F28DD Database Management Systems GA

COURSE DETAILS
Course Code: F28DD
Full Course Title: Database Management Systems GA
SCQF Level: 8
SCAF Credits: 15
Available as Elective: No

DELIVERY LEVEL
Undergraduate: Yes  Postgraduate Taught: No  Postgraduate Research: No

Additional Information:

COURSE AIMS

• To provide a comprehensive introduction to database management systems

• To familiarise students with relational algebra and the theory, principles and applications of relational databases

• To gain competence in SQL to develop database applications, such as OLAP and OLTP applications

• To provide an understanding of non-relational alternatives, such as NoSQL databases

• To enable students to design real-world databases, embedded in and contextualised for their host companies

LEARNING OUTCOMES – SUBJECT MASTERY

• Broad knowledge and understanding of the concepts and formalisms of database design

• Detailed knowledge of the building blocks and meaning of relational database queries

• Critical understanding of the principles of query evaluation and concurrency control underlying database applications

• Practice in the collection of data requirements and the design of conceptual database schemas

• Evaluation of emerging database trends and ability to understand their benefits

LEARNING OUTCOMES – PERSONAL ABILITIES

• Skills in selecting, applying and evaluating apt technologies professionally given a problem requiring a database solution.
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- Ability to analyse complex information and design solutions for its efficient management

- Showing creativity, problem solving (PDP) and time management (PDP) skills.

- Ability to reflect and communicate effectively with work colleagues on learned issues.
  - Practice in working on a development project in small groups (PDP)
  - To be able to communicate effectively with work colleagues on learned issues

SYLLABUS

Fundamental concepts of DBMS and types of databases. Relational Algebra. Relational Database Model. RDBMS design (e.g. identification of entities, attributes and relationships; E-R diagram; normalisation; OLTP and OLAP applications and; denormalisation). Relational queries (e.g. SQL DDL, DCL and DML commands including Boolean combinations of queries, aggregation, duplicate elimination, nested queries and CRUD queries). Transactions (e.g. ACID Properties, SQL TCL commands, concurrency control protocols). RDBMS query optimisation (e.g. data storage principles, indexing, query execution plans, physical database design). Big Data demands (e.g. database distribution, scalability, sharding, BASE properties). Non-relational database models (e.g. object, aggregated and graph stores). Emerging database trends. Work-based database project.

COURSE RELATIONSHIPS

N/A

LOCATION AND ASSESSMENT METHODS

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