ROBERT GORDON UNIVERSITY ABERDEEN

MODULE DESCRIPTOR

Module Title

Advanced Artificial Intelligence

Reference	CM4107	Version	2
Created	March 2018	SCQF Level	SCQF 10
Approved	August 2017	SCQF Points	15
Amended	June 2018	ECTS Points	7.5

Aims of Module

To improve understanding of modern artificial intelligence (AI) by learning to code, debug and train machine learning algorithms. Students will learn about the theory as well as the implementation of state-of-the-art supervised and unsupervised algorithms. The module will use popular examples to showcase AI applications in reasoning and decision-making, language understanding, image and activity recognition tasks.

Learning Outcomes for Module

On completion of this module, students are expected to be able to:

1	Understand the principal theories, concepts and methods used in the development of intelligent systems.
2	Critically identify, define, conceptualise and analyse complex machine learning algorithms.
3	Interpret, use and evaluate a wide range of AI models for real-world problems.
4	Understand the importance of data quality and develop an awareness of ethics and transparency issues related to AI.
5	Critically appraise and evaluate relevant literature in AI.

Indicative Module Content

Fundamentals of logic, reasoning and machine learning. Supervised and unsupervised machine learning including neural nets, support vector machines, decision trees, probabilistic learning, instance-based learners, metric learning and clustering algorithms. Real-World Applications for instance in the areas of classification, Image analysis, Natural language understanding.

Module Delivery

Key concepts are introduced and illustrated through lectures and directed reading. The understanding of students is tested and further enhanced through interactive tutorials. In the laboratories, the student will progress through a sequence of exercises to develop sufficient knowledge and skills in Artificial Intelligence.

Indicative Student Workload	Full Time	Part Time
Contact Hours	33	N/A
Non-Contact Hours	117	N/A
Placement/Work-Based Learning Experience [Notional] Hours	N/A	N/A
TOTAL	150	N/A
Actual Placement hours for professional, statutory or regulatory body		

ASSESSMENT PLAN

If a major/minor model is used and box is ticked, % weightings below are indicative only.

Component 1

Type:	Coursework	Weighting:	100%	Outcomes Assessed:	1, 2, 3, 4, 5
Description:	Practical assessment based on a case study and critical analysis.				

MODULE PERFORMANCE DESCRIPTOR

Explanatory Text

The student must achieve a D in C1.

Module Grade	Minimum Requirements to achieve Module Grade:
A	The student must achieve an A in C1.
B	The student must achieve a B in C1.
C	The student must achieve a C in C1.
D	The student must achieve a D in C1.
E	The student must achieve an E in C1.
F	The student must achieve an F in C1.
NS	Non-submission of work by published deadline or non-attendance for examination

Module Requirements

Prerequisites for Module	CM3038 Artificial Intelligence For Problem Solving or equivalent.
Corequisites for module	None.
Precluded Modules	None.

INDICATIVE BIBLIOGRAPHY

1	Russell and Norvig. Artificial Intelligence: A Modern Approach.
2	Raschka. Python Machine Learning. Packt
3	N D LEWIS, 2016, Deep Learning Step by Step with Python
4	RASHID T, 2016, Make Your Own Neural Network, CreateSpace Publishing
5	BISHOP C, 2006 , Pattern Recognition and Machine Learning, Springer
6	KOWALSKI R, 2011, Computational Logic and Human Thinking, Cambridge University Press.
7	ERTEL W, 2011, Introduction to Artificial Intelligence, Springer