

City University of Hong Kong

**Information on a Course
offered by Department of Computer Science
with effect from Semester A in 2009 / 2010**

Part I

Course Title: Topics on Data Engineering

Course Code: CS6482

Course Duration: One Semester

Credit Units: 3

Level: P6

Medium of Instruction: English

Prerequisites: CS3402 Database Systems or
CS3462 Introduction to 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. The course provides the advanced concepts and principles of the database design and management. Specifically, this course aims to introduce (i) the advanced data modelling techniques for large scale databases; (ii) database management for distributed database systems; and (iii) the application of modern database technology to current commercial systems. Systems discussed include relational, object-oriented, distributed, semi-structured and non-traditional systems. The course is a topics based course and will be adjusted to the interests and needs of the students.

Course Intended Learning Outcomes (CILOs)

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

| No. | CILOs | Weighting (if applicable) |
|-----|--|---------------------------|
| 1. | understand 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. | study and grasp the 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 | Tutorial exercises | 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 attendance | | Quiz | | | |
| CILO 2 | Tutorial attendance | Individual/Group project | Quiz | | | |
| CILO 3 | Tutorial attendance | Individual/Group project | Quiz | Exam | | |
| CILO 4 | Tutorial attendance | Individual/Group project | | Exam | | |

| | | | | | | |
|--------|---------------------|--------------------------|-----|------|------|--|
| CILO 5 | Tutorial attendance | Individual/Group project | | Exam | | |
| TOTAL | 10% | 35% | 25% | 30% | 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.: 70% CW; 30% 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, Voice, Multimedia database systems.

Syllabus

- the basic DBMS Concepts, Architecture, and Modeling (ER)
- the background and techniques of semantic modeling and extended ER (EER) modeling
- the advanced concepts and techniques of distributed, object-oriented, and XML databases
- in-depth evaluation of current database systems
- 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. Ozsuz and P. Valduriez, Principles of Distributed Database Systems, 2nd Edition, 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_fundatasy5_5/

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

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