

## Teaching Outline / Semester 1, 2005-2006

**1. Subject Code:** 240-322

**Subject Name:** Client/Server Distributed Systems

**2. Credits:** 3(3-0-0)

**3. Teaching Period:** June, 2005 -- October, 2005

**4. Responsible Department:** Dept. of Computer Eng., Fac. of Eng., PSU

### 5. Course Objectives

- 5.1. Give students an overview knowledge of the main topics of client/server and distributed systems;
- 5.2. Give the students practical experience in some of the main areas through programming examples using C and Java.

### 6. Course Description

The course contains three main components: a survey of client/server and distributed systems, followed by detailed examinations of how such systems can be supported using UNIX networking with C, and Java.

In the survey section, we look at client/server, distribution models, and peer-to-peer.

In the second part, some of the issues and problems highlighted in part 1 are revisited in the context of UNIX networking using C. Topics include: processes, networking overview (ISO, TCP, UDP), sockets programming (iterative, concurrent), and RPC.

In the final part, the themes are considered using Java. Topics include: Web page retrieval, socket-based programming, and various client/server examples based around network chatting. Overviews are given of RMI, CORBA, J2EE, Web Services, and JXTA.

### 7. Prerequisites

240-204 *Computer Programming Techniques* (or equivalent C course)

240-321 *Advanced Computer Programming Techniques* (or equivalent Java course)

### 8. Teaching Method: lectures

### 9. Course Outline

Week	Subject
1	Client/Server Models
2	Distributed Programming Concepts
3	Peer-to-Peer Technologies

4	Low-level File I/O
5	Processes
6	Networking Concepts
7	Sockets 1: TCP, Iterative Servers, Clients
8	Sockets 2.1: Concurrent Servers, Farms
9	<i>Midterm Exam</i>
10	Sockets 2.2: Concurrent Servers, Farms
11	<i>PSU Open Week (no teaching)</i>
12	Sockets 3: UDP
13	RPCs
14	Java Basic Networking: Sockets, URLs
15	Different Forms of Java Chat
16	RMI and CORBA
17	J2EE and Web Services
17	JXTA
18-19	<i>Final Exam</i>

### 10. Assessment

- Mid-term Exam: 35% (2 hours)
- Project (20%): using C/UNIX *or* Java/Windows, sockets
  - in weeks 15-16 , September 12-23
- Final Exam: 45% (3 hours)

### Grading Scheme

Grade	Mark Range
A	80 and above
B+	75-79
B	70-74
C+	65-69
C	60-64
D+	55-59
D	50-54
E	below 50

## 11. Lecturer

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URL: <http://fivedots.coe.psu.ac.th/~ad>

## Teaching Equipment

- white board, black board, chalk, marker pens, a computer with network connection, a projector connected to the computer, a projector screen, overhead projector, chair

## References

One copy of my PowerPoint slides will be given to the students.

I will supply URLs for information on quickly changing areas, such as J2EE, P2P models.

## Textbooks

*Client/Server Architecture*  
Alex Berson, McGraw Hill, 1996 (2nd ed.)

*UNIX Distributed Programming*  
Chris Brown, Prentice Hall, 1994

*Practical UNIX Programming*  
Kay A. Robbins and Steven Robbins, Prentice Hall, 1996

*Java: How to Program*  
H.M. Deitel & P.J. Deitel, Prentice Hall, 4th ed. or later

*Killer Game Programming in Java*  
A. Davison, O'Reilly, 2005

I will hand out a photocopy of the relevant chapters from *Berson*. The relevant chapters from *Davison* can be found online at <http://fivedots.coe.psu.ac.th/~ad/jg/>

## 12. Subject Type: elective

## 13. Teaching Schedule and Timetable

3 hours/week for 15 weeks

(not including 3 weeks for exams, 1 week for PSU Open Week).