Course Title: **Enterprise Application Development**

Course Code:

Duration: One Semester

Pre-requisite: Knowledge of Programming. An understanding of HTML, basic knowledge of SQL and a basic knowledge of working at the UNIX or Windows command-line is useful but not required.

Evaluation:

**Theory Practical Total**

Sessional 30 20 50

Final 50 -

Total 80 20 100

**Course Objectives:**

* It will introduce students to the enterprise application development environment and provides the knowledge about most recent developments in enterprise application frameworks.
* Students will have better understanding of software architecture and various design principles.
* Students will have the understanding of good coding practices, including documentation, testing and builds.
* Students will learn about the web application security vulnerabilities and how to solve those security issues.

**Contents**

1. Introduction 7hrs

1.1Enterprise Application Architecture

1.1.1Platform for Enterprise Solutions: E.g. Java EE, Enterprise Java Bean

1.1.2 Enterprise Architecture Frameworks: E.g. Government enterprise architecture , Zachman Framework.

1.2 Web Technologies Concepts

1.2.1 Protocols

1.2.2 Communication Types

1.2.3 Web Services: Data Exchange Formats: (XML, JSON, RDF), Data Standards & Interoperability(SOAP, WSDL, UDDI, and ebXML)

2. Development Process Management 7hrs

2.1 Source code Management

2.2 Continuous Integration

2.3 Software Testing

2.4 Software Documentation (UML Diagram and Tools)

3. Design Patterns 10hrs

3.1 Types of Patterns

3.2 Dependency Injection and Inversion of Control.

3.3 Convention vs Configuration.

3.4 Factory pattern.

3.5 Singleton pattern.

3.6 Lazy initialization.

4. Web Application Architecture 7hrs

4.1 Layered Architecture for web applications:

4.1.1 Presentation Layer

4.1.2 Data source Layer

4.1.3 Domain Logic & Business Logic.

4.2 MVC pattern

5. SOA and RESTFUL Web services 5hrs

5.1 Resource-Oriented Architecture

5.2 Resource-Oriented Architecture Analysis and Design

5.2.1 Designing Read-Only Resource-Oriented Services

5.2.2 Designing Read/Write Resource-Oriented Services

6. Software Security 3hrs

6.1 Basic attacks

6.2 State-based attacks

6.3 Dos and Don'ts of client authentication

6.4 Cross-site scripting

6.5 SQL injection

7. Software Development Methodologies 6hrs

7.1 Agile

7.2 Test Driven

7.3 Behavior Driven

**Lab sessions:**

Lab sessions should be conducted to provide students experience with specific technologies

and techniques used across many applications.

**References**

1. Fowler, M., *Patterns of Enterprise Application Architecture*. Addison-Wesley, 2003.

2. E. Jendrock,R. Cervera-Navarro,I. Evans,D. Gollapudi,K. Haase,W. Markito,C. *The Java EE*

*6 Tutorial*, 3rd edition, Addison-Wesley, 2006. (Available online:

http://docs.oracle.com/javaee/6 /tutorial/doc/)

3. Anderson, E., Greenspun, P., and Grumet, A.,*Software Engineering for Internet Applications*,

1st ed. MIT Press, 2006.

4. Andrews, M. and Whitaker, J.A., *How to Break Web Software: Functional and Security*

*Testing of Web Applications and Web Services*. Addison-Wesley, 2006.

5. Fowler (2003) UML Distilled: *A Brief Guide to the Standard Object Modeling Language*, 3rd

Edition. Addison-Wesley.