MODULE DESCRIPTOR

Module Title

Knowledge Modeling and Reasoning

Reference	CMM304	Version	2
Created	February 2025	SCQF Level	SCQF 11
Approved	April 2024	SCQF Points	15
Amended	February 2025	ECTS Points	7.5

Aims of Module

This module aims to enable students to design, implement, and use knowledge graphs through applying appropriate symbolic AI technologies, and understand their role in AI systems.

Learning Outcomes for Module

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

1	Design solutions based on the technologies and knowledge representation formalisms of that underpin symbolic AI.
2	Make judgements on the technical architectures for incorporating symbolic knowledge representations in AI systems.
3	Synthesise methods for reasoning and querying semantic knowledge into working solutions.
4	Appraise the quality of knowledge graphs.

Indicative Module Content

Principles of knowledge representation and symbolic AI, knowledge graphs, deductive knowledge, RDF, OWL, ontologies, querying knowledge graphs via SPARQL, quality assessment, linked data principles.

Module Delivery

Lectures are used to deliver the main principles and techniques. Practical sessions are used to acquire practical skills and reinforce knowledge from the lectures.

Indicative Student Workload	Full Time	Part Time
Contact Hours	30	N/A
Non-Contact Hours	120	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

Description:	A coursework normally typically consisting of designing, development and evaluation of knowledge graphs and related technologies.

MODULE PERFORMANCE DESCRIPTOR

Explanatory Text

The calculation of the overall grade for this module is based on 100% weighing of C1. An overall minimum grade D is required to pass the module.

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

Module Requirements

Prerequisites for Module	None.
Corequisites for module	None.
Precluded Modules	None.

INDICATIVE BIBLIOGRAPHY

1 Hogan, A. et al. (2021) Knowledge Graphs. Cham, Switzerland: Springer.

2 Heath, T. and Bizer, C. (2011) Linked Data: Evolving the Web into a Global Data Space. Cham, Switzerland: Springer.

3 Kejriwal, M. (2019) Domain-specific knowledge graph construction. Cham, Switzerland: Springer.