Course : ICT 102 : Enterprise Java

Course Code	ICT 102
Course Title	Enterprise Java
Credit	4
Teaching per Week	4 Hrs
Minimum weeks per Semester	15 (Including Class work, examination, preparation, holidays etc.)
Last Review / Revision	June 2019
Purpose of Course	This course helps students to understand and develop large scale enterprise , distributed and scalable applications using Java
Course Objective	The objective of the course is to provide in depth knowledge of all JAVA API which contribute to the development of high performing , secure , distributed and scalable applications in line with the current trends in the software industry
Pre-requisite	Knowledge of Java Language and Web Application concepts
Course Out come	Students will be able to develop large scale and distributed applications in Java
Course Content	**Unit : 1 : JAVA EE and EJB** 1.1 Layered model architectures – principles and goals 1.2 Java EE definition and characteristics 1.3 Java EE technologies in a multi-tier architecture 1.4 Stateless Session Bean 1.5 Stateful Session Bean 1.6 Binding and looking up objects 1.7 Singleton Beans 1.8 Local and Remote Lookups 1.9 Timers and Schedulers 1.10 Asynchronous Beans **Unit : 2 : JAVA MESSAGING SERVICES** 2.1 JMS Architecture 2.2 Queue And Topic Messages, 2.3 Message Driven Beans Life Cycle, 2.4 JMS Producers and Consumers , 2.5 Creating Client for MDB **Unit : 3 : ORM WITH JAVA PERSISTANCE** 3.1 JPA overview 3.2 JPA architecture 3.3 ORM with Entities 3.4 JPA Annotations 3.5 One to One 3.6 One to Many 3.7 Many to Many Relationships 3.8 JPA Query Language 3.9 Named Queries 3.10 Dynamic Queries AND Native Queries 3.11 Criteria Queries 3.12 Transactions 3.13 Using Hibernate as ORM

	Unit : 4 : WEB SERVICES 4.1 Introduction to web services 4.2 SOAP Envelope ,WSDL , Schema and UDDI 4.3 Creating and Publishing a SOAP based Web Service 4.4 Searching and Consuming SOAP based Web Service 4.5 Google Remote Procedure Call (GRPC) 4.6 REST services with JAX-RS API 4.7 REST Patterns 4.8 Using HTTP Methods and URL-Patterns in REST 4.9 JERSEY Client for REST Services 4.10 Using JavaScript API for calling REST methods 4.11 Micro-Services Architecture in Java 4.12 In Grid Database using Jcache / Hazelcast **Unit 5 - JAVA ENTERPRISE SECURITY** 5.1 The Need of Security and Security Threats 5.2 Realm, Users, Group and Roles 5.3 Basic Authentication 5.4 Form Based Authentication, 5.5 Protecting Your Resources with Authorization 5.6 Java API for Authentication and Security – JAAS 5.7 JAAS security for web and EJB applications 5.8 Maintaining Confidentiality and Trust with SSL certificates 5.9 JAAS Security to SOAP based Web Services 5.10 Securing REST services using Authentication Filters 5.11 Security with JWT and OAuth
Reference Book	1. Mastering Enterprise JavaBeans , Enterprise Edition, *by Ed Roman* 2. Java 8 EE Tutorial : Basic Concepts by Oracle press 3. Beginning Java™ EE 8 Platform with Payara™ Server Novice to Professional by Antonio Goncalves 4. Microservice Architecture: Aligning Principles, Practices, and Culture by Irakli Nadareishvili, Ronnie Mitra, Matt McLarty, Mike Amundsen 2018 5. Java EE 8 Application Development by David R. Heffelfinger Packt Publication Jan 2018 6. Beginning EJB 3: Java EE 7 Edition by by Wetherbee and Chirag Rathod 7. High-Performance Java Persistence by Vlad Mihalcea 2018
Teaching Methodology	Lectures, Discussion, Independent Study, Seminars and Assignment
Evaluation Method	30% Internal assessment 70% External assessment