CS 513 Software Systems
TERM I (2022-23)

GENERAL COURSE INFORMATION

Course Name	CS 513 Software Systems - Enterprise Software Development
Instructors	Prof. Chandrashekar R Office No. 116 rc@iiitb.ac.in
Course credits	2
Pre-requisite	a) Good knowledge of programming in Java

COURSE OVERVIEW

Two major components of CS513 Software Systems are a) System Software and b) Enterprise Software Development. The "System Software" module covers the rudiments of Operating Systems. This module is on Enterprise Software Development. As part of this module, students will get to understand what Enterprise Software is and how it is different from other software. The course will give exposure to the students to different architectural considerations for addressing the complexities associated with Enterprise Software. The course provides an in-depth insight into three-tier architecture and the software programming elements of developing software applications using three-tier architecture. At the end of this course, students are expected to have sufficient proficiency and skills in implementing the front-end, middleware and backend components of enterprise software.

COURSE CONTENTS

Topic 1: Fundamentals of Object-oriented Analysis and Design
- Design vs Architecture
- OO concepts
- Unified Modeling Language (UML)

Topic 2: Software Architectures
- Understanding large scale systems – n-Tier architectures.
- Understanding quality attributes of architectures

Topic 3: Database application development
- Database Design through Conceptual Modeling
- Database Implementation through SQL
- Database Programming through Hibernate

Topic 4: Web application development
- MVC for Web - Twitter Bootstrap (rendering view), jQuery, Ajax (from jQuery) and servlets (controller), REST service, back-end model - MySql, Java programming and concepts of key value pair (like mongo DB – implemented using MySql)

LAB Activities
1. Java Programming
2. Javascript Programming
3. Database Programming using SQL
4. Database Programming using Hibernate
5. Twitter Bootstrap
6. jQuery Programming
7. REST Services

ASSESSMENTS and GRADING

1	Quiz 1: UML / DB Design Quiz	03-Nov-22	15%
2	Quiz 2: SQL Quiz	17-Nov-22	15%
3	Quiz 3: End-term exam	December first week	35%
4	Mini Project Demo / Viva	25-Nov-20	35%

SCHEDULE

S. No.	Date	Topic
1	11-Oct-22	Introduction
2	13-Oct-22	Enterprise Software Elements
3	14-Oct-22	Lab - Environment setup
4	18-Oct-22	Database Design
5	20-Oct-22	OR Mapping
6	21-Oct-22	Lab - SQL DDL
7	25-Oct-22	Lab - SQL SELECT
8	27-Oct-22	DB Programming & N-Tier Architecture
9	28-Oct-22	Lab - OR Mapping with hibernate
10	01-Nov-22	HOLIDAY
11	03-Nov-22	Quiz 1: UML / DB Design Quiz
12	04-Nov-22	Lab - REST services
13	08-Nov-22	Project
14	10-Nov-22	Service Oriented Architecture
15	11-Nov-22	Lab - Frontend development
16	15-Nov-22	Software Testing for Enterprise Software
17	17-Nov-22	Quiz 2: SQL Quiz
18	18-Nov-22	Lab - Full-stack Integration
19	22-Nov-22	Deployment Architecture
20	24-Nov-22	Lab - Basic Devops
21	25-Nov-22	FINAL-DEMO

REFERENCE MATERIAL

1. Software Architecture in Practice by Bass and Clements, Addison Wesley.
2. Ajax - https://www.youtube.com/watch?v=f46WEeM8HTA
3. REST Services - https://www.youtube.com/watch?v=xkKcdK1u95s
4. Jquery Tutorial - https://www.youtube.com/watch?v=8mwKq7_JlS8

CHEATING AND PLAGIARISM

This course has zero tolerance for cheating and plagiarism. Any violation may result in an F grade and further disciplinary action may be initiated as per the Institute's policies. Ignorance of what constitutes cheating and plagiarism is not an excuse! If you have any doubts, contact your instructor.

DEADLINES

Unless noted otherwise, all deadlines are due at **9:00 AM** on the date indicated

LATE POLICY

- 4 - 24 hours late submission: 25% penalty
- 24 - 48 hours late submissions: 50% penalty
- > 48 hours late submissions: 75% penalty

ANNEXURE

What is Plagiarism

Many people think of plagiarism as copying another's work, or borrowing someone else's original ideas. But terms like "copying" and "borrowing" can disguise the seriousness of the offense:

According to the *Merriam-Webster OnLine Dictionary*, to "plagiarize" means
1) to steal and pass off (the ideas or words of another) as one's own
2) to use (another's production) without crediting the source
3) to commit literary theft
4) to present as new and original an idea or product derived from an existing source.

In other words, plagiarism is an act of fraud. It involves both stealing someone else's work and lying about it afterward. But can words and ideas really be stolen?

According to U.S. law, the answer is yes. In the United States and many other countries, the expression of original ideas is considered intellectual property, and is protected by copyright laws, just like original inventions. Almost all forms of expression fall under copyright protection as long as they are recorded in some media (such as a book or a computer file).

All of the following are considered plagiarism:
- turning in someone else's work as your own
- copying words or ideas from someone else without giving credit
- failing to put a quotation in quotation marks
- giving incorrect information about the source of a quotation
- changing words but copying the sentence structure of a source without giving credit
- copying so many words or ideas from a source that it makes up the majority of your work, whether you give credit or not (see our section on "fair use" rules)

Attention! Changing the words of an original source is not sufficient to prevent plagiarism. If you have retained the essential idea of an original source, and have not cited it, then no matter how drastically you may have altered its context or presentation, you have still plagiarized

Most cases of plagiarism can be avoided, however, by citing sources. Simply acknowledging that certain material has been borrowed, and providing your audience with the information necessary to find that source, is usually enough to prevent plagiarism.