

**Computer Science Graduate Course: Distributed Systems**  
**California Lutheran University**  
**Winter 2012**

**Instructor:** Dr. Srinivasan Jagannathan

Date/Time: Wed 6-9:30PM

Classroom:D8

**Instructor Email:**

**Course Webpage:**

**Prerequisites:** Computer Networks, Operating Systems

**Course Description:** This course will cover various topics in distributed systems such as communication mechanisms, synchronization, fault tolerance, security and access control. The course will include discussion of design principles as well as implementation of a distributed system.

**Textbook:** Distributed Systems: Principles and Paradigms, Andrew S. Tanenbaum, Maarten van Steen. **2nd Edition.**ISBN:0132392275. Prentice Hall.

**Requirements:** To pass this course, you must meet the following requirements:

**In-class participation:** Actively participate in the in-class discussion.

**Research Papers and Presentation:** There will be **TWO** research paper summaries you will submit. At the beginning of the course, you will be assigned two research papers to review and submit a summary of. You will present your work in class.

**Mid-Term Exam**

**Final Exam**

**Distributed Systems Project:** You will design and implement distributed systems software projects (number to be determined) using concepts discussed in class.

**Grading:** Each of your submissions will be provided with a letter grade (from A to F). The letter grades have numeric scores as shown in column 2:

<b>Grade</b>	<b>Numeric score</b>	<b>Range for Final grade</b>
A, A+	4.0	[90,100]
A-	3.67	[85, 90)
B+	3.33	[80,85)
B	3.0	[70, 80)
B-	2.67	[65, 70)
C+	2.33	[60, 65)

C	2.0	[50, 60)
C-	1.67	[45, 50)
D+	1.33	[40, 45)
D	1.0	[30, 40)
D-	0.67	[25, 30)
F	0	[0, 30)

To calculate the final grade, the following weights will be applied to the numeric score of each of your submissions, and the weighted sum will be mapped to a letter grade using column 3 in the table above:

Assignment	Weight
Attendance/Classroom participation	5%
Research Paper 1	10% Paper + 5% Class presentation
Research Paper 2	10% Paper + 5% Class presentation
Midterm	15%
Software Projects	20%
Final Exam	30%

**Class Schedule:** In each class (depending on class size), time will be allotted towards the end of class for student presentations on a distributed systems related research paper.

Wk	Date	Topic Covered	Work Due
1		<i>In Class:</i> Syllabus, Introduction to Course  Multi-processor, multi-computers, distributed OS, network file systems, middleware, client-server architectures, application layering.	
2		Communication: layered protocols, RPC, remote objects, message oriented-communication, stream oriented communication	Student Paper and Presentation (depending on class size)
3		Processes: Threads, Code migration, load balancing, software agents  Software Agent assignment	Student Paper and Presentation (depending on class size)
4		Naming: Names, name resolution, DNS  Synchronization: Clock synchronization, logical clocks, election algorithms, mutual exclusion, distributed transactions	Software agent programming assignment due  Student Paper and Presentation (depending on class size)

			size)
5		Synchronization: Clock synchronization, logical clocks, election algorithms, mutual exclusion, distributed transactions	Student Paper and Presentation (depending on class size)
6		Mid-Term  Consistency and Replication: Strict Consistency, Linearizability and Sequential Consistency, Causal Consistency, FIFO Consistency, etc. Client Centric Consistency Models.	Mid Term
7		Fault Tolerance	Student Paper and Presentation (depending on class size)
8		Security and Access Control	Student Paper and Presentation (depending on class size)
9		Distributed File Systems	Student Paper and Presentation (depending on class size)
10		Example distributed system: (Google/Amazon?) Guest presentation	Software projects demo (depending on class size)
11		Final Exam	