IMPROVE LIFE.

College of Engineering and Physical Sciences

School of Computer Science

Course Outline (Winter 2022)

CIS*4780 – Computational Intelligence

Instructor	Neil Bruce School of Computer Science Office: Reynolds 2222 Email: brucen@uoguelph.ca Office Hours: To be determined Web: socs.uoguelph.ca/~brucen/4780/
Prerequisites	Prerequisite(s): (CIS*3750 or CIS*3760) CIS*3490, (CIS*2460 or STAT*2040), (CIS*3700 recommended) Restriction(s): CIS*4750
Calendar Description	This course introduces concepts of soft computing: modelling uncertainty, granular computing, neurocomputing, evolutionary computing, probabilistic computing and soft computing for software engineering.
Reference Textbooks	No textbook is required, and course notes / slides will provide the most relevant coverage. Following are some recommended textbooks for additional reference. Please also see the course web page for additional resources.
Course Organization	See the course web page for details on course organization. socs.uoguelph.ca/~brucen/4780/
Topics Covered	• Computing with uncertainty • Bayes' nets and belief propagation • Fuzzy decision making

	• Genetic algorithms, swarm intelligence, particle swarm and ant colony optimization • Constraint satisfaction • Neural computation including neural networks • Markov decision processes and reinforcement learning • Network analysis
Learning Objectives	At the end of the course, a successful student will be able to: 1. Understand fundamental principles, ideas and techniques in computational intelligence including a broad array of paradigms for computing under uncertain conditions 2. Gain practical exposure to the theoretical aspects of computational intelligence
Evaluation & Feedback	**Assignment 1**: 20% Handed out: January 31 Due Date: February 20 **Assignment 2**: 20% Handed out: February 20 Due Date: March 14 **Assignment 3**: 20% Handed out: March 14 Due Date: April 4 **Final Exam**: 40% Please refer to the official exam schedule for time and location of the Final Exam.
Grading requirements	To pass the course you require at least 50% of the total course marks.
Information Technology and electronic devices	Please exercise appropriate use of laptop computers and other electronic devices in the classroom, and refrain from use of cellular phones except in the case of urgent or extenuating circumstances.
Evaluation Guidelines	● Evaluations will be based on the rubric that accompanies the individual assignment
Missed Evaluations	When you find yourself unable to meet an in-course requirement because of illness or compassionate reasons, please advise the course instructor in writing, with your name, id#, and e-mail contact. See the academic calendar for information on regulations and procedures for Academic Consideration:

Communication with Students	Only University of Guelph e-mail accounts are to be used for communication with students or the instructor. ***Emails sent from other accounts may not be answered!*** E-mails should be written in a way that is appropriate for a professional context. Indicate your course and section, formulate your question clearly, check spelling (names AND content) and use a polite language. Read the course outline before contacting the instructor or seminar leaders, you might find the answer here.
Course Content	See the course webpage for the most up to date details concerning class schedule and announcements. The course webpage is: socs.uoguelph.ca/~brucen/4780/
Accessibility	The University of Guelph is committed to creating a barrier-free environment. Providing services for students is a shared responsibility among students, faculty and administrators. This relationship is based on respect of individual rights, the dignity of the individual and the University community's shared commitment to an open and supportive learning environment. Students requiring service or accommodation, whether due to an identified, ongoing disability or a short-term disability should contact Student Accessibility Services as soon as possible. For more information, contact SAS at 519-824-4120 ext. 56208 or email sas@uoguelph.ca or see the website: https://wellness.uoguelph.ca/accessibility/
Academic Misconduct	The University of Guelph is committed to upholding the highest standards of academic integrity and it is the responsibility of all members of the University community, faculty, staff, and students to be aware of what constitutes academic misconduct and to do as much as possible to prevent academic offences from occurring. University of Guelph students have the responsibility of abiding by the University's policy on academic misconduct regardless of their location of study; faculty, staff and students have the responsibility of supporting an environment that discourages misconduct. Students need to remain aware that instructors have access to and the right to use electronic and other means of detection. Please note: Whether or not a student intended to commit academic misconduct is not relevant for a finding of guilt. Hurried or careless submission of assignments does not excuse students from responsibility for verifying the academic integrity of their work before submitting it. Students who are in any doubt as to whether an action on their part could be construed as an academic offence should consult with a faculty member or faculty advisor. The Academic Misconduct Policy is detailed in the Undergraduate Calendar: https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-amisconduct.shtml

Diversity and Inclusion Statement	In this course I would like to create a learning environment that supports a diversity of thoughts, perspectives and experiences, and honors your identities (including race, gender, class, sexuality, religion, ability, etc.)
Land Acknowledgement	The University of Guelph is in the 'Dish With One Spoon Territory'. The Dish With One Spoon is a treaty between the Anishinaabe, Mississaugas and Haudenosaunee that bound them to share the territory and protect the land. Subsequent Indigenous Nations and peoples, Europeans and all newcomers have been invited into this treaty in the spirit of peace, friendship and respect.
COVID Related	**Disclaimer** Please note that the ongoing COVID-19 pandemic may necessitate a revision of the format of course offerings, changes in classroom protocols, and academic schedules. Any such changes will be announced via CourseLink and/or class email. This includes on-campus scheduling during the semester, mid-terms and final examination schedules. All University-wide decisions will be posted on the COVID-19 website (https://news.uoguelph.ca/2019-novel-coronavirus-information/) and circulated by email. **Illness** Medical notes will not normally be required for singular instances of academic consideration, although students may be required to provide supporting documentation for multiple missed assessments or when involving a large part of a course (e.g.. final exam or major assignment). For information on current safety protocols, follow these links: https://news.uoguelph.ca/return-to-campuses/how-u-of-g-is-preparing-for-your-safe-return/ https://news.uoguelph.ca/return-to-campuses/spaces/#ClassroomSpaces Please note, these guidelines may be updated as required in response to evolving University, Public Health or government directives.