

Course Outline

Course Title Database Management System

Course Code ITEC 204

Overall Course Aim(s) Introduce Students to Database Concepts

- **Teaching Methods**
- Assigned Readings
- Practical Sessions
- Lectures
- Research Assignments

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Course Information

Course Description Understand the fundamental principles in the design of Database systems

ITEC 204 Database Management System

The original stimulus for this course came from an individual work in industry, providing consultancy on database design for new software systems or, as often as not, resolving inadequacies with existing systems. In addition, the objectives of this course, therefore, are to provide a knowledge that introduces the theory behind databases as clearly as possible and, in particular, to provide a methodology for database design that can be used by both technical and nontechnical readers.

Indicative Content

- A. Acquire an understanding of Database Concepts
- B. Carry Out Basic database system task
- C. Acquire more hands on capabilities of debugging database issues.

Learning Outcomes

Learning Objectives

Upon the completion of this course, the student is expected to be able to carry out basic system and concepts of operating systems such as:

- Understand the concepts of Database systems
- Understand the structures of Database Systems
- Be able to explain concepts in database
- Proficient in Database management and administration
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Resources:

Prescribed Textbooks

- a. Reading
- b. Connolly, T. M., & Begg, C. E. (2014). *Database Systems: A Practical Approach to Design, Implementation and Management*. (6th ed.). London: Addison Wesley.

- c. Churcher, C. (2012). *Beginning Database Design*. (2nded.). New York, NY: A press.
- d. Any Good book on Database Concepts

Summative Assessment

Assessment

Type	Weighting	Week
Attendance	10%	
Weekly Tests	10%	
Mid-Sem Test/Presentations	20%	
Final Examination	60%	
Total	100%	

Period	Topic/Lecture content	Assignments
Week 1	Introduction: Introduces the field of database management, examining the problems with the precursor to the database system, the file-based system, and the advantages offered by the database approach.	N/A
Week 2	Examines the database environment, discussing the advantages offered by the three-level ANSI-SPARC architecture, introducing the most popular data models and outlining the functions that should be provided by a multi-user DBMS. [L] [SEP]	Class Assignment
Week 3 & 4	Examines multi-user DBMS architectures and discusses the different types of middleware that exist in the database field. We also examine Web services that can be used to provide new types of business services to users and service-oriented architecture (SOA). The week briefly introduces the architecture for a distributed DBMS and data warehousing presented more fully in later sections. This also looks at the underlying software architecture for DBMSs and the logical and physical	Write a brief report on a selected topic

	structures in the Oracle DBMS, which could be omitted for a first course in database management.	
Week 5	<p>Introduces the concepts behind the relational model, the most popular data model at present, and the one most often chosen for standard business applications.</p> <p>After introducing the terminology and showing the relationship with mathematical relations, the relational integrity rules, entity integrity, and referential integrity are discussed</p>	Assignment
Week 6 & 7	Introduces the relational algebra and relational calculus with examples to illustrate all the operations.	Assignment
Week 8	Introduces the data manipulation statements of the SQL standard: SELECT, INSERT, UPDATE, and DELETE.	N/A
Week 9	Mid-Semester Exam/Presentations	Presentations
Week 10 & 11	Covers the main data definition facilities of the SQL standard. Again, this presented as a worked tutorial. The week introduces the SQL data types and the data definition statements, the Integrity Enhancement Feature (IEF), and the more advanced features of the data definition statements, including the access control statements GRANT and REVOKE. It also examines views and how they can be created in SQL.	Assignment
Week 12	<p>Covers some of the advanced features of SQL, including the SQL programming language (SQL/PSM), triggers, and stored procedures.</p> <p>Functional Dependency and Data</p>	Assignment

	Normalization.	
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