Arab Academy for Science and Technology and Maritime Transport **Computer Science Curriculum** **Course Syllabus**				
Course Code: CS425	**Course Title:** Distributed Systems	**Classification:** E	**Coordinator:** Prof. Dr. Ayman Adel **Lecturer:** Prof. Dr. Ayman Adel	**Credit Hours:** 3
Pre-requisites: CS322 (Operating Systems)	**Co-requisites:** None	**Schedule:** Lecture: 2 hours Tutorial: 2 hours		

Office Hours: (Room 207)
Monday 12:30 p.m. -2:30 p.m.

Course Description:
This course presents an introduction to distributed systems principles and paradigms. Key principles in the distributed systems arena are presented including: characterization, system models, communication, remote invocation, notion of time, coordination and agreement, consistency and replication, design of distributed file systems. In addition, a case study for the design of distributed systems is explored. A practical component of the course will allow students to experiment with implementing distributed system applications.

Textbook:

Coulouris G., Jean Dollimore J., Kindberg T., and Blair G., *Distributed Systems: Concepts and Design*, Pearson.

References:

- Maarten van Steen and Andrew S. Tanenbaum, *Distributed Systems*, 3rd Edition, CreateSpace Independent Publishing Platform

Contribution to Program Student Outcomes:
(SO-1) Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.
(SO-2) Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.
(SO-6) Apply computer science theory and software development fundamentals to produce computing-based solutions.

Course Objective/Course Learning Outcome:	Contribution to Program Student Outcomes:
1. Understand distributed system principles and associated techniques	(SO-1)
2. Apply remote invocation techniques (RPC and RMI)	(SO-1) (SO-2) (SO-6)
3. Experiment with the notion of time in distributed systems	(SO-1) (SO-2) (SO-6)
4. Implement coordination and replication techniques	(SO-1) (SO-2) (SO-6)
5. Inspect a case study for the design of distributed systems	(SO-1)

Course Outline:

Week 1. Course Introduction and Characterization of Distributed Systems
Week 2. Characterization of Distributed Systems (cont.)
Week 3. System Models
Week 4. System Models (cont.)
Week 5. Interprocess Communication
Week 6. Interprocess Communication (cont.)
Week 7. 7th Week Exam
Week 8. Remote Procedure Call (RPC)

Week 9. Remote Method Invocation
Week 10. Time and Global States
Week 11. Coordination and Agreement
Week 12. 12th Week Exam
Week 13. Replication
Week 14. Distributed File Systems
Week 15. Designing Distributed Systems case study
Week 16. Final Exam

Grade Distribution:

7th Week Assessment (30%):
Exam (25%) + Tutorial assignments (Programming and homework assignments) (5%)

12th Week Assessment (20%):
Exam (20%)

Term Work (10%):
Tutorial assignments (Programming and homework assignments + Project) (10%)

Final Exam (40%)

Policies:

Attendance:
AASTMT Education and Study Regulations (available at aast.edu)

Academic Honesty:
AASTMT Education and Study Regulations (available at aast.edu)

Late Submission:
Late submissions are graded out of 75% (1 week late), 50% (2 weeks late), 25% (3 weeks late), 0% (more than 3 weeks late)