Cosc 4P80	**Introduction to Artificial Neural Networks**	Fall 2024

D.Bockus J324

Lecture time: Tuesday, Friday 10:30 to 12:00 Th242

Course Description:

This course is an introductory course on artificial neural networks. The course will explore various topologies and their application to problems. Students are expected to attend all lectures and participate in the student presentations toward the end of the course.

1. Introduction and Overview
2. Biological History
3. Single-Layer Networks (Perceptrons)
4. Multi-Layer Feed Forward Networks
5. Activation Functions
6. Back Propagation Training algorithm
7. Variants on other Training Methodologies
8. Unsupervised Topologies
9. Self-Organizing Maps (Kohonen Maps)
10. Convolutional Networks, Recurrent Networks, LSTM and Deep Learning.
11. Other topics as time permits.

Text Book.

Suggested book, Neural Networks, A comprehensive foundation – Simon Haykin

David Kriesel, 2007, *A Brief Introduction to Neural Networks*, available at **http://www.dkriesel.com** direct link https://www.dkriesel.com/en/science/neural_networks

Marking Scheme:	
Assignments (3)	35% (7% +2x14%)
Project	25% (See note 7)
Seminar & Attendance:	15% (In Class)
Test:	25% (In Class)

Essential Course Requirements: Practical competence of the requisite material will be assessed using assignments. Theoretical rote knowledge and concepts regarding the fundamentals will be assessed on the Test.

Important dates

The most recent listing of Important Dates for all durations is at https://brocku.ca/important-dates/all/
First day of classes: 4 September
Last day of lectures: 3 December
Last day of exams: 19 December
Deadline for withdrawal without academic penalty: 5 November

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Note 1: Due date and time for assignment submission will be printed on the assignment text. Assignments due dates are firm.

Note 2:

Academic misconduct is a serious offence. The principle of academic integrity, particularly of doing one's own work, documenting properly (including use of quotation marks, appropriate paraphrasing and referencing/citation), collaborating appropriately, and avoiding misrepresentation, is a core principle in university study. Students should consult Section VII, "Academic Misconduct", in the "Academic Regulations and University Policies" entry in the Undergraduate Calendar to view a fuller description of prohibited actions, and the procedures and penalties. Information on what constitutes academic integrity is available at Brock University Academic Integrity Website

The department views plagiarism as a serious issue. Students are directed to the Department's Students who are convicted of plagiarism, will receive a grade of 0 in the course. A piece of work which is compromised through academic misconduct will be subject to the above stated penalties in its entirety, regardless to the degree of compromise.

Note 3:

All slides, presentations, handouts, tests, exams, and other course materials created by the instructor in this course are the intellectual property of the instructor. A student who publicly posts or sells an instructor's work, without the instructor's express consent, may be charged with misconduct under Brock's Academic Integrity Policy and/or Code of Conduct, and may also face adverse legal consequences for infringement of intellectual property rights.

Note 4: All assignments will be the result of individual student effort unless otherwise specified on the assignment.

Note 5: Assignments will be submitted electronically, details will be printed on the assignments.

Note 6: Assignment material will be distributed through Brightspace

Note 7: A departmental medical form will need to be submitted as per instructions before any consideration will be given due to sickness.

Note 8: Project must be completed and submitted by the due date in order to pass this course.