



## **Module Specification**

### **Cloud Computing [TSI]**

Version: 2021-22, v1.0, 26 Oct 2021

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## Part 1: Information

**Module title:** Cloud Computing [TSI]

**Module code:** UFCEF1-12-M

**Level:** Level 7

**For implementation from:** 2021-22

**UWE credit rating:** 12

**ECTS credit rating:** 6

**Faculty:** Faculty of Environment & Technology

**Department:** FET Dept of Computer Sci & Creative Tech

**Partner institutions:** Transport and Telecommunication Institute

**Delivery locations:** Transport and Telecommunication Institute Latvia

**Field:** Computer Science and Creative Technologies

**Module type:** Standard

**Pre-requisites:** None

**Excluded combinations:** None

**Co-requisites:** None

**Continuing professional development:** No

**Professional, statutory or regulatory body requirements:** None

## Part 2: Description

**Overview:** 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 Component A, 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.

**Assessment components:**

**Written Assignment - Component A (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 - Component A (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}

[Feb][FT][TSI][2yrs] MSc 2021-22