

### Harikisan Jajoo Education Sanstha

# COLLEGE OF MANAGEMENT AND CMCS COMPUTER SCIENCE, YAVATMAL.

(Affiliated to Santa Gadgebaba Amravati University, Amravati ) College Code 457 / MBA Code 1106

www.cmcs.hjes.in

cmcs457@sgbau.ac.in

9423131946

Address:- Behind Naringe Nagar, Dhamangaon Road, Yavatmal 445001

### **INDEX**

Sr. No	Description	Page No.
1	PO, PSO, CO of MBA Program	2
2	PO, PSO, CO of M.Sc.(Computer Science) Program	22
3	PO, PSO, CO of BCA Program	34
4	PO, PSO, CO of BBA Program	70



College Of Management And Computer Science, Yavatmal

## College of Management and Computer Science, Yavatmal Department of Master in Business Administration

#### PO, PSO, CO's of MBA

#### **Program Outcomes**

- PO1: Apply knowledge of management theories and practices to solve business problems.
- PO2: Foster Analytical and critical thinking abilities for data-based decision making.
- PO3: Ability to develop Value based Leadership ability.
- PO4: Ability to understand, analyze and communicate global, economic, legal, and ethical aspects of business.
- PO5: Ability to lead themselves and others in the achievement of organizational goals, contributing effectively to a team environment.

#### **Program Specific Outcomes**

- PSO1: Students should exhibit effective skills of communication to organize presentations, events, exhibitions, seminars and conferences.
- PSO2: Demonstrate knowledge and understanding of data based decision making using their critical-thinking and problem solving skills in multidisciplinary environments.
- PSO3: An ability to apply knowledge, skills and right attitude necessary to provide effective leadership in a global environment.
- PSO4: An ability to develop competent management professionals with strong ethical values, capable of assuming a pivotal role in various sectors of the Indian Economy & Society, aligned with the national priorities.
- PSO5: An ability to develop proactive thinking so as to perform effectively in the dynamic socio-economic and business ecosystem.
- PSO6: An ability to communicate effectively.

#### **Course Outcomes (COs):**

Sr.	Name of the course	Course Code	Course Outcome
No			
		M	BA Semester First
1	Principles & Practice Of  Management	MBA/101	<ul> <li>To help the students gain understanding of the responsibilities and functions of Management.</li> <li>Recognize the role of a manager and how it relates to the organization's mission.</li> <li>To get knowledge about various leadership style.</li> <li>To enable the effective and barriers communication in the organization and it will help to know the system and process of effective controlling in the organization.</li> </ul>
2	Managerial Economics	MBA/102	<ul> <li>Understand the roles of managers in firms.</li> <li>Understand the internal and external decision to be made by managers.</li> <li>Analyze the demand and supply conditions and assess the Position of a company</li> <li>Analyze real - world business problems with a systematic theoretical framework.</li> </ul>

3	Managerial Skill Development	MBA/103	<ul> <li>Make optimal business decision by integrating the concepts of economics, mathematics and statistics.</li> <li>Design competition strategies, including costing, pricing, product differentiation, and market environment according to the natures of products and the structures of the market</li> <li>To aware the students with the necessary techniques &amp; skills of communication and presentation.</li> <li>It enables in developing confidence among students to perform better as professionals.</li> <li>To facilitate students understanding of their own managerial skills.</li> <li>To understand the role of communication in the process of</li> </ul>
4	Accounting For Managers	MBA/104	<ul> <li>To understand the role of communication in the process of management.</li> <li>The basic Purpose of this course is to develop an insight of Postulates.</li> <li>To acquaint the students with the Management Accounting, Need and importance.</li> <li>To aware students about Principles and techniques of Accounting.</li> <li>To understand the student about utilization of financial and</li> </ul>
5	Organization Behavior & Effectiveness	MBA/105	accounting information for Planning and decision -making and control.  • Understanding Individual Behavior and its importance in professional life

			<ul> <li>Understanding group behavior and its effects on organization.</li> <li>Understanding the concept of organizational change.</li> <li>Understanding and implementing organizational effectiveness.</li> <li>Understanding the power and culture of organization.</li> </ul>
6	Business Ethics	MBA/106	<ul> <li>To acquaint the students with ethical values and practices with emphasis on Indian Values and Culture.</li> <li>To make the students familiarize with principles and models of theory of karma</li> <li>To aware the students about Meaning and applicability of ethics in business</li> <li>It enables students to handle the ethical dilemma during the real business</li> </ul>
7	Management Information System	MBA/107	<ul> <li>Developing the understanding about the use of intelligent system in business</li> <li>Understanding the basic of MIS</li> <li>Using Computer system for effective decision making.</li> <li>Understanding the application of Artificial Intelligence in Business.</li> <li>Future of business and MIS</li> </ul>
8	Quantitative Methods(Grade)	MBA/108	<ul> <li>The students will be able to Distinguish between different mathematical techniques and applications</li> <li>The students will be able to Employ appropriate mathematical tools</li> </ul>

			<ul> <li>to solve problems</li> <li>The students will be able to calculate and interpret statistical values by using statistical tool (correlation &amp; regression)</li> <li>The students will be able to Understand various quantitative &amp; statistical methods</li> <li>The students will be able to understand relevance &amp; need of quantitative methods for making business decisions</li> </ul>
		MI	BA Semester Second
9	Business Environment	MBA/201	<ul> <li>To equip the students with the basic understanding of Business and its types.</li> <li>This course is to acquaint the students to emerging trends of business environment.</li> <li>To understand student about Controllable and Non controllable environment.</li> <li>To aware student of Business environment at local and global level</li> </ul>
10	Research Methodology	MBA/202	<ul> <li>To equip the students with the basic understanding of the research methodology and to provide and insight into the application of modern analytical tools and techniques for the purpose of management decision making.</li> <li>To make students aware with the how problem identification should done and how hypothesis formulation should done</li> <li>To equip the students with research process and research design and</li> </ul>

11	Human Resource Management	MBA/203	<ul> <li>applicability of exploratory research</li> <li>To familiarize the students government and non government research agencies</li> <li>To acquaint the role of human resource management in organizations and the factors shaping the role.</li> <li>To enable the students to understand the HR management system at</li> </ul>
			<ul> <li>various level in general and in certain specific industries or organization.</li> <li>To help the students focus on and analysis the issues and strategies required to select and develop manpower resources.</li> <li>To integrate the knowledge of Virtual organization and HR Trends and issues to International HRM.</li> </ul>
12	Financial Management	MBA/204	<ul> <li>To acquaint the students with the broad framework of financial decision making in a business unit.</li> <li>To aware the overall role and importance of the finance function.</li> <li>It will helps in analyzing the complexities associated with management of cost of funds in the capital structure.</li> <li>To understand how the concepts of financial management and investment, financing and dividend policy decisions could integrate while identification and resolution of problems.</li> </ul>
13	Marketing Management	MBA/205	The purpose of this course is to develop an understanding Concept     of Marketing

			<ul> <li>The purpose of this course is to develop an understanding Strategies of Marketing</li> <li>To familiarize the students with Issues involved in the Marketing</li> <li>To familiarize the students with Product Distribution in Marketing Management</li> <li>To familiarize the students with Services in Marketing Management</li> </ul>
14	Production & Operations  Managment	MBA/206	<ul> <li>Familiarizing the students with the concept of production system.</li> <li>Introducing to different types of production systems</li> <li>Introduction to ISO and TQM.</li> <li>Understanding material handling.</li> <li>Highlighting the importance of quality.</li> </ul>
15	Logistics Management	MBA/207	<ul> <li>Understand the principles of procurement and outsourcing.</li> <li>Apply the principles of inventory management.</li> <li>Apply packaging and material handling principles to logistics operations.</li> <li>Use the principles of warehousing to improve their warehousing operations</li> </ul>
16	Management Science (Grade)	MBA/208	<ul> <li>To familiarize the students with Basic concept &amp; role of management science in decision making.</li> <li>To familiarize the students with Basic concept about Decision Theory, Decision Tree.</li> </ul>

		MB	BA Semester Third
17	Business Law	MBA/301	<ul> <li>To familiarize the students with different provisions of Indian Contract Act, 1872.</li> <li>To familiarize the students with different provisions of Sale of Goods Act, 1930.</li> <li>To familiarize the students with different provisions of Negotiable Instrument Act, 1881.</li> <li>To familiarize the students with different provisions of Consumer Protection Act &amp; IT Act.</li> </ul>
18	Indian Financial System (Finance)	MBA/3101/F	<ul> <li>To make the students familiarize with the operational dimensions of Indian Financial System.</li> <li>To aware about the different components of a financial system and their role.</li> <li>To make the students familiarize the instruments, participants and operation of the money market.</li> <li>It enables student how to take decisions in Financial Markets.</li> </ul>
19	Banking System (Finance)	MBA/3102/F	<ul> <li>To familiarize the students with different provisions of Banking System in India.</li> <li>To familiarize the students with different provisions of Banking Regulation Act.</li> <li>To make students aware about the different functions of commercial</li> </ul>

			Bank & Central Bank.
			To make students aware about Upcoming Issues in Banks.
20	Working Capital Management (Finance)	MBA/3103/F	<ul> <li>To acquaint the students with the importance of the working capital and the techniques used for effective working capital management.</li> <li>It will helps student to evaluate comparative working capital management policies and their impact on the firm's profitability,</li> </ul>
			<ul> <li>liquidity, risk and operating flexibility.</li> <li>To familiarize basic principles of cash management and the relevance of cash budgeting.</li> <li>To understand inventory management and application of simple inventory control techniques: Economic Order Quantity and Re-order Level methods.</li> </ul>
21	International Financial  Management (Finance)	MBA/3104/F	<ul> <li>To get knowledge about international financial system and how multinational corporations operate.</li> <li>To make students aware about the International Monetary System</li> <li>To understand applicability of various modes of International Business activities.</li> <li>To make students aware about the foreign exchange operating exposure.</li> </ul>
22	Investment Science (Finance)	MBA/3105/F	<ul> <li>To acquaint the students with the criterion and process of investment decisions.</li> <li>To understand the valuation of investment in shares.</li> </ul>

23	Risk Management (Finance)	MBA/3106/F	<ul> <li>To make students aware about theory of Interest, Time Value consideration.</li> <li>To get knowledge about Stock Market,</li> <li>To make the students well versed with the mechanism of risk estimation and elimination framework for financial decision making in modern business scenario.</li> <li>To identify and categories the various risks face by an organization.</li> <li>To familiarize with the risk management process.</li> <li>To aware about the risk assessment, risk and organizations, risk response, risk assurance and reporting.</li> </ul>
24	International Marketing Strategy(Marketing)	MBA/3201/M	<ul> <li>Have developed an understanding of major issues related to international marketing.</li> <li>Have developed skills in researching and analyzing trends in global market and in modern marketing practice.</li> <li>Be able to asses an organization's ability to enter and compete in international markets.</li> <li>To develop skills in researching and analyzing international marketing opportunities.</li> </ul>
25	Sales & Distribution Management (Marketing)	MBA/3202/M	<ul> <li>Analyze how organization conceive, produce, and transfer goods and services to points of consumption.</li> <li>Identify how organization develop and expand customer relationships.</li> </ul>

26	Consumer Behavior (Marketing)	MBA/3203/M	<ul> <li>Integrate various methods of developing, directing, and evaluating sales forces and distribution channels.</li> <li>To sharpen decision making skills of future sales and distribution management system.</li> <li>The students will be able to demonstrate how knowledge of consumer behavior can be applied to marketing.</li> <li>The students will be able to Identify and explain factors which influence consumer behavior.</li> <li>The students will be able to relate internal dynamics such as personality, perception, learning motivation and attitude to the choices consumers make.</li> <li>The students will be able to understand consumer behavior in an informed and systematic way</li> <li>To enable students in designing and evaluating the marketing strategies based on fundamentals of consumer buying behavior.</li> </ul>
27	Advertising Management (Marketing)	MBA/3204/M	<ul> <li>Demonstrate an understanding of the overall role advertising plays in the business world.</li> <li>Identify and understand the various advertising media.</li> <li>Demonstrate an understanding of how an advertising agency operates.</li> <li>Demonstrate an understanding of advertising strategies and budgets.</li> </ul>
28	Brand Management (Marketing)	MBA/3205/M	To familiarize the students with Depth Knowledge of Brand

			Management
			To familiarize the students with Branding in Different Sectors
			To familiarize the students with Managing Brands
			To familiarize the students with Commodity, Product, Brands
			To familiarize the students with Importance of Branding in Market
29	Agro Business Marketing	MBA/3206/M	To familiarize the students with modern Agriculture Scenario and
	(Marketing)		Practices in India & to acquaint with opportunities & challenges in
			with emphasis on Agriculture Marketing.
			To acquire student with the knowledge about agriculture allied
			product and agro based Industry
			To aware about upcoming practices in agriculture marketing in India
			and abroad.
			To equip the knowledge about retailing and merchandising of agri
			products and its export potential.
30	Management Of Industrial	MBA/3301/H	To acquaint students with the principles and practices of
	Relations(HR)		management of Industrial Relations and to teach them the
			importance of various aspects and issues related to it.
			To aware students about trade unions and its role and future
			To make students aware about various industrial dispute and
			procedure of negotiation with collective settlement
			To make the student aware with industrial relation and its effect on
			technology change

31	Human Relation & Legal Frame	MBA/3302/H	To familiarize students with legal aspects and frame work related to
	Work(HR)		human relations at work place.
			To familiarize the students with socio economical effect of labor
			law.
			To aware the students with law relating to industrial dispute and law
			relating to discharge of duty
			To familiarize the students about law relating to workman
			compensation and various benefits
32	Compensation Management (	MBA/3303/H	To make the students well versed with the principles and practices of
	HR)		Compensating the Human Resource of an organization.
			To understand the legally required employee benefit.
			Recognize how pay decisions help the organization achieve a
			competitive advantage.
			To make students aware about compensation practices of corporate
			and public sector companies.
33	Human Resource Development	MBA/3304/H	To acquaint students with principles, objectives and practices of
	(HR)		human resource development in 21st century.
			To develop, implement, and evaluate employee orientation, training,
			and development programs.
			To make students aware about the HRD Audit and Accounting
			To Identify and understand Training makes people more competent

34	Management Of Training & Development (HR)	MBA/3305/H	<ul> <li>To familiarize students with training needs techniques and applications for overall development of employees.</li> <li>To will enhance the knowledge and skills of employee.</li> <li>It will help in understanding the responsibility and steps in conducting a training programmed.</li> <li>It will help student in improving work skills and behaviour.</li> </ul>
35	Performance Management (HR)	MBA/3306/H	<ul> <li>To familiarize the students with performance and its management.</li> <li>To impart necessary skills regarding assessment, evaluation of employee in the organization.</li> <li>To learn of new concepts, trends in the field of performance management.</li> <li>To aware about the performance strategy, performance evaluation system and performance appraisal system.</li> </ul>
36	Dissertation	MBA/307	<ul> <li>The objective of this course is to get practical exposures to students in different industries.</li> <li>While preparing dissertation students has to visit industry &amp; acquire knowledge about the different process in Marketing, Human Resource &amp; Finance.</li> </ul>
			BA Semester Four
37	Strategic Management	MBA/401	The objective of this course is to develop understanding about strategic processes and their impact on a firm India.

			<ul> <li>To make the student understand evolution of strategic management and corporate policy.</li> <li>It enables the student to understand the competitive Analysis and Internal corporate analysis.</li> <li>To acquaint the students about corporate diversification, Merger and acquisition</li> </ul>
38	Financial Decision Analysis (Finance)	MBA/4101/CGF	<ul> <li>To impart an intensive knowledge about the use of quantitative techniques in specified financial decision making areas.</li> <li>To aware about the financial decision making tools.</li> <li>To solve financial decision problems through the use of quantitative and qualitative analysis techniques.</li> <li>To facilitate financial decision models.</li> </ul>
39	Security Analysis & Portfolio Management (Finance)	MBA/4102/CGF	<ul> <li>To provide a theoretical and practical background in the field of Investment.</li> <li>To understand concept of Fundamental and Technical Analysis.</li> <li>Equipped with the knowledge of security analysis.</li> <li>To familiarizes the students with the portfolio investment process.</li> <li>To provide insight about the relationship of Risk and Return.</li> </ul>
40	Financial Derivatives (Finance)	MBA/4103/CGF	<ul> <li>To understand the functioning of derivative securities market.</li> <li>To aware about the forward contract concepts.</li> <li>Students can apply their knowledge of derivatives in solving</li> </ul>

			problems involving financial risks including foreign exchange risk,
			interest rate risk, credit risk and portfolio risks.
			To understand the use of derivative instruments including interest
			rate, equity, and currency forwards, futures, options, swaps and
			embedded derivatives.
41	Management Of Financial	MBA/4104/CGF	To familiarize the students with different financial Service.
	Services (Finance)		To make students aware about the capital market.
			To make students aware about the credit rating agencies.
			To make students aware about the venture capital companies.
42	Foreign Exchange Market	MBA/4105/CGF	To understand how the foreign exchange market operates.
	(Finance)		To understand the principles of currency valuation.
			To make students aware about the foreign exchange management in
			India.
			To make students aware the about International Bond Market
43	Insurance Management (Finance)	MBA/4106/CGF	To acquaint the students with the working of Insurance Sector and
			the challenges thereto.
			To make student aware about the Life Insurance Product.
			To familiarize student with general insurance and health insurance.
			To understand the basic of insurance and life insurance
44	Sales Promotion Management	MBA/4201/SM	Develop creative strategies for sales promotion.
	(Marketing)		Examine the importance of market segmentation, position and action

			<ul> <li>objectives to the development of an advertising and promotion.</li> <li>Implement and verify the effectiveness of a sales promotion plan.</li> <li>Assess strategic uses of sales promotions.</li> </ul>
45	Marketing Of Services (Marketing)	MBA/4202/SM	<ul> <li>The objective of this course is to develop insights into emerging trends in the service sector in a developing economy and tackle issues involved in the management of services on national basis.</li> <li>To acquaint the students with the knowledge of consumer behavior in service and customer expectation with customer perception.</li> <li>To make the student familiarize with nature of service marketing and classification of service.</li> <li>To aware students with strategic issue in service in market segmentation with targeting.</li> </ul>
46	Marketing For Non-Profit Organization & Social Service (Marketing)	MBA/4203/SM	<ul> <li>The Course is designed to give an opportunity to acquire knowledge about the application of Marketing tool and techniques for social welfare programs.</li> <li>To enable the students with applicability of marketing in the context of non-profit organization.</li> <li>To make the students familiarize with marketing of government social institute like police, hospital and other social organization.</li> <li>To make the students aware about analyzing internal and external environment influencing nonprofit organization and social service</li> </ul>
47	Retail Marketing	MBA/4204/SM	To familiarize the students with concept & practicing of retailing.

	(Marketing)		To abreast with latent trends in retail industry.
			To acquaint the students with Indian Vs Global Scenario.
			To aware students about Importance of Retailing, Marketing Mix,
			Retail Location, Retail Strategies.
48	Rural Marketing	MBA/4205/SM	To make the students aware about peculiarities of Indian Rural
	(Marketing)		Market
			To develop the knowledge of strategic tools of marketing to win
			over rural customer
			To familiarize the students with Rural Consumer Behavior
			To familiarize the students with Information System for Rural
			Marketing
			To familiarize the students with Promotion Towards Rural Audience
49	International Marketing	MBA/4206/SM	Identify and analyze opportunities within international marketing
	Environment		environments.
	(Marketing)		Select research and enter a new international market.
			Prepare an international market.
			We understand how companies adjust their international strategies
			based on the global environment changes.
50	Human Behavior at Work Place	MBA/4301/OB	To understand the Organizational Behaviour systems and its
	(HR)		elements.
			To understand the Organizational Behaviour Emotions and moods- types

			To understand Learning Behaviour-Concept, Models and its applications
51	Organizational Development &	MBA/4302/OB	To understand the various intervention strategies in organization
	Intervention Strategies (HR)		development.
			Understand how human process issues can be used by the OD
			consultant to diagnose organization effectiveness.
			Analyze activity data from organizational systems in order to frame
			effective OD interventions.
			To improved their own facilitation skill through a team facilitation
			assignment.
52	Management of Group Process	MBA/4303/OB	To acquaint the students with group dynamics and group process.
	(HR)		To familiarizes the students about group dynamic.
			To understand the behavior of people in the organization.
			To make students aware about group effects and inter group
			relationship
53	Corporate Leadership	MBA/4304/OB	Understand the importance of leadership management for the
	Management (HR)		organizational development
			To aware about the work of leader for the organizational
			development.
			Introduce the range of skills and knowledge required of executive
			leaders.
			Explore the function of various types of collaborations and sources

			of power and influence.
54	Knowledge Management	MBA/4305/OB	Understand the knowledge shortage and excess for strategy
	(HR)		implementation.
			To make students aware about the knowledge management concept
			and concept of learning organization.
			To understand the Importance of knowledge management in
			organization.
			Understanding of knowledge creation based on dynamic
			transformation of explicit and tacit knowledge.
55	International HRM (HR)	MBA/4306/OB	To make the students well versed with the HR Policies and
			Strategies in the context of International Business.
			To aware about the Culture and Organizational Performance.
			To understand International HRM functions.
			To aware about the organizational ethics.
56	Dissertation	MBA/407	The objective of this course is to get practical exposures to students
			in different industries.
			While preparing dissertation students has to visit industry & acquire
			knowledge about the different process in Marketing, Human
			Resource & Finance.

### College of Management and Computer Science, Yavatmal Department of Master of Computer Science

#### PO, PSO, CO's of M.Sc.(Comp.)

#### **Program Outcomes**

This program develops human resource for government organizations, IT industries as well as equipped students to start their own business as a software developer, database administrator, programmer, system analyst, data scientist, web application developer, system programmer, software testing, expert system designer.

#### **Program Specific Outcomes**

- PSO1: Students will be able to adapt the skills to implement effective solutions for need based problems by applying knowledge gained through different programming languages, tools and software covered in the syllabus of program.
- PSO2: Student will be able to learn working and type of operating systems, distributed operating systems, its process, memory and file management which enables them to take appropriate optimized decisions for applying necessary algorithms.
- PSO3: Students will be able to handle network related problems by studying data communication network, network security courses.

  Students learn to troubleshoot fault detection in combinational switching circuits, learn and utilize the concepts of mobile communications.

- PSO4: Students will be able to learn and apply the concepts of software engineering which is essentially important while working on big modules and or projects.
- PSO5: Students will be able to apply and implement the working of compilers which also tends them towards system programming. By using various components students will be able to implement a efficient scalable software solution in the form of web or windows application. Students are prepared for research oriented concepts of data mining and data warehousing.
- PSO6: Student will learn the necessity and importance of data preprocessing, data integration, data discretization. Students learn the concepts of OLAP technology, data mining methods, various classification and prediction methods, accuracy and error measures, various methods of cluster analysis, graph mining and mining sequence patterns.
- PSO7: Students will be able to understand and implement the mathematical modeling of graphical objects required to be drawn/used in different kind of graphical applications. Students learn Remote method invocation for cross-platform data access applications, application related to artificial intelligence using Prolog language, digital image processing techniques.

#### **Course Outcomes (COs):**

Sr.	Name of the course	<b>Course Code</b>	Course Outcome
No			
		M.Sc.	(Comp.) Semester First
1	Digital System and	2881(1MCS1)	Learn representation of numbers in digital systems, Karnaugh map,
	Microprocessor		TTL, ECL, MOS, CMOS logic families.
			Understand working of multiplexers, de-multiplexers, digital
			comparators, code convertor, and decoder.
			Design arithmetic circuits, Filp-flops such as RS, JK, JK-MS, D and T

			flip-flops, counters.  • Understand the working of microcomputer, microprocessor.  • Able to write codes for 8086 microprocessor with interrupt processing and memory management.
2	.Net Technologies and C#	2882(1MCS2)	<ul> <li>Learn the C# language of the .net technology of Microsoft Corporation.</li> <li>Able to understand object-oriented principles, inheritance along with its types, polymorphism, operator overloading, delegates, exception handling, multithreading.</li> <li>Learn file manipulation and data access with ADO.Net.</li> <li>Able to implement a efficient scalable software solution in the form of web or windows application.</li> </ul>
3	Operating System	2883(1MCS3)	<ul> <li>Able to learn working and type of operating systems, its process management, process synchronization, deadlocks, memory management.</li> <li>Able to analyze and write algorithms for disk, process and memory management.</li> <li>Understand concepts of file system, directory structures, distributed file system and embedded operating system.</li> </ul>
4	Computer Networks	2884(1MCS4)	<ul> <li>Learn data transmission models, modulation, multiplexing.</li> <li>Understand applications of layers such as application layer, transport layer, network layer, and data link layer.</li> </ul>

5	Lab I (Based on 1MCS1 and 1MCS3)  Lab II (Based on 1MCS2 and 1MCS4)	3001(1MCS5) 3002(1MCS6)	<ul> <li>Understand the importance of network security and management by analyzing different threats, principles of cryptography, digital signature, internet network management framework.</li> <li>Skill to implement assembly language programs.</li> <li>Skill to implement operating system related algorithms as programs.</li> <li>Skill of writing C# application using OOP concept.</li> </ul>
	,	M.Sc.(0	Comp.) Semester Second
7	Java Programming	2891(2MCS1)	<ul> <li>Learn Java programming language which can be utilized to develop windows and internet based software solutions.</li> <li>Able to understand and apply the knowledge of object-oriented principles, applets, graphical user-interface for scientific and business oriented applications.</li> </ul>
8	Data Structures	2892(2MCS2)	<ul> <li>Understand the classification of data structures and Knowledge of basic and dynamic data structures</li> <li>Compare and contrast various data structures and design techniques in the area of Performance and Memory Representation.</li> <li>Ability to evaluate algorithms and data structures in terms of time and complexity of basic operations.</li> <li>Ability to analyze algorithms for stack, queue and linked list, trees, and graphs and compare their Performance and tradeoffs.</li> <li>Incorporate data structures into the applications such as binary search</li> </ul>

			<ul> <li>trees, AVL tree and B trees.</li> <li>Ability to implement Data Structure Traversal such as Array, Stack, Queue, Linked List, Tree and Graph.</li> <li>Apply and implement learned algorithm design techniques and data structures to solve problems.</li> <li>Understand the various searching and sorting techniques</li> </ul>
9	Software Engineering	2893(2MCS3)	<ul> <li>Able to apply the concepts of software engineering which is essentially important while working on big modules and or projects.</li> <li>Understand the concept of system and able to analyze its feasibility study.</li> <li>Understand software process framework, requirement modeling approaches, software design, and software quality.</li> <li>Able to apply software metrics and software testing.</li> </ul>
10	Compiler Construction	2895(2MCS4)	<ul> <li>Understand the major phases of compilation and to understand the knowledge of Lex tool &amp; YAAC tool.</li> <li>Develop the parsers and experiment the knowledge of different parsers design without automated tools.</li> <li>Construct the intermediate code representations and generation.</li> <li>Convert source code for a novel language into machine code for a novel computer.</li> <li>Apply for various optimization techniques for dataflow analysis.</li> </ul>

11	Lab III – Based on 2MCS1	3003(2MCS5)	Skill of writing core Java application using OOP concept.
			Skill of writing applet for internet applications.
			Skill of writing GUI based windows applications.
12	Lab IV – Based on 2MCS2 and 2MCS3	3004(2MCS6)	<ul> <li>Skill of applying and implementing linear and non-linear data structures in programs.</li> <li>Skill of writing effective sorting and searching methods depending upon factors like type and volume of data.</li> <li>Knowledge of software engineering methods and practice their appropriate applications.</li> <li>Understands software testing approaches such as white box testing, black box testing.</li> <li>Skill to take case studies with respect to components learned in software engineering.</li> </ul>
	I .	M.Sc.(	Comp.) Semester Third
13	Data Mining and Data Warehousing	2901(3MCS1)	<ul> <li>Develop research oriented applications of data mining and data warehousing.</li> <li>Understand the necessity and importance of data preprocessing, data integration, data discretization.</li> <li>Learn the concepts of OLAP technology, data mining methods, various classification and prediction methods.</li> <li>Able to apply accuracy and error measures, methods of cluster analysis, graph mining and mining sequence patterns in biological</li> </ul>

			data.
14	Computer Graphics	2902(3MCS2)	Apply mathematical geometry and logic to develop Computer
			programs for elementary graphics operations and to develop scientific
			and strategic approach to solve complex problems in the domain of
			Computer Graphics.
			Demonstrate an understanding of contemporary graphics hardware.
			Ability to draw graphics using line & polygon and ability to perform
			operations on computer graphics.
			Understand and demonstrate geometrical transformations, Segment,
			Windowing and Clipping, Interaction.
			<ul> <li>Understand and demonstrate 2D &amp; 3D image processing techniques.</li> </ul>
			Understand and demonstrate Hidden Surfaces & Lines; Light,
			Colour& Shading; Curves and Fractals
15	Client-Server Computing	2903(3MCS3)	Learn to implement network related programs with concepts of servers
			and sockets.
			Understand JDBC concepts, prepared and callable statements and able
			to implement database connectivity applications.
			Understand and learn effective implementation of Servlet and JSP
			technologies which is essential component implementing scalable and
			sturdy enterprise level applications.
			Implement Remote method invocation applications for cross platform
			data transaction.

			<ul> <li>Apply client-side scripting language JavaScript which can be utilized to optimize server load.</li> <li>Learn advanced Java and able to develop enterprise level web applications.</li> </ul>
16	Distributed Operating System	2904(3MCS4)	<ul> <li>Understand distributed operating system concepts, design issues.</li> <li>Learn communication, synchronization, processes and processors in distributed systems.</li> <li>Understand distributed file systems, distributed shared memory concepts.</li> <li>Analyze two distributed operating systems AMOEBA and MACH with reference to modules learned earlier as case study</li> </ul>
17	Lab V – Based on 3MCS1 and 3MCS2	3005(3MCS5)	<ul> <li>Understand stages in building a Data Warehouse</li> <li>Understand the need and importance of pre-processing techniques</li> <li>The data mining process and important issues around data cleaning, and integration.</li> <li>The principle algorithms and techniques used in data mining, such as clustering, association mining, classification and prediction.</li> <li>Draw primitive graphical shapes and perform transformation techniques programmatically.</li> <li>Understand Text and Graphics mode, initialization of graphics mode, graphics drivers, switching between text and graphics mode programmatically.</li> </ul>

18	Lab VI – Based on 3MCS3	3006(3MCS6)	<ul> <li>Understand the basic principles of implementing computer graphics primitives programmatically.</li> <li>Skill to implement network based applications.</li> <li>Skill to implement database connectivity application using client-server architecture.</li> <li>Skill to write enterprise-level applications using Servlet and JSP.</li> </ul>
			<ul> <li>Skill to develop RMI application for cross-platform data transaction.</li> <li>Skill to develop component-based programming using beans.</li> <li>Skill to implement client-side JavaScript modules for server optimization.</li> </ul>
		M.Sc.	(Comp.) Semester Four
19	Artificial Intelligence and Expert Systems	2911(4MCS1)	<ul> <li>Learn the language for programming in logic (ProLog) which is based on 'inferring with heuristic learning', utilized for implementing artificial intelligence applications and design of expert systems of particular domain knowledge-base.</li> <li>Understand wide range of techniques to represent knowledge in machines and develop perspective towards variety of methodologies to solve a problem which otherwise would not be possible by procedural languages.</li> <li>Understand and able to implement game playing algorithms with minimax search procedure, predicate logic.</li> <li>Understand the process of natural language understanding,</li> </ul>

			applications of artificial neural networks, learning by machines.
20	Design and Analysis of Algorithms	2912(4MCS2)	<ul> <li>Learn to compute the time and space complexity of a given algorithm and analyse the efficiency of algorithms.</li> <li>Learns the utilization of different prototypes of problem solving to solve a given problem.</li> <li>Understand and analyze greedy algorithms, dynamic programming, concepts of tractable and intractable problems.</li> <li>Understand the class of P, NP and NP-complete problems.</li> </ul>
21	Network Security	2913(4MCS3)	<ul> <li>Develop basic skills of secure Network Architecture and explain the theory behind security</li> <li>Study the basic idea behind cryptography and design the algorithm to make a secure communication.</li> <li>Identify common Network vulnerabilities and attacks.</li> <li>Learn too find the defense mechanism against network attack</li> <li>Design the cryptographic protection mechanism.</li> <li>Knowledge about the authentication and various techniques used for the authentication.</li> </ul>
22	Mobile Communication	2914(4MCS4)	<ul> <li>Understand the concepts of mobile communication, signal propagation, modulation, medium access control.</li> <li>Learn concepts of telecommunication systems, satellite systems, and broadcast systems.</li> </ul>

			<ul> <li>Understand wireless LAN, mobile network layer, adhoc networks, and mobile transport layer.</li> <li>Understand and analyze various supports for mobility such as file systems, www, WAP, i-mode, SyncML.</li> </ul>
23	Lab VII – Based on 4MCS1 and 4MCS2	3007(4MCS5)	<ul> <li>Skill to write applications to prevent and/or enforce backtracking using Prolog.</li> <li>Skill to write applications using lists with recursion.</li> <li>Skills to write applications of AI in Prolog.</li> <li>Skill to implement an expert system using Prolog.</li> <li>Skill to compute the time and space complexity of a given program and analyze the efficiency of program.</li> <li>Understands the utilization of different prototypes of problem solving to solve a given problem.</li> <li>Skill to implement and analyze greedy algorithms, dynamic programming, tractable and intractable problems.</li> <li>Understand the class of P, NP and NP-complete problems.</li> </ul>
24	Project	3008(4MCS6)	<ul> <li>Learn to apply the knowledge gained through various courses in solving a real life problem.</li> <li>Practice different phases of software/system development life cycle.</li> <li>To introduce the student to a professional environment and/or style typical of a global IT industry</li> </ul>

<ul> <li>To prepare for structured team work and project management.</li> <li>Able to prepare effective, real-life, technical documentation.</li> </ul>
To provide an opportunity to practice time, resource and person
management.

### College of Management and Computer Science, Yavatmal Department of Bachelor in Computer Application

#### PO, PSO, CO's of BCA

#### **Programme Outcomes**

- PO1: Acquire Knowledge of mathematical foundations, computer application theory and algorithm principles in the design and modeling of computer based system.
- PO2: To provide thorough understanding of nature, scope and application of computer and computer languages.
- PO3: To develop interdisciplinary approach among the students.
- PO4: Exhibit clarity on both conceptual and application-oriented skills of Computing, programming for higher studies in Post Graduate programs.

#### Programe Specific Outcomes

- PSO1: To pursue further studies to get specialization in Computer Science and Applications, Economics, Mathematics, business administration.
- PSO2: To pursue the career in corporate sector can opt for MBA, MCA.
- PSO3: To Work in the IT sector as programmer, system engineer, software tester, junior programmer, web developer, system administrator, software developer, etc.
- PSO4: To work in public sector undertakings and Government organizations.
- PSO5: For teaching in Schools and Colleges.

- PSO6: Students will able to understand, analyze and develop computer programs in the areas related to algorithm, system software, web design and networking for efficient design of computer-based system.
- PSO7: Apply standard software engineering practices and strategies in software project development using open source programming environment to deliver a quality of product for business success.

PSO8: Student will able to know various issues, latest trends in technology development and thereby innovate new ideas and solutions to existing problems

#### **Course Outcomes and Outcomes (COs):**

Sr. No	Name of the course	<b>Course Code</b>	Course Objectives / Outcome
			BCA Semester First
1	Computer Fundamental	1001(1ST1)	<ul> <li>To impart knowledge about the structure, components and functions of a computer system.</li> <li>To understand working of basic input and output devices.</li> <li>To learn about the binary number representation along with its operations.</li> <li>Learn basic word processing skills with Microsoft Word, such as text input and formatting, editing, cut, copy and paste, spell check, margin and tab control, keyboard shortcuts, printing, as well as how to include some graphics such as pictures and charts.</li> <li>In general, develop an intuitive sense of how computers work and how they can be used to make your academic work more efficient.</li> <li>Familiarization with the terms like Operating System, peripheral devices,</li> </ul>

2	C Programming	1002(1ST2)	<ul> <li>networking, multimedia, internet, etc.</li> <li>Ability to use internet for searching information on web, sending e-mails and many other tasks.</li> <li>Skill to work with MS-Word, Excel and PowerPoint.</li> <li>Initiation into the process of writing business letters or job applications, tabulating data, preparing PPTs, etc. using MS-Office.</li> <li>Bridge the fundamental concepts of computer with the present level of knowledge of the students.</li> </ul>
2	C Programming	1002(1812)	<ul> <li>To learn advance structured and procedural programming and to improve C programming skills.</li> <li>To understand the basic structure of a C program.</li> <li>To gain knowledge of various programming errors.</li> <li>To enable the students to make flowchart and design an algorithm for a given problem.</li> <li>To enable the students to develop logics and programs.</li> <li>Ability to design and develop Computer programs, analyzes, and interprets the concept of pointers, declarations, initialization, operations on pointers and their usage.</li> <li>Able to define data types and use them in simple data processing applications also he/she must be able to use the concept of array of structures.</li> <li>Student must be able to define union and enumeration user defined data</li> </ul>

			types. Develop confidence for self-education and ability for life-long
			learning needed for Computer language.
			Understanding a functional hierarchical code organization.
3	Digital Technique-I	1003(1ST3)	To acquire the basic knowledge of digital logic levels and application of
			knowledge to understand digital electronics circuits.
			To prepare students to perform the analysis and design of various digital
			electronic circuits.
			Have a thorough understanding of the fundamental concepts and techniques
			used in digital electronics.
			To understand and examine the structure of various number systems and its
			application in digital design.
			The ability to understand, analyze and design various combination and
			sequential circuits.
			Ability to identify basic requirements for a design application and propose
			a cost-effective solution.
			• The ability to identify and prevent various hazards and timing problems in
			a digital design.
			<ul> <li>To develop skill to build, and troubleshoot digital circuits.</li> </ul>
4	Numerical Method-I	1004(1ST4)	To learn how to perform error analysis for arithmetic operations.
			• To demonstrate working of various numerical methods.
			• To provide a basic understanding of the derivation and use of methods of
			interpolation and numerical integration.

5	Discrete Mathematics-I	1005(1ST5)	<ul> <li>To impart knowledge of various statistical techniques.</li> <li>To develop students' understanding through laboratory activities to solve problems related to above stated concepts.</li> <li>Skill to choose and apply appropriate numerical methods to obtain approximate solutions to difficult mathematical problems.</li> <li>Ability to apply various statistical techniques such as Measures of Central Tendency and Dispersion.</li> <li>Understanding of relationship between variables using the method of Correlation and Trend Fit Analysis.</li> <li>Skill to execute programs of various Numerical Methods and Statistical Techniques for solving mathematical problems.</li> <li>To understand and solve discrete mathematical problems.</li> <li>To impart knowledge regarding relevant topics such as set Theory, basic logic, graphs, trees or discrete probability.</li> <li>To familiarize students with linear Algebra, differential and integral calculus, numerical methods and statistics.</li> <li>Develops formal reasoning.</li> <li>Creates habit of raising questions.</li> <li>Knowledge regarding the use of Discrete Mathematics in Computer Science.</li> <li>Helpful in formulating questions.</li> </ul>
---	------------------------	------------	--

			Ability to communicate knowledge, capabilities and skills related to the computer engineer profession.
6	Communication Skills-I	1006(1ST6)	<ul> <li>To study the personality development of individuals in the micro perspective.</li> <li>To provide employability skills.</li> <li>To provide the skills of comprehension writing.</li> <li>To develop Formal correspondence writing skills.</li> <li>To learn the language skills grammatically.</li> <li>To understand the need, benefits and forms of communication.</li> <li>Use English language accurately and effectively in real life situations.</li> <li>Mastering the art of Formal correspondence writing.</li> <li>To actively participate in oral and written communication in practical applications.</li> <li>Understand the language and its use grammatically and proficiently.</li> </ul>
7	Lab-I (Based on 1ST1 and 1ST2)	1007(1SP1)	<ul> <li>To give detailed knowledge of MS-Office.</li> <li>To give an in-depth understanding of role of computers in business, education and society.</li> <li>To make the student learn a programming language.</li> <li>To learn problem solving techniques.</li> <li>To teach the student to write programs in C and to solve the problems.</li> <li>After Completion of this course the student would be able to Student will</li> </ul>

8	Lab-III (Based on 1ST3)  Lab-III (Based on 1ST4)	1003(1SP2)	<ul> <li>be able to identify the components of a personal computer system</li> <li>Student will be able to demonstrate mouse and keyboard functions</li> <li>Student will be able to compose, format and edit a word document, ppt, excel.</li> <li>Read, understand and trace the execution of programs written in C language.</li> <li>Write the C code for a given algorithm.</li> <li>Implement Programs with pointers and arrays, perform pointer arithmetic, and use the per-processor.</li> <li>Write programs that perform operations using derived data types.</li> <li>To acquire the basic knowledge of digital logic levels and application of knowledge to understand digital electronics circuits.</li> <li>To prepare students to perform the analysis and design of various digital electronic circuits.</li> <li>Have a thorough understanding of the fundamental concepts and techniques used in digital electronics.</li> <li>To understand and examine the structure of various number systems and its application in digital design.</li> <li>To demonstrate working of various numerical methods using C</li> </ul>
9	Lab-III (Based on 1ST4)	1004(1SP3)	<ul> <li>To demonstrate working of various numerical methods using C         Programming.     </li> <li>To impart knowledge of various statistical techniques using C         Programming.     </li> </ul>

			To develop students' understanding through laboratory activities to solve problems related to above stated concepts.
			BCA Semester Second
10	Operating System	1021(2ST1)	<ul> <li>To deliver a detailed knowledge of integral software in a computer system <ul> <li>Operating System.</li> </ul> </li> <li>To understand the working of operating system as a resource manager.</li> <li>To familiarize the students with Process and Memory management.</li> <li>To describe the problem of process synchronization and its solution.</li> <li>Ability to apply CPU scheduling algorithms to manage tasks.</li> <li>Initiation into the process of applying memory management methods and allocation policies.</li> <li>Knowledge of methods of prevention and recovery from a system deadlock.</li> </ul>
11	Advanced C Programming	1022(2ST2)	<ul> <li>Demonstrate an understanding of computer programming language concepts.</li> <li>To be able to develop C programs on compiler.</li> <li>Ability to design and develop Computer programs, analyzes, and interprets the concept of pointers, declarations, initialization, operations on pointers and their usage.</li> <li>Develop confidence for self-education and ability for life-long learning needed for Computer language.</li> <li>Utilize the best of the inbuilt functions for various input and output</li> </ul>

			<ul> <li>Implement the concept of arrays.</li> <li>Implement problem solving skills using pointer concept of the programming languages.</li> <li>Work efficiently with files using the programming languages.</li> </ul>
12	Digital Techniques-II	1023(2ST3)	<ul> <li>To acquire the basic knowledge of digital logic levels and application of knowledge to understand digital electronics circuits.</li> <li>To prepare students to perform the analysis and design of various digital electronic circuits.</li> <li>Have a thorough understanding of the fundamental concepts and techniques used in digital electronics.</li> <li>To understand and examine the structure of various number systems and its application in digital combinational logic design.</li> <li>The ability to understand, analyze and design various combination and sequential circuits.</li> <li>Ability to identify basic requirements for a design application and propose a cost-effective solution.</li> <li>The ability to identify and prevent various hazards and timing problems in a digital design.</li> <li>To develop skill to build, and troubleshoot digital circuits.</li> </ul>
13	Numerical Methods-II	1024(2ST4)	To learn how to perform error analysis for arithmetic operations.

			<ul> <li>To demonstrate working of various numerical methods.</li> <li>To provide a basic understanding of the derivation and use of methods of interpolation and numerical integration.</li> <li>To impart knowledge of various statistical techniques.</li> <li>To develop students' understanding through laboratory activities to solve problems related to above stated concepts.</li> <li>Skill to choose and apply appropriate numerical methods to obtain approximate solutions to difficult mathematical problems. Central Tendency and Dispersion.</li> <li>Understanding of relationship between variables using the method of Correlation and Trend Fit Analysis.</li> <li>Skill to execute programs of various Numerical Methods and Statistical Techniques for solving mathematical problems.</li> </ul>
14	Discrete Mathematics-II	1025(2ST5)	<ul> <li>To understand and solve discrete mathematical problems.</li> <li>To impart knowledge regarding relevant topics such as set Theory, basic logic, graphs, trees or discrete probability.</li> <li>To familiarize students with linear Algebra, differential and integral calculus, numerical methods and statistics.</li> <li>Develops formal reasoning.</li> <li>Creates habit of raising questions.</li> <li>Knowledge regarding the use of Discrete Mathematics in Computer</li> </ul>

			Science.
			Helpful in formulating questions.
			Ability to communicate knowledge, capabilities and skills related to the
			computer engineer profession.
15	Communication Skills-II	1026(2ST6)	To provide the skills of comprehension writing.
			To develop Informal correspondence writing skills.
			To learn the language skills grammatically.
			To know the process of Interview Techniques, Group discussion,
			Conferences and Meetings.
			• To understand the needs and benefits of written communication.
			Develop the student's ability to use English language accurately and
			effectively by enhancing their communication skills
			Mastering the art of Informal Correspondence writing.
			• Participate actively in GD, seminars and conferences and meetings
			practically.
			Write informal correspondence effectively.
			• Understand the language and its use grammatically and proficiently.
16	Lab-I (Based on 2ST1 and	1027(2SP1)	To understand the working of operating system as a resource manager.
	2ST2)		• To familiarize the students with Process and Memory management.
			• To describe the problem of process synchronization and its solution.
			To make the student learn a programming language.

17	Lab-II (Based on 2ST3)	1023(2SP2)	<ul> <li>To learn problem solving techniques.</li> <li>To teach the student to write programs in C and to solve the problems.</li> <li>Ability to apply CPU scheduling algorithms to manage tasks.</li> <li>Initiation into the process of applying memory management methods and allocation policies.</li> <li>Knowledge of methods of prevention and recovery from a system deadlock.</li> <li>Read, understand and trace the execution of programs written in C language.</li> <li>Implement Programs with pointers and arrays, perform pointer arithmetic, and use the pre-processor.</li> <li>Write programs that perform operations using derived data types.</li> <li>To acquire the basic knowledge of digital logic levels and application of knowledge to understand digital electronics circuits.</li> <li>To prepare students to perform the analysis and design of various digital electronic circuits.</li> <li>Have a thorough understanding of the fundamental concepts and techniques used in digital electronics.</li> <li>To understand and examine the structure of various number systems and its</li> </ul>
18	Lab-III (Based on 2ST4)	1024(2SP3)	<ul> <li>application in digital design.</li> <li>To demonstrate working of various numerical methods using C         Programming.     </li> </ul>

To impart knowledge of various statistical techniques using C Programming.     To develop students' understanding through laboratory activities problems related to above stated concepts.    BCA Semester Third				
To develop students' understanding through laboratory activities problems related to above stated concepts.  BCA Semester Third  19 Data Structure  1031(3ST1)  To introduce the fundamental concept of data structures and to eat the importance of data structures in developing and implementing algorithms.  To familiar with basic techniques of algorithm analysis.  To familiar with writing recursive methods.  To master the implementation of linked data structures such as land binary trees.  To familiar with several sub-quadratic sorting algorithms included Selection sort, Insertion sort etc.  To master analyzing problems and writing program solutions to using the above techniques.  Describe how arrays, records, linked structures, stacks, queues, are represented in memory and used by algorithms.  Describe common applications for arrays, records, linked structures.				
BCA Semester Third  19 Data Structure  1031(3ST1)  • To introduce the fundamental concept of data structures and to e the importance of data structures in developing and implementing algorithms.  • To familiar with basic techniques of algorithm analysis.  • To familiar with writing recursive methods.  • To master the implementation of linked data structures such as I and binary trees.  • To familiar with several sub-quadratic sorting algorithms included Selection sort, Insertion sort etc.  • To master analyzing problems and writing program solutions to using the above techniques.  • Describe how arrays, records, linked structures, stacks, queues, are represented in memory and used by algorithms.  • Describe common applications for arrays, records, linked structures.				
BCA Semester Third  19 Data Structure  1031(3ST1)  • To introduce the fundamental concept of data structures and to enthe importance of data structures in developing and implementing algorithms.  • To familiar with basic techniques of algorithm analysis.  • To familiar with writing recursive methods.  • To master the implementation of linked data structures such as land binary trees.  • To familiar with several sub-quadratic sorting algorithms included Selection sort, Insertion sort etc.  • To master analyzing problems and writing program solutions to using the above techniques.  • Describe how arrays, records, linked structures, stacks, queues, are represented in memory and used by algorithms.  • Describe common applications for arrays, records, linked structures.	to solve			
Data Structure  1031(3ST1)  • To introduce the fundamental concept of data structures and to e the importance of data structures in developing and implementing algorithms.  • To familiar with basic techniques of algorithm analysis.  • To familiar with writing recursive methods.  • To master the implementation of linked data structures such as I and binary trees.  • To familiar with several sub-quadratic sorting algorithms included Selection sort, Insertion sort etc.  • To master analyzing problems and writing program solutions to using the above techniques.  • Describe how arrays, records, linked structures, stacks, queues, are represented in memory and used by algorithms.  • Describe common applications for arrays, records, linked structures.				
the importance of data structures in developing and implementin algorithms.  To familiar with basic techniques of algorithm analysis.  To familiar with writing recursive methods.  To master the implementation of linked data structures such as l and binary trees.  To familiar with several sub-quadratic sorting algorithms includ Selection sort, Insertion sort etc.  To master analyzing problems and writing program solutions to using the above techniques.  Describe how arrays, records, linked structures, stacks, queues, are represented in memory and used by algorithms.		<u> </u>		
algorithms.  To familiar with basic techniques of algorithm analysis.  To familiar with writing recursive methods.  To master the implementation of linked data structures such as I and binary trees.  To familiar with several sub-quadratic sorting algorithms includ Selection sort, Insertion sort etc.  To master analyzing problems and writing program solutions to using the above techniques.  Describe how arrays, records, linked structures, stacks, queues, are represented in memory and used by algorithms.  Describe common applications for arrays, records, linked structures.	mphasize	031(3ST1)	Structure	19
<ul> <li>To familiar with basic techniques of algorithm analysis.</li> <li>To familiar with writing recursive methods.</li> <li>To master the implementation of linked data structures such as I and binary trees.</li> <li>To familiar with several sub-quadratic sorting algorithms includ Selection sort, Insertion sort etc.</li> <li>To master analyzing problems and writing program solutions to using the above techniques.</li> <li>Describe how arrays, records, linked structures, stacks, queues, are represented in memory and used by algorithms.</li> <li>Describe common applications for arrays, records, linked structures.</li> </ul>	g efficient			
<ul> <li>To familiar with writing recursive methods.</li> <li>To master the implementation of linked data structures such as I and binary trees.</li> <li>To familiar with several sub-quadratic sorting algorithms includ Selection sort, Insertion sort etc.</li> <li>To master analyzing problems and writing program solutions to using the above techniques.</li> <li>Describe how arrays, records, linked structures, stacks, queues, are represented in memory and used by algorithms.</li> <li>Describe common applications for arrays, records, linked structures.</li> </ul>				
<ul> <li>To master the implementation of linked data structures such as I and binary trees.</li> <li>To familiar with several sub-quadratic sorting algorithms includ Selection sort, Insertion sort etc.</li> <li>To master analyzing problems and writing program solutions to using the above techniques.</li> <li>Describe how arrays, records, linked structures, stacks, queues, are represented in memory and used by algorithms.</li> <li>Describe common applications for arrays, records, linked structures.</li> </ul>				
<ul> <li>and binary trees.</li> <li>To familiar with several sub-quadratic sorting algorithms included Selection sort, Insertion sort etc.</li> <li>To master analyzing problems and writing program solutions to using the above techniques.</li> <li>Describe how arrays, records, linked structures, stacks, queues, are represented in memory and used by algorithms.</li> <li>Describe common applications for arrays, records, linked structures.</li> </ul>				
<ul> <li>To familiar with several sub-quadratic sorting algorithms included Selection sort, Insertion sort etc.</li> <li>To master analyzing problems and writing program solutions to using the above techniques.</li> <li>Describe how arrays, records, linked structures, stacks, queues, are represented in memory and used by algorithms.</li> <li>Describe common applications for arrays, records, linked structures.</li> </ul>	nked lists			
Selection sort, Insertion sort etc.  To master analyzing problems and writing program solutions to using the above techniques.  Describe how arrays, records, linked structures, stacks, queues, are represented in memory and used by algorithms.  Describe common applications for arrays, records, linked structures.				
<ul> <li>To master analyzing problems and writing program solutions to using the above techniques.</li> <li>Describe how arrays, records, linked structures, stacks, queues, are represented in memory and used by algorithms.</li> <li>Describe common applications for arrays, records, linked structures.</li> </ul>	ng			
<ul> <li>using the above techniques.</li> <li>Describe how arrays, records, linked structures, stacks, queues, are represented in memory and used by algorithms.</li> <li>Describe common applications for arrays, records, linked structures.</li> </ul>				
<ul> <li>Describe how arrays, records, linked structures, stacks, queues, a are represented in memory and used by algorithms.</li> <li>Describe common applications for arrays, records, linked structures.</li> </ul>	problems			
are represented in memory and used by algorithms.  • Describe common applications for arrays, records, linked structu				
Describe common applications for arrays, records, linked structure	and trees			
queues and trees.	res, stacks,			
Write programs that use arrays, records, linked structures, stacks	, queues,			
trees, and graphs				

			<ul> <li>Demonstrate different methods for traversing trees.</li> <li>Compare alternative implementations of data structures with respect to performance.</li> <li>Describe the concept of recursion, give examples of its use, describe how it can be implemented using a stack.</li> <li>Discuss the computational efficiency of the principal algorithms for sorting and searching.</li> </ul>
20	Object Oriented Programming with C++	1032(3ST2)	<ul> <li>To give an overview of benefits of Object-Oriented Programming (OOP) approach over the Traditional Programming approach.</li> <li>To deliver comprehensive view of OOP concept.</li> <li>To impart detailed knowledge of a powerful object-oriented programming language -C++.</li> <li>Familiarization with a widely used programming concept - Object Oriented Programming.</li> <li>Develop logical thinking.</li> <li>Skill to write codes in C++ by applying concept of OOP, such as Objects, Classes, Constructors, Inheritance etc., to solve mathematical or real-world problems.</li> <li>Ability to isolate and fix common errors in C++programs</li> </ul>
21	Database Management System	1033(3ST3)	<ul> <li>To introduce the students to the database system.</li> <li>To learn how to design a database by using different models.</li> </ul>

			<ul> <li>To enable the students to understand the database handling during execution of the transactions.</li> <li>To understand the handling of database by concurrent users.</li> <li>To gain complete knowledge of SQL and PL/SQL.</li> <li>Familiarization with Database Management System.</li> <li>Comprehensive knowledge of database models.</li> <li>Ability to code database transactions using SQL.</li> <li>Skill to write PL/SQL programs.</li> </ul>
22	Advanced Operating System	1034(3ST4)	<ul> <li>The 'Advance Operating Systems' course aims at presenting advanced design/implementation methods and techniques for modern operating systems.</li> <li>The course will cover an introduction on the policies for scheduling, kernel, processes, deadlocks, memory management, synchronization, system calls, and file systems.</li> <li>To understand the basic components of a computer operating system, and the interactions among the various components.</li> <li>To introduce operating system as a resource manager, its evolutions and fundamentals.</li> <li>Students will demonstrate knowledge of process control, concurrency, memory management scheduling, I/O and files, distributed systems, security and an ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs.</li> </ul>

			<ul> <li>Compare between different algorithms used for management and scheduling of processes, memory and input/output operation.</li> <li>Students demonstrate an ability to apply mathematical foundations, algorithmic principles, and computer science theory in the modeling and design of computer-based systems .</li> </ul>
23	Electronics	1035(3ST5)	<ul> <li>To learn the basics of Digital Systems.</li> <li>To learn to program a processor using assembly language.</li> <li>To learn configuring and using different peripherals in a digital system.</li> <li>To compile and debug a Program.</li> <li>To generate an executable file and use it.</li> <li>The student will learn the internal organization of Microprocessor</li> <li>To discuss the concept of addressing modes and timing diagram of Microprocessor.</li> <li>Students will be able to perform the operation based on Interrupts.</li> <li>To understand the Basic Fundamentals of 8085 Microprocessor.</li> <li>To make a basic Programming and implementation on 8085 Microprocessor Kit.</li> </ul>
24	Lab-I (Based on 3ST1 & 3ST2)	1036(3SP1)	<ul> <li>Practically familiar with basic techniques of algorithm analysis.</li> <li>Implementation of linked data structures such as linked lists and binary trees.</li> <li>Practically isolate and fix common errors in C++programs</li> </ul>

25 Lab- 3ST	o-II (Based on 3ST3 & 54)	1037(3SP2)	<ul> <li>Identify and practice the object-oriented programming concepts and techniques</li> <li>Practice the use of C++ classes and class libraries, arrays, vectors, inheritance and file I/O stream concepts.</li> <li>Describe how arrays, records, linked structures, stacks, queues, trees, and graphs are represented in memory and used by algorithms.</li> <li>Describe common applications for arrays, records, linked structures, stacks, queues, trees, and graphs.</li> <li>Write programs that use arrays, records, linked structures, stacks, queues, trees, and graphs.</li> <li>Creating simple programs using classes and objects in C++.</li> <li>Implement Object Oriented Programming Concepts in C++.</li> <li>To understand the different issues involved in the design and implementation of a database system.</li> <li>To study the physical and logical database designs, database modeling, relational, hierarchical, and network models.</li> <li>To understand and use data manipulation language to query, update, and manage a database.</li> <li>To develop an understanding of essential DBMS concepts such as: database security, integrity, concurrency</li> <li>To explore programming language and operating system facilities essential to implement real-time, reactive, and embedded systems</li> </ul>
----------------	---------------------------	------------	---

26	Lab-III (Based on 3ST5)	1035(3SP3)	<ul> <li>concurrent systems, their implementation, and their impact on operating systems;</li> <li>construct and/or analyse simple concurrent programs using transactional memory and/or message passing, to understand the trade-offs and implementation decisions.</li> <li>To compile and debug a Program.</li> <li>To generate an executable file and use it.</li> <li>The student will learn the internal organization of Microprocessor</li> <li>To discuss the concept of addressing modes and timing diagram of Microprocessor.</li> <li>Students will be able to perform the operation based on Interrupts.</li> <li>To understand the Basic Fundamentals of 8085 Microprocessor.</li> </ul>
			<ul> <li>To discuss limitations of widely-used operating systems, introduce new design approaches to address challenges of security, robustness, and concurrency</li> <li>To give an understanding of practical engineering issues in real-time and concurrent systems; and suggest appropriate implementation techniques</li> <li>Populate and query a database using SQL DML/DDL commands.</li> <li>Programming PL/SQL including stored procedures, stored functions, cursors, packages.</li> <li>understand the impact of heterogeneous multicore systems on operating systems; compare and evaluate dif-ferent programming models for</li> </ul>

			To make a basic Programming and implementation on 8085
			Microprocessor Kit.
			BCA Semester Four
27	System Analysis Design & MIS	1041(4ST1)	<ul> <li>Understand both the nature of 'information systems analysis and design' and its various components.</li> <li>Demonstrate knowledge on the different phases of Systems Development Life Cycle (SDLC).</li> <li>Appreciate the use of systems design techniques, methodologies, and tools.</li> <li>Identify various types of information systems concepts and terminologies.</li> <li>Explain the types of business needs that can be addressed using information technology based solutions.</li> <li>Discuss the initial phases of the System Development Life Cycle (SDLC) using analytical tools and quantitative techniques used to identify problems.</li> <li>Define problems and opportunities that initiate projects.</li> <li>Write clear and concise business requirements and convert them into technical specifications.</li> </ul>
28	Visual Basic	1042(4ST2)	<ul> <li>To understand the concepts of windows Programming.</li> <li>To develop applications using Visual Basic.</li> <li>Creating dialogs, menus, windows and use Windows common dialogs</li> <li>Developing modular, reusable Visual Basic code and forms</li> <li>Demonstrate knowledge of programming terminology and how applied</li> </ul>

			using Visual
			Develop a Graphical User Interface (GUI) based on problem description
			Develop an Event Planning Chart based on problem description so as to
			define the processing that is to occur based on specific event
			Develop programs that retrieve input from a file as opposed to input only
			provided by user
29	Web Designing and Office	1043(4ST3)	MS-EXCEL :- This course will teach you the skills you'll need to
	Automation		successfully use Excel. This course will start with basic skills, and then
			move forward to more advanced features and techniques.
			To understand website development in a user friendly manner.
			To improve the visual design and content structuring.
			To understand the concept of HTML to develop their web development
			skill.
			Office tools course would enable the students in crafting professional word
			documents, excel spread sheets, power point presentations using the
			Microsoft suite of office tools. To familiarize the students in preparation of
			documents and presentations with office automation tools.
			Understanding the use of HTML tags.
			Designing and Developing web pages using HTML.
			Ability to Animate and Design the document.
			Simplification of Mathematical expressions.

			<ul> <li>Create Format cells, rows, columns, and entire worksheets.</li> <li>Create charts and diagrams for data.</li> <li>Create data lists and forms.</li> <li>Create and use pivot tables and pivot charts. By learning the course, the students will be able to perform documentation, to perform accounting operations, to perform presentation skills</li> </ul>
30	NETWORKING	1044(4ST4)	<ul> <li>It will help students in understanding of various types of computer networks, technologies behind networks and application protocols, e-mail and communication protocols will be introduced to students through this subject.</li> <li>Become familiar with the basics of computer networks</li> <li>Become familiar with network architectures</li> <li>Become familiar with fundamental protocols</li> <li>Become familiar with basic network computing techniques</li> <li>Explain how communication works in computer networks and to understand the basic terminology of computer networks</li> <li>Explain the role of protocols in networking and to analyze the services and features of the various layers in the protocol stack.</li> <li>Understand design issues in Network Security and to understand security threats, security services and mechanisms to counter.</li> <li>Administer and maintain a computer network.</li> </ul>

			<ul> <li>Demonstrate basic understanding of network principles.</li> <li>Demonstrate understanding of how computers communicate with each other and the methods employed to assure that the communication is reliable.</li> <li>Have a good understanding of the OSI Reference Model and in particular have a good knowledge of Layers 1-3.</li> </ul>
31	Advance Microprocessors and Microcontroller	1045(4ST5)	<ul> <li>To develop background knowledge and core expertise of microprocessor &amp; microcontroller.</li> <li>To know the importance of different peripheral devices and their interfacing to microcontrollers.</li> <li>To know the design aspects of microprocessor &amp; microcontrollers.</li> <li>To write assembly language programs of microcontrollers for various applications.</li> <li>At the end of course, a student will able to draw &amp; describe architecture of 8051 microcontroller.</li> <li>To Interface various peripherals devices to the microcontrollers.</li> <li>To write assembly language program for microcontrollers.</li> <li>To design microcontroller based system for various applications.</li> </ul>
32	Lab-I (based on 4ST1 & 4ST2)	1046(4SP1)	<ul> <li>To develop applications using Visual Basic.</li> <li>Creating dialogs, menus, windows and use Windows common dialogs.</li> <li>Demonstrate knowledge on the different phases of Systems Development</li> </ul>

33	Lab-II (based on 4ST3 & 4ST4)	1047(4SP2)	<ul> <li>Life Cycle (SDLC).</li> <li>Appreciate the use of systems design techniques, methodologies, and tools.</li> <li>Develop a Graphical User Interface (GUI) based on problem description</li> <li>Develop an Event Planning Chart based on problem description so as to define the processing that is to occur based on specific events</li> <li>Develop programs that retrieve input from a file as opposed to input only provided by user</li> <li>Learn practically System Development Life Cycle (SDLC) using analytical tools and quantitative techniques used to identify problems.</li> <li>Define problems and opportunities that initiate projects.</li> <li>To Learn practically working of MS-Word</li> <li>To Learn practically working of MS-Excel</li> <li>To perform practically visual design and content structuring.</li> <li>Become familiar with the basics of computer networks</li> <li>Become familiar with network architectures</li> <li>Understanding the use of HTML tags.</li> <li>Designing and Developing web pages using HTML.</li> </ul>

			Demonstrate basic understanding of network principles.
34	Lab-III (based on 4ST5)	1045(4SP3)	<ul> <li>To know the design aspects of microprocessor &amp; microcontrollers.</li> <li>To write assembly language programs of microcontrollers for various applications.</li> <li>At the end of course, a student will able to draw &amp; describe architecture of 8051 microcontroller.</li> <li>To Interface various peripherals devices to the microcontrollers.</li> </ul>
35	Environmental Studies		<ul> <li>Gaining in-depth knowledge on natural processes that sustain life and govern economy.</li> <li>Predicting the consequences of human actions on the web of life, global economy and quality of human life.</li> <li>Developing critical thinking for shaping strategies (scientific, social, economic and legal) for environmental protection and conservation of biodiversity, social equity and sustainable development.</li> <li>Acquiring values and attitudes towards understanding complex environmental economic-social challenges, and participating actively in solving current environmental problems and preventing the future ones.</li> <li>Adopting sustainability as a practice in life, society and industry.</li> </ul>
36	Core Java	1051(5ST1)	<ul> <li>Covers software design, implementation, and testing using Java.</li> <li>Understands fundamentals of basic java programming</li> </ul>

37 NETWORK SECURITY 1052(5ST2)	<ul> <li>Introduces object-oriented design techniques and problem solving.</li> <li>Emphasizes development of secure, well-designed software projects that solve practical real-world problems.</li> <li>Be able to use the java SDK environment to create ,debug, &amp; DK empirent ample java program.</li> <li>Use an integrated development environment to write, compile, run, and test simple object-oriented Java programs.</li> <li>Read and make elementary modifications to Java programs that solve real-world problems.</li> <li>Validate input in a Java program.</li> <li>Identify and fix defects and common security issues in code.</li> <li>Document a Java program using Javadoc.</li> <li>Use a version control system to track source code in a project.</li> <li>To understand basics of Cryptography and Network Security.</li> <li>To understand basic concepts of different attacks and security threats.</li> <li>To be able to secure a message over insecure channel by various means.</li> <li>To be able to secure a message over insecure channel by various means.</li> <li>To understand various System Security Threats - Intruders, Viruses &amp; related Threats</li> <li>To understand various protocols for network security to protect against the threats in the networks.</li> </ul>
--------------------------------	---

20		1052/5GT2\	<ul> <li>Provide security of the data over the network.</li> <li>Do research in the emerging areas of cryptography and network security.</li> <li>Be able to digitally sign emails and files</li> <li>Protect any network from the threats in the world.</li> </ul>
38	Software Engineering	1053(5ST3)	<ul> <li>To understand system concepts</li> <li>To know about software engineering and its application in Software development</li> <li>The aim of the course is to assist the student in understanding the basic theory of software engineering, and to apply these basic theoretical principles to a group software development project.</li> <li>To inculcate in students different concepts of software engineering principles</li> <li>To develop the skills necessary to design, develop and execute software projects.</li> <li>Select and implement different software development process models</li> <li>Extract and analyze software requirements specifications for different projects</li> <li>Develop some basic level of software architecture/design</li> <li>Understand the importance of the stages in the software life cycle.</li> <li>Understand the various process models.</li> <li>Be able to design software by applying the software engineering principles.</li> </ul>

			• Implement software development efficiently and effectively
39	Computer Graphics	1054(5ST4)	<ul> <li>The main objective of this module is to introduce to the students the concepts of computer graphics.</li> <li>This course deals with two and three dimensional transformation, projection and graphical functions. It helps to have a better understanding of 2D and 3D technologies.</li> <li>Understand the basics of computer graphics, different graphics systems and applications of computer graphics.</li> <li>Discuss various algorithms for scan conversion and filling of basic objects and their comparative analysis.</li> <li>Use of geometric transformations on graphics objects and their application in composite form.</li> <li>Extract scene with different clipping methods and its transformation to graphics display device.</li> <li>Explore projections and visible surface detection techniques for display of 3D scene on 2D screen.</li> <li>Performing Animation techniques using tweening and morphing.</li> <li>Students will understand 2D and 3D graphic techniques which will help them to proceed with their project development.</li> <li>Knowledge and understanding  a) Have a knowledge and understanding of the structure of an interactive computer graphics system, and the separation of system components.</li> </ul>

40	E-commerce	1055(5ST5)	<ul> <li>b) Have a knowledge and understanding of geometrical transformations. Have a knowledge and understanding of techniques for representing 2D geometrical objects.</li> <li>c) Have a knowledge and understanding of interaction techniques.</li> <li>Cognitive skills (thinking and analysis).</li> <li>a) Be able to create interactive graphics applications.</li> <li>b) Practical and subject specific skills (Transferable Skills).</li> <li>c) Perform simple 2D graphics with lines, curves and can implement algorithms to rasterizing simple shapes, fill and clip polygons and have a basic grasp of anti-aliasing techniques.</li> <li>This course provides an introduction to information systems for business</li> </ul>
			<ul> <li>and management.</li> <li>It is designed to familiarize students with organizational and managerial foundations of systems, the technical foundation for understanding information systems</li> <li>Identify and apply relevant problem solving methodologies</li> <li>Design components, systems and/or processes to meet required specifications for a web presence</li> <li>Demonstrate research skills</li> <li>Understand the basic concepts and technologies used in the field of management information systems.</li> <li>Have the knowledge of the different types of management information</li> </ul>

			systems.
			<ul> <li>Understand the processes of developing and implementing information</li> </ul>
			systems.
			• Be aware of the ethical, social, and security issues of information systems.
41	LAB-I (Based On 5ST1 &	1056(5SP1)	To understand basic concepts of different attacks and security threats.
	5ST2)		• To be able to secure a message over insecure channel by various means.
			Understands fundamentals of basic java programming
			<ul> <li>Introduces object-oriented design techniques and problem solving.</li> </ul>
			• Emphasizes development of secure, well-designed software projects that
			solve practical real-world problems.
			• Provide security of the data over the network.
			• Do research in the emerging areas of cryptography and network security.
			Be able to digitally sign emails and files
			• Read and make elementary modifications to Java programs that solve real-
			world problems.
			• Validate input in a Java program.
			• Identify and fix defects and common security issues in code.
42	LAB-II (Based On 5ST3 &	1057(5SP2)	To inculcate in students different concepts of software engineering
	5ST4)		principles
			• To develop the skills necessary to design, develop and execute software
			projects.

43	LAB-III (Based On 5ST5)	1055(5SP3)	<ul> <li>Select and implement different software development process models</li> <li>Understand the basics of computer graphics, different graphics systems and applications of computer graphics.</li> <li>Discuss various algorithms for scan conversion and filling of basic objects and their comparative analysis.</li> <li>Use of geometric transformations on graphics objects and their application in composite form.</li> <li>Understand the importance of the stages in the software life cycle.</li> <li>Understand the various process models.</li> <li>Be able to design software by applying the software engineering principles.</li> <li>Students will understand 2D and 3D graphic techniques which will help them to proceed with their project development.</li> <li>Demonstrate research skills</li> </ul>
			<ul> <li>Understand the basic concepts and technologies used in the field of management information systems.</li> <li>Have the knowledge of the different types of management information systems.</li> <li>Understand the processes of developing and implementing information systems.</li> </ul>
		,	BCA Semester SIX
44	.NET Using ASP	1061(6ST1)	• Set up a programming environment for ASP.net programs.

			<ul> <li>Configure an asp.net application.</li> <li>Creating ASP.Net applications using standard .net controls.</li> <li>Develop a data driven web application.</li> <li>Connecting to data sources and managing them.</li> <li>Maintain session and controls related information for user used in multiuser web applications.</li> <li>Understand the fundamentals of developing modular application by using object oriented methodologies</li> <li>Students will be able to design web applications using ASP.NET</li> <li>Students will be able to use ASP.NET controls in web applications</li> <li>Students will be able to debug and deploy ASP.NET web applications</li> <li>Students will be able to create database driven ASP.NET web applications and web services</li> </ul>
45	CLIENT SERVER TECHNOLOGY	1062(6ST2)	<ul> <li>Deals with basics concept of Client Server Communication.</li> <li>To learn fundamentals of clients server design</li> <li>To learn division of labour.</li> <li>Comprehend the basic concepts of the client-server model.</li> <li>To understand how Client-Server systems work.</li> <li>To understand primitive Vs non-primitive systems.</li> <li>To understand techniques and protocols.</li> <li>To understand scheduling implementations.</li> </ul>

			To understand semaphores.
46	MULTIMEDIA AND ITS APPLICATIONS	1063(6ST3)	<ul> <li>Students will understand multimedia in respect to many application</li> <li>Students will learn copyright laws associated with</li> </ul>
			Students will work with all aspects of video.
			Students will work with all aspects of sound.
			Multimedia including business, schools, home, education, and virtual
			reality.
			Describe the types of media and define multimedia system.
			Describe the process of digitizing (quantization) of different analog signals
			(text, graphics, sound and video).
			• Use and apply tools for image processing, video, sound and animation.
			Apply methodology to develop a multimedia system.
			Apply acquired knowledge in the field of multimedia in practice and
			independently continue to expand knowledge in this field.
47	Software Testing	1064(6ST4)	In this course, students will gain a broad understanding of the discipline of
			software Testing and Quality Management.
			• The course will help students to develop skills that will enable them to
			learn testing techniques and strategies.
			• It will make the students learn about quality standards, quality planning,
			quality assurance and quality control.
			Understand fundamental concepts in software testing, including software

			<ul> <li>testing objectives, process, criteria, strategies, and methods.</li> <li>Gain software testing experience by applying software testing knowledge and methods to practice-oriented software testing projects.</li> <li>Understand software test automation problems and solutions.</li> <li>Comprehend the concepts related to Software Quality Attributes, Quality Planning, Software Quality Control and Software Quality Assurance.</li> <li>Learn and demonstrate various software evaluation techniques and relationship of SQA to software life cycle.</li> </ul>
48	Advance Database Management System	1065(6ST5)	<ul> <li>Understand the role of a database management system in an organization.</li> <li>Understand basic database concepts, including the structure and operation of the relational data model.</li> <li>Construct simple and moderately advanced database queries using Structured Query Language (SQL).</li> <li>Understand and successfully apply logical database design principles, including E-R diagrams and database normalization.</li> <li>Introduce basic concepts and major techniques in DBMS implementations. These include concepts and techniques for data storage, query processing, concurrency control and transaction management.</li> <li>Introduce research development ability in databases through technical survey and reading.</li> <li>Explain in detail DBMS architecture.</li> </ul>

			<ul> <li>Explain in detail query processing and techniques involved in query optimization.</li> <li>Explain the principles of concurrency control.</li> <li>Explain the principles of recovery management.</li> <li>Know recent developments and active research topics in database.</li> </ul>
49	LAB-I (Based on 6ST1 & 6ST2)	1066(6SP1)	<ul> <li>Develop a data driven web application.</li> <li>Connecting to data sources and managing them.</li> <li>Maintain session and controls related information for user used in multiuser web applications</li> <li>Deals with basics concept of Client Server Communication.</li> <li>To learn fundamentals of clients server design</li> <li>To learn division of labour.</li> <li>Students will be able to design web applications using ASP.NET</li> <li>Students will be able to use ASP.NET controls in web applications</li> <li>Students will be able to debug and deploy ASP.NET web applications</li> <li>Students will be able to create database driven ASP.NET web applications and web services.</li> <li>Comprehend the basic concepts of the client-server model.</li> <li>To understand how Client-Server systems work.</li> <li>To understand primitive Vs non-primitive systems.</li> </ul>
50	LAB-II (Based on 6ST3 &	1067(6SP2)	• In this course, students will gain a broad understanding of the discipline of

	6ST4)		software Testing and Quality Management.
			The course will help students to develop skills that will enable them to
			learn testing techniques and strategies.
			It will make the students learn about quality standards, quality planning,
			quality assurance and quality control.
			Students will understand multimedia in respect to many application
			Understand fundamental concepts in software testing, including software
			testing objectives, process, criteria, strategies, and methods.
			Gain software testing experience by applying software testing knowledge
			and methods to practice-oriented software testing projects.
			Understand software test automation problems and solutions.
			Use and apply tools for image processing, video, sound and animation.
			Apply methodology to develop a multimedia system.
51	LAB-III (Project Work)	1068(6SP3)	To be able to apply some of the techniques/principles you have been taught
			To carry out time planning for the project.
			To follow correct grounding and shielding practices
			To do effective trouble-shooting of the mini project.
			To develop effective communication skill by delivering a seminar based on
			mini project
			Demonstrate a through and systematic understanding of project contents.
			Understand methodologies and professional way of documentation and

	communication.
	Know the key stages in development of the project.
	Extend or use the idea in mini project for major project.

# College of Management and Computer Science, Yavatmal Department of Bachelor in Business Administration

### PO, PSO, CO's of BBA

#### **Programme Outcomes**

- PO1: Use analytical and reflective thinking techniques to identify and analyze business problems, develop viable solutions, and make effective decisions.
- PO2: Apply appropriate quantitative and qualitative techniques in solving business problems.
- PO3: Demonstrate competency in the underlying concepts, theory and tools taught in the core curriculum.
- PO4: Identify and analyze relevant factors that influence decision-making in business.
- PO5: Develop viable alternatives and make effective decisions in an international business context.
- PO6: Effectively address important international and multicultural issues that impact business.
- PO7: Acquire skills and competencies in the field of international business and finance.

#### **Programe Specific Outcomes**

- PSO1: Demonstrate proficiency in the fundamental business principles and practices that enable successful firms to operate in domestic and global environments.
- PSO2: Demonstrate critical thinking and analysis skills that solve business problems in a real-world context.
- PSO3: Demonstrate effective Communication through the delivery of written and oral presentations.
- PSO4: Specify the role of technology as a strategy for competitive advantage in business.

PSO5: Identify ethical issues that impact business decisions from economic, political, legal, and social perspectives.

## **Course Outcomes (COs):**

Sr. No	Name of the course	Course Code	Course Outcome
			BBA Semester First
1	Business Environment	BBA/101	<ul> <li>To equip the students with the basic understanding of Business and its types.</li> <li>This course is to acquaint the students to emerging trends of business environment.</li> <li>To understand student about Controllable and Non controllable environment.</li> <li>To aware student of Business environment at local and global level.</li> </ul>
2	Business Communication	BBA/102	<ul> <li>Introducing students with Business Communication</li> <li>Adding Values to career through business communication.</li> <li>Familiarizing students with Business and employment related communication</li> <li>Introducing students with new ways of communication.</li> <li>Understanding the value of good communication and soft skills in professional life.</li> </ul>

3	Basics of Accounting	BBA/103	<ul> <li>To explain the concept and role of accounting and financial reporting in the modern market economy,</li> <li>To explain the regulatory framework for the operation of accounting activities,</li> <li>Understanding of basic accounting concepts, accounting principles and techniques of posting basic business changes.</li> <li>To explain the structure and content of financial statements</li> </ul>
4	Creativity and Innovation	BBA/104	<ul> <li>To make students aware about the Creativity</li> <li>To make students aware about the Innovation</li> <li>To make students aware about the Renovation</li> <li>To make students aware about the Incubation Process.</li> </ul>
5	Business Mathematics & Statistics	BBA/105	<ul> <li>To understand the concept of ratio, proportion, percentage, S.I. and C.I.</li> <li>To understand the concept of Integration in business</li> <li>To understand the concept of sampling and calculation mean, median and mode</li> <li>To understand the concept of quartile deviation, standard deviation</li> <li>To understand the concept of Coefficient of variance and index number to improve business.</li> </ul>
	1	'	BBA Semester Second
6	Principles of Business  Management	BBA/201	Recognize the role of a manager and how it relates to the organization mission.

7	Principles of Economics	BBA/202	<ul> <li>Demonstrate the roles, skills and function of management.</li> <li>Recognize the concept of social responsiveness and its benefits.</li> <li>Define management ,its four basic function and skills.</li> <li>To get overall knowledge about definition given by the various economist.</li> <li>Get an introduction to supply and demand and the basic forces that determine equilibrium in a market.</li> <li>Understand the fundamentals of Micro and Macro economics.</li> <li>To get information about the problems facing by the Indian Economy.</li> </ul>
8	Fundamentals of Accounting	BBA/203	<ul> <li>To help the students to develop cognizance of the importance of accounting in organization financial statements.</li> <li>To enable students to describe how people analyze the corporate financial under different conditions and understand why people describe the financial statements in different manner.</li> <li>To provide the students to analyze specific characteristics of Logistics Management Accounting and their future action for expenses and income.</li> <li>To enable students to synthesize related information and evaluate options for most logical and optimal solution such that they would be able to predict and control cost incurrence and improve results.</li> </ul>
9	Business Law	BBA/204	To familiarize the students with different provisions of Indian Contract Act, 1872.

			<ul> <li>To familiarize the students with different provisions of Sale of Goods Act, 1930.</li> <li>To familiarize the students with different provisions of Negotiable Instrument Act, 1881.</li> <li>To familiarize the students with different provisions of GST</li> </ul>
10	Financial Services	BBA/205	<ul> <li>It helps to understand meaning of Finance.</li> <li>It Provides detail information regarding the kinds of Finance.</li> <li>Make students aware about Sources of Finance.</li> <li>It will help to know the Role of Finance in Indian Economy.</li> </ul>
			BBA Semester Third
11	Human Resource Management	BBA/301	<ul> <li>To Develop the skill for better human relation in this organization</li> <li>To make the student familiarize with why HRM matters more now than ever.</li> <li>To make the students aware about HR Planing, HR Structure</li> <li>To familiarize the student with modern training and development programs</li> </ul>
12	Sales & Distribution  Management	BBA/302	<ul> <li>Introducing students with the concept of sales and distribution management.</li> <li>Making students familiar with the concept and importance of salesmanship</li> <li>Developing personal selling skills in students</li> </ul>

13	Company Accounts	BBA/303	<ul> <li>Understanding forecasting and its applications in sales and distribution.</li> <li>Understanding the concept and need of distribution management</li> <li>The main objective of this subject to provide the knowledge of companies, Shares and Regulatory of companies.</li> <li>The subjects describes the pattern of final accounts of the company.</li> <li>It provides the knowledge of Issue of share and Issue of debenture etc.</li> <li>It also provide the knowledge about the company amalgamation and absorption.</li> </ul>
14	Secretarial Practice & Company Management	BBA/304	<ul> <li>To familiarize the students with Companies Act 1956 &amp; Companies Act 2013</li> <li>To familiarize the students with fundamental documents related to company</li> <li>To familiarize the students with company share structure</li> <li>To familiarize the students with Company Secretary</li> <li>To familiarize the students with secretarial duties related to company meeting</li> </ul>
15	Direct Tax Laws	BBA/305	<ul> <li>The student will be able to Acquire the complete knowledge of basic concepts of income tax</li> <li>The student will be able to Understand the concept of exempted incomes.</li> <li>The student will be able to Understand the provisions of agricultural</li> </ul>

			<ul> <li>The student will get thorough knowledge on the tax practice prevailing in Various Heads of Incomes</li> <li>The student will be able to Develop the skill of recording difference between Direct and Indirect Tax.</li> </ul> BBA Semester Four
16	Managerial Skills	BBA/401	<ul> <li>To familiarize the students with skills &amp; managerial skills</li> <li>To familiarize the students with Skills Developments &amp; Entrepreneurial skills</li> <li>To familiarize the students with Business Driving Skills</li> <li>To familiarize the students with Problem Solving &amp; Negotiation Skills</li> <li>To familiarize the students with Relationship Development Skills</li> </ul>
17	Marketing Managment	BBA/402	<ul> <li>Introducing students with the concept of Marketing</li> <li>Introduction to 7 P's of marketing.</li> <li>Introducing the concept of consumer behavior and its importance</li> <li>Understanding the concept of Product Life Cycle.</li> <li>Understanding the modern concept of marketing</li> </ul>
18	Management Of Small Entrepreneurs	BBA/403	<ul> <li>To make students aware about the Creativity</li> <li>To make students aware about the Innovation</li> <li>To make students aware about the Renovation</li> <li>To make students aware about the Incubation Process.</li> </ul>

19	Corporate Accounting	BBA/404	<ul> <li>It will help students to develop awareness about Corporate Accounting in conformity with the provision of companies act.</li> <li>It enables student to understand Banking Company Account.</li> <li>It helps to understand Accounts of Insurance and Electricity Company.</li> <li>It helps to understand the importance of Valuation of Shares and Goodwill.</li> </ul>
20	Indirect Taxes	BBA/405	<ul> <li>The student will be able to Acquire conceptual knowledge of Indirect Tax</li> <li>The student will be able to Compute the assessable value of transactions related to goods and services for levy and determination of tax liability</li> <li>The student will be able to Identify and analyze the procedural aspects under different applicable statutes related to indirect taxation.</li> <li>The student will be able to Understand the provisions of GST</li> <li>The student will be able to Understand the concept of various types of GST (CGST, SCST, IGST, UTGST)</li> </ul>
21	Environmental Studies		<ul> <li>Gaining in-depth knowledge on natural processes that sustain life and govern economy.</li> <li>Predicting the consequences of human actions on the web of life, global economy and quality of human life.</li> <li>Developing critical thinking for shaping strategies (scientific, social, economic and legal) for environmental protection and conservation of</li> </ul>

			<ul> <li>biodiversity, social equity and sustainable development.</li> <li>Acquiring values and attitudes towards understanding complex environmental economic-social challenges, and participating actively in solving current environmental problems and preventing the future ones.</li> <li>Adopting sustainability as a practice in life, society and industry.</li> </ul> BBA Semester Five
22	Cost Accounting	BBA/501	<ul> <li>This Course exposes the students to the basic concepts and tools used in Cost Accounting.</li> <li>To acquaint the students about Meaning and uses of Cost Accounting.</li> <li>To equip the student about various cost concept.</li> <li>To provide an understanding of application of Cost Accounting techniques for determination of cost of Production.</li> </ul>
23	Indian Economics	BBA/502	<ul> <li>To develop ideas of the basic characteristics of Indian economy.</li> <li>It helps to get knowledge about the Economy system of India.</li> <li>To aware about the role of government, recent trends Parallel economy.</li> <li>Understand the importance of structural shift of Indian economy.</li> </ul>
24	Health Care & Hospitality  Management	BBA/503	<ul> <li>To familiarize the students with functions involved in Health and Hospital Management.</li> <li>To familiarize the students with the structure, nature and operating characteristics of the different sectors of the hospitality industry: food service, lodging and tourism</li> </ul>

25	Personal Financial Planning  Event Management	BBA/504	<ul> <li>To familiarize the students with research in the field of Health and Hospital Management in order to improve the efficiency of Health Care delivery Systems.</li> <li>To familiarize the students with the social, economic and environmental context within which the hospitality industry operates</li> <li>To familiarize the students with an introduction to the world of business and particularly to business as it applies to the hospitality industry</li> <li>To make students aware about the Personal Financial Planning</li> <li>To make students aware about the Retirement Planning</li> <li>To make students aware about the Retirement Benefits</li> <li>To make students aware about the Tax Management</li> <li>To familiarize the students with Concept of Event Management</li> <li>To familiarize the students with Marketing of Events</li> </ul>
			<ul> <li>To familiarize the students with Activities in Event Management</li> <li>To familiarize the students with Event Production &amp; Stage Management</li> </ul>
			BBA Semester Six
27	Management Accounting	BBA/601	<ul> <li>Assistance in Planning and Formulation of Future Policies.</li> <li>Helps in the Interpretation of Financial Information.</li> <li>Helps in Controlling Performance.</li> <li>Helps in the Solution of Strategic Business Problems.</li> </ul>

			<ul> <li>Helps in Coordinating Operations.</li> <li>Helps in Motivating Employees.</li> <li>Communicating Up-to-date Information.</li> <li>Helps in Evaluating the Efficiency and Effectiveness of Policies</li> </ul>
28	Industrial Laws	BBA/602	<ul> <li>Students should able to elaborate the concept of Industrial Relations.</li> <li>The students should able to illustrate the role of trade union in the industrial setup.</li> <li>Students should able to elaborate Industrial Dispute settlement procedures.</li> <li>Students should able to outline the important causes &amp; impact of industrial disputes.</li> <li>Students will be able to acquire skills in handling employer-employee relations.</li> </ul>
29	Auditing	BBA/603	<ul> <li>To familiarize the students with Concept of Auditing</li> <li>To familiarize the students with the use of Internal Check System in Auditing</li> <li>To familiarize the students with the importance of Verification &amp; Valuation in Auditing</li> <li>To familiarize the students with Company Auditor</li> <li>To familiarize the students with Audit of different Companies</li> </ul>
30	Investment Management	BBA/604	To make students aware about the Investment Management

			<ul> <li>To make students aware about the Capital Market</li> </ul>
			<ul> <li>To make students aware about the IPO</li> </ul>
			To make students aware about the Stock Market
31	Services Management	BBA/605	Familiarizing students with the concept of service industry.
			<ul> <li>Understanding the concept and future prospects of service industry.</li> </ul>
			<ul> <li>Introducing students with service quality and TQM</li> </ul>
			Familiarizing students with service delivery.