

City University of Hong Kong

Information on a Course
offered by Department of Electronic Engineering
with effect from Semester A in 2012/13

Part I

Course Title:	Multi-Dimensional Data Modeling and its Applications
Course Code:	EE6435
Course Duration:	One Semester (13 weeks)
No. of credits:	3
Level:	P6
Medium of Instruction:	English
Prerequisites :	EE2331 Data Structures and Algorithms
Precursors :	Nil
Equivalent Course :	Nil
Exclusive Courses:	Nil

Part II

Course Aims:

This course aims to provide a fundamental understanding in the multi-dimensional data model design principles, together with their implementation, basic operations, and analytical functionalities. The course also provides students with the know-how of multi-dimensional data models which can be used in strategy planning and analysis to help entrepreneurs overcome the challenges in an ever changing technology driven industrial environment.

Course Intended Learning Outcomes (CILOs)

Upon successful completion of this course, students should be able to:

No.	CILOs
1.	Describe the concept of multi-dimension data model, and the building block of a multi-dimensional data model;
2.	Explain the basic operations that can be performed on a multi-dimensional data model and the analytical functionalities;
3.	Identify and perform the steps involved in designing a multi-dimensional data model and its applications;
4.	Demonstrate how the multi-dimensional data models are used in strategic planning and analysis using case studies;
5.	Realistic industrial Implementation of multi-dimensional data modelling.

Teaching and Learning Activities (TLAs)

(Indicative of the possible activities and tasks designed to facilitate students' achievement of the CILOs. Fine details will be provided for students upon the commencement of the course.)

CILO 1, 2, 3, 4	Lecture: The instructor will explain the course material in detail. Lectures support ILOs 1, 2, 3 and 4.
CILO 2, 3	Assignment: Each student is required to independently work on 1-2 assignments. Each assignment contains several questions designed to help students reinforce the concepts/operations learned.
CILO 5	Mini-project: Each student is required to apply multi-dimensional data modelling. In such a project, a student needs to design multi-dimensional models, construct user interfaces, implements data input and data output processes.

Timetabling Information

Pattern	Hours
Lecture:	26
Tutorials:	13
Laboratory:	
Other activities:	

Assessment Tasks/Activities

(Indicative of likely activities and tasks designed to assess how well the students achieve the CILOs. Final details will be provided to students in their first week of attendance in this course)

	Type of assessment tasks	Weighting (if applicable)
Continuous Assessment	Assignments	15%
	Mini-project	25%
Examination	Written exam	60% 2 hours

Remarks: To pass the course, students are required to achieve at least 35% in course work and 35% in the examination.

Grading of Student Achievement:

Refer to Grading of Courses in the Academic Regulations for Taught Postgraduate Degrees.

Letter Grade	Grade Point	Grade Definitions
A+	4.3	Excellent:
A	4.0	
A-	3.7	
B+	3.3	Good:
B	3.0	
B-	2.7	
C+	2.3	Adequate:
C	2.0	
C-	1.7	
D	1.0	Marginal:
F	0.0	Failure:

Constructive Alignment with Programme Outcomes

PILO	How the course contribute to the specific PILO(s)
1,2,3	The course provides students with opportunities in acquiring knowledge of multi-dimensional data modelling techniques, and also the applications of mathematics and engineering problem solving skills which are central to the aims of this program.
4, 5	Students are required to complete a min-project designed to gain practical experience in implementing a business solution using a multi-dimensional data model. The analytical and research skills developed are central to the aims of this program.

Part III**Keyword Syllabus:**Fundamental of multi-dimensional model

OLAP; data structures ; industrial informatics, ;;

Basic operations on multi-dimensional model

rollup; spreading; slice; dice; cube view creation: roll dimension, column dimension, filter dimension; MDX expression

Application of multi-dimensional model

The mini-projects in the case studies are designed to complement the lecture aspects of the course, and to gain practical but industrial experience by applying multi-dimensional analysis tools targeting the electronic industry. The mathematic and engineering skills developed are central to the aims of this course.

Recommended Reading:**Reference Books:**

1. OLAP Solutions: Building Multidimensional Information Systems (2nd Edition) by Erik Thomsen, Wiley Computer Publishing, Apr 18 2002, ISBN-13: 978-0471400301
2. The Data Warehouse Toolkit: The Complete Guide to Dimensional Modeling (2nd Edition) by Ralph Kimball, Wiley Computer Publishing, Apr 26 2002, ISBN-13: 978-0471200246
3. IBM Cognos TM1 The Official Guide by Karsten Oehier, McGraw-Hill Osborne Media, Feb 22 2012, ISBN-13: 978-0071765695
4. <http://www.palo.net>

Online Resources (if any)