Punyashlok Ahilyadevi Holkar Solapur University, Solapur

NAAC Accredited-2015
'B' Grade (CGPA 2.62)

Name of the Faculty: Science& Technology

CHOICE BASED CREDIT SYSTEM

Syllabus: Bachelor of Computer Applications

Name of the Course: B.C.A. I (Sem–I & II)

(Syllabus to be implemented from w.e.f. June 2019)

Punyashlok Ahilyadevi Holkar SolapurUniversity, Solapur

Choice Based Credit System

Syllabus and Structure of the

Bachelor of Computer Applications (BCA)

With effective from June 2019

1) Title:

The degree shall be titled as Bachelor of Computer Applications (BCA)

2) Objectives of the course:

This is a three years bachelor degree course in computer applications aimed at developing computer professional versatile in use of computers mostly in business world. The emphasis is to have generality of developing professionals as programmer, system analysts, database administrators, documentation officer etc.

3) Duration:

1. The course shall be a full time course.
2. The duration of course shall be three years.
3. The course shall be run on self-supporting basis.

4) Number of Students:

A batch shall consist of not more than 60 students.

5) Eligibility:

1. A candidate for being eligible for admission to the Degree Course in Computer Science. Candidate shall have passed XII std. Examination of the Maharashtra Board of Higher Secondary Education or its equivalent or any Diploma of not less than two years.
2. A candidate has to appear for a common entrance test to be conducted by respective college for getting admission to this course.

1. Percentage at HSC	100
2.Percentage at Entrance	100
Total	200

The merit list will be prepared on the basis of percentage of HSC and percentage at entrance examination. Students will be admitted on the basis of Merit list.

6) Medium:

The medium of instruction and examination will be only in English.

a) Marks internal for theory and of Lab course and mini project will be given by the concerned college on the basis of evaluation by the internal teacher.

b) Original Report and Viva-Voce:

Project Report will be assessed by the internal teacher at the end of sixth Semester.

The panel of examiners will consist of one internal and one external appointed

by university.

Standard of Passing:

A candidate must obtain minimum 40% marks for passing in each university examination paper, internal examination, Lab course, Major Project.

i. Class will be awarded on the basis of marks obtained by the candidate in all the six semester examination.

ii. Candidate who has secure 40% marks in each head of internal credit and semester examination shall be declared to have passed in the paper.

iii. A candidate who fails in any particular theory papers shall be allowed to reappear for that theory paper. However, his/her internal credit marks shall be carrying forwarded.

Award of Class:

Class should be awarded to the students of BCA on the basis of aggregate marks in the six semesters.

The award of class shall be as under:

Aggregate 70% and above	First class with distinction
Aggregate 60% and above	First Class But less than 70%,
Aggregate 50% and above	Second Class But less than 60%
Aggregate 40% and above	Pass Class But less than 50%

Punyashlok Ahilyadevi Holkar Solapur University

Choice Based Credit System (CBCS), (w.e.f.2019)

Structure for B. C. A. (Science) – Part I

Subject/ Core Course	Name and Type of the Paper		No. of papers/ Practical	Hrs/week			Total Marks Per Paper	UA	CA	Credits
	Type	Name		L	T	P				
Class :	**B.C. A.- I Semester –I**									
Ability Enhancement Course(AECC)		English(communication skill)	Paper- I	4.0			100	80	20	4.0
Core	DSC1A	Fundamentals of Computer	Paper-I	2.5	--	--	50	40	10	4.0
		Logic Development With 'C' Programming	Paper-II	2.5	--	--	50	40	10	
	DSC2A	Basics of Web Programming – I	Paper-I	2.5	--	--	50	40	10	4.0
		Software Engineering- I	Paper-II	2.5	--	--	50	40	10	
	DSC3A	Basics of Mathematics – I	Paper-I	2.5	--	--	50	40	10	4.0
		Statistical Methods-I	Paper-II	2.5	--	--	50	40	10	
	DSC4A	DigitalElectronics	Paper-I	2.5	--	--	50	40	10	4.0
		Development of Human Skills	Paper-II	2.5	--	--	50	40	10	
Total				**24**	--	--	**500**	**400**	**100**	**20**
Class :	**B. C. A. - I Semester - II**									
Ability Enhancement Course(AECC)		English (communication skill)	Paper- II	4.0			100	80	20	4.0
Core	DSC1B	Advanced Programming in C	Paper-III	2.5	--	--	50	40	10	4.0
		Introduction to Operating System	Paper-IV	2.5	--	--	50	40	10	
	DSC2B	Basics of Web Programming – II	Paper-III	2.5	--	--	50	40	10	4.0
		OfficeAutomation	Paper-IV	2.5	--	--	50	40	10	
	DSC3B	Basics of Mathematics – II	Paper-III	2.5	--	--	50	40	10	4.0
		StatisticalMethods-II	Paper-IV	2.5	--	--	50	40	10	
	DSC4B	Introduction to Microprocessor	Paper-III	2.5	--	--	50	40	10	4.0
		Software Engineering- II	Paper-IV	2.5	--	--	50	40	10	
Democracy, Elections and Good Governance				3.0			50	40	10	NC
Total (Theory)				**27**	--	--	**550**	**440**	**110**	**20**
Core		DSC 1 A & 1B	Practical I & II	--	--	4	100	80	20	4.0
		DSC 2 A & 2B	Practical I & II	--	--	4	100	80	20	4.0
		DSC 3 A & 3B	Practical I & II	--	--	4	100	80	20	4.0
		DSC 4 A & 4B	Practical I & II	--	--	4	100	80	20	4.0
			Total (Practical)			**16**	**400**	**320**	**80**	**16**
			Grand Total	**51**		**16**	**1450**	**1160**	**290**	**56**

Abbreviations:

L: Lectures T: Tutorials P: Practical's UA : University Assessment CA : College Assessment DSC / CC: Core Course AEC : Ability Enhancement Course

DSE : Discipline Specific Elective Paper SEC : Skill Enhancement Course GE : Generic Elective CA: Continuous Assessment ESE: End Semester Examination

First Year BCA (Under Science) Semester- I

Course Code: DSC1A **Course Title: Computer Fundamentals**
Total Contact Hours: 30 Hrs. **Total Marks: 50 (30 Lectures)**
Teaching Scheme: Theory 2.5 Lect. /Week **Total Credits: 02**

Unit No.	Description	Number of Lectures
Unit-I	**Computer Fundamentals:** • Introduction to Computer • Characteristics of computer • Concepts of hardware and software • Firmware • Evolution of computer and Generations • Classification and types of computers • Limitation of computer • Applications of computers in various fields. • Structure of computer: • Block diagram of computer: • Basic Units of computer- ➢ Input unit ➢ CPU- ALU ➢ Memory unit and control unit ➢ output unit • Introduction to- ➢ Motherboard ➢ SMPS ➢ Math co-processor ➢ Expansion slots ➢ Serial and parallel ports.	12
Unit-II	**Computer Peripherals :** • Computer Memory: • Memory Concepts • Semiconductor memory • Magnetic memory- RAM, ROM, EPROM, EEPROM • Secondary Storage Devices- ➢ Magnetic Tape ➢ Magnetic Disk (Floppy disk and Hard Disk) ➢ Compact Disk. • Input/ Output Devices: • Input Devices- ➢ Keyboard ➢ Mouse ➢ Light pen ➢ Joystick ➢ Scanner ➢ Graphic Pad ➢ MICR ➢ OMR ➢ Bar Code reader	12

	➢ Digitizer ➢ Touch Screen. • VDU ➢ Printers- ➢ Dot Matrix ➢ Daisywheel ➢ Ink Jet ➢ Laser, Line (Chain andDrum) ➢ Plotters.	
Unit-III	**Computer Communication and Networks:** • Concepts of computer communication • Communication components • Computer network • Network Topologies • Communication Channels • Protocols • LAN, WAN,MAN • Introduction to internet • Overview of modem, Bluetooth and router devi• Buying &saling goods over the internet. • E-Mail	06

Books Recommended:

1) Computer Fundamental –P.K. Sinha
2) Computer Fundamental – V. Rajaraman
3) Computer Today – Donaid N. Sanders.

First Year BCA (Under Science) Semester- I

Course Code: DSC1A **Course Title:Logic Development With 'C' Programming**

Total Contact Hours: 30 Hrs. **Total Marks: 50 (30 Lectures)**

Teaching Scheme: Theory 2.5 Lect. /Week **Total Credits: 02**

Unit No.	Description	Number of Lectures
Unit-I	**Programming Methodology:** • Definition of Problem • Problem solving steps • Introduction to programming planning tools • Need of programming planning tools • Definition of Logic • Types of logic- 1) Sequence logic 2) Selection logic 3) Iterationlogic • Algorithm- ➢ Definition, Characteristics or features of algorithm, ➢ Examples of algorithm to solve problem. ➢ Flowchart- • Definition, characteristics or features of flowchart ➢ symbols used in flowchart ➢ Examples that converts algorithms to flowchart • Pseudo Code- ➢ Definition, characteristics or features of pseudo code. Examples of pseudo code that implements sequence logic, selection logic and iteration logic.	12
Unit-II	**Introduction to 'C':** • History or evolution of 'C' language • Features or characteristics of 'C' language. • Structure of 'C' program. • Compilation & execution of program. **'C' Fundamentals:** • 'C' tokens- ➢ Keywords ➢ Identifier ➢ Special symbols ('C' character sets) ➢ Variables ➢ Constants, ➢ Data types- Primitive, Derived, User defined ➢ Operators- Arithmetic, logical, assignment, relational, bitwise, conditional, increment, decrement, sizeof, comma operator etc. • Type casting or type conversion • Use of 'typedef' and 'enum' • Precedence and associatively of operator. • Header files and its use.	12

	Data input and output operations: • Introduction to input and output operations • Introduction to stdio.h header file. • stdio.h header file functions- printf( ), scanf( ), getchar( ), putchar( ) • Different format codes or format specifier with their use • Different back slash (escape sequence) character constants with their use	
Unit-III	**Control Statements:** • Introduction to control stateme • Types of control statements- 1) Selective or Decision making ➢ if statement ➢ switch statement ➢ Conditional (ternary) operator 2) Iterative or looping statement ➢ While loop ➢ do-while loop ➢ for loop 3) Unconditional branching (jump) Statement ➢ break statement ➢ continue statement ➢ goto statement **Arrays:** • Introduction & definition of array • Types of array- 1) One dimensional array 2) Two dimensional array 3) Multi-dimensional array • Declaration & initialization of array • Memory allocation view for all types of array. • Character array (string) Declaration, operation on string and inbuilt String functions.	06

Books Recommended:

1) Programming in ANSII-C – E. Balgurusamy
2) The C programming Language - Ritchie and Kernighan.
3) Let Us C - Y.C. Kanetkar.
4) A structure Programming Approach using 'C'- Behrouz A. Forouzan, RichardF. Gilberg

First Year BCA (Under Science) Semester- I

Course Code: DSC2A **Course Title:Basics of Web Programming -**

ITotal Contact Hours: 30 Hrs. **Total Marks: 50 (30 Lectures)**

Teaching Scheme: Theory 2.5 Lect. /Week **Total Credits: 02**

Unit No.	Description	Number of Lectures
Unit-I	• **Overview of HTML & HTML5:** • Introduction to Web technology • Introduction to Internet • Requirement for Internet • History of web technology. • Introduction to HTML • Overview of basic HTML • Structure of HTML • Creating and opening HTML file • Singular and paired tags, Text formLists, Image, Image Map, Table, FramForm, get and post method, input tag.	12
Unit-II	HTML5- • Introduction to HTML5 • Need of HTML5 • DOCTYPE Element • Tags-Section, Article, aside, header, foot figure etc. • Events in HTML5, • Input tag in HTML5- (Type, Auto focus, placeholder, required etc. attributes.) • Graphics in HTML5 Media tags in HTML5	8
Unit-III	**CSS & JavaScript:** • Introduction to CSS • Use of CSS • Types of CSS, Selectors, Properties, Values. • CSS Properties- Background, Text, Fonts, Link, List, Table, Box Model, Border, Margin, Padding, Display, Positioning, Floating, Opacity, Media type, Backgrounds and Borders Image, Values and Replaced Content, Text Effects, 2D/3D Transformations, Animations, Multiple Column Layout • User Interface • CSS interact with JavaScript.	10

Books Recommended:

1) HTML5 Black Book- Kogent Learning Solutions IncDreamtech.
2) Beginning JavaScript and CSS Development with jQuery- Richard York.
3) Beginning HTML and CSS-Rob Larsen.
4) HTML_&_CSS_The_Complete_Reference-Thomas A. Powell. (Fifth Edition).
5) W3schools.com

First Year BCA (Under Science) Semester- I

Course Code: DSC2A **Course Title:Software Engineering- I**

Total Contact Hours: 30 Hrs. **Total Marks: 50 (30 Lectures)**

Teaching Scheme: Theory 2.5 Lect. /Week **Total Credits: 02**

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Unit No.	Description	Number of Lectures
Unit-I	**System concepts** • Definition of system • Elements of system • System concepts • Types of system • System Analysis and Role of System Analyst	6
Unit-II	**Software Engineering** • Definition of software engineering • Characteristics of software • Qualities of software	6
Unit-III	**System Development life cycle** What is System Development life cycle? SDLC Models- • Classical model • Spiral model • Waterfall model • Prototyping Model • RAD model	12
Unit-IV	**Fact finding techniques** • Need of fact finding techniques Fact finding techniques- • Interviews • Questionnaire • Record reviews • Observation	6

Books Recommended:

1) Analysis and Design of Information Systems by James Senn.
2) System analysis and design by Elias Awad
3) Software Engineering by Pressman
4) System Analysis and Design by Parthsarty / Khalkar
5) Practical guide to structure System Design by Miller/Page/jones.

First Year BCA (Under Science) Semester- I

Course Code: DSC3A **Course Title:Basics of Mathematics - I**

Total Contact Hours: 30 Hrs. **Total Marks: 50 (30 Lectures)**

Teaching Scheme: Theory 2.5 Lect. /Week **Total Credits: 02**

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Unit No.	Description	Number of Lectures
Unit-I	**Basics of Matrices** Definition, order, types of matrices: square matrix, rectangular matrix, diagonal matrix, scalar matrix, upper triangular matrix, lower triangular matrix, symmetric matrix, skew symmetric matrix, identity matrix, row matrix, column matrix, transpose of a matrix, inverse of a matrix, Algebra of matrices: addition, subtraction, scalar multiplication, matrix multiplication.	10
Unit-II	**Sets and Relations** Definition: Set, Subset, power set, disjoint sets , Operations on sets : Union, Intersection , Complement , Difference , Symmetric difference, Algebraic properties of set operations: Commutative laws , Distributive laws, Associative laws , DeMorgan's laws , Cardinality of set. Relation :Definition of Cartesian product , relation, Types of relation: void, universal, identity, reflexive, symmetric, transitive, equivalence, anti-symmetric, partial ordering, asymmetric, Matrix representation of relation, Graphical representation (digraph) of relation, In-degree and out-degree of a vertex, Transitive closure: Warshall's algorithm	12
Unit-III	**Elementary logic** Prepositional Calculus: Proposition- Simple statement, Compound statement, Logical connectives, Disjunction, Conjunction , Negation , Implication, Double implication, Converse, inverse and contra positive of conditional statement, truth tables, tautology, Contradiction & neither, commutative laws, associative laws, distributive laws, Demorgan's laws, logical equivalence.	8

Books Recommended:

1) Introductory Methods of Numerical Analysis-S.S. Sastry(Prentice Hall)
2. Computer Oriented Numerical Methods. – Rajaraman
3. Elements of Discrete Mathematics- C.L.Liu
4. Discrete Mathematical structure for Computer Science-Alan Doerr and K.Levessuer
5. Discrete mathematics & its applications- K. Rosen

First Year BCA (Under Science) Semester- I

Course Code: DSC3A **Course Title**:**Statistical Methods-I**

Total Contact Hours: 30 Hrs. **Total Marks: 50 (30 Lectures)**

Teaching Scheme: Theory 2.5 Lect. /Week **Total Credits: 02**

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Unit No.	Description	Number of Lectures
Unit-I	**Population and Sample:** Concept of Statistical population with illustration, Concept of Sample with illustration, Methods of sampling - SRSWR, SRSWOR, Stratified, Systematic (description only) Data condensation and Graphical methods: Raw data, Attribute, Variables, Discrete and Continuous Variable, General principles of classification of raw data, Construction of frequency dist, Cumulative frequency dist, Graphical representation of frequency dist- Histogram, Ogives, Numerical problems.	10
Unit-II	**Measures of Central Tendency**: Concept of Central Tendency, Objects of Central Tendency, Criteria for good Measures of Central Tendency, A.M. – def., formula for computation for ungrouped & grouped data, combined A.M., effect of change of origin & scale, merits & demerits, Median- def., formula for computation for ungrouped & grouped data, graphical methods, merits & demerits, Mode- def., formula for computation for ungrouped & grouped data, graphical methods, merits & demerits, Empirical Relation between mean ,mode & median, Numerical Problems. Measures of dispersion: Concept of dispersion, Absolute & Relative measures of dispersion, Range- def., formula for computation for ungrouped & grouped data, coeff. of range, merits & demerits, Variance & S.D.- def., formula for computation for ungrouped & grouped data, combined variance, C.V., effect of change of origin & scale, merits & demerits, Numerical problems.	10
Unit-III	Correlation Bivariate data, scattered diagram. Concept of correlation, types of correlation, cause & effect Relation. Karl Pearson's coeff. of correlation (r), limit of r ($-1 \leq r \leq 1$) Interpretation of r, basic assumptions on which r is based. Numerical problems. Regression for ungrouped data-Concept of regression, Derivation of lines of regression by least square principle. Properties of regression coeff. Numerical problems.	10

Books Recommended:

1. Fundamentals of Mathematical Statistics- Kapoor& Gupta.
2. Modern elementary Statistics – J.E.Freund
3. Statistical Methods – J.Medhi.
4. Fundamentals of Statistics-S.C.Gupta.

Course Code: DSC4A **Course Title**: **Digital Electronics**
Total Contact Hours: 30 Hrs. **Total Marks: 50 (30 Lectures)**
Teaching Scheme: Theory 2.5 Lect. /Week **Total Credits: 02**

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Unit No.	Description	Number of Lectures
Unit-I	**Number Systems and Arithmetic:** • Decimal Number System • Binary Number System • Octal number System • Hexadecimal number system. • Decimal to Binary conversion • Binary to Decimal conversion • Hexadecimal to binary conversion • Binary to Hexadecimal conversion • Hexadecimal to decimal conversion • Binary Arithmetic : Binary addition, subtraction, multiplication & division, Binary subtraction using 2's complement method	10
Unit-II	**Digital circuit design:** • Introduction to digital circuit design • Circuit design using logic gates- (OR,AND,NOT,NOR,NAND,XOR,XNOR) • Converter Binary to gray converter, Gray to Binary converter Decimal to BCD encoder • Circuit design using state table/K-map- • Design of Half adder, Full adder • Design of full subtractor • Design of BCD to seven segment decoder • Concept of excitation table • Design of 3 bit synchronous up counter • 3 bit random sequence generato	10
Unit-III	**Combinational Circuit:** • Multiplexer Different types • De-multiplexer Different types Encoder, Decoder and segment decoder	10

Books Recommended:

1) Digital principle & applications- Malvino Leech
2) Fundamental of Digital electronics : R.P. Jain ,
3) Digital design : M. Morris Mano, Prentice-Hall of India
4) Digital Electronics- C.F. Strangio
5) Modern Digital electronics- R.P. Jain

Course Code: DSC4A **Course Title:Development of Human Skills**
Total Contact Hours: 30 Hrs. **Total Marks: 50 (30 Lectures)**
Teaching Scheme: Theory 2.5 Lect. /Week **Total Credits: 02**

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Unit No.	Description	Number of Lectures
Unit-I	**Verbal Communication:** Principles and Practice of Group Discussion Public Speaking (Addressing Small Groups and Making Presentation) **Interview Preparation:** Types of Interview, Preparing for the Interviews, Attending the Interview, Interview Process, Employers Expectations, General Etiquette, Dressing Sense, Postures & Gestures and some examples of interviews. Presentation Skills	8
Unit-II	**Personality :** Introduction, Definition, Theories on personality, The shaping of personality Assessment of Freud's stages Personality traits. **Personality and Organizational Behavior:** Attitudes, Formation of attitude, Types of attitudes, Attitude and OB, SWOT Analysis.	8
Unit-III	**Writing Skills** Principles of writing skills • Writing emails : (Inquiry, Invitation, Thank you, Request for permission, Sponsorship, Job Acceptance and Job Refusal) • Letter writing: Types, parts, layout of letters, Writing job application letter and resume • Story Writing , Dialogue Writing and Blogging (Fashion, Travel, Culture and Personal blog)	8
Unit-IV	**Study of IT Industry** • 10 most popular IT Industry : Basic and general information, demanded Skills, Work Culture etc • Case study regarding to collect the information of the industry about the selection process of the company.	6

Books Recommended:

1. Communication Skills, Oxford University Press, 2017, Meenakshi Raman, Sangeeta Sharma
2. Organizational Behavior, Himalayan Publication, Mumbai (1991), Aswalthapa, K.
3. Effective Communication, Beacon New Delhi (1996), Balan,K.R. and Rayudu C.S.
4. English for Communication published by Shivaji University, Kolhapur, 1996
5. English for Practical Purposes - Z.N. Patil , B.S.Valke, Ashok Thorat, Zeenath
6. Essentials of Business Communication – Rajendra Pal & L.S.
7. Group Discussion for admissions and Jobs: PustakMahal Delhi, AnandGanguly
8. GD and Interview – PriyankaPrakashan ,ChandreshAgarwal
9. Human Behaviour at work - Davis &Newstrom
10. Organizational Behaviour - Uma Sekaran

Course Code: DSC1BCourse Title:Advanced Programming in 'C'
Total Contact Hours: 30 Hrs. Total Marks: 50 (30 Lectures)
Teaching Scheme: Theory 2.5 Lect. /Week Total Credits: 02

Unit No.	Description	Number of Lectures
Unit-I	**Functions:** • Introduction & definition of function. • Need or use of function. • Types of Functions- Inbuilt/Predefined/Library functions User defined function Steps to add or include user defined function in program ➢ Function declaration (Prototyping) ➢ Function calling ➢ Function definition (Function Implementation) • Types of Function depending on its signature & return type- ➢ Function with argument without return value ➢ Function with argument with return value ➢ Function without argument with return value ➢ Function without argument without return value • Definition, characteristics & importance of local & globalvariable • Recursion. • Introduction & definition of storage Classes • Explanation and use of storage classes- auto, extern, static, register	12
Unit-II	**Pointers:** • Definition and declaration, Operation on pointer • Pointer initialization, Pointer and function • Pointer and array, Pointer of pointer • Call by value and Call by reference • Dynamic memory allocation. **Structures and Union:** • Definition and declaration, Array of structures • Passing structure to function, Pointer to structure • Nested structure, self referential structure • Size of and type def.	10
Unit-III	**File Handling:** • Standard input- get char(), getch(), getche() • Standard output- put char(), putch(), putche(), • Formatted input- scanf(), sscanf(), fsclose(), • File opening mode- open, modify, write, append, Text and binary mode. **Macros and Preprocessing:** • Feactures of C preprocessor • Macro – Declaration, Expansion, File Inclusion.	8

Books Recommended:

1) Programming in ANSII-C – E. Balgurusamy
2) The C programming Language - Ritchie and Kernighan.
3) Let Us C - Y.C. Kanetkar.

Course Code: DSC1B **Course Title:Operating System**
Total Contact Hours: 30 Hrs. **Total Marks: 50 (30 Lectures)**
Teaching Scheme: Theory 2.5 Lect. /Week **Total Credits: 02**

Unit No.	Description	Number of Lectures
Unit-I	**Introduction:** What is mean by O.S.? • Types of O.S. (Batch, Parallel, Multiprogramming, Time Sharing, Distributed, Real time) • Structure of O.S. • System Components • Services provided by O.S. • Monolithic and Layered Systems • System design and implementation • System Generalization and virtual machine.	12
Unit-II	**Process Management:** • Concepts-Process, System calls • Operations on Process • Cooperating Process and threads • Interprocess Communication • Process Scheduling: ➢ Basic Concept. ➢ Scheduling criteria • Scheduling Algorithms: FCFS, SJF, Round Robin, Priority Scheduling, Multilevel Queue Scheduling.	10
Unit-III	**Process Synchronization:** • Critical section problem • Semaphores • Critical Regions • Classic Problems of Synchronization	8

Books Recommended:

1. System programming and O.S.By D.M. Dhamdhere.
2. Modern O.S. By Andrews Tanenbaum.
3. Operating System Concepts BySiberchatz and calvin.

Course Code: DSC2B **Course Title:Basics of Web Programming - II**
Total Contact Hours: 30 Hrs. **Total Marks: 50 (30 Lectures)**
Teaching Scheme: Theory 2.5 Lect. /Week **Total Credits: 02**

Unit No.	Description	Number of Lectures
Unit-I	**JavaScript:** • Introduction to JavaScript • JavaScript Variables, Data types, Operators, Built in functions in JavaScript • Control structure in JavaScript • DOM, Math, Array, History, Navigator, Location, Windows, String, Date, Document objects, user defined function, • Validation in JavaScript • Event & event handling in JavaScript.	15
Unit-II	**JQuery:** • Introduction to JQuery • Need of JQuery • Adding jQuery to Your Web Pages • jQuery Syntax, jQuery Selectors, jQuery Event Methods, • jQuery Effects - Hide and Show, Fading, Sliding, Animation, • jQuery Callback Functions, jQuery – Chaining, jQuery – Get and Set Content and Attributes, • jQuery - Add Elements, Add Several New Elements, jQuery - Remove Elements, jQuery - Get and Set CSS Classes, jQuery - css() Method, • jQuery - The noConflict() Method	15

Books Recommended:

1) HTML5 Black Book- Kogent Learning Solutions IncDreamtech.
2) Beginning JavaScript and CSS Development with jQuery- Richard York.
3) Beginning HTML and CSS-Rob Larsen.
4) HTML_&_CSS_The_Complete_Reference-Thomas A. Powell. (Fifth Edition).
5) W3schools.com

First Year BCA (Under Science) Semester- II

Course Code: DSC2B **Course Title**:**Office Automation**

Total Contact Hours: 30 Hrs. **Total Marks: 50 (30 Lectures)**

Teaching Scheme: Theory 2.5 Lect. /Week **Total Credits: 02**

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Unit No.	Description	Number of Lectures
Unit-I	Introduction to Computer: Applications of Computer – Advantages of Computer – Terms related to Computer - Characteristics of Computer: Speed, Storage, Versatility and Diligence – Hardware & Software. **Windows:** Desktop icons and their functions: My computer, My documents, Network neighborhood, Recycle Bin, Quick launch tool bar, System tray, Start menu, Task bar, Dialog Boxes: List Box, Spin Control Box, Slide, Drop-down list, Radio button, Check box, Text box, Task Bar - System Tray - Quick launch tool bar - Start button - Parts of Windows -Title bar-Menu bar - Scroll barStatus bar, Maximize, Minimize, close and Resize & Moving a Window, Keyboard Accelerators: Key board short keys or hotkeys.	08
Unit-II	**MS Word:** Working with Documents -Opening & Saving files, Editing text documents, Inserting, Deleting, Cut, Copy, Paste, Undo, Redo, Find, Search, Replace, Formatting page & setting Margins, Converting files to different formats, Importing & Exporting documents, Sending files to others, Using Tool bars, Ruler, Using Icons, using help. **Formatting Documents:** Setting Font styles, Font selection- style, size, colouretc, Type face - Bold, Italic, Underline, Case settings, Highlighting, Special symbols, Setting Paragraph style, Alignments, Indents, Line Space, Margins, Bullets & Numbering. **Setting Page style:** Formatting Page, Page tab, Margins, Layout settings, Paper tray, Border & Shading, Columns, Header & footer, Setting Footnotes & end notes – Shortcut Keys; Inserting manual page break, Column break and line break, Creating sections & frames, Anchoring & Wrapping, Setting Document styles, Table of Contents, Index, Page Numbering, date & Time, Author etc., Creating Master Documents, Web page. **Creating Tables**: Table settings, Borders, Alignments, Insertion, deletion, Merging, Splitting, Sorting, and Formula. **Drawing:** Inserting Clip Arts, Pictures/Files etc. **Tools:** Word Completion, Spell Checks, Mail merge, Templates, Creating contents for books, Creating Letter/Faxes, Creating Web pages, Using Wizards, Tracking Changes, Security, Digital Signature. Printing Documents – Shortcut keys.	10
Unit-III	**MS Excel:** Spread Sheet & its Applications, Opening Spreadsheet, Menus - main menu, Formula Editing, Formatting, Toolbars, Using Icons, Using help, Shortcuts, Spreadsheet types. Working with Spreadsheets- opening, Saving files, setting Margins, Converting files to different formats (importing, exporting, sending files to others), Spread sheet addressing - Rows, Columns & Cells, Referring Cells & Selecting Cells – Shortcut Keys.	08

	Entering & Deleting Data: Entering data, Cut, Copy, Paste, Undo, Redo, Filling Continuous rows, columns, Highlighting values, Find, Search &replace,Inserting Data, Insert Cells, Column, rows & sheets, Symbols, Data from external files, Frames, Clipart, Pictures, Files etc, Inserting Functions, Manual breaks. **Setting Formula:** finding total in a column or row, Mathematical operations (Addition, Subtraction, Multiplication, Division, Exponentiation), using other Formulae. **Formatting Spreadsheets:** Labelling columns & rows, Formatting- Cell, row, column & Sheet, Category - Alignment, Font, Border & Shading, Hiding/ Locking Cells, Anchoring objects, Formatting layout for Graphics, Clipart etc., Worksheet Row & Column Headers, Sheet Name, Row height & Column width, Visibility - Row, Column, Sheet, Security, Sheet Formatting & style, Sheet background, Colouretc, Borders & Shading – Shortcut keys. **Working with sheets:** Sorting, Filtering, Validation, Consolidation, and Subtotal. **Creating Charts**: Drawing. Printing. Using Tools – Error checking, Formula Auditing, Creating & Using Templates, Pivot Tables, Tracking Changes, Security, Customization.	
Unit-IV	**MS Power point:** Presentation – Opening new presentation, Different presentation templates, setting backgrounds, selecting presentation layouts. **Creating a presentation:** Setting Presentation style, Adding text to the Presentation. **Formatting a Presentation:** Adding style, Colour, gradient fills, Arranging objects, Adding Header & Footer, Slide Background, Slide layout. Adding Graphics to the Presentation- Inserting pictures, movies, tables etc into presentation, Drawing Pictures using draw. **Adding Effects to the Presentation:** Setting Animation & transition effect. Printing Handouts, Generating Standalone Presentation viewer. **MS Access:** Introduction, Planning a Database, Starting Access, Access Screen, Creating a New Database, Creating Tables, Working with Forms, Creating queries, Finding Information in Databases, Creating Reports, Types of Reports, Printing & Print Preview – Importing data from other databases viz. MS Excel etc.	4

Books Recommended:

1. Information Technology in Business: Principles, Practices, and Opportunities by James A Senn, Prentice Hall.
2. Technology and Procedures for Administrative Professionals by Patsy Fulton-Calkins, Thomson Learning.
3. Computer Fundamental MS Office – Including Internet & Web Technology: Anupama Jain (Author), AvneetMehra
4. The Complete Reference: Virginia Andersen, McGraw Hill
5. MS Office 2007 in a Nutshell: S. Saxena, Vikas Publications
6. MS-Office 2007 Training Guide: S. Jain, BPB Publications
7. Learning Computer Fundamentals, MS Office and Internet & Web Technology: D. Maidasani. Reading, Vols. 1 and 2. Macmillan, 1975, Bhasker, W. W. S &Prabhu, N. S

First Year BCA (Under Science) Semester- II

Course Code: DSC3B **Course Title**:**Basics of Mathematics - II**

Total Contact Hours: 30 Hrs. **Total Marks: 50 (30 Lectures)**

Teaching Scheme: Theory 2.5 Lect. /Week **Total Credits: 02**

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Unit No.	Description	Number of Lectures
Unit-I	**Graph:** Definition and elementary results, Types of graph: Simple graph, Multi-graph, pseudo graph, complete graph, Null graph, Regular graph, Bipartite graph, weighted graph, degree of a vertex, total degree of a graph, shaking hand lemma and elementary results, Adjacency and incidence matrix .	10
Unit-II	**Euler and Hamiltonian Graph:** Walk, trail , path, circuit, length of a path, Euler trail and Euler's circuit, Euler's graph, Hamiltonian Path and Hamiltonian Circuit, Hamiltonian Graph, travelling sales man problem, Chinese Postman problem	10
Unit-III	**Derived graphs and Tree:** Sub graphs, Vertex deleted & edge deleted sub graphs, Vertex disjoint & edge disjoint sub graphs, Operations on graphs- Union, Intersection, Ring sum of two graphs, complement of a graph. Tree: Definition and elementary results, Spanning Trees, Shortest spanning tree , Kruskal's algorithm for shortest spanning tree.	10

Books Recommended:

1.Elements of Discrete Mathematics- C.L.Liu
2. Discrete Mathematical structure for Computer Science-Alan Doerr and K.Levessuer
3. Elements of graph theory- Bhave&Raghunathan
4. Discrete mathematics & its applications- K. Rosen

First Year BCA (Under Science) Semester- II

Course Code: DSC3B **Course Title**:**Statistical Methods-II**

Total Contact Hours: 30 Hrs. **Total Marks: 50 (30 Lectures)**

Teaching Scheme: Theory 2.5 Lect. /Week **Total Credits: 02**

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Unit No.	Description	Number of Lectures
Unit-I	**Permutations & Combinations:** Principles of counting, Permutations of n dissimilar objects taken r at a time (with without repetitions), Permutations of n objects not all of which r different, Combinations of n objects taken r at a time, Combinations with restriction on selection (excluding or including a particular object in the group), Numerical problems. **Probability:** Random expt. – Sample space (finite, infinite, countable), Events-Types of events, Probability – Classical def., axioms of probability, probability of an event, Theorems of probability (with proof)- i) $0 \leq P(A) \leq 1$, ii) $P(A) + P(A') = 1$, iii) $P(\Phi) = 0$ iv) $P(A) \leq P(B)$ when A is subset of B v) Addition law of probability (Statement only). Concept & def. of conditional probability, multiplication law of probability(Statement only), Concept & def. of conditional probability, multiplication theorem, Concept & def. of independence of two events, Numerical problems.	15
Unit-II	**Discrete random variable:** Def. of r.v., discrete r.v., Def. of p.m.f., c.d.f. & properties of c.d.f., Def. of expectation & variance, theorems on expectation, Numerical problems. **Standard Discrete Distribution:** Binomial distribution- Def., mean, variance(only state), illustration of real life situations, additive property (statement only). **Poisson distribution-** mean, variance(only State), illustration of real life situation, additive property (Statement only), Numerical Problems. **Geometric distribution –** Def.,mean, variance(only State), illustration of real life situation, Numerical problems.	8
Unit-III	**Continuous r.v.-** Def.-continuous r.v., p.d.f., c.d.f., statement of properties of c.d.f. Def. of mean & variance, Numerical problems. **Uniform distributions**-Def., mean, variance(only State),Numerical Problems **Normal Distribution-** Definition, identification of parameters, nature of probability curve, s.n.v., properties of normal distribution, distribution of aX+b, aX+bY+c when X & Y are independent, Numerical Problems.	7

Books Recommended:

1. Fundamentals of Mathematical Statistics- Kapoor& Gupta.
2. Modern elementary Statistics – J.E.Freund
3. Statistical Methods – J.Medhi.
4. Fundamentals of Statistics-S.C.Gupta.
5. Fundamentals of applied Statistics-Gupta &Kapoor.
6. Business Statistics – S. Shah
7. Programmed Statistics - B.L.Agarwal.

First Year BCA (Under Science) Semester- II

Course Code: DSC4B **Course Title:Introduction to Microprocessor**

Total Contact Hours: 30 Hrs. **Total Marks: 50 (30 Lectures)**

Teaching Scheme: Theory 2.5 Lect. /Week **Total Credits: 02**

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Unit No.	Description	Number of Lectures
Unit-I	**Fundamental of Microprocessor:** • Introduction to microprocessor • Basic system bus architecture • Intel 8085 microprocessor features • Concept of T state • Machine cycle • Instruction cycle • Types of microprocessor(According to bus and application)	08
Unit-II	**8 bit microprocessor:** • Introduction • Types of 8 bit microprocessor • Pin function of 8085 microprocessor • Internal architecture of 8085 microprocessor • Applications	08
Unit-III	**Instruction set:** • Introduction • Classification of instruction set • Format of instructions • Addressing modes • Assembly language programming of 8085(addition, subtraction, division, multiplication, orders)	08
Unit-IV	**Interfacing:** • Concept of interfacing • Types of interfacing • Concept of I/O mapping • I/O memory mapping techniques • PPI[8285] • Programmable timer[8253]	06

Books Recommended:

1) Microprocessor Architecture, Programming, and Applications with the 8085-Ramesh S. Gaonkar
2) Microprocessor and principles- S.P. Chowdhury, SunetraChowdhury
3) Advanced Microprocessor and principles- K.M. Bhuruhand, A.K. Ray

First Year BCA (Under Science) Semester- II

Course Code: DSC4B **Course Title:Software Engineering-IITotal Contact Hours: 30 Hrs.** **Total Marks: 50 (30 Lectures)**

Teaching Scheme: Theory 2.5 Lect. /Week **Total Credits: 02**

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Unit No.	Description	Number of Lectures
Unit-I	**System Analysis and System Design Tools:** • Flow chart • Decision tables & Decision Trees • Structure charting Techniques (HIPO) • Entity relation Analysis (ERD) • Normalization • Input output design • Data flow Diagram (Physical, Logical), structured chart • Data Dictionary: Features of Data Dictionary, Process specification Methods	12
Unit-II	**Configuration and Construction of the System**: • Collection of system statistics • Setting Sub-system Boundaries • Fractional Approach, Incremental Approach	10
Unit-III	**Software Testing, Implementation and maintenance:** • Need of Testing, White Box, Black Box testing • Changeover, Pilot, Parallel	8
	Case studies Pay Roll, Library System, Inventory Management System, College Admission System	

Books Recommended:

1) Analysis and Design of Information Systems by James Senn.
2) System analysis and design by Elias Awad
3) Software Engineering by Pressman
4) System Analysis and Design by Parthsarty / Khalkar
5) Practical guide to structure System Design by Miller/Page/jones.

Course Code: BCA 106 **Course Title: Lab 1 Based on DSC 1 A & 1B**

Total Marks: 100 **Practical: 60 Lectures**

Teaching Scheme: Practical 8 Pract. /Week **Total Credits: 04**

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1. WAP to find out factorial of any number.
2. WAP to print the sum and product of digits of an integer.
2. WAP to reverse a number.
3. Write a function that checks whether a given number is perfect or not.
4. Write a function to find whether a given no. is prime or not.
5. WAP to compute the factors of a given number.
6. WAP to find out palindrome numbers between 1 to 100.
7. Write a macro that swaps two numbers.
8. WAP to print a triangle of stars as follows (take number of lines from user):

```
*
***
*****
*******
*********
```

9. WAP to perform following actions on an array entered by the user:
   i) Print the even-valued elements
   ii) Print the odd-valued elements
   iii) Calculate and print the sum and average of the elements of array
   iv) Print the maximum and minimum element of array
   v) Remove the duplicates from the array
   vi) Print the array in reverse order
10. WAP a program to find out entered number is palindrome or not?
11. Write a program to display weekday name when user entered any day's first character (e.g. S=Sunday)
12. Write a program to calculate multiplication of two matrices.
13. Write a program that swaps two numbers using pointers.
14. Write a program in which a function is passed address of two variables and then alter its contents.

15. Write a program which takes the radius of a circle as input from the user, passes it to anotherfunction that computes the area and the circumference of the circle and displays the value ofarea and circumference from the main() function.
16. Writea programwhichcounttotalnumberofvowelspresentinstring.
17. Write a program to find sum of n elements entered by the user.
18. Write a program to allocate memory dynamically using malloc() / calloc().
19. WAP to illustrate difference between structure and union.
20. WAP to pass array of structure to function.
21. WAP to copy content of one file into another file.
22. WAP to display content of binary files.
23. Write a program to accept integer numbers in file,find even and odd numbers between them store even number into even file and odd number into odd file and display the content of files.

Course Code: BCA 106 **Course Title: Lab 1 Based on DSC 2 A & 2B**
Total Marks: 100 **Practical: 60 Lectures**

Teaching Scheme: Practical 8 Pract. /Week **Total Credits: 04**

Unit Name	Description
HTML & HTML 5	Design different web pages using HTML & HTML5.
CSS & JavaScript	Design different web pages that use CSS & JavaScript.
JavaScript	Design different web pages in JavaScript that shows use of array, inbuilt functions, and operators.
JQuery	Design a different web page that uses JQuery.
Windows	Starting Windows- Browsing Start Menu, Manipulating Windows-Moving, Resizing, Closing, Windows, Minimizing and Maximizing Windows, Working With Multiple Windows Using Windows Application. Using Word- Pad to create a document, entering text and saving the work. Using my computer- Changing the icon arrangement, To View the floppy disk. To manage files, selecting one or more files, copying a file, delete a file, Drag and drop to move a file.
File Management using Windows Explorer	To Copy, move and delete files, using copy and paste, using drag and drop, creating a folder. Creating a file to a folder, copying and moving the files between drives, renaming files and folders, find Program- To search by file name, by name, by date, by type, by specific text.
Control Panel	Changing date and time changing display, choosing background, placing folder on desktop. Adding shortcuts to folder and creating shortcut.
MS-Office 2010	a. MS-Word b. MS-Excel c. MS-PowerPoint d. MS-Access

Course Code: BCA 106 **Course Title: Lab 1 Based on DSC 3 A & 3B**

Total Marks: 100 **Practical: 60 Lectures**

Teaching Scheme: Practical 8 Pract. /Week **Total Credits: 04**

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1. Algebra of matrices: addition, subtraction,scalar multiplication, matrix multiplication.
2. Operations on Sets: Union, intersection, difference, symmetric difference andcomplement.
3. Algebraic properties of set operations: Commutative laws, Distributive laws,Associative laws,DeMorgan's laws.
4. Transitive closure of relation by using Warshall's algorithm.
5. Matrix representation of graph: Adjacency and incidence matrix of a graph.
6. Traveling salesman problem and Chinese postman problem.
7. Operations on graphs: Union, intersection, ring sum of two graphs, andcomplement of a graph.
8. Kruskal's algorithm to find shortest spanning tree.
9. Construction of frequency dist. & graphical representation.
10. Measures of central tendency(ungrouped data).
11. Measures of central tendency(grouped data).
12. Measures of dispersion.
13. Computation of correlation coeff.
14. Fitting of lines of regression.
15. Fitting of Binomial distribution.
16. Fitting of Poission distribution.
17. Fitting of Geometric Distribution.
18. Fitting of Normal distribution.
19. Model sampling from uniform.
20. Model sampling from binomial distribution.

Course Code: BCA 106 **Course Title: Lab 1 Based on DSC 4 A & 4 B**

Total Marks: 100 **Practical: 60 Lectures**

Teaching Scheme: Practical 8 Pract. /Week **Total Credits: 04**

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1. Study of logic gates.
2. Study of Demorgans Theorem.
3. Half adder using gates.
4. Full adder using gates.
5. RS flip flop.
6. Intercoversion of gates using NAND gate.
7. Intercoversion of gates using NOR gate.
8. Assembly language programming for arithmetic operations using 8085 microprocessor.
9. Assembly program for ascending order using 8085 microprocessor.
10. Assembly program for descending order using 8085 microprocessor.
11. Assembly program for block transfer of program.

Punyashlok Ahilyadevi Holkar Solapur University
Faculty of Science and Technology
Choice Based Credit System (CBCS), (w.e.f.2020-21)
Structure for B. C. A. – Part II (Science)

Subject/ Core Course	Name and Type of the Section		No. of Papers/ Practical	Hrs/week			Total Marks Per Section	UA	CA	Credits
	Type	Name		L	T	P				
Class :	**B.C. A.- II Semester – III**									
Core	DSC1C	OOPS with C++-I	Section -I	03	--	--	50	40	10	4.0
		Data structures using 'C'- I	Section-II	03	--	--	50	40	10	
	DSC2C	Database Management System	Section-I	03	--	--	50	40	10	4.0
		Software Testing & Quality Assurance	Section-II	03	--	--	50	40	10	
	DSC3C	Web Development using PHP	Section-I	03	--	--	50	40	10	4.0
		Computer Networks-I	Section-II	03	--	--	50	40	10	
	SEC-I	Financial Accounting with Tally		06	--	--	100	80	20	4.0
Total				**24**	--	--	**400**	**320**	**80**	**16**
Class :	**B. C. A. - II Semester - IV**									
Core	DSC1D	OOPS with C++-II	Section -I	03	--	--	50	40	10	4.0
		Data structures using 'C'- II	Section-II	03	--	--	50	40	10	
	DSC2D	MySQL	Section-I	03	--	--	50	40	10	4.0
		Ethics and Cyber law	Section-II	03	--	--	50	40	10	
	DSC3D	Angular JS	Section-I	03	--	--	50	40	10	4.0
		Advanced Computer Networks	Section-II	03	--	--	50	40	10	
	AECC	Environmental Studies		03	--	--	50	40	10	NC
	SEC-II	Python Programming		06	--	--	100	80	20	4.0
Total (Theory)				**27**	--	--	**450**	**360**	**90**	**16**
Core	DSC 1 C & 1 D		Practical I & II	--	--	8	100	80	20	4.0
	DSC 2 C & 2 D		Practical I & II	--	--	8	100	80	20	4.0
	DSC 3 C & 3 D		Practical I & II	--	--	8	100	80	20	4.0
Total (Practical)						**24**	**300**	**240**	**60**	**12**
Grand Total				**51**	--	**24**	**1150**	**920**	**230**	**44**

***Core Subjects: Chemistry/Physics/Electronics/Computer Science/Mathematics/Statistics/Botany/Zoology/ Microbiology/Geology/ Geography/Psychology**

Abbreviations: L: Lectures, T: Tutorials, P: Practical's, UA:University Assessment, CA: College Assessment, DSC / CC: Core Course, AEC : Ability Enhancement Course, DSE : Discipline Specific Elective Section, SEC : Skill Enhancement Course, GE : Generic Elective, CA: Continuous Assessment,
ESE: End Semester Examination

BCA (Science)-II Semester- III

Course Code: DSC1C (Section-I) **Course Title: OOP'S with C++-I**
Total Contact Hours: Hrs. **Total Marks: 50(40Lectures)**
Teaching Scheme: Theory 3 Lect./Week **Total Credits: 02**

Unit No	Content	No. of Lectures
Unit-1	**Introduction to (Object Oriented Programming)OOP**: • Introduction to OOP, Features of OOP's- Class, Object, Data Abstraction and encapsulation, Data hiding, Message passing, polymorphism, inheritance, persistency, delegation, extensibility • Comparison between POP(Procedural Oriented Programming) and OOP, Advantages of OOP's, Application of OOP	**08**
Unit-2	**Introduction to C++**: • History of C++, C++ basics(C++ tokens)- Keywords, identifiers, data types, constants, operators, special symbols, control flow statements • Types of Variables- Value, pointer and reference. • Structure of C++ program, Introduction to cin and cout objects • Function and its types, template, Default argument, Parameter passing methods, inline function • Static polymorphism(Function overloading)	**12**
Unit-3	**Classes and Objects:** • Introduction to class and object. • Defining class (class specification), Creating object • Access specifier(Visibility modes)-public, protected, private • Class members- data members, member & Non-member function • Defining member function inside and outside the class • Static data members and static member functions • Pointer to object, Array of object, Returning objects from functions • Passing object as parameter by value, by pointer, by reference • Dynamic memory allocation (new, delete) • Friend function and friend class, nesting of classes. • Constructors Concept, characteristics of constructor • Types of constructor- default, parameterized and copy • Constructor overloading, Constructor with default argument • Destructor Concept, characteristics of destructor. • Static polymorphism (Operator overloading) Concept- rules to overload operator, unary and binary operator overloading, overloading operator using member function and friend function. • Type conversion (type casting)- implicit and explicit.	**20**

Books Recommended:

1) OOP in C++ – E-balagurusamy
2) Mastering C++-K. R. Venugopal
3) The Complete Reference C++-Herbert Schildt

BCA (Science)-II Semester- III

Course Code: DSC1C (Section-II) **Course Title: Data Structures using 'C'-I**
Total Contact Hours: Hrs. **Total Marks: 50(40 Lectures)**
Teaching Scheme: Theory 3 Lect./Week **Total Credits: 02**

Unit No	Content	No. of Lectures
Unit-1	**An Introduction to Data Structures:** Introduction, Definition and types of Data structure. Abstract Data Type (ADT)-ADT for array, ADT for stack, ADT for queue. Algorithm: Definition, characteristics of algorithm, Complexity of algorithm-Space complexity, time complexity, Big-O Notation. Design strategies of Algorithm- Divide and Conquer, Greedy Algorithm, branch & bound, backtracking and dynamic programming.	**8**
Unit-2	**Array:** Introduction to Array, types of array- one dimensional, two dimensional, multidimensional, Operations of array- insert, delete, traverse, count, display, reverse	**4**
Unit-3	**Stack:** Introduction to Stack, Operations of stack- Create, isempty, isfull, push, pop, display, Implementation of stack using array(Static Implementation), Applications of Stack-Conversion of infix expression to postfix expression, Conversion of infix expression to prefix expression, Matching parenthesis in an expression (Checking expression is valid or invalid), Evaluation of postfix expression, Stack in recursion, Implementation of applications of stack.	**8**
Unit-4	**Queue:** Introduction to Queue, Operations of queue- Create, isempty, isfull, insert, remove, display, Types of Queue- Linear Queue, Circular Queue, Deque (Double Ended Queue), Priority queue. Implementation of all types of queue using array(Static Implementation), Difference between stack and queue, Applications of Queue	**8**
Unit-5	**Linked Lists:** Introduction to Linked Lists, Difference between Array and linked list. Types of linked list- 1) Linear linked list- Singly (Single) and Doubly (Double) 2) Circular linked list- Singly (Single) and Doubly (Double) Operations of linked list- Creation, Insertion, Deletion, Traversing, Searching, Display, count, reverse, Implementation of all types of linked list, Implementation of stack using linked list (Dynamic stack),Implementation of queue using linked list (Dynamic queue)	**12**

Books Recommended:

1. Tanenbaum: Data structures using C and C++
2. Data Structures Through C in Depth- S.K.Srivastava, D.Srivastava
3. Fundamentals of *Data Structures in C by Sahni*

BCA (Science)-II Semester- III

Course Code: DSC2C (Section-I) **Course Title: Database Management System**
Total Contact Hours: Hrs. **Total Marks: 50(40 Lectures)**
Teaching Scheme: Theory 3 Lect./Week **Total Credits: 02**

Unit No	Content	No. of Lectures
Unit-1	**Introduction to Database Management System:** • Definition, Limitations of traditional file system • Advantages of DBMS, Components of DBMS, Database Users • Database Structure • Database Architecture- 2-tier and 3 level tier architecture • Instances and Schemas-3 Schema architecture • Database languages, Data Independence, Data Abstraction	**06**
Unit-2	**Database Design** • Types of data models- Relational, Network, Hierarchical • E-R model: entities, attributes and its types, Relationship, Relationship sets, Generalization, Specialization, Aggregation, ER-to-Relational Mapping • Relational Model: Relation, Domain, Tuples, Degree, cardinality • Relational Algebra operations: Select, Project, Cartesian Product, Union, Set difference, join	**06**
Unit-3	**Transaction Management & Concurrency Control:** • Introduction of Transaction, ACID properties, transaction states, scheduling and types, conflict and view serializability. • Introduction of Concurrency Control, problems of concurrency control, lock based protocols, timestamp based protocol, deadlock, deadlock handling methods.	**14**
Unit-4	**Database recovery and Atomicity:** • Introduction, Failure Classification, recovery algorithms, Undo/Redo operations, Log file,log base recovery, shadow paging, recovery with concurrent transaction, checkpoints/syncpoints/ savepoints. • Distributed Databases: Structure of Distributed Database, Advantages and Disadvantages of Data Distribution, Data Replication, Data Fragmentation	**14**

Books Recommended:

1) Database System Concepts by Korth Silberschetz
2) Fundamentals of Database Systems by Elmsari, Navathe
3) SQL, PL/SQL The programming language of Oracle by Ivan Bayross
4) "Introduction to Database Systems", C.J.Date, Pearson Education.

BCA (Science)-II Semester- III

Course Code: DSC2C (Section-II) **Course Title: Software Testing & Quality Assurance**
Total Contact Hours: Hrs. **Total Marks: 50(40 Lectures)**
Teaching Scheme: Theory 3 Lect./Week **Total Credits: 02**

Unit No	Content	No. of Lectures
Unit-1	**Introduction To Software Testing:** • What is Software Testing, Importance or need of software testing • Differences between Manual and Automation Testing **White Box Testing (WBT):** ▪ Introduction to WBT, Advantages & Disadvantages of WBT. ▪ Static Techniques: Informal Reviews, Walkthroughs, Technical Reviews, Inspection ▪ Dynamic Techniques or Structural Techniques: Statement Coverage Testing, Branch Coverage Testing, Path Coverage Testing, Conditional Coverage Testing, Loop Coverage Testing	08
Unit-2	**Black Box Testing(BBT):** • Introduction to BBT, Advantages and Disadvantages of BBT • Black Box Techniques: Boundary Value Analysis, Equivalence Class Partition, State Transition, Cause Effective Graph, Decision Table, Use Case Testing • Experienced Based Techniques: Error guessing, Exploratory testing **Levels of Testing** • Functional Testing: System Testing, Smoke Testing, ▪ Integration Testing & types-Top-Down, Bottom-Up, Non-Incremental ▪ Acceptance Testing-Alpha and Beta ▪ Regression Testing and types- Unit/Retest, Regional, Full • Non Functional Testing: Adhoc Testing, Recovery Testing ▪ Performance Testing and types: Load Testing, Stress Testing, Volume Testing, Soak Testing	15
Unit-3	**Test cases design Techniques:** • Introduction Test Case, Types of Test Cases, Test Case Template • How to write a test case with examples, Preparing Review Report **Software Test Life cycle** ▪ Writing Test Plan, Preparing Traceability Matrix ▪ Writing Test Execution Report and Summary Report	10
Unit-4	**Bug/Defect Life Cycle:** Difference between Bug, Defect, Failure, Error ▪ Defect Tracking and Reporting ▪ Types of Bugs, Identifying the Bugs, Reporting the Bugs **Case study:** Design test case for login page, Online Purchase Order	07

Books Recommended:

1) The art of Software Testing– Glenford J. Myers
2) Lessons learned in Software Testing – CemKaner, James Bach, Bret Pettichord
3) A Practitioner's Guide to Software Test Design- Lee Copeland
4) Software Testing Techniques, 2nd edition- Boris Beizer
5) How to Break Software: A Practical Guide to Testing- James Whittaker

BCA (Science)-II Semester- III

Course Code: DSC3C (Section-I) **Course Title: Web Development using PHP**
Total Contact Hours: Hrs. **Total Marks: 50(40 Lectures)**
Teaching Scheme: Theory 3 Lect./Week **Total Credits: 02**

Unit No	Content	No. of Lectures
Unit-1	**Introduction to Web Development:** • Introduction to web applications, Client Side Vs Server Side Scripting • WebServers: Local Servers and Remote Servers, Installing Web servers, Internet Information Server(IIS),Personal Web Server(PWS) • Static website vs Dynamic website development. • Introduction to PHP Framework, Basic PHP syntax, • Data types in PHP, Variables, Constants, operators and Expressions, printing data on PHP page, • Control statements–if, switch case, for, while, do while. • Arrays: Initialization of an array, Iterating through an array, Sorting arrays, Array Functions, • Functions: Defining and Calling Functions, Passing by Value and passing by references, Inbuilt Functions.	**10**
Unit-2	**String and Working with Forms** • String: Formatting String for Presentation and Storage, Joining and Splitting String, Comparing String, Matching and replace Substring, patterns, basic regular expressions. • Working With Forms: Forms controls properties, methods and events, Retrieving form data with $_POST, $_GET and $_REQUEST arrays, Validating retrieved data, Strategies for handling invalid input, Super global variables, Super global array, Importing user input, Accessing user input, Combine HTML and PHP code, Using hidden fields, Redirecting the user, File upload and scripts, Validation-Server side validation, Client side validation (Java script)	**14**
Unit-3	**Working with Database MySQL:** History of MySQL, Installation and Up gradation to MYSQL, MySQL Architecture, MySQL Server Start and Stop, Working with PHP-MySQL Environment, Connecting to the MYSQL, Selecting a database, Creating Tables, Inserting, deleting and updating data in to table, Displaying returned data on Web pages, Finding the number of rows, Executing multiple queries, Checking data errors.	**10**
Unit-4	**State Management:** • Cookies: Setting time in a cookie with PHP, Deleting a cookie, Creating session cookie, Working with the query string • Session: Starting a session, Registering Session variables, working with session variables, destroying session, passing session Ids, encoding and decoding session variables	**6**

Books Recommended:

1) PHP: The Complete Reference-Steven Holzner.
2) Professional PHP 5-Ed Lecky-Thompson,HeowEide-Goodman, Steven D. Nowicki
3) Programming PHP- Rasmuslerdorf, Kevin Tatroe.
4) Learning php, mysql, javascript and css –Oreilly- Robin Nixon

BCA (Science)-II Semester- III

Course Code: DSC3C (Section-II) **Course Title: Computer Networks**
Total Contact Hours: Hrs. **Total Marks: 50(40 Lectures)**
Teaching Scheme: Theory 3 Lect./Week **Total Credits: 02**

Course Objective:

Unit No	Content	No. of Lectures
Unit-1	**Introduction to Data Communication & Networking:** Data Communication: Components, Data Representation, Data Flow Communication Model Computer N/W: Introduction of Network, Uses of computer network N/W Components: Hubs, Switches, Repeaters, Bridges, Routers, Gateways. N/W Topologies, Types of Networks, Inter-networking, Applications of Internet	**06**
Unit-2	**Network Models:** Protocols & Standards, Protocol Hierarchies, Design Issues of Layers, Services Primitives, Connection oriented and connection less services Reference Model: ISO-OSI reference model, TCP/IP reference model.	**06**
Unit-3	**Physical layer:** Signals-Analog & Digital Signals, Period, Frequency, Phase, Amplitude, Bandwidth, Bit Rate, Bit Length, Fourier analysis. Transmission Impairment-Attenuation, Distortion, Noise, Transmission Media-Guided Media-Magnetic Media, Twisted Pair, Coaxial Cable, Fiber Optic Cable, Unguided Media- Wireless Radio Waves, Microwaves, Infrared, Satellite Communication Analog Transmission-Modem, Digital Transmission-Pulse Code Modulation, Manchester & Differential Manchester Coding. Modulation and types- Amplitude, Frequency, Phase Transmission Mode-Parallel, Serial, Synchronous Transmission, Asynchronous Transmission. Multiplexing and types- Frequency, Time, Wavelength, Switching and types- Circuit, Message, Packet	**16**
Unit-4	**Data link layer:** Data link layer Design issues, Error Detection & Correction-Types of Errors, Hamming Distance, Error Detection-Parity Check, Cyclic Redundancy Check, Checksum Check Error correction, Data Link Control-Framing, Flow & Error Control, Protocols-Simplex, Stop and Wait, Stop and Wait ARQ, Go Back N ARQ, Selective repeat ARQ. Multiple Access Protocol-ALOHA, CSMA, CSMA/CD, CSMA/CA Channelization, FDMA, TDMA, CDMA	**12**

Reference Books:

1. Computer Networking by Tannenbaum.
2. Data communication and networking by B A Forouzan

BCA (Science)-II Semester- III

Course Code: SEC-I **Course Title: Financial Accounting with Tally**
Total Contact Hours: Hrs. **Total Marks: 100(80 Lectures)**
Teaching Scheme: Theory 6 Lect./Week **Total Credits: 04**

Course Objective: To impart basic knowledge of Management Accounting.

Unit No	Content	No. of Lectures
Unit-1	**Introduction to Book-keeping and Accountancy-** Definition and Objectives, Importance of Book-keeping, Difference between Book-keeping and Accountancy, Definition of Accountancy, Basis of Accounting System, characteristics of accounting information, Basic Accounting Terminologies, Accounting Concepts, Conventions and Principles, Accounting Standards (AS) and IFRS **Fundamentals of Double Entry Book-keeping-** Introduction of Double entry Book-keeping System, Methods of Recording Accounting Information (Indian, Single, Double), Advantages of Double entry Book-keeping system, Classification of Accounts, Golden Rules of Debit and Credit (Traditional Approach), Modern Approach of Rules of Accounts, Accounting Equations	**16**
Unit-2	**Journal-** Importance and Utility of Accounting Documents, Definition, Importance and Utility of Journal, Specimen of Journal, Recording of Journal entries with GST. **Ledger-** Definition and Importance of Ledger, Specimen of Ledger, Posting of entries from Journal/Subsidiary Books to Ledger, Balancing of Ledger Accounts, Preparation of Trial Balance **Subsidiary-Books-**Introduction and need for maintaining Subsidiary Books, Cash Book with Cash Column, Cash Book with Cash and Bank Columns, Simple and Analytical Petty Cash Book under Imprest System, Purchase Book, Purchase Return Book, Sales Book, Sales Return Book, Journal Proper	**16**
Unit-3	**Bank Reconciliation Statement-** Introduction and Utilities of Accounting Documents, Need and Importance, Introduction of Bank Reconciliation Statement, Reasons for difference between Cash Book balance and Pass Book balance, Specimen of Bank Reconciliation Statement. **Depreciation-** Introduction and Importance of Depreciation, Factors of Depreciation, Methods of Depreciation, Accounting Treatment for Depreciation. **Rectification of Errors-**Introduction and Effects of errors, Types of Errors, Detection & Rectification of errors, Preparation of Suspense Accounts	**16**
Unit-4	**Final Accounts of a Proprietary concern-** Introduction, Objectives and Importance of Final Accounts, Preparation of Trading Account. Preparation of Profit and Loss Account, Preparation of Balance Sheet. Effects of following adjustments. ▪ Closing stock, Outstanding Expenses, Prepaid Expenses, Depreciation on assets, Bad debts and R.D.D., Discount on Debtors and Creditors, Income received in advance , Accrued Income, Goods distributed as free sample, Goods withdrawn by proprietor for Personal use, Interest on capital, Interest on Drawings **Introduction to Tax Deducted at Source (TDS)-**TDS in Tally, TDS Masters, Vouchers / Transactions, Advance to a Party, TDS Reports, TDS Return, TDS E-Return, TDS Outstanding, GST Basics.	**16**

Unit-5	**Implementation through Tally** 1. Create, Alter & Display Stock Groups and Stock Items, 2. All inventory voucher types and transactions Inventory details in accounting vouchers. 3. Reports like Stock summary, Inventory books like Stock item, Group summary, Stock transfers, Physical stock register, Movement analysis, Stock group & item analysis, stock category analysis Ageing analysis, Salesorder & Purchase order book, Statement of inventory related to Godowns, categories, stock query, Reorder status, Purchase & Sales order summary, Purchase & Sales bill pending, Exception reports like negative stock& ledger, overdue receivables & payables, memorandum vouchers, optional vouchers, post-dated vouchers, reversing journal	**16**

Books Recommended:

1)Elements of double entry book keeping – Batliboi
2)Advanced Accounts – M.C.Shukla, T.S.Grewal and S.C.Gupta
3)An Introduction to Accountancy – S.N.Maheshwari.
4)Accounting for Management – S.K.Bhattacharyya& John Dea

BCA (Science)-II Semester- IV

Course Code: DSC1D (Section-I) **Course Title: OOPS with C++-II**
Total Contact Hours: Hrs. **Total Marks: 50(40 Lectures)**
Teaching Scheme: Theory 3 Lect./Week **Total Credits: 02**

Unit No	Content	No. of Lectures
Unit-1	**Inheritance and Runtime Polymorphism:** • Introduction of inheritance, benefits,use • Defining derived class • Types of derivations • Types(Forms) of Inheritance- Single, Multi-level, Multiple, Hierarchical, Hybrid, Multi-path (Virtual base class) • Behavior of constructors and destructor in inheritance • Overloaded member functions • Pointer to base class, Pointer to derived class • Object composition-delegation **Runtime polymorphism-** • Introduction of runtime polymorphism • Virtual functions- Concept, characteristics and use of virtual function. • Pure virtual function-Concept, characteristics and Use. • Abstract class, virtual destructors	**15**
Unit-2	**Stream and Files:** • Introduction to streams in C++ • Stream classes and File stream classes • Formatted and unformatted I/O functions and Manipulators. • File Manipulations- Opening, closing, reading, writing, Appending • File opening modes-Opening files, using open() and constructor • Error handling during file manipulations • Command line arguments.	**15**
Unit-3	**Exception Handling and Template:** • Introduction to Exception handling • Exception handling mechanism-try, catch, throw keywords. • Custom exception. • Introduction to function template- overloaded function and user defined template • class template- inheritance of class template, overloaded operators and class template containership	**10**

Books Recommended:

1) OOP in C++ – E-balagurusamy
2) Mastering C++ - K.R. Venugopal
3) Structured approach using C++ – Behrouz A. Forouzan
4) The Complete ReferenceC++- Fourth Edition. Herbert Schildt

BCA (Science)-II Semester- IV

Course Code: DSC1D (Section-II) **Course Title: Data structures using 'C'- II**
Total Contact Hours: Hrs. **Total Marks: 50(40 Lectures)**
Teaching Scheme: Theory 3 Lect./Week **Total Credits: 02**

Unit No	Content	No. of Lectures
Unit-1	**Trees:** Introduction to Tree, Introduction to Binary Trees, Types of Binary tree- Strictly Binary tree, Complete Binary tree, Extended (2-Tree) Binary tree, Binary expression tree, Binary Search tree, Heap Tree- Min heap tree, Max heap tree, Representation of Binary tree using- Array, Linked list Operations of Binary search tree-Creating and inserting node, Searching node, Counting total nodes, Counting and displaying leaf nodes, Tree Traversal methods- Preorder, Inorder, Postorder, Deletion of Nodes, Implementation of binary search tree, Height balanced tree/Balanced Binary Tree/AVL tree, Application of tree	**10**
Unit-2	**Graph:** Concept & terminologies used in graph, Graph Representation using- Array and linked list, Graph traversals – BFS & DFS, Dijakstra's shortest path algorithm, and application of graph.	**10**
Unit-3	**Sorting:** Introduction and definition of Sorting, Types of Sorting-Bubble sort, Quick sort, Shell sort, Selection sort, Insertion sort, Heap Sort, Merge sort, Radix Sort, Tree Sort techniques	**10**
Unit-4	**Searching:** Introduction and definition of Searching, Types of searching-Linear (Sequential) Search, Binary Search, Indexed sequential search, Hashing and different Hash functions.	**10**

Reference Books

1. Aho, Hopcroft, Ulman: Data structures and Algorithms.
2. Nikaulus Wirth: Algorithms, data structures, Programs.
3. ThomsHorbron: File Systems, Structures and Algorithms (PHI).
4. D. E. Kunth: Art of computer Programming Vol – I.
5. Tanenbaum: Data structures using C and C++ (PHI).
6. fundamentals of computer algorithms by ellis horowitz sartaj sahni 2nd edition galgotia publication

BCA (Science)-II Semester- IV

Course Code: DSC2D (Section-I) **Course Title: Relational Database MySQL**
Total Contact Hours: Hrs. **Total Marks: 50(40 Lectures)**
Teaching Scheme: Theory 3 Lect./Week **Total Credits: 02**

Unit No	Content	No. of Lectures
Unit-1	**Introduction to MySQL** ▪ Installing and starting MySQL instance, History and Architecture of MySQL ▪ Components of MySQL -DML,DDL,DCL,DQL ▪ Data types in MySQL-Numeric, String, Complex, Date and Time, ▪ Creating databases and show databases	**4**
Unit-2	**MySQL Operators, Function and clauses** ▪ MySQL operators- Arithmetic, Comparison, Logical, Bit, like ▪ MySQL Functions- Aggregate, Math, String, Date and Time, control flow functions and expressions, Type conversion, Formatting, Encryption ▪ MySQL clause-where, distinct, order by, group by, having, rollup.	**8**
Unit-3	**Performing Operation on Table Data** ▪ Populating tables with data, Retrieving data from tables, Sorting data in a table, Deleting data from table, Updating data in tables, searching data ▪ Adding and Dropping columns, Modifying and Rename existing columns ▪ Renaming table using alter table, Changing a table type ▪ Finding out the tables created by user, Displaying a table structure ▪ Creating a table from a table, Inserting data into a table from another table	**8**
Unit-4	**MySQL constraints, Join and View** ▪ Applying data constraints- column level and table level ▪ Types of Data constraints- • I/O constraints- Not null, Unique, Primary key, Foreign key,composite • Business rule constraints- Check, ▪ Adding, Modify and drop constraints using alter table command ▪ MySQL join:- Advantages & disadvantages of Join, Types of Joins ▪ MySQL View:- why view, Create, Update, Alter and Drop view	**8**
Unit-5	**SubQueries, Union and Indexing** ▪ sub queries-use, example ▪ Set Operations- Union, Union all, Minus and Intersect ▪ Indexing:- Advantages and disadvantages of Indexing, creating index (simple, composite, unique),multiple indexing, drop index	**6**
Unit-6	**Stored Procedures, Transaction and cursor** ▪ Stored Procedure:- Structure, use of stored procedure, Supported SQL statements in Procedures, creating dynamic procedure, Adding record to the table using procedure, procedure with IN,OUT,INOUT parameter, dropping procedure. ▪ Transaction :MySQL transactions, open and closing transaction, commit, rollback, savepoint in transaction, table lock ▪ Cursor:-use of cursor, types of cursor ,opening a cursor, fetching a record from the cursor, cursor fetch statement, closing cursor ▪ MySQL import & export- Import CSV File into MySQL Table, Export MySQL Table to CSV	**6**

Reference books: 1) MySQL(TM): The Complete Reference-Vikram Vaswani
2) Learning MySQL, by Seyed Tahaghoghi, Hugh Williams.
3) MYSQL 5 for professional, Ivan Bayross and Sharanam Shah

BCA (Science)-II Semester- IV

Course Code: DSC2D (Section-II) **Course Title: Ethics and Cyber law**
Total Contact Hours: Hrs. **Total Marks: 50(40 Lectures)**
Teaching Scheme: Theory 3 Lect./Week **Total Credits: 02**

Unit No	Content	No. of Lectures
Unit-1	**Introduction to Cybercrime:** what is Cybercrime, Categories of Cybercrime Classifications of Security attacks (Passive Attacks and Active Attacks), Essential Terminology (Threat, Vulnerability, Target of Evaluation, Attack, Exploit). Classifications of Cybercrimes: E-Mail Spoofing, Spamming, Cyber defamation, Internet Time Theft, Newsgroup Spam/Crimes from Usenet Newsgroup, Industrial Spying/Industrial Espionage, Hacking, Online Frauds, Pornographic Offenses, Software Piracy, Password Sniffing, Credit Card Frauds and Identity Theft. Cyber offenses: How Criminals Plan that attack, Scanning/Scrutinizing gathered Information, Attack(Gaining and Maintaining the System Access), Social Engineering, Cyberstalking, Cyber cafe and Cybercrimes, Botnets: The Fuel for Cybercrime, Attack Vector and Cloud Computing.	
Unit-2	**Cyber Law:** Introduction, Information Technology Act-2000, Weakness in Information Technology Act, Amendments to the Indian IT Act, Cybercrime and Punishment, key elements certification and monitoring prevention of crimes, contract aspect, security aspects, intellectual property aspects, Intellectual Property aspect, criminal aspect.	
Unit-3	**Introduction to Ethical Hacking:** What is Hacking, Types of Hackers, Reasons for Hacking, Effects of Computer Hacking on an organization ,Network Security Challenges ,Elements of Information Security, The Security, Functionality & Usability Triangle, What is Ethical Hacking, Scope & Limitations of Ethical Hacking, skills required, phases of ethical hacking, tools and techniques, Black Box, Gray Box and White Box techniques, What is Penetration Testing, What is Vulnerability Auditing, differences between vulnerability assessment, Reverse engineering.	
Unit-4	**Foot Printing**: What is Foot Printing, Objectives of Foot Printing, Finding a company's details, Finding a company's domain name, Finding a company's Internal URLs, Finding a company's Public and Restricted URLs, Finding a company's Server details, Finding the details of domain registration, Finding the range of IP Address, Finding the DNS information, Finding the services running on the server, Finding the location of servers, Traceroute analysis, Tracking e-mail communications **Types of Attacks-** phishing, key loggers, backdoor access, password cracking, data stolen, data deleted virus attack.	

Reference Books:

1) Cyber Security: Understanding Cyber Crimes, Computer Forensics & Legal Perspectives by Nina Godbole And Sunit Belapure
2) Ethical Hacking and Countermeasures: Attack Phases By EC-Council
3) The Web Application Hacker′s Handbook: Finding and Exploiting Security Flaws Paperback –Wiley, 2nd Edition, Dafydd Stuttard,
4) Gray Hat Hacking The Ethical Hackers Handbook, 3rd Edition Paperback – 1 Jul 2017 by Allen Harper, Shon Harris, Jonathan Ness, Chris Eagle, McGraw Hill Education
5) CEH Certified Ethical Hacker Study Guide By Kimberly Graves

BCA (Science)-II Semester- IV

Course Code: DSC3D (Section-I) **Course Title: Angular JS**
Total Contact Hours: Hrs. **Total Marks: 50(40 Lectures)**
Teaching Scheme: Theory 3 Lect./Week **Total Credits: 02**

Unit No	Content	No. of Lectures
Unit-1	Overview of AngularJS: What is AngularJS?, Why AngularJS?, Features of AngularJS, AngularJS architecture, Setting up the Environment, Model-View-Controller explained, My first AngularJS app Directives: Introduction to Directives, Directive lifecycle, Using AngularJS built-in directives, Core Directives, Conditional Directives, Style Directives, Mouse and Keyboard Events Directives, Matching directives, Creating a custom directive Angular Expressions: All about Angular expressions, How to use expressions, Number and String Expressions, Object Binding and Expressions, Working with Arrays, Forgiving Behavior, Angular expressions v/s Javascript expressions	**10**
Unit-2	Controller: Role of a Controller, Attaching properties and functions to scope, Nested Controllers, Using filters in Controllers, Controllers in External Files, Controllers & Modules, Controllers Filters: Built-in filters, Uppercase and Lowercase Filters, Currency and Number Formatting Filters, OrederBy Filter, Filter Filter, Using AngularJS filters, Creating custom filters AngularJS Modules: Introduction to AngularJS Modules, Module Loading and Dependencies, Creation vs Retrieval, Bootstrapping AngularJS	**12**
Unit-3	AngularJS Forms: Working with Angular Forms, Model binding, Understanding Data Binding, Binding controls to data, Form controller, Validating Angular Forms, Form events, Updating models with a twist, $error object, Scope-What is scope, Scope lifecycle, Two way data binding, Scope inheritance, Scope & controllers, Scope & directives, $apply and $watch, Rootscope, Scope broadcasting, Scope events	**10**
Unit-4	Single Page Application(SPA): What is SPA, Pros & Cons of SPA, Installing the ngRoute module, Configure routes, Passing parameters, Changing location, Resolving promises, Create a Single Page Application, AngularJS Animation: ngAnimate Module, CSS transforms, CSS transitions, Applying animations, Directives supporting animation	**08**

Reference Books

1.Professional AngularJS by Diego Netto and Valeri Karpov-Wrox press
2.Learning AngularJS by Brad Dayley- Addison-Wesley Professiona
3.AngularJS by Brad Green and Shyam Seshadri- O'Reilly

BCA (Science)-II Semester- IV

Course Code: DSC3D (Section-II) **Course Title: Advance Computer Networks**
Total Contact Hours: Hrs. **Total Marks: 50(40 Lectures)**
Teaching Scheme: Theory 3 Lect./Week **Total Credits: 02**

Unit No	Content	No. of Lectures
Unit-1	**Network layer:** Network layer Design issues, Routing Algorithm: Optimality Principle, Shortest Path Routing, Distance Vector Routing, Link State Routing, Broadcast Routing, Multicast Routing Congestion Control Algorithm: General principle of congestion control, Congestion prevention policies, Congestion Control in Virtual-Circuit Subnets, Congestion Control in Datagram Subnets.	**8**
Unit-2	**Transport, Session, Presentation & Application layers:** Elements of Transport Protocols-Addressing, Connection establishment, Connection Release, Flow Control & Buffering, TCP/IP protocol suite- Transmission Control Protocol, User Datagram Protocol, IP, Real Time Transport Protocol, FTP, DNS, TelNet, SMTP, POP, HTTP, WWW, SNMP, ARP, RARP etc., Data Compression-Audio Compression, Video Compression.	**10**
Unit-3	**Network and Web Security:** Introduction Network security, Security Techniques- Encryption & decryption, Digital Signatures, Cryptography, Firewall Security Services, Authentication Mechanisms- Passwords, Smart Card, Biometrics. Web Security: SSL Encryption, TLS, SET, E-mail Security, PGPs / MIME, IP Security.	**10**
Unit-4	**Network Services:** VPN, Virtual LAN, Wi-Fi Network, Remote Sensing, GPS GPRS, GSM, Bluetooth, Video Conferencing. CASE study-Linux: Installing client & server, Roles & responsibility of Network Administrator Server Management Login Script, Ftp Server, News & search server, Web Server, Samba Server, Mail Server, Proxy Server, Print Server, User & group management.	**12**

References Books: 1. Computer Networking by Tannenbaum.
2. Network Security Essentials by William Stallings
3. Dorothy E. Denning, "Cryptography and Data Security", Addison-Wesley
4. Data communication and networking by William Stallings
5. Complete Reference Red Hat Enterprise Linux & Fedora Edition by Petersen Haddan

BCA (Science)-II Semester- IV

Course Code: SEC-II **Course Title: Basics of Python Programming**
Total Contact Hours: Hrs. **Total Marks: 100(80 Lectures)**
Teaching Scheme: Theory 6 Lect./Week **Total Credits: 04**

Unit No	Content	No. of Lectures
Unit-1	**Introduction to Python:** Features/Characteristics of Python, Installation and Working with Python, Structure of a Python Program, Writing simple python program, Executing python program using command line window and IDLE graphics window, Python Virtual Machine, Identifiers and Keywords, **Python Data Types:** Python Variables, Data types, Sequences, Sets, Literals, Constants, Type conversion, I/O Statements, Command line arguments. **Operators-**Arithmetic, Relational, Logical, Boolean, Assignment, Bit wise, Membership, Identity, Operator Precedence and Associativity **Conditional Statements-** if, if-else, nested if –else,**Looping-**for, while, nested loops, Loop manipulation using pass, continue, break, assert and else suite	**15**
Unit-2	**Array:** introduction, importing and slicing on array, types of array, compare and aliasing. **Strings:** Introduction to String, String Manipulation. **Collection List:** Introduction to List, Manipulating list. **Tuples:** Introduction to Tuples, Manipulating Tuples. **Dictionaries:** Concept of Dictionary, Techniques to create, update & delete dictionary items.	**15**
Unit-3	**Functions:** Difference between a Function and a Method, Defining a function, Calling a function, Advantages of functions, Types of functions, Function parameters:-Formal parameters, Actual parameters, Anonymous functions, Global and Local variables, **Modules:** Importing module, Creating & exploring modules, Math module, Random module, Time module **Object Oriented Programming:** Features, Concept of Class & Objects, Constructor, Types of Variables, Namespaces, Types of Methods, Inner Classes, Constructors in Inheritance, Overriding Super Class Constructors and Methods, Types of Inheritance, Abstract Classes and Interfaces, The Super() Method, Operator Overloading, Method Overloading, Method Overriding. **Threads:** Introduction, uses, types, creating threads, thread class methods and synchronization	**18**
Unit-4	**Regular Expressions:** Introduction to Regular Expression, Advantages & Operations, Sequence characters in Regular Expression, Powerful pattern matching and searching, Password, email, url validation using regular expression, Pattern finding programs using regular expression **Exception Handling:** Errors in a Program, Exceptions, Exception handling, Types of Exceptions, User-defined Exceptions **Python File Operation:** Types of File, Opening and Closing a File, Reading and writing to files, Manipulating directories	**18**
Unit-5	**Graphical user interface-** root window, fonts and colors, working with containers, canvas, frame, widgets and its types. **Database connectivity-** Installing MySQLdb module, working with MySQL, Retrieving, inserting, Deleting and Updating rows into table, creating database tables	**12**

Reference Books

1. Python Cookbook: Recipes for Mastering Python 3 by Brian Kenneth Jones and David M. Beazley-O'Reilly Media

2. Beginning Python by Magnus Lie Hetland-Apress

Lab course based on DSC 1 C & 1 D

Sample Programs on OOP's with C++-I and II

1) Write different programs in 'C++' language that shows use of array, pointers variable, reference variable, cin and cout objects, scope resolution operators, basic operators
2) Write a program that shows use of class and object.
3) Write a program that shows parameter passing techniques in C++
4) Write a program that shows defining member function inside and outside of class body
5) Write a program that demonstrate use of inline function
6) Write a program to implement function overloading concept
7) Write a program to implement parameterized and copy constructor
8) Write a program that shows use of static data member and static member function.
9) Write a program that shows use of nesting classes.
10) Write a program that shows passing and returning object from function.
11) Write a program that shows use of new and delete operator
12) Write a program that shows explicit type conversion
13) Write a program to overload different unary and binary operators by using friend and member function.
14) Write a program to calculate factorial of given number by using recursion.
15) Write a program for addition, subtraction, multiplication and division of two complex numbers by using return by object method.
16) Create 2 distance classes "class A" stores distance in meter and cm and "Class B" stores distance in feet and inches and add two distances by friend function and display the result.
17) Generate the result for 5 students with following data - Name, exam no, Theory marks in 5 subjects, grade. Use array of object concept.
18) Write a program for constructor overloading.
19) Write a program to calculate root of quadratic equation by using default argument constructor.
20) Write a program to demonstrate friend function, friend class, member function of a class is friend to another class.
21) Write a program to count no. of objects created by using static data member & member function.
22) Write a program to overload unary operators (++, - -, -).
23) Write a program to overload binary operator.(+, -, *, /, %) by using member function and friend function.

Inheritance & Runtime polymorphism

24) Write a program to implement single inheritance.
25) Write a program to implement multi-level inheritance
26) Write a program to implement multiple inheritance
27) Write a program to implement hierarchical inheritance
28) Write a program to implement hybrid inheritance
29) Write a program to implement multi-path inheritance
30) Write a program that shows use of pointer to base class
31) Write a program that shows use of pointer to derived class
32) Write a program that shows use of virtual function.
33) Write a program that shows use of pure virtual function.
34) Write a program that shows use of abstract class
35) Write a program that shows use of virtual destructor
36) Write a program that shows behavior of constructor and destructor in inheritance.

Streams and Files

37) Write a program that shows use of istream class.
38) Write a program that shows use of ostream class.
39) Write a program that shows use of different manipulators.
40) Write a program to read, write and append data into file.
41) Write a program that checks two files are identical or not.
42) Write a program that shows use of random access of file.
43) Write a program that shows use of command line argument.

Exception Handling and template

44) Write a program that shows use try, catch and throw
45) Write a program that shows use multiple catch blocks.
46) Write a program that shows use of custom exception.
47) Write a program that shows use of function template
48) Write a program that shows use of class template

Sample Programs on Data Structure using 'C'- I and II

Array

1) Write a program to implement array with following operations:
a) Insert Element b) Delete element from entered position c) Traverse array element d) Count e) Search element
2) Write a programs that prints array elements in reverse order.
3) Write a program that finds only even elements in an array.
4) Write a program that finds only odd elements in an array.
5) Write a program that finds addition of matrices.
6) Write a program that finds multiplication of matrices.

Stack

1) Write a program to implement stack by using array. (Static Implementation of stack)
2) Write a program, which reverses the string by using stack.
3) Write a program to check entered string is palindrome or not by using stack.
4) Write a program to convert decimal number into binary number by using stack.
5) Write a program to count total number of vowels present in string by using stack.
6) Write a program which convert infix expression into prefix expression.
7) Write a program which convert infix expression into Postfix expression.
8) Write a program which check entered expression is valid or not.
9) Write a program for evaluation of postfix expression.
10) Write a program to calculate factorial of entered number by using recursion.
11) Write a program to calculate digit sum of entered number by using recursion.
12) Write a program to find face value of entered number by using recursion.

Queue

1) Write a program to implement linear queue by using array. (Static Implementation of queue)
2) Write a program to implement Circular queue.
3) Write a program to implement Priority queue.
4) Write a program to implement IRD (Input Restricted Deque)
5) Write a program to implement ORD (Output Restricted Deque)

Linked List

1) Write a program to implement singly linear linked list with its basic operations.
2) Write a program to implement stack by using linked list. (Dynamic implementation)
3) Write a program to implement queue by using linked list. (Dynamic implementation)
4) Write a program to implement doubly linear linked list with its basic operations.
5) Write a program to implement singly circular linked list with its basic operations.
6) Write a program to implement doubly circular linked list with its basic operations.

Tree

1) Write a program to implement binary search tree with tree traversal methods.
2) Write a program to implement BST with following operations:
   I) Insert Node II) Count Leaf nodes III) Count Non-Leaf nodes IV) Count Total nodes
3) Write a program to implement BST with following operations:
   I) Insert Node II) Find Maximum node III) Find Minimum Node IV)Search node
   V) Display only odd nodes VI) Display only even nodes VII) Display leaf nodes
   VIII) Find level of node IX) Find degree of node X) Delete Node

Graph

1) Write a program to represent undirected and directed graph by using Adjacency matrix.
2) Write a program to represent weighted graph by using Adjacency matrix.
3) Write a program to implement graph by using linked list and perform following operations:
   1) Insert Vertex (Node) 3) Search Vertex 5) Find adjacent Vertices
   2) Display Vertices 4) Insert Edge 6) Display Graph

4) Write a program to implement breadth first search (BFS) traversal of graph.
5) Write a program to implement depth first search (DFS) traversal of graph.

Sorting and Searching

1) Write a program to implement simple exchange sort method.
2) Write a program to implement bubble sort method.
3) Write a program to implement insertion sort method.
4) Write a program to implement selection sort method.
5) Write a program to implement Shell sort method.
6) Write a program to implement linear searching technique for unsorted data.
7) Write a program to implement linear searching technique for sorted data.
8) Write a program to implement Binary search technique.

Lab course based on DSC 2 C & 2 D

Sample Programs on Software Testing:

1) Design test case for Internet Banking Application
2) Design test case for Gmail Login Functionality
3) Design test case for college admission Application
4) Design test case for online order processing.
5) Design test case for social networking sites.
6) Design test case for MS-word application
7) Design test case for simple calculator
8) Design test case for ball pen.
9) Design test case for Paint application.
10) Design test case for Online Flight Booking

Sample Programs on RDBMS using MYSQL

1. Create the following Databases.

Salesmen

SNUM	SNAME	CITY	COMMISSION
1001	Prashnat	Mumbai	12
1002	Rajesh	Surat	13
1004	Anandi	Mumbai	11
1007	Priya	Delhi	15
1003	Suchita	Pune	10
1005	Nayan	Baroda	14

Customers

CNUM	CNAME	CITY	RATING	SNUM
2001	Harsh	Baroda	100	1001
2002	Gita	Pune	200	1003
2003	Lalit	Mumbai	200	1002
2004	Govind	Delhi	300	1002
2006	Chirag	Surat	100	1001
2008	Prajkta	Delhi	300	1007
2007	Sushma	Mumbai	100	1004

Orders

ONUM	AMOUNT	ODATE	CNUM	SNUM
3001	18	10/3/2019	2008	1007
3003	767	15/3/2019	2001	1001
3002	1900	10/3/2019	2007	1004
3005	5160	20/4/2019	2003	1002
3006	1098	20/4/2019	2008	1007
3007	1713	10/5/2019	2002	1003
3008	75	10/5/2019	2004	1002
3010	4723	15/6/2019	2006	1001
3011	1309	18/3/2019	2004	1002

Solve the following queries using above databases and where clause range searching and pattern matching.

1. Produce the order no, amount and date of all orders.
2. Give all the information about all the customers with salesman number 1001.
3. Display the following information in the order of city, sname, snumand commission.
4. List of rating followed by the name of each customer in Surat.
5. List of snum of all salesmen with orders in order table without any duplicates.

Solve the following queries using above databases and group by clause.

1. Find out the largest orders of salesman 1002 and 1007.
2. Count all orders of October 3, 1997.
3. Calculate the total amount ordered.
4. Calculate the average amount ordered.
5. Count the no. of salesmen currently having orders.

Solve the following queries using above databases and formatted output and order by clause.

1. List all salesmen with their % of commission.
2. Display the no. of orders for each day in the descending order of the no. of.
3. Display order number, salesman no and the amount of commission for that order.
4. Find the highest rating in each city in the form: For the city (city), the highest rating is (rating)
5. List all in descending order of rating.
6. Calculate the total of orders for each day and place the result in descending order.

Solve the following queries using above databases and join.

1. Show the name of all customers with their salesman's name.
2. List all customers and salesmen who shared a same city.
3. List all orders with the names of their customer and salesman.
4. List all orders by the customers not located in the same city as their salesman.
5. List all customers serviced by salespeople with commission above 12%.

Solve the following queries using above databases and join and subquery.

1. Find all orders attributed to salesmen in 'London'.
2. List the commission of all salesmen serving customers in 'London'.
3. Find all customers whose cnum is 1000 above than the snum of ‘Sejal’.
4. Count the no. of customers with the rating above than the average of 'Surat'.
5. List all orders of the customer 'Chirag'.

Solve the following queries using above databases and delete and update.

1. Remove all orders from customer Chirag from the orders table.
2. set the ratings of all the customers of Piyush to 400.
3. Increase the rating of all customers in Rome by 100.
4. Salesman Sejal has left the company. Assign her customers to Miti.
5. Salesman Miti has resigned. Reassign her number to a new salesman Gopal whose city is Bombay and commission is 10%.

Solve the following queries using above databases and alter table and table constraints..

1. How the onum field is forced to be an unquie?
2. Create an index to permit each salesman to find out his orders by date quickly.
3. Write a command to enforce that each salesman is to have only one customer of a given rating.
4. Write a command to add the item-name column to the order table.
5. Write a command to create the salesmen table so that the default commission is 10% with no NULLs permitted, snum is the primary key and all names contain alphabetical only.
6. Give the commands to create our sample tables (salesmen, customer,orders) with all the necessary constraints like primary key, not null , unique, foreign key.

Solve the following queries using above databases and view.

1. Create a view called big orders which stores all orders larger than Rs. 4000.
2. Create a view Rate count that gives the count of no. of customers a teach rating.
3. Create a view that shows all the customers who have the highest ratings.
4. Create a view that shows all the number of salesmen in each city.
5. Create a view that shows the average and total orders for each salesmen after his name and number.
6. Create a cursor emp_cur,fetch record from emp table and check whether sal>10000 then update Grade = ‘A’ else if sal = > 5000 and sal<= 10000 then update Grade = ‘B’
7. Write a procedure to find the table structure of a given number
8. Write a procedure on software table to calculate selling cost of all software of a specified person

Lab course based on DSC 3 C & 3 D

Sample Programs on Web Technology using PHP

1) Write PHP code to check entered number is Armstrong or Not.
2) Write a menu driven program to perform following operations:
   a) Check Number is Palindrome or not.
   b) Check Number is Perfect or not.
   c) Find face value of Entered number.
   d) Check Number is Prime or not.
   e) Check Number is Strong or not.
3) Write a PHP code to perform following operations:
   a) Sort array element b) Find Maximum and Minimum number in array
   c) Merge two arrays in third array. d) Swap two array elements
4) Write a program to overload the constructor.
5) Write a program which uses the static methods and static variables.
6) Write a program to implement different types of inheritance.
7) Write a program to implement interface.
8) Write a program to handle different types of exceptions.
9) Write a program which shows the use of 'final' keyword.
10) Write a program to copy the content of one file into another.
11) Write a program to merge two files into third file.
12) Design a web application to perform following task on employee table.
   I) Add New II) Save III) Delete IV) Update V) Move First VI) Move Last
13) Design a web application that uses cookies and session object.

Sample Programs on angular js

1. Write an angular js app which display your name, college name and class.
2. Write an angular js app which demonstrate that one way data binding and two way data binding.
3. Write an angular js app which demonstrate ng-cut, ng-copy, ng-paste directive.
4. Write an angular js app which demonstrate different directive realeted to keyboard.
5. Write an angular js app which demonstrate conditional directive.
6. Write an angular js app for creating custom directive which display employee id and name.
7. Write an angular js app which demonstrate all types of expressions
   1) Number expression
   2) String expression
   3) Object expression
   4) Array expression
8. Demonstrate nested controller
9. Demonstrate multiple controller
10. Demonstrate json filter
11. Demonstrate custom filter
12. Design simple single page application.
13. Custom validation in angular js.

Sample Programs on Python

1) Installing Python and setting up Python environment.
2) Write a program to print strings, numbers and perform simple mathematical calculations.
3) Write a program to implement command line arguments.
4) Write a program to implements conditional statements -if, if-else, nested if.
5) Write a program to implement loops.
6) Write a program to manipulate strings like string copy, string concatenation, string comparison, string length, string reverse etc.
7) Write program to show use of Lists and Tuples.
8) Write program which uses dictionaries
9) Write program to implement functions & Modules

10) Write program to implement Package.
11) Write a program to implement Constructors.
12) Write a program to implement types of Inheritance and Interfaces.
13) Write a program to implement Method Overloading and Method Overriding.
14) Write a program to implement Operator Overloading.
15) Write a program in to read and write contents in a file.
16) Write a program to demonstrate Exception handling
17) Write a program to demonstrate user defined exception.
18) Write a program to demonstrate the use of regular expressions
19) Write a program to draw different shapes

PUNYASHLOK AHILYADEVI HOLKAR
SOLAPUR UNIVERSITY, SOLAPUR

NAAC Accredited-2015 'B' Grade (CGPA 2.62)

Name of the Faculty: Science & Technology

CHOICE BASED CREDIT SYSTEM

Syllabus: Bachelor of Computer Applications

Name of the Course: B.C.A. III (Sem–V & VI)

(Syllabus to be implemented from w.e.f. June 2021)

PUNYASHLOK AHILYADEVI HOLKAR SOLAPUR UNIVERSITY, SOLAPUR

Choice Based Credit System (CBCS), (w.e.f. June-2021)

Syllabus for B. C. A. – Part III (Science)

Name and Type of the Paper		Title of Paper	Hrs/Wee		Total Marks per paper	UA	CA	Credits
Type	**Name**		**L**	**P**				
B. C. A. – III Semester V								
English (Business English)	English (Business English)		4	-	50	40	10	2.0
DSE 1 A	Paper IX	Core Java	4	-	100	80	20	4.0
DSE 2 A	Paper X	Visual Programming	4	-	100	80	20	4.0
DSE 3 A	Paper XI	Computer Graphics	4	-	100	80	20	4.0
DSE 4 A	Paper XII	Recent Trends in IT	4	-	100	80	20	4.0
SEC 3	Paper XIII	Linux and Shell Programming	4	-	100	80	20	4.0
	Total (Theory)		**24**	**-**	**550**	**440**	**110**	**22.0**
B. C. A. – III Semester VI								
English (Business English)	English (Business English)		4	-	50	40	10	2.0
DSE 1 B	Paper XIV	Advanced Java	4	-	100	80	20	4.0
DSE 2 B	Paper XV	Dot Net Technology	4	-	100	80	20	4.0
DSE 3 B	Paper XVI	Data Warehouse and Data Mining	4	-	100	80	20	4.0
DSE 4 B	Paper XVII	Cryptography and Network Security	4	-	100	80	20	4.0
SEC 4	Paper XVIII	Advanced Python	4	-	100	80	20	4.0
	Total (Theory)		**24**	**-**	**550**	**440**	**110**	**22.0**
Practical								
DSE 1A &1B	Practical IV	Practical On Core Java and Advance Java	-	5	100	80	20	4.0
DSE 1A &1B	Practical V	Practical on Visual Programming and .Net Technology	-	5	100	80	20	4.0
DSE 1A &1B	Practical VI	Practical on Computer Graphics And DM & DW	-	5	100	80	20	4.0
DSE 1A &1B	Practical VII	Practical on SEC 3 and 4	-	5	100	30	0	4.0
		Project	-			50	20	
	Total (Practicals)		**-**	**20**	**400**	**320**	**80**	**16**
Grand Total			**48**	**20**	**1500**	**1200**	**300**	**60**

Third Year BCA (Under Science)

Semester V

Course Code: Paper IX **Course Title: Core Java**

Teaching Scheme: Theory 4 Lect./week **Total Marks: 100**

Unit No.	Description	No. of Lectures
I	**Introduction to Java Programming** • Overview of Java • Features of Java as programming language / Platform • JDK Environment and Tools	03
II	**Java Programming Fundaments** • Data types, Variables, Operators, Keywords, Naming Conventions • Structure of Java Program • Flow Control- Decision, Iterations • Arrays	03
III	**Classes and Objects** • Class – Members access control, Objects, Constructors, Use of 'this' keyword • Static, non-static data members and methods. • public, private & protected data members	03
IV	**Inheritance & Polymorphism** • Access/Scope specifiers protected • Super, extends, single, multiple inheritance • Method overriding • Abstract classes & ADT, 'final' keyword • Extending interfaces	05
V	**Exception Handling** • Exceptions and Types, try. catch and finally block • throw & throws statement, user-defined exceptions	06
VI	**Threading** • Java thread lifecycle • Thread class & run able interface Thread priorities & synchronization • Usage of wait & notify	10
VII	**Java I/O** • Java I/O package, byte & character stream • Reader & writer, file reader & file writer	10
VIII	**Event Programming** • Java awt components: window, Frame, Panel, Dialog, File Dialog, Label, Button, List, Check Box, Text Components, Choice, Menu Components • Layout Managers • Border, Flow, Grid, Event Model • Listeners / Adapters	10
IX	**JDBC** • Introduction to JDBC • Feature & Architecture of JDBC • Types of drivers, its advantage & disadvantage • JDBC Statements & Methods : statement, PreparedStatement, CallableStatement, execute(), executeQuery(), executeUpdate(), Working with Resultset interface, Working with Resultset Metadata	10

Reference Books:

1. Java 2 for professional developers [by Michael Morgen]
2. Jdbc, Servlets & JSP black book [by Santoshkumar K. Kogent Solution Inc.]
3. Core Java Vol 1 and Vol 2 [by Cay. S. Horstmann, Gray Cornell]
4. Java The complete Reference [by Herbert Schildt]

Third Year BCA (Under Science)

Semester V

Course Code: Paper X **Course Title: Visual Programming**

Teaching Scheme: Theory 4 Lect./week **Total Marks: 100**

Unit No	Description	No. of Lectures
I	**Introduction to Dot.Net Framework** • Introduction to DOTNET • DOT NET class framework • Common Language Runtime • Overview • Elements of .NET application • Memory Management • Garbage Collector : Faster Memory allocation, • Optimizations • Common Language Integration • Common type system • User and Program Interface	**08**
II	**Introduction to C#** • C# Language elements • Data types -Reference Type and Value Type • Boxing and Unboxing • Enum and Constant • Operators • Control Statements • Working with Arrays and Strings • Parameter passing technique: • Pass by value and by reference, out parameters, Variable length parameter	**10**
III	**Object oriented concepts** • Working with Indexer and Properties • Constructor & Destructor • Working with "static" Members • Inheritance & Polymorphism - Types of Inheritance - Constructor in Inheritance - Interface Implementation - Operator and method Overloading and overriding - Static and Dynamic Binding and • Virtual Methods • Abstract Class, sealed keyword	**10**
IV	**Exception Handling** • What is Exception • Rules for Handling Exception • Exception classes and its important properties • Understanding & using try, catch keywords • Throwing exceptions • Importance of finally block	**04**

V	**USING I/O Class** • Streams Class • Text Stream and Binary Stream • System.IO and Base classes of Stream • Console I/O Streams • Working with File System -File ,FileInfo, • Directory ,DirectoryInfo classes	**04**
VI	**Delegates** • Introduction of Delegation • Types of delegate • Anonymous Methods	**03**
VII	**Collections & Generics** • Collection classes: • ArrayList,Hashtable,stack,queue. • Writing custom generic classes. • Working with Generic Collection Classes	**05**
VIII	**Windows Forms** • Controls: Common control Group, • Data control Group, Dialog control Group, • Container control Group • Menus and Context Menus: Menu Strip, • Toolbar Strip. • SDI and MDI Applications	**10**
IX	**Data Access using ADO.NET** • Evolution of ADO.NET • Connected and Disconnect Classes • Establishing Connection with Database • Executing simple Insert, Update and Delete • Statements • DataReader and DataAdapter • What is Dataset? • Advantages of DataSet • Stored Procedures	**06**

Reference Books:

1. "Programming C#"- Jesse Liberty , O'Reilly Press.
2. "Professional C#"-Robinson et al, Wrox Press, 2002.
3. "The Complete Reference: C#"-Herbert Schildt, Tata McGraw Hill.
4. "The Complete Reference: Ado.Net"- Jerke, Tata McGraw Hill.
5. 5."C# for programmer"-Deilte-Pearson

Third Year BCA (Under Science)
Semester- V

Course Code: Paper XI **Course Title: Computer Graphics**
Teaching Scheme: Theory 4 Lect./week **Total Marks: 100**

Unit No.	Description	No. of Lectures
I	**Introduction** – applications of computer graphics, operations of computer graphics, graphics software packages.	**04**
II	**Graphical input – output devices**- graphical input devices, graphical output devices, raster scan video principles- raster scan monitors, color raster scan systems, plasma panel display, LCD panels, hard copy raster devices. Random scan devices- monitor tube displays, plotters.	**10**
III	**Scan conversion** – scan conversion methods, polynomial method for line, polynomial method for circle, DDA algorithm for line, circle and ellipse, Bresenham's algorithm for line drwing and circle. Midpoint methods for line and circle, problems of scan conversion.	**10**
IV	**Scan conversion for solids**- solid areas or polygons, inside-outside test – odd even method, winding number method. Solid area filling algorithms- boundary fill algorithm, scan line fill algorithm, scan line seed fill algorithm, ordered edge list algorithm.	**10**
V	**2D geometrical transformations** – basic transformations- translation, rotation, scaling, homogeneous co-ordinate system – transformations in homogeneous notation, inverse of basic transformations, scaling about a reference point, rotation about an arbitrary point. Other transformations – reflection about any arbitrary line, shearing, combined transformation- computational efficiency, visual reality, inverse of combines'transformations.	**10**
VI	**3D geometrical transformations**- basic 3D transformation- 3D translation, 3D scaling. 3D rotation, rotation about an arbitrary axis in space, other 3D transformations- 3D reflection, reflection about any arbitrary plane, 3D shearing	**06**
VII	**Projection** – introduction, parallel projection- orthographic projection, axonometric projection, oblique projection, perspective projection – standard perspective projection, vanishing points. Image formation inside a camera.	**04**
VIII	**2D viewing and clipping-** windows and viewports, viewing transformation, clipping of lines in 2D- cohen-sutherland clipping algorithm, midpoint subdivision method, polygon clipping – Sutherland – hogman polygon clipping.	**06**

Reference Book:

1. Computer Graphics, Multimedia and Animation by Malay K Pakhira
2. Computer Graphics, Donald Hearn, M. Pauline Baker, Prentice-Hall
3. Computer Graphics, Roy A. Plastock, Gordon Kalley, Schaum's Outlines, McGraw Hill

Third Year BCA (Under Science)
Semester- VI

Course Code: Paper XII **Course Title: Recent Trends in IT**
Teaching Scheme: Theory 4 Lect./week **Total Marks: 100**

Unit No.	Description	No. of Lectures
I.	**GREEN IT** **INTRODUCTION** Environmental Impacts of IT, Holistic Approach to Greening IT, Green IT Standards and Eco-Labelling, Enterprise Green IT Strategy , Green IT: Burden or Opportunity? **Hardware:** Life Cycle of a Device or Hardware, Reuse, Recycle and Dispose. **Software:** Introduction, Energy-Saving Software Techniques, Evaluating and Measuring Software Impact to Platform Power.	**10**
II.	**BIG DATA AND HADOOP** 1: Introduction to Big Data Topics - What is Big Data and where it is produced? Rise of Big Data, Compare Hadoop vs traditional systems, Limitations and Solutions of existing Data Analytics Architecture, Attributes of Big Data, Types of data, other technologies vs Big Data. 2: Hadoop Architecture and HDFS Topics - What is Hadoop? Hadoop History, Distributing Processing System, Core Components of Hadoop, HDFS Architecture, Hadoop Master – Slave Architecture, Daemon types - Learn Name node, Data node, Secondary Name node.	**10**
III.	**DATA SCIENCE** Definition, working, benefits and uses of Data Science, Data science vs BI, The data science process, Role of a Data Scientist, Populations and samples, Statistical modeling, probability distributions	**10**
IV.	**MACHINE LEARNING** **INTRODUCTION TO MACHINE LEARNING(8)** Why Machine learning, Examples of Machine Learning Problems, Structure of Learning, Learning versus Designing, Training versus Testing, Characteristics of Machine learning tasks, Predictive and descriptive tasks, Features: Feature types, Feature Construction and Transformation, Feature Selection.	**10**
V.	**CLOUD COMPUTING** **INTRODUCTION TO CLOUD COMPUTING (8)** Defining Cloud computing, Essential characteristics of Cloud computing, Cloud deployment model, Cloud service models, Multitenancy, Cloud cube model, Cloud economics and benefits, Cloud types and service scalability over the cloud, challenges in cloud NIST guidelines. **VIRTUALIZATION, SERVER, STORAGE AND NETWORKING** Virtualization concepts, types, Server virtualization, Storage virtualization, Storage services, Network virtualization, Service virtualization, Virtualization management, Virtualization technologies and architectures, Internals of virtual machine, Measurement andprofiling of virtualized applications. Hypervisors: KVM, Xen, HyperV Different hypervisors and features.	**10**

VI.	**INTERNET OF THINGS** **INTRODUCTION** What is the Internet of Things? : History of IoT, About IoT, Overview and Motivations, Examples of Applications, Internet of Things Definitions and Frameworks : IoT Definitions, IoT Architecture, General Observations, ITU-T Views, Working Definition, IoT Frameworks, Basic Nodal Capabilities	**10**

Reference Books:

1. San Murugesan, G. R. Gangadharan: Harnessing Green IT,WILEY 1st Edition-2013
2. Data science and big data analytics, EMC
3. Doing Data Science, *Rachel Schutt and Cathy O'Neil*
4. Introducing Data Science, Davy Cielen
5. Data Science for Business, Foster Provost and Tom Fawcett, O'Reilly.
6. Peter Flach: Machine Learning: The Art and Science of Algorithms that Make Sense of Data, Cambridge University Press, Edition 2012.
7. Hastie, Tibshirani, Friedman: Introduction to Statistical Machine Learning with Applications in R, Springer, 2nd Edition-2012.
8. Barrie Sosinsky, " Cloud Computing Bible", Wiley
9. Gautham Shroff, "Enterprise Cloud Computing", Cambridge.
10. Stefan Poslad, "Ubiquitous Computing: Smart Devices, Environments and Interactions" by John Wiley & Sons, 2011.
11. A.Shrinivasan, J.Suresh, "Cloud Computing: A practical approach for learning and implementation", Pearson
12. Daniel Minoli, "Building the Internet of Things with IPv6 and MIPv6: The Evolving World of M2M Communications", ISBN: 978-1-118-47347-4, Willy Publications
13. Bernd Scholz-Reiter, Florian Michahelles, "Architecting the Internet of Things", ISBN 978-3- 642-19156-5 e-ISBN 978-3-642-19157-2, Springer
14. Parikshit N. Mahalle& Poonam N. Railkar, "Identity Management for Internet of Things", River Publishers, ISBN: 978-87-93102-90-3 (Hard Copy)

Third Year BCA (Under Science)

Semester V

Course Code: Paper XIII **Course Title: Linux & Shell Programming**

Teaching Scheme: Theory 4 Lect./week **Total Marks: 100**

Unit No.	Description	No. of Lectures
I	**Introduction to Linux** History, Distributions, Features, Linux Architecture, Kernel, Types of Shells, Difference between Windows and Linux Working environments -KDE, GNOME , Xface4 etc	03
II	**Installation of Linux** Hardware requirement, Software requirements, Create partitions, Configuration of X system, Start-up configuration.	03
III	**Linux File System** File System, Hierarchy of File system, Devices and Drives in Linux, Mounting Devices File System parts- Boot Block, Super Block, Inode Block, Data Block	03
IV	**Users, Groups and Permissions** Create Users ,Create groups, Special groups, Assigning permissions to users and groups	05
V	**Commands, Utilities and File Management** Managing file and directories: mkdir, cd and pwd, ls, cat, more, less. Nested directories, File and Directory Operations: find, cp, mv, rm, ln etc. Filters: head, tail , pr, cut, paste , sort, uniq, grep, egrep, fgrep. Text Editors- vi,vim File and Directory permissions- chmod, chown, chgrp. Printing the files - lpr, lpq, lprm etc. Archive and File compression, Windows integration tools.	06
VI	**Shell Programming and Process Management** Shell Variables, Shell Scripts – Control and Loop structure, User defined commands, I/O and Redirection, Piping, Metacharacters Process Management : Shell process, Parent and children, Process status, System process, Multiple jobs in background and foreground, Changing process priority with nice. listing processes, ps, kill, Premature termination of process.	10
VII	**Disk management and System Administration** Boot Loaders-GRUB, LILO, Custom Loaders System administration – Common administrative tasks, Identifying administrative files, Configuration and log files, Chkconfig, Role of system administrator, Security Enhanced Linux. Configuration Apache and MySql, X Window, Communication.	10
VIII	**Linux Networking** Networking services and Configuration files, starting services, Network tools-ping, finger, traceroute, who, host, rlogin, slogin, rcp, rsh, ssh. Protocols and Services- SMB, FTP, DHCP, LDAP, NFS and NIS.	10

Reference Books:

1) Operating Systems by William Stallings(PHI)
2) Operating System by Achyut Godbole (TMH)
3) Linux the complete refrence by Richard Mathews(TMH)
4) Red Hat Linux :The Complete Reference by Peterson (TMH)
5) Unix Systems V 4 Concepts & Applications by Sumitabha Das
6) Using Linux by Bill Ball

Third Year BCA (Under Science)
Semester- VI

Course Code: Paper XIV **Course Title: Advanced Java**
Teaching Scheme: Theory 4 Lect./week **Total Marks: 100**

Unit No.	Description	No. of Lectures
I	**Servlet** • Introducing CGI • Introducing Servlet • Advantages of Servlet over CGI • Features of Servlet • Introducing Servlet API • Javax.servlet package • Javax.servlet.http package • Introducing Servlet • Advantages of Servlet over CGI • Features of Servlet • Servlet life Cycle • Init() • Service() • Destroy() • Working with GenericServlet and • HttpServlet • RequestDispatcher interface • Include() and forward() • Use of RequestDispatcher • Session in Servlet • Introducing session • Session tracking mechanism • Cookies • Advantages & disadvantages • use of cookies • Hidden form filed • Advantages & disadvantages • use of Hidden form filed • URL rewritten • disadvantages • use of URL rewritten • HttpSession • Advantages & disadvantages • use of URL HttpSession	**18**
II	**JSP** • Introduction to JSP • Advantages of JSP over Servlet • JSP architecture • JSP life cycle • Implicit objects in JSP- request, response, out, page, pageContext, application, session, config, exception • JSP tag elements- Declarative, Declaration, scriplet, expression, action.	**18**

	• Java Bean- Advantages & Disadvantages, • useBean tag- setProperty and getProperty • Bean In Jsp • JSTL core tag: General purpose tag, • conditional tag, networking tag • JSTL SQL tags • JSTL formatting tags • JSTL xml tags • Custom tag: empty tag, body content tag, • iteration tag, simple tag • Introducing internationalization & Java: local class, ResourseBundle class	
III	**Hibernate** • Introduction Hibernate(HB) • Architecture of HB • Application of HB: HB with annotation, • HB web application • Inheritance mapping: Table per Hierarchy • (TPH), TPH using annotation, Table Per • Concrete (TPC), TPC using annotation, • Table Per Subclass (TPS), • TPS using annotation. • Collection mapping: • Mapping list, one to many by list, • one to many by bag, • one to many by set, one to many by map.	**12**
IV	**Spring** • Introduction to spring • Spring modules. • Spring application • Dependency injection: constructor Injection (CI), • CI dependant object, • CI with collection, • CI with map, • CI inheriting bean • Spring JDBC: JDBC template, • PreparedStatement, ResultsetExactor, • RowMapper, NamedParameter, • Simple JDBC template. • Spring with Hibernate	**12**

Reference Books:

1. "JDBC, Servlet and JSP Black Book"- Santosh Kumar K.
2. "Java EE Server programming"- Sharanam Shah and Vaishali Shah.
3. "Java Server Programming Black book"
4. "Hibernate"- Sharanam Shah & Vaishali Shah
5. "Spring Persistence with Hibernate"- Paul Tepper Fisher, Brian D Murphy.

Third Year BCA (Under Science)
Semester- VI

Course Code: Paper XV **Course Title: Dot Net Technology**
Teaching Scheme: Theory 4 Lect./week **Total Marks: 100**

Unit No.	Description	No. of Lectures
I	Introduction of Asp.Net • Evaluation of Asp.Net • Fundamentals of ASP.NET • Understanding architecture ASP.NET • Compilation Technique of ASP.Net • Application Location • Web Page and Web Site life cycle • ASP.Net Page Structure • Page Directives • Self-page and Cross page posting • Postback and ViewState concepts • Application Folders	**08**
II	Web Server Control • Creating ASP.NET Pages – Web Forms • Working with web controls – Standard • control group, Rich Controls. • Different type of List controls • FileUpload, AdRotator, MultiView, Calendar • Create Web User Control	**10**
III	Validation controls • Introduction of validation • Types of validation • Validation Controls • Validation Groups	**06**
IV	Master Pages & Themes • Need of Master Pages • Basics of master pages • Creating Master and Content pages • Programmatically assign master pages • Nested Master pages • Event ordering of master pages • Basic Themes and Skins • Creating and Using Themes • Defining multiple skins • Programmatically working with themes	**08**
V	Site Navigation • Site Navigation technique • SiteMapPath, TreeView and Menu Control • Nesting sitemap file • Attach XML file to treeview and menu	**04**
VI	State Management • Introduction of state management • technique • Types of State Management technique	**04**

	• Client side and server side State Management	
VII	Personalization • Personalization Model • Creating Personalization Properties	**03**
VIII	AJAX • What is AJAX and need for AJAX • Client side and server side AJAX • Implementing AJAX with JavaScript • Using ASP.NET Ajax Control toolkit • Working with AJAX's Server side controls. • ScriptManager, ScriptMangerProxy, • Updatepanel, UpdateProgress, Timer	**06**
IX	Web Services • What is Web Service? • Understanding SOAP, WSDL, Proxy etc. • Creating Web services • How to consume web services • To build an WebService application and Client	**05**
X	Storing and Retrieving Data with ADO.NET • Accessing Data with ADO.NET • Using Data Sets on Web Forms • Processing Transactions • Working with DML commands	**06**

Reference Books:

1. "Unlished Asp.Net "- Walther , SAMS Pearson.
2. "Professional ASP.Net"-Evjen, Sivkumar, Wrox Press.
3. "The Complete Reference: Asp.Net"-MacDonald, Tata McGraw Hill.
4. "The Complete Reference: Ajex"- Powell, Tata McGraw Hill.
5."Pro Asp.Net in C#"-MacDonald, Szpuszta-APress
6."Asp.Net Step by step"- George Shephera-Microsoft Press
8. "Professional Ajex"-Zakas, NxPeak, fawcett, Wrox Press
9. complete reference crystal reports-Geogre Peak

Third Year BCA (Under Science)

Semester- V

Course Code: Paper XVI **Course Title: Data Warehouse and Data Mining**

Teaching Scheme: Theory 4 Lect./week **Total Marks: 100**

Unit No.	Description	No. of Lectures
I	**Introduction to Data Warehouse** ✓ Difference between operational database systems and data warehouses. ✓ Data warehouse Characteristics, ✓ Data warehousse Architecture and its Components, ✓ Extraction – Transformation – Loading, Logical (Multi – Dimensional), ✓ Data Modelling - Schema Design, Star and Snow – Flake Schema, Fact Constellation, Fact Table, Fully Addictive, Semi – Addictive, Non Addictive Measures; Fact – Less – Facts, ✓ Dimension Table Characteristics; OLAP Cube, OLAP Operations, OLAP Server Architecture – ROLAP, MOLAP and HOLAP.	**12**
II	**Introduction to Data Mining** ✓ What is Data Mining, Difference between Database Management System, Data Warehouse and Data Mining ✓ KDD, Challenges, Data Mining Tasks, ✓ Need for Pre-processing the Data ✓ Data Summarization ✓ Data Cleaning ✓ Data Integration and Transformation, ✓ Data Reduction ✓ Discretization and Concept Hierarchy ✓ Generation ✓ Binaryzation ✓ Data Transformation; Measures of Similarity and Dissimilarity – Basics.	**12**
III	**Association Rule** ✓ problems Definition, ✓ Frequent Item Set Generation, ✓ The APRIORI Principle, Support and Confidence Measures, ✓ Association Rule Generation; APRIOIRI Algorithm, ✓ The Partition Algorithms, FP- Growth Algorithms, ✓ Compact Representation of Frequent Ittem set- Maximal Frequent Item Set, ✓ Closed Frequent Item Sets.	**10**

IV	**Classification** ✓ Problem Definition, ✓ General Approaches to solving a classification problem, ✓ Evaluation of classifiers, Classification Techniques, ✓ Decision Tree – Decision tree Construction, Methods for ✓ Expressing attribute test conditions, ✓ Measures for Selecting the Best Split, ✓ Algorithm for Decision tree Induction; Naive Bayes Classifier, ✓ Rule base classification ✓ Bayesaian Belief Networks; K – N earnest neighbour classification – Algorithm nd Characteristics.	**10**
V	**Clustering** ✓ Problem Definition, Clustering Overview, ✓ Evaluation of Clustering Algorithms, Partitioning Clustering -K-Means Algorithm, K-Means Additional issues, ✓ PAM Algorithm; ✓ Hierarchical Clustering – Agglomerative Methods and divisive methods, ✓ Basic Agglomerative Hierarchical Clustering, Strengths and Weakness; ✓ Outlier Detection.	**10**
VI	**Application and trends in Data Mining** ✓ Spatial Data Mining ✓ Text Data Mining ✓ Multimedia Data Mining ✓ Web Data Mining ✓ Application of data mining	**06**

Reference Books:

1. Data Mining – Concepts and Techniques – Jiawei Han, Michelinen Kamber, Morgan Kaufmann Publishers, Elsevier, 2 Edition, 2006.
2. Introduction to Data Mining, Pang – Ning Tan, Vipin Kumar, Michael Steinbanch, Pearson Education.
3. Data Mining Techniques, Arun K Pujari, 3rd Edition, Universities Press.
4. Data Warehouse Fundamentals, Pualraj Ponnaiah, Wiley Student Edition.
5. Data Mining, Vikaram Pudi, P Radha Krishna, Oxford University Press

Third Year BCA (Under Science)
Semester- VI

Course Code: Paper XVII **Course Title: Cryptography and Network Security**

Teaching Scheme: Theory 4 Lect./week **Total Marks: 100**

Unit No.	Description	No. of Lectures
I	Security Concepts: Introduction, The need for security, Security approaches, Principles of security, Types of Security attacks – Active and Passive, Security services, Security Mechanisms, A model for Network Security	08
II	Cryptography Concepts and Techniques: Introduction, plain text and cipher text, substitution techniques, transposition techniques, encryption and decryption, symmetric and asymmetric key cryptography, steganography, key range and key size, possible types of attacks	15
III	Symmetric Key Cryptographic Algorithms: Algorithm Types and Modes, An overview of Symmetric Key Cryptography, DES, International Data Encryption Algorithm (IDEA), RC5, Blowfish, AES Asymmetric Key Cryptography: Brief History of Asymmetric Key Cryptography, An overview of Asymmetric Key Cryptography, The RSA Algorithm, Symmetric and Asymmetric Key Cryptography Together	15
	Digital Signatures: Introduction, Message digests, MD5, SHA-512,MAC,HMAC, Knapsack Algorithm, Elliptic curve Technology, ELGamal Algorithm. Internet Security Protocols: Secure Socket Layer/TLS, Secure Electronic Transaction, SSL versus SET, E-mail Security- PGP, S/MIME.	15
V	User Authentication and Kerberos: Authentication basics, Passwords, use of smart cards, Biometrics, Kerberos. Network Security: Firewalls, types of firewalls, IP Security Intrusion : Intruders, Audit Records, Intrusion Detection, honeypots.	07

Reference Books:

1. Atul Kahate Cryptography and Network Security, Tata McGraw-Hill, 2007
2. Behrouz A. Forouzan, Debdeep Mukhopadhyay: Cryptography and Network Security, 2nd Edition, Special Indian Edition, Tata McGraw-Hill, 2011.
3. Michael E. Whitman and Herbert J. Mattord: Principles of Information Security, 2nd Edition, Thomson, Cengage Delmar Learning India Pvt., 2012.
4. William Stallings: Network Security Essentials: Applications and Standards, 4th Edition, Pearson Education, 2012.

Third Year BCA (Under Science)
Semester- VI

Course Code: Paper XVIII **Course Title: Advanced Python**
Teaching Scheme: Theory 4 Lect./week **Total Marks: 100**

Unit No.	Description	No. of Lectures
I	Windows Applications using Tkinter GUI Programming GUI in Python, Advantages of GUI, Introduction to GUI library, Basic Operations using Tkinter, Root Window, Working with Containers: Frame, Canvas Layout Management, Events and Bindings, Font, Colors, drawing on Canvas (line, oval, rectangle, etc.) Widgets: Label, Button, Checkbutton, Entry, Listbox, Message, Radiobutton, Text, Spinbox, Scrollbar, Menu etc. Writing Python Programs for GUI applications	**15**
II	**Web Application using Django** : What Is a Web Framework? The MVC Design Pattern, Django's History, Advantages of Django, Understanding Django environment, Installing Django, Setting Up a Database Django architecture, The Development Server, Django Commands Overview, Starting a Project, Django apps, Difference between app and project, The Project Structure, Setting Up Your Project, Create an Application Migration, Admin Panel. Views in Django, URL Routing, Template in Django, Models in Django, Forms in Django.	**15**
III	**XML**: Introduction to XML, XML Parser Architecture and API's, Parsing XML with SAX API's, Parsing XML with DOM API's	**12**
IV	**Network Programming:-** Introduction to Sockets Programming, Server Socket Methods, Client Socket Methods, IP Address, URL, TCP/IP Server, TCP/IP Client, Sending E-mail Application	**12**

Reference Books:

1. Beginning Django: Web Application Development and Deployment with Python-Daniel Rubio-Apress
2. Django Unleashed- Andrew Pinkham-SAMS
3. Practical Django Projects- James Bennett-Apress
4. Python GUI Programming with Tkinter- Alan D. Moore-Packt
5. Tkinter GUI Application Development H TSHOT - Bhaskar Chaudhary -Packt

Sample Assignments on Core Java

1. WAP to demonstrate the use of various data types.
2. WAP to print following pattern.
    a. A
    b. A B
    c. A B C
    d. A B C D
3. WAP which will check number for Armstrong, prime, palindrome & perfect number.
4. WAP USING arrays to sort player name along with timing of Athlete (sort using two dimensionalarray).
5. WAP to demonstrate the use of Access Control.(Public, private , protected).
6. WAP using static & nonstatic data members.
7. WAP using Interface.
8. WAP to demonstrate use of Exception Handling.
9. WAP which will create user defined Exception.
10. WAP which will accept string and calculate how many vowels present in it.
11. WAP which will accept range of years from users and print leap years between them.
12. WAP to reverse the number.
13. WAP which will accept number and displays it in words.
    a. e.g.- If number-123 as one two three.(use switch).
14. WAP which will create following threads.
    a. Print even & odd numbers.
    b. Print Hello 15 times.
    c. Print the prime number.
15. WAP which will demonstrate overloading & Inheritance.
16. WAP to display the following pattern.
    a. *1
    b. **2
    c. ***3
17. WAP to show demo of parameterized constructor.
18. Create an Applet which contains one combobox for font name, one listbox , for font size and threeradiobutton for font style i.e. Bold, Italic and Normal.
    The applet also displays some string message by label.
    WAP such that user will be able to change the font type, font size and font style of the text displayedas label caption.
19. WAP to append the contents of one file with another file.
20. WAP to develop a calculator using Applet (functions showing addition, subtraction, Multiplicationand Division.
21. WAP which will insert student records into database having fields roll no, name, marks of fivesubjects, total marks and percentage and display the same.

Sample Assignments on Visual Programming

1. WAP program to check entered number is even or odd.AP program to get number and display sum of digits.
2. WAP program to check whether entered year is leap year or not.
3. WAP program to display date in various formats.
4. WAP program to Illustrate the Use of Access Specifiers.
5. WAP to create sealed class.
6. WAP to perform boxing and unboxing operation.
7. WAP to demonstrate multilevel inheritance.
8. WAP to demonstrate single level inheritance.
9. WAP to demonstrate multilevel inheritance with virtual methods.
10. WAP to get lower bound and upper bound of an array.
11. WAP to demonstrate jagged array.
12. WAP to find Minimum and Maximum of numbers.
13. WAP to search elements of an array.
14. WAP to copy a section of one array to another.
15. WAP to demonstrate abstract properties.
16. WAP to implement delegates.
17. WAP to combine two delegates.
18. WAP to implement multicast delegate.
19. WAP to demonstrate DivideByZero Exception.
20. WAP to demonstrate Multiple exceptions.
21. WAP to create a file.
22. WAP to Read the Contents of File.
23. WAP to Create Directory.
24. WAP to implement BinaryReader.
25. WAP to Read Line from File until end of file is reached.
26. WAP to Design user interface using all windows controls.
27. WAP to design MDI application.
28. WAP to demonstrate ADO.NET.
29. WAP to demonstrate Insert, Update and Delete Statements.

Sample Assignments on Computer Graphics

1. Write a program to implement bouncing of a ball over a horizontal plane.
2. Program to create Pie Chart.
3. Program to create Bar Chart.
4. Program to display Circles in Circle.
5. Program to create smiling face.
6. Program to create National Flag.
7. Program to create Solar System.
8. Program to create an analog clock
9. Program to create a digital clock
10. Program to animate a Fan.
11. Program to animate a Flying Kite
12. Program to animate a Traffic light
13. Program to translate an object with respect to origin.
14. Program to rotate an object with respect to origin.
15. Program to scale an object with respect to origin.
16. Program to rotate an object with respect to arbitrary point.
17. Write a program to draw a line by using DDA algorithm. 1
8. Write a program to draw a line by using Bresenham's algorithm.
19. Write a program to draw a Midpoint Circle algorithm

Sample Assignments on Linux and Shell Programming

1. Write a shell script to find out the greatest among three inputs.
2. Write a shell script to calculate the net salary of an employee in a particular month considering various allowances (TA, DA, HRA) and deductions (INCOME TAX, PROVIDEND FUND) as: TA=15 percent of basic salary DA=2 percent of basic salary HRA=10 percent of basic salary INCOME TAX=5 percent of salary PROVIDEND FUND=10 percent of salary Choice Based Credit System Syllabus of B.Sc (Entire Computer Science)-II To be effective From 2020-2021
3. A departmental store announces its festival scheme to customers on cash payment. The scheme is as followsIf purchase amount is less than 1000 then Tax=2% and discount=10%. If purchase amount is greater than 1000 then Tax=5 % and discount=20%.
4. Write a shell script to check whether an input is a prime or not.
5. Write a shell script to find out the sum of series
6. Write a shell script to print Fibonacci series.
7. Write a shell script for Swapping of Two Numbers.
8. Write a shell script to calculate the area & perimeter of the rectangle, and the area & circumference of the circle.
9. Write a shell script to convert this temperature into Centigrade degrees.
10. Write a menu driven shell Script 1) Change the group & owner of a directory 2) Set permission read, write & remove execute of a file 3) To check a file is sorted.
11. Write a menu driven shell Script 1) Change directory 2) Display first 15 lines only 3) To remove repeated data from a file.
12. Write a menu driven shell Script 1) To locate all files named by bsc 2) User of system 3) Merge two files
13. Write a menu driven shell Script 1) To create hard link a file bsc to bcs file 2) Cut fields 2 & 3 from a bsc file 3) Create a new file
14. Write a shell Script to calculate simple interest and compound interest
15. Write a menu driven shell Script 1) To find out Factorial. 2) To find out given no is perfect or not. 3) To find out Armstrong or not.
16. Write a menu driven Script to make File and Directory Management Operations: Choice Based Credit System Syllabus of B.Sc (Entire Computer Science)-II To be effective From 2020-2021 1) Display Current directory 2) Make Directory 3) Edit a file 4) Copy a file 5) Remove a file 6) Move a file.
17. Write a Shell Script to check if a file is readable, writable and executable
18. Write a shell script to concatenate files.
19. Write a Shell Script to convert Decimal number into Binary
20. Write a shell script to display series: 1+4+27+256...

Sample Assignments on Advance Java

1. Write a programme which demonstrates life cycle of Servlet
2. Write a programme by using GenericServlet
3. Write a programme by using HttpServlet
4. Write a Servlet programme to send request to another page
5. Write a Servlet programme to track the user by using (Cookies, URL-rewriting, Hidden form field &HttpSession)
6. Write Jsp programme which will display its life cycle
7. Write a Jsp programme by using its implicit objects like request, response, out, page, pageContext,application, session, config, exception
8. Write a Jsp programme which will use scriplet, expression and declarative tag.
9. Write a Jsp programme which will create bean and calculate simple interest
10. Write a Jsp programme to create bean to check account balance(from database)
11. Write a Jsp programme to insert data into database
12. Write a Jsp programme which will use JSTL core tag,JSTL SQL tags, JSTL formatting tags,JSTL xml tags, Customtag: empty tag, body content tag,iteration tag, simple tag
13. Write a programme to display a message in different languages (use java internationalization)
14. Write a simple Hibernate programme
15. Write a HB with annotation
16. Write a HB web application
17. Write a HB Inheritance mapping: Table per Hierarchy(TPH), TPH using annotation, Table Per Concrete (TPC), TPC using annotation,Table Per Subclass (TPS), TPS using annotation. Collection mapping: Mapping list, one to many by list, one to many by bag, one to many by set, one to manyby map.
18. Write simple Spring programme.
19. Write a Spring programme to show Dependency injection: constructor Injection (CI),CI dependant object, CI with collection, CI with map, CI inheriting bean
20. Write a Spring Spring JDBC programme using : JDBC template, PreparedStatement, ResultsetExactor,RowMapper, NamedParameter, Simple JDBC template. Spring with Hibernate

Sample Assignments on Dot Net Technology

1. Write a JavaScript for Addition, Subtraction, Division, and Multiplication of two numbers.
2. Design Webpage for employee registration form using all HTML controls and CSS.
3. Design web page for simple calculator By using class. Command name property. Button event.
4. Design web page of online shopping form which used textbox, label, buttons, and all type list controls.
5. Design Application for cross page posting.
6. Design This year calendar with all holidays in red color.
7. Design web page for image map by using Both method.
8. Design Advertisement web page.
9. Design web page which uses Multiview & View control. Wizard control. File upload control
10. Design web page for all validation control & validation Groups.
11. Create nested master pages.
12. Design web site which uses all site navigation Control.
13. Design web page which shows list of employees in selected dept.
14. Create XML & it's styles Sheet file.
15. Create Master Detail Form.
16. Create web page demonstrate insert, update, delete and select record.
17. Create web page demonstrate insert record and find sum of sal using stored procedure.
18. Design web page for grid view control.
19. Design web page which shows 10 events in calendar control.
20. Design web page which demonstrate wizard control

Sample Assignment on Advance Python

1. Write a program to draw different shapes
2. Write a program to develop GUI applications
3. Write a program to show database connectivity using
   MySQL to perform Insert, update and delete operations.
4. Write a program to implement Thread Synchronization.
5. Write a program to demonstrate use of XML file
6. Write a program to create simple Django app
7. Write a program to create simple Django project.
8. Write a program to create Django project which add, delete, update records.
9. Write windows application which demonstrate all layouts used in Tkinter.
10. Write windows application which demonstrate any 10 Tkinter controls.

Sample Assignment on Data Warehousing and Data Mining

1. Open any dataset in WEKA and write down the attributes in that dataset also write down its types.
2. Open iris dataset in weka. Apply each type of classification algorithm on dataset. Identify which is best classification algorithm for iris dataset.
3. Convert CSV file to ARFF file format.
4. Demonstrate supervised and unsupervised filter of preprocessor tab.
5. Open any data set and apply tree base classification algorithm on that dataset. Interpret the result.
6. Open any data set and apply Rule base classification algorithm on that dataset. Interpret the result.
7. Load the weather.nominal dataset. Demonstrate how to remove all instances in which the humidity attribute has the value high.
8. Load the iris data using the Preprocess panel. Evaluate C4.5 on this data using (a) the training set and (b) cross-validation. What is the estimated percentage of correct classifications for (a) and (b)? Which estimate is more realistic?
9. Find the glass dataset glass.arff and load it into the Explorer interface. Apply the unsupervised discretization filter in the two different modes (equal-width (the default) and equal-frequency discretization.) explained previously.
10. Apply the ranking technique to the labor negotiations data in labor.arff to determine the four most important attributes based on information gain.
11. Demonstrate how to convert numeric to nominal, nominal to numeric, string to nominal and nominal to string.

Project Work

Course Code: Practical VII **Course Title: Major Project Work**
Internal Assessment: 20 **External Assessment: 50**

Instructions: Team size for major project not exceed than two students.

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सूचना

दिनांक: ०७-०५-२०२१-२२

सर्व शिक्षक व शिक्षकेतर कर्मचाऱ्यांना कळविण्यात येते की, शैक्षणिक वर्ष २०२१-२०२२ या कालावधीत बी.सी.ए विभागा तर्फे आपल्या महाविद्यालयात दि.०८/०५/२०२२रोजी **"तणावमुक्त जीवन व्याख्यान"** साजरा करण्यात येणार आहे. तरी सर्वांनी याची नोंद घ्यावी.

Principal
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Pandharpur.

प्राचार्य

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(Approved By Govt. of Maharashtra, Affiliated to Solapur University Solapur)

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Founder President: - Mr. Rajaramji (Nana) M. Nikam

Ref.No:- NSCBP/

दिनांक :०७-०५-२०२१-२२

प्रति,
डॉ.संगीता पाटील.
पंढरपूर.

पंढरपूर.

मा. महोदय,

आमच्या महाविद्यालयात दि. ०८-०५-२०२२ रोजी **"तणावमुक्त जीवन व्याख्यान"**याचे आयोजन करण्यात आले आहे. सदर कार्यक्रमाचे उद्घाटन व मार्गदर्शनासाठी आपली नियुक्ती करण्यात आलेली आहे.

धन्यवाद

आपला विश्वासू

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9

New Satara College of B.C.A.,Pandharpur

Attendance Sheet

Name of Student	Sign.
Sayali Amar Hadge	Sayali
Gauri Tukaram Shelake	Shelake
Vaishali Balasaheb Shendle	[illegible]
Gitanjali Vitthal Devkate	G.V.Devkate
Muktai Vitthal Devkate	M.V.Devkate
Riya Hanumant Thombare	Riya
Kiran Madhukar Devkate	K.M.Devkate
Koli Sarthak Mukesh	S.M.Koli
Jadhav Vishal Namdev	[illegible]
Pawar Ganesh Ramesh	G.R.Pawar
Kandre Ganesh Dattatray	Ganesh
Suryavanshi Prashant Pandurang	PPS
Thite Akash Sadashiv	Thite A.S.
Gulame Harshad Ballu	[illegible]
Narale Ganesh Aagatrav	[illegible]
Narale Ganesh Dhanaji	[illegible]
Karade Shraddha Rajkumar	Karade
Bagal Mukta Bhagawat	Karade
Narale Rutuja Santosh	M.B.Bagal.
Mujavar Fija Altab	R.S.Narale
Shendge Dhanashri Dattatray	F.A.mujavar
Waghmare Prajakta Shankar	Shendge.
Patil Pratiksha Jankoppa	Waghmare
Bhosale Prachi Maruti	Patil
Rajgude Vishal Gorakh	Bhosale.
Gaikwad Rasik Prakash	Rajgude.V.G.
Narale Prashant Dhanaji	[illegible]
Dagade Vaibhav Machindra	[illegible]
Dagade Nilesh Shrimant	Dagade.
Aiwale Rutuvaj Vaibhav	N.Dagade.
Gawade Suyash Haridas	[illegible]
Alwale Sahil Madhukar	S.H.Gawade
~~Narale Ganesh Aagatrav~~	S.M.Alwale
Gaikwad Vishwajit Bharat	V.B.Gaikwad
Waghmare Akash Dharmraj	Akash
Sole Vedant Dipak	V.D.Sole
Thite Prathmesh Parmeshwar	Thite P.P
Talekar Sahil Ashok	S.A.Talekar
Bagal Shravan Hanmant	[illegible]
Mulani Shahid Sardar	S.mulani
Mogal Inzmam Akhtar	I.mogal
Potdar Someshwar Audumber	S.A.Potdar.
Yadav Rohan Rajaram	R.Yadav
~~Aniket~~ Maske Aniket Gulab	[illegible]
Mogal Azim Iliyas	A.I.Mogal
Bhosale Swapnil Shahaji	Swapnil
Waghmare Shilpa Siddheshwar	Shilpa

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Founder President: - Mr. Rajaramji (Nana) M. Nikam

Ref.No:- NSCBP/

दि.०८-०५-२०२१-२२

प्रति,

डॉ.संगीता पाटील.
पंढरपूर.

मा. महोदय,

आमच्या महाविद्यालयात दि.०८-०५-२०२२ रोजी **"तणावमुक्त जीवन व्याख्यान "**याचे आयोजन करण्यात आले आहे. सदर कार्यक्रमात आपण आमच्या विद्यार्थिनींना व विद्यार्थीना मार्गदर्शन केल्याबद्दल आपले हार्दिक आभार.

धन्यवाद

आपला विश्वास

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न्यू सातारा कॉलेज ऑफ बीसीए, पंढरपूर

"तणावमुक्त जीवन व्याख्यान"

न्यू सातारा कॉलेज ऑफ बी.सी.ए. महाविद्यालयातील राष्ट्रीय सेवा योजना विभागाच्या वतीने **"तणावमुक्त जीवन व्याख्यान"** साजरा करण्यात आला.

तणावमुक्त जीवन व्याख्यान हे डॉक्टर.संगीता पाटील यांनी सर्व विध्यार्थी तणावमुक्त जीवन कसे जगावे हे समजून सांगितले.

हा कार्यक्रम संस्था प्रतिनिधी ज्ञानेश्वर शेंडगे यांच्या उपस्थितीमध्ये व प्राचार्य डॉ. अनिल भोसले यांच्या अध्यक्षतेखाली संपन्न झाला, या कार्यक्रमाचे प्रास्ताविक प्राचार्य राजेश क्षीरसागर यांनी केले.

हा कार्यक्रम यशस्वी करण्यासाठी प्रा. प्रविण ताठे, प्रा. किरचेकर, प्रा. तांबडे, प्रा. बाबर, प्रा. कांबळे यांच्यासह कर्मचारी यांनी परिश्रम घेतले. कार्यक्रमाचे सूत्रसंचलन विद्यार्थिनी पूजा पाटील यांनी केले. कार्यक्रमाचे आभार कार्यक्रम अधिकारी एकनाथ शिंदे यांनी मानले.

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सूचना

दिनांक: १०-९-२०२१

सर्वशिक्षक व शिक्षकेतर कर्मचाऱ्यांना कळविण्यात येते की, शैक्षणिक वर्ष २०२१-२०२२ या कालावधीत बी.सी.ए विभागातर्फेआपल्या महाविद्यालयातदि. ११-९-२०२१रोजी **"Women's Welfare Rally"** चे आयोजित करण्यात येणार आहे. तरी सर्वांनी याची नोंद घ्यावी.

प्राचार्य

NEW SATARA COLLEGE OF B.C.A PANDHARPUR

Principal
New Satara College of B.C.A
Pandharpur.

New Satara Samuh Mumbai's

New Satara College of B.C.A
Pandharpur

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Founder President: -Mr. Rajaramji (Nana) M. Nikam

Ref.No:- NSCBP/ दिनांक :१०-९-२०२१

प्रति,
मा.श्री .शिंदे.नितीन.
पंढरपूर.

मा. महोदय,

आमच्या महाविद्यालयात दि. ११-९"-**Women's Welfare Rally"** याचे आयोजन करण्यात आले आहे. सदर शिबिराच्या उद्घाटन व मार्गदर्शनासाठी आपली नियुक्ती करण्यात आलेली आहे.

धन्यवाद

आपला विश्वासू

Principal
New Satara College of B.C.A
Pandharpur.

NEW SATARA COLLEGE OF B.C.A PANDHARPUR

02

New Satara College of B.C.A.,Pandharpur

Attendance Sheet

Name of Student	Sign.
Palli Pratiksha Jankojirav	Palli
Bhosale Prachi Maruti	Bhosale
Shendge Dhanashri Dattatray	Shendge
Waghmare Prajakta Shankar	Waghmare
Bagal Mukta Bhagawat	M.B. Bagal
Narale Rutuja Santosh	R.S. Narale
Karade Shraddha Rajkumar	Karade
Mujavar Fija Altab	F. Mujavar
Talekar Sonika Vijay	S.V. Talekar
Jadhav Chitralekha Sharad	Chitralekha
Hingmire Shilpa Siddeshwar	Shilpa
Shelake Gauri Tukaram	Shelake
Hadge Sayali Amar	Sayali
Shevale Vaishali Balasaheb	[illegible]
Devkate Kiran Madhukar	K.M. Devkate
Devkate Muktai Vitthal	M.V. Devkate
Thombare Riya Hanumant	Riya
Devkate Gitanjali Vitthal.	G.V. Devkate.
Koli Sarthak Mukesh	S.M. Koli
Jadhav Vishal Namdev	[illegible]
Kandre Ganesh Dattatray	Ganesh
Suravase Prashant Pandurang	[illegible]
Pawar Ganesh Ramesh	G.R. Pawar
Gulame Harshad Balu	[illegible]
Narale Ganesh Dhanaji	[illegible]
Khandekar Sangram Shivaji	Sangram K
Narale Ganesh Aagatrav	[illegible]
Bagal Rohan Sanjay	[illegible]
Shinde Rohan Appa	[illegible]
Pagade Vaibhav Machindra	Pagade
Pagade Nilesh Shrimant	N. Pagade
Narale Prashant Dhanaji	Narale
Gaikwad Rasik Prakash	[illegible]
Rajgude Vishal Gorakh	Rajgude, V.G.
Awcar Rutu raj Vaibhav	[illegible]
Gawade Suyash Haridas	S.H. Gawade
Aiwale ~~S~~ Sahil Madhukar.	S.M. Aiwale
~~Jadhav Vishal Namdev~~	
~~Ra~~ Kadale Sumit ~~Ra~~ Shantilal	Kadale
Gaikwad Vishwvijay Dattatray	V.D. Gaikwad
Mulani Shahid Sardar	S. Mulani
Bagal Shravan Hanmant	[illegible]
~~Mulani Shahid Sardar~~	S.S.
Mogal Inzmam Akhtar	I. Mogal
Baldar Someshwar Audumbar	S.A. Baldar
Yadav Rohan Rajaram	R. Yadav
Mhaske Aniket Gulab	[illegible]

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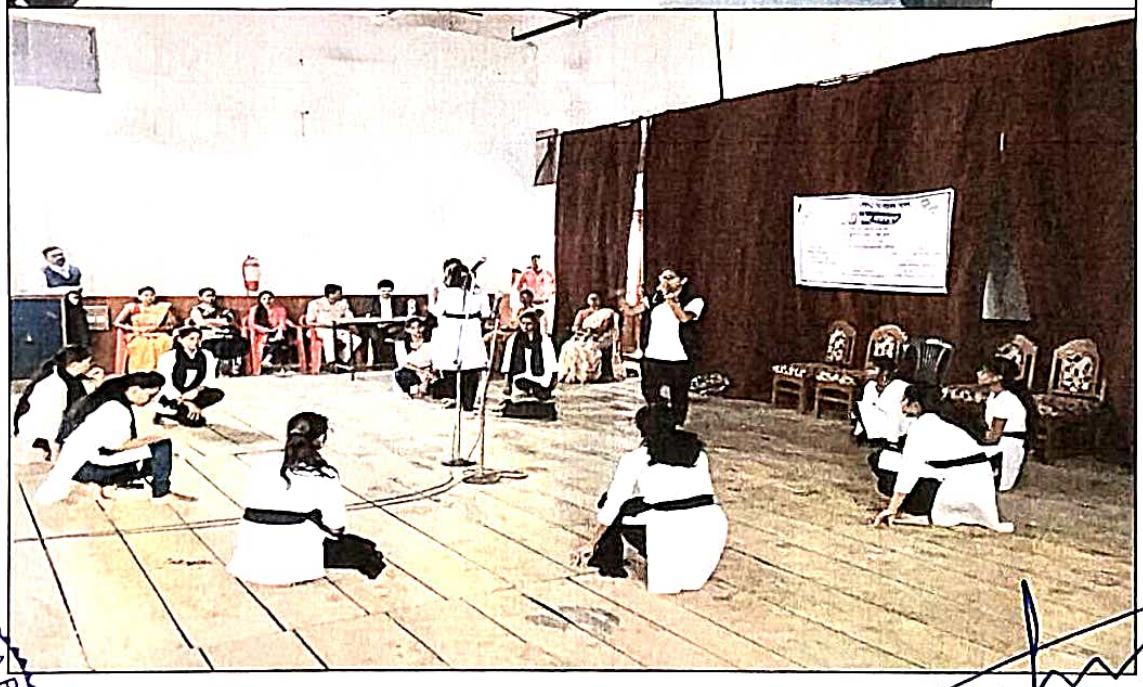
न्यू सातारा कॉलेज ऑफ बीसीए, पंढरपूर

"Women's Welfare Rally"



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Ref.No:- NSCBP/ दिनांक :११-९-२०२१

प्रति,
मा.श्री .शिंदे.निंतीन.

पंढरपूर.

मा. महोदय,

आमच्या महाविद्यालयात दि. ११-९-२०२१रोजी **"Women's Welfare Rally"** " याचे आयोजन करण्यात आले आहे. सदर कोर्ससाठी आपण आमच्या विद्यार्थीवविद्यार्थिनींना मार्गदर्शन केल्याबद्दल आपले हार्दिक आभार.

धन्यवाद

आपला विश्वासू

Principal
New Satara College of B.C.A
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NEW SATARA COLLEGE OF B.C.A. PANDHARPUR

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न्यू सातारा कॉलेज ऑफ बीसीए, पंढरपूर

राष्ट्रीय सेवा योजना

"Women's Welfare Rally"

मुलींना होणारी छेडछाडी आणि अत्याचाराच्या विरोधात खंबीरपणे उभे राहण्यासाठी आज जवळपास तीन हजार विद्यार्थिनींनी निर्भया रॅली काढून आपला आवाज पंढरपूरकरांना दाखवून दिला. आता आम्ही वावरणार नाही, जशास तसे उत्तर देऊ, अशा आत्मविश्वासात जवळपास तीन हजार मुलींनी ही निर्भया रॅली काढली होती. शाळा, कॉलेजेस, शिकवण्या किंवा वस अशा कोणत्याही ठिकाणी टवाळखोर आणि रोडरोमिओंच्या दहशतीखाली वावरणाऱ्या या तरुणींना आजच्या या निर्भया रॅलीने आत्मविश्वास

पंढरपुरात निघालेल्या रॅलीत पथनाट्य सादर करताना मुली रॅलीनंतर दुसऱ्या छायाचित्रात रखुमाई सभागृहात जमलेल्या हजारो मुली मिळाला आहे.

पंढरपूर पोलीस उपअधीक्षक डॉ.सागर कवडे यांच्या मार्गदर्शनाखाली शहर व परिसरातील सर्व शाळा-महाविद्यालयांच्या मुली विविध घोषणांचे बॅनर घेऊन शिवाजी चौकात जमल्या होत्या. येथून या निर्भया रॅलीची सुरुवात झाली. शहरातील चौफाळा, नाथ चौक, घोंगडे गल्ली, महाद्वार मार्गे प्रदक्षिणा मार्गावरून जोरजोरात घोषणा देत या मुलींनी भव्य रॅली काढली. या रॅलीत मुलींनी ठिकठिकाणी पथनाट्ये सादर करीत छेडछाडीची भीती झुगारून लावण्यासाठी पंढरपुरात भव्य निर्भया रॅली रोडरोमिओंना चपराक दिली.

रॅलीनंतर येथील रखुमाई पोलीस संकुलात विविध मान्यवरांनी या मुलींना मार्गदर्शन करीत निर्भय बनण्याचे आवाहन केले. यावेळी महिला

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पोलिसांनी मुलींना ज्युडो कराटेची प्रात्यक्षिके दाखवून छेडछाड करणाऱ्या रोडरोमिओंना कसा घडा शिकवायचा याच्या युक्त्या सांगितल्या. या रॅलीनंतर सर्वच मुलींचा आत्मविश्वास वाढला असून, आता बसमध्ये असो अथवा शाळा कॉलेजमध्ये असो आम्ही. छेडछाडीला चोख उत्तर देऊ, अशी भूमिका या मुलींनी व्यक्त केली. या रॅलीत पंढरपूर शहरातील विविध शाळेतील तीन हजार मुली सहभागी झाल्या होत्या.

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New Satara College of BCA, Pandharpur

सूचना

दिनांक: ०६-०३-२०२०

सर्व शिक्षक व शिक्षकेतर कर्मचाऱ्यांना कळविण्यात येते की, शैक्षणिक वर्ष २०१९-२०२० या कालावधीत बी.सी.ए विभागा तर्फे आपल्या महाविद्यालयात दि.०८/०३/२०२० रोजी **"जागतिक महिला दिवस"** साजरा करण्यात येणार आहे. तरी सर्वांनी याची नोंद घ्यावी.

प्राचार्य

NEW SATARA COLLEGE OF B.C.A. PANDHARPUR

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Founder President: - Mr. Rajaramji (Nana) M. Nikam

Ref.No:- NSCBP/

दिनांक :०६-०३-२०२०

प्रति,
प्रा.माधुरी.यादव
पंढरपूर.

मा. महोदय,

आमच्या महाविद्यालयात दि. ०८/०३/२०२० रोजी **"जागतिक महिला दिवस"** याचे आयोजन करण्यात आले आहे. सदर कार्यक्रमाचे उद्घाटन व मार्गदर्शनासाठी आपली नियुक्ती करण्यात आलेली आहे.

धन्यवाद

आपला विश्वासू

Principal
New Satara College of B.C.A.
Pandharpur.

NEW SATARA COLLEGE OF B.C.A. PANDHARPUR

Gaikwad Vishwajit Bharat	[illegible]
Inamdar chaitanya Prasad	(VB) Gaikwad
Thite Akash siddeshik	C.P. Inamdar
Gaikwad Rasik Prakash	A.S. Thite
Kokade Sumit Shantilal	[illegible]
Yadav Rohan Rajaram	Kokade
Maske Aniket Gulab	R. Yadav
Mogal Inzmam Akhtar	[illegible]
Bagal shravan Hanmant	I. mogal.
Mogal Azim Ilias	S.H.B.
Kandre Ganesh Dattatray	A.I. mogal
Sahil madhukar Aiwale	Ganesh
Shinde Rohan Appa	S.M. Aiwale
Rajguru vishal Gorakh	[illegible]
SAYYED LAZINA ASIF	Rajguru V.G.
Devkate kiran Madhukar	Lazina
Devkate Muktai Vitthal	K.M. Devkate
Thombare Riya Hanumant	M.V. Devkate
Narale Rutuja Santosh	Riya
Shelake Vaishnvi Bhimrav	[illegible]
Bagal Mukta Bhagwat	Vaishnvi
Karade Shraddha Rajkumar	M.B. Bagal.
shelake Gauri Tukaram	Karade
Hingmire Shilpa Siddheshwar	Shelake.
Shewale Vaishali Balasaheb	Shilpa
Devkate Gitanjali vitthal	Shewale
Shendge Dhanashri Dattatray	G.V. Devkate.
Waghmare Prajakta Shankar	Shendge
Jadhav chitralekha Sharad	Waghmare
Bhosale Prachi maruti	chitra
Rajguru vaibhav Aiwale	Bhosale.
Pravin Kundlik Deshmukh	[illegible]
koli sarthak mukesh	[illegible]
Someshwar Audumbar Potdar	S.M. Koli
Bagal Rohan Sanjay	S.A. Potdar
Narale Ganesh Aagatrav	[illegible]
Khandekar Sangram Shivaji	[illegible]
Dagade vaibhav Machindra	Someshwar
Sahil madhukar Aiwale	Dagade
Sawade Rohit Dadaso	S.M. Aiwale
Thite Prathamesh parmeshwar	Sawade RD
Narale prashant Dhanaji	Thite. PP
Gulame Harshad Balu	Prashant
Pawar Ganesh Ramesh	Gulame
	G Pawar

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New Satara College of B.C.A
Pandharpur.

New Satara Samuha Mumbai's

न्यू सातारा कॉलेज ऑफ बीसीए, पंढरपूर

"जागतिक महिला दिवस"

NEW SATARA COLLEGE OF B.C.A. PANDHARPUR

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Founder President: - Mr. Rajaramji (Nana) M. Nikam

Ref.No:- NSCBP/

दिनांक :८-०३-२०२०

प्रति,
प्रा.माधुरी.यादव
पंढरपूर.

मा. महोदय,

आमच्या महाविद्यालयात दि. ०८/०३/२०२० रोजी **"जागतिक महिला दिवस"** याचे आयोजन करण्यात आले आहे. सदर कार्यक्रमात आपण आमच्या विद्यार्थिनींना व विद्यार्थीना मार्गदर्शन केल्याबद्दल आपले हार्दिक आभार.

धन्यवाद

आपला विश्वासू

Principal
New Satara College of B.C.A
Pandharpur.

New Satara Samuha Mumbai's

न्यू सातारा कॉलेज ऑफ बीसीए, पंढरपूर

"जागतिक महिला दिवस"

न्यू सातारा कॉलेज ऑफ बी.सी.ए. महाविद्यालयातील राष्ट्रीय सेवा योजना विभागाच्या वतीने जागतिक महिला दिवस साजरा करण्यात आला.

जागतिक महिला दिवस ह्या कार्यक्रमाच्या वतीने प्रा.माधुरी.यादव यांनी सर्व विध्यार्थी जागतिक महिला दिवस हा दिवसाचे महत्व समजून सांगितले

हा कार्यक्रम संस्था प्रतिनिधी ज्ञानेश्वर शेंडगे यांच्या उपस्थितीमध्ये व प्राचार्य डॉ. अनिल भोसले यांच्या अध्यक्षतेखाली संपन्न झाला, या कार्यक्रमाचे प्रास्ताविक प्रा.माधुरी.यादव यांनी केले.

हा कार्यक्रम यशस्वी करण्यासाठी प्रा. प्रविण ताठे, प्रा. किरचेकर, प्रा. तांबडे, प्रा. बाबर, प्रा. कांबळे यांच्यासह कर्मचारी यांनी परिश्रम घेतले. कार्यक्रमाचे सूत्रसंचलन विद्यार्थिनी पूजा पाटील यांनी केले. कार्यक्रमाचे आभार कार्यक्रम अधिकारी एकनाथ शिंदे यांनी मानले.

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New Satara College of BCA, Pandharpur

सूचना

दिनांक: १०-०७-२०१९

सर्व शिक्षक व शिक्षकेतर कर्मचाऱ्यांना कळविण्यात येते की, शैक्षणिक वर्ष २०१९-२०२० या कालावधीत बी.सी.ए तर्फे आपल्या महाविद्यालयात दि.११/०७/२०१९ रोजी **"women self Defence"व्याख्यान** साजरा करण्यात येणार आहे. तरी सर्वांनी याची नोंद घ्यावी.

प्राचार्य
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दिनांक :१०-०७-२०१९

प्रति,
प्रा.कांबळे कोमल.
अकलूज.

मा. महोदय,

आमच्या महाविद्यालयात दिनांक :११-०७-२०१९ रोज" **women self Defence**" याचे आयोजन करण्यात आले आहे. सदर कार्यक्रमाचे उद्घाटन व मार्गदर्शनासाठी आपली नियुक्ती करण्यात आलेली आहे.

धन्यवाद

आपला विश्वासू

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NEW SATARA COLLEGE OF B.C.A. PANDHARPUR

New Satara College of B.C.A.,Pandharpur

Attendance Sheet

Name of Student	Sign.
Gitanjali vitthal Devkate	G.V.Devkate
Vaishali Balasaheb Shevale	
Shelake Gaurav Tukaram.	Shelake
Hadge Sayali Amar	Sayali
Koli Sambhak Mukesh	S.M.Koli
Jadhav Vishal Namdev	
Pawar Ganesh Ramesh	Pawar
Kanchan Ganesh Dattatray	
Thite Akash Sadashiv	Thite A.S
Sirsagar Prashant Pandurang	
Shinde Rohan Appa	
Khemdekar Sangram Shivaji	
Bagal Rohan Sanjay	
Khemdekar Sangram Shivaji	
Gulame Harshad Baku	
Narale Ganesh Dhanaji	
Narale Ganesh Nagnathrao	
Talekar Samika Vijay	S.V. Talekar
Jadhav Chitralekha Sharad	Chitra
Hingmire Shilpa Siddheshwar	Shilpa
Bagal Mukta Bhagawat	M.B. Bagal
Narale Rutuja Santosh	R.S. Narale
Mujavar Fija Aftab	Mujavar
Shendge Dhanashri Dattatray	Shendge.
Waghmare Prajakta Shankar	
Patil Pratiksha Jankojirav	
Bhosale Prachi Maruti	Bhosale.
Aiwale Sahil Madhukar	S.M Aiwale
Gaikwad Suyash Haridas	S.H. Gaikwad
Aiwale Rutuja Vaibhav	
Narale Prashant Dhanaji	
Gaikwad Rasik Prakash	
Rajgude Vishal Gorakh	Rajgude V.G.
Dagade Nilesh Shrimant	
Dagade Vaibhav Mashindra	Dagade
Kadam Ravi Dada	
Gaikwad Vishwajit Bharat	Gaikwad
Lokhande Dipak Maruti	
Gaikwad Vishwvijay Dattatray	V.D. Gaikwad
Bagal Shravan Hanmant	
mulani shahid sardar	S. mulani
Talekar Sahil Ashok	S.A. Talekar
Thite Pradhamesh Parmeshwar	Thite. PP
Kanchan Ganesh	
Sole vedant Dipak	V.D.Sole
Waghmare Akash Dharmraj	
Devkate kiran Madhukar	K.M. Devkate

Principal
New Satara College of B.C.A
Pandharpur.

New Satara Samuha Mumbai's

न्यू सातारा कॉलेज ऑफ बीसीए, पंढरपूर

"Women Self Defence"

NEW SATARA COLLEGE OF B.C.A. PANDHARPUR

Principal
New Satara College of B.C.A
Pandharpur.

New Satara Samuh Mumbai's

New Satara College of B.C.A
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Ref.No:- NSCBP/

दिनांक :११-०७-२०१९

प्रति,

प्रा.कांबळे कोमल.
अकलूज.

मा. महोदय,

आमच्या महाविद्यालयात दिनांक :११-०७-२०१९रोजी **"women self Defence"** याचे आयोजन करण्यात आले आहे. सदर कार्यक्रमात आपण आमच्या विद्यार्थिनींना व विद्यार्थीना मार्गदर्शन केल्याबद्दल आपले हार्दिक आभार.

धन्यवाद

आपला विश्वासू

Principal
New Satara College of B.C.A
Pandharpur.

NEW SATARA COLLEGE OF B.C.A. PANDHARPUR

New Satara Samuha Mumbai's

न्यू सातारा कॉलेज ऑफ बीसीए, पंढरपूर

"women self Defence"

न्यू सातारा कॉलेज ऑफ बी.सी.ए. महाविद्यालयातील राष्ट्रीय सेवा योजना विभागाच्या वतीने **"women self Defence"** साजरा करण्यात आला.

सेल्फ डिफेन्स कसे जगावे याचे व्याख्यान प्रा.कांबळे कोमल.

यांनी सर्व विध्यार्थी सेल्फ डिफेन्स कसे जगावे हे समजून सांगितले.

हा कार्यक्रम संस्था प्रतिनिधी ज्ञानेश्वर शेंडगे यांच्या उपस्थितीमध्ये व प्राचार्य डॉ. अनिल भोसले यांच्या अध्यक्षतेखाली संपन्न झाला, या कार्यक्रमाचे प्रास्ताविक प्राचार्य राजेश क्षीरसागर यांनी केले.

हा कार्यक्रम यशस्वी करण्यासाठी प्रा. प्रविण ताठे, प्रा. किरचेकर, प्रा. तांबडे, प्रा. बाबर, प्रा. कांबळे यांच्यासह कर्मचारी यांनी परिश्रम घेतले. कार्यक्रमाचे सूत्रसंचलन विद्यार्थिनी पूजा पाटील यांनी केले. कार्यक्रमाचे आभार कार्यक्रम अधिकारी एकनाथ शिंदे यांनी मानले.

NEW SATARA COLLEGE OF B.C.A. PANDHARPUR

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New Satara College of BCA, Pandharpur

सूचना

दिनांक: ०२-०१-२०१८

सर्व शिक्षक व शिक्षकेतर कर्मचाऱ्यांना कळविण्यात येते की, शैक्षणिक वर्ष २०१८-२०१९ या कालावधीत **"रासेयो"** विभागातर्फे आपल्या महाविद्यालयात दि.०३/०१/२०१८ रोजी **"सावित्रीबाई फुले जयंती"** साजरा करण्यात येणार आहे. तरी सर्वांनी याची नोंद घ्यावी.

Principal
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Pandharpur.

प्राचार्य

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Ref.No:- NSCBP/

दिनांक :०२-०१-२०१८

प्रति,
डॉ.अदिती.कांबळे.
पंढरपूर.

पंढरपूर.

मा. महोदय,

आमच्या महाविद्यालयात दि. ०३/०१/२०१८ रोजी **"सावित्रीबाई फुले जयंती"** यांची आयोजन करण्यात आले आहे. सदर कार्यक्रमाचे उद्घाटन व मार्गदर्शनासाठी आपली नियुक्ती करण्यात आलेली आहे.

धन्यवाद

आपला विश्वासू

Principal
New Satara College of B.C.A.
Pandharpur.

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Lazina Asif Sayyed	Lazina.
Kiran Madhukar Devkate	K.M.Devkate
Muktai Vitthal Devkate	M.V.Devkate
Riya Hanumant Thombare	[illegible]
Sahil Madhukar Alwale	S.M.Alwale
Ganesh Dattatray Kandare	[illegible]
Azim Iliyas Mogal	A.I.Mogal
Bagal Shravan Hanmant	S.H.B.
Mogal Inzmam Akhtar	I.mogal.
Gaikwad Rasik Prakash	[illegible]
Pokade Sumit Shantilal	Pkade
Yadav Rohan Rajaram	R.Yadav
Masle Aniket Gulab	[illegible]
Rajgude Vishal Gorakh	Rajgude V.G.
Thite Akash Sadashiv	A.S Thite
Inamdar Chaitanya Prasad	C.P. Inamdar
Gaikwad Vishwajit Bharat	V.B. Gaikwad
Jadhav Vishal Namdev	[illegible]
Sole Vedant Dipak	V.D.Sole
Bagal Rohan Sanjay	[illegible]
Narale Ganesh Dattatrav	[illegible]
Khandekar Sangram Shivaji	[illegible]
Dagade Vaibhav Machindra	Dagade
Karade Shraddha Rajkumar	Karade
Bagal Mukta Bhagawat	M.B.Bagal
Shelake Vaishnavi Bhimarav	Vishnavi
Narale Rutuja Santosh	Rate
Shelake Gauri Tukaram	Shelake.
Devkate Gitanjali Vitthal	G.V.Devkate.
Shevale Vaishali Balasaheb	[illegible]
Hingmire Shilpa Siddheshwar	Shilpa
Bhosale Prachi Maruti	Bhosale
Jadhav Chitralekha Sharad	Chitra
Waghmare Prajakta Shankar	[illegible]
Shendge Dhanashri Dattatray	Shindge.
Akash Dharmraj Waghmare	Akash
Narale Ganesh Dhanaji	Narale
Pawar Ganesh Ramesh	G.R.Pawar
Gulame Harshad Balu	G.Lame
Narale Prashant Dhanaji	[illegible]
Thite Prathamesh Parmeshwar	Thite.P.P
Sarode Rohit Dadaso	[illegible]
Someshwar Audumbar Potdar	S.A.Potdar
Sarthak Mukesh Koli	S.M.Koli
Butemaj Vaibhav Aiwale	[illegible]
Sachin Kundlik Deshmukh	[illegible]

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न्यू सातारा कॉलेज ऑफ बीसीए, पंढरपूर

सावित्रीबाई फुले जयंती

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Ref.No:- NSCBP/

दि. ०३/०१/२०१८

प्रति,
डॉ.अदिती.कांबळे.
पंढरपूर.

मा. महोदय,

आमच्या महाविद्यालयात दि. ०३/०१/२०१८ रोजी **"सावित्रीबाई फुले जयंती"** याचे आयोजन करण्यात आले आहे. सदर कार्यक्रमात आपण आमच्या विद्यार्थिनींना व विद्यार्थीना मार्गदर्शन केल्याबद्दल आपले हार्दिक आभार.

धन्यवाद

आपला विश्वासू
Principal
New Satara College of B.C.A
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NEW SATARA COLLEGE OF B.C.A PANDHARPUR

New Satara Samuha Mumbai's

न्यू सातारा कॉलेज ऑफ बीसीए, पंढरपूर

"सावित्रीबाई फुले जयंती"

न्यू सातारा कॉलेज ऑफ बी.सी.ए. महाविद्यालयातील राष्ट्रीय सेवा योजना विभागाच्या वतीने सावित्रीबाई फुले जयंती साजरा करण्यात आला.

सावित्रीबाई फुले जयंती दिवस ह्या कार्यक्रमाच्या वतीने डॉ.अदिती.कांबळे.

यांनी सर्व विद्यार्थिनींना व विद्यार्थीना सावित्रीबाई फुले जयंती दिवसाचे महत्व समजून सांगितले.

हा कार्यक्रम संस्था प्रतिनिधी ज्ञानेश्वर शेंडगे यांच्या उपस्थितीमध्ये व प्राचार्य डॉ. अनिल भोसले यांच्या अध्यक्षतेखाली संपन्न झाला, या कार्यक्रमाचे प्रास्ताविक प्राचार्य राजेश क्षीरसागर यांनी केले.

हा कार्यक्रम यशस्वी करण्यासाठी प्रा. प्रविण ताठे, प्रा. किरचेकर, प्रा. तांबडे, प्रा. बाबर, प्रा. कांबळे यांच्यासह कर्मचारी यांनी परिश्रम घेतले. कार्यक्रमाचे सूत्रसंचलन विद्यार्थिनी पूजा पाटील यांनी केले. कार्यक्रमाचे आभार कार्यक्रम अधिकारी एकनाथ शिंदे यांनी मानले.

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Principal
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Pandharpur

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New Satara College of BCA, Pandharpur

सूचना

दिनांक: ०६-०३-२०१८

सर्व शिक्षक व शिक्षकेतर कर्मचाऱ्यांना कळविण्यात येते की, शैक्षणिक वर्ष २०१८-२०१९ या कालावधीत **"रासेयो"** विभागा तर्फे आपल्या महाविद्यालयात दि.०८/०३/२०१८ रोजी **"जागतिक महिला दिवस"** साजरा करण्यात येणार आहे. तरी सर्वांनी याची नोंद घ्यावी.

Principal
New Satara College of B.C.A.
Pandharpur.

प्राचार्य

NEW SATARA COLLEGE OF B.C.A. PANDHARPUR

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Founder President: - Mr. Rajaramji (Nana) M. Nikam

Ref.No:- NSCBP/

दिनांक :०६-०३-२०१८

प्रति,
प्रा.परिचारक .अर्चना
पंढरपूर.

मा. महोदय,

आमच्या महाविद्यालयात दि. ०८/०३/२०१८ रोजी **"जागतिक महिला दिवस"** याचे आयोजन करण्यात आले आहे. सदर कार्यक्रमाचे उद्घाटन व मार्गदर्शनासाठी आपली नियुक्ती करण्यात आलेली आहे.

धन्यवाद

आपला विश्वासू,

Principal
New Satara College of B.C.A
Pandharpur.

NEW SATARA COLLEGE OF B.C.A. PANDHARPUR

Attendance Sheet

Name of Student	Sign.
Akash Dharmraj Waghmare	Akash
Narale Ganesh Dhanaji	Narale
Pawar Ganesh Ramesh	G.R. Pawar
Gulame Harshad Balu	Gulame
Narale Prashant Dhanaji	[illegible]
Sarade Rohit Dadaso	Sarade R.D.
Thite Prathamesh Parmeshwar	Thite P.P.
Someshwar Audumbar Potdar	S.A. Potdar
Sarthak Mukesh Koli	S.M. Koli
Ruturaj Vaibhav Aiwale	[illegible]
Pravin Kundlik Deshmukh	[illegible]
Narale Ganesh Aagatrav	[illegible]
Bagal Rohan Sanjay	[illegible]
Khandekar Sangram Shivaji	[illegible]
Dagade vaibhav machindra	Dagade
Thite Akash Sadashiv	A.S. Thite
Inamdar chaitanya Prasad	C.P. Inamdar
Gaikwad Vishwajit Bharat	V.B. Gaikwad
Jadhav Vishal Namdev	[illegible]
Sole vedant Dipak	V.D. Sole
Rajgude vishal Gorakh	Rajgude V.G.
Maske Aniket Gulab	[illegible]
Shinde Rohan Appa	[illegible]
Yadav Rohan Rajaram	R. Yadav
Kokate Sumit Shantilal	Kokate
Gaikwad Rasik Prakash	[illegible]
Mogal Inzmam Akhtar	A. Mogal
Bagal Shravan Hanmant	S.H.B.
Mogal Azim Iliyas	A.I. Mogal.
Kumbhar Ganesh Dattatray	[illegible]
Sahil Madhukar Aiwale	S.M. Aiwale.
Shevale Vaishali Balasaheb	[illegible]
Devkate kiran Madhukar	K.M. Devkate
Sayyed Lazina Arif	Lazina
Devkate Muktai Vitthal	M.V. Devkate
Thombare Riya Hanumant	[illegible]
Karade Shraddha Rajkumar	Karade
Bagal Mukta Bhagawat	M.B. Bagal
Narale Rutuja santosh	[illegible]
Shelake vaishnvi Bhimrav	Vaishnvi
Shelake Gauri Tukaram	Shelake
Devkate Gitanjali vitthal	G.V. Devkate
Hingmire Shilpa Siddheshwar	Shilpa
Shendge Dhanashri Dattatray	Shendge
Waghmare Prajakta Shankar	Waghmare
Bhosale Prachi Maruti	Bhosale
Jadhav chitralekha Sharad	Jadhav

NEW SATARA COLLEGE OF B.C.A. * PANDHARPUR

Principal
New Satara College of B.C.A
Pandharpur.

New Satara Samuha Mumbai's

न्यू सातारा कॉलेज ऑफ बीसीए, पंढरपूर

"जागतिक महिला दिवस"

Principal
New Satara College of B.C.A
Pandharpur.

NEW SATARA COLLEGE OF B.C.A. PANDHARPUR

New Satara Samuh Mumbai's

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Pandharpur

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Founder President: - Mr. Rajaramji (Nana) M. Nikam

Ref.No:- NSCBP/

दिनांक :८-०३-२०२१

प्रति,
प्रा.परिचारक अर्चना

मा. महोदय,

आमच्या महाविद्यालयात दि. ०८/०३/२०२० रोजी **"जागतिक महिला दिवस"** याचे आयोजन करण्यात आले आहे. सदर कार्यक्रमात आपण आमच्या विद्यार्थिनींना व विद्यार्थीना मार्गदर्शन केल्याबद्दल आपले हार्दिक आभार.

धन्यवाद

आपला विश्वासू

Principal
New Satara College of B.C.A
Pandharpur.

NEW SATARA COLLEGE OF B.C.A PANDHARPUR

New Satara Samuha Mumbai's

न्यू सातारा कॉलेज ऑफ बीसीए, पंढरपूर

"जागतिक महिला दिवस"

न्यू सातारा कॉलेज ऑफ बी.सी.ए. महाविद्यालयातील राष्ट्रीय सेवा योजना विभागाच्या वतीने जागतिक महिला दिवस साजरा करण्यात आला.

जागतिक महिला दिवस ह्या कार्यक्रमाच्या वतीने प्रा. प्रविण ताठे यांनी सर्व विध्यार्थी जागतिक महिला दिवस हा दिवसाचे महत्व समजून सांगितले

हा कार्यक्रम संस्था प्रतिनिधी ज्ञानेश्वर शेंडगे यांच्या उपस्थितीमध्ये व प्राचार्य डॉ. अनिल भोसले यांच्या अध्यक्षतेखाली संपन्न झाला, या कार्यक्रमाचे प्रास्ताविक प्रा.परिचारक .अर्चना यांनी केले.

हा कार्यक्रम यशस्वी करण्यासाठी प्रा. प्रविण ताठे, प्रा. किरचेकर, प्रा. तांबडे, प्रा. बाबर, प्रा. कांबळे यांच्यासह कर्मचारी यांनी परिश्रम घेतले. कार्यक्रमाचे सूत्रसंचलन विद्यार्थिनी पूजा पाटील यांनी केले. कार्यक्रमाचे आभार कार्यक्रम अधिकारी एकनाथ शिंदे यांनी मानले.

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Principal
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New SataraSamuha Mumbai's

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सूचना

दिनांक: ११-०१-२०२०१७

सर्व शिक्षक व शिक्षकेतर कर्मचाऱ्यांना कळविण्यात येते की, शैक्षणिक वर्ष २०१७-२०१८ या कालावधीत **"रासेयो"** विभागातर्फे आपल्या महाविद्यालयात दि.१२/०१/२०१७ रोजी **"राजमाता जिजाऊ व स्वामी विवेकानंद जयंती"** साजरा करण्यात येणार आहे. तरी सर्वांनी याची नोंद घ्यावी.

Principal
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Pandharpur.

प्राचार्य

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Founder President: - Mr. Rajaramji (Nana) M. Nikam

Ref.No:- NSCBP/

दि. ११/०१/२०१७

प्रति,
प्रा.अर्चना परिचारक.
पंढरपूर.

पंढरपूर.

मा. महोदय,

आमच्या महाविद्यालयात दि. १२/०१/२०१७ रोजी **"राजमाता जिजाऊ व स्वामी विवेकानंद जयंती"** यांची आयोजन करण्यात आले आहे. सदर कार्यक्रमाचे उद्घाटन व मार्गदर्शनासाठी आपली नियुक्ती करण्यात आलेली आहे.

धन्यवाद

आपला विश्वासू

Principal
New Satara College of B.C.A
Pandharpur.

NEW SATARA COLLEGE OF B.C.A. PANDHARPUR

Attendance Sheet

Name of Student	Sign.
Rohan Sanjay Bagal	[illegible]
Ganesh Nagatrav Narale	[illegible]
Sangram Shivaji Khandekar	[illegible]
Vaibhav Machindra Dagade	[illegible]
Sorode Rohit Dadaso	[illegible]
Thite Prathamesh Parmeshwar	Thite P.P
Someshwar Audumbar Potdar	S.A.Potdar
Sarthak Mukesh Koli	S.M.Koli
Rajaraj Vaibhav Alwale	[illegible]
Pravin Pundlik Deshmukh	[illegible]
Gaikwad Vishwajit Bharat	Gaikwad
Jadhav Vishal Namdev	[illegible]
Sole Vedant Dipak	V.D.Sole
Inamdar Chaitanya Prasad	C.P. Inamdar
Thite Akash Sadashiv	A.S.Thite
Pakade Sumit Shantilal	[illegible]
Gaikwad Rasik Prakash	[illegible]
Yadav Rohan Rajaram	R.Yadav
Maske Aniket Gulab	[illegible]
Shinde Rohan Appa	[illegible]
Rajgude Vishal Gorakh	Rajgude.V.G.
Mogal Azim Iliyas	A.I.Mogal
Mogal Inzmam Akhtar	[illegible]
Bagal Shravan Hanmant	S.H.B.
Kandre Ganesh Dattatray	[illegible]
Sahil Madhukar Aiwale	S.M.Aiwale
Devkate Muktai Vitthal	M.V. Devkate
Thombare Riya Hanumant	[illegible]
Shevale Vaishali Balasaheb	[illegible]
Hingmire Shilpa Siddheshwar	Shilpa
Sayyed Lazina Arif	Lazina
Bagal Mukta Bhagwat	M. B. Bagal
Devkate Kiran Madhukar	K.M Devkate
Karade Shraddha Rajkumar	Karade
Narale Rutuja Santosh	[illegible]
Shelake Vaishnavi Bhimrao	Vishnavi
Shelake Gauri Tukaram	Shelake
Devkate Gitanjali Vitthal	G.V.Devkate
Jadhav Chitralekha Sharad	[illegible]
Bhosale Prachi Maruti	Bhosale.
Narale Prashant Dhanaji	Prashant
Gulame Harshad Bala	[illegible]
Pawar Ganesh Ramesh	[illegible]
Narale Ganesh Dhanaji	[illegible]
Akash Dharmraj Waghmare	Akash
Thombare Prajakta Shankar	[illegible]
Shendge Dhanashri Dattatray	[illegible]

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New Satara Samuha Mumbai's

न्यू सातारा कॉलेज ऑफ बीसीए, पंढरपूर

राजमाता जिजाऊ व स्वामी विवेकानंद जयंती

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दि. १२/०१/२०१७

प्रति,

प्रा.अर्चना परिचारक.

पंढरपूर.

मा. महोदय,

आमच्या महाविद्यालयात दि. १२/०१/२०१७ रोजी **"राजमाता जिजाऊ व स्वामी विवेकानंद जयंती "** याचे आयोजन करण्यात आले आहे. सदर कार्यक्रमात आपण आमच्या विद्यार्थिनींना व विद्यार्थींना मार्गदर्शन केल्याबद्दल आपले हार्दिक आभार.

धन्यवाद

आपला विश्वासू

Principal

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न्यू सातारा कॉलेज ऑफ बीसीए, पंढरपूर

राजमाता जिजाऊ व स्वामी विवेकानंद जयंती

न्यू सातारा कॉलेज ऑफ बी.सी.ए. महाविद्यालयातील राष्ट्रीय सेवा योजना विभागाच्या वतीने राजमाता जिजाऊ व स्वामी विवेकानंद जयंती साजरी करण्यात आली.

राजमाता जिजाऊ व स्वामी विवेकानंद जयंती दिवस ह्या कार्यक्रमाच्या वतीने प्रा.अर्चना परिचारक यांनी सर्व विद्यार्थिनींना व विद्यार्थीना राजमाता जिजाऊ व स्वामी विवेकानंद जयंती दिवसाचे महत्व समजून सांगितले.

हा कार्यक्रम संस्था प्रतिनिधी ज्ञानेश्वर शेंडगे यांच्या उपस्थितीमध्ये व प्राचार्य डॉ. अनिल भोसले यांच्या अध्यक्षतेखाली संपन्न झाला, या कार्यक्रमाचे प्रास्ताविक प्राचार्य राजेश क्षीरसागर यांनी केले.

हा कार्यक्रम यशस्वी करण्यासाठी प्रा. प्रविण ताठे, प्रा. किरचेकर, प्रा. तांबडे, प्रा. बाबर, प्रा. कांबळे यांच्यासह कर्मचारी यांनी परिश्रम घेतले. कार्यक्रमाचे सूत्रसंचलन विद्यार्थिनी पूजा पाटील यांनी केले. कार्यक्रमाचे आभार कार्यक्रम अधिकारी एकनाथ शिंदे यांनी मानले.

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सूचना

दिनांक: ३०-१०-२०१७

सर्व शिक्षक व शिक्षकेतर कर्मचाऱ्यांना कळविण्यात येते की, शैक्षणिक वर्ष २०१७-२०१८ या कालावधीत **"रासेयो"** विभागातर्फे आपल्या महाविद्यालयात दि. ३१-१०-२०१७रोजी **"इंदिरागांधी व सरदार वल्लबभाई पटेल जयं "**साजरा करण्यात येणार आहे. तरी सर्वांनी याची नोंद घ्यावी.

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प्रति,
प्रा.सांजवणी अतकरे
सांगोला.

पंढरपूर.

मा. महोदय,

आमच्या महाविद्यालयात दि.३१/१० /२०१७ **" इंदिरा गांधी व सरदार वल्लबभाई पटेल जयंती "**यांची आयोजन करण्यात आले आहे. सदर कार्यक्रमाचे उद्घाटन व मार्गदर्शनासाठी आपली नियुक्ती करण्यात आलेली आहे.

धन्यवाद

आपला विश्वासू

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Kiran	V.D.Sole
Jadhav Vishal Namdev	
Gaikwad Vishwajit Bharat	(VB) Gaikwad
Inamdar Chaitanya Prasad	C.P. Inamdar
Thite Akash Jaddshiv	A.S. Thite
Gaikwad Rasik Prakash	
Pokvale Sumit Chandilal	Pokvale
Yadav Rohan Rajaram	R. Yadav
Maske Aniket Gulab	
Mogal Inzmam Akhtar	I. Mogal
Bagdi Shravan Hanmant	S.H.B.
Mogal Azim Ilias	A.I. Mogal
Kandar Ganesh Pandurang	
Sahil Madhukar Aiwale	S.M. Aiwale
Shinde Rohan Appa	
Rajgude Vishal Gorakh	(Rajgude.V.G.
SAYYED LAZINA ASIF	LAZINA
Devkate Kiran Madhukar	K.M. Devkate
Devkate Muktai Vitthal	M.V. Devkate
Thombare Riya Hanumant	
Nangle Rutuja Santosh	
Shelake Vaishnavi Bhimrao	Vishnavi
Bagal Mukta Bhagavat	M.B. Bagal
Karade Shraddha Rajkumar	Karade
Shelake Gauri Tukaram	Shelake.
Hingmire Shilpa Siddheshwar	Shilpa
Shevale Vaishali Balasaheb	
Devkate Gitanjali Vitthal	G.V. Devkate.
Shendge Dhanashri Dattatray	Shendge
Waghmare Prajakta Shankar	
Jadhav Chitralekha Shamrao	Chitra
Bhosale Prachi Maruti	Bhosale.
Pandurang Vaibhav Aiwale	
Pravin Kandlik Deshmukh	
Koli Sarthak Mukesh	S.M. Koli
Someshwar Audumbar Poldar	S.A. Poldar
Bagal Rohan Sanjay	
Nangle Ganesh Jagannath	
Khandekar Sangram Shivaji	Sangram
Dagade Vaibhav Machindra	Dagade
Sahil Madhukar Aiwale	S.M. Aiwale
Sagade Rohit Dadaso	
Thite Prathamesh Parmeshwar	Thite.PP
Narale Prashant Dhanaji	
Gulame Harshad Balu	
Pawar Ganesh Ramesh	GRPawar

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न्यू सातारा कॉलेज ऑफ बीसीए, पंढरपूर

" इंदिरा गांधी व सरदार वल्लबभाई पटेल जयंती "

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Founder President: - Mr. Rajaramji (Nana) M. Nikam

Ref.No:- NSCBP/

दिनांक :३१-१०-२०१७

प्रति,

प्रा.सांजवणी अतकरे
सांगोला.

मा. महोदय,

आमच्या महाविद्यालयात दि. ३१-१०-२०१७रोजी **"इंदिरागांधी व सरदार वल्लबभाई पटेल जयंती "**याचे आयोजन करण्यात आले आहे. सदर कार्यक्रमात आपण आमच्या विद्यार्थिनींना व विद्यार्थीना मार्गदर्शन केल्याबद्दल आपले हार्दिक आभार.

धन्यवाद

आपला विश्वासू

Principal
New Satara College of B.C.A
Pandharpur.

NEW SATARA COLLEGE OF B.C.A PANDHARPUR

New Satara Samuha Mumbai's

न्यू सातारा कॉलेज ऑफ बीसीए, पंढरपूर

" इंदिरा गांधी व सरदार वल्लबभाई पटेल जयंती "

न्यू सातारा कॉलेज ऑफ बी.सी.ए. महाविद्यालयातील राष्ट्रीय सेवा योजना विभागाच्या वतीने राजमाता जिजाऊ व स्वामी विवेकानंद जयंती साजरी करण्यात आली.राजमाता जिजाऊ व स्वामी विवेकानंद जयंती दिवस ह्या कार्यक्रमाच्या वतीने प्रा.सांजवणी अतकरे यांनी सर्व विद्यार्थिनींना व विद्यार्थीना " इंदिरा गांधी व सरदार वल्लबभाई पटेल जयंती " दिवसाचे महत्व समजून सांगितले.

हा कार्यक्रम संस्था प्रतिनिधी ज्ञानेश्वर शेंडगे यांच्या उपस्थितीमध्ये व प्राचार्य डॉ. अनिल भोसले यांच्या अध्यक्षतेखाली संपन्न झाला, या कार्यक्रमाचे प्रास्ताविक प्राचार्य राजेश क्षीरसागर यांनी केले.

हा कार्यक्रम यशस्वी करण्यासाठी प्रा. प्रविण ताठे, प्रा. किरचेकर, प्रा. तांबडे, प्रा. बाबर, प्रा. कांबळे यांच्यासह कर्मचारी यांनी परिश्रम घेतले. कार्यक्रमाचे सूत्रसंचलन विद्यार्थिनी पूजा पाटील यांनी केले. कार्यक्रमाचे आभार कार्यक्रम अधिकारी एकनाथ शिंदे यांनी मानले.

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