

SYST H4205: Advanced Database Systems

Language of Instruction: English Credits: 10 NFQ Level: 8 Module Delivered In No Programmes Teaching & Learning The course is taught by means of lectures and supervised practicals. The practical work consists of 9 laboratory assignments. All assignments will focus on three large DBMSs. The laboratory exercise topics (installation, configuration, maintenance, data analysis, etc) are designed to fully explore the features of each package and to compare packages. Module Alm: To broaden the student's theoretical and practical knowledge of the design, operation and administration of modern large database systems. Learning Outcomes To broaden the student's theoretical and practical knowledge of the design, operation and administration of modern large database systems. L01 Set up and administer large database systems L02 Understand the importance of data management within a modern organization L03 Appreciate the difficulties inherent in integration of heterogeneous data sources L04 Evaluate developments and trends in database systems L05 Understand the functionality available in modern DBMS software and how to compare competing packages Pre-requisite learning Module Recommendations This is prior learning (or a practical skill) that is recommended before enrolment in this module. No recommendations listed Requitemod						
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Module Content & Assessment

Indicative Content

1. Oracle, SQL Server, MySQL Architecture, physical & logical structure

2. Database Maintenance

Backup & Recovery; import-export, log files, indexing, database integrity

3. Database Applications SQL, ODBC, XML, stored procedures, database connections, database app security

4. Database Performance

Normalization, catalog, query optimizer, contention, security & authorization, physical database design & tuning, monitoring & tuning

5. Object-Oriented Database

OO concepts, distributed objects, object models, Java, OODB, Multimedia databases

6. Data Warehousing

OLAP, dimensions, measures, roll-up/drill-down, dimension & fact tables, star schema, data warehouse, data mart, materialized view

7. Data Analytics

market basket analysis, classification, association rules, clustering, decision trees, regression, neural nets, genetic algorithms, big data, total data

8. Data Management in the Cloud DaaS, DBaaS, Cloud-based DBMS Services, Security, AWS, EMC, Azure

9. Next Generation Database Systems

Mobile, Temporal, Biological & Sensor Databases Digital Libraries, Spatial data, Unstructured Data, NoSQL, NewSQL, Hadoop

Assessment Breakdown	%
Continuous Assessment	10.00%
Practical	30.00%
End of Module Formal Examination	60.00%

Continuous Assessment				
Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Other	Class Tests; Theory Assignments (e.g. problem sheets, literature surveys, etc)	2,3,4	10.00	n/a

No Project

Practical					
Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date	
Practical/Skills Evaluation	9 laboratory assignments	1,3,5	30.00	Sem 1 End	

End of Module Formal Examination				
Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Formal Exam	No Description	1,2,3,4,5	60.00	End-of-Semester

SETU Carlow Campus reserves the right to alter the nature and timings of assessment



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Module Workload

Workload: Full Time		
Workload Type	Frequency	Average Weekly Learner Workload
Lecture	30 Weeks per Stage	2.00
Laboratory	30 Weeks per Stage	2.00
Independent Learning Time	30 Weeks per Stage	2.67
	Total Hours	200.00