

**Payap University**  
**Bachelor of Science, Department of Computer Information Systems**  
**Faculty of Science**  
**1<sup>st</sup> Semester, Academic year 2010**

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**1. Course Title**      ICS362          Distributed Systems  
Credits:                3(3-0-6)  
Prerequisite:        ICS361 Data Communications and Networking (2-2-5)

**Course Description**

This course provides an introduction to the basic issues in the design and implementation of distributed systems. Topics include communication, processes, naming, synchronization, consistency and replication, fault tolerance and security.

**2. Instructor' Name** Dr.Vaide Narvaez

Status                     full-time                     part-time

**3. Course Objectives**

The course will cover basic principles, architectures, and algorithms of distributed systems. The course is structured in four parts:

- (i) foundations of distributed systems, focusing on system models;
- (ii) system infrastructure, such as operating system support, distributed file systems, and distributed shared memory;
- (iii) basic distributed algorithms (coordination and agreement);
- (iv) distributed data management, including distributed transactions and concurrency control.

**4. Reading Material**

**4.1 Required textbook(s)**

1. George Colouris, Jean Dolimore, Tim Kindberg, *Distributed Systems: Concepts and Design*. 4<sup>th</sup> edition, 2005 Pearson Education Limited.

**4.2 Supplementary reading materials**

1. Andrew S. Tanenbaum and Maarten Van Steen, *Distributed systems: Principles and Paradigms*. 2<sup>nd</sup> edition, 2006 Prentice Hall.
2. Kenneth P. Birman, *Reliable Distributed Systems: Technologies, Web Services, and Applications*, 1<sup>st</sup> edition, 2005 Springer.
3. Sape Mullender, *Distributed Systems*, 2<sup>nd</sup> edition, 1993 Addison Wesley Publishing Company

Students are encouraged to use the library catalogue and databases to locate additional readings.

**5. Course Syllabus**

A proposed lecture schedule for the subject is as follows:

Week	Unit/ Chapter	Content	Number of hours (No. of lecture hours /Lab)	Teaching and learning activities
1		Introduction to distributed systems	3	
2		System models	3	
3		Inter-process communication <ul style="list-style-type: none"> <li>• Client-server communication</li> <li>• Group communication</li> </ul>	3	
4-5		Distributed Objects and Remote Invocation <ul style="list-style-type: none"> <li>• Java RMI</li> </ul>	6	

6-7		Distributed File Systems <ul style="list-style-type: none"> <li>• The Google File System</li> <li>• Amazon S3</li> <li>• Hadoop Distributed File System</li> </ul>	6	
8		Time and global states	3	
9-10		Coordination and Agreement	6	
11		Transactions and Concurrency control	3	
12		Distributed Transactions	3	
13		Distributed Shared Memory	3	
14-15		Web Services and Cloud Computing <ul style="list-style-type: none"> <li>• Amazon EC2</li> </ul>	6	

## 6. Evaluation

6.1 Presentations/Project	30%
6.2 Midterm	30 %
6.3 Final	40 %
6.4 Total	<b>100 %</b>

## 7. Evaluation Criteria

- 7.1. Students are required to attend at least 80% of classes to be eligible to sit in the final exam.
- 7.2. Plagiarism is not tolerated! Students caught plagiarising will receive 0.
- 7.3. This course employs the following grading system:

Range	Letter Grade	Score (4 point scale)
80-100	A	4
75-79	B+	3.5
70-74	B	3
65-69	C+	2.5
60-64	C	2
55-59	D+	1.5
50-54	D	1
0-49	F	0