USE
TU

Ollscoil
Teicneolaíochta
an Oirdheiscirt

South East
Technological
University

Module Descriptor

Database Systems
(Computing and Mathematics)

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

Description of Module / Aims

This module concentrates on the physical design and implementation of a database. Database Management concepts are also examined such as Transaction Management, Concurrency Control and Recovery. Students will be provided with the knowledge and skills to administer and manage a commercial database.

Programmes

	stage/semester/status
COMP-0174 BSc (Hons) in Creative Computing (WD_KCRCO_B)	2 / 4 / M
COMP-0174 BSc (Hons) in Software Engineering (WD_KDEVP_BI)	2 / 4 / M
COMP-0174 BSc (Hons) in Software Systems Development (WD_KDEVP_B)	2 / 4 / M
COMP-0174 BSc in Applied Computing (WD_KCOMP_D)	2 / 4 / M
COMP-0174 BSc in Information Technology (WD_KINFT_D)	2 / 4 / M
COMP-0174 BSc in Multimedia Applications Development (WD_KMULA_D)	2 / 4 / M
COMP-0174 BSc in Software Systems Development (WD_KCOMC_D)	2 / 4 / M
BEng (Hons) in Automation Engineering with Data Intelligence (WD_EAUTO_B)	4 / 8 / M

Indicative Content

- Physical Database Design: Translate the logical data model; File organisation and Indexes
- Distributed databases
- Transactions management: Concurrency Control
- Database Backup & Recovery
- SQL: Indexes; Constraints; Triggers; Advanced Querying; Privileges

Learning Outcomes

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

1. Appraise the concepts of Physical Database Design and Implementation.
2. Classify and compare the concepts of Distributed Database Systems.
3. Examine the issues surrounding Transaction Management and Concurrency Control.
4. Explore the process of Database Recovery and Backup procedures.
5. Construct SQL statements, which would allow for the creation of relational database tables and manipulation of the data within those tables.
6. Design and implement a database application.

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	24	12
Practical	24	12
Independent Learning	87	111

Assessment Methods

	Weighting	Outcomes Assessed
Continuous Assessment	100%	
In-Class Assessment	40%	1,2,3,4
Project	30%	5,6
In-Class Practical	30%	5,6

Assessment Criteria

<40%: Unable to interpret and describe key concepts of Physical Database Design and Implementation; and Database Management concepts.

40%–49%: Be able to interpret and describe key concepts of Physical Database Design and Implementation; and Database Management concepts.

50%–59%: Ability to discuss key concepts of Physical Database Design and Implementation; and Database Management concepts. and ability to discover and integrate related knowledge in other knowledge domains.

60%–69%: Be able to solve problems within the field of Physical Database Design and Implementation; and Database Management concepts. 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