DEPARTMENT OF COMPUTER SCIENCE & ALLIED

PROGRAM: COMPUTER SCIENCE & ENGINEERING

Lesson Plan

Session: Jan –Jul, 2026

Semester: 4th

Name:_____

University Roll Number: _____

BUDDHA INSTITUTE OF TECHNOLOGY

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TIME TABLE

BUDDHA INSTITUTE OF TECHNOLOGY, GIDA, GORAKHPUR

Department of Computer Science & Allied

CLASS TIME TABLE (2025-26 EVEN SEMESTER)

PROGRAM: COMPUTER SCIENCE & ENGINEERING (CSE)	w.e.f.: 29 JANUARY 2026	SEMESTER: 4-A3	ROOM NO: 316(Block-3)

Day / Time	9:10-10:05 AM	10:05-11:00 AM	SHORT BREAK (15 Min.)	11:15-12:10 PM	12:10-01:05PM	LUNCH BREAK (45 Min.)	01:45-2:40 PM	2:40-3:35 PM	3:35-4:30 PM
MON	OS Lab-SV-A31-304 / CSW Lab-PD-A32-305			TAFL (BK)	OOPJ (PC)		OS (SV)	Maths-IV (AKP)	PP (SKS)
TUES	TAFL (BK)	OS (SV)		OOPJ (PC)	TC (ASS)		Maths-IV (AKP)	OOPJ Lab-PC-A31-304 / OS Lab-SV-A32-305	
WED	OS (SV)	TAFL (BK)		Maths-IV (AKP)	PP (SKS)		OOPJ (PC)	CSW Lab-PD-A31-310 / PP Lab-AKS-A32-311	
THU	OS (SV)	TAFL (BK)		CSEP (BK)	PP (SKS)		Maths-IV (AKP)	PP Lab-AKS-A31-310 / Techedge Lab-ANC-A32-311	
FRI	Techedge Lab-ANC-A31-310 / OOPJ Lab-PC-A32-311			PP (SKS)	OOPJ (PC)		TC (ASS)	Maths-IV (AKP)	LIBRARY
SAT	Maths-IV (AKP)	TAFL (BK)		OS (SV)	OOPJ (PC)				

EVALUATION SCHEME

Subject Code	Subject	Sessional Marks	Exam Marks	Total Marks
THEORY SUBJECTS				
BCS-401	**Operating System**	30	70	100
BCS-402	**Theory of Automata and Formal Language**	30	70	100
BCS-403	**Object Oriented Programming with Java**	30	70	100
BCC-402	**Python Programming**	30	70	100
BAS-401	**Technical Communication**	30	70	100
BAS-402	**Mathematics**	30	70	100
PRACTICAL/DESIGN/DRAWING				
BCS-451	**Operating System Lab**	50	50	100
BCS-452	**Object Oriented Programming with Java Lab**	50	50	100
BCS-453	**Cyber Security Workshop**	50	50	100

BUDDHA INSTITUTE OF TECHNOLOGY

DEPARTMENT OF COMPUTER SCIENCE &ALLIED
PROGRAM: COMPUTER SCIENCE & ENGINEERING
ACADEMIC YEAR 2025-26 (EVEN Semester)

LESSON PLAN

Semester: IV	Section: A3	Course Code: BCS 401	Contact Hours /week**: 5**
Course name: **Operating System**			# of credits:4
Teacher's name:**Ms. Chaynika Srivastava**			Designation:Asst. Professor
Sessional Marks:30	End Semester Examination Marks: 70		University Exam Hours: 3

Prerequisites if any:			
Course Code	**Course Name**	**Topic/s**	**Semester**
KCS101/KCS 201	Principal for Problem Solving	Basic Understanding of components of a computer system & basics of C-Programming & Algorithms	1st or 2nd

Content delivery by using	Chalk and Board, PPT and Video Lectures

COURSE SYLLABUS (as prescribed by University / Board)

Module No	UNIT Contents	Hours	COs
1	**Introduction:** Operating system and functions, Classification of Operating systems- Batch, Interactive, Timesharing, Real Time System, Multiprocessor Systems, Multiuser Systems, Multiprocess Systems, Multithreaded Systems, Operating System Structure- Layered structure, System Components, Operating System services, Reentrant Kernels, Monolithic and Microkernel Systems.	**10**	**CO1**
2	**Concurrent Processes:** Process Concept, Principle of Concurrency, Producer / Consumer Problem, Mutual Exclusion, Critical Section Problem, Dekker's solution, Peterson's solution, Semaphores, Test and Set operation; Classical Problem in Concurrency- Dining Philosopher Problem, Sleeping Barber Problem; Inter Process Communication models and Schemes, Process generation.	**13**	**CO2**
3	**CPU Scheduling:** Scheduling Concepts, Performance Criteria, Process States, Process Transition Diagram, Schedulers, Process Control Block (PCB), Process address space, Process identification information, Threads and their management, Scheduling Algorithms, Multiprocessor Scheduling. Deadlock: System model, Deadlock characterization, Prevention, Avoidance and detection, Recovery from deadlock.	**13**	**CO3**
4	**Memory Management:** Basicbare machine,Resident monitor, Multiprogramming with fixed partitions, Multiprogramming with variable partitions, Protection schemes, Paging, Segmentation, Paged segmentation, Virtual memory concepts, Demand paging, Performance of demand paging, Page replacement algorithms, Thrashing, Cache memory organization, Locality of reference.	**12**	**CO4**
5	**I/O Management and Disk Scheduling:** I/O devices, and I/O subsystems, I/O buffering, Disk storage and disk scheduling, RAID. File System: File concept, File organization and access mechanism, File directories, and File sharing, File system implementation issues, File system protection and security.	**12**	**CO5**

COURSE OUTCOMES: At the end of the Course, the Student will be able to:

CO1	Explain OS types, structures, services, and kernel architectures effectively.	L2
CO2	Demonstrate comprehension of concurrent processes, principles, and problem-solving techniques.	L2
CO3	Apply CPU scheduling and deadlock concepts effectively to solve related problems.	L3
CO4	Interpret memory management, paging, segmentation, and cache memory concepts.	L2
CO5	Apply I/O management, disk scheduling, and file system concepts effectively to solve related problems.	L3

Mapping of CO v/s PO:

	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	2	2	1	2	1	1	-	-	-	-	-	1
CO2	2	2	1	2	1	1	-	-	-	-	-	2
CO3	2	2	1	2	1	1	-	-	-	-	-	1
CO4	2	2	1	2	1	1	-	-	-	-	-	2
CO5	2	2	1	2	1	1	-	-	-	-	-	2
Average	2	2	1	2	1	1	-	-	-	-	-	1.6

	PSO1	**PSO2**	**PSO3**
CO1	1	1	1
CO2	1	1	1
CO3	1	1	1
CO4	1	1	1
CO5	1	1	1
Average	1	1	1

Correlation levels: 1-Slight (Low) 2-Moderate (Medium) 3-Substantial (High)

Topics to be covered beyond syllabus	

LESSON PLAN

Lecture #	**Module#**	**Topics**	***RBT Levels**	**Course Outcome Mapping**	**Planned Date**	**Actual Date**	**No. Of Students**	**Faculty Sign**	**Remarks**
1		Introduction: Operating system and functions	L2						

2		Classification of Operating systems- Batch,Interactive, Time sharing	L2						
3		Real Time System, Multiprocessor Systems, Multiuser Systems,	L2						
4		Multiprocess Systems, Multithreaded Systems	L2						
5		Operating System Structure- Layered structure	L2						
6		**Tutorial-I**							
7		System Components	L2						
8		Operating System services	L2						
9		Reentrant Kernels, Monolithic and Microkernel Systems	L2						
10		**Tutorial-II**							
11		Concurrent Processes: Process Concept, Principle of Concurrency	L2						
12		Producer / Consumer Problem	L2						
13		Mutual Exclusion	L2						
14		Critical Section Problem	L2						
15		Dekker's solution, Peterson's solution	L2						
16		Semaphores	L2						
17		Test and Set operation	L2						
18		**Tutorial-III**							
19		Classical Problem in Concurrency- Dining Philosopher Problem	L2						
20		SleepingBarber Problem	L2						
21		Inter Process Communication models and Schemes	L2						
22		Process generation	L2						
23		**Tutorial-IV**							

24		CPU Scheduling: Scheduling Concepts, Performance Criteria	L2						
25		Process States, Process TransitionDiagram	L2						
26		Schedulers, Process Control Block (PCB),	L2						
27		Process address space	L2						
28		Process identificationinformation	L2						
29		**Tutorial-V**							
30		Threads and their management, Scheduling Algorithms	L2						
31		Multiprocessor Scheduling	L2						
32		Deadlock: System model, Deadlock characterization	L2						
33		Prevention, Avoidance and detection	L2						
34		Recovery from deadlock	L3						
35		**Revision Class**							
36		**Tutorial-VI**							
37		Memory Management: Basic bare machine, Resident monitor	L2						
38		Multiprogramming with fixed partitions, Multiprogramming with variable partitions	L2						
39		Protection schemes, Paging	L2						
40		**Revision Class**	L2						
41		**Tutorial-VII**							
42		Segmentation,Paged segmentation	L2						
43		Virtual memory concepts, Demand paging	L2						
44		Performance of demand paging	L2						
45		Page replacement algorithms, Thrashing	L2						

46		Cache memory organization, Locality of reference	L2						
47		**Revision Class**							
48		**Tutorial-VIII**							
49		I/O Management and Disk Scheduling: I/O devices, and I/O subsystems, I/O buffering	L2						
50		Diskstorage and disk scheduling	L2						
51		RAID	L2						
52		File System: File concept	L2						
53		**Revision Class**	L2						
54		**Tutorial-IX**							
55		File organization and accessmechanism	L2						
56		File directories	L2						
57		File sharing,	L2						
58		File system implementation issues	L3						
59		File systemprotection and security.	L2						
60		**Tutorial-X**							

Class Test	Syllabus
CT-01	
CT-02	
PRE-AKTU	**Full Syllabus**

***Revised Bloom's Taxonomy (RBT) Levels:**
L1 – Remembering; L2 – Understanding; L3 – Applying; L4 – Analysing; L5 – Evaluating; L6 - Creating

References:

Text books:(As per University / Board syllabus)
T1. Sibsankar Halder and Alex A Aravind, "Operating Systems", Pearson Education
T2. Silberschatz, Galvin and Gagne, "Operating Systems Concepts", Wiley.

Program Head

BUDDHA INSTITUTE OF TECHNOLOGY

DEPARTMENT OF COMPUTER SCIENCE &ALLIED
PROGRAM: COMPUTER SCIENCE & ENGINEERING
ACADEMIC YEAR 2025-26 (EVEN Semester)

LESSON PLAN DETAILS

Semester: IV	Section: A3	Course Code: BCS 402	Contact Hours /week**: 6**
Course Name: Theory of Automata and Formal Languages			# of credits: 4
Faculty name: Mr. Shrawan Kumar Pandey			Designation: Assistant Professor
Sessional Marks: 30		End Semester Examination Marks:70	University Exam Hours: 3

Prerequisites if any:
Set Theory

Content delivery methods:	By Face to face delivery, Presentation, Tutorial etc.

COURSE SYLLABUS (as prescribed by University / Board)

Module No	UNIT Contents	Hours	COs
1	**Basic Concepts and Automata Theory:** Introduction to Theory of Computation- Automata, Computability and Complexity, Alphabet, Symbol, String, Formal Languages, Deterministic Finite Automaton (DFA)- Definition, Representation, Acceptability of a String and Language, Non Deterministic Finite Automaton (NFA), Equivalence of DFA and NFA, NFA with ε-Transition, Equivalence of NFA's with and without ε-Transition, Finite Automata with output- Moore Machine, Mealy Machine, Equivalence of Moore and Mealy Machine, Minimization of Finite Automata	**14**	**CO1**
2	**Regular Expressions and Languages:** Regular Expressions, Transition Graph, Kleen's Theorem, Finite Automata and Regular Expression- Arden's theorem, Algebraic Method Using Arden's Theorem, Regular and Non-Regular Languages- Closure properties of Regular Languages, Pigeonhole Principle, Pumping Lemma, Application of Pumping Lemma, Decidability- Decision properties, Finite Automata and Regular Languages	**12**	**CO2**
3	**Regular and Non-Regular Grammars:** Context Free Grammar(CFG)-Definition, Derivations, Languages, Derivation Trees and Ambiguity, Regular Grammars- Right Linear and Left Linear grammars, Conversion of FA into CFG and Regular grammar into FA, Simplification of CFG, Normal Forms- Chomsky Normal Form(CNF), Greibach Normal Form (GNF), Chomsky Hierarchy, Programming problems based on the properties of CFGs.	**13**	**CO3**
4	**Push Down Automata and Properties of Context Free Languages:** Nondeterministic Pushdown Automata (NPDA)- Definition, Moves, A Language Accepted by NPDA, Deterministic Pushdown Automata(DPDA) and Deterministic Context free Languages(DCFL), Pushdown Automata for Context Free Languages, Context Free grammars for Pushdown Automata, Two stack Pushdown Automata, Pumping Lemma for CFL, Closure properties of CFL, Decision Problems of CFL, Programming problems based on the properties of	**14**	**CO4**

	CFLs.		
5	**Turing Machines and Recursive Function Theory :** Basic Turing Machine Model, Representation of Turing Machines, Language Acceptability of Turing Machines, Techniques for Turing Machine Construction, Modifications of Turing Machine, Turing Machine as Computer of Integer Functions, Universal Turing machine, Linear Bounded Automata, Church's Thesis, Recursive and Recursively Enumerable language, Halting Problem, Post's Correspondance Problem, Introduction to Recursive Function Theory.	**17**	**CO5**

COURSE OUTCOMES: At the end of the Course, the Student will be able to:

CO1	Make use of knowledge of basic concepts of automata theory for solving the problems of NFA, DFA, Mealy and Moore machine.
CO2	Utilize concept of Arden's theorem in DFA.
CO3	Apply fundamental concepts of regular grammar and CFG for solving the problems of regular language and CFL.
CO4	Model PDA for context free languages.
CO5	Model Turing Machine for computational problem.

Mapping of CO v/s PO:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	2	-	2	-	-	-	1	1	1
CO2	3	3	2	2	-	2	-	-	-	1	1	1
CO3	3	3	2	2	-	2	-	-	-	1	1	1
CO4	3	3	2	2	-	2	-	-	-	1	1	1
CO5	3	3	2	2	-	2	-	-	-	1	1	1
Average	3	3	2	2	-	2	-	-	-	1	1	1

Mapping of CO v/s PSO:

	PSO1	PSO2	PSO3
CO1	2	-	-
CO2	2	-	-
CO3	2	-	-
CO4	2	-	-
CO5	2	-	-
Average	2	-	-

Correlation levels: 1-Slight (Low) 2-Moderate (Medium) 3-Substantial (High)

Topics to be covered beyond syllabus	NA

LESSON PLAN

Lecture	Module	Scheduled				Conducted			
		Topic	*RBT Levels	C O Mapping	Date	Topic	Date	No. Of Students	Faculty Sign
1	I	Introduction to Theory of Computation-Automata	L2	CO1					
2		Computability and Complexity,	L3	CO1					
3		Alphabet, Symbol, String	L2	CO1					
4		Formal Languages,	L3	CO1					
5		Deterministic Finite Automaton (DFA)-Definition, Representation	L3	CO1					
6		**Tutorial-1**	L3	CO1					
7		Acceptability of a String and Language, Non Deterministic Finite Automaton (NFA) , Equivalence of DFA and NFA,	L3	CO1					
8		NFA with ε-Transition, Equivalence of NFA's with and without ε-Transition	L3	CO1					
9		Finite Automata with output- Moore Machine, Mealy Machine,	L3	CO1					
10		Equivalence of Moore and Mealy Machine	L3	CO1					
11		Minimization of Finite Automata	L3	CO1					
12		**Tutorial-2**	L3	CO1					
13	II	Regular Expressions, Transition Graph	L3	CO2					
14		Kleen's Theorem,	L3	CO2					
15		Finite Automata and Regular Expression-Arden's theorem,	L3	CO2					

16		Finite Automata and Regular Languages	L3	CO2					
17		Algebraic Method Using Arden's Theorem,	L3	CO2					
18		**Tutorial-3**	L3	CO2					
19		Regular and Non-Regular Languages-	L2	CO2					
20		Closure properties of Regular Languages,	L3	CO2					
21		Pigeonhole Principle, Pumping Lemma.	L3	CO2					
22		Application of Pumping Lemma, Decidability-Decision properties,	L3	CO2					
23		Finite Automata and Regular Languages	L3	CO2					
24		**Tutorial-4**	L3	CO2					
25	III	Context Free Grammar(CFG)-Definition,	L3	CO3					
26		Derivations, Languages	L3	CO3					
27		Derivation Trees and Ambiguity	L3	CO3					
28		Regular Grammars-Right Linear and Left Linear grammars	L3	CO3					
29		Conversion of FA into CFG	L3	CO3					
30		**Tutorial-5**	L3	CO3					
31		Regular grammar into FA	L3	CO3					
32		Simplification of CFG, Normal Forms-Chomsky Normal Form(CNF)	L3	CO3					
33		Greibach Normal Form (GNF),	L3	CO3					
34		Chomsky Hierarchy	L3	CO3					
35		Programming problems based on the properties	L3	CO3					
36		**Tutorial 6**	L3	CO3					

37		Nondeterministic Pushdown Automata (NPDA)- Definition,	L3	CO4					
38		Moves, A Language Accepted by NPDA	L3	CO4					
39		Deterministic Pushdown Automata(DPDA)	L3	CO4					
40		Deterministic Context free Languages(DCFL)	L3	CO4					
41		Pushdown Automata for Context Free Languages,	L3	CO4					
42		**Revision Class 1**	L3	CO4					
43	I V	**Tutorial 7**	L3	CO4					
44		Context Free grammars for Pushdown Automata	L3	CO4					
45		Two stack Pushdown Automata	L3	CO4					
46		Pumping Lemma for CFL,	L3	CO4					
47		Closure properties of CFL, Decision Problems of CFL,	L3	CO4					
48		Programming problems based on the properties of CFLs.	L3	CO4					
49		**Revision Class 2**	L3	CO4					
50		**Tutorial-8**	L3	CO4					
51		Basic Turing Machine Model, Representation of Turing Machines	L3	CO5					
52		Language Acceptability of Turing Machines,	L3	CO5					
53	V	Techniques for Turing Machine Construction.	L3	CO5					
54		Modifications of Turing Machine, Turing Machine as Computer of Integer Functions	L3	CO5					
55		Universal Turing machine, Linear Bounded Automata	L3	CO5					

56		**Revision Class 3**	L2	CO5					
57		**Tutorial-9**	L2	CO5					
58		Church's Thesis	L2	CO5					
59		Recursive and Recursively Enumerable language	L3	CO5					
60		Halting Problem	L3	CO5					
61		Post's Correspondance Problem	L3	CO5					
62		Introduction to Recursive Function Theory	L2	CO5					
63		**Revision Class 4**	L3	CO5					
64		**Tutorial-10**	L3	CO5					
65		**Revision Class 5**							
66		**Revision Class 6**							
67		**Revision Class 7**							
68		**Revision Class 8**							
69		**Revision Class 9**							
70		**Revision Class 10**							

Class Test	**Syllabus**
CT-01	Class 1-Class 35
PRE-AKTU	Full Syllabus

***Revised Bloom's Taxonomy (RBT) Levels:**
L1 – Remembering; L2 – Understanding; L3 – Applying; L4 – Analysing; L5 – Evaluating; L6 - Creating

Text Books:
T1 K. L. P. Mishra and N. Chandrashekaran, " Theory of Computer Science: Automata, Languages and Computation ", PHI Publication.
T2. Peter Linz, "An Introduction to Formal Languages and Automata", Wordpress.

Program Head

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DEPARTMENT OF COMPUTER SCIENCE &ALLIED
PROGRAM: COMPUTER SCIENCE & ENGINEERING
ACADEMIC YEAR 2025-26 (EVEN Semester)

LESSON PLAN DETAILS

Semester: IV	Section: A3	Course Code: BCS403	Contact Hours /week**: 4**
Course Name:Object Oriented Programming with Java			# of credits:2
Facultyname: Mr. Amit Sharma			Designation: AssistantProfessor
Sessional Marks:30		End Semester Examination Marks:70	University Exam Hours: 3

Prerequisites if any:
Basics of Computers and Programming

Content delivery methods:	Marker and Board, PPT and Video Lectures

COURSE SYLLABUS (as prescribed by University / Board)

Module No	UNIT Contents	Hours	COs
1	**Introduction:** Why Java, History of Java, JVM, JRE, Java Environment, Java Source File Structure, and Compilation. Fundamental, **Programming Structures in Java**: Defining Classes in Java, Constructors, Methods, Access Specifies, Static Members, Final Members, Comments, Data types, Variables, Operators, Control Flow, Arrays & String. **Object Oriented Programming**: Class, Object, Inheritance Super Class, Sub Class, Overriding, Overloading, Encapsulation, Polymorphism, Abstraction, Interfaces, and Abstract Class. **Packages:** Defining Package, CLASSPATH Setting for Packages, Making JAR Files for Library Packages, Import and Static Import Naming Convention for Packages	**16**	**CO1**
2	**Exception Handling**: The Idea behind Exception, Exceptions & Errors, Types of Exception, Control Flow in Exceptions, JVM Reaction to Exceptions, Use of try, catch, finally, throw, throws in Exception Handling, In-built and User Defined Exceptions, Checked and Un-Checked Exceptions. Input /Output Basics: Byte Streams and Character Streams, Reading and Writing File in Java. Multithreading: Thread, Thread Life Cycle, Creating Threads, Thread Priorities, Synchronizing Threads, Inter-thread Communication.	**12**	**CO2**
3	**Java New Features**: Functional Interfaces, Lambda Expression, Method References, Stream API, Default Methods, Static Method, Base64 Encode and Decode, ForEach Method, Try-with resources, Type Annotations, Repeating Annotations, Java Module System, Diamond Syntax with 08 Inner Anonymous Class, Local Variable Type Inference, Switch Expressions, Yield Keyword, Text Blocks, Records, Sealed Classes	**11**	**CO3**
4	**Java Collections Framework**: Collection in Java, Collection Framework in Java, Hierarchy of Collection Framework, Iterator Interface, Collection Interface, List Interface, ArrayList, LinkedList, Vector, Stack, Queue Interface, Set Interface, HashSet, LinkedHashSet, SortedSet Interface, TreeSet, Map Interface, HashMap Class, LinkedHashMap Class, TreeMap Class, Hashtable Class, Sorting,	**10**	**CO4**

	Comparable Interface, Comparator Interface, Properties Class in Java.		
5	**Spring Framework:** Spring Core Basics-Spring Dependency Injection concepts, Spring Inversion of Control, AOP, Bean Scopes- Singleton, Prototype, Request, Session, Application, Web Socket, Auto wiring, Annotations, Life Cycle Call backs, Bean Configuration styles Spring Boot: Spring Boot Build Systems, Spring Boot Code Structure, Spring Boot Runners, Logger, BUILDING RESTFUL WEB SERVICES, Rest Controller, Request Mapping, Request Body, Path Variable, Request Parameter, GET, POST, PUT, DELETE APIs, Build Web Applications	**11**	**CO5**

COURSE OUTCOMES: At the end of the Course, the Student will be able to:

CO1	Understand the Programming structures in JAVA, Object Oriented Programming and Packages.
CO2	Implement exception handling, file handling, and multi-threading in Java
CO3	Apply new java features to build java programs.
CO4	Analyze java programs with Collection Framework
CO5	Understand web and RESTful Web Services with Spring Boot using Spring Framework concepts

Mapping of CO v/s PO:

	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	3	2	2	1	1	-	-	-	-	-	-	1
CO2	3	2	2	1	1	-	-	-	-	-	-	1
CO3	3	2	2	1	1	-	-	-	-	-	-	1
CO4	3	2	2	1	1	-	-	-	-	-	-	1
CO5	3	2	2	1	1	-	-	-	-	-	-	1
Average	3	2	2	1	1	-	-	-	-	-	-	1

Mapping of CO v/s PSO:

	PSO1	**PSO2**	**PSO3**
CO1	2	2	2
CO2	2	2	2
CO3	2	2	2
CO4	2	2	2
CO5	2	2	2
Average	2	2	2

Correlation levels: 1-Slight (Low) 2-Moderate (Medium) 3-Substantial (High)

Topics to be covered beyond syllabus	NA

LESSON PLAN

Lecture	Module	Scheduled				Conducted			
		Topic	***RBT Levels**	**C O Mapping**	**Date**	**Topic**	**Date**	**No. Of Students**	**Faculty Sign**
1	I	Introduction: Why Java, History of Java,	L2						
2		JVM, JRE, Java Environment	L2						
3		Source File Structure and Compilation. Fundamental,	L2						
4		Programming Structures in Java: Defining Classes in Java,	L2						
5		Constructors, User defined Methods	L2						
6		Access Specifies, Static Members, Final Members,	L2						
7		Comments, Data types, Variables	L2						
8		Operators, Control Flow, Arrays & String.	L2						
9		**Tutorial 1**	L2						
10		Class, Object, Inheritance Super Class, Sub Class	L2						
11		Method Overriding, Method Overloading,	L2						
12		Encapsulation, Polymorphism	L2						
13		Abstraction, Interfaces, and Abstract Class	L2						
14		Packages: Defining Package, CLASSPATH Setting for Packages, Making JAR Files for Library Packages,	L2						
15		import and Static Import Naming Convention for Packages	L2						

16		**Tutorial 2**							
17		Exception Handling: The Idea behind Exception, Exceptions & Errors,	L2						
18		Types of Exception, Control Flow in Exceptions,	L3						
19		JVM Reaction to Exceptions, Use of try, catch, finally,	L2						
20		throw, throws in Exception Handling,	L3						
21		In-built and User Defined Exceptions Checked and Un-Checked Exceptions.	L2						
22	II	**Tutorial 3**							
23		Input /Output Basics: Byte Streams and Character Streams,	L3						
24		Reading and Writing File in Java.	L3						
25		Multithreading: Thread, Thread Life Cycle	L3						
26		Creating Threads, Thread Priorities,	L3						
27		Synchronizing Threads, Inter-thread Communication.	L3						
28		**Tutorial 4**							
29		Java New Features: Functional Interfaces, Lambda Expression,	L2						
30		Method References, Stream API, Default Methods, Static Method,	L3						
31		Base64 Encode and Decode, For-Each Method,	L3						
32	III	Try-with resources, Type Annotations, Repeating Annotations,	L3						
33		Java Module System,	L2						
34		**Tutorial 5**							
35		Diamond Syntax with Inner Anonymous Class,	L2						
36		Local Variable Type Inference,	L3						
37		Switch Expressions, Records, Sealed Classes	L3						

38		Yield Keyword, TextBlocks,	L2						
39		**Tutorial 6**							
40	IV	Java Collections Framework: Collection in Java, Collection Framework in Java,	L2						
41		Hierarchy of Collection Framework, Iterator Interface,	L2						
42		Collection Interface, List Interface, ArrayList, LinkedList,	L4						
43		Vector, Stack, Queue Interface, Set Interface	L4						
44		**Tutorial 7**							
45		HashSet, LinkedHashSet, SortedSetInterface,TreeSet,	L4						
46		Map Interface, HashMap Class, LinkedHashMap Class,	L4						
47		TreeMap Class, Hashtable Class, Sorting,	L4						
48		Comparable Interface, Comparator Interface, Properties Class in Java	L4						
49		**Tutorial 8**							
50	V	Spring Core Basics-Spring Dependency Injection concepts	L2						
51		Spring Inversion of Control, AOP, Bean Scopes-Singleton	L2						
52		Prototype, Request, Session, Application, Web Socket,	L2						
53		Autowiring, Annotations, Life Cycle Call backs, Bean Configuration styles	L2						
54		**Tutorial 9**							
55		Spring Boot: Spring Boot Build Systems, Spring Boot Code Structure	L2						
56		Spring Boot Runners, Logger,	L2						

57		BUILDING RESTFUL WEB SERVICES, Rest Controller,	L2						
58		Request Mapping, Request Body, Path Variable, Request Parameter,	L2						
59		GET, POST, PUT, DELETE APIs, Build Web Applications	L2						
60		**Tutorial 10**							

Class Test	**Syllabus**
CT-01	Class 1-Class 23
PRE-AKTU	Full Syllabus

***Revised Bloom's Taxonomy (RBT) Levels:**
L1 – Remembering; L2 – Understanding; L3 – Applying; L4 – Analysing; L5 – Evaluating; L6 - Creating

References:

Text books:(As per University / Board syllabus)
T1. Herbert Schildt, "Java The complete reference", McGraw Hill Education.
T2. Craig Walls, "Spring Boot in Action", Manning Publication.

Program Head

BUDDHA INSTITUTE OF TECHNOLOGY

DEPARTMENT OF COMPUTER SCIENCE &ALLIED
PROGRAM: COMPUTER SCIENCE & ENGINEERING
ACADEMIC YEAR 2025-26 (EVEN Semester)

LESSON PLAN DETAILS

Semester: IV	Section: A3	Course Code: BCC402	Contact Hours /week**: 4**
Course Name:Python Programming			# of credits:2
Faculty name:Mr. Alok Kumar Srivastava			Designation: AssistantProfessor
Sessional Marks:30		End Semester Examination Marks:70	University Exam Hours: 3

Prerequisites if any:
Program

Content delivery methods:	Marker and Board, PPT and Video Lectures

COURSE SYLLABUS (as prescribed by University / Board)

Module No	UNIT Contents	Hours	COs
1	**Introduction to Python:** Python variables, Python basic Operators, Understanding python blocks. Python Data Types, Declaring and using Numeric data types: int, float etc.	**07**	**CO1**
2	**Python Program Flow Control Conditional blocks:** if, else and else if, Simple for loops in python, For loop using ranges, string, list and dictionaries. Use of while loops in python, Loop manipulation using pass, continue, break and else. Programming using Python conditional and loop blocks.	**09**	**CO2**
3	**Python Complex data types:** Using string data type and string operations, Defining list and list slicing, Use of Tuple data type. String, List and Dictionary, Manipulations Building blocks of python programs, string manipulation methods, List manipulation. Dictionary manipulation, Programming using string, list and dictionary in-built functions. Python Functions, Organizing python codes using functions.	**20**	**CO3**
4	**Python File Operations:** Reading files, Writing files in python, Understanding read functions, read(), readline(), readlines(). Understanding write functions, write() and writelines() Manipulating file pointer using seek Programming, using file operations	**12**	**CO4**
5	**Python packages:** Simple programs using the built-in functions of packages matplotlib, numpy, pandas etc. GUI Programming: Tkinter introduction, Tkinter and PythonProgramming, Tk Widgets, Tkinter examples. Python programming with IDE.	**12**	**CO5**

COURSE OUTCOMES: At the end of the Course, the Student will be able to:

CO1	Interpret the fundamental Python syntax and semantics and be fluent in the use of Python control flow statements.
CO2	Express proficiency in the handling of strings and functions
CO3	Determine the methods to create and manipulate Python programs by utilizing the data structures like lists, dictionaries, tuples and sets.

CO4	Identify the commonly used operations involving file systems and regular expressions.
CO5	Develop simple Python applications using built-in functions of standard libraries such as NumPy, Pandas, and Matplotlib, and design basic GUI-based programs using Tkinter and a Python IDE.

Mapping of CO v/s PO:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	2	2	-	-	-	-	-	-	-	2
CO2	2	2	2	2	-	-	-	-	-	-	-	2
CO3	2	2	2	2	-	-	-	-	-	-	-	2
CO4	2	2	2	2	-	-	-	-	-	-	-	2
CO5	2	2	2	2	-	-	-	-	-	-	-	2
Average	2	2	2	2	-	-	-	-	-	-	-	2

Mapping of CO v/s PSO:

	PSO1	PSO2	PSO3
CO1	2	2	1
CO2	2	2	1
CO3	2	2	1
CO4	2	2	1
CO5	2	2	1
Average	2	2	1

Correlation levels: 1-Slight (Low) 2-Moderate (Medium) 3-Substantial (High)

Topics to be covered beyond syllabus	NA

LESSON PLAN

Lecture	Module	Scheduled				Conducted			
		Topic	*RBT Levels	C O Mapping	Date	Topic	Date	No. Of Students	Faculty Sign
1	I	Introduction about COs & POs related to the course and Introduction to subject							
2		Python variables	L2						
3		Python basic Operators	L2						
4		Understanding python blocks	L2						
5		Elements of Python, Type Conversion	L2						
6		Python Data Types	L2						
7		Declaring and using Numeric data types: int, float etc	L2						
8	II	if, else and else if	L2						
9		Simple for loops in python	L2						
10		For loop using ranges	L2						
11		string, list and dictionaries	L2						
12		Use of while loops in python	L2						
13		Loop manipulation using pass	L2						
14		continue	L2						
15		break and else	L2						
16		Programming using Python conditional and loop blocks	L2						
17		String	L2						

18		String	L2						
19		String	L2						
20		Strings : Length of the string	L2						
21		Perform Concatenation and Repeat operations in it	L2						
22		Indexing and Slicing of Strings	L2						
23	III	List and Dictionary	L2						
24		Manipulations Building blocks of python programs	L2						
25		string manipulation methods.	L2						
26		List manipulation	L2						
27		Dictionary manipulation	L2						
28		Programming using string	L2						
29		list and dictionary in-built functions	L2						
30		Python Functions	L2						
31		Organizing python codes using functions	L2						
32	IV	Reading files	L2						
33		Writing files in python, Understanding read functions	L2						
34		read(), readline(), readlines()	L2						
35		Understanding write functions	L2						
36		write() and writelines() Manipulating file pointer using seek Programming	L2						
37	V	using file operations	L2						
38		Simple programs using the built-in functions of packages matplotlib	L2						

39		numpy, pandas etc	L2						
40		GUI Programming:	L2						
41		Tkinter introduction	L2						
42		Tkinter and PythonProgramming	L2						
43		Tk Widgets	L2						
44		Tkinter examples	L2						
45		Python programming with IDE	L2						

Class Test	**Syllabus**
CT-01	Class 1-Class 23
PRE-AKTU	Full Syllabus

***Revised Bloom's Taxonomy (RBT) Levels:**
L1 – Remembering; L2 – Understanding; L3 – Applying; L4 – Analysing; L5 – Evaluating; L6 - Creating

TextBooks:
T1. Ashok Namdev Kamthane, Amit Ashok Kamthane- Programming and Problem Solving with PYTHON, Mc Graw Hill, 2019.
T2. Guido van Rossum and Fred L. Drake Jr, ―An Introduction to Python – Revised and updated for Python 3.2, Network Theory Ltd., 2011.

Program Head

BUDDHA INSTITUTE OF TECHNOLOGY

DEPARTMENT OF COMPUTER SCIENCE &ALLIED
PROGRAM: COMPUTER SCIENCE & ENGINEERING
ACADEMIC YEAR 2025-26 (EVEN Semester)

LESSON PLAN

Semester: **I**	Section: A3	Course Code: **BAS401**	Contact Hours / week**: 2**
Course Name: **Technical Communication**			# of credits: **3**
Teacher's Name: **Mr. Ashutosh Srivastava**			Designation: **Assistant Professor**
Sessional Marks: **30**		End Semester Examination Marks:**70**	University Exam Hours: **3**

Prerequisites if any:
NA

Content delivery methods:	By Face to face delivery, Presentation, Tutorial etc.

COURSE SYLLABUS (as prescribed by University / Board)

Module No	UNIT Contents	Hours	COs
1	**Fundamentals of Technical Communication:** Technical Communication: Features; Distinction between General and Technical Communication; Language as a tool of Communication; Dimensions of Communication: Reading & comprehension; Technical writing: sentences; Paragraph; Technical style: Definition, types & Methods; The flow of Communication: Downward; upward, Lateral or Horizontal; Barriers to Communication.	**5**	**CO1**
2	**Forms of Technical Communication:** Technical Report: Definition & importance; Thesis/Project writing: structure & importance; synopsis writing: Methods; Technical research Paper writing: Methods & style; Seminar & Conference paper writing; Expert Technical Lecture: Theme clarity; Analysis & Findings; 7 Cs of effective business writing: concreteness, completeness, clarity, conciseness, courtesy, correctness, consideration, C.V./Resume writing; Technical Proposal: Types, Structure & Draft.	**6**	**CO2**
3	**Technical Presentation:** Strategies & Techniques Presentation: Forms; interpersonal Communication; Class room presentation; style; method; Individual conferencing: essentials: Public Speaking: method; Techniques: Clarity of substance; emotion; Humour; Modes of Presentation; Overcoming Stage Fear; Audience Analysis & retention of audience interest; Methods of Presentation: Interpersonal; Impersonal; Audience Participation: Quizzes & Interjections.	**7**	**CO3**
4	**Technical Communication Skills:** Interview skills; Group Discussion: Objective & Method; Seminar/Conferences Presentation skills: Focus; Content; Style; Argumentation skills: Devices: Analysis; Cohesion & Emphasis; Critical thinking; Nuances: Exposition narration & Description; effective business communication competence: Grammatical; Discourse competence: combination of expression & conclusion; Socio-linguistic competence: Strategic competence: Solution of communication problems with verbal and non verbal means.	**8**	**CO4**

5	**Dimensions of Oral Communication & Voice Dynamics:** Code and Content; Stimulus & Response; Encoding process; Decoding process; Pronunciation Etiquette; Syllables; Vowel sounds; Consonant sounds; Tone: Rising tone; Falling Tone; Flow in Speaking; Speaking with a purpose; Speech & personality; Professional Personality Attributes: Empathy; Considerateness; Leadership; Competence.	**4**	**CO5**

COURSE OUTCOMES: At the end of the Course, the student will be able to:

CO1	Understand the nature and objective of Technical Communication relevant for the work place as Engineers.
CO2	Utilize the technical writing for the purposes of Technical Communication and its exposure in various dimensions.
CO3	Imbibe inputs by presentation skills to enhance confidence in face of diverse audience.
CO4	Create a vast know-how of the application of the learning to promote their technical competence.
CO5	Evaluate their efficacy as fluent & efficient communicators by learning the voice-dynamics.

Mapping of CO v/s PO:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	-	-	-	-	-	-	-	-	-	-	-
CO2	-	-	-	-	-	-	-	-	-	-	-	-
CO3	-	-	-	-	-	-	-	-	-	-	-	-
CO4	-	-	-	-	-	-	-	-	-	-	-	-
CO5	-	-	-	-	-	-	-	-	-	-	-	-
Average	-	-	-	-	-	-	-	-	-	-	-	-

	PSO1	PSO2	PSO3
CO1	-	-	-
CO2	-	-	-
CO3	-	-	-
CO4	-	-	-
CO5	-	-	-
Average	-	-	-

Correlation levels: 1-Slight (Low) 2-Moderate (Medium) 3-Substantial (High)

Gap in the syllabus	NA

Topics to be covered beyond syllabus	NA

LESSON PLAN

Lecture	Module	Scheduled				Conducted			
		Topic	*RBT Levels	C O Mapping	Date	Topic	Date	No. Of Students	Faculty Sign
1	I	**Technical Communication: Features; Distinction between General and Technical Communication; Language as a tool of Communication**	L2	CO1					
2		**Dimensions of Communication; Reading & Comprehension**	L2						
3		**Technical writing: Sentences; Paragraph; Technical style: Definition, Types & Methods**	L2						
4		**The Flow of Communication: Downward; Upward, Lateral or Horizontal**	L2						
5		**Barriers to Communication**	L2						
6	II	**Technical Report: Definition & importance; Thesis/Project Writing: Structure & Importance**	L2	CO2					
7		**Synopsis Writing: Methods; Technical Research Paper**	L2						
8		**Seminar & Conference Paper Writing**	L2						
9		**Key-Note Speech: Introduction & Summarization**	L2						
10		**Expert Technical Lecture: Theme Clarity; Analysis & Findings**	L2						
11		**7 Cs of Effective Business Writing: Concreteness, Completeness, Clarity, Conciseness, Courtesy, Correctness, Consideration.**	L2						
12	III	**Presentation: Forms; Interpersonal Communication; Class Room Presentation; Style; Method**	L2	CO3					
13		**Individual conferencing: Essentials**	L2						
14		**Public Speaking: Method**	L2						
15		**Techniques: Clarity of**	L2						
16		**Modes of Presentation;**							

		Overcoming Stage Fear: Confident Speaking							
17		**Audience Analysis & Retention of Audience Interest; Methods of Presentation: Interpersonal**	L2						
18		**Methods of Presentation: Impersonal; Audience Participation: Quizzes & Interjections.**	L2						
19	**I V**	**Interview Skills**	L2	CO4					
20		**Group Discussion: Objective & Method**	L2						
21		**Seminar/Conferences Presentation Skills: Focus; Content; Style**	L2						
22		**Argumentation skills: Devices: Analysis**	L2						
23		**Cohesion & Emphasis; Critical Thinking; Nuances: Exposition narration & Description**	L2						
24		**Discourse Competence: combination of expression & conclusion; Socio-linguistic Competence**	L2						
25		**Strategic Competence: Solution of communication problems with verbal and non verbal means**	L2						
26		**Kinesics: Definitions; Importance; Features of Body Language.**	L2						
27	V	**Voice Modulation: Quality, Pitch**	L2	CO5					
28		**Rhythm; intonation; Pronunciation; Articulation**	L2						
29		**Stress & Accent**	L2						
30		**Linguistic Features Of Voice Control: Vowel & Consonant Sounds.**	L2						

Class Test	**Syllabus**
CT – 01	**Class 1 – Class 7**
CT – 02	**Class 8 – Class 18**
PRE – AKTU	**Full Syllabus**

***Revised Bloom's Taxonomy (RBT) Levels:**

L1 – Remembering; L2 – Understanding; L3 – Applying; L4 – Analysing; L5 – Evaluating; L6 - Creating

Literature

Text Books:

T1) Technical Communication: Principles and Practices by Meenakshi Raman & Sangeeta Sharma, Oxford Univ. Press, 2007, New Delhi.

T2) Personality Development and Soft Skills by Barun K. Mitra, OUP, 2012, New Delhi.

T3) Spoken English- A Manual of Speech and Phonetics by R.K.Bansal & J.B.Harrison, Orient Blackswan, 2013, New Delhi.

T4) Business Correspondence and Report Writing by Prof. R.C. Sharma & Krishna Mohan, Tata McGraw Hill & Co. Ltd., 2001, New Delhi.

Reference Books:

R1) Practical Communication: Process and Practice by L.U.B. Pandey; A.I.T.B.S. Publications India Ltd.; Krishan Nagar, 2014, Delhi.

R2) Modern Technical Writing by Sherman, Theodore A (et.al); Apprentice Hall; New Jersey; U.S.

R3) A Text Book of Scientific and Technical Writing by S.D. Sharma; Vikas Publication, Delhi.

R4) Skills for Effective Business Communication by Michael Murphy, Harward University, U.S.

R5) Business Communication for Managers by Payal Mehra, Pearson Publication, Delhi

Program Head

BUDDHA INSTITUTE OF TECHNOLOGY

DEPARTMENT OF COMPUTER SCIENCE &ALLIED
PROGRAM: COMPUTER SCIENCE & ENGINEERING
ACADEMIC YEAR 2025-26 (EVEN Semester)

LESSON PLAN

Semester: **IV**	Section: **A3**	Course Code: **BAS403**	Contact Hours /week**: 5+1**
Course name: **Mathematics-IV**			# of credits:**4**
Teacher's name: **Dr. Arun Kumar Pandey**			Designation: **Associate Professor**
Sessional Marks: **30**		End Semester Examination Marks: **70**	University Exam Hours: **3**

Prerequisites if any: Knowledge of Mathematics I and II of B. Tech or equivalent			
Code No	Course Name	Description	Semester
BAS103/BAS203	Engg. Mathematics	Differential Equation, Laplace Transform etc	I & II

Content delivery methods:	Chalk & Board, Video, Book

COURSE SYLLABUS (as prescribed by University / Board)

Module No	UNIT Contents	Hours	COs
1	**Partial Differential Equations** : Origin of Partial Differential Equations, Linear and Non-Linear Partial Differential Equations of first order, Lagrange's Equations method to solve Linear Partial Differential Equations, Charpit's method to solve Non-Linear Partial Differential Equations, Solution of Linear Partial Differential Equation of Higher order with constant coefficients, Equations reducible to linear partial differential equations with constant coefficients.	**15**	**CO1**
2	**Applications of Partial Differential Equations and Fourier Transform**: Method of separation of variables, Solution of one dimensional heat equation, wave equation, Two dimensional heat equation (only Laplace Equation) and their application, Complex Fourier transform, Fourier sine transform, Fourier cosine transform, Inverse transform, convolution theorem, Application of Fourier	**16**	**CO2**

	Transform to solve partial differential equation		
3	**Statistical Techniques I**: Overview of Measures of central tendency, Moments, Skewness, Kurtosis, Curve Fitting, Method of least squares, Fitting of straight lines, Fitting of second degree parabola, Exponential curves, Correlation and Rank correlation, Regression Analysis: Regression lines of y on x and x on y.	**15**	**CO3**
4	**Statistical Techniques II**: Overview of Probability Random variables (Discrete and Continuous Random variable) Probability mass function and Probability density function, Expectation and variance, Discrete and Continuous Probability distribution: Binomial, Poission and Normal distributions.	**12**	**CO4**
5	**Statistical Techniques III**: Introduction of Sampling Theory, Hypothesis, Null hypothesis, Alternative hypothesis, Testing a Hypothesis, Level of significance, Confidence limits, Test of significance of difference of means, t-test, Z-test and Chi-square test, Statistical Quality Control (SQC) , Control Charts, Control Charts for variables (X and R Charts), Control Charts for Variables (p, np and C charts).	**12**	**CO5**

COURSE OUTCOMES: At the end of the Course, the Student will be able to:

CO1	Apply the basic concept of partial differential equation to solve mathematical problems.
CO2	Use the concept of partial differential equations and Fourier transform to solve engineering problems.
CO3	Apply the basic concept of statistical techniques to solve statistical problems.
CO4	Use the concept of probability and probability distributions functions to solve engineering problems.
CO5	Apply the basic concept of hypothesis testing and statistical quality control technique for statistical problems

Mapping of CO v/s PO:

	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
BAS403.1	**2**	**2**	**-**	**-**	-	-	**-**	**-**	**-**	**-**	**-**	**-**
BAS403.2	**2**	**2**	**-**	**-**	-	-	**-**	**-**	**-**	**-**	**-**	**-**
BAS403.3	**2**	**2**	**-**	**-**	-	-	**-**	**-**	**-**	**-**	**-**	**-**
BAS403.4	**2**	**2**	**-**	**-**	-	-	**-**	**-**	**-**	**-**	**-**	**-**
BAS403.5	**2**	**2**	**-**	**-**	-	-	**-**	**-**	**-**	**-**	**-**	**-**

	PSO1	PSO2
BAS403.1	**2**	**1**
BAS403.2	**2**	**1**
BAS403.3	**1**	**1**
BAS403.4	**1**	**1**
BAS403.5	**2**	**1**

Correlation levels: 1-Slight (Low) 2-Moderate (Medium) 3-Substantial (High)

Gap in the syllabus	NA

Topics to be covered beyond syllabus	NA

LESSON PLAN

Lecture	Module	Scheduled				Conducted			
		Topic	*RBT Levels	C O Mapping	Date	Topic	Date	No. Of Students	Faculty Sign
1.	I	Origin of PDE	L3	CO 1					
2.		Problems	L3						
3.		Linear PDE of first order	L3						
4.		Problems	L3						
5.		Problems	L3						
6.		Non-linear PDE of First order	L3						
7.		Lagrange's equations	L3						
8.		Charpit's method	L3						
9.		Problems	L3						

10.		**Tutorial-1**	L3						
11.		Solution of Linear Partial Differential equation of Higher order with constant coefficients	L3						
12.		Problems	L3						
13.		Equations reducible to linear partial differential equations with constant coefficients	L3						
14.		Problems	L3						
15.		**Tutorial-2**	L3						
16.	**II**	Classification of Second Order PDE	L3	**CO 2**					
17.		Method of separation of variables	L3						
18.		Problems	L3						
19.		Solution of One Dimensional Wave equation	L3						
20.		Problems Solution of One Dimensional heat equation	L3						
21.		Problems	L3						
22.		Introduction of two dimensional heat equation	L3						
23.		Solution of Laplace equation	L3						
24.		**Tutorial-3**	L3						

25.		Solution of Laplace equation and their application	L3						
26.		Problems	L3						
27.		Complex Fourier transform,	L3						
28.		Fourier sine transform, Fourier cosine transform	L3						
29.		Problems	L3						
30.		Inverse transform & convolution theorem	L3						
31.		Application of Fourier Transform to solve partial differential equation	L3						
32.		Problems	L3						
33.		**Tutorial-4**	L3						
34.	**III**	Overview of Measures of central tendency	L3	**CO 3**					
35.		Problems	L3						
36.		Moments & their types	L3						
37.		Problems	L3						
38.		Skewness, Kurtosis	L3						
39.		Problems	L3						
40.		Method of least squares	L3						
41.		Curve Fitting	L3						
42.		Fitting of straight lines Problems	L3						
43.		Fitting of second degree parabola Problems	L3						

44.		Fitting of Exponential curves	L3						
45.		**Tutorial-5**	L3						
46.		Correlation and Rank correlation,	L3						
47.		Problems	L3						
48.		Regression Analysis: Regression lines of y on x	L3						
49.		Problems	L3						
50.		**Tutorial-6**	L3						
51.	**IV**	Overview of Probability Random variables (Discrete and continuous Random variable)	L3	**CO 4**					
52.		Problems	L3						
53.		Probability mass function	L3						
54.		Probability density function	L3						
55.		Problems	L3						
56.		Expectation and variance	L3						
57.		Problems	L3						
58.		**Tutorial-7**	L3						
59.		Discrete and continuous Probability distribution	L3						

60.		Binomial distributions	L3						
61.		Problems	L3						
62.		Poisson distributions	L3						
63.		Problems	L3						
64.		Normal distributions	L3						
65.		Problems	L3						
66.		**Tutorial-8**	L3						
67.		Introduction, Sampling theory (Small and large)	L3						
68.		Hypothesis (Null & Alternate)	L3						
69.		T-test, Degree of freedom	L3						
70.		Level of significance, Confidence limits	L3						
71.		Problems	L3						
72.		Z-Test	L3						
73.		Chi-square test & Problems	L3						
74.	**V**	Problems	L3	**CO 5**					
75.		**Tutorial-9**	L3						
76.		Statistical Quality Control (SQC)	L3						
77.		Control Charts, Control Charts for Variables (X and R charts)	L3						
78.		Problems	L3						

79.		Control Charts for Variables (p, np and C charts)	L3						
80.		**Tutorial-10**	L3						

Class Test	**Syllabus**
CT-01	**Class 1-Class 24**
CT-02	**Class 25-Class 50**
PRE-AKTU	**Full Syllabus**

*Revised Bloom's Taxonomy (RBT) Levels:

L1 – Remembering; L2 – Understanding; L3 – Applying; L4 – Analysing; L5 – Evaluating; L6 - Creating

Text Books:

T1. H.K. Das , Introduction to engineering mathematics Volume-IV, S.Chand, First edition 2019

T2. N.P.Bali, A textbook of Engineering mathematics-IV, Univ. Science Press, 10th Edition 2020

Reference Books:

R1. B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 35th Edition, 2000

R2. R.K. Jain and S.R.K. Iyenger: Advance Engineering Mathematics; Narosa Publishing House, New Delhi.

R3. J.N. Kapur: Mathematical Statistics; S. Chand & Sons Company Limited, New Delhi

Program Head