

<b>MODULE TITLE</b>	Database Theory and Design	<b>CREDIT VALUE</b>	15
<b>MODULE CODE</b>	ECM2419	<b>MODULE CONVENER</b>	Dr Zeliang Wang (Coordinator)
<b>DURATION: TERM</b>	1	2	3
<b>DURATION: WEEKS</b>	12		
<b>Number of Students Taking Module (anticipated)</b>	81		

### DESCRIPTION - summary of the module content

This module will give you an insight into the theoretical and technical issues underlying current and future database management systems. You will acquire practical and theoretical competence in database modelling and design, as well as gaining familiarity with modern state-of-the-art database technology.

Prerequisite module: ECM1400, ECM1410, ECM1413 or equivalent.

### AIMS - intentions of the module

The intention of the module is to equip you with the theoretical and practical knowledge needed to design, develop and manage database systems using modern database management systems. You will get hands-on experience on a selected database management system that is currently in commercial use. By the end of the module you will be competent with the methods for designing, developing and managing database systems and their associated forms-based applications.

### INTENDED LEARNING OUTCOMES (ILOs) (see assessment section below for how ILOs will be assessed)

On successful completion of this module, **you should be able to:**

#### Module Specific Skills and Knowledge:

- 1 outline the ACID properties of database systems;
- 2 develop and interpret database schemas and queries expressed in SQL-92;
- 3 develop conceptual designs and transform them into SQL-92 schemas;
- 4 demonstrate an understanding of relational theory and its use in database design;
- 5 demonstrate an understanding of the transaction concept and its use in integrity and recovery;
- 6 express queries in a declarative language.

#### Discipline Specific Skills and Knowledge:

- 7 interpret an informal requirement specification;
- 8 express designs at different levels of abstraction and map between them;
- 9 design with a data-centric view;
- 10 systematically analyse information and make appropriate design choices;
- 11 develop appropriate data for testing a set-orientated model.

#### Personal and Key Transferable / Employment Skills and Knowledge:

- 12 use on-line resources to develop advanced computer language skills;
- 13 write a technical report incorporating the design, implementation and testing of a database system.

### SYLLABUS PLAN - summary of the structure and academic content of the module

- the relational model and its expression in SQL-92;
- information modelling and mapping to SQL;
- database design theory;
- transactions and their use in integrity and recovery management;
- physical database implementation;
- dynamic modelling and user interaction via forms.

## LEARNING AND TEACHING

### LEARNING ACTIVITIES AND TEACHING METHODS (given in hours of study time)

<b>Scheduled Learning &amp; Teaching Activities</b>	50.00	<b>Guided Independent Study</b>	100.00	<b>Placement / Study Abroad</b>	0.00
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### DETAILS OF LEARNING ACTIVITIES AND TEACHING METHODS

Category	Hours of study time	Description
Scheduled learning and teaching activities	20	Lectures
Scheduled learning and teaching activities	10	Workshops
Scheduled learning and teaching activities	20	Individual assessed work
Guided independent study	100	Guided independent study

## ASSESSMENT

### FORMATIVE ASSESSMENT - for feedback and development purposes; does not count towards module grade

Form of Assessment	Size of Assessment (e.g. duration/length)	ILOs Assessed	Feedback Method
Conceptual level design	10 hours, open book	3,7,8,9,10	Written and oral
Relational algebra worksheet	6 hours, open book	4	Written and oral
SQL coding	6 hours, open book	2,3,4,6,11,12	Written and oral

### SUMMATIVE ASSESSMENT (% of credit)

<b>Coursework</b>	40	<b>Written Exams</b>	60	<b>Practical Exams</b>	0
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### DETAILS OF SUMMATIVE ASSESSMENT

Form of Assessment	% of Credit	Size of Assessment (e.g. duration/length)	ILOs Assessed	Feedback Method
Coursework (DB design and implementation)	40	24 hours	2, 3, 4, 6, 7, 8, 9, 10, 11, 12, 13	Written and oral
Written exam	60	2 hours - January Exam	1, 2, 3, 4, 5, 6, 7, 8, 9, 10,11	Written and oral

**DETAILS OF RE-ASSESSMENT (where required by referral or deferral)**

Original Form of Assessment	Form of Re-assessment	ILOs Re-assessed	Time Scale for Re-reassessment
Coursework (DB design and implementation) Written exam	Coursework (DB design and implementation) Written exam (2 hours)	2, 3, 4, 6, 7, 8, 9, 10, 11, 12, 13 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11	August Ref/Def Period August Ref/Def period

**RE-ASSESSMENT NOTES**

Reassessment will be by coursework and/or written exam in the failed or deferred element only. For referred candidates, the module mark will be capped at 40%. For deferred candidates, the module mark will be uncapped.

**RESOURCES**

**INDICATIVE LEARNING RESOURCES - The following list is offered as an indication of the type & level of information that you are expected to consult. Further guidance will be provided by the Module Convener**

ELE: <http://vle.exeter.ac.uk>

**Reading list for this module:**

Type	Author	Title	Edition	Publisher	Year	ISBN	Search
Set	Connolly, Thomas and Begg, Carolyn	Database Systems: A Practical Approach to Design, Implementation and Management	6th	Pearson	2015	1292061189	<a href="#">[Library]</a>
Set	Michael J. Hernandez	Database Design for Mere Mortals: A Hands-On Guide to Relational Database Design	3rd	Addison Wesley	2013	0321884493	<a href="#">[Library]</a>
Set	Elmasri, R., Navathe, S. B.	Fundamentals of Database Systems	7th	Pearson	2016	1292097612	<a href="#">[Library]</a>
Set	Silberschatz, A, Korth, H F, and Sudarshan, S	Database System Concepts	6th	McGraw-Hill	2013	9332901384	<a href="#">[Library]</a>

**CREDIT VALUE** 15

**ECTS VALUE** 7.5

**PRE-REQUISITE MODULES** ECM1413, ECM1400, ECM2415

**CO-REQUISITE MODULES**

**NQF LEVEL (FHEQ)** 5

**AVAILABLE AS DISTANCE LEARNING** No

**ORIGIN DATE** Tuesday 10 July 2018

**LAST REVISION DATE** Wednesday 08 February 2023

**KEY WORDS SEARCH** Database; design; modelling.