



Date :- 01/08/2024

NOTIFICATION

Sub :- CBCS Syllabi of BCA (Sem. III & IV)

Ref. :- Decision of the Academic Council at its meeting held on 27/07/2024.

The Syllabi of BCA (Third and Fourth Semesters) as per **NATIONAL EDUCATION POLICY - 2020 (2023 Pattern)** and approved by the Academic Council as referred above are hereby notified for implementation with effect from the academic year 2024-25.

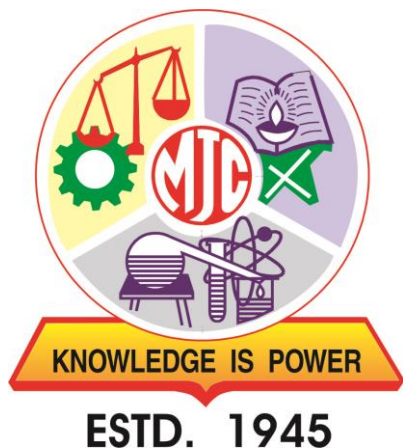
Copy of the Syllabi Shall be downloaded from the College Website
(www.kcesmjcollege.in)

Sd/-
Chairman,
Board of Studies

To :

- 1) The Head of the Dept., M. J. College, Jalgaon.
- 2) The office of the COE, M. J. College, Jalgaon.
- 3) The office of the Registrar, M. J. College, Jalgaon.

Khandesh College Education Society's
Moolji Jaitha College, Jalgaon
An "Autonomous College" Affiliated to
KBC North Maharashtra University, Jalgaon



STRUCTURE AND SYLLABUS

BCA Honours / Honours with Research (S.Y.B.C.A)

**Under Choice Based Credit System (CBCS)
and
as per NEP-2020 Guidelines**

[w.e.f. Academic Year:2024-25]

Preface

There are various innovative technologies that have come up in the IT world which are transforming the business landscape at a rapid pace. The challenges of the IT sector today are a lot different from those that existed a few years ago. The changing technological environment has made it necessary for students who aspire to a career in IT to be well aware of the latest innovations. The BCA program is specially designed to cater to the present industry skills and knowledge needs. It comprises of theoretical and practical training sessions that can prepare students for the well-rewarding jobs of the future.

Programme Outcomes (PO) for B.C.A. honours/ Honours with Research :

Upon successful completion of this Programme, student will be able to:

PO No.	PO
1	Discipline knowledge: Acquiring knowledge on basics of Computer Science and ability to apply to design principles in the development of solutions for problems of varying complexity
2	Problem Solving: Improved reasoning with strong mathematical ability to Identify, formulate and analyze problems related to computer science and exhibiting a sound knowledge on data structures and algorithms.
3	Design and Development of Solutions: Ability to design and development of algorithmic solutions to real world problems and acquiring a minimum knowledge on statistics and optimization problems. Establishing excellent skills in applying various design strategies for solving complex problems.
4	Programming a computer: Exhibiting strong skills required to program a computer for various issues and problems of day-to-day applications with thorough knowledge on programming languages of various levels.
5	Application Systems Knowledge: Possessing a sound knowledge on computer application software and ability to design and develop app for applicative problems.
6	Motivation to take up Higher Studies: Inspiration to continue educations towards advanced studies on Computer Science.

Programme Specific Outcome (PSO) for B.C.A. Honours/Honours with Research:

After completion of this course, students are expected to:

PSO No.	PSO
1	Apply standard Software Engineering practices and strategies in real -time software project development
2	Design and develop computer programs/computer -based systems in the areas related to AI, algorithms, networking, web design, cloud computing, IoT and data analytics.
3	The ability to apply the knowledge and understanding noted above to the analysis of a given information handling problem.
4	The ability to apply the knowledge and understanding noted above to the analysis of a given information handling problem.
5	Acquaint with the contemporary trends in industrial/research settings and thereby innovate novel solutions to existing problems
6	Practicing of existing projects and becoming independent to launch own project by identifying a gap in solutions.

Multiple Entry and Multiple Exit options:

The multiple entry and exit options with the award of UG certificate/ UG diploma/ or three-year degree depending upon the number of credits secured;

Levels	Qualification Title	Credit Requirements		Semester	Year
		Minimum	Maximum		
4.5	UG Certificate	40	44	2	1
5.0	UG Diploma	80	88	4	2
5.5	Three Year Bachelor's Degree	120	132	6	3
6.0	Bachelor's Degree- Honours Or Bachelor's Degree- Honours with Research	160	176	8	4

S. Y. B.C.A Course Structure

Semester	Course Module	Credit	Hours/ week	TH/ PR	Code	Title
III	DSC	2	2	TH	BCA-DSC-231	Java Programming-I
	DSC	2	2	TH	BCA-DSC-232	Mathematics for Managers -I
	DSC	2	4	PR	BCA-DSC-233	Practical on Java Programming-I
	DSC	2	4	PR	BCA-DSC-234	Practical on Mathematics for Managers -I
	MIN	2	2	TH	BCA-MIN-231	Operating System
	MIN	2	2	TH	BCA-MIN-232	Linux Operating System
	MIN	2	4	PR	BCA-MIN-233	Practical on Linux Operating System
	OE	2	2	TH	BCA-OE-231	Professional Presentation Skills
	CEP	2	2	PR	BCA-CEP	Community Engagement Programme
Semester	Course Module	Credit	Hours/ week	TH/ PR	Code	Title
IV	DSC	2	2	TH	BCA-DSC-241	Java Programming-II
	DSC	2	2	TH	BCA-DSC-242	Mathematics for Managers -II
	DSC	2	4	PR	BCA-DSC-243	Practical on Java Programming-II
	DSC	2	4	PR	BCA-DSC-244	Practical on Mathematics for Managers -II
	MIN	2	2	TH	BCA-MIN-241	System Analysis and Design
	MIN	2	4	PR	BCA-MIN-242	Practical on System Analysis and Design
	OE	2	2	TH	BCA-OE-241	Basics of Internet
	OE	2	2	PR	BCA-OE-242	Practicals on Basics of Internet
	FP	2	2	PR	BCA-FP	Field Projects

S.Y.B.C.A.

Semester III

S.Y.BCA
SEMESTER-III
BCA-DSC-231: Java Programming – I

Total Hours: 30

Credits: 2

Course objectives	- To understand fundamentals of programming such as variables, conditional and iterative execution, methods, etc. - To understand fundamentals of object-oriented programming in Java, including defining classes, invoking methods, using class libraries, etc. - To have the ability to write a computer program to solve specified problems. - To be able to use the Java SDK environment to create, debug and run simple Java programs.	
Course outcomes	After successful completion of this course, students are expected to: - Identify classes, objects, members of a class and relationships among them needed for a specific problem - Write Java application programs using OOP principles and proper program structuring - Demonstrate the concepts of polymorphism and inheritance - Write Java programs to implement error handling techniques using exception handling	
Unit	Content	Hours
Unit I	Introduction - Introduction - History of Java - Comparison of Java and C++ - Features of Java - Java and Internet - JDK Environment (Java, Javac, Applet Viewer, Javadoc) - Simple Java Program - Java Program Structure - Implementing Java Program - Java Virtual Machine - Command Line Arguments	7
Unit II	Classes and Objects and Methods - Classes and Object - Defining a class - Adding variables ,methods - Creating objects - Accessing data members - Constructors - Method Overloading - Packages - Visibility Control - Inheritance-Extending a class	8

	○ Overriding methods ○ Abstract methods and Classes ○ Reflection - 'Class' class	
Unit III	Array and Strings ○ One –Dimensional Array ○ Creating array ○ Two- Dimensional Array ○ Strings ○ String functions-concatenation, Sub string, String editing, testing for equality, ○ Character extraction functions-CharAt, getChars, getByte, ○ Formatting functions, ○ Date and Time functions using Gregorian calendar class ○ Wrapper classes ○ Interfaces ○ Inner classes ○ Multithreading	7
Unit IV	Exception and File Handling ○ Types of errors ○ Exceptions ○ Syntax of Exception Handling Code ○ Multiple Catch statements ○ Using finally statement ○ Throwing your own exception ○ String class and StringBuffer Class ○ Stream classes-Byte Stream classes , Character Stream Classes ○ Creation of files ○ Reading/Writing characters and bytes ○ Random Access files	8
Study Resources	• Cay's Horstmann and Gary Cornell. Core Java Volume -1 Fundamentals • E. Balaguruswamy (Tata Mc Graw Hill) Programming with Java – A primer • Herbert Schildt (TMH) The complete reference JAVA-2 Fifth Edition • Java 6 Programming Black Book	

S.Y.BCA
SEMESTER-III
BCA-DSC-232: Mathematics for Managers -I

Total Hours: 30

Credits: 2

Course objectives	- To study the basic problems on permutation and combinations. - To study the basic concept of graphs and algorithms in graph theory.	
Course outcomes	After successful completion of this course, students are expected to: - Understand basic concepts of permutation and combinations and can apply it to real life situation. - Understand graph, isomorphism of graphs, Hand-shaking lemma, Eulerian graph Hamiltonian graph, Euler's formula for planer graphs, Dijkstra's algorithm, Prim's algorithm, Kruskal's algorithm.	
Unit	Content	Hours
Unit I	Permutation and Combination - Meaning of permutation and combination - Fundamental principle of counting - Meaning of Factorial of a number - Statement of basic properties of factorial of a number - Statement of formula for number of permutations of different objects when objects are taken at a time - Statement of formula for number of combinations of different objects taken at a time - Simple numerical problems from real life situations	7
Unit II	Graph - Graph - Simple graph - Multigraph - Hand shaking lemma - Types of graphs - Operations on graphs, - Subgraphs, - Isomorphism of graphs,	8
Unit III	Connected Graphs - Connected and disconnected graphs - Walk, Path, Cycles (circuits), Bridges - Cut vertices - Edge connectivity and vertex connectivity - Eulerian graph - Hamiltonian graph - Planer graph - Euler's formula for planer graphs	7

Unit IV	Trees and Algorithms ○ Definition and some properties of trees ○ Distance and centre in a tree ○ Definitions of rooted and binary trees ○ Spanning trees ○ Minimal spanning trees ○ Dijkstra's algorithm ○ Prim's algorithm ○ Kruskal's algorithm	8
Study Resources	• Ghosh, R. K., and Saha, S. (2008). Business Mathematics and Statistics (2nd.ed.). New Central Book Agency (P) Ltd. • Deo, N. Graph Theory with applications to Engineering and computer science. Prentice Hall of India Pvt. Ltd. • Lipschutz, S., Lipson, M. L., and Patil, V. H. (2006). Discrete Mathematics (3rd.ed.). Tata McGraw Hill Publishing Company Limited. • Harary F. (1969), Graph Theory, Addison-Wesley Publishing Company. • Bhav N. S. and T. T. Raghunathan (1990), Elements of Graph Theory, Goal Publications	

S.Y.BCA
SEMESTER-III
BCA-DSC-232: Practical on Java Programming – I

Total Hours: 60

Credits: 2

Course objectives	• To get practical knowledge of Java Programming. • To get hands on practical knowledge for Java Programming concepts • To get basic practical knowledge about the basic object oriented concepts. • To acquaint concepts of classes and objects.	
Course Outcomes	After successful completion of this course, students are expected to: • aware about basic concepts of Java Programming. • Use various classes in java like abstract class, inner class, class-class. • Design packages. • apply object oriented concepts for problem solving.	
Sr. No.	Content	Hours
1	Write a simple program in Java to print first fifty prime number.	4
2	Write a program in Java to print factorial of given number using recursion	4
3	Write a program in Java to print fibonacci series in given series	4
4	Write a program in Java to demonstrate command line arguments.	4
5	Write a program in Java to create student information using array	4
6	Write a program in Java to implement user defined package.	4
7	Write a program in Java to implement default & parameterized constructor.	4
8	Write a program in Java to demonstrate various operations on string functions.	4
9	Write a program in Java to demonstrate wrapper classes	4
10	Write a program in Java to demonstrate abstract class.	4
11	Write a program in Java to implement inheritance.	4
12	Write a program in Java to demonstrate inner class.	4
13	Write a program in Java to demonstrate reflection.	4
14	Write a program in Java to demonstrate exception handling.	4
15	Write a program in Java to demonstrate text stream object that take input from user & write it into text file.	4
Study Resources	• Cay's Horstmann and Gary Cornell. Core Java Volume -1 Fundamentals • E. Balaguruswamy (Tata Mc Graw Hill) Programming with Java – A primer • 3. Herbert Schildt (TMH) The complete reference JAVA-2 Fifth Edition • Java 6 Programming Black Book	

Note: At least 12 experiments should be performed.

S.Y.BCA
SEMESTER-III
BCA-DSC-234: Practical on Mathematics for Managers -I

Total Hours: 60

Credits: 2

Course objectives	- To study the basic problems on permutation and combinations. - To study the basic problems of graphs and algorithms in graph theory.	
Course Outcomes	After successful completion of this course, students are expected to: - Solve problems of real life situations based on permutation and combinations. - Solve problems on graphs, isomorphism of graphs, Hand-shaking lemma, Eulerian graph, Hamiltonian graph, Euler's formula for planer graphs, Dijkstra's algorithm, Prim's algorithm and Kruskal's algorithm.	
Sr. No.	Content	Hours
1	Permutations	4
2	Combinations	4
3	Problems on real life situations	4
4	Hand shaking lemma	4
5	Types of graphs and operations of graphs	4
6	Subgraphs	4
7	Isomorphism of graphs	4
8	Connected and disconnected graphs	4
9	Edge connectivity and vertex connectivity	4
10	Eulerian graph	4
11	Hamiltonian graph	4
12	Planer graph and Euler's formula	4
13	Trees and rooted trees	4
14	Dijkstra's algorithm	4
15	Prim's and Kruskal's algorithm	4
Study Resources	- Ghosh, R. K., and Saha, S. (2008). Business Mathematics and Statistics (2nd.ed.). New Central Book Agency (P) Ltd. - Deo, N. Graph Theory with applications to Engineering and computer science. Prentice Hall of India Pvt. Ltd. - Lipschutz, S., Lipson, M. L., and Patil, V. H. (2006). Discrete Mathematics (3rd.ed.). Tata McGraw Hill Publishing Company Limited. - Harary F. (1969), Graph Theory, Addison-Wesley Publishing Company.	

	• Bhav N. S. and T. T. Raghunathan (1990), Elements of Graph Theory, Goal Publications.	
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S.Y.BCA
SEMESTER-III
BCA-MIN-231: Operating System

Total Hours: 30

Credits: 2

Course objectives	- To understand Operating system concepts and services. - To understand the concept of a CPU scheduling. - To apply memory management scheme. - To analyze Disk Drum Scheduling and deadlock handling concepts.	
Course outcomes	After successful completion of this course, students are expected to: - To understand the basic concepts of Operating system and its services. - To understand different CPU scheduling algorithms. - To apply memory management scheme. - To analyze Disk Drum Scheduling and deadlock handling concepts.	
Unit	Content	Hours
Unit I	Introduction - What is an operating system? - Types of Operating System - Services of Operating System - Functions of operating system	4
Unit II	CPU scheduling - Multiprogramming Concepts - Basic Concept of CPU scheduling: CPU-I/O burst cycle, CPU scheduler - Preemptive scheduling, - Dispatcher - Performance criteria's - Scheduling Algorithms: FCFS, SJF, Priority scheduling, Round-robin scheduling	6
Unit III	Memory Management - Logical versus Physical Address space - Swapping - Multiple partition allocation MFT , MVT - Paging - Segmentation - Virtual Memory Management – Background, Demand paging - Disk and Drum Scheduling algorithms: First Come first serve scheduling, Shortest Seek Time First Scheduling, SCAN Scheduling, C-SCAN Scheduling	12
Unit IV	Deadlocks - Concept of Deadlock - Deadlock Characterization - Deadlock Prevention - Deadlock Avoidance - Deadlock Detection - Recovery from Deadlock	8

Study Resources	• Peterson Silberschatz, “Operating system concepts”, ISBN: 0-201-35251-6, Addison Wesley, 1ST Edition • Andrew S. Tanenbaum, “Modem operating system”, ISBN: 81-203-0974-X, P .H.I. New Delhi . • Achyut S. Godbole, “Operating Systems” ISBN: 9780070702035, McGraw Hill Education, 2010, Third Edition	
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S.Y.BCA
SEMESTER-III
BCA-MIN-232: Linux Operating System

Total Hours: 30

Credits: 2

Course objectives	• To understand the fundamental concepts and components of the Linux operating system. • To understand and manage Linux file systems and permissions. • To develop the ability to write and execute basic and advanced shell scripts. • To implement security measures and optimize system performance.	
Course outcomes	After successful completion of this course, students are expected to • Demonstrate proficiency in using basic and advanced Linux commands. • Administer users and groups effectively in a Linux environment. • Install, update, and manage system services and packages. • Acquire the ability to automate routine tasks using shell scripts, enhancing productivity and system management efficiency.	
Unit	Content	Hours
Unit I	Introduction to Linux ▪ Overview of Operating Systems: Definition, Functions, Types. ▪ Introduction to Linux: History, Features, Distributions. ▪ Linux Architecture: Kernel, Shell, File System. ▪ Installation of Linux: Partitioning, Boot Loader, Basic Installation Steps. ▪ Basic Commands: File operations, Directory operations, File permissions.	7
Unit II	Linux File System and Process Management ▪ File System Structure: Types of file systems, Mounting, Inodes. ▪ File Management: File types, File attributes, File compression. ▪ Process Management: Process, Process control, Scheduling, Daemons. ▪ Memory Management: Swapping, Paging, Virtual memory. ▪ Disk Management: Disk partitions, File system checking, Backup.	8
Unit III	Shell Scripting and Network Configuration ▪ Introduction to Shell Scripting: Shell types, Writing and executing scripts, Variables, Control structures. ▪ Advanced Shell Scripting: Functions, Script debugging, Sed, Awk. ▪ Network Configuration: Network interfaces, IP addressing, Subnetting, Configuring network services. ▪ Network Utilities: Ping, Traceroute, Netstat, ifconfig.	7
Unit IV	System Administration and Security ▪ User and Group Management: Adding, Deleting users, User privileges, Group management. ▪ System Administration: Backup and Restore, System updates, Package management (RPM, YUM). ▪ Security Management: Firewall configuration, SSH, File system security, SELinux. ▪ Performance Monitoring: System logs, Performance tuning, Monitoring tools.	8

Study Resources	• Bhatt, P. C. P. (2017). Introduction to Operating Systems. PHI Learning. • Jaiswal, A. (2018). Linux System Administration. Firewall Media. • Jain, V. K. (2016). Linux: Concepts and Administration. Wiley India. • Prasad, R. K. (2014). Linux Command Line and Shell Scripting Bible. Wiley India. • Sharma, A. (2018). Linux Security and Administration. Vikas Publishing House. • Venkateswaran, R. (2015). Linux Administration Handbook. PHI Learning. • Negus, C. (2015). Linux Bible. Wiley. • Petersen, R. W. (2017). Linux: The Complete Reference, Sixth Edition. McGraw-Hill Education.	
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S.Y.BCA
SEMESTER-III
BCA-MIN-232: Practical on Linux Operating System

Total Hours: 60

Credits: 2

Course objectives	• To earn and practice basic Linux commands for file and directory operations. • To gain skills to manage file and directory permissions effectively. • To understand network configuration and service management. • To learn techniques for securing and tuning system performance.	
Course outcomes	After successful completion of this course, students are expected to • Achieve proficiency in using the Linux command line interface. • Manage files, directories, and permissions efficiently. • Configure network interfaces and manage system services. • Implement security measures and optimize system performance.	
Unit	Content	Hours
1.	Demonstration to basic Linux commands for file and directory operations.	4
2.	Demonstration to change file and directory permissions using chmod, chown and chgrp.	4
3.	Demonstrations to add, modify and delete users and groups.	4
4.	Write a simple shell script to automate a task.	4
5.	Write shell scripts using loops and functions.	4
6.	Demonstration to Manage processes using ps, top, kill, nice and renice.	4
7.	Demonstration to Compress and decompress files using gzip, bzip2 and tar.	4
8.	Demonstration to Configure a network interface and set up IP addressing.	4
9.	Demonstration to Use network utilities like ping, traceroute, netstat and ifconfig.	4
10.	Demonstration to Create a script using loops to print numbers from 1 to 10.	4
11.	Write a Shell Script For Removing Duplicate Lines from Files.	4
12.	Write a Shell Script to check entered number is negative positive or zero	4
13.	Write a Shell Script For Cheking Even/Odd numbers Using && Operator.	4
14.	Write a shell script to automate a daily backup of a specific directory.	4

15.	Write a script to list all running processes and kill a specific process by PID.	4
Study Resources	• Bhatt, P. C. P. (2017). Introduction to Operating Systems. PHI Learning. • Jaiswal, A. (2018). Linux System Administration. Firewall Media. • Jain, V. K. (2016). Linux: Concepts and Administration. Wiley India. • Prasad, R. K. (2014). Linux Command Line and Shell Scripting Bible. Wiley India. • Sharma, A. (2018). Linux Security and Administration. Vikas Publishing House. • Venkateswaran, R. (2015). Linux Administration Handbook. PHI Learning. • Negus, C. (2015). Linux Bible. Wiley. • Petersen, R. W. (2017). Linux: The Complete Reference, Sixth Edition. McGraw-Hill Education. • https://tldp.org/ • https://linuxjourney.com/ • https://www.digitalocean.com/community/tutorials	

S.Y.BCA
SEMESTER-III
BCA-CEP: Community Engagement Program

Total Hours: 30

Credits: 2

In alignment with the National Education Policy (NEP) 2020, Moolji Jaitha College (Autonomous), Jalgaon is introducing the Community Engagement Program at the undergraduate level. The NEP 2020 emphasizes holistic development, inclusivity, and integrating vocational education with academic learning, aiming to nurture socially responsible individuals. Inspired by NEP 2020, the Community Engagement Program aims to produce knowledgeable, compassionate, and proactive graduates, contributing to a more just, equitable, and sustainable society. This course fosters a strong connection between education and socioeconomic problems of real-world. Students will learn about the challenges faced by vulnerable households and appreciate local wisdom and lifestyles.

Objectives

- To engage students in activities that promote emotional, social, and intellectual growth, fostering a well-rounded approach to personal and academic development.
- To provide hands-on experiences that complement classroom learning, enabling students to apply their knowledge in socioeconomic problems of real-world.
- To instil a sense of responsibility towards the community by encouraging students to actively participate in social and environmental initiatives, appreciate rural culture, lifestyle, and wisdom.

Learning Outcomes

After completing this course, students will be able to

- Understand rural and/or urban culture, ethos, and socioeconomic realities.
- Develop a sense of empathy with the local community while appreciating the significant contributions of local communities to society and the economy.
- Learn to value the local community wisdom and identify opportunities for contributing to the community's socioeconomic improvements.

Activities

- Conduct workshops and interactive sessions on emotional intelligence and social skills.
- Organize debates, discussions, and intellectual challenges that stimulate critical thinking and socioeconomic problem-solving using concern subject.
- Organize field visits where students can work on real-world problems, such as environmental conservation, rural and/or urban planning, or community health.
- Organize internships or service-learning opportunities with local businesses, NGOs, or government agencies.
- Facilitate project-based learning activities that require students to use their academic knowledge to develop solutions to community issues.
- Engage students in community service activities that address local social and environmental issues.

- Organize cultural exchange programs or field trips to rural areas to foster an appreciation of rural culture and wisdom.
- Facilitate collaborative projects involving students, educators, and community members to develop solutions for local challenges, promoting teamwork and collective problem-solving.
- Conduct educational sessions on the status of various agricultural and development programs and the challenges faced by vulnerable households, ensuring inclusivity and accessibility for all students.

S. No.	Module Title	Module Content	Assignment submission	Teaching/ Learning Methodology
1	Appreciation of Rural Society	Rural lifestyle, rural society, caste and gender relations, rural values with respect to community, nature and resources, elaboration of ‘soul of India lies in villages’, rural infrastructure.	Prepare a map (physical, visual or digital) of the village you visited and write an essay about inter-family relations in that village.	– Classroom discussions – Field visit – Assignment
2	Understanding rural and local economy and livelihood	Agriculture, farming, land ownership, water management, animal husbandry, non-farm livelihoods and artisans, rural entrepreneurs, rural markets, migrant labour.	Describe your analysis of the rural house hold economy, its challenges and possible pathways to address. Circular economy and migration patterns.	– Field visit – Group discussions in class – Assignment
3	Rural and local Institutions	Traditional rural and community organisations, Self-help Groups, Panchayati raj institutions (Gram Sabha, Gram Panchayat, Standing Committees), Nagarpalikas and municipalities, local civil society, local administration.	How effectively are Panchayati Raj and Urban Local Bodies (ULBs) institutions functioning in the village? What would you suggest to improve their effectiveness? Present a case study (written or audio-visual).	– Classroom – Field visit – Group presentation of assignment
4	Rural and National Development Programmes	History of rural development and current national programmes in India: Sarva Shiksha Abhiyan, Beti Bachao,	Describe the benefits received and challenges faced in the delivery of one of these programmes	– Classroom – Each student selects one program for field visit – Written assignment

Beti Padhao, Ayushman Bharat, Swachh Bharat, PM Awaas Yojana, Skill India, Gram Panchayat Decentralised Planning, National Rural Livelihood Mission (NRLM), Mahatma Gandhi National Rural Employment Guarantee Act 2005 (MGNREGA), SHRAM, Jal Jeevan Mission, Scheme of Fund for Regeneration of Traditional Industries (SFURTI), Atma Nirbhar Bharat, etc.

in the local community; give suggestions about improving the implementation of the programme for the poor. Special focus on the urban informal sector and migrant households.

Note: The modules are suggestive in nature and students can opt any one activities for community engagement program and field project based on topic appropriate to their regional community context.

Some additional suggestive themes for field-based / community engagement activities are listed below:

- Management curriculum may include aspects of micro-financing in a rural context;
- Chemistry syllabus can have a component of conducting water and soil analysis in surrounding field areas;
- Political science syllabus could include a mapping of local rural governance institutions and their functioning.
- Environment education will include areas such as climate change, pollution, waste management, sanitation, conservation of biological diversity, management of biological resources and biodiversity, forest and wildlife conservation, and sustainable development and living
- Understanding panchayats and constitutional mandate of local governance
- Panchayat administration, Gram Sabha, Mahila Sabha, Gram Panchayat Development Plan (GPDP), local planning of basic services.
- Micro-finance, SHGs, system of savings and credit for local business, linkages to banks, financial inclusion.
- Rural – entrepreneurship, opportunities for small business in local communities, access to financial and technical inputs to new entrepreneurs.
- Renewable energy, access to household and community level solar and bio-mass systems for sustainable energy use.

- Participatory Monitoring and evaluation of socio-economic development programmes, and cost-benefit analysis of project proposals.
- Migrant workers' livelihood security and social services.
- Hygiene and sanitation, improving health and personal behaviours, locally manageable decentralised systems and awareness against stubble burning.
- Water conservation, traditional practices of storage and harvesting, new systems of distribution and maintenance.
- Women's empowerment, gender inequality at home, community and public spaces, safety of girls and women, access to skills, credit and work opportunities.
- Child security, safety and good parenting, nutrition and health, learning and training for child care.
- Rural Marketing, market research, designing opportunities for rural artisans and crafts, and new products based on demand assessment.
- Community Based Research in Rural Settings, undertaking research that values local knowledge, systematises local practices and tools for replication and scale-up.
- Peri-urban development of informal settlements, mapping and enumeration, design of local solutions.

Assessment:

- Readings from related literature including e-content and reflections from field visits should be maintained by each student in the form of Field Diary (20 Marks)
- Submission of assignments based on modules assignment submission (details mentioned above) (20 Marks)
- Oral/ Group discussion/ Presentation (10 Marks)

S.Y.B.C.A.

SEMESTER-IV

S.Y.BCA
SEMESTER-IV
BCA-DSC-241: Java Programming – II

Total Hours: 30

Credits: 2

Course objectives	- To understand fundamentals of programming such as variables, conditional and iterative execution, methods, etc. - To understand fundamentals of object-oriented programming in java, including defining classes, invoking methods, using class libraries, etc. - To have the ability to write a computer program to solve specified problems. - To be familiar with GUI programming.	
Course outcomes	After successful completion of this course, students are expected to: - Write Java programs to implement GUI programming. - Deal with event handling. - Deal with swing components - Deal with web pages using applets.	
Unit	Content	Hours
Unit I	Unit 1: Graphics Programming - Introduction-frames - frame Layouts - Displaying information in a frame - Graphics objects and paint component method - Text and fonts Colors - Drawing shapes - Filling shapes - Paint mode and images	7
Unit II	Event Handling - Basic Event Handling - The AWT event hierarchy - Event handling summary-event sources and listener - Aadapter classes - Focus event - Window event - Keyboard event - Mouse events - Multicasting	8
Unit III	Swing - Introduction to layout management - Panels, Border Layout, GridLayout - Basics of Swing - Text Input- Text Field, Text Area, Passwordfield - Labels and Buttons - Making choices - Check boxes, Radio buttons, List, Comboboxes - JProgressBar class - JSlider class - JTable Class - Graphics in swing - Displaying Image - Menus-Building menus - Menu events	7

	○ Popup menu ○ Keyboard mnemonics and Accelerators ○ Enabling and disabling menus ○ Dialog boxes-opening dialogs using inbuilt dialog box	
Unit IV	Applets ○ Introduction to applet ○ How applet differ from Applications ○ Converting application to applets ○ Life cycle of applet ○ Creating Executable Applet ○ Applet Tag ○ Param Tag	8
Study Resources	● Cay's Horstmann and Gary Cornell. Core Java Volume -1 Fundamentals ● E. Balaguruswamy (Tata Mc Graw Hill) Programming with Java – A primer ● Herbert Schildt (TMH) The complete reference JAVA-2 Fifth Edition ● Java 6 Programming Black Book	

S.Y.BCA
SEMESTER-IV
BCA-DSC-242: Mathematics for Managers -II

Total Hours: 30

Credits: 2

Course objectives	• To study the simplex method for unbounded, alternative and infeasible solutions of LPP. • To study the initial basic feasible solution of transportation problem (TP). • To study the two person zero sum game, saddle point, maximin-minimax principal. • To study graphical method to solve $m \times 2$ and $2 \times n$ games and dominance property.	
Course outcomes	After successful completion of this course, students are expected to: • Solve the linear programming problem by graphical method and simplex method. • Learn the unbounded, alternative and infeasible solutions of LPP by graphical and simplex method. • Find the optimal solution of TP by MODI method. • Solve the solution of assignment problems by Hungarian Method. • Understand the unbalanced, balanced, maximization, restricted AP and alternative solution of AP.	
Unit	Content	Hours
Unit I	Linear Programming Problem (LPP) ○ Formation of LPP ○ Solution of LPP by graphical method ○ Standard and Canonical forms of LPP ○ Simplex Algorithm ○ Solution of LPP by simplex method ○ Artificial variable technique (Big M method) ○ Special cases in LPP: (a) Unbounded solution, (b) Alternate solution, and (c) Infeasible solution	7
Unit II	Transportation Problem (TP) ○ General Transportation Problem ○ Transportation Table. Methods for finding IBFS: ○ North –West corner rule ○ Matrix minima method (Least cost method) ○ Vogel’s approximation method (VAM) ○ Optimality test and optimization of solution to TP by U-V method (MODI). Special cases in TP: ○ Alternate solution ○ Maximization TP ○ Unbalanced TP ○ Restricted TP ○ Degeneracy in TP	8

Unit III	Assignment Problem (AP) ○ Mathematical Formulation of Assignment problem ○ Hungarian method for solving AP ○ Special cases in AP: ○ Alternate solution ○ Maximization AP ○ Unbalanced AP ○ Restricted AP	7
Unit IV	Game Theory ○ Two person-zero sum games ○ Pure and mixed strategies, value of a game ○ Maxmin and Minimax principles and saddle point ○ Solution of 2×2 game by algebraic method and oddment method ○ Game without saddle points-mixed strategies, Graphical solution of $m \times 2$ and $2 \times n$ games ○ Dominance Property	8
Study Resources	• Kanti Swarup, P. K. Gupta, Man Mohan, Operations Research, S. Chand and Sons, Educational Publishers, New Delhi. Twelfth Edition, 2004.(Chapter No.- 3, 4, 10, 11) • S. D. Sharma and K.Ramnath, Operations Research, Meerut Publication, 2012. • Prem Kumar Gupta, Operations Research, S. Chand and Company pvt Ltd. New Delhi 7th Edition, 2014.	

**S.Y.BCA
SEMESTER-IV**

BCA-DSC-243: Practical on Java Programming - II

Total Hours: 60

Credits: 2

Course objectives	• To get practical knowledge of Java GUI Programming. • To get hands on practical knowledge for Java Programming GUI concepts • To get basic practical knowledge about the Swing Components. • To acquaint concepts of Applets.	
Course Outcomes	After successful completion of this course, students are expected to: • Aware about basic concepts of Java GUI Programming. • Aware about basic concepts multithreading. • Use various swing components of java. • Execute Applet Programming.	
Sr. No.	Content	Hours
1	Write a program in Java to display messages in various fonts in a frame	4
2	Write a program in Java to draw various geometric shapes like circle, line, rectangle etc.	4
3	Write a program in Java to demonstrate paint mode.	4
4	Write a program in Java to demonstrate window events.	4
5	Write a program in Java to demonstrate Mouse events.	4
6	Write a program in Java to demonstrate Keyboard events.(key pressed, key released)	4
7	Write a program in Java to demonstrate multicasting	4
8	Write a program in Java to demonstrate user interface component Text Input.	4
9	Write a program in Java to demonstrate user interface component Labels and Buttons.	4
10	Write a program in Java to demonstrate user interface component list boxes and combo box.	4
11	Write a program in Java to demonstrate user interface component radio button and check box.	4
12	Write a program in Java to demonstrate menus as interface component .	4
13	Write a program in Java to demonstrate multithreading.	4
14	Write an Applet to display human face.	4
15	Write a program in Java to demonstrate Java Applet with parameter.	4
Study Resources	• Cay's Horstmann and Gary Cornell. Core Java Volume -1 Fundamentals • E. Balaguruswamy (Tata Mc Graw Hill) Programming with Java – A primer • 3.Herbert Schildt (TMH) The complete reference JAVA-2 Fifth Edition - Java 6 Programming Black Book	

Note: At least 12 experiments should be performed.

**S.Y.BCA
SEMESTER-IV**

BCA-DSC-244: Practical on Mathematics for Managers -II

Total Hours: 60

Credits: 2

Course objectives	• To study problems on a linear programming problem (LPP). • To study problems on graphical and simplex method. • To study problems on optimum solution of transportation problem (TP) and assignment problems (AP). • To study problems on game using maximin-minimax principle, algebraic method and principle of dominance, graphical method.	
Course Outcomes	After successful completion of this course, students are expected to: • To solve problems on a linear programming problem (LPP). • To solve linear programming problem by graphical and simplex method. • To find optimum solution of transportation problem (TP) and assignment problems (AP). • To solve game using maximin-minimax principle, algebraic method and principle of dominance. • To solve $m \times 2$ and $2 \times n$ games by graphical method.	
Sr. No.	Content	Hours
1	Linear programming problem (LPP)	4
2	Graphical method	4
3	Simplex method	4
4	Big-M method	4
5	North –West corner rule and matrix minima method (Least cost method)	4
6	Vogel’s approximation method (VAM)	4
7	Optimum solution to transportation problem (TP)	4
8	Alternate solution, maximization TP and restricted TP	4
9	Assignment problem (AP)	4
10	Alternate solution to AP	4
11	Maximization AP, unbalanced AP and restricted AP	4
12	Maximin and Minimax principles to solve game	4
13	Algebraic method	4
14	Principle of Dominance	4
15	Graphical solution of $m \times 2$ and $2 \times n$ games	4
Study Resources	• Kanti Swarup, P. K. Gupta, Man Mohan, Operations Research, S. Chand and Sons, Educational Publishers, New Delhi. Twelfth Edition, 2004. (Chapter No.- 3, 4, 10, 11) • S. D. Sharma and K.Ramnath, Operations Research, Meerut Publication, 2012.	

	• Prem Kumar Gupta, Operations Research, S. Chand and Company pvt Ltd. New Delhi 7th Edition, 2014.	
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SYBCA
SEMESTER-IV
BCA-MIN-241: System Analysis and Design
Total Hours: 30 **Credits: 2**

Course objectives	• To introduce basic system concepts and the stages of SDLC. • To teach methods for gathering and analyzing system requirements. • To provide knowledge on system implementation and upkeep. • To enable hands-on practice with real-world projects.	
Course outcomes	After successful completion of this course, students are expected to • Gather and analyze system requirements effectively. • Design user interfaces, databases, and outputs. • Implement systems and maintain them properly. • Apply knowledge to real-world projects.	
Unit	Content	Hours
Unit I	Basic Concept of Systems ○ The System: Definition and Concepts, Characteristics of a System ○ Elements of a System: Input, Output Processor, Control, Feedback, Environment, Boundaries and Interface ○ Types of systems -Physical and Abstract System, Open and Closed Systems, Role of a System Analyst ○ System Planning and Selection: Identifying Needs and Feasibility Analysis, Cost-Benefit Analysis, Project Initiation and Planning	7
Unit II	System Development Life Cycle (SDLC) ○ Introduction to SDLC, Various phases: study, analysis, design, development, testing, implementation, maintenance; System documentation: Types of documentation and their importance - System Analysis: ○ Information Gathering: Techniques: Interviews, Questionnaires, Observation, Document Analysis ○ Tools: Data Flow Diagrams (DFD), Entity-Relationship Diagrams (ERD) ○ Requirements Determination: Types of Requirements: Functional and Non-functional, Requirement Analysis Strategies, Creating and Managing Requirement Documents	8
Unit III	System Design ○ Design Methodologies: Structured Design, Object-Oriented Design, Agile Design, Top-down and bottom-up design. ○ Input and Output Design: Designing User Interfaces, Classification of forms, Requirements of Form design, Designing Forms and Reports. ○ Database Design: Normalization, Database Management Systems	7

	(DBMS), Designing Database Schema	
Unit IV	System Implementation and Maintenance ○ System Implementation: ○ Coding and Testing, ○ Implementation Methods: Direct, Parallel, Phased, Pilot ○ User Training and Documentation ○ System Maintenance ○ Types of Maintenance: Corrective, Adaptive, Perfective, Preventive ○ Maintenance Strategies, Evaluating and Improving System Performance ○ Need of System Testing, Types of System Testing, Quality Assurance; System Conversion, Conversion methods, procedures and controls, System evaluation and performance, Maintenance activities and issues	8
Study Resources	• Elias M. Awad. (2007). System Analysis and Design. Vikas Publishing House Pvt Ltd. • Parthasarathy, S. (2008). System Analysis and Design. Dreamtech Press. • Rajaraman, V. (2011). Analysis and Design of Information Systems. PHI Learning Pvt. Ltd. • Goyal, A. (2012). Analysis and Design of Information Systems. Deep & Deep Publications. • Aggarwal, K. K., & Singh, Y. (2008). Software Engineering: Programs Documentation, Operating Procedures. New Age International. • Prasad, K. V. K. K. (2013). Software Testing Tools. Dreamtech Press. • Bhatt, P. (2011). Object-Oriented Analysis and Design with Applications. PHI Learning Pvt. Ltd. • Sinha, P. (2007). Software Engineering and Quality Assurance. Excel Books India. • Whitten, J. L., Bentley, L. D., & Dittman, K. C. (2006). Systems Analysis and Design Methods. Tata McGraw-Hill Education. • Sharma, S., & Kanetkar, Y. (2009). Logic and System Design. BPB Publications.	

**SYBCA
SEMESTER-IV**

BCA-MIN-242 : Practical on System Analysis and Design

Total Hours: 60

Credits: 2

Course objectives	• To understand the components and purpose of a system proposal document. • To grasp the relationships between entities in a system. • To gain experience in gathering system requirements through interviews. • To learn how to design questionnaires for collecting user requirements.	
Course outcomes	After successful completion of this course, students are expected to • Ability to create a comprehensive system proposal for a hypothetical project. • Skill in developing DFDs and ERD for various systems. • Skill in developing detailed project plans using tools. • Competence in creating detailed and effective output reports for systems.	
Unit	Content	Hours
1.	Create a system proposal document for a hypothetical project.	4
2.	Develop a Level 0 Data Flow Diagram for a library management system.	4
3.	Create an ERD for a hospital management system.	4
4.	Conduct a mock interview to gather system requirements for a retail management system.	4
5.	Design a questionnaire to gather user requirements for an online shopping system.	4
6.	Perform a feasibility analysis for a new e-commerce project.	4
7.	Develop a project plan using Gantt Chart for a small IT project.	4
8.	Design input forms for a student registration system.	4
9.	Create an output report for a payroll management system.	4
10.	Develop a use case diagram for an ATM system.	4
11.	Create a class diagram for a hotel booking system.	4
12.	Design a normalized database schema for an inventory management system.	4
13.	Develop a prototype of a user interface for a ticket booking system.	4
14.	Implement and perform unit testing on a small module of a billing system.	4
15.	Evaluate the performance of an existing system and provide	4

	improvement suggestions.	
Study Resources	• Elias M. Awad. (2007). System Analysis and Design. Vikas Publishing House Pvt Ltd. • Parthasarathy, S. (2008). System Analysis and Design. Dreamtech Press. • Rajaraman, V. (2011). Analysis and Design of Information Systems. PHI Learning Pvt. Ltd. • Goyal, A. (2012). Analysis and Design of Information Systems. Deep & Deep Publications. • Aggarwal, K. K., & Singh, Y. (2008). Software Engineering: Programs Documentation, Operating Procedures. New Age International. • Prasad, K. V. K. K. (2013). Software Testing Tools. Dreamtech Press. • Bhatt, P. (2011). Object-Oriented Analysis and Design with Applications. PHI Learning Pvt. Ltd. • Sinha, P. (2007). Software Engineering and Quality Assurance. Excel Books India. • Whitten, J. L., Bentley, L. D., & Dittman, K. C. (2006). Systems Analysis and Design Methods. Tata McGraw-Hill Education. • Sharma, S., & Kanetkar, Y. (2009). Logic and System Design. BPB Publications.	

SYBCA
SEMESTER-IV
CS-FP: Field Projects

Total Hours: 30

Credits: 2

Preamble

In alignment with the National Education Policy (NEP) 2020, Moolji Jaitha College (Autonomous), Jalgaon is introducing the Field Project at the undergraduate level. The NEP 2020 emphasizes holistic development, inclusivity, and integrating vocational education with academic learning, aiming to nurture socially responsible individuals. This course fosters a strong connection between education and real-world applications. These initiatives aim to bridge the gap between theoretical knowledge and practical experience, helping students develop critical thinking, problem-solving skills, and a sense of civic responsibility.

Objectives

- To provide students with practical exposure in rural and urban socioeconomic context.
- To develop students abilities to apply subject knowledge to address real world problems
- To foster critical thinking and innovative approaches to solve socioeconomic issues.

Outcomes

After completing this course, students will be able to

- Participate actively in filed projects that benefit local communities and promote sustainable development practices.
- Analyse the socio economic data using appropriate methods showcasing improved problem-solving skills, technical proficiency.
- Demonstrate the ability to apply theoretical knowledge to real-world situations effectively and exhibit communication skills.

Course structure

The course is divided in to four probable phases

I] Orientation and preparation

- Introduce to the course, objectives and expectation
- Overview of socioeconomic development issues in rural and urban context
- Training on working methodology and data collection techniques
- Review existing literature related to topic to understand the background and context.

II] Work plan and Field visit

- Visit the potential sites to get a sense of the environment and logistical requirements.
- Create a detailed project plan outlining the steps, timeline, resources needed, and roles of team members.
- Obtain necessary approvals (Ethical/ local authorities/organizations/communities)
- Gather materials and resources (recording devices, cameras, notebooks and supplies)
- Conduct Preliminary Survey, choose appropriate methods for data collection and analysis (e.g., surveys, interviews, observations).

III] Data collection and analysis

- Pilot test to identify issues with data collection.
- Collect data systematically, ensuring consistency and accuracy.
- Keep detailed records of all data (field notes, recordings, photographs etc)
- Organize and analyse the data (manual/ software)

IV] Interpretation and Reporting

- Interpret your findings in the context to objectives.
- Write and submit a comprehensive report detailing your methodology, findings, analysis, and conclusions. (Include visuals - charts, graphs, and photographs).
- Prepare a presentation to share findings with peers/ instructors/ community.

Assessment

- Field work participation, field note book, team work etc. (10 Marks)
- Data Collection and Analysis (15 Marks)
- Field project report (15 Marks)
- Presentation of Findings (10 Marks)

Examples of activities to be conducted under field projects

- **Biodiversity Survey:** Conduct a biodiversity survey in a local park or nature reserve, documenting plant and animal species.
- **Water Quality Testing:** Test water samples from different sources (e.g., rivers, lakes, ground water) for pollutants and compare results.
- **Soil Analysis:** Collect soil samples from various locations and analyse their composition and quality.
- **Wildlife Tracking:** Use camera traps or tracking devices to monitor and study the behaviour of local wildlife.
- **Urban Heat Island Effect:** Measure and map temperature differences in various parts of a city.
- **Land Use Mapping:** Create maps showing different land uses in a region and analyze changes over time.
- **Cultural Heritage Documentation:** Document and analyze local cultural heritage sites or practices.
- **Community Interviews:** Conduct interviews with community members to understand social dynamics and traditions.
- **Ethnographic Study:** Participate in and observe community events to gather ethnographic data.
- **Crop Yield Analysis:** Study the factors affecting crop yield in different fields or under different farming practices.
- **Pest Management:** Investigate the effectiveness of various pest management techniques in local farms.
- **Sustainable Farming Practices:** Evaluate the impact of sustainable farming practices on soil health and crop productivity.

- **Community Needs Assessment:** Conduct surveys and interviews to identify the needs and concerns of a community.
- **Social Network Analysis:** Study the social networks within a community to understand relationships and influence.
- **Public Health Study:** Investigate public health issues in a community, such as access to healthcare or prevalence of diseases.
- **Infrastructure Survey:** Assess the condition and effectiveness of local infrastructure, such as roads, bridges, and buildings.
- **Renewable Energy Potential:** Evaluate the potential for renewable energy sources (e.g., solar, wind) in a specific area.
- **Water Management:** Study and improve local water management systems, including irrigation and drainage.
- **Literacy Program Evaluation:** Evaluate the effectiveness of local literacy programs and suggest improvements.
- **Educational Resource Assessment:** Assess the availability and quality of educational resources in local schools.
- **Market Analysis:** Conduct a market analysis for a local business or industry.
- **Entrepreneurship Project:** Develop a business plan for a local entrepreneurial venture.
- **Local History Documentation:** Research and document the history of a local site, building, or community.
- **Oral History Project:** Conduct interviews with local residents to collect oral histories and preserve community memories.
- **Archival Research:** Explore local archives to uncover historical documents and artifacts related to a specific topic or period.
- **Community Mural:** Design and create a mural in collaboration with community members that reflects local culture and history.
- **Public Art Installation:** Develop and install a public art project that engages the local community.
- **Art Exhibit Curation:** Curate an exhibit featuring works by local artists, highlighting themes relevant to the community.
- **Music Documentation:** Record and document traditional or contemporary music from the local area.
- **Community Concerts:** Organize and perform in community concerts that showcase local musical talent.
- **Community Theatre Production:** Develop and produce a play that involves community members as actors and crew.
- **Site-Specific Theatre:** Create a theatrical performance that takes place in a non-traditional venue, such as a historic site or public space.
- **Cultural Mapping:** Map cultural resources and heritage sites within the community and analyze their significance.
- **Festival Documentation:** Document and analyze local festivals or cultural events, exploring their history and impact.
- **Ethnographic Study:** Conduct an ethnographic study of a particular cultural practice or community group.

- **Public Philosophy Discussions:** Organize and facilitate public discussions on philosophical topics relevant to the community.
- **Community Documentary:** Create a documentary film about a local issue, event, or group.
- **Digital Storytelling:** Develop digital storytelling projects that capture and share local stories.
- **Language Survey:** Conduct a survey of languages spoken in the community and analyze patterns of language use and change.
- **Dialect Study:** Study and document local dialects or accents, exploring their features and origins.
- **Language Preservation:** Work with community members to document and preserve endangered languages or dialects.
- **Gentrification Impact Study:** Examine the effects of gentrification on local communities, including displacement and economic changes.
- **Crime and Safety Analysis:** Study crime patterns and perceptions of safety within a community.
- **Ritual and Festival Study:** Participate in and document local rituals or festivals to understand their social and cultural significance.
- **Migration Patterns Study:** Analyze migration patterns and their effects on both the sending and receiving communities.
- **Food and Culture Study:** Investigate the role of food in cultural practices and social interactions within a community.
- **Local Governance Analysis:** Study the structure and functioning of local government and its impact on the community.
- **Political Participation Study:** Analyze patterns of political participation and engagement within a community.
- **Public Policy Impact Assessment:** Evaluate the impact of specific public policies on local communities.
- **Election Study:** Analyze voting behavior and patterns in local elections.
- **Mental Health Survey:** Conduct surveys to assess the mental health needs and resources in a community.
- **Social Behavior Observation:** Observe and analyze social behaviors in public spaces, such as parks or markets.
- **Stress and Coping Study:** Investigate sources of stress and coping mechanisms within a community.
- **Community Support Systems:** Study the role and effectiveness of community support systems and networks.
- **Youth Development Programs:** Evaluate the impact of youth development programs on community wellbeing.
- **Educational Equity Study:** Assess disparities in educational resources and outcomes in local schools.
- **Parent and Teacher Interviews:** Conduct interviews to understand perceptions of educational quality and challenges.
- **After-School Program Evaluation:** Evaluate the effectiveness of after-school programs in supporting student development.
- **Educational Attainment Study:** Analyze factors influencing educational attainment in a community.

- **Local Economy Analysis:** Study the structure and dynamics of the local economy, including key industries and employment patterns.
- **Small Business Survey:** Conduct surveys of local small businesses to understand their challenges and successes.
- **Economic Impact of Events:** Analyze the economic impact of local events or festivals on the community.
- **Income Inequality Study:** Investigate patterns and causes of income inequality within a community.
- **Housing Affordability Analysis:** Study housing affordability issues and their impact on residents.
- **Gender Roles and Expectations:** Study gender roles and expectations within a community and their impact on individuals.
- **Women's Health Study:** Investigate issues related to women's health and access to healthcare.
- **Gender-Based Violence Survey:** Conduct surveys to understand the prevalence and impact of gender-based violence.
- **Workplace Equality Study:** Analyze gender equality in local workplaces, including pay equity and job opportunities.
- **Urban Development Projects:** Study the impact of urban development projects on local communities.
- **Public Space Usage:** Analyze how public spaces are used and perceived by different community members.
- **Transportation Study:** Investigate transportation needs and challenges within a community.
- **Green Space Analysis:** Study the availability and usage of green spaces in urban areas and their impact on residents.