"Dissemination of Education for Knowledge, Science and Culture"

- Shikshanmaharshi Dr. Bapuji Salunkhe

Shri Swami Vivekanand Shikshan Sanstha's

Vivekanand College, Kolhapur (Autonomous)

DEPARTMENT OF B.C.A

B.C.A Part – I
Semester-I&II

SYLLABUS

Under Choice Based Credit System

To be implemented from Academic Year 2023-24

CHOICE BASED CREDIT SYSTEM

B.C.A – I (Sem -I and II)
Course Structure
to be implemented from 2023-24

Sr. No.	Course Abbr.	Course code	Course Name	Teaching Scheme Hours/week		Examination Scheme and Marks				Course Credits
				TH	PR	ESE	CIE	PR	Marks	
Semester-I										
1	DSC-I	DSC04COM11	Programming in C –I	2	-	40	10	-	50	2
2	DSC-II	DSC04COM12	Basic Web Technology	2	-	40	10	-	50	2
3	MIN-I	MIN04ACC11	Financial Accounting with Tally-I	2	-	40	10	-	50	2
4	MIN-II	MIN04MGT11	Principles of Management-I	2	-	40	10	-	50	2
5	OEC-I	OEC04MAT11	Mathematics-I	2	-	40	10	-	50	2
6	OEC-II	OEC04STA11	Statistics-I	2	-	40	10	-	50	2
7	AEC-I	AEC04ENG11	English	2	-	40	10	-	50	2
8	IKS-I	IKS04GEC11	Indian knowledge System	2	-	50	-	-	50	2
9	DSC-PR-I	DSC04PRA19	DSCComputerLab-1A		4			50	50	2
10	DSC-PR-II	DSC04PRB19	DSCComputerLab-1B		4			50	50	2
11	OEC-PR-I	OEC04MAT19	OEC-MATHS Lab-1		2			25	25	1
12	OEC-PR-II	OEC04STA19	OEC- STAT Lab-1		2			25	25	1
	Total (Semester-I)			**16**	**12**	**330**	**70**	**150**	**550**	**22**
Semester-II										
1	DSC-III	DSC04COM21	Programming in C- II	2	-	40	10	-	50	2
2	DSC-IV	DSC04COM22	Advance Web Technology	2	-	40	10	-	50	2
3	MIN-III	MIN04ACC21	Financial Accounting with Tally-II	2	-	40	10	-	50	2
4	MIN-IV	MIN04MGT21	Principles of Management-II	2	-	40	10	-	50	2
5	OEC-III	OEC04MAT21	Mathematics-II	2	-	40	10	-	50	2
6	OEC-IV	OEC04STA21	Statistics-II	2	-	40	10	-	50	2
7	SEC-I	SEC04COM21	PHP-I	2	-			50	50	2
8	AEC-II	AEC04ENG21	English	2	-	40	10		50	2
9	DSC-PR-III	DSC04PRA29	DSCComputerLab-2A		4			50	50	2
10	DSC-PR-IV	DSC04PRB29	DSCComputerLab-2B		4			50	50	2
11	OEC-PR-III	OEC04MAT29	OEC-MATHS Lab-2		2			25	25	1
12	OEC-PR-IV	OEC04STA29	OEC- STAT Lab-2		2			25	25	1
	Total (Semester-II)			**16**	**12**	**280**	**70**	**200**	**550**	**22**
	Cumulative Total (1st Year)			**32**	**24**	**610**	**140**	**350**	**1100**	**44**

B.C.A Part – I NEP
Semester – I Part- I
Programming in C –I (DSC04COM11)
Theory: 30 Teaching Hours Credits - 2

Course Outcomes - At the end of this course students will be able to:
CO1. Understand the problem solving techniques.
CO2. Develop algorithm and flowcharts for different problems.
CO3. Design programs using control statements.
CO4. Handle multi-dimensional array.

Unit	Contents	Hours Allotted
1	**Introduction to C :** ALGORITHM, advantages and disadvantages FLOWCHARTS,Character set,Identifiers: variables, constants, keywords.,Tokens,Data types.	7.5
2	**Operators:** Arithmetic, relational, logical, assignment, bitwise, increment/decrement,Comments-types of comments, Header Files (conio,stdio,string,math). Structure of C Program, Input and Output Functions	7.5
3	**Control Structures:** Conditional statements: if, If-else nested if-else, switch statement. Loops: while, for, do...While loop, Unconditional statements: Break, continue, exit, goto statements.	7.5
4	**Arrays and Strings:** Arrays- Meaning and definition, Declaration, Initialization and types of arrays (single and multidimensional arrays). **Strings**: Meaning and definition, Declaration, Initialization String functions strlen(), strrev(), strlwr(), strupr(), strcat(), strcmp() , strcpy().	7.5

References:
1. The C programming Language by Ritchie and Kernighan.
2. Let us C by Y.C. Kanetkar
3. Introduction to programming using C by Prof.D.R.Patil, Pawar, Shinde and Lad(Dreamtech).
4. Programming in C by D Ravichandran.
5. C Programming by Venugopal.
6. Programming in C – E. Balagurusamy
7. Pointers in C – Yashwant Kanetkar

Semester – I Part- I
Basic Web Technology (DSC04COM12)
Theory: 30 Teaching Hours Credits - 2

Course Outcomes - At the end of this course students will be able to:
CO1. Understand the basic working of Internet and its main services.
CO2. Create web pages using HTML.
CO3. Applying CSS styles in web page development.
CO4. Utilize theoretical skills and practical experience of web design.

Unit	Contents	Hours Allotted
1	**Introduction to HTML-5:** What is HTML-5 , Basic Tags, Structure, Layout, Web Development Process Overview of HTML Tags, Formatting Tags, Headings(H1-H6), Tags and Attributes, Paragraph Tag, FONT Tag,	7.5
2	**List Tags:** Ordered and Unordered Tags, Hyperlink, <HR> <Marquee> Tags, Image <img> Tag with all attributes, Image and Image map. <TABLE>.. </TABLE> tag with all attributes. .<FORM> tag,Examples and case studies based on all tags.	7.5
3	**Basic of CSS** Introduction to CSS, CSS Basics, Syntax / Rule of CSS , Selectors, properties and values, Applying CSS to HTML tags, Types : Internal, Inline, External CSS with Properties	7.5
4	**CSS – Page Layout** Case Study: Select any topic of your interest and Design Project using above technologies which suit for Desktop and Laptop computer screen only.	7.5

References:

1. Internet 6-in-1 by Kraynak and Habraken, Prentice Hall of India Pvt. Ltd., New Delhi
2. Internet for Everyone by Alexis Leon and Mathews Leon; Vikas Publishing House Pvt. Ltd., New Delhi.
3. Josh Hill, HTML5 and CSS3 in Simple Steps, 2011, Pearson.
4. Joel Sklar, Principle of Web Design, 2014, 5th Edition, Cengage Learning.
5. Alexis Goldstein, Louis Lazaris, Estelle Way, HTML5 and CSS3 for the Real World, 2015, SitePoint

B.C.A Part – I NEP
Semester – I Part- I
Financial Accounting with Tally-I (MIN04ACC11)
Theory: 30 Teaching Hours Credits – 2

Course Outcomes - At the end of this course students will be able to:
CO1. Developing the ability to uses accounting concepts and principles.
CO2. Use basic accounting terminology, procedures and systems of maintaining accounts records.
CO3. Understand the need for Journal.
CO4. Develop the understanding for posting of transaction and balancing of account.

Unit	Content	Hours Allotted
1	**Introduction to Financial Accounting** Meaning and Definition of Financial Accounting, Objectives of Accounting, Various users of Accounting Information.	7.5
2	**Accounting Terminology:** Accounting Concepts and Conventions, Double entry system, Types of Accounts and Golden rules of accounting. Books of Prime Entry, Subsidiary Books and Ledger Creation.	7.5
3	**Journal:** Introduction ,Importance of journal ,subsidiary books, (problem based on journal).	7.5
4	**Ledger:** Introduction to cash book ,Types of cash book, preparation of cash book Introduction to ledger ,ledger posting.	7.5

References:
1. Fundamentals of Accounting: P. Mohana Rao
2. Advance Accountancy: S.C. Jain & K.L. Narang
3. Advance Accountancy: S.M. Shukla
4. Financial Accounting: S.N. Maheshwari
5. Advance Accountancy: R.L.Gupta

B.C.A Part – I NEP
Semester – I Part- I
Principles of Management-I (MIN04MGT11)
Theory: 30 Teaching Hours Credits – 2

Course Outcomes - At the end of this course students will be able to:

CO1. Student will be component to deliver the basic managerial function

CO2. Student will be able to design appropriate organizational structure for smooth running of organization.

CO3. Student will be able to understand functions of staffing.

CO4. To gain knowledge about all management process and create understanding in detail about the application of management

Unit	Content	Hours Allotted
1	**Introduction to Management** Definition of Management, Nature and Role of manager in organization, Functions of Management, Contribution of F.W. Taylor, Henry Fayol and, Peter Drucker to management theory.	7.5
2	**Organizing** Meaning of Organizing, Definition & Importance of Organizing, Principles of organization.	7.5
3	**Planning** Planning: Meaning of planning, Definition & Nature of planning, Steps in Planning.	7.5
4	**Staffing:** Meaning & Definition of staffing, Process, Recruitment & selection of staffing.	7.5

References:

1.Principles of management : P. Subba Rao

2. Essential of management : Kncotz & O'Donnel

3. Principles and practices of management : L.M Prasad

B.C.A Part – I NEP
Semester – I Part- I
Mathematics-I (OEC04MAT11)
Theory: 30 Teaching Hours Credits – 2

Course Outcomes - At the end of this course students will be able to:
CO1. Familiarize basic Concept of Set theory.
CO2. Recognize different types of function
CO3. Compute the addition and multiplication of matrices.
CO4. Find inverse of matrices by Elementary transformation and Adjoint method.

Unit	Content	Hours Allotted
1	**Set and Relation** 1.1 Meaning of Set. 1.2 Method of describing of a set: Tabular form, Set-builder form 1.3 Types of sets 1.4 Operation on sets: Union of sets, Intersection of sets, Difference of sets. 1.5 De Morgan's laws 1.6 Venn Diagram. 1.7 Cartesian product of two sets. 1.8 Idempotent laws, Identity laws, Commutative laws, Associative laws, Distributive laws, Inverse laws, Domination laws, Absorption laws, Involution laws. 1.9Examples based on above 1.10Defination of Relation, Domain, Co-domain and Range of Relation.	9
2	**Function** 2.1 Definition of Function. 2.2 Types of Function 2.3 Representation of Function. 2.4 Algebra of Function. 2.5 Inverse function	5

3	**Matrices** 3.1 Meaning of Matrix, Order of Matrix. 3.2 Types of matrices 3.3 Definition of Determinants of order 2nd and 3rd and theire Examples. 3.4 Singular and Non-Singular Matrices 3.5 Algebra of matrices: 3.5.1 Equality of matrices 3.5.2 Scalar Multiplication of matrix 3.5.3 Addition of matrices, Subtraction of matrices 3.5.4 Multiplication of matrices	6
4	**Matrix Inversion** 4.1 Elementary Transformations 4.2 Inverse Matrix 4.3 Elementary Transformation method 4.3.1Adjoint Method 4.3.2Application of matrices (Salutation of simultaneous linear equation) 4.4 Method of Inversion 4.5 Method of Reduction.	9

References:
1. Fundamental Approach to Discrete mathematics by D.P.Acharjya, sreekumar, New Age
2. Discrete Mathematics by K D Joshi

Semester – I Part- I

Statistics -I (OEC04STA11)
Theory: 30 Teaching Hours Credits – 2

Course Outcomes - At the end of this course students will be able to:
CO1. Demonstrate understanding of descriptive statistics by practical application
CO2.Calculate and interpret the various descriptive measures for centrality and dispersion
CO3.Enumerate various measures of dispersion
CO4.To compute correlation coefficient and its interpretation, compute regression coefficients and regression lines.

Unit	Content	Hours Allotted
1	**Introduction** 1.1. Definition and concept Statistics, Population and Sample: Concept of statistical population with illustrations, concept of sample with illustrations. 1.2. Methods of sampling: Simple Random Sampling and Stratified Random sampling (description only). 1.3. Data Condensation: Raw data, Attributes and variables, discrete and continuous variables, classification and construction frequency distribution. 1.4. Graphical Representation: Histogram, Frequency polygon, Frequency curve, Ogive curves and their uses. 1.5. Examples and Problems.	8
2	**Measure of Central Tendency** 2.1 Concept of central tendency, Criteria for good measures of Central tendency. 2.2 Arithmetic mean: Definition, computation for ungrouped and grouped data, Combined mean, weighted mean, merits and demerits. 2.3 Median: Definition, computation for ungrouped and grouped data, Graphical method, merits and demerits. 2.4 Mode: Definition, computation for ungrouped and grouped data, graphical Method, merits and demerits. 2.5 Quartiles: Definition, computation for ungrouped and grouped data graphical method. 2.6 Numerical problems.	7

3	**Measures of dispersion** 3.1 Concept of dispersion and measures of dispersion, absolute and relative measures of dispersion. 3.2 Range and Quartile Deviation: definition for ungrouped and grouped data, and their coefficients, merits and demerits. 3.3 Mean Deviation: Definition for ungrouped and grouped data, minimal property (statement only). 3.4 Standard deviation and Variance: definition for ungrouped and grouped data, coefficient of variation, combined variance and s. d. for two groups, merits and demerits. 3.5 Numerical problems	**7**
4	**Correlation (for ungrouped data)** 4.1 Concept of bivariate data, scatter diagram. Concept of correlation, positive correlation, negative correlation, cause and effect relation. 4.2 Karl Pearson's coefficient of correlation, properties of correlation coefficient, interpretation of correlation coefficient. 4.3 Spearman's Rank Correlation coefficient (formula with and without ties). Regression (for ungrouped data): 4.4 Concept of regression. Derivation of lines of regression by method of least squares. 4.5 Regression coefficients and their significance. Properties of regression coefficients. 4.6 Point of intersection and acute angle between regression lines (without proof). 4.7 Numerical problems.	**8**

References:

1. Fundamental of Statistics – S. C. Gupta
2. Fundamentals of Probability And Statistics - SIA Publishers & Distributors Pvt Ltd

B.C.A Part – I NEP
Semester – I Part- I
English -I (AEC04ENG11)
Theory: 30 Teaching Hours Credits – 2

Course Outcomes - At the end of this course students will be able to:
CO1. Understand the concept, process and importance of communication.
CO2. Gain knowledge of media of communication.
CO3. Develop skills of effective communication - both written and oral.
CO4. Familiar with interdepartmental communication.

Unit	Content	Hours Allotted
1	**Introduction to Communication:** Basic types of communication- Reading, Writing, Listening, Speaking; Purpose of Communication; Process of Communication; Importance of Communication in Business; Barriers to Communication; Measures to Overcome the Barriers to Communication.	15
2	**Writing Memos, Circulars and Notices:** Memo- Characteristics of a memo, Language and writing style of a memo- Format of a Memo; Circulars- Guidelines for writing a circular- Languages and writing style of a circular- Format of a circular; Notices- Purpose- Format- Important points to remember while writing a notice	15

References:
1. Modern Commercial Correspondence – R.S.N. Pillai
2. Business Communication – Prakash Herekar
3. Business Communication – Lillawati Patil

B.C.A Part – I NEP
Semester – I Part- I
DSCComputerLab -I (DSC04PRA19**)**
Theory: 00 Teaching Hours Credits – 2

Course Outcomes - At the end of this course students will be able to:
CO1. To learn advance structured and procedural programming and to improve C programming skills.
CO2. To understand the basic structure of a C program.
CO3. To gain knowledge of various programming errors.
CO4. To enable the students to make flowchart and design an algorithm for a given problem.

Sr. No.	Content
1	Write a program to addition of two numbers.
2	Write a program to get number from user and display its square and cube.
3	Write a program to find the sum of first n natural numbers.
4	Write a program to display whether a given number is even or odd.
5	Write a program to find greater number from given two/three number.
6	Write a program to display table of given number (by methods sum & multiplication).
7	Write a program to calculate given power of given number. (Calculate raise to)
8	Write a program to calculate factorial of given number.
9	Write a program to calculate sum of digits of a given number.
10	Write a program to reverse the given number and find whether it is palindrome or not.
11	Write a program to find whether a given number is prime number or not.
12	Write a program to add two Matrices; Use two Dimensional arrays
13	Write a program to find the product of given two matrices.
14	Write a program to accept the range and generate Fibonacci Series.
15	Write a program to find given number is Armstrong or not.

Semester – I Part- I

DSCComputerLab -II (DSC04PRB19)
Theory: 00 Teaching Hours Credits – 2

Course Outcomes - At the end of this course students will be able to:
CO1**.** To learn advance structured and procedural programming and to improve C programming skills.
CO2**.** To understand the basic structure of a C program.
CO3**.** To gain knowledge of various programming errors.
CO4**.** To enable the students to make flowchart and design an algorithm for a given problem.

Sr No.	Content
1	Create HTML page to add basic tags
2	Write an HTML code to illustrate the usage of the following: • Ordered List • Unordered List • Definition List.
3	Write HTML page to add image and 2 paragraph,and insert a table.
4	Use tag and Div tag and design page
5	Write an HTML code to demonstrate the usage of inline CSS. C3
6	Write an HTML code to demonstrate the usage of internal CSS.
7	Write an HTML code to demonstrate the usage of external CSS.
8	Design a simple website using Header, Menubar , content, footer on any topic Home page having three links: About Us, Our Services and Contact Us.

Semester – I Part- I
OEC-MATHS Lab-I (DSC04MAT19)
Theory: 00 Teaching Hours Credits – 2

Course Outcomes – At the end of this course students will be able to:

CO1**.** To impart the required knowledge of Mathematics and statistics for managerial activities among students.

CO2. To inculcate in students the fundamental mathematical background in computer science.

CO3. To gain knowledge about Sets, Relations Functions, Matrices, Mathematical logic, and group theory.

CO4. Develop analytical ability to solve real-world problems using these methodologies.

Sr No.	Content
1	Union of set, Intersection of set
2	Algebra of Function
3	Determinant of Matrix
4	Algebra of Matrices (Addition and Substations)
5	Inverse of matrix by Elementary Transformation Method.
6	Inverse of matrix by Adjoint Method

Semester – I Part- I
OEC- STAT Lab-II (DSC04STA29)
Theory: 00 Teaching Hours Credits – 2

Course Outcomes – At the end of this course students will be able to:

CO1. Construction of frequency distribution and graphical methods.

CO2. Compute measures of central tendency to various data sets

CO3. Compute measure of dispersion to various data sets

CO4. Compute correlation coefficient, regression coefficient

Sr No.	Content
1	Construction of frequency distributions and graphical methods.
2	Measures of Central tendency (Ungrouped data)
3	Measures of Central tendency (Grouped data)
4	Measures of dispersion (Ungrouped data).
5	Measures of dispersion (Grouped data).
6	Computation of correlation coefficient and scatter diagram.

Semester – II Part- I

Programming in C- II (DSC04COM21)
Theory: 30 Teaching Hours Credits – 2

Course Outcomes – At the end of this course students will be able to:

CO1. Ability to design and develop Computer programs, analyses, and interprets the concept of pointers, declarations, initialization, operations on pointers and their usage

CO2. Able to define data types and use them in simple data processing applications also he/she must be able to use the concept of array of structures and file Handling.

CO3. Develop confidence for self-education and ability for life-long learning needed for computer language

CO4. Students can write programs using advance C concepts.

Unit	Content	Hours Allotted
1	**User defined functions and pointer** Form of a c function, return value and their type, calling a function, category of a functions, Actual and Formal arguments, functions with array.	7.5
2	**Pointers** Understanding pointers, accessing address of variable, declaration and initializing pointers, pointer expression, pointer to array and functions, function call by value and by reference. Dynamic memory allocation-malloc(),calloc(),realloc().	7.5
3	**Structures and Unions** Defining and processing a structure, array of structure, array within structure, structure within structure, Defining and processing a Unions. Difference between structure and union.	7.5
4	**File Handling** Defining and opening a file, File opening mode- open, modify, write, Closing a file, Functions:fopen(), fclose(), fscanf(), Input/Output Operations on file: getc(), putc(), getw(), putw(), fprintf(), fscanf(), ftell(), fseek(), rewind().	7.5

References:
1. The C Programming Language- By Brian W Kernighan and Dennis Ritchie
2. C Programming by E. Balgurusamy.
3. The GNU C Programming Tutorial -By Mark Burgess
4. Let us C- By Yashwant Kanetkar

B.C.A Part – I NEP
Semester – II Part- I
Advance Web Technology (DSC04COM22)
Theory: 30 Teaching Hours Credits – 2

Course Outcomes – At the end of this course students will be able to:
CO1. Understand Web designing techniques.
CO2. Develop commercial web development.
CO3. Integrate java and server side scripting languages to develop web applications.
CO4. Create well-formed valid HTML documents

Unit	Content	Hours Allotted
1	**Introduction to JavaScript** Overview, Client-Side JavaScript, Advantages of JavaScript, Limitations of JavaScript, Syntax:- First JavaScript Code, Java Script	7.5
2	**Java Script** Variables, Data types, Variables, Operators:- Reserve words ,Control statements, Loops, Function:- Function Definition.	7.5
3	**Events in JavaScript &DOM:** What is an Event?, onclick Event Type, onsubmit Event Type, onmouseover and onmouseout, Standard Events, Dialog Box:- Alert Dialog Box, Confirmation Dialog Box, Prompt Dialog Box.	7.5
4	**JAVA Script Objects** Object Properties, Object Methods, User-Defined Objects, Defining Methods for an Object DOM (Document Object Model), Array, String, Form Validation:- Basic Form Validation.	7.5

References:

1. Web Technologies by Black Book
2. HTML,CSS & JavaScript by SAMS-Pearson
3. PHP for Absolute Beginners – Jason Lengstort
4. PHP and MySQL Web Development: – Lokesh Gupta
5. Web Development Using PHP:- Rjinder Kumar,Gunjan Gupta.

Semester – II Part- I
Financial Accounting with Tally-II (MIN04ACC21)
Theory: 30 Teaching Hours Credits – 2

Course Outcomes – At the end of this course students will be able to:

CO1. Develop the skill of preparing trial balance by balance method.
CO2. Students learn to prepare final accounts of Sole Trading concern.
CO3. Learn to create company, enter accounting voucher entries and also print financial statements etc. in tally.
CO4. Demonstrate various reports in tally

Unit	Content	Hours Allotted
1	**Trial balance** Meaning, Definition, Importance and features ,preparation of trial balance	7.5
2	**Final Accounts** Introduction, objective of final accounts ,adjustments before preparation of final accounts, preparation of trading account ,profit and loss account and balance sheet.	7.5
3	**Introduction to Tally** Tally history and journey, difference between manual accounting v?s computerized accounting Tally, features of tally. Fundamentals- Company Data – Gateway of Tally, Creating and Maintaining a Company. Voucher Entry, Inventory- Stock Groups, Stock Items	7.5
4	**Report** Profit and Loss A/C, Balance Sheet, Interest Calculations, Statutory Master-VAT, Inventory report, Day Book, Use of Reports in Business	7.5

References:
1. Advance Accountancy: M.C. Shukla & T.S. Grewal
2. Advance Accountancy: S.C. Jain & K.L. Narang
3. Advance Accountancy: S.M. Shukla
4. Tally ERP9 :-Gaurav Agrawal
5. Tally ERP 9 :- Sanjay Satpathy

B.C.A Part – I NEP
Semester – II Part- I
Principles of Management-II (MIN04MGT21)
Theory: 30 Teaching Hours Credits – 2

Course Outcomes – At the end of this course students will be able to:
CO1. To know the principles of directing.
CO2. Students will be able to understand various theories of motivation
CO3. To gain understanding the qualities of leadership.
CO4. Identify and apply appropriate management techniques for organizations and understand social responsibility involved in business situations

Unit	Content	Hours Allotted
1	**Directing** Introduction, meaning of Directing, Importance and Principles of Directing	7.5
2	**Motivation** Theories of motivation –Maslow's Hierarchy Theory, Herzberg's theory & Theory X & Y	7.5
3	**Leadership** Meaning & Definition, Theories of Leadership, Qualities of Leadership & Types of Leaders.	7.5
4	**Controlling** Meaning, Importance, Steps in Control Process, Types of control Feed forward control, Concurrent control & feedback control, Techniques of control.	7.5

References:
1. Principles of management : T. Ramasamay
2. Management concepts and practices : Dr. Manmohan Prasad
3. Management: L. M. Prasa

B.C.A Part – I NEP

Semester – II Part- I

Mathematics -II (OEC04MAT21)

Theory: 30 Teaching Hours Credits – 2

Course Outcomes – At the end of this course students will be able to:

CO1. Have substantial experience to comprehend formal logic arguments.

CO2. The ways to select certain objects to form with or without replacements.

CO3. Define a permutation and explain how to calculate one.

CO4.The basic concept of graph theory

Unit	Content	Hours Allotted
1	**Mathematical Logic** **Logic** 1.1 Introduction 1.2 Meaning of Statement (Proposition). 1.3 Simple and compound Statements. 1.4 Truth values of a statement. 1.5 Logical Operations: Negation, Conjucation, Contingency, Implication, Double Implication. 1.6 Equivalence of Logical Statements. 1.7 Truth Tables and construction of truth tables. 1.8 Converse, Inverse and Contra positive. 1.9 Statements forms: Tautology, Contradiction, Contingency. 1.10 Duality, Laws of logic: Idempotent laws, Commutative laws, Associative laws, Identity laws, Involution laws, Distributive Laws, Complement laws, De Morgan's laws. 1.11 Argument: Valid and invalid arguments.	9
2	**Permutation** 2.1Introduction 2.2Factorial Notation 2.3Fundamental Principle and Counting Principle of Addition, Principle of Multiplication 2.4Permutation: 2.4.1 Permutation when all object is Distinct. 2.4.2 Permutation when all object is not Distinct	8
3	**Combination** 3.1 Introduction 3.2 Definition of combination 3.3 Examples	4

4	**Graph Theory** 4.1 Introduction of Graph 4.2 Kinds of Graph: Simple,Multi and Pseudo Graph 4.3 Diagraph 4.4 Weight of Graph 4.5Degree of vertex, Isolated Vertex 4.6Path, Cycle, A-cycle. 4.7 Types of Graph: Complement, Regular, Bi-Partite, Complete Bipartite, Isomorphism of Graph.	9

References:
1. Introduction to Logic" by Irving M. Copi and Carl Cohen
2. The ultimate Beginners guide to Permutations and and Combinations by Arthur Taff
3. Graph Theory by Reinhard Diestel

B.C.A Part – I NEP
Semester – II Part- I
Statistics -II (OEC04STA21)
Theory: 30 Teaching Hours Credits – 2

Course Outcomes – At the end of this course students will be able to:
CO1. Distinguish between Deterministic and Non-deterministic experiments..
CO2. Understand the basic concepts of probability, conditional probability and independence of events .
CO3. Learn theorems on probabilities and compute probabilities
Co4. Understand the concept of discrete random variable, probability distributions and mathematical expectation.

Unit	Content	Hours Allotted
1	**Probability:** 1.1 Idea of permutation and combination, concept of experiments and random experiments. 1.2 Definitions: sample space (finite and countably infinite), events, types of events, power set (sample space consisting at most 3 sample points). 1.3 Illustrative examples. 1.4 Classical (apriori) definition of probability of an event, equiprobable sample space, simple examples of probability of an events based on permutations and combinations, axiomatic definition of probability with reference to finite and countably infinite sample space. 1.5 Theorems on probability : i) $P(\Phi) = 0$ ii) $P(A') = 1 - P(A)$ iii) $P(A \cup B) = P(A) + P(B) - P(A \cap B)$ iv) If $A \subseteq B$, $P(A) \leq P(B)$ v) $0 \leq P(A \cap B) \leq P(A) \leq P(A \cup B) \leq P(A) + P(B)$ 1.6 Illustrative examples	7

2	**Conditional probability and independence of events:** 2.1 Definition of conditional probability of an event, examples. 2.2 Partition of sample space, Baye's theorem (only statement) and examples. 2.3 Concept of independence of two events, examples. 2.4 Proof of the result that if A and B are independent events then i) A and B', ii) A' and B, iii) A' and B' are also independent. 2.5 Pairwise and complete independence of three events, examples. 2.6 Elementary examples.	8
3	**Univariate probability distributions (defined on finite and countably infinite sample space)** 3.1 Definitions: discrete random variable, probability mass function (p.m.f.), cumulative distribution function (c.d.f.), properties of c.d.f., median, mode and examples. 3.2 Definition of expectation of a random variable, expectation of a function of random variable. 3.3 Results on expectation : i) $E(c) = c$, where c is constant. ii) $E(aX + b) = a E(X) + b$, where a and b are the constants. 3.4 Definition of mean and variance of univariate distributions.	7
4	**Some standard discrete probability distributions:** 4.1 Discrete uniform distribution: p.m.f., mean and variance, examples. 4.2 Binomial distribution: p.m.f., mean and variance, additive property of binomial variates, recurrence relation for probabilities, examples. 4.3 Geometric distribution: p.m.f., mean and variance, additive property, recurrence relation for probabilities, examples. 4.4 Poisson distribution: p.m.f., mean and variance, additive property, recurrence relation for probabilities, Poisson distribution as a limiting case of binomial distribution (without proof), examples.	8

References:
1. Elements Of Statistics – J. P Chauhan, Sharad Kumar
2. Statistics Probability Distributions D.V.L.N Jogiraju, C. Srikala

B.C.A Part – I NEP
Semester – II Part- I
English -II (AEC04ENG21)
Theory: 30 Teaching Hours Credits – 2

Course Outcomes – At the end of this course students will be able to:
CO1. Understand the concept, process and importance of communication network.
CO2. Gain knowledge of interdepartmental communication network.
CO3. Develop skills of effective communication - both oral and written
CO4. Familiar with business correspondence.

Unit	Content	Hours Allotted
1	**Communication Network:** Scope and Types of Communication Network; Formal and Informal Communication Network; Upward Communication; Downward Communication; Horizontal Communication; Diagonal Communication; Grapevine.	15
2	**Writing Business Letter:** Importance of Business Letters; Difference between Personal and Business Letters; Structure and Format of Business Letters; Types of Business Letters.- enquiry letter, compliant letter, request letter	15

References:
1. Modern Commercial Correspondence – R.S.N. Pillai
2. Business Communication – Prakash Herekar

Semester – II Part- I
English -II (AEC04ENG21)
Theory: 00 Teaching Hours Credits – 2

Course Outcomes – At the end of this course students will be able to:
CO1. To develop students' understanding through laboratory activities to solve problems related to above stated concepts.
CO2. To develop students' understanding through laboratory activities to solve problems related to above stated concepts.
CO3.Handle file for real time application
CO4. Handle file for real time application

Sr. No.	Content
1	Write the programs to understand categories of function. (Minimum three programs)
2	Write a program to demonstrate actual arguments and formal arguments.
3	Write a program to calculate mean two numbers which are given at command line.
4	Write a programs based on Pointer
5	Write a program which swap two number using a) call by value and b) call by reference.
6	Write programs which create student structure which accept stud roll no, student name, address, subject marks, and percentage and display same on screen.
7	Write a program to calculate factorial of given number by using user defined function.
8	Create a structure employee (id, name, salary). Accept details of n employees and write a menu driven program to perform the following operations. Write separate functions for the different options. i) Search by name ii) Search by id iii)Display all
9	Write a program based on union.
10	Write a program to count the no. of words in a given text file.
11	Write a program to remove blank lines from a file.
12	Write a program to copy content of one file into another file.

Semester – II Part- I

DSCComputerLab-III (DSC04PRA29)
Theory: 00 Teaching Hours Credits – 2

Course Outcomes – At the end of this course students will be able to:

CO1. Ability to design and develop Computer programs, analyzes, and interprets the concept of pointers, declarations, initialization, operations on pointers and their usage.

CO2. To develop students' understanding through laboratory activities to solve problems related to above stated concepts.

CO3. Apply pointers for developing simple programs.

CO4. Handle file for real time application.

Sr. No.	Content
1	Write the programs to understand categories of function. (Minimum three programs)
2	Write a program to demonstrate actual arguments and formal arguments.
3	Write a program to calculate mean two numbers which are given at command line.
4	Write a programs based on Pointer
5	Write a program which swap two number using a) call by value and b) call by reference.
6	Write programs which create student structure which accept stud roll no, student name, address, subject marks, and percentage and display same on screen.
7	Write a program to calculate factorial of given number by using user defined function.
8	Create a structure employee (id, name, salary). Accept details of n employees and write a menu driven program to perform the following operations. Write separate functions for the different options. i) Search by name ii) Search by id iii)Display all
9	Write a program based on union.
10	Write a program to count the no. of words in a given text file.
11	Write a program to remove blank lines from a file.
12	Write a program to copy content of one file into another file.

B.C.A Part – I NEP
Semester – II Part- I
DSCComputerLab-IV (DSC04PRB29)
Theory: 00 Teaching Hours Credits – 2

Course Outcomes – At the end of this course students will be able to:
CO1. Understand Web designing techniques.
CO2. Develop commercial web development.
CO3. Organize content, hosting and web publishing.
CO4. Create well-formed valid HTML documents.

Sr No.	Content
1	Write a Javascript code to welcome user.
2	Write a Javascript code to show arithmetic calculation with user input
3	Write a Javascript code to check given number is even or odd.
4	Write a Javascript code to calculate factorial of given number.
5	Write a Javascript code to calculate Length of string.
6	Write a Event Driven Javascript code to display 7 different colours.
7	Write a Event Driven Javascript code to convert the given string into upper case and lower case
8	Write a Event Driven Javascript code to accept a string from user and dsiplay number of vowels

Semester – II Part- I
OEC-MATHS Lab-II (DSC04MAT29)
Theory: 00 Teaching Hours Credits – 2

Course Outcomes – At the end of this course students will be able to:

CO1. To inculcate in students the fundamental mathematical background in computer science.

CO2. To gain knowledge about Mathematical logic, permutation, combination and Group theory.

CO3. Understand the basic concepts of Mathematical logic, permutation, combination and Group theory.

CO4. Develop analytical ability to solve real-world problems using these methodologies.

Sr No.	Content
1	Example of Equivalence relation using Truth table.
2	Example of Equivalence relation without using Truth table.
3	Permutations when all object are distinct.
4	Permutations when all object are distinct and not distinct.
5	Examples of Combination
6	Isomorphic graph

B.C.A Part – I NEP
Semester – II Part- I
OEC- STAT Lab-II (DSC04STA29)
Theory: 00 Teaching Hours Credits – 2

Course Outcomes – At the end of this course students will be able to:
CO1. Compute probabilities to different events.
CO2. Understand the concept of discrete random variable, probability distribution and mathematical expectations.
CO3. Apply various discrete distributions.
CO4. Acquire a concise and clear description of statistical problems.

Sr No.	Content
1	Applications of Discrete Uniform & Binomial distribution.
2	Applications of Poisson distribution
3	To compute conditional probabilities and probabilities of independence of events.
4	To compute univariate probability distributions.
5	Applications of discrete uniform distribution and binomial distribution.
6	Application of Poisson distribution.

Evolution Pattern

Nature of Theory Question paper:
QUESTION PAPER PATTERN FOR SEMESTER I & II
Total Marks-40   Duration- 2 Hrs
Instructions:
1. All questions are compulsory.
2. Figures to right indicate full marks.
Q1.A. MCQ   -5 marks
   B. Fill in the blanks / Match the pair / True false   -3 marks
Q2. Long answer questions / Brief answer questions (Solve any 2 out of 3)   -16 marks
Q3. Short Note (Solve any four out of five)   -16 marks

Internal evaluation
Total Marks- 10 **(Test- 3 marks, Home Assignment-3 marks, Dept.Activities-02 marks, Oral-02 marks)**