Sunbeam
College for Women
Autonomous Post Graduate College
Accredited 'A' Grade by NAAC
BHAGWANPUR, VARANASI-221005 (U.P.)

B.C.A. III Sem.

ACADEMIC PLANNER

2025-26

B C A
LECTURE
PLAN
SEMESTER – 3
2025-26

BCA-24-301: Computer Organization and Architecture

Course Outcome:

CO1: Understand the architecture and organization of a computer system, including the CPU, memory, and I/O devices.
CO2: Comprehend the basic principles of digital electronics, including logic gates, flip-flops, and combinational and sequential circuits.
CO3: Analyze and design digital circuits using Boolean algebra and logic gate representations.
CO4: Explain the functioning of various computer components, such as registers, ALU, control unit, and memory hierarchy.

DETAILED SYLLABUS		
Unit	**Topic**	**Proposed Lecture**
I	Logic gates and circuit Gates (OR, AND, NOR, NAND, XOR & XNOR); De Morgan's laws; Boolean laws, Circuit designing techniques (SOP, POS, K-Map). Multiplexors; Decoder; Encoder; Adder and Subtractor. Combinational Building Blocks	**20**
II	Sequential Building Blocks: Flip-Flop (RS, D, JK, Master-slave & T flip-flops); Registers & Shift registers; Counters; Synchronous and Asynchronous , Designing method. Basic computer organization and design, Instructions and instruction codes, Timing and control/ instruction cycle, Register/ Types of register/ general purpose & special purpose registers/ index registers, Register transfer and micro operations/ register transfer instructions, Memory and memory function, Bus/ Data transfer instructions	**20**
III	Arithmetic logic micro-operations/ shift micro-operations, Input/ Output and interrupts, Memory reference instructions, Memory interfacing, Cache memory. Central Processing Unit: General Register Organization/ stacks organizations, instruction formats, addressing modes, Data transfer and manipulation. Program control, reduced computer, pipeline/ RISC/ CISC pipeline vector processing/ array processing.	**30**
IV	Computer Arithmetic : Floating-point representations. Addition, subtraction and multiplication algorithms, divisor algorithms. Floating point arithmetic operations, decimal arithmetic operations. Booth's algorithm. Input – Output Organization: Peripheral devices, Input/output interface, ALU Asynchronous Data transfer, mode of transfer, priority interrupts, Direct memory Address (DMA), Input/ Output processor (IOP), serial communication.	**20**

Reference Books:

1. Digital Logic and Computer design (PHI) 1998 : M.M. Mano
2. Computer Architecture (PHI) 1998 : M.M. Mano
3. Digital Electronics (TMH) 1998 : Malvino and Leach
4. Computer Organization and Architecture : William Stallings
5. Digital fundamentals (Universal Book Stall) 1998 : Floyd, L.Thomas

LECTURE PLAN (BCA – III A & B)

Teacher Name: Abhishek Sharma

Course Name: Computer Organization and Architecture **Course Code: BCA-24-301**

Lecture Plan				
Month	**Unit**	**Week**	**No. of Planned Lecture**	**Topic**
JUL	I	1st	--	**---**
		2nd	--	**---**
		3rd	2	Logic gates and circuit Gates (OR, AND, NOR, NAND, XOR & XNOR);
		4th	4	De Morgan's laws; Boolean laws, Circuit designing techniques (SOP, POS, K-Map).
		5th	3	Multiplexors; Decoder; Encoder; Adder and Subtractor. Combinational Building Blocks
AUG	II	1st	1	Sequential Building Blocks: Flip-Flop
		2nd	4	RS, D, JK, Master-slave & T flip-flops
		3rd	3	Registers & Shift registers; Counters; Synchronous and Asynchronous
		4th	4	Designing method. Basic computer organization and design,
		5th	4	Instructions and instruction codes,
SEP	II & III	1st	3	Timing and control/ instruction cycle,
		2nd	4	Register/ Types of register/ general purpose & special purpose registers/ index registers
		3rd	3	Register transfer and micro operations/ register transfer instructions, Memory and memory function, Bus/ Data transfer instructions
		4th	4	Arithmetic logic micro-operations/ shift micro-operations
		5th	0	---
OCT	III & VI	1st	0	---
		2nd	4	Input/ Output and interrupts, Memory reference instructions,
		3rd	4	Memory interfacing, Cache memory. Central Processing Unit: General Register Organization/ stacks organizations, instruction formats
		4th	1	addressing modes,
		5th	4	Data transfer and manipulation. Program control, reduced computer, pipeline/ RISC/ CISC pipeline vector processing/ array processing.
NOV	V	1st	0	---
		2nd	3	Computer Arithmetic : Floating-point representations. Addition, subtraction and multiplication algorithms, divisor algorithms. Floating point arithmetic operations, decimal arithmetic operations.
		3rd	4	Booth's algorithm. Input – Output Organization: Peripheral devices, Input/output interface, ALU Asynchronous Data transfer, mode of transfer, priority interrupts
		4th	1	Direct memory Address (DMA), Input/ Output processor (IOP), serial communication.
Total planned lecture: 60				

BCA-24-302: Design and Analysis of Algorithms

Course Outcome:

CO 1: To teach the students demonstrate performance of algorithms with respect to time and space complexity.

CO 2: Remember and understand the concepts related to algorithm

CO 3: Apply the knowledge of algorithm to analyze various source code

CO 4: Evaluate the effectiveness of algorithm and create effective solutions for source code

DETAILED SYLLABUS		
Unit	**Topic**	**Proposed Lecture**
I	**Introduction:** Definition of Algorithm, Fundamentals of Algorithmic problem solving, Important problem types. Fundamental of data structures.	**20**
II	**Fundamentals of the Analysis of Algorithm Efficiency:** Analysis Framework, Measuring the input size, Units for measuring Running time, Orders of Growth, Worst-case, Best-case and Average-case efficiencies, Asymptotic Notations and Basic Efficiency classes, Informal Introduction, O-notation, Ω-notation, θ-notation.	**30**
III	**Sorting and Searching:** Sorting: Bubble Sort, Insertion Sort and Selection Sort; Searching: Sequential Search, Merge Sort, Quick Sort, Binary Search.	**20**
IV	**Graph & Analysis:** Introduction to Depth First Search, Breadth First Search, Minimum Spanning Tree, Travelling Salesman Problem and Knapsack Problem.	**20**

Reference Books:

- Ellis Horowitz, SartajSahni, Sanguthevar Rajasekaran (2008). *Fundamentals of Computer Algorithms.* Galgotia Publications Pvt. Ltd.
- Gilles Brassard and Paul Bratley (1997).*Fundamentals of Algorithms*, PHI.
- AnanyLevitin(2005).*Introduction to Design and Analysis of Algorithms,.*Pearson Education
- Thomas H. Corman, Charles E. Leiserson, Ronald and L. Rivest (2003). *Introduction to Algorithms* PrenticeHall of India

LECTURE PLAN

Course Name: Design and Analysis of Algorithms (BCA III A & B)

Course Code: BCA-24-302 Faculty Name: Mr. Abhishek Sharma

Lecture Plan				
Month	**UNIT**	**Week**	**No. of Planned Lecture**	**Topic**
JUL	I	3rd		
		4th	3	**Introduction:** Definition of Algorithm, Fundamentals of Algorithmic
		5th	3	problem solving, Important problem types.
AUG	II	1st	------	--------
		2nd	3	Fundamental of data structures.
		3rd	3	**Fundamentals of the Analysis of Algorithm Efficiency:** Analysis Framework, Measuring the input size,
		4th	3	Units for measuring Running time
		5th	3	Orders of Growth, Worst-case, Best-case and Average-case efficiencies
SEP	IV & V	1st	3	Asymptotic Notations and Basic Efficiency classes,
		2nd	3	Informal Introduction, O-notation
		3rd	2	Ω-notation, θ-notation
		4th	3	**Sorting and Searching:** Sorting: Bubble Sort, Insertion Sort and Selection Sort
OCT		2nd	3	Searching: Sequential Search, Merge Sort,
		3rd	3	Searching: Sequential Search, Merge Sort,
		4th	----	-------
		5th	3	Graph & Analysis: Introduction, Types of Graph
NOV		1st	----	-----
		2nd	2	Introduction to Depth First Search
		3rd	3	Breadth First Search, Minimum Spanning Tree,
		4th	1	Travelling Salesman Problem and Knapsack Problem
Total Classes		**Planned: 44**		

BCA-24-303T: Programming in Java

Course Outcome:

CO 1: Apply the concept of object-oriented programming using Java

CO 2: Apply and analyze the real-world problems using Java programming

CO 3: Build the solution of real problems using Java programming concepts and evaluate it

DETAILED SYLLABUS		
Unit	**Topic**	**Proposed Lecture**
I	**Introduction to java:** Importance and features of java, keywords, constants, data types and variables, operators and expression. **Decision making, branching and looping:** if…else, switch…case, loops, break, continue, and return. **Introduction OOPs:** class, object, defining class, adding fields and methods in the class, static methods, creating objects, constructors, destructor.	**15**
II	**Arrays and strings:** Creating an array, one and two dimensional arrays, string and string buffer classes, wrapper classes, Vector class. **Inheritance**: Introduction and type of inheritance, using super keyword, access specifiers, final field, abstract and final methods, abstract and final classes, packages and interfaces. **Exception handling**: fundamentals exception types, uncaught exception, throw, throws, finally, built in exception, creating your own exceptions. **Multithreaded programming**: Differences between multi-threading and multitasking, thread life cycle, creating threads, synchronizing threads, Inter-thread communication, suspending, resuming and stopping thread.	**15**
III	**Input/output:** basics, streams, byte and character stream, reading and writing from console and files, using standard java packages (lang, util, io, net). **Networking:** introduction: TCP/IP and UDP protocols, IP-Address, port number and socket, networking classes and interfaces, using java.net package, TCP/IP and datagram programming. **JDBC:** Introduction, Drivers, Establishing Connection, Connection Pooling.	**15**
IV	**Event Driven Programming:** Graphics programming: Frame, Components, working with 2D shapes, Using colors, fonts, and images. Basics of event handling: event handlers, adapter classes, actions, mouse events, AWT event hierarchy. Introduction to Swing: layout management, Swing Components: Text Fields, Text Areas, Buttons, Check Boxes, Radio Buttons, Lists, choices, Scrollbars, Windows Menus and Dialog Boxes.	**15**

Reference Books:

1. Herbert Schildt, "Java The complete reference‖", McGraw Hill Education, 8th Edition, 2011.
2. Cay S. Horstmann, Gary Cornell, "Core Java Volume –I Fundamentals", Prentice Hall, 9th Edition,2013.
3. Steven Holzner, “Java Black Book”, Dreamtech.
4. E Balagurusamy, “ Programming in Java”, McGraw Hill
5. Naughton, Schildt, “The Complete reference java2”, McGraw Hill
6. Khalid Mughal, “A Programmer’s Guide to Java SE 8 Oracle Certified Associate (OCA)”, Addison-Wesley.

LECTURE PLAN (2025-26)
BCA Semester-III A & B

Course Name: Programming in Java **Course Code:** BCA-24-303T

Teacher Name: Daya Shankar Singh

Month	Week	No. of Planned Lecture	Topic
July	1st	---	---
	2nd	---	---
	3rd	1	**UNIT-I** **Introduction to java:** Importance and features of java,
	4th	4	keywords, constants, data types and variables, operators and expression. **Decision making, branching and looping:** if…else, switch…case,
	5th	4	loops, break, continue, and return.
August	1st	0	---
	2nd	4	**Introduction OOPs:** class, object, defining class, adding fields and methods in the class, static methods, creating objects, constructors, destructor.
	3rd	4	**UNIT-II** **Arrays and strings:** Creating an array, one and two dimensional arrays, string and string buffer classes, wrapper classes, Vector class.
	4th	4	**Inheritance**: Introduction and type of inheritance, using super keyword, access specifiers, final field, abstract and final methods, abstract and final classes, packages and interfaces.
	5th	4	**Exception handling**: fundamentals exception types, uncaught exception, throw, throws, finally, built in exception, creating your own exceptions. **Multithreaded programming**: Differences between multi-threading and multitasking, thread life cycle, creating threads, synchronizing threads, Inter-thread communication, suspending, resuming and stopping thread.
September	1st	4	**UNIT-III** **Input/output:** basics, streams, byte and character stream, reading and writing from console and files, using standard java packages (lang, util, io, net).
	2nd	4	**Networking:** introduction: TCP/IP and UDP protocols, IP-Address, port number and socket, networking classes and interfaces, using java.net package, TCP/IP and datagram programming.
	3rd	3	---do--
	4th	4	**JDBC:** Introduction, Drivers, Establishing Connection, Connection Pooling.
	5th	0	---
October	1st	0	---
	2nd	4	**UNIT-IV** **Event Driven Programming:** Graphics programming: Frame, Components, working with 2D shapes,
	3rd	4	Using colors, fonts, and images.
	4th	0	
	5th	4	Basics of event handling: event handlers, adapter classes, actions, mouse events,
November	1st	0	---
	2nd	3	AWT event hierarchy. Introduction to Swing: layout management,
	3rd	4	Swing Components: Text Fields, Text Areas, Buttons, Check Boxes, Radio Buttons, Lists, choices, Scrollbars, Windows Menus and Dialog Boxes.
	4th	1	--do--
	5th	---	---

Total: 60

BCA-24-303P: Programming in Java Lab

Course Outcome:

CO 1: Apply the concept of object-oriented programming using Java

CO 2: Apply and analyze the real-world problems using Java programming

CO 3: Build the solution of real problems using Java programming concepts and evaluate it

Practical Exercises:

1. Write a program to print hello world.
2. Write programs to print following format: -

a.
```
1
12
123
1234
```

b.
```
1234
123
12
1
```

b.
```
1
121
12321
1234321
```

c.
```
A
ABA
ABCBA
ABCDCBA
```

3. Write a program to input two numbers by using scanner class and print the sum.
4. Write a program to check given number is prime or not.
5. Write a program to print all prime numbers from 1 to 500
6. Write a program to print Fibonacci series.
7. Write a program to check given number is palindrome or not.
8. Write a program to check the given number is perfect number of not.
9. Write a program to check the given number is Armstrong or not.
10. Create programs to implement the concept of class and object definition.
11. Create programs to implement the concept of constructors and destructor.
12. Create programs to implement the concept of static fields and methods.
13. Write a program to add two matrices.
14. Write a program to multiply two matrices.
15. Write a program that asks to input value in jagged array and print it.
16. Write programs to search an array using sequential and binary method.
17. Write a program to print the transpose of a matrix.
18. Write a program that asks to input a string and print it in upper case using toUpperCase method. Also try some other methods of String class.
19. Write a program to add some strings in Vector and print it. Also try some other methods of Vector class.
20. Create programs to implement the concept of different access modifiers private, friendly, protected and public.
21. Create programs to implement the concept of final field, abstract and final methods.
22. Create programs to implement the concept of abstract and final classes.
23. Create programs to implement the concept of packages and interfaces.
24. Create programs to implement the concept of exception handling.
25. Create programs to implement the concept of user defined exception.
26. Create programs to implement the concept of multithreaded programming.
27. Create programs to read and write from/to files.
28. Create programs to send message to another device using TCP/IP protocol.
29. Create programs to send message to another device using UDP protocol.
30. Create programs to implement the concept of JDBC.
31. Develop a GUI application using AWT controls with three buttons “Red”, “Green”, “Blue”. On click of each button the background color of application should change accordingly.
32. Design a menu-based GUI application using Java AWT

Suggested Readings:

1. Herbert Schildt, "Java The complete referencell", McGraw Hill Education, 8th Edition, 2011.
2. Cay S. Horstmann, Gary Cornell, "Core Java Volume –I Fundamentals", Prentice Hall, 9th Edition,2013.
3. Steven Holzner, “Java Black Book”, Dreamtech.
4. E Balagurusamy, “ Programming in Java”, McGraw Hill
5. Naughton, Schildt, “The Complete reference java2”, McGraw Hill
6. Khalid Mughal, “A Programmer’s Guide to Java SE 8 Oracle Certified Associate (OCA)”, Addison-Wesley.

LECTURE PLAN (2025-26)
BCA Semester-III A.

Course Name: Programming in Java Lab **Course Code:** BCA-24-303P

Teacher Name: Daya Shankar Singh

Month	Week	No. of Planned Lecture	Topic
July	1st	**---**	**---**
	2nd	**---**	**---**
	3rd	**2**	**UNIT-I** Java programs related to data types, variables, constants and control structures.
	4th	**3**	--do--
	5th	**1**	--do--
August	1st	**2**	Programs related to class, object, defining class, adding fields and methods in the class, static methods, creating objects, constructors, destructor.
	2nd	**2**	--do--
	3rd	**2**	**UNIT-II** Programs related to Arrays and strings: Creating an array, one and two-dimensional arrays, string and string buffer classes, wrapper classes, Vector class.
	4th	**3**	Programs related to inheritance, using super keyword, access specifiers, final field, abstract and final methods, abstract and final classes, packages and interfaces.
	5th	**3**	Programs related to Exception handling, built in exception, creating your own exceptions and Multithreaded programming
September	1st	**2**	**UNIT-III** Programs related to Input/output: basics, streams, byte and character stream, reading and writing from console and files, using standard java packages (lang, util, io, net).
	2nd	**3**	--do--
	3rd	**2**	Programs related to socket, networking classes and interfaces, using java.net package, TCP/IP and datagram programming.
	4th	**3**	Programs related to JDBC
	5th	**0**	**---**
October	1st	**0**	**---**
	2nd	**3**	**UNIT-IV** Programs related to Frame, Components, working with 2D shapes, Using colors, fonts, and images.
	3rd	**2**	--do--
	4th	**1**	Programs related to event handling
	5th	**2**	--do--
November	1st	**1**	Programs related to Swing Components
	2nd	**2**	--do--
	3rd	**3**	--do--
	4th	**0**	**---**
	5th	**---**	**---**

Total: 42

LECTURE PLAN (2025-26)
BCA Semester-III B

Course Name: Programming in Java Lab **Course Code:** BCA-24-303P

Teacher Name: Daya Shankar Singh

Month	Week	No. of Planned Lecture	Topic
July	1st	---	---
	2nd	---	---
	3rd	1	**UNIT-I** Java programs related to data types, variables, constants and control structures.
	4th	3	--do--
	5th	3	--do--
August	1st	0	---
	2nd	2	Programs related to class, object, defining class, adding fields and methods in the class, static methods, creating objects, constructors, destructor.
	3rd	3	**UNIT-II** Programs related to Arrays and strings: Creating an array, one and two-dimensional arrays, string and string buffer classes, wrapper classes, Vector class.
	4th	3	Programs related to inheritance, using super keyword, access specifiers, final field, abstract and final methods, abstract and final classes, packages and interfaces.
	5th	3	Programs related to Exception handling, built in exception, creating your own exceptions and Multithreaded programming
September	1st	3	**UNIT-III** Programs related to Input/output: basics, streams, byte and character stream, reading and writing from console and files, using standard java packages (lang, util, io, net).
	2nd	3	--do--
	3rd	2	Programs related to socket, networking classes and interfaces, using java.net package, TCP/IP and datagram programming.
	4th	3	Programs related to JDBC
	5th	0	---
October	1st	0	---
	2nd	3	**UNIT-IV** Programs related to Frame, Components, working with 2D shapes, Using colors, fonts, and images.
	3rd	3	--do--
	4th	0	---
	5th	3	Programs related to event handling
November	1st	0	---
	2nd	2	Programs related to Swing Components
	3rd	3	--do--
	4th	1	--do--
	5th	---	---

Total: 44

BCA-24-304ME2: Fundamentals of Economics

Course Outcome:

CO 1: Remember and understand the relevance of economics for a business firm.
CO 2 Analyze the different laws of economics and apply them in various changing situations in industry CO 3 Evaluate the different market structures leading towards creation of a business and economy as a whole

DETAILED SYLLABUS		
Unit	**Topic**	**Proposed Lecture**
I	The Fundamentals of Economics the Economic Problem-Scarcity and Choice; Nature and Scope- Positive and Normative Economics, Micro and Macro Economics; Central Problems of an Economy; Production Possibility Curve; Opportunity Cost; Working of Economic Systems; Economic Cycles	**20**
II	Basic Elements of Demand and Supply Demand- Meaning, Demand Schedule, Individual and Market Demand Curve, Determinants of Demand, Law of Demand, Changes in Demand; Supply- Meaning, Supply Schedule, Individual and Market Supply Curve, Determinants of Supply, Law of Supply, Changes in Supply; Equilibrium of Demand and Supply Determination of Equilibrium Price and Quantity, Effect of a shift in Demand or Supply; Elasticity of Demand and Supply	**30**
III	Market Structure: Equilibrium of a firm and Price, Output Determination under Perfect Competition Monopoly, Monopolistic Competition & Oligopoly Macro-Economic Concerns: Inflation, Unemployment, Trade-Cycles, Circular Flow up to Four Sector Economy, Government in the Macro Economy: Fiscal Policy, Monetary Policy, Measuring national Income and Output	**20**
IV	The World Economy – WTO, Globalisation, MNC's, Outsourcing, Foreign Capital in India, Trips, Groups of Twenty (G-20), Issues of dumping, Export-Import Policy 2004-2009	**20**

Reference Books:

1. Ahuja H.L., "Business Economics", S.Chand & Co., New Delhi, 2001
2. Ferguson P.R., Rothschild, R and Ferguson G.J."Business Economics" Mac-Milan, Hampshire, 1993
3. Karl E.Case & Ray C. fair , "Principles of Economics" , Pearson Education , Asia, 2000
4. Nellis, Joseph, Parker David, "The Essence of Business Economics", Prentice Hall, New Delhi, 1992.

LECTURE PLAN

Course Name: Business Economics **Course Code:** BCA-S204T
Teacher Name: Suman Mishra Tiwari **Sec- A & B**

Lecture Plan				
Month	**UNIT**	**Week**	**LP No.**	**Topic**
July	I	1st	**---**	**---**
		2nd	**---**	**---**
		3rd	1	**The Scope and Method of Economics**
		4th	4	The Economic Problem: Scarcity & Choice, The Price Mechanism
		5th	4	Demand & Supply Equilibrium, The Concept of Elasticity and its Applications.
Aug	II	1st	--	
		2nd	4	**The Production Process**, output decisions – Revenues Costs
		3rd	4	Revenues Costs and Profit Maximization
		4th	4	**Laws of returns & Returns to Scale**
		5th	4	Economics and Diseconomies of scale
Sep	**III**	1st	4	**Market Structure**
		2nd	4	Equilibrium of a firm and Price
		3rd	3	Output Determination under Perfect Competition, Output Determination under Monopoly, Monopolistic Competition Oligopoly.
		4th	4	**Macro-Economic Concerns** Inflation, Unemployment
		5th	--	
Oct	IV	1st	--	
		2nd	4	Trade-Cycles, Circular Flow up to Four Sector Economy, Government in the Macro Economy, Fiscal Policy
		3rd	4	Monetary Policy. Measuring national Income and Output. Measuring national Income and Output
		4th	--	
		5th	4	Fiscal Policy, Monetary Policy, Measuring national Income and Output
Nov		1st	--	
		2nd	3	**The World Economy:** WTO, Globalization, MNC's, Outsourcing Foreign Capital in India,
		3rd	4	Trips, Groups of Twenty (G-20)
		4th	4	Issues of dumping
		5th	1	Export-Import Policy 2004-2009.
Total Classes		**Planned: 64**		

BCA-24-305VC: Basics of Data Analytics using Spreadsheet

Course Outcome:

CO1: Understand the basics of data analytics and its applications.

CO2: Develop proficiency in using spreadsheet software for data manipulation and analysis.

CO3: Build and use spreadsheet models for decision making & Communicate data insights effectively

DETAILED SYLLABUS		
Unit	**Topic**	**Proposed Lecture**
I	UNIT I: Introduction to Data Analytics Understanding data and its types (structured, unstructured, semi-structured)-What is Data Analytics- Types of data Analytics- Importance of Data Analytics- Applications of Data Analytics.	**10**
II	UNIT II: Data, Ethics, and Industry: Case Studies Data Collection Methods - Different Data Sources & format - Data Cleaning and Transformation - Handling Missing Data and Outliers. - Ethical considerations in data analytics. - Real-world Applications of Data Analytics- Industry-specific applications (finance, marketing, operations) - Case Study	**10**
III	UNIT III: Introduction to Excel and Basic Functions 1. Getting started with Excel: Workbook, Worksheet, Cells, and Ranges 2. Data entry and basic formatting techniques 3. Using basic arithmetic functions: SUM, AVERAGE, MIN, MAX, ROUND 4. Introduction to cell referencing: relative, absolute, and mixed Data Importing and Pre-processing 1. Importing data from various sources (CSV, text files, web data) 2. Data cleaning: removing duplicates, handling missing data, and standardizing formats 3. Data transformation: text-to-columns, data validation techniques 4. Using the "Find & Replace" and "Text Functions" (LEFT, RIGHT, MID, CONCATENATE) Descriptive Statistics Using Excel 1. Calculating measures of central tendency: mean, median, mode 2. Computing measures of dispersion: range, variance, standard deviation 3. Creating and interpreting frequency distributions and histograms	**15**
IV	Advanced Spreadsheet Functions 1. Using logical functions: IF, AND, OR, IFERROR 2. Lookup and reference functions: VLOOKUP, HLOOKUP, INDEX, MATCH 3. Data aggregation techniques: SUMIFS, COUNTIFS, AVERAGEIFS 4. Text functions for data manipulation: TRIM, CLEAN, TEXT, RIGHT, LRFT, MID Data Visualization Techniques 1. Creating various chart types: bar, line, pie, scatter 2. Advanced charting techniques: combo charts, dual-axis charts 3. Data visualization best practices: choosing the right chart, formatting, and styling 4. Creating and customizing PivotTables and Pivot Charts	**10**

Reference Books

1. "Excel 2019 Bible" by Michael Alexander, Richard Kusleika, and John Walkenbach, John Wiley & Sons, 25 Sept 2018
2. "Spreadsheet Modeling and Decision Analysis: A Practical Introduction to Business Analytics" by Cliff T Ragsdale, Cegage learning asia pet. 2015
3. “Mastering Excel” by WebTech Solutions, Khanna Publishing House, 2024.

LECTURE PLAN - BCA III – A

Course Name: Basics of Data Analytics using Spreadsheet

Course Code: BCA-24-305VC **Faculty Name: Ms. Anita Shah**

Lecture Plan				
Month	**UNIT**	**Week**	**No. of Planned Lecture**	**Topic**
JULY	I	3rd	3	Introduction to Data Analytics Understanding data and its types (structured, unstructured, semi-structured), What is Data Analytics- Types of data Analytics- Importance of Data Analytics, Applications of Data Analytics.
		4th	3	Data, Ethics, and Industry: Case Studies Data Collection Methods, Different Data Sources & format - Data Cleaning and Transformation, Handling Missing Data and Outliers. - Ethical considerations in data analytics.
		5th	1	Real-world Applications of Data Analytics- Industry-specific applications (finance, marketing, operations) - Case Study
AUGUST	II	1st	2	Getting started with Excel: Workbook, Worksheet, Cells, and Ranges. Data entry and basic formatting techniques
		2nd	2	Using basic arithmetic functions: SUM, AVERAGE, MIN, MAX, ROUND, Introduction to cell referencing: relative, absolute, and mixed, Importing data from various sources (CSV, text files, web data), Data cleaning: removing duplicates, handling missing data, and standardizing formats
		3rd	2	Data transformation: text-to-columns, data validation techniques, Using the "Find & Replace" and "Text Functions" (LEFT, RIGHT, MID, CONCATENATE)
		4th	3	Calculating measures of central tendency: mean, median, mode, Computing measures of dispersion: range, variance, standard deviation Creating and interpreting frequency distributions and histograms
		5th	3	Using logical functions: IF, AND, OR, IFERROR ,Lookup and reference functions: VLOOKUP, HLOOKUP, INDEX, MATCH ,Data aggregation techniques: SUMIFS, COUNTIFS, AVERAGEIFS ,Text functions for data manipulation: TRIM, CLEAN, TEXT, RIGHT, LRFT, MID Data ,Creating various chart types: bar, line, pie, scatter
SEPTEMBER	IV & V	1st	2	Advanced charting techniques: combo charts, dual-axis charts , Data visualization best practices: choosing the right chart, formatting, and styling, Creating and customizing PivotTables and Pivot Charts,Data, Ethics, and Industry: Case Studies Data Collection Methods
		2nd	3	Different Data Sources & format - Data Cleaning and Transformation, Handling Missing Data and Outliers. – Ethical considerations in data analytics
		3RD	3	Getting started with Excel: Workbook, Worksheet, Cells, and Ranges .Data entry and basic formatting techniques, Using basic arithmetic functions: SUM, AVERAGE, MIN, MAX, ROUND,Introduction to cell referencing: relative, absolute, and mixed
		4th	3	Importing data from various sources (CSV, text files, web data) , Data cleaning: removing duplicates, handling missing data, and standardizing formats , Data transformation: text-to-columns, data validation techniques ,Using the "Find & Replace" and "Text Functions" (LEFT, RIGHT, MID, CONCATENATE)
OCTOBER		2nd	3	Calculating measures of central tendency: mean, median, mode ,Computing measures of dispersion: range, variance, standard deviation , Creating and interpreting frequency distributions and histograms
		3rd	2	Using logical functions: IF, AND, OR, IFERROR ,Lookup and reference functions: VLOOKUP, HLOOKUP, INDEX, MATCH ,
		4th	2	Data aggregation techniques: SUMIFS, COUNTIFS, AVERAGEIFS , Text functions for data manipulation: TRIM, CLEAN, TEXT, RIGHT, LRFT, MID,Data
		5th	2	Creating various chart types: bar, line, pie, scatter, Advanced charting techniques: combo charts, dual-axis charts ,
NOVEMBER		1st	1	Data visualization best practices: choosing the right chart, formatting, and styling,Creating and customizing PivotTables and Pivot Charts
		2nd	3	Data, Ethics, and Industry: Case Studies Data Collection Methods, Different Data Sources & format - Data Cleaning and Transformation
		3rd	3	Handling Missing Data and Outliers. - Ethical considerations in data analytics.
Total Classes		**Planned: 46**		

LECTURE PLAN - BCA III – B

Course Name: Basics of Data Analytics using Spreadsheet

Course Code: BCA-24-305VC **Faculty Name: Ms. Anita Shah**

Lecture Plan				
Month	**UNIT**	**Week**	**No. of Planned Lecture**	**Topic**
JULY	I	3rd		
		4th	3	Introduction to Data Analytics Understanding data and its types (structured, unstructured, semi-structured), What is Data Analytics- Types of data Analytics- Importance of Data Analytics ,Applications of Data Analytics.
		5th	3	Data, Ethics, and Industry: Case Studies Data Collection Methods ,Different Data Sources & format - Data Cleaning and Transformation, Handling Missing Data and Outliers. - Ethical considerations in data analytics.
AUGUST	II	1st		
		2nd	3	Real-world Applications of Data Analytics- Industry-specific applications (finance, marketing, operations) - Case Study, Getting started with Excel: Workbook, Worksheet, Cells, and Ranges. Data entry and basic formatting techniques
		3rd	3	Using basic arithmetic functions: SUM, AVERAGE, MIN, MAX, ROUND, Introduction to cell referencing: relative, absolute, and mixed
		4th	3	Importing data from various sources (CSV, text files, web data), Data cleaning: removing duplicates, handling missing data, and standardizing formats
		5th	3	Data transformation: text-to-columns, data validation techniques, Using the "Find & Replace" and "Text Functions" (LEFT, RIGHT, MID, CONCATENATE)
SEPTEMBER	IV & V	1st	3	Calculating measures of central tendency: mean, median, mode, Computing measures of dispersion: range, variance, standard deviation Creating and interpreting frequency distributions and histograms
		2nd	3	Using logical functions: IF, AND, OR, IFERROR ,Lookup and reference functions: VLOOKUP, HLOOKUP, INDEX, MATCH ,Data aggregation techniques: SUMIFS, COUNTIFS, AVERAGEIFS ,Text functions for data manipulation: TRIM, CLEAN, TEXT, RIGHT, LRFT, MID Data ,Creating various chart types: bar, line, pie, scatter
		3RD	2	Advanced charting techniques: combo charts, dual-axis charts, Data visualization best practices: choosing the right chart, formatting, and styling, Creating and customizing PivotTables and Pivot Charts,Data, Ethics, and Industry: Case Studies Data Collection Methods
		4th	3	Different Data Sources & Format- Data Cleaning and TransformationHandling Missing Data and Outliers. – Ethical considerations in data analytics
OCTOBER		2nd	3	Real-world Applications of Data Analytics- Industry-specific applications (finance, marketing, operations) - Case Study Getting started with Excel: Workbook, Worksheet, Cells, and Ranges .Data entry and basic formatting techniques
		3rd	3	Using basic arithmetic functions: SUM, AVERAGE, MIN, MAX, ROUND,Introduction to cell referencing: relative, absolute, and mixed, Importing data from various sources (CSV, text files, web data) , Data cleaning: removing duplicates, handling missing data, and standardizing formats , Data transformation: text-to-columns, data validation techniques ,Using the "Find & Replace" and "Text Functions" (LEFT, RIGHT, MID, CONCATENATE)
		4th		
		5th	3	Calculating measures of central tendency: mean, median, mode ,Computing measures of dispersion: range, variance, standard deviation , Creating and interpreting frequency distributions and histograms
NOVEMBER		1st		
		2nd	2	Using logical functions: IF, AND, OR, IFERROR ,Lookup and reference functions: VLOOKUP, HLOOKUP, INDEX, MATCH ,Data aggregation techniques: SUMIFS, COUNTIFS, AVERAGEIFS , Text functions for data manipulation: TRIM, CLEAN, TEXT, RIGHT, LRFT, MID,Data
		3rd	3	Creating various chart types: bar, line, pie, scatter, Advanced charting techniques: combo charts, dual-axis charts ,Data visualization best practices: choosing the right chart, formatting, and styling,Creating and customizing PivotTables and Pivot Charts
		4th	1	Data, Ethics, and Industry: Case Studies Data Collection Methods, Different Data Sources & format - Data Cleaning and Transformation, Handling Missing Data and Outliers. - Ethical considerations in data analytics.
Total Classes		**Planned: 44**		