Planning and Quality Assurance Affairs

Form (A)

Course Specifications

General Information

Course name	Distributed Systems
Course number	ITCS4320
Faculty	
Department	
Course type	College Needs
Course level	4
Credit hours (theoretical)	3
Credit hours (practical)	0
Course Prerequisites	

Course Objectives

1 - Give the student an overview of how a distributed system works ☐ collaboratively

2 - Enable the student to understand the link between system architecture and application development

3 - Develop the student ability to design a distributed application for a particular distributed system architecture

Intended Learning Outcomes

Knowledge and Understanding	* a1. Identify the basic architectures of distributed systems, the problems in providing distributed transparency, and the rationales and trade-offs of different types of transparencies
Intellectual Skills	* b1. Create program and evaluate the problems in interprocess communications
Professional Skills	* c1. Analyze and evaluate the basic algorithms for distributed systems such as time synchronization, name management, process and data coordination
	* c2. Analyze and evaluate the performance characteristics of different algorithms for transaction management and distributed deadlock resolution
General Skill	* d1. Develop the ability to investigate the trends and problems of current distributed systems using examples and case studies

Course Contents

1 - INTRODUCTION
2 - ARCHITECTURES
3 - PROCESSES
4 - COMMUNICATION
5 - NAMING
6 - SYNCHRONIZATION
7 - CONSISTENCY AND REPLICATION
8 - FAULT TOLERANCE
9 - SECURITY

Teaching and Learning Methods

1 - The concepts and techniques of distributed computing will be covered in the lectures

2 - The tutorials provide an opportunity for the students to discuss and develop their attitude and ability towards further evaluation and discovery of solutions for solving the problems discussed in the lectures

3 - A series of test/assignments and tutorial exercises, aimed at helping with the students learning the concepts, approaches and techniques, will be offered

4 - The test and assignment results will also serve as feedbacks so that the lecturer can pace the presentations accordingly. They also can be served as tools for the students to develop the self-learning skills for discovery of current problems in distributed systems

Students Assessment

Assessment Method	TIME	MARKS
Assignments		10
First Midterm Exam	6th week	20
Second Midterm Exam	12th week	20
Final Exam	16th week	50

Books and References

Essential books	Tanenbaum, Andrew S. and Van Steen, Maarten. Distributed System, Principles and Paradigms. 2ND Edition, Prentice-Hall, 2007
Recommended books	Coulouris G., Dollimore J. and Kindberg T. Distributed System, Concepts and Design. 5th Ed. Addison Wesley, 2011

Knowledge and Skills Matrix

Main Course Contents	Study Week	Knowledge and Understanding	Intellectual Skills	Professional Skills	General Skill
INTRODUCTION	1	a1	b1	c1	d1
ARCHITECTURES	2	a1	b1	c1	d1
PROCESSES	3-4	a1	b1	c2	d1
COMMUNICATION	5-6	a1	b1	c1-c2	d1
NAMING	7-8	a1	b1	c2	d1
SYNCHRONIZATION	9-10	a1	b1	c2	d1
CONSISTENCY AND REPLICATION	11-12	a1	b1	c1	d1
FAULT TOLERANCE	13-14	a1	b1	c2	d1
SECURITY	15	a1	b1	c1-c2	d1