



## **Module Specification**

### **Advanced Databases**

Version: 2021-22, v3.0, 04 Oct 2021

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## Part 1: Information

**Module title:** Advanced Databases

**Module code:** UFCFU3-15-3

**Level:** Level 6

**For implementation from:** 2021-22

**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:** Frenchay Campus, Global College of Engineering and Technology (GCET), Northshore College of Business and Technology, Taylors University, Villa College

**Field:** Computer Science and Creative Technologies

**Module type:** Standard

**Pre-requisites:** Web Programming 2021-22

**Excluded combinations:** None

**Co-requisites:** None

**Continuing professional development:** No

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

## Part 2: Description

**Overview:** Learners will explore different technologies that support the storage, access and processing of organisational data at various levels. The systems that support the processing of Big Data to allow for efficient processing with advanced algorithms will also be explored.

Learners will be expected to be able to evaluate different options in supporting data systems that are used in complex real life projects

Students will develop skills to assess the legal and ethical implications of designing, storing and managing access to increasing volumes of data particularly where such data is a mixture of sensitive and personal data with various levels of complexity that could lead to different levels of risk

**Features:** Not applicable

**Educational aims:** The aim of this module is to support students in developing the skills to experiment with the design and implementation of SQL and NoSQL databases.

**Outline syllabus:** Indicative module content will include:

Relational; Object Relational Databases; Transaction processing – ACID property; Complex queries; Query optimisation; NoSQL databases; Distributed and Scalable Databases – CAP Theorem, Horizontal/Vertical fragmentation; Temporal Databases; Data Warehousing; Data Marts; Big Data; GDPR; Access Management; Authentication, authorisation; Information risk management.

### **Part 3: Teaching and learning methods**

**Teaching and learning methods:** Face to face learning:

The theoretical underpinning will be provided in lectures with material being made available on the University's VLE. Further reading will be made available through the reading list and appropriate research papers that will be supplied via the VLE for special reflective evaluation sessions.

Practical sessions will provide the opportunity to design and implement solutions with the support of materials available on the VLE and continuous in class feedback from the module tutors.

Independent learning:

In addition, students will be expected to develop independent learning approaches through directed reading and study, and presentation development.

Online forum and other support means such videos and external links will be made available via the VLE and the University's library systems.

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

**MO1** Design and Implement Prototypes of Database Systems that serve the needs of Real World problems with complex data (assessed in component B)

**MO2** Critically evaluate database systems as to risk and safety of data stored in them and the way such data is accessed and processed (assessed in components A and B)

**MO3** Demonstrate a thorough knowledge of the ethical and legal challenges posed with the storing of very large volumes of data in corporate systems (assessed in component A)

**MO4** Critically assess the different database paradigms in addressing efficiency and effectiveness requirements of a problem area (assessed in components A & B)

**Hours to be allocated:** 150

**Contact 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](https://rl.talis.com/3/uwe/lists/77E1E73E-4F67-C0E9-7D2B-76FC4B76FF26.html?lang=en-GB&login=1) via the following link <https://rl.talis.com/3/uwe/lists/77E1E73E-4F67-C0E9-7D2B-76FC4B76FF26.html?lang=en-GB&login=1>

## Part 4: Assessment

**Assessment strategy:** Assessment will be formative and summative in nature.

Formative will occur during the practical sessions where students will be completing in-class exercises and will be receiving verbal feedback. Formative feedback will also be provided to those students that will make their draft coursework available to

tutors for review - such feedback will be both verbal and written, (usually in the form of an email to the student).

Summative assessment will be in the form of online in-class tests taken during tutorial / practical sessions in computer laboratories. These will assess a student's ability to select and justify the use of appropriate database technologies in solving real world problems with storage and management of data.

Further to the in-class tests, a practical coursework will require a student to demonstrate their ability to work independently in implementing a design of a database that yields a solution to a practical problem. The efficiency of the solution and its impact on security and legal issues will be assessed via a short video submission.

Referral work will be of the same type as per the main assessment.

### **Assessment components:**

#### **In-class test - Component A (First Sit)**

Description: In-class tests. A maximum of two tests, with a total duration of 2 hours.

Weighting: 40 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO2, MO3

#### **Practical Skills Assessment - Component B (First Sit)**

Description: Coursework requiring the design, implementation and supporting video presentation of a database system, modelled on the exercises to be completed during the practical sessions

Weighting: 60 %

Final assessment: No

Group work: No

Learning outcomes tested: MO1, MO2, MO4

#### **Examination - Component A (Resit)**

Description: Laboratory examination - 2hrs

Weighting: 40 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO2, MO3

### **Practical Skills Assessment - Component B (Resit)**

Description: Coursework requiring the design, implementation and supporting video presentation of a database system, modelled on the exercises to be completed during the practical sessions.

Weighting: 60 %

Final assessment: No

Group work: No

Learning outcomes tested: MO1, MO2, MO4

## **Part 5: Contributes towards**

This module contributes towards the following programmes of study:

Computing [Sep][FT][Frenchay][3yrs] BSc (Hons) 2019-20

Computing {Dual} [Aug][FT][Taylors][3yrs] BSc (Hons) 2019-20

Computing {Dual} [Mar][FT][Taylors][3yrs] BSc (Hons) 2019-20

Software Engineering [Sep][FT][Frenchay][3yrs] - Not Running BSc (Hons) 2019-20

Software Engineering {Dual} [Aug][FT][Taylors][3yrs] BSc (Hons) 2019-20

Software Engineering {Dual} [Mar][FT][Taylors][3yrs] BSc (Hons) 2019-20

Software Engineering [Jan][FT][Northshore][3yrs] - Not Running BSc (Hons) 2019-20

Computing [Sep][SW][Frenchay][4yrs] BSc (Hons) 2018-19

Software Engineering {Foundation} [Oct][FT][GCET][4yrs] BEng (Hons) 2018-19

Computing {Dual} [Mar][SW][Taylors][4yrs] BSc (Hons) 2018-19

Computing {Dual} [Aug][SW][Taylors][4yrs] BSc (Hons) 2018-19

Software Engineering [Sep][SW][Frenchay][4yrs] - Not Running BSc (Hons) 2018-19

Computing {Foundation} [Sep][FT][Frenchay][4yrs] BSc (Hons) 2018-19

Software Engineering {Foundation} [Feb][FT][GCET][4yrs] BEng (Hons) 2018-19

Forensic Computing and Security {Dual} [Mar][FT][Taylors][3yrs] - Not Running BSc (Hons) 2019-20

Forensic Computing and Security {Dual} [Aug][FT][Taylors][3yrs] - Not Running BSc (Hons) 2019-20

Software Engineering for Business [Sep][FT][Frenchay][3yrs] BSc (Hons) 2019-20

Computer Science [Jan][FT][Villa][3yrs] BSc (Hons) 2019-20

Computer Science [May][FT][Villa][3yrs] BSc (Hons) 2019-20

Computer Science [Sep][FT][Frenchay][3yrs] BSc (Hons) 2019-20

Computer Science [Sep][FT][Villa][3yrs] BSc (Hons) 2019-20

Forensic Computing and Security [Sep][FT][Frenchay][3yrs] BSc (Hons) 2019-20

Automation and Robotics Engineering {Foundation} [Feb][FT][GCET][4yrs] BEng (Hons) 2018-19

Computer Science [Sep][SW][Frenchay][4yrs] BSc (Hons) 2018-19

Forensic Computing and Security [Sep][SW][Frenchay][4yrs] BSc (Hons) 2018-19

Computer Science {Foundation} [Sep][FT][Frenchay][4yrs] BSc (Hons) 2018-19

Forensic Computing and Security {Foundation} [Sep][FT][Frenchay][4yrs] BSc (Hons) 2018-19

Automation and Robotics Engineering {Foundation} [Oct][FT][GCET][4yrs] BEng (Hons) 2018-19

Computer Security and Forensics {Foundation} [Feb][FT][GCET][4yrs] BSc (Hons) 2018-19

Computer Security and Forensics {Foundation} [Oct][FT][GCET][4yrs] BSc (Hons) 2018-19

Software Engineering for Business {Foundation} [Sep][FT][Frenchay][4yrs] BSc (Hons) 2018-19

