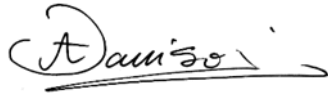


Approved By Associate Dean:



Jan 2, 2025

Signature

COURSE SECTION INFORMATION

Machine Learning I Applied A.I. Solutions Development
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Note: All academic inquiries will be replied to within three business days.

COURSE DESCRIPTION:

This course will provide an introduction to Machine Learning. The main focus of this course will be on building Machine Learning models for tabular data. Students will gain experience with professional tools and techniques such as Git, Docker, and Python libraries like Scikit-learn, NLTK.

COURSE OUTCOMES:

Upon successful completion of this course the students will have reliably demonstrated the ability to:

1. Explain Machine Learning concepts of an AI ecosystem
 2. Utilise developer tools like Git, Docker, and the Command Line Interface (CLI)
 3. Assess, transform, and select the appropriate data attributes for building Machine Learning models.
 4. Apply Machine Learning techniques like Data Acquisition, Data Cleaning, Data Pre-processing, Data Transformation, Model Building and Model Deployment.
 5. Build Tabular data models using a variety of Python libraries
- Evaluate, and finetune appropriate ML algorithms

LIST OF TEXTBOOKS AND OTHER TEACHING AIDS:

Required:

Recommended Resources:

1. **Data Science Handbook - Jake Van der Plas**
2. **Python for Data Analysis - Wes McKinney**
3. **Python Essential Reference - David Beazley**
4. **Learn Python the Hard Way - Zed Shaw**

COURSE DELIVERY MODE:

Refer to the topical outline table for the delivery mode.

Important Note on the Use of Generative AI:

Students must review the "Generative AI Usage Guidelines" document, available on D2L, or consult with the instructor for details on how generative AI tools may be used in this course.

Generally, use of AI is allowed and encouraged in most of the courses of this program, this include projects and assignments. However use of AI are not allowed in exams and quizzes unless specified otherwise by the instructor.

Students must consult their instructor when unsure.

Misuse of AI in assessments where it is not permitted or failure to adequately disclose its use will be treated as a violation of academic integrity. According to college policy, consequences may include failing the assignment or the course or more severe disciplinary actions. **Students must also download the AI Usage Declaration form from D2L, complete it, and submit it with their assignments where AI use is permitted.** Adherence to these guidelines is mandatory to maintain academic integrity.

Detailed Evaluation System

Assessment Tool:	Description:	Outcome(s) assessed:	EES assessed:	Date / Week:	% of Final Grade:
Participation	Attendance and in-class participation in various activities	1,2,3,4,5,6,7	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11	1 - 4	10
Lab Exercises 15 @ 2% (best 15 out of 20)	Hands-on exercises	1,2,3,4,5,6,7	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11	1 - 4	30
Project	Individual Assignments	1,2,3,4,5,6,7	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11	1 - 4	30
Final Exam	This is a short answer exam that will evaluate the knowledge of the student	1,2,3,4,5,6,7	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11	4	30
TOTAL:					100%

GRADING SYSTEM the passing grade for this course is: D (50%)

A+	90-100	4.0	B+	77-79	3.3	C+	67-69	2.3	D+	57-59	1.3	Below 50	F	0.0
A	86-89	4.0	B	73-76	3.0	C	63-66	2.0	D	50-56	1.0			
A-	80-85	3.7	B-	70-72	2.7	C-	60-62	1.7						

Excerpt from the College Policy on Academic Dishonesty:

The *minimal* consequence for submitting a plagiarized, purchased, contracted, or in any manner inappropriately negotiated or falsified assignment, test, essay, project, or any evaluated material will be a grade of zero on that material.

To view George Brown College policies please go to www.georgebrown.ca/policies

Learning Schedule / Topical Outline (subject to change with notification)

TOPICAL OUTLINE:

Week	Topic Task	Delivery mode	Outcome(s)	Content / Activities	Resources
1	1	Monday Online	1, 2, 3	<ul style="list-style-type: none"> Tools for Machine Learning development and environment setup Introduction to Git, Command Line Interface (CLI), Jupyter Notebook Introduction to Python 	Resource material available on D2L
1	2	Wednesday Online	1, 2, 3	<ul style="list-style-type: none"> Introduction to Pandas 	Resource material available on D2L
1	3	Friday Online	1, 2, 3	<ul style="list-style-type: none"> Introduction to Machine Learning 	Resource material available on D2L
					Tasks: Lab Exercises 1, 2, 3, 4
2	4	Monday In-person	1, 2, 3, 4	<ul style="list-style-type: none"> Scikit-learn 	Resource material available on D2L

2	5	Wednesday In-person	1, 2, 3, 4	● Fundamentals of feature selection	Resource material available on D2L
2	6	Friday Online	1, 2, 3, 4	● Pre-processing of data (data cleaning)	Resource material available on D2L
Tasks: Lab Exercises 5, 6, 7, 8, 9, 10					
3	7	Monday In-person	1, 2, 3, 4, 5, 6	● ML Algorithms - I	Resource material available on D2L
3	8	Wednesday Online	1, 2, 3, 4, 5, 6	● ML Algorithms – II	Resource material available on D2L
3	9	Friday Online	1, 2, 3, 4, 5, 6	● ML Algorithms – III	Resource material available on D2L
Tasks: Lab Exercises 11, 12, 13, 14, 15, 16					
4	10	Monday In-person	1, 2, 3, 4, 5, 6, 7	● Benchmarking Algorithms ● Cross Validation ● Fine-tuning a model ● Evaluation of models	Resource material available on D2L
4	11	Wednesday Online	1, 2, 3, 4, 5, 6, 7	● Ensemble Learning	Resource material available on D2L
4	12	Friday In-person	1, 2, 3, 4, 5, 6, 7	● Project Due ● Final Exam	Resource material available on D2L
Tasks: Lab Exercises 17, 18, 19, 20 Project Due Final Exam					
Please note: this schedule may change as resources and circumstances require. For information on withdrawing from this course without academic penalty, please refer to the College Academic Calendar: http://www.georgebrown.ca/Admin/Registr/PSCal.aspx					