

Pre-Requisite Modules code(s)	Co-Requisite Modules code(s)	ECTS credits	Module Code	Module Title
		5	CMPU4049	System and Database Administration

8.7.3. System and Database Administration

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Module Description:

This module teaches the student how to administrate a large database installation on an existing operating system, taking into account factors affecting security, scalability, availability, capability and performance costs.

Module aim

- The student will gain the necessary skills/knowledge to evaluate/assess/specify the security, performance, and availability and scalability requirements of an organisational database system.
- The student will plan, configure the Operating system, install appropriate database software, instantiate a server, partition, index and replicate database artefacts, provide secure user access, networking, archiving, backup and recovery that is appropriate to an organisation’s needs.
- The student will learn to evaluate the complex trade-offs required between providing service levels and controlling costs with respect to database administration.

Learning Outcomes:

On completion of this module, the learner will be able to.....

- Evaluate organisational requirements for a data storage system.
- Choose the most appropriate configuration for integrating a large DBMS server onto an existing network, taking performance, security and cost into account.
- Partition, index, distribute and replicate database artefacts as appropriate.
- Configure system and database objects to maximise security, availability and cost.
- Configure and enable local and network user and group access, privileges and auditing, both to Operating System and database services.
- Plan and execute an archiving, backup and recovery strategy for all anticipated levels of failure, trading service level requirements with performance and space requirements.
- Develop an operational and maintenance plan, monitoring performance, security and cost with reference to Service Level agreements.

Learning and Teaching Methods:

During the lecture, new material on the theories and practices in systems and database administration will be disseminated. Techniques will be applied in the practical laboratory sessions. A virtual learning environment will be used for this module.

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Module content:

Operating System and Database System administration requirements. Interaction between the Operating System and the database. Roles of the System Administrator and Database Administrator. Organisational considerations when choosing a database installation. Configuration of the Operating System for the Database server. Choice and configuration of the database server for an organisation's requirements. Anatomy of a database. Startup, shutdown, monitoring and management of the database and operating system. Persistent storage strategies to optimise speed and cost. Database performance design, profiles and system security. Auditing techniques and implications. Networking techniques and implications. Archiving, backup and recovery with reference to service level agreements.

Module Assessment

Module will be assessed by both non-exam (50%) and examination (50%) assessment. Students must pass the entire module. Non-exam assessment will include practical work and a research component.

Essential Reading:

Elmasri & Navathe, 2010, 'Fundamentals of Database Systems' 5th Ed., Addison Wesley. Or
Connolly & Begg, 2009, 'Database Systems: A Practical Approach to Design, Implementation and Management', 5th Ed., Addison Wesley.

Supplemental Reading:

Watson, J., 2008, OCA Oracle Database 11g Administration I Exam Guide (Exam 1Z0-052) , McGraw-Hill Osborne Media

Web references, journals and other:

www.oracle.com
webcourses.dit.ie

Further Details:

e.g. laboratory sessions limited to 20 – 25 by lab size. . To be delivered in one semester. 4 contact hours per week allocated as 2 hours lab, 1 hour lecture, 1 hour tutorial.

Date of Academic Council approval