

**City University of Hong Kong**

**Information on a Course  
offered by Department of Computer Science  
with effect from Semester A in 2008 / 2009**

This form is for completion by the Course Co-ordinator/Examiner. The information provided on this form will be deemed to be the official record of the details of the course. It has multipurpose use: for the University's database, and for publishing in various University publications including the Blackboard, and documents for students and others as necessary.

Please refer to the Explanatory Notes attached to this Form on the various items of information required.

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**Part I**

Course Title: Distributed System Technologies and Programming

Course Code: CS4273

Course Duration: One semester

No. of Credit Units: 3

Level: B4

Medium of Instruction: English

Prerequisites: *(Course Code and Title)*

CS3270 Fundamentals of Computer Networks and the Internet or  
EE2310 Networking I or  
EE3010 Data Communications and LANs or  
EE3015 Computer Networks or equivalent

Precursors: *(Course Code and Title)*

Nil

Equivalent Courses: *(Course Code and Title)*

\*CS3283 Distributed Systems (from the "old" curriculum)

Exclusive Courses: *(Course Code and Title)*

Nil

**Part II**

**1. Course Aims:**

This course aims to provide introduction to advanced Internet technologies and programming. It will discuss the fundamental concepts of web-based systems, and design and programming techniques of these systems. Specifically, it will discuss the programming of clients, middle tier servers and application servers in great details.

## 2. Course Intended Learning Outcomes (CILOs)

(state what the student is expected to be able to do at the end of the course according to a given standard of performance)

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

No.	CILOs	Weighting (if applicable)
1.	Describe HTTP protocols, web-based systems and Internet services	
2.	Describe the fundamental concepts and design principles of the above	
3.	Design and implement web-based information systems (with database access)	
4.	Program client-server systems by using communication protocols	
5.	Design and implement multi-threading server programs	
6.	Design and build multi-tier web-based information systems	

## 3. Teaching and learning Activities (TLAs)

(designed to facilitate students' achievement of the CILOs)

Teaching pattern:

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

ILO No	TLAs	Hours/week (if applicable)
CILO 1 to CILO 6	<p>Class room lectures will concentrate on fundamental concepts of distributed systems and designs. The lectures will explain the system structure, client-server interface and protocols, with demonstration of sample programs or prototype systems.</p> <p>Tutorials will extend the classroom teaching materials, enhancing students' understanding of the concepts explained during lectures. Tutorials will be conducted in a way that students will be asked to work on the tutorial questions and then to present their answers.</p> <p>There are two assignments, which are the design and implementation of web-based systems. The two assignments are properly designed to enhance students understanding of teaching materials and to improve their programming skills of using the technologies taught in the classroom. Students will have a good hand-on programming experience and implementation practice of web-based systems.</p>	

## 4. Assessment Tasks/Activities

(designed to assess how well the students achieve the CILOs)

ILO No	Type of assessment tasks/activities	Weighting (if applicable)	Remarks
CILO 1	Describe HTTP protocols, web-based systems and Internet services Assessed by final exam. Some conceptual questions will be designed for this purpose.		
CILO 2	Describe the fundamental concepts and design principles of the above The same as above.		

CILO 3	Design and implement web-based information systems (with database access) Assessed by the 2 <sup>nd</sup> assignment and the final exam. The 2 <sup>nd</sup> assignment is designed to test students learning in this aspect.		
CILO 4	Program client-server systems by using communication protocols Assessed by the 1 <sup>st</sup> assignment and the final exam. The 1 <sup>st</sup> assignment is specially designed to test students learning in this aspect.		
CILO 5	Design and implement multi-threading server programs Assessed by both assignments and the final exam. Multi-thread programming will be used in both assignments and some exam questions will be designed in this aspect.		
CILO 6	Design and build multi-tier web-based information systems Assessed by the 2 <sup>nd</sup> assignment and the final exam. The 2 <sup>nd</sup> assignment involves the knowledge of multi-tier web-based information systems.		

- 5. Grading of Student Achievement:** Refer to Grading of Courses in the Academic Regulations (Attachment) and to the Explanatory Notes.

*Examination duration:* 2 hours

*Percentage of coursework, examination, etc.:* 30% CW; 70% 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:

WWW, HTTP, telnet, SMTP, HTML, XML, Java event model, Java GUI, Java Applet, Java Servlet, JSP (JavaServer Page), Client-server model, Socket API, CGI (Common Gateway Interface), thread, JDBC (Java Database Connection), RMI (Remote Method Invocation).

Syllabus

1. WWW, HTTP protocol, HTML and XML
2. Java Event model and Java GUI
3. Java Applet programming
4. CGI (Common Gateway Interface) programming
5. Sockets communication and client-server programming
6. Java Servlet and JSP (JavaServer Page)

7. Multi-threading and concurrent programming
8. Java DataBase Connections (JDBC), 2-tier / 3-tier system design
9. Java RMI (remote method invocation)

Recommended Reading:

Text(s):

Deitel, et al., JAVA How to Program (6/E), Prentice Hall, 2005.

Any book with “distributed systems”, “Web Programming”, “network systems”.

Online Resources:

**Returned by:**

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