### MASENO UNIVERSITY

**CIT 318 – ARTIFICIAL INTELLIGENCE**

**COURSE OUTLINE AND SCHEDULE**

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| **INSTRUCTOR:** | GABRIEL OLIKO |
| **CONTACT PHONE:** | 0710 401055 |
| **CONTACT EMAIL:** | [goliko2002@gmail.com](mailto:goliko2002@gmail.com) |
| **IMPORTANT NOTICE:** | If you have any concerns about this course, please contact me first. If I cannot resolve your issue, please contact the IT department office and speak to the department chairman. Please DO NOT wait until the last minute to make your concerns known to me and/or to the department chairman. |
| **LEARNING OUTCOMES:** | * Understand artificial intelligence principles and approaches * Understand a basic understanding of the building blocks of AI as presented in terms of intelligent agents * Evaluate various search algorithms * Understand foundational ideas in the field of natural language processing, computer vision, and robotics * Reflect on the philosophical foundations of AI and the future of AI * Implement (write computer programs) various AI algorithms |
| **GRADING:** | CAT 1: 15%  CAT 2: 15%  EXAM: 70% |
| **MAKE-UP POLICY:** | There are NO MAKEUP exams or assignments. All exams and assignments will have strict due dates. |
| **ATTENDANCE** | Class attendance is mandatory. Because this is a graduate class, I expect students to participate actively in class, and that’s hard to do if you’re not actually there. I won’t take attendance at class (except as necessary to make the registrar happy), but you cannot pass if you miss too many classes. If you need to miss a class for a good reason, such as a conference or other research-oriented commitment, please see me in advance if possible.  Much of the course material, including assignments and lecture notes, will be posted on your personal emails. However, you’re responsible for all material covered in class, whether or not it appeared on your emails. If you miss a class, I suggest you ask either a fellow student or me to fill in any material you may have missed. |
| **COLLABORATION AND CHEATING** | Collaboration is not permitted in this class.  Cheating at any level will be treated very seriously. |

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| **WEEK** | **TOPIC** | **SUBTOPIC** |
| **1** | **Introduction** | * A brief review of AI history * What is artificial intelligence * Artificial Intelligence Introduction * Future of Artificial Intelligence * Characteristics of Intelligent Agents * Typical Intelligent Agents * Related research fields |
| **2** | **Problem Solving Methods** | * Problem solving Methods * Search Strategies * Uninformed and Informed Search * Local Search * Heuristics * Algorithms and Optimization Problems * Searching with Partial Observations * Constraint: Satisfaction Problems, Constraint Propagation, Backtracking Search * Game Playing * Optimal Decisions in Games * Alpha-Beta Pruning * Stochastic Games |
| **3** | **Intelligent Agents** | * reactive, * deliberative, * goal-driven, * utility-driven, * and learning agents * Artificial Intelligence programming techniques |
| **4** | **Software Agents** | * Architecture for Intelligent Agents * Agent communication * Negotiation and Bargaining * Argumentation among Agents * Trust and Reputation in Multi-agent systems |
| **5** | **Learning** | * Forms of learning * Supervised Learning * Decision Trees |
| **6** | **Learning** | * Regression and Linear Classification * ANN * Non Parametric Models * SVM * Ensemble Learning |
| **7** | **Communicating, Perceiving and acting** | * Introduction |
| **8** | **Communicating, Perceiving and acting: NLP** | * Language Models * Text Classification * Information Retrieval * Information Extraction |
| **9** | **Communicating, Perceiving and acting: Robotics** | * Robot Hardware * Robot Perception * Robot Movements * Robot Software Architectures |
| **10** | **Artificial Intelligence Applications** | * Artificial Intelligence applications * Language Models * Information Retrieval * Information Extraction * Natural Language Processing * Machine Translation * Speech Recognition * Robotics * Hardware and Software for Robots * Planning and Perception |
| **11** | **Project Review** |  |