Outcome:**  CLO2, CLO3, CLO5, CLO6  **Topics:**   * **Auto-ML: TPOT**   + Estimators & Hyperparameters   + Syntax   + Pros & Cons   **Resources & References:**  Blackboard, Google, Medium, Kaggle etc. | 6-Feb-23 |  | **\*DUE:** GROUP ASSIGNMENT 1 (20%) |
| **6** | **Course Learning Outcome:**  CLO2, CLO3, CLO5, CLO6  **Topics:**   * **Auto-ML: HyperOPT-sklearn**   + Estimators & Hyperparameters   + Syntax   + Pros & Cons   **Resources & References:**  Blackboard | 13-Feb-23 | - | ~~--~~ |
| **7** | **Course Learning Outcome:**  CLO2, CLO3, CLO5, CLO6  **Topics:**   * **Auto-ML: MLJAR**   + Estimators & Hyperparameters   + Syntax   + Pros & Cons * **\***Offline Mid-Term Quiz   **Resources & References:**  Blackboard, Google, Medium, Kaggle etc. | 20-Feb-23 |  | **\*DUE:** MID-TERM (15%) |
| **-** | **READING/STUDY WEEK** | 27-Feb-23  (No Session) | - | **-** |
| **8** | **Course Learning Outcome:**  CLO2, CLO3, CLO5, CLO6  **Topics:**   * **\*Quantum Mechanics & Computing**   + Python (**QuTiP**)   + Python (**Qiskit**)   **Resources & References:**  Blackboard | 6-Mar-23 | - | -- |
| **9** | **Course Learning Outcome:**  CLO1, CLO2, CLO3, CLO4, CLO5, CLO6, CLO7  **Topics:**   * **\*GROUP-SHARES**   **Resources & References:**  Blackboard, Google, Medium, Kaggle etc. | 13-Mar-23 | - | **\*DUE:**  GROUP-SHARE (20%) (SCHEDULED) |
| **10** | **Course Learning Outcome:**  CLO1, CLO2, CLO3, CLO4, CLO5, CLO6, CLO7  **Topics:**   * **\*GROUP-SHARES**   **Resources & References:**  Blackboard, Google, Medium, Kaggle etc. | 20-Mar-23 | - | **\*DUE:**  GROUP-SHARE (20%) (SCHEDULED) |
| **11** | **Course Learning Outcome:**  CLO1, CLO2, CLO3, CLO4, CLO5, CLO6, CLO7  **Topics:**   * **\*GROUP-SHARES**   **Resources & References:**  Blackboard, Google, Medium, Kaggle etc. | 27-Mar-23 |  | **\*DUE:**  GROUP-SHARE (20%) (SCHEDULED) |
| **12** | **Course Learning Outcome:**  CLO1, CLO2, CLO3, CLO4, CLO5, CLO6, CLO7  **Topics:**   * **\*Artificial General Intelligence**   + History & Journey   + AI Assistants (ChatGPT, MidJourney, etc)   **Resources & References:**  Blackboard | 3-Apr-23 | - | **--** |
| **13** | **Course Learning Outcome:**  CLO2, CLO3, CLO5, CLO6  **Topics:**   * **\***Offline End-Term Quiz   **Resources & References:**  Blackboard | 10-Apr-23 | - | **\*DUE:** END-TERM (15%) |
| **14** | **Course Learning Outcome:**  CLO1, CLO2, CLO3, CLO4, CLO5, CLO6, CLO7, CLO8  **Topics:**   * Final Group Implementation   **Resources & References:**  Blackboard | 17-Apr-23 | - | **\*DUE:** PROJECT (30%) |

The sequence and content of this syllabus may change due to unanticipated opportunities or challenges, or to accommodate the learning styles of the students.