Course descriptor F29AI

Course code	F29AI
Course title	Artificial Intelligence and Intelligent Agents
Credits	15
School	Mathematics and Computer Sciences
SCQF Level	9
Semester	1
Aims	This course aims to: • Introduce the fundamental concepts and techniques of AI, including planning, search and knowledge representation • To introduce the scope, subfields and applications of AI, topics to be taken from a list including natural language processing, expert systems, robotics and autonomous agents, machine learning and neural networks, and vision. • To develop skills in AI programming in an appropriate language
Syllabus	• Search algorithms (depth first search, breadth first search, uniform cost search, A* search) • Constraint satisfaction problems • Games (min-max, alpha-beta pruning) • Logic, resolution, introductory logic programming • Knowledge representation – logic, rules, frames • Goal and data-driven reasoning • Practical rule-based programming • Overview of main fields of AI (Vision, Learning, Knowledge Engineering) • In depth view of one field of AI (e.g. Planning, Natural Language) • Autonomous agents • Applications of AI • AI programming

Learning Outcomes	
Subject Mastery	• Critical understanding of traditional AI problem solving and knowledge representation methods • Use of knowledge representation techniques (such as predicate logic and frames). • Critical understanding of different systematic and heuristic search techniques • Practice in expressing problems in terms of state-space search

	- Broad knowledge and understanding of the subfields and applications of AI, such as computer vision, machine learning and expert systems - Detailed knowledge of one sub-field of AI (e.g. natural language processing, planning) and ability to apply its formalisms and representations to small problems - Detailed understanding of different approaches to autonomous agent and robot architectures, and the ability to critically evaluate their advantages and disadvantages in different contexts. - Practice in the implementation of simple AI systems using a suitable language
Personal Abilities	- Identification, representation and solution of problems - Time management and resource organisation - Research skills and report writing - Practice in the use of ICT, numeracy and presentation skills

Assessment method	70% written examination, 30% coursework