



جمهورية مصر العربية

وزارة التعليم العالي والبحث العلمي

Ministry of Higher Education and Scientific Research



المعهد العالى للحاسبات وتكنولوجيا المعلومات
مدينة الشروق - القاهرة
شعبة علوم الحاسب

Course specification

Course Code: CS 432

Course Title: Distributed Systems

Academic Year: /

Course specification
(CS 432: Distributed Systems)

Course Outline

Faculty:	<i>HICIT- (Higher Institute for Computers & Information Technology-El Shorouk Academy)</i>		
Programme(s) on which the course is given:	Undergraduate program in Computer Science		
Major or minor element of programme:	Compulsory		
Department offering the program	Department of Computer Science		
Department offering the course:	Department of Computer Science		
Level	fourth Level		
Date of specification approval	DD/MM/YYYY		

Basic Information

Code:	CS 432	Title:	Distributed Systems
Prerequisites:	CS 331 Theory of Operating Systems		
Weekly Hours:			
Lecture: 2	Exercise: -	Practical : 2	Total: 2 credit hours

Professional Information

Course Aims:

In Distributed Systems course, you will learn a range of fundamental and applied techniques in distributed systems. This course introduces the concepts and motivations of distributed systems, types of distributed systems, distributed system architectures, concept of process, communications and synchronization, distributed concurrency control, and distributed algorithms.

The learning objectives for Distributed Systems are:

- Define the fundamental concepts and goals of distributed systems .
- Describe the different types of distributed systems and different architectures .
- Define process concept, synchronization and communication.
- Understand the concept of distributed concurrency control and distributed algorithms.

Program ILOs Covered by Course

Knowledge and understanding	Intellectual Skills	Professional and practical skills	General and Transferable skills
A10,A15, A19	B3, B15	C4, C6, C11, C14	D3, D10, D11, D12,

Intended learning outcomes of course (ILOs)

A. Knowledge and Under-Standing:

A1- Define the basic concepts and goals of distributed systems. [A10, A15, A19]

A2- Describe the different types of distributed systems and different architectures. [A10, A15, A19]

A3- Define process concept, synchronization and communication. [A15, A19]

A4- Understand the concept of distributed concurrency control and distributed algorithms. [A10, A15, A19]

B. Intellectual Skills:

B1- Evaluate distributed system architectures, consistency, security, process synchronization and data replication needs. [B3, B15]

B2- Analyse distributed system models. [B3, B15]

C. Professional and practical skills

C1-Examine how modern distributed systems meet the demands of contemporary distributed applications . [C4, C6, C11, C14]

C2-Design and implement simple distributed system. [C4, C6, C11, C14]

D. General and transferable skills

D1- Able to understand and write efficient parallel application programs . [D12]

D2- Attempt to generate new ideas and innovations using different types of communication methods. [D3, D10, D11, D12]

D3- Work as a part of a team to produce report. [D10, D11]

D4- Apply specific task in certain period of time. [D3, D11]

Contents

Topic	Contact Hours	
	lecture	Lab
Course overview, Policies, Basic concepts of distributed computing systems	5	2
Goals, characteristics and design issues of distributed systems	5	4
Types of distributed systems	4	2
Distributed systems architectures	4	2
Communication and Synchronization	4	2
Distributed Concurrency control	5	4
Distributed Algorithms	4	4

Teaching and learning methods

Teaching and learning methods	Used
Lectures	√
Tutorial Exercises	√
Practical Lab	√
Discussions.	√
Self – Learning (Reading material, Websites search,)	√
Self-studies	-

Group work	√
Presentation	√
Problem solving/problem solving learning based	√
Case study	√
Synchronous E-Learning	-
Video lectures	√
Asynchronous E-Learning	√

Student assessment methods & Schedule

Methods	Used	Week#
Midterm Exam	√	8
Final Exam	√	16
Course Work & Quizzes	√	2-14
Practical Exam	√	15

Assessment Weight

Assessment	Weight %
Mid Term Exam	10%
Final Exam	60%
Course Work & Quizzes	15%
Practical Exam	15%
Total	100

Course Work & Quizzes

Short Exams, Assignments, Research, Reports, Presentations
Class/Project discussion

List of references

Essential books (textbooks)	<ul style="list-style-type: none"> Distributed Systems: Principles and Paradigms, Andrew S.Tanenbaum, Maarten Van Steen Distributed Systems: Concepts and Design • Jean Dollimore, Tim Kindberg, George Coulouris
Course notes	E-Learning Portal
Recommended books	-
Periodicals, website	-
Videos link	-

Required Facilities

Tools & SW (Technology facilities):	<ul style="list-style-type: none"> - MS-Office - Distributed systems middleware - C, Python - Microsoft TEAMS to create virtual classrooms for lectures, discussions for project. - Academy Portal (MOODLE) to make electronic quizzes and electronic midterm exam. - Academy Portal (MOODLE) to upload project deliverable and assignment. - Academy portal (MOODLE) to upload electronic material. 		
Teaching facilities:	Whiteboard	√	
	Computer Lab	√	
	Data show	√	
	E-Learning	√	
	Videos	√	
	Website	√	

Course Content/ILO Matrix

Course Contents	Knowledge & understanding				Intellectual skills		Professional and practical skills				General				
	a10	a15	a18	a19	b3	b15	c4	c6	c11	c14	d3	d10	d11	d12	
Course overview, Policies, Basic concepts of distributed computing systems	x														x
Goals, characteristics and design issues of distributed systems		x										x			x
Types of distributed systems			x				x								x
Distributed systems architectures				x		x	x	x					x		x
Communication and Synchronization						x		x			x				x
Distributed Concurrency control						x					x	x			x
Distributed Algorithms					x	x									x

Learning Methods /ILO Matrix

Learning Methods	Knowledge & understanding				Intellectual skills		Professional and practical skills				General			
	a10	a15	a18	a19	b3	b15	c4	c6	c11	c14	d1	d2	d3	d4
Lectures	x	x	x	x	x	x	x	x			x	x	x	x
Tutorial Exercises					x	x	x	x						x
Reading material	x	x	x	x										
Websites search														

Research and reporting					x	x							
Problem solving													
Group work													
Case study		x	x	x									
Practical Lab					x	x	x	x				x	x
Discussions.					x	x	x	x			x	x	x

Assessment Methods /ILO Matrix

Assessment Methods	Knowledge & understanding				Intellectual skills		Professional and practical skills		General				
	a1	a2	a3	a4	b1	b2	c1	c2	d1	d2	d3	d4	
Mid Term Exam	x	x	x	x	x	x	x	x	x	x	x	x	x
Final Exam	x	x	x	x	x	x			x	x	x	x	x
Course Work & Quizzes	x	x	x	x	x	x	x	x	x	x	x	x	x
Practical Exam	x	x	x	x	x	x	x	x					x

Course ILOs Vs Program ILOs

Course ILOs \ Prog ILOs		Knowledge & understanding			Intellectual skills		Professional and practical skills				General			
		A10	A15	A19	B3	B15	C4	C6	C11	C14	D3	D10	D11	D12
Knowledge and Understanding	a1	x	x											
	a2		x	x										
	a3													
	a4	x	x	x										
Intellectual skills	b1				x	x								
	b2				x	x								
Professional and practical skills	c1						x	x						
	c2						x	x						
General skills	d1											x		x
	d2											x	x	
	d3											x	x	
	d4										x	x		

Course Coordinator : Dr. Tarek S. Abdelazeim ()

Head of Department : Dr. Ahmed El-Abbassy ()

Date: --/--/2023