Course Specification

— (Postgraduate Programs)

Course Title: **Distributed Computing**	
Course Code: **MSCS 612**	
Program: **Master Programme in Computer Science**	
Department: **Computer Science**	
College: **Computer Science and Information Technology**	
Institution: **King Faisal University**	
Version: *Course Specification Version Number*	
Last Revision Date: *Pick Revision Date.*	

Table of Contents

A. General information about the course:

1. Course Identification:

1. Credit hours: 3 (3-0-6)

2. Course type

A.	☐University	☒ College	☐Department	☐Track	
B.	☒ Required			☐ Elective	

3. Level/year at which this course is offered: : Level 2 , 3 or 4

4. Course General Description:

In this course the students will learn concepts and recent trends in distributed systems. It includes topics: Loosely and Tightly Coupled Hardware and Software, Multiprocessing Systems, Network Operating Systems, Distributed and Parallel Time Sharing, Design Issues of Distributed File System, Transparency, Global States and Coordination, Data Sharing and Transactions, Concurrency Control, Replication, Protocols for Replication, Distributed Shared Memory, Designing Distributed Objects, Principles of Object Oriented Middleware, Object Synchronization, Dynamic Object Requests, Object Security, Locating Distributed Objects, Object Naming, Object Trading, Object Naming Issues, Naming Scheme, Name Servers, Life Cycle of Distributed Objects, Composite Object Life Cycle, Object Persistence, Distributed Shared Memory, Distributed Security, Fault Tolerance, Remote Procedure Calling, Distributed Databases, Grid Computing, Cloud Computing

5. Pre-requirements for this course (if any):

NA

6. Pre-requirements for this course (if any):

NA

7. Course Main Objective(s):

The objectives of this course are to enhance the knowledge and skills of distributed systems by discussing new trends and techniques both from theory and practice point of view. Developing distributed systems skills and applying such skills using concepts, methods, principles, standards and techniques of distributed systems including algorithms, protocols and recent advancements in multiple domains. This course also explain recent trends in the field of Distributed system.

2. Teaching Mode: (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom		
2	E-learning		
3	Hybrid • Traditional classroom • E-learning	45	100%
4	Distance learning		

3. Contact Hours: (based on the academic semester)

No	Activity	Contact Hours
1.	**Lectures**	45
2.	**Laboratory/Studio**	-
3.	**Field**	-
4.	**Tutorial**	-
5.	**Others (specify)……**	-
	Total	45

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods:

Code	Course Learning Outcomes	Code of PLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	**Knowledge and understanding**			
1.1	Recognize new and emerging trends in Distributed Systems.	K1	Lectures	- Quizzes - Exams - Assignments
2.0	**Skills**			
2.1	Identify problems and challenges associated with distributed systems	S1	- Lectures -Problem Solving	- Quizzes - Exams - Assignments
2.2	Explain the design issues and	S2	- Lectures - Problem solving	- Quizzes - Exams - Assignments

Code	Course Learning Outcomes	Code of PLOs aligned with program	Teaching Strategies	Assessment Methods
	performance of distributed systems.			
...				
3.0	**Values, autonomy, and responsibility**			
3.1	Evaluate principles and their application in modern distributed systems	V1	- Lectures - Case studies -Research assignment	Project Report and Presentation
...				

C. Course Content:

No	List of Topics	Contact Hours
1.	Introduction to Distributed Systems	3
2.	Distributed Systems Architectures and Models	6
3	Process Communications and Object Invocations	6
4	Middleware and Recent Trends	6
5	Peer 2 Peer Systems	6
6	Web Services and Service-Oriented Computing	3
7	Distributed Systems Issues and Challenges	6
8	Mobile and Ubiquitous Computing	3
9	Distributed Web-Based System Distributed Databases	6
Total		**45**

D. Students Assessment Activities:

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Assignments	Continuous	5%
2.	Quiz	Continuous	10%
3.	Mid Term	8th- 9th	25%
4	Capstone Project	15th	20%

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
5	Final Exam	16th- 17th	40%

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.)

E. Learning Resources and Facilities:

1. References and Learning Resources:

Required Textbook	*"Distributed Systems: Principles and Paradigms"*, Andrew S. Tanenbaum and Maarten Van Steen, 2nd Edition, Prentice Hall, 2007. ISBN: 0132392275
Essential References	*"Distributed Systems: Concepts and Design"*, George Coulouris, Jean Dollimore, Tim Kindberg and Gordon Blair, 5th Edition, Addison Wesley Publications, 2011. ISBN: 0132143011.
Supportive References	
Electronic Materials	IEEE/ACM Journal / Conference Papers on Software Engineering
Other Learning Materials	Electronic Materials, Web Sites etc. for any recent resources related to Advanced Topics in Software Engineering

2. Educational and Research Facilities and Equipment Required:

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Sufficient seats (typically 20) as per student registration required in the lecture
Technology equipment (Projector, smart board, software)	Sufficient computer terminals with required setup having the necessary software installed and configured for the students to complete assignments and projects. Data show is needed to demonstrate in the class
Other equipment (Depending on the nature of the specialty)	Not Required

F. Assessment of Course Quality:

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students	Indirect Assessment through Teaching Evaluation
Effectiveness of students' assessment	Faculty	Indirect assessment through Course Evaluation Survey

Assessment Areas/Issues	Assessor	Assessment Methods
Quality of learning resources	Students	Indirect Assessment through Learning Resources Survey
The extent to which CLOs have been achieved	**Faculty**	Direct assessment through Rubrics analyses
Other		

Assessor (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)

Assessment Methods (Direct, Indirect)

G. Specification Approval Data:

COUNCIL /COMMITTEE	
REFERENCE NO.	
DATE	