Addis Ababa University

Addis Ababa Institute of Technology

School of Electrical and Computer Engineering

Course Title: Distributed Systems

Course No: ECEG-6504

Credit Hour: 3

Course Outline

Chapter One: Introduction

- What is a distributed system? Examples of distributed systems
- Goals and challenges of distributed systems
- Software concepts
- Architectural styles
- System architectures

Chapter Two: System Models

- Types of system models
- Physical models
- Architectural models
- Fundamental models
    - Interaction, Failures, Security

Chapter Three: Processes

- Introduction
- Threads
- Code migration
- Agents in distributed systems

Chapter Four: Inter-process Communication

- Introduction
- APIs for Internet protocols
- External data representation and marshalling
- Client-server communication
- Group communication

Chapter Five: Distributed Objects and Remote Invocation
- Introduction

- Remote procedure call

- Communication between distributed objects

- Events and notifications

Chapter Six: Naming
- Names, addresses, name resolution

- Internet DNS

Chapter Seven: Synchronization

- Clock synchronization

- Logical clocks

- Mutual exclusion

- Elections

Chapter Eight: Fault Tolerance
- Two-phase commit

- Three-phase commit

Assessment Methods:

Assignments	20%
Projects	30%
Final	50%

Text Book:
- Tanenbaum, van Steen: Distributed Systems, Principles and Paradigms; Prentice Hall 2006

References:
- Coulouris, Dollimore and Kindberg,Distributed Systems: Concepts and Design, 3rd Ed., Addison-Wesley, 2001

- Marko Boger, Java in Distributed Systems, Concurrency, Distribution and Persistence, Addison-Wiley, 2001