



Module Specification

Cloud Computing [TSI]

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Part 1: Information

Module title: Cloud Computing [TSI]

Module code: UFCEF1-12-M

Level: Level 7

For implementation from: 2023-24

UWE credit rating: 12

ECTS credit rating: 6

College: College of Arts, Technology and Environment

School: CATE School of Computing and Creative Technologies

Partner institutions: Transport and Telecommunication Institute

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: This module will introduce students to the concepts, modules and techniques commonly used within Cloud Computing.

Features: Not applicable

Educational aims: The aim of this module is to provide students with knowledge and skills in the use of cloud technologies; focusing on current concepts and models,

cloud-enabling technologies, securing cloud systems, cloud infrastructures and management mechanisms.

Outline syllabus: Cloud Computing Overview:

History of cloud computing and a discussion of business drivers and technology innovations.

Basic cloud terminology and concepts are introduced, along with descriptions of common benefits and challenges of cloud computing adoption.

Understanding of virtualisation concept and possible business drivers behind the use of virtual computer hardware platforms, operating systems, storage devices, and computer network resources.

Concepts and Models:

Cloud delivery and cloud deployment models are discussed in detail, discussion on cloud characteristics and roles and boundaries.

Cloud-Enabling Technologies:

Contemporary technologies that realize modern-day cloud computing platforms and innovations are discussed, including data centres, virtualisation, and Web-based technologies.

Fundamental Cloud Security:

Security topics and concepts relevant and distinct to cloud computing are introduced including: confidentiality, integrity, authenticity, availability, threat, vulnerability, risk, security controls, security mechanisms, security policies and descriptions of common cloud security threats and attacks.

Cloud Infrastructures and Management Mechanisms:

Primary cloud computing mechanisms and their management mechanisms.

Sustainability impacts of Cloud Computing:

Sources of electricity and related greenhouse gas emissions, clean and dirty cloud, using renewable power to de-carbonise cloud / data centres, ways to improve cloud energy efficiency, buying clean cloud services, impacts of migrating from in-house to

cloud and societal impacts of cloud computing.

Cloud Computing Architectures:

Technology architecture within the realm of cloud computing – including requirements and considerations that manifest themselves in broadly scoped architectural layers (e.g. fundamental, advanced, and specialized) and numerous distinct architectural models.

Future of Cloud Computing:

Cloud computing future opportunities, challenges and research trends.

Part 3: Teaching and learning methods

Teaching and learning methods: The module is delivered through weekly lectures and weekly tutorial sessions. Each lecture will direct the course and introduce the new ideas and skills required. Then small group tutorial sessions will enable each student to carry out the study and research exercises described in the associated work-sheet under the guidance of a Tutor.

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

MO1 Demonstrate a comprehensive understanding of the business drives, techniques and methodologies applicable to cloud computing and virtualisation.

MO2 Undertake independent analysis of the security issues in Cloud Computing.

MO3 Evaluate sustainability issues arising from cloud computing and propose actions to mitigate against these.

MO4 Critically compare between traditional data storage and modern-day cloud computing data centre technology, and apply new approaches to complex problems that are appropriate to this level.

MO5 Critically evaluate various cloud computing mechanisms including cloud services e.g. cloud storage, cloud usage monitoring, automated scaling and remote administration to apply to complex problems.

Hours to be allocated: 120

Contact hours:

Independent study/self-guided study = 112 hours

Face-to-face learning = 48 hours

Total = 160

Reading list: The reading list for this module can be accessed at [readinglists.uwe.ac.uk](https://rl.talis.com/3/uwe/lists/FAE693FE-B358-3BC0-7DEA-0D35E87D587D.html?lang=en-gb&login=1) via the following link <https://rl.talis.com/3/uwe/lists/FAE693FE-B358-3BC0-7DEA-0D35E87D587D.html?lang=en-gb&login=1>

Part 4: Assessment

Assessment strategy: This module has one assessment.

The coursework involves solving a business related cloud adoption problem based on given requirements, proposing a solution and preparing implementation specifications. The actual assignment topics are chosen to demonstrate some basic principles, which are especially significant to the course. The coursework is required to be carried out by individual students and the assessment should be made on written work provided by each individual.

There will be opportunities for formative assessment in the form of regular in-class presentations of research/implementation completed as part of tutorial work completed and subsequent group discussions.

The resit work consists of a rework/update of the original submission.

Assessment tasks:

Written Assignment (First Sit)

Description: Written Report + appendices (2000 words)

Weighting: 100 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO1, MO2, MO3, MO4, MO5

Written Assignment (Resit)

Description: Written report + Appendices (2000 words)

Weighting: 100 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO1, MO2, MO3, MO4, MO5

Part 5: Contributes towards

This module contributes towards the following programmes of study:

Computer Science (Data Analytics and Artificial Intelligence) {Double Degree} [TSI]

MSc 2023-24