F28DM Database Management Systems

**COURSE DETAILS**

**Course Code:** F28DM  
**Full Course Title:** Database Management Systems  
**SCQF Level:** 8  
**SCAF Credits:** 15  
**Available as Elective:** No

**DELIVERY LEVEL**

<table>
<thead>
<tr>
<th>Undergraduate</th>
<th>Yes</th>
<th>Postgraduate Taught</th>
<th>No</th>
<th>Postgraduate Research</th>
<th>No</th>
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Additional Information:

**COURSE AIMS**

To familiarise students with the principles of database management systems, to enable them to design and implement databases for specific applications and to integrate databases with application programs.

**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**

- Practice in working on a development project in small groups (PDP)  
- Practice in defining the subject and scope of a development project (PDP)  
- Deconstructing a problem and synthesizing a solution (PDP)  
- Time management (PDP).

**SYLLABUS**

**Database Design:** data requirements, entity relationship diagrams, relational data model, integrity constraints, key constraints, types, integrity maintenance

**Relational Queries:** SQL, Boolean combinations of queries, aggregation, duplicate elimination, nested queries, negation, views, insertions, deletions, updates, command level interfaces, integration with programming application

**Query execution and optimisation:** data storage principles, file organisation, indexing, indexes in commercial DBMSs, relational algebra, query execution plans, cost estimation of plans, interpretation of plans, physical database design
Concurrenty: transactions, schedules, serialisability, concurrency control protocols, locking, two-phase-locking, time stamp based concurrency control.

Emerging Database Trends: data warehousing, distributed databases, and alternative database models such as XML, document, object, and graph stores

NOTE: Course F27WD Web Design and Databases, (or equivalent), is a pre-requisite for this course.