COVENANT UNIVERSITY
College of Science and Technology

College: College of Science and Technology
Department: Computer and Information Sciences
Programme: Computer Science
Course Code: CSC 415
Course Title: Artificial Intelligence
Units: 2
Course Lecturer(s): Dr. Zacchaeus Omogbadegun, Dr. (Mrs.) Iheanatu
Semester: Alpha
Time: Thursday, 4-6 P.M
Location: Hall 308 (CST Building)

a) Brief Overview

Machines must exhibit intelligence if they are to find more relevance and application to real world problems. The course is a study of the theoretical concepts and computational mechanism that enables intelligence in computer systems (machines). The course is a study of the nature of machine intelligence and the various Artificial Intelligence (AI) techniques that can be implemented in computer system in order to facilitate human intelligent behaviour in machines to a reasonable level.

b) Course Objective/Goals

- To provide students with detailed knowledge of AI problems and AI problem-solving techniques.
- To study the composition of AI systems and an understanding of the origin of intelligent behaviours in machines.

c) Methods of Lecture Delivery/Teaching Aids

- **Lecture delivery Methods:** Lecture, Tutorial
- **Teaching aids:** Lecture notes on Slides/Microsoft Word slides/eBooks, Power Point Presentation with Multimedia support

d) Course Outlines

Module 1 (Week 1-2)

- Introduction: Definition and history - **(Dr. Zacchaeus Omogbadegun, Dr. (Mrs.) Iheanatu)**

-Applications of AI (Planning, understanding, natural language processing, parallel and distributed AI, learning, connectionist model, Robotics, expert systems, fuzzy logic, neural network)

Module 2 (Week 3-4)

-AI problems and problem spaces
- Heuristic Search Techniques (Solving problems by searching, informed search methods)
- Game Playing **(Dr. (Mrs.) Iheanatu)**

Module 3 (Week 5-Week 6)

Knowledge and Reasoning: Agents that reason logically, Intelligent Agents (Agents that communicate, Perception, Common Sense **(Dr. Zacchaeus Omogbadegun)**

Week 7: Mid-Semester Assessment

Module 5 (Week 8 –Week 10)

-First order logic

-Building a knowledge base, inference in first-order logic, logical reasoning systems. Languages for AI problem solving: PROLOG, LISP. **(Dr. Zacchaeus Omogbadegun)**

Module 6 (Week 11-Week 12)

-Learning (Learning: Learning from observations, learning from neural network, reinforcement learning, and knowledge in learning)

-Expert systems **(Dr. (Mrs.) Iheanatu)**

e) Tutorials

- Week 4 – Tutorial 1 (on Module 1-2 Topics)
- Week 10 – Tutorial 2 (on Module 3-5 Topics)
- Week 12 – Tutorial 3 (on Module 4-6 Topics/Examination Revision)

f) Structure of the Programme/Method of Grading

- Continuous Assessment: Mid-term Test *(10 Marks)*

- Impromptu Class Quiz *(5 marks)* Class

Group Project: *(10 marks)*

- Term Paper Assignment *(5 marks)*
- End of Semester Examination *(70 Marks)*

g) Ground rules & Regulations

Students are expected to be punctual, calm and responsive, in creating a highly interactive atmosphere in class sessions. All assignments and exercises should be completed on schedule with necessary feedbacks obtained from the course lecturers.

h) Term Paper and Assignment:

Writings on Selected AI Applications: (Robotics, Natural Language Processing, Computational Linguistics, Automated Process Control, Expert Systems etc.)

i) Alignment with Covenant University Vision and Goals

The subject of intelligence is the focal point of next generation computers. The course provides a platform for students to learn the fundamentals of artificial intelligence techniques and emerging approaches for developing intelligent systems. Sufficient equipping in these areas will put the students in a vantage position to make novel academic and industrial contributions as future leaders in the field of science and technology.

j) Contemporary issues/ Industrial relevance

The course offers the basic knowledge required to understand, design, build intelligent systems which remains the most desirable feature not yet prevalent in many of today's computer systems.

k) Recommended Reading/Text:

1. Text books:

i. David L. Poole and Alan K. Mackworth (2017) *Artificial Intelligence: Foundations of Computational Agents*, 2nd Edition, Cambridge University Press **[Main Text]**

ii. Stuart J. Russell and Peter Norvig (2016), *Artificial Intelligence – A Modern Approach*, Global Edition, Pearson Education Limited **[Alternate Main Text]**

iii. M. Tim Jones (2008), *Artificial Intelligence: A Systems Approach*, Infinity Science Press Llc, Hingham, Massachusetts

2. Journal articles

i. IEEE Computer Society (2017), *Computing Edge*, April 2017 • Volume 3, Number 4, www.computer.org/computingedge,

ii. IEEE Computer Society (2018), *Computing Edge*, February 2018 • Volume 4, Number 2, www.computer.org/computingedge,

iii. IEEE Computer Society (2018), *Computing Edge*, July 2018 • Volume 4, Number 7, www.computer.org/computingedge,