Module Specification

Database and Data Banks [TSI]

Version: 2023-24, v2.0, 20 Mar 2023

Contents

Part 1: Information

Module title: Database and Data Banks [TSI]

Module code: UFCFTX-12-1

Level: Level 4

For implementation from: 2023-24

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: 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: The aim of this module is to acquire knowledge and practical skills in the field of IS development based on data bases.

Outline syllabus: Introduction to Data Bases. Information and data. Main terms, concepts and definitions in the field of data bases;

Models of the data. Purpose of the data models and their classification. Model entity-relationship and its development;

Relational theory of Data Bases. Main concept of data relational model. Structure of the relation. Main features of the relation. Relational model of entity-relationship;

Relational Algebra. Activities of relational algebra for ratios;

Functional dependencies in ratios. The definition of functional dependency. Armstrong's axioms. Closure of functional dependencies;

Normalisation of ratios. Kinds of a periodicities which appear in ratios. Definition of normal form. Kinds of normal form and their requirements. Ratio sequence towards 3rd normal form;

Introduction to Structured Query Language. Purpose and special features of the language. Types of data. SQL commands;

Introduction to optimisation of queries. Types of query optimization. Plan of query creation. improving the speed of query completion;

Introduction to Data Base Management Systems. Purpose, types and functions of DBMS. Main features of popular DBMS;

Introduction to modern technologies of Data Bases. Purpose and issues being solved. Short description of modern Data Base technologies;

Data Depository. Purpose and issues being solved. Layouts of Data Depositories. Data model OLAP and its completion;

Distributed Data Bases. Purpose and issues being solved. Definition of distributed and remote query, transactions;

Object-oriented Data Bases. Expanded ER model. Object-oriented Data model.

Part 3: Teaching and learning methods

Teaching and learning methods: Learning and teaching will be provided to students in forms: lectures, labs and practical classes. During lectures, theoretical aspects of the course will be provided to students by the teaching staff. Lectures will be supported by presentation published and available to the students on e.tsi.lv under the module section. Also, additional materials, like code examples, text books,

publications on the internet, videos etc will be presented in e.tsi.lv.

During labs, each student receives an individual task to perform.

Practical classes are used to explain in details practical elements of the module and to train students to do application area analysis, ER model development, database normalization etc.

In addition to learning activities during taught sessions, students are expected to spend time outside of class on independent learning activities. These might include completing assignment tasks, independent reading, practising new skills on personal projects and watching informative videos, completing self-assessment test etc.

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

> **MO1** Design and develop the data bases and their content, as well to apply the technologies used for development of the data bases
>
> **MO2** Model subject area using different notations and create data base using different Data Base Management Systems
>
> **MO3** Build the set of requirements and functions for the database development
>
> **MO4** Use SQL to work with database (SELECT, UPDATE, INSERT, DELETE)

Hours to be allocated: 120

Contact hours:

> Independent study/self-guided study = 96 hours
>
> Face-to-face learning = 68 hours
>
> Total = 164

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/E21CBD0C-8BAD-6AFD-7B8C-1595070C82AA.html?lang=en-gb&login=1

Part 4: Assessment

Assessment strategy: This module assessment is split into two (Exam, Labs):

A final 3-hour examination which will assess the students understanding of taught material that forms part of the learning outcomes but cannot easily be assessed through practical tasks.

A series of practical tasks, exploring different aspects of design and development of data base in Data Base Management System using SQL language.

Assessment components:

Examination (First Sit)
Description: Examination
Weighting: 50 %
Final assessment: Yes
Group work: No
Learning outcomes tested: MO1, MO2, MO3

Portfolio (First Sit)
Description: series of 5 practical tasks, exploring different aspects of design and development of data base in Data Base Management System using SQL language.
Weighting: 50 %
Final assessment: No
Group work: No
Learning outcomes tested: MO1, MO2, MO3, MO4

Examination (Resit)
Description: Examination
Weighting: 50 %
Final assessment: No
Group work: No
Learning outcomes tested: MO1, MO2, MO3, MO4

Portfolio (Resit)

Description: series of 5 practical tasks, exploring different aspects of design and development of data base in Data Base Management System using SQL language.

Weighting: 50 %

Final assessment: No

Group work: No

Learning outcomes tested: MO1, MO2, MO3, MO4

Part 5: Contributes towards

This module contributes towards the following programmes of study:

Computer Science and Software Development {Double Degree} {Foundation} [TSI] BSc (Hons) 2022-23

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