**Course Planning**

**BCS2313 – ARTIFICIAL INTELLIGENCE TECHNIQUES SEMESTER I SESSION 2024/2025**

|  |  |  |
| --- | --- | --- |
| **Week** | **Chapter/topic** | **Assessment/Activity** |
| 1 | **Course Briefing Module 1**   * 1. : Foundation Issues      + Introduction to AI      + Foundation to AI      + Overview of AI (HUAWEI Module 1)   -Technical Fields and Application Fields of AI  -Future Prospects of AI |  |
| 2 | **Module 1**   * Mainstream Development Framework in the Industry (HUAWEI Module 4)   1. : Agent      + Intelligent Agents      + Structure of Agents      + Problem Solving Agents 1.3: Robotics      + Applications of robotics |  |
| 3 | **Module 3**  Machine Learning Overview (HUAWEI Module 2)  -Machine Learning Types  -Machine Learning Process  -Other Key Machine Learning Methods  -Common Machine Learning Algorithms   * 1. Machine Learning (Fuzzy Logic)      + Overview of fuzzy logic      + Fuzzy set      + Fuzzy operation * Fuzzy inference | **Quiz 1 (Cover Module 1)**  **28/10/2024 (Monday) – 31/10/2024 (Thursday)**  **Online quiz on UDAS**  **Lab-python programming** |
| 4 | **Module 3**   * 1. Machine Learning (Fuzzy Logic) (Continue)      + Overview of fuzzy logic      + Fuzzy set      + Fuzzy operation * Fuzzy inference |  |
| 5 | **Module 4**   * 1. : Basic Knowledge Representation and Reasoning      + Knowledge discovery in database      + Overview of CBR      + CBR architecture & system      + Case-based VS Rule-based Expert System * Type of CBR Applications | **Lab-python programming** |
|  |  |  |

|  |  |  |
| --- | --- | --- |
| 6 | **Module 4**   * 1. : Basic Knowledge Representation and Reasoning (Continue)      + Knowledge discovery in database      + Overview of CBR      + CBR architecture & system      + Case-based VS Rule-based Expert System * Type of CBR Applications |  |
| 7 | **Module 3**  Deep Learning Overview (HUAWEI Module 3)  **-** Deep learning summary   * Training rules * Activation function * Normalizer * Optimizer * Types of Neural Network   1. : Machine Learning (Artificial Neural Network)      + Overview of ANN      + ANN structure of Learning      + Hebb rule      + Perceptron * Multi Layered ANN | **Midterm Test**  **11/12/2024**  **Wednesday**  **2.30pm – 4.30pm** |
| 8 | **Mid-Term Break** | **23/11/24 – 1/12/24** |
| 9 | **Module 3**   * 1. : Machine Learning (Artificial Neural Network) (Continue)      + Overview of ANN      + ANN structure of Learning      + Hebb rule      + Perceptron * Multi Layered ANN |  |
| 10 | **Module 3**   * 1. : Machine Learning (Artificial Neural Network) (Continue)      + Overview of ANN      + ANN structure of Learning      + Hebb rule      + Perceptron * Multi Layered ANN |  |
| 11 | **Module 2**   * 1. : Basic Search Strategies      + Problem spaces (states, goals, and operators), problem solving by search      + Factored representation (factoring state into variable) | **Project Submission**  **6/1/2025**  **Monday**  **11.59pm** |
| 12 | **Module 2**   * 1. : Basic Search Strategies      + Uninformed search (breadth-first, depth-first, depth first with iterative deepening)   2. : Basic Search Strategies      + Heuristic and informed search | **Lab-python**  **programming** |
| 13 | **Module 2**  2.4 Advanced Search |  |

|  |  |  |
| --- | --- | --- |
|  | * Genetic Algorithm * Overview of GA * Evolutionary Computation * Genetic Operator   **Module 2**   * 1. Advanced Search (Continue)      + Genetic Algorithm      + Overview of GA      + Evolutionary Computation   Genetic Operator | **Quiz 2 (Cover Module 2)**  **13/1/2025 (Monday) – 16/1/2025 (Thursday)**  **Online quiz on UDAS** |
| 14 | Study Week for Final Exam | **18/1/2025 – 26/1/2025** |

**Assessment Plan**

CO1: Distinguish the artificial intelligence concepts and methodologies in computer science. CO2: Construct an intelligence system prototype/module.

CO3: Demonstrate critical thinking ideas in artificial intelligence knowledge and problem-solving. CO4: Initiate AI knowledge to the final year/capstone projects and future problems.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Assessment** | **Weighting** | **CO1** | **CO2** | **CO3** | **CO4** |
| Quiz 1 | 5% | 5% |  |  |  |
| Quiz 2 | 5% | 5% |  |  |  |
| Group Project | 30% |  | 14% | 6% | 10% |
| Mid-term Test | 20% | 20% |  |  |  |
| Final | 40% | 40% |  |  |  |
| **Total** | **100%** | 70% | 14% | 6% | 10% |

# **Quiz 1** (Week 3): Overview of AI (HUAWEI Module 1)

**Midterm Test** (Week 7): Topic covered [1.1: Foundation Issues, 1.2 Agent, 1.3: Robotics, Machine Learning Overview (HUAWEI Module 2), 3.1 Machine Learning (Fuzzy Logic)]

**Quiz 2** (Week 13): Topic covered (Module 2: Search Strategies)

**Project Submission:** Week 11 (deadline 6/1/2025) at 11.59pm