New College of the Humanities

Database Management Systems Course Descriptor

Course Title	Database Management Systems	Faculty	Philosophy
Course code	NCHCS762	Course Leader	Dr Dimitrios Mylonas
Credit points	15	Teaching Period	Any
FHEQ level	Level 7	Date approved	September 2020
Compulsory/ Optional	Compulsory		
Pre-requisites	None		
Co-requisites	None		

COURSE SUMMARY

This course prepares students to be sophisticated users of relational database management systems. The course gives a critical understanding of: (i) how information is logically organised in a database (i.e. the relational model) as well as how information is physically organised on storage media (e.g. computer disks); (iii) logical operations on the data (i.e. relational algebra) and how they can be combined to create well-formed queries over the data; and (iv) how database systems ensure atomicity, consistency, isolation, and durability of user transactions when multiple users query or modify data concurrently. Finally, the course's group assignment provides students with practical experience on building database applications.

COURSE AIMS

The aims of this course are:

- Develop a critical understanding of the design and implementation of database systems and their usage in real-world applications.
- Gain hands-on experience by developing a complete database application from the ground up, applying conceptual knowledge to solve a practical problem.

LEARNING OUTCOMES

On successful completion of the course, students will be able to:

KNOWLEDGE AND UNDERSTANDING

K1d Master practical tools, methods and techniques required to build a database application.

K2d Understand advanced aspects of database design theory, query language, and performance/tuning issues of databases.

K3d Evaluate relational database management systems as a class of software systems, and their technical, social and management dimensions when deployed in multi-user environments.

SUBJECT SPECIFIC SKILLS

S1d Critically assess a data problem, recognise the individual tools, libraries and techniques suitable for solving that problem and integrate them to produce a database application.

S2d Become a sophisticated user of database management systems and develop software that integrates available database systems using best industry practices and standards.

S3d Design and develop original software for a database application that solves a practical data problem.

TRANSFERABLE AND PROFESSIONAL SKILLS

T1d Critically review existing database technologies and propose the right tools for solving a problem or ways to improve it.

T2d Communicate effectively the design and implementation choices of a database application.

T2d Consistently apply an excellent level of technical proficiency in written English, using an advanced application of scholarly terminology, that demonstrates the ability to deal with complex issues both systematically and with sophistication.

T3d Lead or participate in team projects.

TEACHING AND LEARNING

Teaching and learning strategies for this course will include:

- 30 hours of full-cohort lectures
- 20 hours of lab-based tutorials
- 1 office hour per teaching week

There will be three 1-hour lectures per teaching week. Two 1-hour lab sessions will give students the opportunity to work on their assignments with the help of the course leader and teaching assistants.

Course information and supplementary materials are available on the College's Virtual Learning Environment (VLE).

Students will also attend the formal meeting, Collections, in which they will receive constructive and developmental feedback on their performance.

Students are required to attend and participate in all the formal and timetabled sessions for this course. Students are also expected to manage their directed learning and independent study in support of the course.

EMPLOYABILITY SKILLS

- Communication skills
- Programming skills
- Team-based project skills

ASSESSMENT

FORMATIVE

Students will be formatively assessed during the course by means of set assignments. These do not count towards the end of year results but will provide students with developmental feedback. Set assignments will also amplify problem-solving skills useful for the written examination and develop software components that form part of the students' projects.

SUMMATIVE

Assessment will be in two forms:

AE:	Assessment Activity	Weighting (%)	Online submission	Duration	Length
1	Project (group-based)	40	Yes	N/A	Code and up to 2500-word documentation
2	Written examination	60	N/A	2 hours	N/A

The examination will consist of a number of questions from which the student will have the choice of answering a specified number. The project and the examination will be assessed in accordance with the assessment aims set out in the Programme Specification.

FEEDBACK

Students will receive formal feedback in a variety of ways: written (including via email correspondence); oral (within one-to-one tutorials or on an *ad hoc* basis) and indirectly through discussion during group tutorials.

Feedback on examinations is provided through generic internal examiners' reports and are made available to the student on the VLE. For all other summative assessment methods, feedback is made available to the student either via email, the VLE or another appropriate method.

INDICATIVE READING

Note: Comprehensive and current reading lists for courses are produced annually in the Course Syllabus or other documentation provided to students; the indicative reading list provided below is used as part of the approval/modification process only.

BOOKS

Ramez Elmasri and Shamkant Navathe. 2016. *Fundamentals of Database Systems*, 7th edition (7th. ed.). Pearson Publications, USA

JOURNALS

E. F. Codd. 1970. A relational model of data for large shared data banks. Commun. ACM 13, 6 (June 1970), 377–387. DOI: https://doi.org/10.1145/362384.362685

Donald D. Chamberlin and Raymond F. Boyce. 1974. SEQUEL: A structured English query language. In Proceedings of the 1974 ACM SIGFIDET (now SIGMOD) workshop on Data description, access and control (SIGFIDET '74). Association for Computing Machinery, New York, NY, USA, 249–264. DOI: https://doi.org/10.1145/800296.811515

Christof Strauch. NoSQL Databases (e-book)

INDICATIVE TOPICS

Students will study the following topics:

- Conceptual understanding of database usage and design
- Relational data model and relational algebra
- ER diagrams and normalisation
- SQL
- Indexing
- Transactions
- Code implementation
- User interface skills
- Collaborative design skills

Title: NCHCS762 Database Management Systems

Approved by: Academic Board

Location: Academic Handbook/Programme specifications and Handbooks/ Postgraduate Programme Specifications/MSc Computer Science Programme Specification/Course Descriptors

Version number	Date approved	Date published	Owner	Proposed next review date	Modification (As per AQF4) & category number
2.0	January 2022	April 2022	Dr Alexandros Koliousis	April 2025	Category 3: Changes to Course Learning Outcomes
1.0	September 2020	September 2020	Dr Alexandros Koliousis	April 2025	