Module Specification

Advanced Databases

Version: 2023-24, v4.0, 14 Jun 2023

Contents

Part 1: Information

Module title: Advanced Databases

Module code: UFCFU3-15-3

Level: Level 6

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

Field: Computer Science and Creative Technologies

Module type: Module

Pre-requisites: Web Programming 2023-24

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, addressing the requirements efficiently and effectively.

MO2 Critically evaluate database systems as to risk and safety of data stored in them and the way such data is accessed and processed. In doing so, demonstrate thorough knowledge of the ethical and legal challenges surrounding the storage of a wide range of data types.

Hours to be allocated: 150

Contact hours:

Face-to-face learning = 114 hours

Total = 150

Reading list: The reading list for this module can be accessed at readinglists.uwe.ac.uk 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 a portfolio of work. The portfolio 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 student will

also be required to include a discussion of the implications of their implementation in relation to a significant database issue such as security, legal imperatives etc.

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

Assessment tasks:

Portfolio (First Sit)

Description: Portfolio demonstrating the implementation of a database, an illustrative dataset and a discussion of some one or more selected issues relevant to the implementation.

Weighting: 100 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO1, MO2

Portfolio (Resit)

Description: Portfolio demonstrating the implementation of a database, an illustrative dataset and a discussion of some one or more selected issues relevant to the implementation.

Weighting: 100 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO1, MO2

Part 5: Contributes towards

This module contributes towards the following programmes of study:

Software Engineering [Sep][FT][Frenchay][3yrs] - Not Running BSc (Hons) 2021-22

Computer Science [Sep][FT][Frenchay][3yrs] BSc (Hons) 2021-22

Computer Science [Sep][FT][Villa][3yrs] BSc (Hons) 2021-22

Computer Science [Jan][FT][Villa][3yrs] BSc (Hons) 2021-22

Computer Science [May][FT][Villa][3yrs] BSc (Hons) 2021-22

Computing {Dual} [Aug][FT][Taylors][3yrs] - Not Running BSc (Hons) 2021-22

Computing {Dual} [Mar][FT][Taylors][3yrs] - Not Running BSc (Hons) 2021-22

Computing [Sep][FT][Frenchay][3yrs] - Not Running BSc (Hons) 2021-22

Software Engineering {Dual} [Aug][FT][Taylors][3yrs] BSc (Hons) 2021-22

Software Engineering {Dual} [Mar][FT][Taylors][3yrs] BSc (Hons) 2021-22

Software Engineering [Jan][FT][Northshore][3yrs] - Not Running BSc (Hons) 2021-22

Computing [Sep][SW][Frenchay][4yrs] BSc (Hons) 2020-21

Computing {Dual} [Aug][SW][Taylors][4yrs] BSc (Hons) 2020-21

Computing {Dual} [Mar][SW][Taylors][4yrs] BSc (Hons) 2020-21

Computing {Foundation} [Sep][FT][Frenchay][4yrs] - Not Running BSc (Hons) 2020-21

Computer Science {Foundation}[Sep][FT][Frenchay][4yrs] BSc (Hons) 2020-21

Computer Science [Sep][SW][Frenchay][4yrs] BSc (Hons) 2020-21

Software Engineering [Sep][SW][Frenchay][4yrs] - Not Running BSc (Hons) 2020-21

Software Engineering {Foundation} [Feb][FT][GCET][4yrs] BEng (Hons) 2020-21

Software Engineering {Foundation} [Oct][FT][GCET][4yrs] BEng (Hons) 2020-21

Computing {Foundation} [Sep][SW][Frenchay][5yrs] BSc (Hons) 2019-20

Computer Science [Sep][FT][Villa][3yrs] - Not Running BSc (Hons) 2021-22

Computer Science [May][FT][Villa][3yrs] - Not Running BSc (Hons) 2021-22

Computer Science [Jan][FT][Villa][3yrs] - Not Running BSc (Hons) 2021-22

Software Engineering for Business [Sep][FT][Frenchay][3yrs] BSc (Hons) 2021-22

Cyber Security and Digital Forensics [Sep][FT][Frenchay][3yrs] BSc (Hons) 2021-22

Cyber Security and Digital Forensics [Jan][FT][NepalBrit][3yrs] BSc (Hons) 2021-22

Forensic Computing and Security {Dual} [Mar][FT][Taylors][3yrs] - Not Running BSc (Hons) 2021-22

Forensic Computing and Security {Dual} [Aug][FT][Taylors][3yrs] - Not Running BSc (Hons) 2021-22

Automation and Robotics Engineering {Foundation} [Feb][FT][GCET][4yrs] BEng (Hons) 2020-21

Automation and Robotics Engineering {Foundation} [Oct][FT][GCET][4yrs] BEng (Hons) 2020-21

Computer Security and Forensics {Foundation} [Feb][FT][GCET][4yrs] BSc (Hons) 2020-21

Computer Security and Forensics {Foundation} [Oct][FT][GCET][4yrs] BSc (Hons) 2020-21

Software Engineering for Business {Foundation} [Sep][FT][Frenchay][4yrs] BSc (Hons) 2020-21

Computer Science {Foundation} [Sep][FT][Frenchay][4yrs] - Not Running BSc (Hons) 2020-21

Computer Science [Sep][SW][Frenchay][4yrs] - Not Running BSc (Hons) 2020-21

Forensic Computing and Security {Foundation} [Sep][FT][Frenchay][4yrs] - Not Running BSc (Hons) 2020-21

Forensic Computing and Security [Sep][SW][Frenchay][4yrs] - Not Running BSc (Hons) 2020-21

Cyber Security and Digital Forensics [Sep][SW][Frenchay][4yrs] BSc (Hons) 2020-21

Cyber Security and Digital Forensics {Foundation} [Sep][FT][Frenchay][4yrs] BSc (Hons) 2020-21

Computer Science {Foundation} [Sep][SW][Frenchay][5yrs] BSc (Hons) 2019-20

Forensic Computing and Security {Foundation} [Sep][SW][Frenchay][5yrs] BSc (Hons) 2019-20