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**IT5x22**

**Fundamentals of Data Models and Databases**

**Level 5**

**Credits 15**

**Semester 2 2017**

**George Tongariro**

**Code Title**

IT5x82 Fundamentals of Data Models and Databases

**Level Credits**

5 15

**Pre-requisites** Nil

**Learning hours** Tutor-directed 85

Self-directed learning 65

**Aim**

To introduce students to the concepts of data models and databases

**Learning outcomes**

By the end of this course the student will be able to:

1. Design a logical model, that defines the data requirements of a simple system, that conforms to second normal form.
2. Create a functional hierarchy diagram that defines the functional requirements of a simple system and their logical groupings.
3. Develop a CRUD matrix that documents the database operations required to perform the steps defined in a process model.
4. Build a simple database that includes tables, columns, primary keys, foreign keys and simple queries.

**Indicative content**

* Introduction & Systems Theory
* Introduction to design of database systems
* System Development Lifecycle (SDLC)
* Modelling System Requirements
* Entity Relationship Concepts
* ERD Exercises (1:1, 1:M)
* ERD Exercises (M:N)
* Entity Relationship Modelling
* Business Rules, Cardinality etc.
* Introduction to MS Visio
* Business Process Modelling (BPM)
* Introduction to Database Design
* Database Design (Continued)
* Introduction to Functional Modelling
* (Function Hierarchy Diagrams – FHDs)
* CRUD Matrix Diagrams
* Normalization (UNF, 1NF)
* Data Definition Language (DDL) and MS SQL Server
* OO Modelling

**Assessments**

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| --- | --- | --- |
| **Assessment Method** | **Weighting** | **Learning Outcome/s** |
| 1. Design a simple database system | 30% | LO1, 2, |
| 2. Build a simple database system | 30% | LO3, 4, |
| 3. Final Exam | 40% | LO1, 2, 3 |

**Successful completion of course**

Students must achieve a minimum of 50% overall and achieve a minimum of 40% in the exam.

**Resources**

There is no required text.

Online resources, for example Moodle, such as lab work-sheets, walkthroughs, readings, video demos, quizzes are available to students.

**Class Times**

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| **Day** | **Class** | **Times** |
| **Monday** | **E204** | **1:00pm – 4:00pm** |
| **Thursday** | **E203** | **9:00am – 11:00am** |

**Tutor Contact Details**

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| **Tutor** | **Email** | **Room** |
| George Tongariro | George.Tongariro@whitireia.ac.nz | E207 |
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| **Week** | **Date** | **Lesson Topics** | **Term Labs** |
| Orientation | 17 July – 21 July | Induction Week |  |
| 1 | 24 July – 28 July | Introduction & Systems Theory Introduction to design of database systems |  |
| 2 | 31 July – 4 August | System Development Lifecycle (SDLC) |  |
| 3 | 7 August – 11 August | Modelling System Requirements  Entity Relationship Concepts  ERD Exercises (1:1, 1:M)  ERD Exercises (M:N) |  |
| 4 | 14 August – 18 August | Entity Relationship Modelling Business Rules, Cardinality etc.  Introduction to MS Visio  Business Process Modelling (BPM) |  |
| 5 | 21 August – 25 August | Introduction to Database Design  Database Design (Continued) | **Assignment One Hand Out** |
| 6 | 28 August – 1 September | Introduction to Functional Modelling  (Function Hierarchy Diagrams – FHDs)  CRUD Matrix Diagrams |  |
| 7 | 4 Sept – 8 Sept | Normalization (UNF, 1NF)  OO Modelling |  |
| 8 | 11 Sept – 15 Sept | Data Definition Language (DDL) and MS SQL Server | **Assignmrnt 1 Due** |
| 9 | 18 Sept – 22 Sept | Data Definition Language (DDL) and MS SQL Server | **Handout Assignment 2** |
| 10 | 25 Sept – 29 Sept | Data Definition Language (DDL) and MS SQL Server |  |
| **11** | **2 Oct – 6 Oct** | **Term Break** | |
| **12** | **9 Oct – 13 Oct** |
| 13 | 16 Oct – 20 Oct | Data Definition Language (DDL) and MS SQL Server | Assign ment 2 Hand in |
| **Mon 23 October Labour Day -No classes** | | | |
| 14 | 24 Oct – 27 Oct | Revision Week |  |
| 16 | 30 Oct – 3 Nov | Study Week |  |
| 17 | 6 Nov – 10 Nov | Final Exams |  |
| 18 | 13 Nov – 17 Nov | Final Exams |  |