

Institute/Department	UNIVERSITY INSTITUTE OF ENGINEERING (UIE)	Program	Bachelor of Engineering - Computer Science & Engineering (CS201)
Master Subject Coordinator Name:	Richa Dhiman	Master Subject Coordinator E-Code:	E11307
Course Name	Project Based Learning in Java	Course Code	20CST-319

Lecture	Tutorial	Practical	Self Study	Credit	Subject Type
2	0	0	0	2.0	T

Course Type	Course Category	Mode of Assessment	Mode of Delivery
Program Core	Graded (GR)	Theory Examination (ET)	Theory (TH)

Mission of the Department	MD1: To provide practical knowledge using state-of-the-art technological support for the experiential learning of our students. MD2: To provide an industry-recommended curriculum and transparent assessment for quality learning experiences. MD3: To create global linkages for interdisciplinary collaborative learning and research. MD4: To nurture an advanced learning platform for research and innovation for students' profound future growth. MD5: To inculcate leadership qualities and strong ethical values through value-based education.
Vision of the Department	"To be recognized as a leading Computer Science and Engineering department through effective teaching practices and excellence in research and innovation for creating competent professionals with ethics, values, and entrepreneurial attitude to deliver service to society and to meet the current industry standards at the global level."

Program Educational Objectives(PEOs)

PEO1	PEO1 Graduates of the Computer Science and Engineering will contribute to the Nation's growth through their ability to solve diverse and complex computer science and engineering problems across a broad range of application areas. (PEO1 is focused on Problem Solving)
PEO2	PEO2 Graduates of the Computer Science and Engineering will be successful professionals, designing and implementing Products & Services of global standards in the field of Computer Science & Engineering, becoming entrepreneurs, Pursuing higher studies & research. (PEO 2 is focused on Professional Success)
PEO3	PEO3 Graduates of the Computer Science and Engineering Program will be able to adapt to changing scenario of dynamic technology with an ability to solve larger societal problems using logical and flexible approach in decision making. (PEO 3 is focused on Attaining Flexibility and Adaptability)

Program Specific OutComes(PSOs)

PSO1	PSO1 Exhibit attitude for continuous learning and deliver efficient solutions for emerging challenges in the computation domain.
PSO2	PSO2 Apply standard software engineering principles to develop viable solutions for Information Technology Enabled Services (ITES).

Program OutComes(POs)

PO1	PO1 Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals and an engineering specialization to the solution of complex engineering problems.
PO2	PO2 Problem analysis: Identify, formulate, review research literature and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences.
PO3	PO3 Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety and the cultural, societal, and environmental considerations.
PO4	PO4 Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data and synthesis of the information to provide valid conclusions.
PO5	PO5 Modern tool usage: Create, select, and apply appropriate techniques, resources and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
PO6	PO6 The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7	PO7 Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development
PO8	PO8 Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO9	PO9 Individual or teamwork: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO10	PO10 Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions
PO11	PO11 Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as member and leader in a team, to manage projects and in multidisciplinary environments.
PO12	PO12 Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context to technological change.

Text Books					
Sr No	Title of the Book	Author Name	Volume/Edition	Publish Hours	Years
1	Java: The Complete Reference	Herbert Schildt	11th Edition	McGraw-Hill	2018
2	Core Java, Volume II--Advanced Features	Cay S. Horstmann, Gary Cornell	9th Edition	Pearson	2013
3	J2ee : Complete Reference	Jim Keogh	1st Edition	Tata McGraw Hill	2002

Reference Books					
Sr No	Title of the Book	Author Name	Volume/Edition	Publish Hours	Years
1	Java Programming Language	James Gosling, Ken Arnold and David Holmes	5th Edition	Pearson Education	2005
2	Core Java	Cay S. Horstmann, Gary Cornell	Volume I, 8th Edition	Pearson Education	2008

Course OutCome	
SrNo	OutCome
CO1	To gain knowledge of the structure and use the Java programming language for various technologies
CO2	Use the syntax and semantics of java programming language and basic concepts of OOP
CO3	Develop reusable programs using the concepts of inheritance, polymorphism, interfaces and packages
CO4	Apply the concepts of Multithreading and Exception handling to develop efficient and error free codes
CO5	Design event driven GUI and web related applications which mimic the real word scenarios

Lecture Plan Preview-Theory						
Unit No	LectureNo	ChapterName	Topic	Text/ Reference Books	Pedagogical Tool**	Mapped with CO Numer (s)
1	1	Java Fundamentals	Introduction to Java. Difference between C++ and Java.	,T-Java: The Complete Reference,R-Core Java	PPT,Video Lecture	CO1
1	2	Java Fundamentals	Keywords, Tokens, Data types.	,T-Java: The Complete Reference,R-Core Java	PPT,Video Lecture	CO1
1	3	Java Fundamentals	Use of public, private and protected.	,T-Java: The Complete Reference,R-Core Java	PPT,Video Lecture	CO1
1	4	OOPS using Java	Use of class and method in Java. Inheritance, Abstraction.	,T-Java: The Complete Reference,R-Core Java	PPT,Video Lecture	CO2
1	5	OOPS using Java	Polymorphism, Encapsulation and data privacy.	,T-Java: The Complete Reference,R-Core Java	PPT,Video Lecture	CO2
1	6	OOPS using Java	Difference between method overloading and method overriding.	,T-Java: The Complete Reference,R-Core Java	PPT,Video Lecture	CO2

1	7	Exception Handling	Introduction to Exceptions. Difference between error and exception.	,T-Java: The Complete Reference,R-Core Java	PPT,Video Lecture	CO2
1	8	Exception Handling	Use of try, catch and throw. Difference between throw and throws.	,T-Java: The Complete Reference,R-Core Java	PPT,Video Lecture	CO2
1	9	Java Fundamentals	Types of Exceptions, Exception handling in Java.	,T-Java: The Complete Reference,R-Core Java	PPT,Video Lecture	CO2
1	10	Exception Handling	Revision	,T-Core Java, Volume II--Advanced,T-J2ee : Complete Reference,T-Java: The Complete Reference,R-Core Java,R-Java Programming Language	PPT,Video Lecture	CO1
2	11	Collection Framework	Use of Collections in Java. ArrayList, LinkedList.	,T-Core Java, Volume II--Advanced,R-Java Programming Language	PPT,Video Lecture	CO3
2	12	Collection Framework	HashMap, TreeMap, HashSet in Java.	,T-Core Java, Volume II--Advanced,R-Java Programming Language	PPT,Video Lecture	CO3
2	13	Collection Framework	Multithreading in Java. Thread Priority, Thread LifeCycle.	,T-Core Java, Volume II--Advanced,R-Java Programming Language	PPT,Video Lecture	CO3
2	14	Collection Framework	Thread Synchronization.	,T-Core Java, Volume II--Advanced,R-Java Programming Language	PPT,Video Lecture	CO3
2	15	Wrapper Classes, I/O Streams and Annotations	Use of wrapper classes in Java- Integer, Character, Long, Boolean. Autoboxing and Unboxing.	,T-Java: The Complete Reference,R-Java Programming Language	PPT,Video Lecture	CO3
2	16	Wrapper Classes, I/O Streams and Annotations	Byte stream, Character stream, Object serialization, cloning.	,T-Java: The Complete Reference,R-Java Programming Language	PPT,Video Lecture	CO3
2	17	Wrapper Classes, I/O Streams and Annotations	System defined annotations, Custom annotations, application of annotations, Testing using JUnit.	,T-Java: The Complete Reference,R-Java Programming Language	PPT,Video Lecture	CO3
2	18	JDBC	Database connectivity, Types of Drivers for connection, Connection Example. CRUD operations using Database.	,T-Core Java, Volume II--Advanced,R-Java Programming Language	PPT,Video Lecture	CO4
2	19	JDBC	Configuring various types of drivers for Java Database Connectivity, MVC Model for project development.	,T-Java: The Complete Reference,R-Java Programming Language	PPT,Video Lecture	CO4
2	20	JDBC	Sequence, Dual table, Date type management in Java.	,T-Java: The Complete Reference,R-Java Programming Language	PPT,Video Lecture	CO4
3	21	Servlets and JSP	Servlet Lifecycle, Generic Servlet, Http Servlet, Linking Servlet to HTML.	,T-J2ee : Complete Reference,R-Java Programming Language	PPT,Video Lecture	CO5
3	22	Servlets and JSP	HttpServlet Request and Response, Servlet with JDBC,	,T-J2ee : Complete Reference,R-Java Programming Language	PPT,Video Lecture	CO5
3	23	Servlets and JSP	Configuring project using servlet, Servlet Config and Servlet Mapping	,T-J2ee : Complete Reference,R-Java Programming Language	PPT,Video Lecture	CO5
3	24	Servlets and JSP	JSP declaration, JSP directives	,T-J2ee : Complete Reference,R-Java Programming Language	PPT,Video Lecture	CO5
3	25	Servlets and JSP	JSP Scriptlets, JSP include tag	,T-J2ee : Complete Reference,R-Java Programming Language	PPT,Video Lecture	CO5
3	26	Servlets and JSP	JSP page tag, JSTL.	,T-J2ee : Complete Reference,R-Java Programming Language	PPT,Video Lecture	CO5
3	27	XML and Web Services	Structure of XML, Elements of XML 1.0, 2.0, DTDs, XML parser	,T-J2ee : Complete Reference,R-Java Programming Language	PPT,Video Lecture	CO5
3	28	XML and Web Services	DOM parser, Web services using REST and HTTP	,T-J2ee : Complete Reference,R-Java Programming Language	PPT,Video Lecture	CO5
3	29	XML and Web Services	Creating web services for database access via remote servers	,T-J2ee : Complete Reference,R-Java Programming Language	PPT,Video Lecture	CO5

3	30	XML and Web Services	Revision	,T-Core Java, Volume II-- Advanced,T-J2ee : Complete Reference,T-Java: The Complete Reference,R-Core Java,R-Java Programming Language	PPT,Video Lecture	CO5
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Assessment Model			
Sr No	Assessment Name	Exam Name	Max Marks
1	20EU01	External Theory	60
2	20EU01	Assignment	10
3	20EU01	Attendance Marks	2
4	20EU01	Mid-Semester Test-1	40
5	20EU01	Quiz	4
6	20EU01	Surprise Test	12
7	20EU01	Mid-Semester Test-2	40

CO vs PO/PSO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CO2	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CO3	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CO4	3	2	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2
CO5	3	3	3	2	NA	NA	NA	NA	NA	NA	NA	NA	NA	2
Target	3	2.5	3	2	NA	NA	NA	NA	NA	NA	NA	NA	NA	2

