Form 2B

City University of Hong Kong

Information on a Course
offered by Department of Computer Science
with effect from Semester A in 2011 / 2012

Part I

Course Title: Data Engineering

Course Code: CS5481

Course Duration: One Semester

Credit Units: 3

Level: P5

Medium of Instruction: English

Prerequisites: CS3402 Database Systems or equivalent

Precursors: Nil

Equivalent Courses: Nil

Exclusive Courses: Nil

Part II

Course Aims

This course examines data engineering for different forms of data and for different levels of complexity. Specifically, this course aims to introduce (i) advanced data modelling techniques for emerging large scale databases; (ii) database management for distributed database systems; and (iii) applications of modern database technology to current commercial systems. Systems discussed include object-relational, distributed, semi-structured, multimedia and other non-traditional systems. Different types of data models and different data manipulation languages are studied.

Course Intended Learning Outcomes (CILOs)

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

No.	CILOs	Weighting (if applicable)
1.	describe the techniques and concepts of existing database technology and systems;	20%
2.	perform a detailed analysis of the various requirements for different applications, especially non-traditional ones;	20%
3.	describe advanced concepts and techniques of modern database systems;	20%
4.	evaluate the pros and cons of current database systems for newly emerging applications;	30%
5.	analyze the trend of database technology development.	10%

Teaching and Learning Activities (TLAs)

(Indicative of likely activities and tasks designed to facilitate students' achievement of the CILOs. Final details will be provided to students in their first week of attendance in this course)

Teaching pattern:

Suggested lecture/tutorial/laboratory mix: 2 hrs. lecture; 1 hr. tutorial.

CILO No.	TLAs		Hours/week (if applicable)
CILO 1	Lectures	Tutorial exercises	1.5 weeks
CILO 2	Lectures	Tutorial exercises	1.5 weeks
CILO 3	Lectures	Tutorial exercises	4 weeks
CILO 4	Lectures		4.5 weeks
CILO 5	Lectures	Tutorial / Demonstration exercises	1.5 weeks

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)

CILO No.	Type of Assessment Tasks/Activities				Weighting (if applicable)	Remarks
CILO 1	Tutorial exercises		Quiz			
CILO 2	Tutorial exercises	Individual/Group project	Quiz			
CILO 3	Tutorial exercises	Individual/Group project	Quiz	Exam		
CILO 4	Tutorial exercises	Individual/Group project		Exam		
CILO 5	Tutorial exercises	Individual/Group project		Exam		
TOTAL	10%	30%	20%	40%	100%	

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

Examination duration: 2 hours

Percentage of coursework, examination, etc.: 60% CW; 40% Exam

Grading pattern: Standard (A+AA-…F)

For a student to pass the course, at least 30% of the maximum mark for the examination must be obtained.

Part III

Keyword Syllabus

EER, OODB, OMT, Knowledge based and database expert systems, free text, information retrieval, statistical, adaptable, schema integration, database interoperability, database conversion, client/server, hypertext, Image, Video, Multimedia database systems.

Syllabus

- the basic DBMS Concepts, Architecture, and Modelling (ER)
- the background and techniques of semantic modelling and extended ER (EER) modelling
- the advanced concepts and techniques of distributed databases
- in-depth evaluation of current database systems including object-oriented, object-relational, and XML databases
- analysis of the current and future DB development

Recommended Reading
Text(s)

R. Elmasri and S. Navathe, Fundamental of Database Systems, 5th Edition (or later), Addison-Wesley.

M.T. Ozsu and P. Valduriez, Principles of Distributed Database Systems, 2nd Edition (or later), Prentice-Hall.

M. Stonebraker and J.M. Hellerstein, Readings in Database Systems, 3rd Edition (or later), Morgan Kaufmann.

Online Resources

http://wps.aw.com/aw_elmasri_fundatasys_5/

http://softbase.uwaterloo.ca/~tozsu/ddbook/notes.html

http://redbook.cs.berkeley.edu/