Module Specification

Linked, Open Data and the Internet of Things

Version: 2023-24, v2.0, 17 Mar 2023

Contents

Part 1: Information

Module title: Linked, Open Data and the Internet of Things

Module code: UFCFLJ-15-M

Level: Level 7

For implementation from: 2023-24

UWE credit rating: 15

ECTS credit rating: 7.5

Faculty: Faculty of Environment & Technology

Department: FET Dept of Computer Sci & Creative Tech

Partner institutions: None

Delivery locations: Not in use for Modules

Field: Computer Science and Creative Technologies

Module type: Module

Pre-requisites: None

Excluded combinations: None

Co-requisites: None

Continuing professional development: No

Professional, statutory or regulatory body requirements: None

Part 2: Description

Overview: Not applicable

Features: Not applicable

Educational aims: See Learning Outcomes

Outline syllabus: Introduction: The open data movement, the role of linked data, origins.

Ontology: Ontology as a shared model of objects, their properties and relationships in a domain, OWL (Web Ontology Language), meta-models, re-use, relationship to vocabulary, taxonomy.

Semantic models: Metadata, URIs and URLs as the foundation of the semantic web, RDF (Resource Description Framework), creating a dataset based on the domain ontology, RDF serializations including Turtle, named graphs.

Querying Semantic Data: The SPARQL query language (SPARQL Protocol and RDF Query Language, pronounced "sparkle"), SPARQL endpoints.

Publishing Linked Data: Publishing models on the web, Open Linked Data, Enterprise Linked Data.

Consuming and Visualizing linked data: JSON-LD, visualisation.

Internet of Things: Consuming and visualizing IoT sensor node data.

Open or Closed? Understanding the challenges of open versus closed data on the Internet of Things.

Part 3: Teaching and learning methods

Teaching and learning methods: Scheduled learning includes lectures, tutorials, demonstration, practical classes.

Independent learning includes hours engaged with essential and further reading, assignment preparation and completion.

Module Learning outcomes: On successful completion of this module students will achieve the following learning outcomes.

MO1 Implement and evaluate Ontology Web Language (OWL) based ontologies using industry standard tools and create Resource Description Framework (RDF) models conforming to these

MO2 Contrast and critique the uses of linked, open data in industry and be fully conversant with best practices in enabling Linked Open Data

MO3 Create semantic models in an appropriate language and using appropriate tools

MO4 Create optimised semantic web queries to extract data from the semantic web and subsequently visualise results in novel situations

MO5 Synthesise evidence on technical challenges, developments and enabling technologies surrounding the development of the Internet of Things (IoT)

Hours to be allocated: 150

Contact hours:

Independent study/self-guided study = 114 hours

Face-to-face learning = 36 hours

Total = 150

Reading list: The reading list for this module can be accessed at readinglists.uwe.ac.uk via the following link https://uwe.rl.talis.com/modules/ufcflj-15-m.html

Part 4: Assessment

Assessment strategy: Learning outcomes will be assessed through coursework. This coursework will demonstrate a student's ability to work practically with semantic web technologies to: create ontologies; find and consume linked, open data; present results that are visually appealing and understandable.

Coursework:
Internet of Things
Ontological modelling

Interpreting RDF
Consuming and visualising data
Understanding SPARQL query results

Assessment components:

Project (First Sit)
Description: Coursework (2000 words)
Weighting: 100 %
Final assessment: Yes
Group work: No
Learning outcomes tested: MO1, MO2, MO3, MO4, MO5

Project (Resit)
Description: Coursework (2000 words)
Weighting: 100 %
Final assessment: Yes
Group work: No
Learning outcomes tested:

Part 5: Contributes towards

This module contributes towards the following programmes of study:

Information Technology [Frenchay] MSc 2023-24

Data Science [GCET] MSc 2023-24

Data Science [NepalBrit] MSc 2023-24

Data Science [Frenchay] MSc 2023-24

Data Science [Frenchay] MSc 2023-24

Information Management [Frenchay] MSc 2023-24

Artificial Intelligence [Frenchay] MSc 2023-24

Information Technology [Frenchay] MSc 2022-23

Information Management [Frenchay] MSc 2022-23