

## **CST-502 (Distributed Computing Systems + Computer Networking) Course Description**

<b>Course code number</b>	CST-502	<b>Course Title</b>	Distributed Computing Systems
<b>Semester hours</b>	75 minutes	<b>No. of Credit Units</b>	1.5
<b>Prerequisite</b>	CST-201 (Java Programming) CST-301 (Operating Systems)	<b>Course Coordinator</b>	Dr. Sabai Phyu Dr. Thi Dar Win

### **Course Objectives**

The aim of this course is to help students the fundamental issues of designing and engineering distributed systems with reference to partial failure, heterogeneity, scalability, concurrency and asynchrony. This course deals with the major recent developments in distributed systems technology.

### **Learning Outcomes**

Upon the successful completion of this course, students will be able to:

- gain a clear understanding of the concepts that underlie distributed computing systems along with design and implementation issues
- understand key mechanisms and models for distributed systems
- identify the core concepts of distributed systems: the way in which several machines orchestrate to correctly solve problems in an efficient, reliable and scalable way
- create an awareness of the fundamental technical challenges in advanced distributed systems design and implementation
- present the principles underlying the function of distributed systems and their extension to grid and cloud computing and virtualization techniques

### **Reference Book**

- Distributed Systems Concepts and Design, 5<sup>th</sup> Edition, by George Coulouris, Jean Dollimore, Tim Kindberg and Gordon Blair  
<http://www.cdk5.net/wp/>

### **Course Organization**

Student participation in the course will involve the following activities:

1. Attending the lectures
2. Assignments
3. Tutorial
4. Moodle
5. Project
6. Exams

### **Assessment Plan for the Course (Distributed Systems 50% + Computer Networking 50% )**

Paper Exam	25%
Tutorial/ Assignment	10%
Project	5%
Moodle Test	5%
Class participation	5%

Period: 15 periods for 15 weeks (75 minutes for 1 period)

No.	Chapter	Page	Period	Detail Lecture Plan
	<b>Chapter 1. Characterization of Distributed Systems</b>	<b>1 to 16</b>	<b>2</b>	<b>Lectures + Assignment</b>
1.	1.1 Introduction 1.2 Examples of distributed systems 1.3 Trends in distributed systems 1.4 Focus on resource sharing		2	
	<b>Chapter 2. System Models</b>	<b>37 to 76</b>	<b>3</b>	<b>Lectures + Assignment</b>
2.	2.1 Introduction 2.2 Physical models 2.3 Architectural models 2.4 Fundamental models		3	
	<b>Chapter 5. Remote Invocation</b>	<b>186 to 225</b>	<b>3</b>	<b>Lectures + Assignment</b>
3.	5.1 Introduction 5.2 Request-reply protocols 5.3 Remote procedure call 5.4 Remote method invocation 5.5 Case study: Java RMI		3	Detail explanation RMI Architecture Framework
	<b>Chapter 7. Operating System Support</b>	<b>280 to 331</b>	<b>3</b>	<b>Lectures + Assignment</b>
4.	7.1 Introduction 7.2 The operating system layer 7.3 Protection 7.4 Processes and threads 7.5 Communication and invocation 7.6 Operating system architecture 7.7 Virtualization at the operating system level		3	
5.	<b>RMI Project</b>		<b>3</b>	
6.	<b>Revision</b>		<b>1</b>	<b>For the whole lecture</b>