Annasaheb Dange College of Engineering and Technology Ashta

Department of Computer Application

Bachelor of Computer Application Program

Sl.No		I	II	III	IV	V	VI	Total
1	Program Core (PC)	12	9	12	15		4	52
2	Program Elective (PE)			4	5	14	10	33
3	Ability Enhancement Courses (AE)	1		2			2	5
4	Skill Enhancement Courses (SE)	5	7	4	2	6	4	28
5	Open Elective (OE)		2					2
6	Value Added Courses (VA)	3	3					6
		21	21	22	22	20	20	126
		42		44		40		126
		First Year		Second Year		Third Year		

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BCA-ST-01/07

Annasaheb Dange College of Engineering and Technology Ashta
Department of Computer Application
Bachelor of Computer Application Program

Semester I

Course Code	Course Name	Teaching Scheme				THEORY							PRACTICAL						GRAND TOTAL
						ISE		MSE+ ESE			Total	Min	ISE		ESE		Total	Min	
		L	T	P	Credits	Max	Min	MSE	ESE	Min			Max	Min	Max	Min			
0BCPC101	Mathematics Foundations to Computer Science - I	3	1	-	4	40	16	30	30	24	100	40	-	-	-	-	-	-	100
0BCPC102	Computer Architecture	3	-	2	4	40	16	30	30	24	100	40	25	10	25	10	50	20	150
0BCPC103	Operating Systems	3	-	2	4	40	16	30	30	24	100	40	25	10	25	10	50	20	150
0BCSE104	Problem Solving Techniques	3	-	4	5	40	16	30	30	24	100	40	25	10	25	10	50	20	150
0BCAE105	General English	-	-	2	1	-	-	-	-	-	-	-	50	20	-	-	50	20	50
0BCVA106	Environmental Science and Sustainability	2	-	-	2	50	20	-	-	-	50	20	-	-	-	-	-	-	50
0BCVA107	Value added Course (Yoga)	-	-	2	1	-	-	-	-	-	-	-	50	20	-	-	50	20	50
		14	**1**	**12**	**21**														**700**
	Total Contact Hours/Week	**27**																	

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BCA-ST-02/07

Annasaheb Dange College of Engineering and Technology Ashta
Department of Computer Application
Bachelor of Computer Application Program

Semester II

Course Code	Course Name	Teaching Scheme				THEORY							PRACTICAL						GRAND TOTAL
						ISE		MSE+ ESE			Total	Min	ISE		ESE		Total	Min	
		L	T	P	Credits	Max	Min	MSE	ESE	Min			Max	Min	Max	Min			
0BCPC108	Mathematics Foundations to Computer Science - II	3	1	-	4	40	16	30	30	24	100	40	-	-	-	-	-	-	100
0BCPC109	Data Structures using C language	3	-	4	5	40	16	30	30	24	100	40	25	10	25	10	50	20	150
0BCSE110	Object Oriented Programming using Java	2	-	4	4	40	16	30	30	24	100	40	25	10	25	10	50	20	150
0BCSE111	Web Technologies	2	-	2	3	40	16	30	30	24	100	40	25	10	25	10	50	20	150
0BCOE112	IKS: Indian Vision for Human Society	2	-	-	2	50	20	-	-	-	50	20	-	-	-	-	-	-	50
0BCVA113	Indian Constitution	2	-	-	2	50	20	-	-	-	50	20	-	-	-	-	-	-	50
0BCVA114	Value added Course (Sports)	-	-	2	1	-	-	-	-	-	-	-	50	20	-	-	50	20	50
		14	**1**	**12**	**21**														**700**
	Total Contact Hours/Week	**27**																	

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BCA-ST-03/07

Annasaheb Dange College of Engineering and Technology Ashta
Department of Computer Application
Bachelor of Computer Application Program

Semester III

Course Code	Course Name	Teaching Scheme				THEORY							PRACTICAL						GRAND TOTAL
						ISE		MSE + ESE			Total	Min	ISE		ESE		Total	Min	
		L	T	P	Credits	Max	Min	MSE	ESE	Min			Max	Min	Max	Min			
0BCPC201	Probability and Statistics	3	1	-	4	40	16	30	30	24	100	40	-	-	-	-	-	-	100
0BCPC202	Database Management System	2	-	2	3	40	16	30	30	24	100	40	25	10	25	10	50	20	150
0BCPC203	Software Engineering	3	-	-	3	40	16	30	30	24	100	40	-	-	-	-	-	-	100
0BCPC204	Principles and Practices of Management	2	-	-	2	40	16	30	30	24	100	40	-	-	-	-	-	-	100
0BCSE205	Python Programming	2	-	4	4	40	16	30	30	24	100	40	25	10	25	10	50	20	150
0BCPE2xx	Program Elective - I	2	-	4	4	40	16	30	30	24	100	40	25	10	25	10	50	20	150
0BCAE209	Aptitude and Reasoning	1	1	-	2	50	20	-	-	-	50	20	-	-	-	-	-	-	50
		15	**2**	**10**	**22**														**800**
	Total Contact Hours/Week	**27**																	

Program Elective I	
0BCPE206	Basics of Data Analytics using Spreadsheet [Data Science]
0BCPE207	Feature Engineering [Artificial Intelligence & Machine Learning]
0BCPE208	Web Programming - I [Full Stack Development]

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BCA-ST-04/07

Annasaheb Dange College of Engineering and Technology Ashta
Department of Computer Application
Bachelor of Computer Application Program

Semester IV

Course Code	Course Name	Teaching Scheme				THEORY							PRACTICAL						GRAND TOTAL
						ISE		MSE+ ESE			Total	Min	ISE		ESE		Total	Min	
		L	T	P	Credits	Max	Min	MSE	ESE	Min			Max	Min	Max	Min			
0BCPC210	Entrepreneurship and Startup Ecosystem	1	1	-	2	40	16	30	30	24	100	40	-	-	-	-	-	-	100
0BCPC211	Computer Network	3	-	2	4	40	16	30	30	24	100	40	25	10	25	10	50	20	150
0BCPC212	Design and Analysis of Algorithm	3	-	2	4	40	16	30	30	24	100	40	25	10	25	10	50	20	150
0BCPC213	Human Behaviour and Organization	3	-	-	3	40	16	30	30	24	100	40	-	-	-	-	-	-	100
0BCPC214	Cyber Security	2	-	-	2	40	16	30	30	24	100	40	-	-	-	-	-	-	100
0BCSE215	Design Thinking and Innovation	1	1	-	2	-	-	-	-	-	-	-	50	20	-	-	50	20	50
0BCPE2xx	Program Elective - II	3	-	4	5	40	16	30	30	24	100	40	25	10	25	10	50	20	150
		16	2	8	22														800
	Total Contact Hours/Week	26																	

Program Elective II	
0BCPE216	Data Visualization [Data Science]
0BCPE217	Introduction to ML [Artificial Intelligence & Machine Learning]
0BCPE218	Web Programming -II [Full Stack Development]

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Annasaheb Dange College of Engg. & Tech. ASHTA 416 301

BCA-ST-05/07

Annasaheb Dange College of Engineering and Technology Ashta
Department of Computer Application
Bachelor of Computer Application Program

Semester V

Course Code	Course Name	Teaching Scheme				THEORY							PRACTICAL						GRAND TOTAL
						ISE		MSE+ ESE			Total	Min	ISE		ESE		Total	Min	
		L	T	P	Credits	Max	Min	MSE	ESE	Min			Max	Min	Max	Min			
0BCPE3xx	Program Elective - III	3	0	4	5	40	16	30	30	24	100	40	25	10	25	10	50	20	150
0BCPE3xx	Program Elective - IV	3	0	4	5	40	16	30	30	24	100	40	25	10	25	10	50	20	150
0BCPE3xx	Program Elective - V	3	0	2	4	40	16	30	30	24	100	40	25	10	25	10	50	20	150
0BCSE310	Quantitative Techniques	1	1	0	2	40	16	30	30	24	100	40	-	-	-	-	-	-	100
0BCSE311	Internship/capstone Project	0	0	8	4	-	-	-	-	-	-	-	50	20	50	20	100	40	100
		10	**1**	**18**	**20**														**650**
	Total Contact Hours/Week	**29**																	

Program Elective III	
0BCPE301	Introduction to Data Science [Data Science]
0BCPE302	Neural Network [Artificial Intelligence & Machine Learning]
0BCPE303	Web Programming -III [Full Stack Development]

Program Elective IV	
0BCPE304	Time Series Analysis [Data Science]
0BCPE305	Digital Image Processing [Artificial Intelligence & Machine Learning]
0BCPE306	Web Programming -IV [Full Stack Development]

Program Elective V	
0BCPE307	Big Data Analytics [Data Science]
0BCPE308	Natural Language Processing [Artificial Intelligence & Machine Learning]
0BCPE309	Web Programming -V [Full Stack Development]

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BCA-ST-06/07

Annasaheb Dange College of Engineering and Technology Ashta
Department of Computer Application
Bachelor of Computer Application Program

Semester VI

Course Code	Course Name	Teaching Scheme				THEORY							PRACTICAL						GRAND TOTAL
						ISE		MSE+ ESE			Total	Min	ISE		ESE		Total	Min	
		L	T	P	Credits	Max	Min	MSE	ESE	Min			Max	Min	Max	Min			
0BCPC312	Generative AI	2	0	4	4	40	16	30	30	24	100	40	25	10	25	10	50	20	150
0BCPE3xx	Program Elective - VI	3	0	4	5	40	16	30	30	24	100	40	25	10	25	10	50	20	150
0BCPE3xx	Program Elective - VII	3	0	4	5	40	16	30	30	24	100	40	25	10	25	10	50	20	150
0BCAE319	Soft Skills	2	0	0	2	50	20	-	-	-	50	20	-	-	-	-	-	-	50
0BCSE320	Major Project	0	0	8	4	-	-	-	-	-	-	-	50	20	50	20	100	40	100
		10	**0**	**20**	**20**														**600**
	Total Contact Hours/Week	**30**																	

Program Elective - VI	
0BCPE313	Exploratory Data Analysis [Data Science]
0BCPE314	Deep Learning for Computer Vision [Artificial Intelligence & Machine Learning]
0BCPE315	Web Programming -VI [Full Stack Development]

Program Elective - VII	
0BCPE316	Business Intelligence & Analytics [Data Science]
0BCPE317	Predictive Analysis [Artificial Intelligence & Machine Learning]
0BCPE318	Web Programming -VII [Full Stack Development]

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Annasaheb Dange College of Engg. & Tech. ASHTA 416 301

BCA-ST-07/07

ANNASAHEB DANGE COLLEGE OF ENGINEERING AND TECHNOLOGY, ASHTA
(An Autonomous Institute)
Department of Bachelor of Computer Application

Course Details:

Class			F.Y. B.C.A, Sem.-I
Course Code and Course Title			**0BCPC101, Mathematics Foundations to Computer Science - I**
Prerequisite/s			
Teaching Scheme: Lecture/Tutorial/Practical			03/01/00
Credits			04
Evaluation	**T**	**ISE / MSE / ESE**	40/30/30
	P	**ISE/ESE**	00/00

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:	
0BCPC101_1	Understand sets their operations & relation to **solve** simple problem.
0BCPC101_2	**Identify** & differentiate between various types of functions and solve combinatorial problems using counting principle .
0BCPC101_3	Use concept of graph theory to **Solve** basic problems in computer application.
0BCPC101_4	**Illustrate** types of matrcies, matrix operations and compute rank of matrix to solve system of linear equation.

Course Contents: Theory		
Unit 1	**Sets and Relation:** Set, Set Operations, Properties of Set operations, Subset, Venn Diagrams, Cartesian Products. Relations on a Set, Properties of Relations, Types of Relations, Equivalence Relation.	**07 Hrs.**
Unit 2	**Function and Counting:** Functions, properties of functions (domain, range), composition of functions, surjective (onto), injective (one-to-one) and bijective functions, inverse of functions. Some useful functions for Computer Science: Exponential and Logarithmic functions, Polynomial functions, Ceiling and Floor functions. Basics of counting, Pigeonhole principle, permutation, combination, Binomial coefficients, Binomial theorem.	**12 Hrs.**
Unit 3	**Elementary Graph Theory:** Basic terminologies of graphs, connected and disconnected graphs, subgraph, paths and cycles, complete graphs, Euler and Hamiltonian graphs. Trees, properties of tree	**10 Hrs.**
Unit 4	**Matrix Algebra:** Types of matrices, algebra of matrices–addition, subtraction, and multiplication of matrices, determinant of a matrix, symmetric and skew-symmetric matrices, orthogonal matrix, rank of a matrix, inverse of a matrix, applications of matrices to solve system of linear equations.	**10 Hrs**

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List of Tutorial:

Sr. No.	Title of tutorials
1	**Set:** Set Operations, Properties of Set operations, Cartesian Products.
2	**Relations:** Properties of Relations, Types of Relations.
3	**Functions:** Properties of functions, Types of functions.
4	**Counting:** Pigeonhole principle, permutation, combination, Binomial coefficients.
5	**Graph Theory:** Basic terminologies of graphs, connected and disconnected graphs, Subgraphs
6	**Graph Theory:** paths and cycles, complete graphs, Euler and Hamiltonian graphs. Trees
7	**Matrix:** Types of matrices, algebra of matrices–addition, subtraction, and multiplication of matrices, determinant of a matrix.
8	**Matrix:** Rank of a matrix, inverse of a matrix, applications of matrices to solve system of linear equations.

Text Books:

Sr. No.	Title	Author	Publisher	Edition	Year of Edition
01	Engineering Mathematics	Garg, Reena	Khanna Book Publishing Company		2024
02	Advanced Engineering Mathematics	Garg, Reena	Khanna Book Publishing Company		2023
03	Discrete Mathematical Structures	Kolman B., Busby R. and Ross S.	Pearson Education.	6th edition	2015
04	Graph Theory with Application to Engineering and Computer Science	Deo Narsingh	Prentice Hall, India		1979
05	Matrices	Vasishtha A. R. and Vasishtha A. K.	Krishna Prakashan		2022

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Annasaheb Dange College of Engg. & Tech. ASHTA 416 301

FYBCA-02/38

Reference Books:					
Sr. No.	**Title**	**Author**	**Publisher**	**Edition**	**Year of Edition**
01	Discrete and Combinatorial Mathematics: An Applied Introduction	Grimaldi Ralph P. and Ramana B. V.	Pearson Education	Fifth Edition	2007
02	Discrete Mathematics and its Applications	Rosen Kenneth H. and Krithivasan Kamala	McGraw Hill, India,		2019
03	Introduction to Graph Theory	West Douglas B.	Pearson Education	Second Edition	2015

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ANNASAHEB DANGE COLLEGE OF ENGINEERING AND TECHNOLOGY, ASHTA
(An Autonomous Institute)
Department of Bachelor in Computer Application

Course Details:

Class			F.Y. B.C.A, Sem.-I
Course Code and Course Title			**0BCPC102, Computer Architecture**
Prerequisite/s			
Teaching Scheme: Lecture/Tutorial/Practical			03/00/02
Credits			04
Evaluation	**T**	**ISE / MSE / ESE**	40/30/30
	P	**ISE/ESE**	25/25

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:	
0BCPC102_1	To Understand the basics of Digital Electronics and Binary Number System.
0BCPC102_2	To Learn the implementation of Combinational Circuit.
0BCPC102_3	To Learn the implementation of Sequential Circuit.
0BCPC102_4	To Understand the Organization of basic computers.
0BCPC102_5	To understand the concept of memory organization.

Course Contents: Theory		
Unit 1	**Digital Principles:** Definition for Digital signals, Digital logic, Digital computers, Von Neumann Architecture, Boolean Laws and Theorems, K-Map: Truth Tables to K-Map, 2, 3 and 4 variable K Map, K-Map Simplifications, Don't Care Conditions, SOP and POS. **Number Systems:** Decimal, Binary, Octal, Hexadecimal, Number System Conversions, Binary Arithmetic, Addition of BCD, Octal Arithmetic, Hexadecimal Arithmetic, Binary Codes, Decimal Codes, Error detecting and correcting codes, ASCII, EBCDIC.	**09 Hrs**
Unit 2	**Combinational Circuits:** Half Adder and Full Adder, Subtractor, Decoders, Encoder, Multiplexer, Demultiplexer. **Sequential Circuits:** Flip-Flops- SR Flip- Flop, D Flip-Flop, J-K Flip-Flop, T Flip-Flop. Register: 4 bit register with parallel load, Shift Registers- Bidirectional shift register with parallel load Binary Counters-4 bit synchronous and Asynchronous binary counter.	**10 Hrs**
Unit 3	**Basic Computer Organization and Design:** Instruction Codes, Computer Registers, Computer Instructions, Timing and Control, Instruction Cycle, Memory-Reference Instructions, Input- Output Interrupt, Complete Computer Description, Design of Accumulator logic.	**10 Hrs**
Unit 4	**Central Processing Unit:** Introduction, General Register Organization, Stack Organization, Instruction Formats, Addressing Modes, Data Transfer and Manipulation, Program Control. **Memory Organization:** Memory Hierarchy, Main Memory, Auxiliary memory, Associate Memory, Cache Memory, Virtual Memory, Memory Management Hardware.	**10 Hrs**

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Annasaheb Dange College of Engg. & Tech. ASHTA 416 301

FY BCA-04/38

Course Contents: Laboratory

Expt. No.	Title
1.	To Familiarize With The Different Components Of Computer System.
2.	To Study Behavior Of AND, OR, NAND, NOR,EX-OR, EX-NOR Gates Using Simulator
3.	To Study And Verify NAND As A Universal Gate.
4.	To Perform Conversions Between Binary, Decimal, Octal, And Hexadecimal Number Systems.
5.	To Verify Demorgan's Theorem Using Logic Gates.
6	Design And Implement The 4:1 Mux Using Gates
7	Design And Verify Operations Of Half Added
8	Design And Verify Operations Of Half Substractor
9	Design And Verify Operations Of Full Adder
10	To Study Different Memory Organization Of Computer System.

Text Books:

Sr. No.	Title	Author	Publisher	Edition	Year of Edition
01	"Digital Principles & Applications"	Donald P Leach, Albert Paul Malvino, Goutam	Tata McGraw Hill Education Private		2011

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Annasaheb Dange College of Engg. & Tech. ASHTA 416 301

FYBCA-05/38

		Saha	Limited		
02	"Computer System Architecture"	M. Morris Mano	Pearson/Phi	Third Edition	
03	Computer fundamentals, Architecture and Organization	B. Ram	M/S New Age International (P) Ltd	Sixth Edition	

Reference Books:

Sr. No.	Title	Author	Publisher	Edition	Year of Edition
01	"Computer Organization and Architecture"	William Stallings	Pearson/PHI	Sixth Edition	2015
02	"Structured Computer Organization"	Andrew S. Tanenbaum	PHI /Pearson	Fourth Edition	
03	"Switching Theory and Logic Design"	M.V. Subramanyam	Laxmi Publications (P) Ltd.		
04	Computer Organization Architecture	Ikvinderpal Singh	Khanna Book Publishing		

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Annasaheb Dange College of Engg. & Tech. ASHTA 416 301

FY BCA-06/38

Course Details:

Class			F.Y. B.C.A, Sem.-I
Course Code and Course Title			**0BCPC103, Operating Systems**
Prerequisite/s			
Teaching Scheme: Lecture/Tutorial/Practical			03/00/02
Credits			04
Evaluation	**T**	**ISE / MSE / ESE**	40/30/30
	P	**ISE/ESE**	25/25

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:	
0BCPC103_1	Explain the fundamentals of the operating system.
0BCPC103_2	Understand issues related to process scheduling and resource management with the help of different scheduling algorithm.
0BCPC103_3	Understanding the concept of critical section problems.
0BCPC103_4	Use deadlock handling and Memory management techniques with suitable method to handle a deadlock and memory management
0BCPC103_5	Understand the various page replacements and Scheduling Algorithms and the features of I/O for efficient resource management.
0BCPC103_6	Proficiently Develop and debug, C programs for different operating system concepts on linux platforms

Course Contents: Theory		
Unit 1	**Operating Systems Overview:** Definition, Evaluation of O.S, Components & Services of OS, Structure, Architecture, types of Operating Systems, Batch Systems, Concepts of Multiprogramming and Time Sharing, Parallel, Distributed and real time Systems. **Operating Systems Structures:** Operating system services and systems calls, system programs, operating system structure, operating systems generations.	**09 Hrs**
Unit 2	**Process Management:** Process Definition, Process states, Process State transitions, Process Scheduling, Process Control Block, Threads, Concept of multithreads, Benefits of threads, Types of threads. **Process Scheduling:** Definition, Scheduling objectives, Scheduling algorithms, CPU scheduling Preemptive and Non-preemptive Scheduling algorithms (FCFS, SJF and RR), Performance evaluation of the scheduling Algorithms	**10 Hrs**
Unit 3	**Process Synchronization:** Introduction, Inter-process Communication, Race Conditions, Critical Section Problem, Mutual Exclusion, Semaphores, Monitors.	**10 Hrs**

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Annasaheb Dange College of Engg & Tech. ASHTA 416 301

FY BCA-07/38

	Deadlocks: System model, deadlock characterization, deadlock prevention, avoidance, Banker's algorithm, Deadlock detection, and recovery from deadlocks.	
Unit 4	**Memory Management:** Logical and Physical address map, Swapping, Memory allocation, Internal and External fragmentation and Compaction, Paging, Segmentation. **Virtual Memory:** Demand paging, Page Replacement algorithms, Allocation of frames, thrashing. **I/O Management:** Principles of I/O Hardware: Disk structure, Disk scheduling algorithms. Memory Hierarchy, Main Memory, Auxiliary memory, Associate Memory, Cache Memory, Virtual Memory, Memory Management Hardware.	**10 Hrs**

Course Contents: Laboratory

List of Practical's		
Expt. No.	**Title of Experiment**	**Contact Hours**
1	Demonstration of basics of LINUX utility commands.	2 Hrs
2	Demonstration of File and Directory management Commands	2 Hrs
3	Demonstration of various File access and permission Commands	2 Hrs
4	Program based on FCFS & SJF CPU Scheduling Algorithms.	2 Hrs
5	Program based on Round Robin CPU Scheduling Algorithms.	2 Hrs
6	Program to simulate producer-consumer problem using semaphores.	2 Hrs
7	Program based on Bankers algorithm for Deadlock Avoidance.	2 Hrs
8	Program to simulate Paging technique of Best Fit contiguous memory management.	2 Hrs
9	Program to simulate Paging technique of First Fit contiguous memory management.	2 Hrs
10	Program based on FIFO Page Replacement Policies.	2 Hrs
11	Program based on Disk scheduling.	2 Hrs

Head of Department Dean Academics Director Executive Director

Annasaheb Dange College of Engg. & Tech. ASHTA 416 301

FY BCA-08/38

Text Books:					
Sr. No	**Title**	**Author**	**Publisher**	**Edition**	**Year of Edition**
1.	Operating System Concepts Gagne	Silberschatz, Galvin,	John Wiley	8	2009
2.	Operating Systems - A Concept Based approach	Dhananjay M Dhamdhere	Tata McGraw Hill	3	2007
3.	Understanding Operating System	Flynn,(Thomson)	Ann McHoes& Ida M.	6	2014
4.	Operating Systems: Principles and Practice	Thomas Anderson and Michael Dahlin	Recursive Books	1	2012

Reference Books:					
Sr. No	**Title**	**Author**	**Publisher**	**Edition**	**Year of Edition**
01	The design of Unix Operating System	Maurice J. Bach	(PHI)	1	2006
02	A practical Guide to Linux commands, Editors and shell programming	Mark G. Sobell	Pearson Education India	3	2013
03	Operating Systems concepts and design	Milan Milenkovic	TMGH	2	2001

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Annasaheb Dange College of Engg. & Tech. ASHTA 416 301

FY BCA - 09/38

ANNASAHEB DANGE COLLEGE OF ENGINEERING AND TECHNOLOGY, ASHTA
(An Autonomous Institute)
Department of Bachelor of Computer Application

Course Details:

Class			F.Y. B.C.A, Sem.-I
Course Code and Course Title			**0BCSE104, Problem Solving Techniques**
Prerequisite/s			
Teaching Scheme: Lecture/Tutorial/Practical			03/00/04
Credits			05
Evaluation	**T**	**ISE / MSE / ESE**	40/30/30
	P	**ISE/ESE**	25/25

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:	
0BCSE104_1	Prepare an algorithm and draw a flowchart to accurately solve various mathematical problems by using structured approach.
0BCSE104_2	Apply the fundamental concepts like data types, operators to solve mathematical problems by using the C language.
0BCSE104_3	Apply the decision and looping constructs to solve the problems related to decision, repetitive statements for real time problem statement using C
0BCSE104_4	Develop a C program to demonstrate the modular approach by using the concept of function, structure and pointer
0BCSE104_5	Design and exhibit micro project on real time problems by using C language.

Course Contents: Theory		
Unit 1	Problems And Problem Instances, Generalization and Special Cases, Types of Computational Problems, Classification of Problems, Analysis of Problems, Solution Approaches, Algorithm Development, Analysis of Algorithm, Efficiency, Correctness, Problem-Solving Steps (Understand the Problem, Plan, Execute, And Review), Breaking the Problem into Subproblems, Top-Down and Bottom-Up Approaches to Problem Solving. Input/Output Specification, Input Validation, Pre and Post Conditions. Flowcharts, Pseudo codes, Writing algorithms and drawing flowcharts for simple exercises. **C Fundamentals** Importance of 'C' Language, History, Structure of 'C' Program, Sample 'C' Program, Constants, variables and data types, Enumeration. Operators and expressions, Managing input / output operations, Control statements-Decision making,	**09 Hrs**
Unit 2	**Control statements- Case control & Looping Constructs.** Different Kinds of Repetitions: Entry Controlled, Exit Controlled, Counter Controlled, Definite, Indefinite and Sentinel-Controlled Repetitions. Problems Involving Iteration and Nesting: Displaying Different Patterns and Shapes Using Symbols and Numbers. **Array** The meaning of an array, one dimensional and two dimensional arrays,	**10 Hrs**

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Annasaheb Dange College of Engg. & Tech. ASHTA 416 301

FY BCA - 10/38

	declaration and initialization of arrays, reading , writing and manipulation of above types of arrays, multidimensional arrays. Strings-Declaring and initialing character array, reading and writing string to/from terminal, arithmetic operations on characters, putting strings together, string handling functions.	
Unit 3	**Functions** Need of user defined functions, elements of User defined functions, defining functions, return values and their types, function calls, function declaration, methods of parameter passing, Scope rule of functions, user defined and library functions, Recursion. **Structure** Need of Structure, Defining a structure, declaring and accessing structure variables, structure initialization, copying and comparing structure variables, array of structures, structures and functions, Unions.	**09 Hrs**
Unit 4	**Pointers** Understanding pointers, accessing the address space of a variable, declaring and initialization pointer variables, accessing a variable through its pointer, pointer expressions, pointers and arrays, pointer and character strings, pointer and structure, Void pointer and generic pointer, null pointer, dangling pointer, pointer to a function, Calling A function through function pointer. **Dynamic memory allocation** malloc() ,calloc() ,realloc(),free(),Core dump ,Memory leak. **File Handling** Defining and opening a file, closing a file, input/output operations on files, error handling during I/O operations, random access files, command line arguments, C preprocessor.	**11 Hrs**

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Annasaheb Dange College of Engg. & Tech. ASHTA 416 301

FY BCA/11/38

Course Contents: Laboratory

Experiment List:	
1	Write an algorithm for given problem statement.
2	Draw a flowchart for given problem.
3	Program using different data types and operators in C.
4	Program using different operators and demonstration of operator precedence.
5	Program using if and if else construct.
6	Program using if else ladder and nested if else.
7	Program using switch case.
8	Program to demonstrate looping constructs (while and for loops)
9	Program to demonstrate looping constructs (do while and nested loops)
10	Program to demonstrate one dimensional array
11	Program to demonstrate two-dimensional array
12	Implement a program to demonstrate String handling functions.
13	Implement a program to demonstrate user defined functions.
14	Program to demonstrate concept of recursion (factorial, Fibonacci)
15	Program to demonstrate concept of structures in C.
16	Program to demonstrate concept of array of structures in c.
17	Program to demonstrate pointers in C.
18	Program to demonstrate pointers arithmetic in C.
19	Program to demonstrate function pointer.
20	Implement a program to demonstrate file handling.
21	Program to demonstrate command line arguments.

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Annasaheb Dange College of Engg. & Tech. ASHTA 416 301

FYBCA -12/38

Text Books:					
Sr. No	Title	Author	Publisher	Edition	Year of Edition
01	Programming And Problem Solving Using C Language	ISRD Group	McGraw-Hill Publications	-	2012
02	Let Us C	YashwantKanetkar	BPB	3rd	2011
03	C How to Program	Harvey M. Deitel , Paul J. Deitel, Abbey Deitel	Pearson	2nd	2009
04	Programming in ANSI C	E. Balguruswamy	Tata Mc-Graw Hill	4th	2008

Reference Books:					
Sr. No	Title	Author	Publisher	Edition	Year of Edition
01	The 'C' Programming Language	D. M. Ritchie	Pearson	2nd	1998
02	C Programming Laboratory: Handbook for Beginners	Sidnal	Wiley India Limited	1st	2012
03	Understanding pointers in C	Yashwant Kanetkar	BPB Publications	4th	2001
04	Test your C Skills	Yashwant Kanetkar	BPB Publications	5th	2013

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Annasaheb Dange College of Engg. & Tech. ASHTA 416 301

FY BCA-13/38

ANNASAHEBDANGE COLLEGE OF ENGINEERING AND TECHNOLOGY, ASHTA

(An Autonomous Institute)

Department of Bachelor of Computer Application

Course Details:

Class	F. Y. B.C.A. Semester-I
Course Code and Course Title	**0BCAE105, General English**
Prerequisite/s	12 the Standard English Grammar
Teaching Scheme: Lecture/Tutorial/Practical	00/00/02
Credits	01
Evaluation Scheme: ISE I / MSE / ESE	50

Course Outcomes (COs): After successful completion of this course, the student will be able to:	
0BCAE105_1	Exhibit the skill of sentence construction considering the frame of English language rules accurately for effective and sound communication
0BCAE105_2	Write Professional Emails proficiently by following necessary digital tools and techniques that will help for maintaining official correspondence
0BCAE105_3	Write formal letters proficiently by following required techniques that helps in maintaining professional affairs at workplace
0BCAE105_4	Produce professional presentations proficiently on assigned topics in convincing manner using necessary tools and techniques
0BCAE105_5	Justify own role in communicative events with balanced zeal, in well-organized manner

Practical No.	**List of Practicals**
1	Enriching Vocabulary
2	Understanding Sentence Patterns
3	Avoiding Common Errors
4	Email Writing
5	Note Making
6	Description of Charts/Images/Processes
7	Application and Resume Writing
8	Delivering Professional Presentation
9	Preparing My Portfolio
10	GD (General)
11	Mock Interview
12	Presenting My Portfolio

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Annasahebdange College of Engg. & Tech. ASHTA 416 301

FY BCA-14/38

Text Books:					
Sr. No.	**Title**	**Author**	**Publisher**	**Edition**	**Year of Edition**
01	Communication Skills in English (with Lab Manual)	Anjana Tiwari	Khanna Book Publishing Company	2nd	2023
02	Effective Communication Skills	Kul Bhushan Kumar	Khanna Book Publishing Company	4th	2022
03	Practical English Usage	Michael Swan	OUP.	4th	1995
04	Remedial English Grammar	F.T. Wood	Macmillan	4th	2007
05	On Writing Well	William Zinsser	Harper Resource Book	4th	2001
06	Study Writing	Liz Hamp-Lyons and Ben Heasly	Cambridge University Press	1st	2006
07	Communication Skills	Sanjay Kumar and PushpLata	Oxford University Press	2nd	2011

Reference Books					
Sr. No	**Title**	**Author**	**Publisher**	**Edition**	**Year of Edition**
1	High-school English Grammar and Composition	Wren and Martin	S. Chand and Co., New Delhi	First	2015
2	The Ace of Soft Skills	Ajai Chowdry, Bala Balchandran	Pearson publication Delhi	8th	2013
3	Effective Technical Communication	M. Ashraf Rizvi	Mc Graw Hill Education, Chennai	Second Edition	2017
4	Business Communication	Hory Shankar Mukharjee	Oxford University Press, New Delhi , India	Second Edition	2013

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Annasaheb Dange College of Engg. & Tech. ASHTA 416 301

FY BCA-15/38

ANNASAHEB DANGE COLLEGE OF ENGINEERING AND TECHNOLOGY, ASHTA
(An Autonomous Institute)
Department of Bachelor of Computer Application

Course Details:

Class			F.Y. B.C.A, Sem.-I
Course Code and Course Title			**0BCVA106, Environmental Science and Sustainability**
Prerequisite/s			
Teaching Scheme: Lecture/Tutorial/Practical			02/00/00
Credits			02
Evaluation	**T**	**ISE / MSE / ESE**	50/00/00
	P	**ISE/ESE**	00/00

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:	
0BCVA106_1	Explore the basic environmental concepts and issues relevant to the business and management field.
0BCVA106_2	Recognize the interdependence between environmental processes and socio-economic dynamics.
0BCVA106_3	Determine the role of business decisions, policies, and actions in minimizing environmental degradation.
0BCVA106_4	Identify possible solutions to curb environmental problems caused by managerial actions.
0BCVA106_5	Develop skills to address immediate environmental concerns through changes in business operations, policies, and decisions.

Course Contents: Theory		
Unit 1	**Understanding Environment, Natural Resources, and Sustainability** Fundamental environmental concepts and their relevance to business operations; Components and segments of the environment, the man-environment relationship, and historical environmental movements. Concept of sustainability; Classification of natural resources, issues related to their overutilization, and strategies for their conservation. Sustainable practices in managing resources, including deforestation, water conservation, energy security, and food security issues. The conservation and equitable use of resources, considering both intergenerational and intergenerational equity, and the importance of public awareness and education.	**07 Hrs**
Unit 2	**Ecosystems, Biodiversity, and Sustainable Practices** Various natural ecosystems, learning about their structure, functions, and ecological characteristics. The importance of biodiversity, the threats it faces, and the methods used for its conservation. Ecosystem resilience, homeostasis, and carrying capacity, emphasizing the need for sustainable ecosystem management. Strategies for in situ and ex situ conservation, nature reserves, and the significance of India as a mega diverse nation.	**06 Hrs**

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Annasaheb Dange College of Engg. & Tech. ASHTA 416 301

FY BCA-16/38

Unit 3	**Environmental Pollution, Waste Management, and Sustainable Development** Various types of environmental pollution, including air, water, noise, soil, and marine pollution, and their impacts on businesses and communities. Causes of pollution, such as global climate change, ozone layer depletion, the greenhouse effect, and acid rain, with a particular focus on pollution episodes in India. Importance of adopting cleaner technologies; Solid waste management; Natural and man-made disasters, their management, and the role of businesses in mitigating disaster impacts.	**07 Hrs**
Unit 4	**Social Issues, Legislation, and Practical Applications** Dynamic interactions between society and the environment, with a focus on sustainable development and environmental ethics. Role of businesses in achieving sustainable development goals and promoting responsible consumption. Overview of key environmental legislation and the judiciary's role in environmental protection, including the Water (Prevention and Control of Pollution) Act of 1974, the Environment (Protection) Act of 1986, and the Air (Prevention and Control of Pollution) Act of 1981. Environmental justice, environmental refugees, and the resettlement and rehabilitation of affected populations; Ecological economics, human population growth, and demographic changes in India.	**06 Hrs**

Text Books:

Sr. No.	Title	Author	Publisher	Edition	Year of Edition
01	M.P. *Environmental Studies*	Poonia	Khanna Publishing House	3rd ed.	2024
02	E. *Textbook of Environmental Studies*	Bharucha	Orient Blackswan Private Ltd.	3rd ed.	2021
03	S. S. *Text Book of Environmental Studies*	Dave, D., & Katewa,	Cengage Learning India Pvt Ltd.	2nd ed.	2012
04	*Environmental studies: from crisis to cure*	Rajagopalan, R.	Oxford University Press.	3rd ed.	2016
05	S. J. *Fundamentals of environmental studies*	Basu, M., & Xavier Savarimuthu	Cambridge University Press.	1st ed.	2017

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Annasaheb Dange College of Engg. & Tech. ASHTA 416 301

FY BCA-17/38

Reference Books:					
Sr. No.	**Title**	**Author**	**Publisher**	**Edition**	**Year of Edition**
01	*Environmental Science: A global concern*	Willian Cunningham and Barbara Woodworth Saigo	WCB / McGraw Hill Publication	5th	1999
02	*Environment Sciences*	Peter Raven, Linda Berg, George Jhonson	McGraw Hill Publication	2nd	1998
03	*Adaptive Environmental Management*	Catherine Allan & George Stanley	Springer Publication	3rd	2009
04	*Elements of Environmental Science and Engineering*	P. Meenakshi	Parentice Hall of India Pvt. Ltd. New Delhi	4th	2006

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Annasaheb Dange College of Engg. & Tech. ASHTA 416 301

FY BCA-18/38

ANNASAHEB DANGE COLLEGE OF ENGINEERING AND TECHNOLOGY, ASHTA
(An Autonomous Institute)
Department of Bachelor of Computer Application

Course Details:

Class			F.Y. B.C.A, Sem.-I
Course Code and Course Title			**0BCVA107, Value added Course (Yoga)**
Prerequisite/s			
Teaching Scheme: Lecture/Tutorial/Practical			00/00/02
Credits			01
Evaluation	**T**	**ISE / MSE / ESE**	00/00/00
	P	**ISE/ESE**	50/00

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:	
0BCVA107_1	Understand yoga's significance and its practical applications for holistic well-being.
0BCVA107_2	Explore subtle energy systems and their role in enhancing health through yogic practices.
0BCVA107_3	Examine various paths of yoga to foster self-realization and spiritual growth.
0BCVA107_4	Master the Eight Limbs of Yoga for physical, mental, and spiritual harmony.
0BCVA107_5	Apply yogic principles to manage psycho-somatic ailments and promote resilience.

Course Contents: Theory		
Unit 1	**Yoga:-** Meaning and definition, Ashtang yog information Importance of yoga in 21st century Introduction to Yogic Basic Anatomy Yoga, Yoga for healthy lifestyle	**06 Hrs**
Unit 2	**Types of Yoga: -** Hatha yaga, laya yoga, mantra yoga, bhakti yoga, karma yoga, jnana yoga, raj yoga Study of Chakras, Koshas, Pranas, Nadis, Gunas, Vayus and its application in Yogic practices.	**07 Hrs**
Unit 3	**Ashtang Yoga: -** Yama, niyama, asana, pranayama, Pratyahar, dharna, dhyan, Samadhi: Benefits, Utilities & their psychological impact on body and mind. According to yoga concept of normality in modern psychology, concept of personality & its development	**08 Hrs**
Unit 4	**Types of wellness:** psychological, social, emotional, and spiritual. **Yogic management of psycho-somatic ailments:-** frustration, anxiety, depression	**05 Hrs**

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Annasaheb Dange College of Engg. & Tech. ASHTA 416 301

FY BCA-19/38

Text Books / References:

- Yog Jeevan Dr. Chikote
- Yog Parichya, Mandle Guruji, Nasik
- Hattpradipika, Devkule
- Patanjali Yog sutre, Yangar
- Anand O P. Yog Dawra Kaya Kalp. Sewasth Sahitya Perkashan. Kanpur.
- Brown, J.E. Nutrition Now Thomson-Wadsworth.

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Annasaheb Dange College of Engg. & Tech. ASHTA 416 301

FYBCA-20/38

ANNASAHEB DANGE COLLEGE OF ENGINEERING AND TECHNOLOGY, ASHTA
(An Autonomous Institute)
Department of Bachelor in Computer Application

Course Details:

Class			F.Y. B.C.A, Sem.-II
Course Code and Course Title			**0BCPC108, Mathematics Foundations to Computer Science - II**
Prerequisite/s			
Teaching Scheme: Lecture/Tutorial/Practical			03/01/00
Credits			04
Evaluation	**T**	**ISE / MSE / ESE**	40/30/30
	P	**ISE/ESE**	00/00

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:	
0BCPC108_1	Understand & **Apply** logical reasoning & proof techniques.
0BCPC108_2	**Calculate** measures of dispersion
0BCPC108_3	**Solve** equations & perform interpolation & integration numerically.
0BCPC108_4	**Solve** Optimization problems.

Course Contents: Theory		
Unit 1	**Logic and Methods of Proofs:** Propositions, logical operations (basic connectives), compound statements, construction of truth table, quantifiers, conditional statements, tautology, contradiction, contingency, logical equivalence. Methods of proofs: proof by contradiction, Mathematical Induction	**11 Hrs.**
Unit 2	**Statistics :** Mean , Median,Mode ,Geometric Mean ,Harmonic Mean , Quartiles, Deciles, Percentiles, Standard deviation, Variance.	**08 Hrs.**
Unit 3	**Numerical Methods (Without Proof):** Solution of algebraic and transcendental equations: Bisection method and Newton- Raphson methods. Numerical Interpolation: Newton's Forward and Newton's Backward interpolation formula and Lagrange's formula. Numerical Integration: Trapezoidal rule and Simpson's 1/3 rule, Simpson's 3/8th rule.	**12 Hrs.**
Unit 4	**Optimization Techniques:** Linear programming: Introduction, Formulation of the problem, Graphical method for solving LPs with two variables, Simplex method. Application in decision making.	**8 Hrs**

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Annasaheb Dange College of Engg. & Tech. ASHTA 416 301

FY BCA-21/38

List of Tutorial:

Sr. No.	Title of tutorials
1	**Logic:** construction of truth table, quantifiers, conditional statements, tautology, contradiction, contingency, logical equivalence.
2	**Methods of proofs**: proof by contradiction, Mathematical Induction
3	**Statistics - I :** Mean , Median,Mode ,Geometric Mean ,Harmonic Mean
4	**Statistics -II :** Quartiles,Deciles,Percentiles,Standard deviation,Variance.
5	**Errors in numerical methods:** Solution of algebraic and transcendental equations: Bisection method and Newton-Raphson methods without proof.
6	**Numerical Interpolation** : Newton's Forward and Newton's Backward interpolation formula and Lagrange's formula without proof.
7	**Linear programming I**: Formulation of the problem, Graphical method for solving LPs with two variables
8	**Linear programming II**: Simplex method.Application in decision making.

Text Books:

Sr. No.	Title	Author	Publisher	Edition	Year of Edition
01	Discrete Structures	S.B. Singh	Khanna Book Publishing Company		2023
02	Numerical Methods in Engineering & Science	B.S.Grewal	Khanna Book Publishing Company		2023
03	Operations Research: Theory and Applications	J. K.Sharma	Macmilllan Publishers	4th edition	2007
04	Linear Programming and Game Theory	J. G. Chakravorty. And P.R.Ghosh	Moulik Library,		2017

Head of Department **Dean Academics** **Director** **Executive Director**

Annasaheb Dange College of Engg. & Tech. ASHTA 416 301

FY BCA-22/38

Reference Books:					
Sr. No.	**Title**	**Author**	**Publisher**	**Edition**	**Year of Edition**
01	Discrete Mathematical Structures	Kolman B., Busby R. and Ross S.	Pearson Education	6th Edition	2015
02	Introductory Methods of Numerical Analysis	Sastry S. S.	PHL,	Fifth Edition	2022
03	Operations Research: An Introduction	Taha Hamdy A	Pearson Prentice Hall,	8th Edition	2003
04	Higher Engineering Mathematics	B.S.Grewal	2012 - 06	42nd edition	

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Annasaheb Dange College of Engg. & Tech. ASHTA 416 301

FY BCA - 23/38

ANNASAHEB DANGE COLLEGE OF ENGINEERING AND TECHNOLOGY, ASHTA

(An Autonomous Institute)

Department of Bachelor in Computer Application

Course Details:

Class			F.Y. B.C.A, Sem.-II
Course Code and Course Title			**0BCPC109, Data Structures using C Language**
Prerequisite/s			Knowledge of Problem Solving Techniques using C programming.
Teaching Scheme: Lecture/Tutorial/Practical			03/00/04
Credits			05
Evaluation	**T**	**ISE / MSE / ESE**	40/30/30
	P	**ISE/ESE**	25/25

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:	
0BCPC109_1	Understand the fundamental concepts of Data Structures and their applications and different types of linked lists, performing operation.
0BCPC109_2	Develop and manipulate stack and queue data structures using array and apply hashing techniques and other applications.
0BCPC109_3	Apply various sorting algorithms and searching techniques to efficiently manage and retrieve.
0BCPC109_4	Explore tree data structure, including binary trees and binary search tree and graph operation.

Course Contents: Theory		
Unit 1	**Introduction and Overview:** Definition, Classification of Data Structures. Algorithms: Complexity. **Linked Lists**: Definition Types of Linked lists, Traversing, Inserting, Deleting and Searching in Singly Linked List, Doubly Linked List and Circular Linked List. Applications of Linked Lists: Addition of Polynomials.	**10Hrs**
Unit 2	**Stacks:** Definition, Representation of Stacks using Arrays and Linked List, Operations on Stacks using Arrays and Linked List, Application of Stacks **Queues:** Definition, Types of Queue: Simple Queue, Circular Queue, Double-Ended queue, Priority Queue, Operations on Simple Queues and Circular Queues Applications of Queues. **Hashing and Collision:** Hashing, Hash Tables, Types of Hash Functions, Collision, Collision Resolution with Open Addressing and Chaining.	**10 Hrs**
Unit 3	**Searching Techniques:** Searching, Importance of Searching, Types of searching: Sequential search, Binary search Sorting Techniques: Basics of sorting, types of sorting: Selection Sort, Insertion Sort, Merge Sort, Radix Sort. **Recursion:** Definition, Applications of Recursion: Factorial of Number, GCD, Fibonacci Series and Towers of Hanoi.	**10 Hrs**

Head of Department **Dean Academics** **Director** **Executive Director**

Annasaheb Dange College of Engg. & Tech. ASHTA 416 301

FYBCA-24/38

Unit 4	**Trees:** Definition, Terminology, Binary Trees, Binary Search Tree, Inserting Binary Search Tree, Height Balanced Trees: AVL Trees, Insertion and Deletion in AVL Tree. **Graphs:** Definition, Terminology, Representation.	**09 Hrs**

Course Contents: Laboratory :

Expt. No.	Title
1.	Write a program for insertion and deletion operations in an array.
2.	Write a program to search for an element in an array using Linear Search and Binary Search.
3.	Write a program to sort an array using Bubble Sort, Selection Sort and Insertion Sort.
4.	Write a program to insert an element into a Singly Linked List: (a) At the beginning (b) At the end (c) At a specified position
5	Write a program to delete an element from a Singly Linked List: (a) At the beginning (b) At the end (c) A specified element
6	Write a program to perform the following operations in a Doubly Linked List: (a) Create (b) Search for an element
7	Write a program to perform the following operations in a Circular Linked List: (a) Create (b) Delete an element from the end
8	Write a program to implement stack operations using an array.
9	Write a program to implement stack operations using a linked list.
10	Write a program to add two polynomials using a linked lists.
11	Write a program to evaluate a postfix expression using a stack.
12	Write a program to perform the following using recursion: (a) Find the factorial of a number (b) Find the GCD of two numbers (c) Solve Towers of Hanoi problem

Head of Department **Dean Academics** **Director** **Executive Director**

Annasaheb Dange College of Engg. & Tech. ASHTA 416 301

FY BCA-25/38

13	Write a program to implement simple queue operations using an array.
14	Write a program to implement circular queue operations using an array.
15	Write a program to implement circular queue operations using a linked list.
16	Write a program to perform the following operations on a binary search tree. (a) Preorder Traversal (b) Inorder Traversal (c) Postorder Traversal
17	Write a program to perform insertion operation in a binary search tree.

Text Books:

Sr. No.	Title	Author	Publisher	Edition	Year of Edition
01	"Expert Data Structures with C"	R.B. Patel	Khanna Book Publishing Company		2023
02	"Data Structures with C"	Seymour Lipschutz	Schaum's Outlines, Tata McGraw-Hill		2011
03	"Data Structures Through C"	Yashavant Kanetkar	BPB Publications	4th Edition	2022

Reference Books:

Sr. No.	Title	Author	Publisher	Edition	Year of Edition
01	"Data Structures Using C"	Reema Thareja	Oxford University Press		2014
02	"Fundamentals of Data Structures in C"	Ellis Horowitz		2nd Edition	2007

1. GeeksforGeeks - Data Structures Tutorial
2. Khan Academy - Algorithms Course

Head of Department **Dean Academics** **Director** **Executive Director**

Annasaheb Dange College of Engg. & Tech. ASHTA 416 301

FY BCA-26/38

ANNASAHEB DANGE COLLEGE OF ENGINEERING AND TECHNOLOGY, ASHTA
(An Autonomous Institute)
Department of Bachelor of Computer Application

Course Details:

Class			F.Y. B.C.A, Sem.-II
Course Code and Course Title			**0BCSE110, Object Oriented Programming using Java**
Prerequisite/s			Knowledge of Problem Solving Techniques using C language
Teaching Scheme: Lecture/Tutorial/Practical			02/00/04
Credits			04
Evaluation	**T**	**ISE / MSE / ESE**	40/30/30
	P	**ISE/ESE**	25/25

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:	
0BCSE110_1	To introduce the object oriented programming system concepts
0BCSE110_2	To introduce syntax and semantics of Java programming language
0BCSE110_3	To develop modular programs using Java
0BCSE110_4	To setup JDK environment to create, debug and run Java programs
0BCSE110_5	To introduce GUI application components by using the concept of Swing.

Course Contents: Theory		
Unit 1	**Fundamentals of Object Oriented Programming:** Basic Concepts of Object Oriented Programming (OOP), Benefits and Applications of OOP. **Java Evolution:** Java Features, Difference between Java and C, Java and Internet, Java Environment. **Overview of Java Language:** Introduction to Simple Java Program, Use of Comments and Math function, Application of two classes, Java Program Structure. **Constants, Variables and Data Types:** Declaration of Variables, Giving values to Variables, Java Tokens and statements, Control Statements, Implementing Java program and JVM, Command Line Arguments, Typecasting.	**06 Hrs**
Unit 2	**Classes, Objects and Methods:** Defining Class, Methods Declaration, Constructors, Methods Overloading, Overriding Methods, Inheritance **Arrays, Strings:** 1D arrays, Creating an Array, 2D arrays, Strings, **Inheritance:** Defining, extending classes, and Implementing Interfaces. Multiple inheritance and polymorphism.	**07 Hrs**

Head of Department **Dean Academics** **Director** **Executive Director**

Annasaheb Dange College of Engg. & Tech. ASHTA 416 301

FY BCA-27/38

Unit 3	**Packages:** Basics of packages, System packages, Creating and accessing packages, Creating user defined packages. **Exception Handling:** Using the main keywords of exception handling: try, catch, throw, throws and finally; Creating user defined exceptions	**06 Hrs**
Unit 4	**Graphical User Interfaces using Swing:** Introduction to the Swing, Swing features, Swing Top Level Containers-Creating a Frame, Positioning a Frame, Displaying Information in a Panel, The Model-View-Controller Design Pattern, The JComponent Class - Jlabel, JTextField, JButton etc. Layout Management: Border Layout, Flow Layout, Grid Layout, Event Handling: Basics of Event Handling,	**07 Hrs**

Course Contents: Laboratory

Experiment List:	
1	Write a program to read two numbers from user and print their product.
2	Write a program to print the square of a number passed through command line arguments.
3	Write a java program to find the largest number out of n natural numbers.
4	Write a java program to addition of two given matrices.
5	Write a Java program for sorting a given list of names in ascending order.
6	Write a Java program that checks whether a given string is a palindrome or not. Ex: MADAM is a palindrome.
7	Write a Java program to perform mathematical operations. Create a class called AddSub with methods to add and subtract. Create another class called MulDiv that extends from AddSub class to use the member data of the superclass. MulDiv should have methods to multiply and divide A main function should access the methods and perform the mathematical operations.
8	Create a JAVA class called Student with the following details as variables within it. a) USN, NAME, BRANCH, PHONE, PERCENTAGE b) Write a JAVA program to create n Student objects and print the USN, Name, Branch, Phone, and percentage of these objects with suitable headings.
9	Write a Java program to create a class called Shape with methods called getPerimeter() and getArea(). Create a subclass called Circle that overrides the getPerimeter() and getArea() methods to calculate the area and perimeter of a circle.

Head of Department **Dean Academics** **Director** **Executive Director**

Annasaheb Dange College of Engg. & Tech. ASHTA 416 301

10	Write a Java program using an interface called 'Bank' having function 'rate_of_interest()'. Implement this interface to create two separate bank classes 'SBI' and 'PNB' to print different rates of interest. Include additional member variables, constructors also in classes 'SBI' and 'PNB'.
11	Write a Java package program for the class book and then import the data from the package and display the result.
12	Write a Java program for demonstrating the divide by zero exception handling.
13	Write a Java program that reads a list of integers from the user and throws an exception if any numbers are duplicates.
14	Create an exception subclass UnderAge, which prints "Under Age" along with the age value when an object of UnderAge class is printed in the catch statement. Write a class exceptionDemo in which the method test() throws UnderAge exception if the variable age passed to it as argument is less than 18. Write main() method also to show working of the program.
15	Program based on development of GUI using Swing.
16	Program based on development of GUI using Swing.
17	Program based on development of GUI using Layout Management.
18	Program based on development of GUI using Event Handling.
19	Program based on development of GUI using Event Handling.

Text Books:

Sr. No	Title	Author	Publisher	Edition	Year of Edition
01	Programming with JAVA: A Primer	Balaguruswamy E.	McGraw-Hill Publications	7th edition	2023
02	Let Us Java	Yashavant Kanetkar	BPB Publication	3rd	2017

Reference Books:

Sr. No	Title	Author	Publisher	Edition	Year of Edition
01	Java: The Complete Reference	Schildt, H.	McGraw-Hill Education	12th edition	2022
02	Thinking in Java	Bruce Eckel	Prentice Hall	4th	2006

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Annasaheb Dange College of Engg. & Tech. ASHTA 416 301

FYBCA-29/38

ANNASAHEB DANGE COLLEGE OF ENGINEERING AND TECHNOLOGY, ASHTA
(An Autonomous Institute)
Department of Bachelor in Computer Application

Course Details:

Class			F.Y. B.C.A, Sem.-II
Course Code and Course Title			**0BCSE111, Web Technologies**
Prerequisite/s			--
Teaching Scheme: Lecture/Tutorial/Practical			02/00/02
Credits			03
Evaluation	**T**	**ISE / MSE / ESE**	40/30/30
	P	**ISE/ESE**	25/25

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:	
0BCSE111_1	Understand the concept and architecture of the World Wide Web, Markup languages along with Cascading Style Sheets.
0BCSE111_2	Utilize Bootstrap components and grid systems for rapid and efficient web development
0BCSE111_3	To understand the concepts of java script, event handling and data validation mechanisms.
0BCSE111_4	Develop dynamic and interactive web application using PHP as a backend scripting language

Course Contents: Theory		
Unit 1	**HTML**: Introduction to HTML, history of HTML, Objective, basic Structures of HTML, Header Tags, body tags, Paragraph Tags. Tags for FORM Creation, TABLE, FORM, TEXTAREA, SELECT, IMG, ANCHOR. Lists in HTML, Introduction to DIV tag, NAVBAR Design.	**6 Hrs**
Unit 2	**HTML**: Introduction to CSS, types, Selectors, and Responsiveness of a web page, Positioning in CSS. Display property. **Bootstrap**: Introduction to Bootstrap, downloads/linking, using classes of Bootstrap, understanding the Grid System in Bootstrap. Introduction to www, Protocols and Programs, Applications and development tools, web browsers, DNS, Web hosting Provider, Web hosting, Types of Web Hosting.	**7 Hrs**

Head of Department **Dean Academics** **Director** **Executive Director**

Annasaheb Dange College of Engg. & Tech. ASHTA 416 301

FY BCA-30/38

Unit 3	**JavaScript:** Introduction to JavaScript, Features of JavaScript, types of scripting Functions and Events, Document Object model traversing using JavaScript. Output System in JavaScript i.e. Alert, Input box, Variables and Arrays in JavaScript.	**6 Hrs**
Unit 4	**JavaScript:** Form Validation like Required validator, length validator, Combining HTML, CSS and JavaScript events and buttons. **PHP**: General language feature, embedding PHP code in your Web pages. Commenting your code, outputting data to the brower, PHP supported data types, identifiers, variables, constants, expressions, string interpolation and control structures.	**7 Hrs**

Course Contents: Laboratory:

Expt. No.	Title
1	Create Your Resume using HTML, use text, link, size, color and lists.
2	Create your class time table using table tag.
3	Design a Webpage for your college containing description of courses, department, faculties, library etc. using list tags, href tags, and anchor tags.
4	Use Inline CSS to format your resume that you have created.
5	Use External CSS to format your time table created.
6	Develop a Simple calculator for addiction, subtraction, multiplication and division operation using JavaScript.
7	Write a JavaScript program using Switch case.
8	Write a HTML and JavaScript program to create login page with validations.
9	Write a HTML and JavaScript Program to create your college website.
10	Write a PHP Program using control statements.

Head of Department **Dean Academics** **Director** **Executive Director**

Annasaheb Dange College of Engg. & Tech. ASHTA 416 301

FY BCA-31/38

Text Books:					
Sr. No.	**Title**	**Author**	**Publisher**	**Edition**	**Year of Edition**
01	Mastering HTML,CSS & Java Script Web Publishing	Laura Lemay	BPB Publishing		2016
02	The Complete Reference HTML & CSS	Thomas A.Powell		5th Edition	2017

Reference Books:					
Sr. No.	**Title**	**Author**	**Publisher**	**Edition**	**Year of Edition**
01	Bootstrap 4 By Example	Silvio Moreto	ebook		2016
02	Web Technologies	Tanweer Alam	Khanna Book Publishing	2nd Edition	2011

Web Resources:

1. www.javatpoint.com
2. www.w3schools.com
3. www.geeksforgeeks.com

Head of Department **Dean Academics** **Director** **Executive Director**

Annasaheb Dange College of Engg. & Tech. ASHTA 416 301

FY BCA-32/38

ANNASAHEB DANGE COLLEGE OF ENGINEERING AND TECHNOLOGY, ASHTA
(An Autonomous Institute)
Department of Bachelor of Computer Application

Course Details:

Class			F.Y. B.C.A, Sem.-II
Course Code and Course Title			**0BCOE112, IKS : Indian Vision for Human Society**
Prerequisite/s			
Teaching Scheme: Lecture/Tutorial/Practical			02/00/00
Credits			02
Evaluation	**T**	**ISE / MSE / ESE**	50/00/00
	P	**ISE/ESE**	00/00

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:	
0BCOE112_1	Explain the concept of "Vasudhaiva Kutumbkam" and its realization process as a base for the development of vision for a human society.
0BCOE112_2	Identify the universality in humans and its coexistence in existence.
0BCOE112_3	Demonstrate the sense of responsibility, duties, and participation of individual for establishment of fearless society.
0BCOE112_4	Explain the apparently rational, verifiable and universal solution from ancient Indian knowledge system for the holistic development of physical, mental and spiritual wellbeing of one and all, at the level of individual, society, nation and ultimately the whole world.

Course Contents: Theory		
Unit 1	**The world view & Vision of Human Society** The concept of non-duality of Prakriti (Jad) and Purush (Chetana), human as coexistence of Jad & Chetan, Pancha-mahabhutas, the root of sorrow and suffering, freedom from sorrow, salvation, eternal peace truth (vyaharika satya), ultimate truth. The acceptance of various systems of philosophy for realization of truth and complementariness in society in ancient Indian system.	**06 Hrs**
Unit 2	**Aspiration and Purpose of Individual and Human Society** Aims of Human life; at individual level and societal level. At societal level; Four purusarthas Dharma, Artha, Kama, Moksha. Individual level; Abhyudaya (progress), Nihsreyasa (perfection) Pravrtti, Nivrtti. Dharma; Dharma sutras (Gautama, Apastamba, Baudhayana, Vasistha). Dharma-Shastra; (Manusmriti, Naradamrti,Visnusmrti, Yajnavalkya Smriti) sociology, different stages of life like studenthood, householdership, retirement and renunciation, rights and duties, judicial matters, and personal laws (Aachara, Vyavahara, Prayaschitta). Artha;Kautliya Arthashastra, Kamandakiya Nitisara, Brihaspati Sutra, Sukra Niti,Moksha: Human liberation (Ignorance to Knowledge)	**07 Hrs**

Head of Department **Dean Academics** **Director** **Executive Director**

Annasaheb Dange College of Engg. & Tech. ASHTA 416 301

FY BCA-33/38

Unit 3	**Program for Ensuring Human Purpose: at Individual and Societal Level –I** Fundamental concept of Nitishastra: Satyanishtha Aur Abhiruchi (Ethics, Integrity & aptitude). The true nature of self; Shiksha Valli, Bhrigu Valli (Concept of Atman-Brahman (self, soul). The true constitution of Human: Ananda Valli (Annamaya Kosha, Pranamaya Kosha, Manomaya Kosha, Vijnanamaya Kosha, Anandamaya Kosha). The four states of consciousness (Waking state, Dreaming state, Deep Sleep State, Turiya the fourth state), Consciousness (seven limbs and nineteen mouths), Prajna, Awarness. The Life Force Prana (Praana-Apaana-Vyaana-Udaana- Samaana)	**06 Hrs**
Unit 4	**Program for Ensuring Human Purpose: at Individual and Societal Level - II** Differentiating Vidya and Avidya, human bondages, Higher and Lower Knowledge (Para Vidhya & Apara Vidhya). Concept of Sattva, Rajas, Tamas and need of balancing the same, Patanjali yog sutra, Yama, Niyama, Asanas, pranayams, pratyahara, dharna, dhyana, Samadhi, Sixteen category of padartha, pramans (pratyaksh, anuman, upaman, shabda). Saadhana chatushtayam (viveka, vairagya, mumukshatavam, shadsampathi (sama, dama, uparama, titiksha, shradha, samadhana), Understanding Nitya karma, Naimittika Karma, Kamya karma, prayaschitta karma, Nishidha Karma. Meditation and Progressive meditation (Narada's education), Ativadin to self knowledge, Jyan yog, Karma yog, sanyas yog in aspect to harmonious practice in society.	**07 Hrs**

Reference Books:

Sr. No	Title	Author	Publisher	Edition	Year of Edition
01	Society in Ancient India: Evolution Since the Vedic Times Based on Sanskrit, Pali, Pakrit and Other Classical Sources: No.1 (Reconstructing Indian History and Culture)	S. C. Banerji,	D.K. Printing	3rd Edition	2007
02	Religious Process: The Puranas and the Making of Regional Tradition	Kunal Chakrabarti	OUP Delhi, India	2nd Edition	2018
03	History of Ancient India(Set of 5 volumes)	Dilip K. Chakrabarti, Makkhan Lal	Aryan Books International	1st Edition	2014

Head of Department **Dean Academics** **Director** **Executive Director**

Annasaheb Dange College of Engg. & Tech. ASHTA 416 301

FY BCA-34/38

ANNASAHEB DANGE COLLEGE OF ENGINEERING AND TECHNOLOGY, ASHTA
(An Autonomous Institute)
Department of Bachelor of Computer Application

Course Details:

Class			F.Y. B.C.A, Sem.-II
Course Code and Course Title			**0BCVA113, Indian Constitution**
Prerequisite/s			
Teaching Scheme: Lecture/Tutorial/Practical			02/00/00
Credits			02
Evaluation	**T**	**ISE / MSE / ESE**	50/00/00
	P	**ISE/ESE**	00/00

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:	
0BCVA113_1	Analyse the Indian Constitution's history, Preamble, Fundamental Rights, and basic structure.
0BCVA113_2	Describe the roles of the President, Prime Minister, and the legislative bodies (Lok Sabha and Rajya Sabha).
0BCVA113_3	Examine the powers of the Governor, Chief Minister, and the State Secretariat.
0BCVA113_4	Assess the functioning of local government bodies like District Administration, Municipal Corporations, and Zila Panchayats.
0BCVA113_5	Analyze the role of the Election Commission in conducting free and fair elections.

Course Contents: Theory		
Unit 1	**The Constitution - Introduction** The History of the Making of the Indian Constitution, Preamble and the Basic Structure, and its interpretation, Fundamental Rights and Duties and their interpretation, State Policy Principles	**07 Hrs**
Unit 2	**Union Government** Structure of the Indian Union, President – Role and Power Prime Minister and Council of Ministers, Lok Sabha and Rajya Sabha	**06 Hrs**
Unit 3	**State Government** Governor – Role and Power, Chief Minister and Council of Ministers, State Secretariat	**07 Hrs**
Unit 4	**Local Administration** District Administration, Municipal Corporation , Zila Panchayat **Election Commission** Role and Functioning, Chief Election Commissioner, State Election Commission	**06 Hrs**

Head of Department **Dean Academics** **Director** **Executive Director**

Annasaheb Dange College of Engg. & Tech. ASHTA 416 301

FY BCA-35/38

Text Books:					
Sr. No.	**Title**	**Author**	**Publisher**	**Edition**	**Year of Edition**
01	Ethics and Politics of the Indian Constitution	Rajeev Bhargava	Oxford University Press, New Delhi	1st ed	2008
02	The Constitution of India	B.L. Fadia	Sahitya Bhawan	1st ed	2017
03	Introduction to the Constitution of India	DD Basu	Lexis Nexis; Twenty-Third,	2nd ed.	2018

Cases

- Rustom Cavasjee Cooper v. Union of India, (1970) 1 SCC 248
- State of Rajasthan v. Mohan Lal Vyas, AIR 1971 SC 2068 (confirmation of a private monopoly, not a violation of fundamental right)
- Mithilesh Garg v. Union of India, (1992) 1 SCC 168 : AIR 1992 SC 221 (Right to carry on business, not breached when it is liberalised)
- Chintamanrao v. The State of Madhya Pradesh, AIR 1951 SC 118 (scope of reasonable restrictions in relation to trade and occupation)
- Cooverjee B. Bharucha v. Excise Commissioner, Ajmer, AIR 1954 SC 220 (the reasonableness of the restriction imposed may depend upon the nature of the business and prevailing conditions including public health and morality)
- T. B. Ibrahim v. Regional Transport Authority. Tanjore, AIR 1953 SC 79
- Harman Singh v. RTA, Calcutta, AIR 1954 SC 190
- Dwarka Prasad Laxmi Narain v. State of U.P., AIR 1954 SC 224
- State of Bombay v. R.M.D. Chamarbaugwala, AIR 1957 SC 699
- Parbhani Transport Coop. Society Ltd. v. Regional Transport Authority, Aurangabad, AIR 1960 SC 801
- State of Bombay v. R. M. D. Chamarbaugwala, (1957) S.C.R. 874,
- G.K.Krishnan vs State of Tamil Nadu, 1975 SCC (1) 375
- Automobile Transport (Rajasthan) Ltd. Vs State of Rajasthan, AIR 1962 SC 1406

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Annasaheb Dange College of Engg & Tech. ASHTA 416 301

FY BCA-36/38

ANNASAHEB DANGE COLLEGE OF ENGINEERING AND TECHNOLOGY, ASHTA
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Department of Bachelor of Computer Application

Course Details:

Class			F.Y. B.C.A, Sem.-II
Course Code and Course Title			**0BCVA114,Value Added Course(Sports)**
Prerequisite/s			
Teaching Scheme: Lecture/Tutorial/Practical			00/00/02
Credits			01
Evaluation	**T**	**ISE / MSE / ESE**	00/00/00
	P	**ISE/ESE**	50/00

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:	
0BCVA114_1	Understand the fundamental principles and concepts of sports management, including its scope, organizational structure, and ethical considerations.
0BCVA114_2	Analyze the role of marketing and sponsorship in the sports industry, with a focus on branding, target audience segmentation, and event management.
0BCVA114_3	Develop proficiency in financial management techniques specific to the sports industry, including revenue generation, cost management, and investment strategies.
0BCVA114_4	Explore the application of analytics and technology in sports, including performance evaluation, strategic decision-making, and fan engagement.
0BCVA114_5	Apply theoretical knowledge to practical scenarios through case studies and projects, fostering critical thinking and problem-solving skills in sports management contexts.

Course Contents: Theory		
Unit 1	**Introduction to Sports Management** • Overview of the sports industry and its various sectors (professional sports, collegiate athletics, recreational sports, etc.) • History and development of sports management as a field • Key roles and responsibilities in sports management • Basketball	**06Hrs**
Unit 2	**Sports Marketing and Sponsorship** • Fundamentals of sports marketing • Branding and fan engagement strategies • Media rights, broadcasting, and digital content	**07Hrs**

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Annasaheb Dange College of Engg. & Tech. ASHTA 416 301

FY BCA -37/38

	• Sponsorship deals, endorsements, and partnerships • Social media and digital marketing in sports • Volleyball	
Unit 3	**Sports Event Management** • Planning and organizing sports events (logistics, scheduling, venue management) • Event marketing and promotion • Sponsorship and ticketing strategies for sports events • Crisis management and contingency planning in event management • Badminton	**08Hrs**
Unit 4	**Facility and Venue Management** • Management of sports venues (stadiums, arenas, training facilities) • Operations and maintenance of sports facilities • Event hosting and venue booking processes • Sustainability and green initiatives in venue management • Table-Tennis	**05Hrs**

Text Books / References:

- Kamlesh, M. L.&Singh, M. K.)Physical Education(Naveen Publications).
- Pedersen, P. M., Thibault, L.,& Pedersen, P.M.(2019).Contemporary Sport Management. Human Kinetics.
- Hoye,R.,Cuskelly,G.,& Nicholson, M.(2019).Sports Governance: A Guide for Sport Organizations. Routledge.
- Shank, M. D.(2019). Sports Marketing: A Strategic Perspective. Pearson.

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