2024 / 25

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Ollscoil Teicneolaíochta an Oirdheiscirt

South East Technological University

Module Descriptor

Database Fundamentals (Computing and Mathematics)

Database Fundamentals (A13503)

Short Title: Database Fundamentals
Department: Computing and Mathematics
Credits: 5 **Level:** Intermediate

Description of Module / Aims

This module will introduce the student to the concepts and practice of relational database modelling. The student will gain competence in Conceptual Data Modelling and Logical Data Modelling. The student will also examine the redundancy that can arise in poorly modelled systems and apply Normalisation to eliminate the redundancy. They will gain experience in the design and implementation of a practical database system.

Programmes

		stage/semester/status
COMP-0185	BSc (Hons) in Creative Computing (WD_KCRCO_B)	2 / 3 / M
COMP-0185	BSc (Hons) in Software Engineering (WD_KDEVP_BI)	2 / 3 / M
COMP-0185	BSc (Hons) in Software Systems Development (WD_KDEVP_B)	2 / 3 / M
COMP-0185	BSc in Applied Computing (WD_KCOMP_D)	2 / 3 / M
COMP-0185	BSc in Information Technology (WD_KINFT_D)	2 / 3 / M
COMP-0185	BSc in Multimedia Applications Development (WD_KMULA_D)	2 / 3 / M
COMP-0185	BSc in Software Systems Development (WD_KCOMC_D)	2 / 3 / M
COMP-0185	Diploma in Computing with Security and Forensics (WD_BCSEC_SP)	3 / 2 / M
	BEng (Hons) in Automation Engineering with Data Intelligence (WD_EAUTO_B)	3 / 5 / M

Indicative Content

- Database Concepts
- Relational Model
- Conceptual Data Modelling
- Logical Data Modelling
- Normalisation
- SQL – Data Definition and Data Manipulation

Learning Outcomes

On successful completion of this module, a student will be able to:

1. Analyse database terminologies, database structures and components.
2. Appraise the elements of the Relational Model.
3. Model and construct Entity Relationship (ER) diagrams for business scenarios.
4. Transform an ER diagram into a set of relations, which are ready for database implementation.
5. Transform unnormalised relations into a set of normalised relations through the rules of normalisation which adhere to relational data model principles.
6. Construct Data Manipulation and Data Definition statements.

Learning and Teaching Methods

- This module will be presented by a combination of lectures, and/or tutorials, and computer-based practicals.
- The lectures will be used to introduce new topics and their related concepts. The student will be encouraged to manage their own learning by asking questions as well as being presented with problems similar to those presented in lectures.
- The practical element is fundamental. The aim is to provide the student with the skills and confidence to apply what has been demonstrated and learned.

Learning Modes

Learning Type	F/T Hours	P/T Hours
Lecture	36	12
Practical	24	12
Independent Learning	75	111

Assessment Methods

	Weighting	Outcomes Assessed
Continuous Assessment	100%	
In-Class Assessment	20%	1,2
Assignment	40%	3,4,5
Assignment	40%	6

Assessment Criteria

<40%: Unable to interpret and describe key concepts of Relational Database Design.

40%–49%: Be able to interpret and describe key concepts of Relational Database Design.

50%–59%: Ability to discuss key concepts of Relational Database Design and the ability to discover and integrate related knowledge in other knowledge domains.

60%–69%: Be able to solve problems within the field Relational Database Design by experimenting with the appropriate skills and tools.

70%–100%: All the above to an excellent level. Be able to analyse and design solutions to a high standard for a range of both complex and unforeseen problems through the use and modification of appropriate skills and tools.

Supplementary Material(s)

- "Oracle Academy." https://academy.oracle.com/en/oa-web-overview.html
- Connolly, T. and C. Begg. *Database Systems: A practical approach to design, implementation and management.* 6th Ed.. Boston: Addison-Wesley, 2015.
- Date, C.J. *SQL and Relational Theory: How to Write Accurate SQL Code.* 2nd Ed.. California: O' Reilly Media Inc, 2012.

Requested Resources

- Room Type: Computer Lab