TECNIA INSTITUTE OF ADVANCED STUDIES

GRADE 'A' INSTITUTE

Department of Information Communication & Technology

COURSE PLAN

ACADEMIC SESSION 2024-25

As per Scheme & Syllabus (w.e.f. Academic Session 2024-2025 onwards); As per UGC Curriculum & Credit Framework for Undergraduate Programme (CCFUP) (Dec 2022) Guru Gobind Singh Indraprastha University, New Delhi.

PROGRAMME CODE:	020	PROGRAMME:	Bachelor of Computer Applications (BCA)	SHIFT:	1st		L	4	T/P	0		Credits	4
COURSE CODE :	BCA-104T	COURSE NAME:	Object Oriented Programming using Java	SECTION:	A								
		COURSE TYPE:	Core Course Theory (CCT)	FACULTY:	Mr. Shubham Rawat								

LEARNING OBJECTIVES:
In this course, the learners will be provided expertise in
1. Learn how to implement Object Oriented concepts through Java.
2. Identify and apply the Java thread model to program Java applications.
3. Develop GUI applications using Java swings

PREREQUISITE:
1. Programming fundamental
2. Object-Oriented concepts

COURSE OUTCOME & MAPPING, COURSE ARTICULATION

		DISCIPLINARY KNOWLEDGE: Disciplinary Knowledge: Apply the knowledge of computer application concepts and domain knowledge to solve the problems in IT domain/IT industry	PROBLEM ANALYSIS: Identify, formulate, review research literature, and analyse complex computer application problem at their workplace and for the society.	DESIGN /DEVELOPMENT OF SOLUTIONS: Design and evaluate solutions for computer applications problems, and design the processes that meet specified needs with appropriate consideration for the public health, safety, cultural, societal, and environmental considerations.	MODERN TOOL USAGE: Create, select, adapt and apply appropriate techniques, resources, and modern computing tools to complex computer application activities, with an understanding of the limitations	PROFESSIONAL ETHICS: Understand and commit to professional ethics and cyber regulations, responsibilities, and norms of professional computing practices.	LIFE-LONG LEARNING: Recognize the need, and have the ability, to engage in independent learning for continual development as a computing professional.	PROJECT MANAGEMENT AND FINANCE: Demonstrate knowledge and understanding of the computing and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.	COMMUNICATION EFFICACY WITH COOPERATION/TEAMWORK: Communicate effectively with the computing community, and with society at large, about complex computing activities by being able to comprehend and write effective reports, design documentation, make effective presentations, and give and understand clear instructions. Function effectively as an individual and as a member or a leader.	SOCIETAL AND ENVIRONMENTAL CONCERN: Understand and assess societal, environmental, health, safety, legal, and cultural issues within local and global contexts, and the consequential responsibilities relevant to professional computing	INNOVATION AND ENTREPRENEURSHIP: Identify a timely opportunity and using innovation to pursue that opportunity to create value and wealth for the betterment of the individual and society at large.
		DISCIPLINARY KNOWLEDGE	PROBLEM ANALYSIS	DESIGN /DEVELOPMENT OF SOLUTIONS	MODERN TOOL USAGE	PROFESSIONAL ETHICS	LIFE-LONG LEARNING	PROJECT MANAGEMENT AND FINANCE	COMMUNICATION EFFICACY WITH COOPERATION/TEAMWORK	SOCIETAL AND ENVIRONMENTAL CONCERN	INNOVATION AND ENTREPRENEURSHIP
	CO - PO MAPPING	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	Illustrate the Object-Oriented paradigm and Java language constructs	4	4	4	2	-	2	1	-	-	2
CO2	To inculcate concepts of Inheritance to create new classes from existing ones and design the Classes needed given a problem specification. To familiarize the concepts of packages and interfaces.	4	4	4	2	-	2	1	-	-	2
CO3	To manage input output using console and files	4	4	4	2	-	2	1	-	-	2
CO4	To facilitate students in handling exceptions and defining their own exceptions. To apply the Java Thread model to develop multithreading applications.	4	4	4	2	-	2	1	-	-	2
	Course Articulation (Average)	4	4	4	2	-	2	1	-	-	2

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S. No.	Lecture No.	Unit-No	Topic	Sessional Outcome Students will able to :	Experiential Learning	Participative Learning	Problem Solving Methodologies	ICT Tools & E-Resources Utilization	Mapping with CO	Class Material (PPT Faculty+ Students)	Additional Material (Links/ Journals/ Articles/ NEWS)	Mode of Assessment	Status
1	L1	1	Introduction to OOP Paradigm	Understand the difference between procedural and object-oriented programming.	Demonstration	Lecture Through PPT	Practical	https://www.geeksforgeeks.org/object-oriented-programming-oops-concept-in-java/	CO1	PPT	https://www.techtarget.com/searchenterpriseai/definition/machine-learning-ML	PPT (CIA)	
2	L2	1	Basic Concepts of OOP: Classes, Objects, Encapsulation, Abstraction	Grasp the fundamental OOP concepts: classes, objects, encapsulation, and abstraction.	Demonstration	Lecture Through PPT	Practical	https://www.tutorialspoint.com/java/java_object_oriented.htm	CO1	PPT	https://www.youtube.com/watch?v=EWmCkVfPnJ8&list=PLJ5C_6qdAvBGaabKHmVbtryZW9XpICIHC&index=2	PPT (CIA)	
3	L3	1	Applications and Benefits of OOP	Identify real-world applications of OOP and explain its advantages in software development.	Demonstration	Lecture Through PPT	Case study	https://www.geeksforgeeks.org/benefits-of-object-oriented-programming/	CO1	PPT	https://www.youtube.com/watch?v=EWmCkVfPnJ8&list=PLJ5C_6qdAvBGaabKHmVbtryZW9XpICIHC&index=2	PPT (CIA)	
4	L4	1	History of Java and Features of Java	Learn about Java's evolution and key features that make it unique.		Discussion/ Doubt Clearing session	Case study	https://www.javatpoint.com/java-history	CO1		https://machinelearningmastery.com/types-of-classification-in-machine-learning/	PPT (CIA)	
5	L5	1	Java vs C++: Key Differences	Compare Java and C++ in terms of syntax, memory management, and other key aspects.	Mini projects	Lecture Through PPT	Practical	https://www.geeksforgeeks.org/differences-between-java-and-cpp/	CO1	PPT	https://www.youtube.com/watch?v=MQOhloZz4Bs	PPT (CIA)	
6	L6	1	Java Architecture: JDK, JVM, JRE	Understand the Java architecture and the role of JDK, JVM, and JRE in the execution of Java programs.	Mini projects	Lecture Through PPT	Practical	https://www.javatpoint.com/java-architecture	CO1	Notes & PPT	https://www.youtube.com/watch?v=FPk9JTWxPFA	Flipped Classroom	
7	L7	1	Java Tokens Overview: Keywords, Identifiers, Literals	Learn about Java syntax elements such as keywords, identifiers, and literals.	Mini projects	Lecture Through PPT	Practical	https://www.geeksforgeeks.org/java-keywords/	CO1	Notes & PPT	https://www.youtube.com/watch?v=j31ah5Qa4QI&t=90Ss	Questions from Assignment	
8	L8	1	Data Types in Java: Primitive and Reference Types	Differentiate between primitive and reference data types in Java.	Mini projects	Discussion/ Doubt Clearing session	Practical	https://www.javatpoint.com/data-types-in-java	CO1		https://www.youtube.com/watch?v=pqNCD_5r0iU&t=2s	Group Discussion	
9	L9	1	Variables, Literals, and Scope	Understand the scope, lifetime, and types of variables in Java.		Group Discussion	Practical	https://www.geeksforgeeks.org/scope-of-variables-in-java/	CO1	PPT	https://www.youtube.com/watch?v=BPJ24SrQqy8&t=143s	Group Discussion	
10	L10	1	Operators in Java: Arithmetic, Relational, Logical, Bitwise	Learn how to use various operators in Java for performing arithmetic, relational, and logical operations.	Service learning	Lecture Through PPT	Practical	https://www.javatpoint.com/java-operators	CO1	PPT	https://www.youtube.com/watch?v=BPJ24SrQqy8&t=143s	PPT(CIA)	
11	L11	1	Control Structures: Selection (if, switch)	Apply selection structures (if, switch) to control the flow of execution in a program.	Service learning	Lecture Through PPT	Practical	https://www.tutorialspoint.com/java/java_if_else_statement.htm	CO1	Notes & PPT	https://scikit-learn.org/stable/modules/generated/sklearn.linear_model.LogisticRegression.html	PPT(CIA)	
12	L12	1	Control Structures: Looping (for, while, do-while)	Use loops to handle repetitive tasks in a program with various loop structures.		Discussion/ Doubt Clearing session	Practical	https://www.geeksforgeeks.org/loops-in-java/	CO1		https://www.youtube.com/watch?v=FuJVLsZYkuE	Group Discussion	
13	L13	1	Arrays in Java: Introduction and Declaration	Learn how to declare and initialize arrays in Java.		Flipped Classroom	Practical	https://www.javatpoint.com/arrays-in-java	CO1	Student PPT	https://www.youtube.com/watch?v=u4kbPtiVVB8	PPT(CIA)	
14	L14	1	Arrays in Java: Manipulation and Multi-dimensional Arrays	Understand how to manipulate one-dimensional and multi-dimensional arrays in Java.	Demonstration	Flipped Classroom	Practical	https://www.geeksforgeeks.org/multidimensional-arrays-in-java/	CO1	Student PPT	https://www.youtube.com/watch?v=5WCkrDl7VCs	Flipped Classroom	
15	L15	1	Java Memory Management: Stack vs Heap, Garbage Collection	Understand Java's memory management system and the role of garbage collection.		Lecture Through PPT	Practical	https://www.geeksforgeeks.org/stack-vs-heap-in-java/	CO1	Notes & PPT	https://www.youtube.com/watch?v=gidJbK1gXmA&t=167s	PPT (CIA)	
16	L16	1	Recap of Unit-I and Practice	Revise and consolidate learning from Unit-I through practical examples and exercises.		Discussion/ Doubt Clearing session			CO1		https://www.youtube.com/watch?v=PNglugoo/UQ&list=RDCMUC2nvtxeY_rJLnlJKEg-J82g&index=17	Group Discussion	
17	L17	2	Creating a Class: Properties, Methods, and Constructors	Understand how to create and define a class with properties, methods, and constructors.	Live project	Lecture Through PPT		https://www.geeksforgeeks.org/creating-classes-in-java/	CO2	Notes	https://www.youtube.com/watch?v=neU3svz0_o	Flipped Classroom	
18	L18	2	Object Access Modifiers: public, private, protected, default	Learn the different access modifiers and their use in controlling the visibility of class members.	Job shadowing	Lecture Through PPT		https://www.javatpoint.com/access-modifiers-java	CO2	PPT & Notes	https://www.youtube.com/watch?v=neU3svz0_o	Mini Projects	
19	L19	2	The this Keyword: Reference to Current Object	Understand the use of the this keyword to refer to the current instance of a class.	Demonstration	Flipped Classroom	Brainstorming	https://www.geeksforgeeks.org/this-keyword-in-java/	CO2	Student PPT	https://www.youtube.com/watch?v=xbYgKoG4x2g&list=PL53BE265CE4A6C056	VIVA	

Dr. Rajeshkum HoD
(HOD - BCA)
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No.	Lec	Hrs	Topic	Objective		Teaching Method		Reference	CO	Aid	YouTube Link	Assessment
20	L20	2	Static Keyword: Static Variables, Methods, and Blocks	Grasp the concept of static members and their use in Java programs.		Discussion/ Doubt Clearing session		https://www.javatpoint.com/static-keyword-in-java	CO2		https://www.youtube.com/watch?v=Zxs-f4HsTDk&list=PL53BE265CE4A6C056&index=5	Group Disscusson
21	L21	2	Final Keyword: Final Variables, Methods, and Classes	Learn how to use the final keyword to define constant values, methods, and classes.	Demonstration	Lecture Through PPT	Brainstorming	https://www.geeksforgeeks.org/final-keyword-in-java	CO2	Notes & PPT	https://www.youtube.com/watch?v=tRG-OnnQ9g4&list=PL53BE265CE4A6C056&index=16	PPT(CIA)
22	L22	2	The String Class: Creating and Manipulating Strings	Learn how to create and manipulate strings using the String class and its methods.		Flipped Classroom		https://www.javatpoint.com/string-class-in-java	CO2	Student PPT	https://www.youtube.com/watch?v=tRG-OnnQ9g4&list=PL53BE265CE4A6C056&index=16	PPT(CIA)
23	L23	2	Introduction to Inheritance: Basic Concept and Types	Understand the concept of inheritance and how it enables code reuse and hierarchy.		Lecture Through PPT	Practical	https://www.geeksforgeeks.org/inheritance-in-java/	CO2	Notes & PPT	https://www.youtube.com/watch?v=hxpGzAb-pyc	PPT(CIA)
24	L24	2	The super Keyword and Constructor Chaining	Learn how to use the super keyword for accessing superclass members and constructor chaining.		Discussion/ Doubt Clearing session	Practical	https://www.javatpoint.com/super-keyword-in-java	CO2		https://www.youtube.com/watch?v=WLC_rGu1_z4	Group Disscusson
25	L25	2	Method Overriding: Polymorphism and @OverrideAnnotation	Learn how to override methods and achieve polymorphism in Java.		Lecture Through PPT	Practical	https://www.geeksforgeeks.org/method-overriding-in-java/	CO2	PPT	https://www.youtube.com/watch?v=WLC_rGu1_z4	PPT(CIA)
26	L26	2	Covariant Return Types and Abstract Classes	Understand covariant return types and the usage of abstract classes for incomplete functionality.		Lecture Through PPT	Practical	https://www.javatpoint.com/abstract-class-in-java	CO2	PPT	https://www.youtube.com/watch?v=JbtS0vE4BGs	PPT (CIA)
27	L27	2	Interfaces: Creation and Implementation	Learn how to define and implement interfaces in Java.	Demonstration	Lecture Through PPT	Practical	https://www.geeksforgeeks.org/interfaces-in-java/	CO2	Notes & PPT	https://www.youtube.com/watch?v=KTzXVnRlnw4&t=565s	PPT(CIA)
28	L28	2	Difference Between Abstract Classes and Interfaces	Grasp the key differences between abstract classes and interfaces in Java.		Discussion/ Doubt Clearing session		https://www.javatpoint.com/difference-between-abstract-class-and-interface-in-java	CO2		https://www.youtube.com/watch?v=HnVYF6VQryU&list=PL53BE265CE4A6C056&index=33	Group Disscusson
29	L29	2	Packages in Java: Creation and Importing Packages	Learn how to organize classes using packages and import them in Java programs.		Flipped Classroom		https://www.javatpoint.com/packages-in-java	CO2	Student PPT	https://www.youtube.com/watch?v=H0HjNuNvFVI&list=PL53BE265CE4A6C056&index=32	Mini Projects
30	L30	2	Polymorphism: Method Overloading	Understand method overloading and its role in achieving polymorphism.		Flipped Classroom		https://www.geeksforgeeks.org/method-overloading-in-java/	CO2	Notes & PPT	https://www.youtube.com/watch?v=KTzXVnRlnw4&t=565s	Mini Projects
31	L31	2	Dynamic Binding and Casting Objects	Learn about dynamic method dispatch and how to cast objects in Java.	Demonstration	Flipped Classroom	Practical	https://www.javatpoint.com/dynamic-method-dispatch-in-java	CO2	Notes & PPT	https://www.youtube.com/watch?v=HnVYF6VQryU&list=PL53BE265CE4A6C056&index=33	Mini Projects
32	L32	2	instanceof Operator and Generic Programming	Understand the instanceof operator and its role in type checking, along with generic programming.		Discussion/ Doubt Clearing session		https://www.geeksforgeeks.org/generics-in-java/	CO2		https://www.youtube.com/watch?v=H0HjNuNvFVI&list=PL53BE265CE4A6C056&index=32	Group Disscusson
33	L33	2	Recap of Unit-II and Practice	Revise key concepts from Unit-II and solve practice problems to reinforce learning.	Demonstration	Lecture Through PPT	Practical		CO2	PPT	https://www.youtube.com/watch?v=KTzXVnRlnw4&t=565s	Mini Projects
34	L34	3	Input/Output Basics: Streams in Java	Learn the basics of input and output in Java using streams.		Lecture Through PPT	Practical	https://www.javatpoint.com/java-io	CO3	Notes & PPT	https://www.youtube.com/watch?v=HnVYF6VQryU&list=PL53BE265CE4A6C056&index=33	Mini Projects
35	L35	3	Byte Streams: Reading and Writing Data	Grasp how to read and write data using byte streams in Java.	Student teaching	Lecture Through PPT	Practical	https://www.geeksforgeeks.org/byte-streams-in-java/	CO3	PPT	https://www.youtube.com/watch?v=H0HjNuNvFVI&list=PL53BE265CE4A6C056&index=32	Mini Projects
36	L36	3	Character Streams: Reading and Writing Data	Learn how to use character streams for reading and writing text data in Java.		Discussion/ Doubt Clearing session	Practical	https://www.javatpoint.com/character-streams-in-java	CO3		https://www.youtube.com/watch?v=KTzXVnRlnw4&t=565s	Group Discussion
37	L37	3	File I/O: FileReader and FileWriter	Understand how to use FileReader and FileWriter for file input/output operations.		Lecture Through PPT	Practical	https://www.geeksforgeeks.org/working-with-files-in-java/	CO3	Notes & PPT	https://www.youtube.com/watch?v=HnVYF6VQryU&list=PL53BE265CE4A6C056&index=33	Mini Projects
38	L38	3	File Operations: Closing Files Automatically	Learn how to properly close files using try-with-resources		Lecture Through PPT		https://www.geeksforgeeks.org/java-io-filewriter-close-method/	CO3	PPT	https://www.youtube.com/watch?v=H0HjNuNvFVI&list=PL53BE265CE4A6C056&index=32	VIVA and Presentation

Dr. Rajesh Kumar
(HOD- BCA)

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39	L39	3	Buffered Streams: Using BufferedReader and BufferedWriter	Understand how to enhance I/O performance using buffered streams.	Demonstration	Lecture Through PPT	Brainstorming	https://www.javatpoint.com/java-bufferedreader-class	CO3	PPT	https://www.youtube.com/watch?v=KTzXVnRinw4&t=565s	PPT(CIA)
40	L40	3	Serialization: Writing and Reading Object Data	Learn about serialization and how to save and load objects to/from a file.		Discussion/ Doubt Clearing session		https://www.geeksforgeeks.org/exception-handling-in-java/	CO3		https://www.youtube.com/watch?v=HnVYF6VQryU&list=PL53BE265CE4A6C056&index=33	Group Disscussion
41	L41	4	Exception Handling: Introduction to Exceptions	Understand the basics of exception handling in Java.	Student teaching	Lecture Through PPT	Practical	https://www.javatpoint.com/unchecked-exceptions-in-java	CO4	PPT	https://www.youtube.com/watch?v=H0HjNuNvFVI&list=PL53BE265CE4A6C056&index=32	PPT(CIA)
42	L42	4	Built-in Exceptions: Handling Common Exceptions (NullPointer, Arithmetic, etc.)	Learn how to handle common built-in exceptions in Java such as NullPointerException, ArithmeticException, etc		Lecture Through PPT	Practical	https://www.geeksforgeeks.org/user-defined-exceptions-in-java/	CO4	Notes & PPT	https://www.youtube.com/watch?v=KTzXVnRinw4&t=565s	PPT(CIA)
43	L43	4	User-defined Exceptions: Creating Custom Exceptions	Learn how to define and throw custom exceptions in Java.		Lecture Through PPT	Practical	https://www.javatpoint.com/multithreading-in-java	CO4	Notes & PPT	https://www.youtube.com/watch?v=HnVYF6VQryU&list=PL53BE265CE4A6C056&index=33	Mini Projects
44	L44	4	Using try, catch, throw, throws, and finally	Understand how to handle exceptions using the various control flow keywords.		Discussion/ Doubt Clearing session		https://www.geeksforgeeks.org/thread-lifecycle-in-java/	CO4		https://www.youtube.com/watch?v=H0HjNuNvFVI&list=PL53BE265CE4A6C056&index=32	Group Discussion
45	L45	4	Multithreading Basics: Introduction to Threads and Thread Class	Understand the fundamentals of multithreading and how to create and manage threads in Java.	Student teaching	Lecture Through PPT	Practical	https://www.javatpoint.com/synchronization-in-java	CO4	Notes & PPT	https://scholar.google.com/scholar?q=software+engineering	PPT(CIA)
46	L46	4	Thread Lifecycle and States	Learn about the different states in a thread's lifecycle and how threads transition between them.		Lecture Through PPT	Brainstorming	https://www.geeksforgeeks.org/thread-synchronization-in-java/	CO4	PPT	https://scholar.google.com/scholar?q=software+engineering	VIVA
47	L47	4	Creating and Running Threads: Extending ThreadClass and Implementing Runnable	Learn how to create and run threads by extending the Thread class or implementing the Runnable interface.		Lecture Through PPT	Practical	https://www.javatpoint.com/java-io-programs	CO4	PPT	https://scholar.google.com/scholar?q=software+engineering	PPT(CIA)
48	L48	4	Thread Synchronization: Using Synchronized Methods and Blocks	Understand the need for synchronization and how to implement it using synchronized methods/blocks.		Discussion/ Doubt Clearing session		https://www.geeksforgeeks.org/java-multithreading/	CO4	PPT	https://scholar.google.com/scholar?q=software+engineering	Group Discussion
49	L49	4	Synchronizing Critical Sections in Code	Learn how to prevent concurrency issues by synchronizing critical sections of code.	Demonstration	Lecture Through PPT		https://www.geeksforgeeks.org/java-online-quiz/	CO4	Notes & PPT	https://scholar.google.com/scholar?q=software+engineering	PPT(CIA)
50	L50	4	Thread Communication: Using wait(), notify(), and notifyAll()	Understand thread communication and synchronization techniques using wait(), notify(), and notifyAll().		Lecture Through PPT		https://www.geeksforgeeks.org/java-online-quiz/	CO4	PPT	https://scholar.google.com/scholar?q=software+engineering	Questions from Assignment
51	L51	4	Handling Thread Deadlock and Race Conditions	Learn how to avoid and manage thread deadlocks and race conditions in concurrent programs.	Student teaching	Flipped Classroom		https://www.geeksforgeeks.org/java-projects/	CO4	Student PPT	https://scholar.google.com/scholar?q=software+engineering	PPT(CIA)
52	L52	3	Recap of Unit-III and Practice	Revise and practice key concepts from Unit-III on file I/O and exception handling.		Discussion/ Doubt Clearing session			CO4		https://scholar.google.com/scholar?q=software+engineering	Group Discussion
53	L53	4	Recap of Unit-IV and Practice	Revise and practice key concepts from Unit-IV on exception handling and multithreading.	Mini projects	Lecture Through PPT			CO3	Notes & PPT	https://scholar.google.com/scholar?q=software+engineering	PPT(CIA)
54	L54	4	Case Study: Building a Multithreaded File Processor	Implement a practical multithreaded application involving file I/O operations.	Mini projects	Lecture Through PPT			CO4	PPT	https://scholar.google.com/scholar?q=software+engineering	PPT (CIA)
55	L55	4	Case Study: Implementing Custom Exceptions in an Application	Create a real-world application involving user-defined exceptions and their handling.	Mini projects	Lecture Through PPT	Practical		CO4	Notes & PPT	https://scholar.google.com/scholar?q=software+engineering	Flipped Classroom
56	L56	4	Advanced Practice: Combining OOP, I/O, and Exception Handling	Develop an advanced project combining OOP, file I/O, and exception handling concepts.	Mini projects	Discussion/ Doubt Clearing session					https://scholar.google.com/scholar?q=software+engineering	Group Discussion
57	L57	4	Advanced Practice: Combining OOP, Multithreading, and Exception Handling	Work on a project that combines OOP, multithreading, and exception handling.	Mini projects	Lecture Through PPT			CO4	PPT	https://scholar.google.com/scholar?q=software+engineering	Group Discussion

Sarwat

HoD

Dr. Rofesh Kumar
(HOD- BCA) BCA-TIAS

58	L58	4	Final Recap of Key Concepts. Review of OOP, I/O, Exception Handling, and Multithreading	Revise all topics, with a focus on reinforcing understanding and addressing any doubts.	Mini projects	Lecture Through PPT			CO4	PPT	https://scholar.google.com/scholar?q=softw are+engineering	PPT(CIA)	
59	L59	4	Practice Exam: Mock Test on All Units	Take a comprehensive mock test covering all topics studied.		Lecture Through PPT			CO1 ,CO2, CO3, CO4	PPT	https://scholar.google.com/scholar?q=softw are+engineering	PPT(CIA)	
60	L60	4	Final Review and Doubt Clearing Session	Address any remaining doubts, review weak areas, and prepare for final exam.		Discussion/ Doubt Clearing session			CO1 ,CO2, CO3, CO4		https://scholar.google.com/scholar?q=softw are+engineering	Group Discussion	

Note :	1 Credit (Theory) =15 Hrs. in a Semester; 1 Credit (Practical) =30 Hrs. in a Semester.

Suggested Readings :(Latest Edition)

TEXTBOOKS							JOURNALS					
TB1.	Herbert Schildt, "Java 2 -The Complete Reference" – Tata McGraw Hill Education Private Limited, 2010						1.Journal of Object Technology (JOT)					
TB2.	TrilochanTarai, "Java Core Concepts and Applications", I.K. International Publishing house pvt. Ltd., 2015						2.ACM Transactions on Software Engineering and Methodolog					
							3.International Journal of Advanced Computer Science and App					
							4.Journal of Computer Science and Information Technology (J					
REFERENCE BOOKS:							5.International Journal of Software Engineering and Applicati					
RB1.	E Balaguruswamy,"Programming with Java A Primer", McGraw Hill Education Private Limited, 5th Edition,2015.											
RB2.	Cay S. Horstmann, "Core Java Volume 1 – Fundamentals", 10th edition, Pearson, 2017											
RB3.	Ken Arnold, Davis Holmes, James Gosling, Prakash Goteti, "The Java Programming Language", 3rd edition, Pearson, 2008.											

Name of Faculty : ~~Mr. Sukant Vats~~ Mr.Shubhnom Rawat

Head of Department : Dr. Rajesh Kumar
HoD
BCA-TIAS

Date :