

Course Type: - Major
Paper Title: - MATHEMATICS FOR COMPUTER SCIENCE
Credit Weightage: - THEORY -04; TUTORIALS- 02

Semester: - 2nd
Paper Code: - CAPC1223M
Batch: - 2023

Course Objective:

- Cultivate clear thinking and creative problem solving
- To introduces elementary discrete mathematics for computer science.
- To Familiarize with formal logic notation, methods of proof, induction, sets, relations, algebraic structures, elementary graph theory, permutations and combinations, counting principles; recurrence relations and generating functions.

Course Outcomes:

- Ability to reason logically.
- Understand and construct precise mathematical proofs.
- Apply logic and set theory to formulate precise statements.
- Analyze and solve counting problems on finite and discrete structures.
- Describe and manipulate sequences.
- Apply graph theory in solving computing problems.

UNIT – I

LOGIC AND PROOFS: Propositional Logic, Applications of Propositional Logic, Propositional Equivalence, Predicates and Quantifiers, Introduction to Proof Techniques and Mathematical Induction.

SET THEORY: Sets, Set operations, Functions and Relations, Sequences & Summations.

UNIT – II

COUNTING: The Basics of Counting, Pigeonhole Principle & Permutations and Combinations.

NUMBER THEORY AND CRYPTOGRAPHY: Prime numbers and divisibility, The Fundamental Theorem of Arithmetic (without proof), Modular arithmetic and congruences, Greatest Common Divisor (GCD) and Euclidean Algorithm. Public key cryptography and RSA encryption algorithm.

MEASURES OF CENTRAL TENDENCY & MEASURES OF DISPERSION: Mean Median, Mode, Range, Quartile Deviation, Mean Deviation, Standard Deviation, and Coefficient of Variation.

UNIT – III

PROBABILITY: Classical, relative frequency and axiomatic definitions of probability, addition rule and conditional probability, multiplication rule, total probability, Bayes' Theorem.

RANDOM VARIABLES: Discrete random variable, Continuous random variable, Two-dimensional random variable, Joint probability distribution.

UNIT – IV

GRAPH THEORY: Basic terminology and definitions in graph theory, Types of graphs, Graph representation, Graph Connectivity Basic Concepts and Euler's Formula, Multi-graphs and Euler Circuits.

TREES: Definition, Binary tree, Spanning Trees, Directed Trees, Binary tree traversal, binary search tree.

TEXT & REFERENCES:

1. Discrete Mathematics and Its Applications - Kenneth H Rosen, 8th Edition, Tata McGraw-Hill.
2. Discrete Mathematical Structures with Applications to Computer Science-J.P. Tremblay and R.Manohar, Tata McGraw-Hill.
3. Elements of Discrete Mathematics, C. L. Liu, Tata McGraw-Hill.
4. A Textbook of Discrete Mathematics, Swapan Kumar Sarkar, S Chand Publishing.



5. <https://www.coursera.org/specializations/discrete-mathematics>
6. NPTEL Discrete Structures Course @ <https://nptel.ac.in/courses/106106094>
7. SWAYM Discrete Structures Course @ https://onlinecourses.nptel.ac.in/noc19_cs67/preview
8. <https://www.edx.org/learn/discrete-mathematics>



Course Objective:

- To understand the fundamentals of Programming and various steps in program development.
- To learn the syntax and semantics of the C programming language.
- To develop students' problem-solving abilities that require, algorithmic thinking and logical reasoning.
- To learn the usage of structured programming approaches in solving problems.

Course Outcomes:

- To write algorithms and to draw flowcharts for solving problems.
- To convert the algorithms/flowcharts to C programs.
- To code and test a given logic in the C programming language.
- To write code that is readable, well-structured, and includes appropriate comments and documentation.
- To decompose a problem into functions and to develop modular reusable code.
- To use arrays, pointers, strings and structures to write C programs.
- To search an element in an array and to sort elements of an array.
- To create, read and write to and from simple text and binary files.

UNIT – I

INTRODUCTION TO PROGRAMMING: Computing Environment, Computer Languages Syntax and semantics, source and object code, creating compiling and running programs, Software Development Method, Algorithms, Pseudo code and flow charts.

INTRODUCTION TO C PROGRAMMING LANGUAGE: variables (with data types and storage requirements), Syntax and Logical Errors in compilation, object and executable code, Operators, expressions and precedence, Expression evaluation, type conversion. Storage classes and bitwise operators.

Conditional Branching and Loops: Writing and evaluation of conditionals and consequent branching with if, if-else, switch-case, ternary operator, goto, Iteration with for, while AND do-while loops.

Input/output (I/O): Simple input and output with scanf and printf, formatted I/O, Introduction to stdin, stdout and stderr.

UNIT – II

ARRAYS, STRINGS, STRUCTURES AND POINTERS: Arrays: one and two dimensional arrays, creating, accessing and manipulating elements of arrays. Strings: Introduction to strings, handling strings as array of characters, basic string functions available in C (strlen, strcat, strcpy, strstr etc.), arrays of strings.

Structures: Defining structures, initializing structures, unions, Array of structures. Pointers: Idea of pointers, Defining pointers, Pointers to Arrays and Structures, Use of pointers. Enumeration data type.

UNIT – III

FUNCTION AND DYNAMIC MEMORY ALLOCATION: Functions: Designing structured programs, Declaring a function, Signature of a function, Parameters and return type of a function, passing parameters to functions, call by value, Passing arrays to functions, passing pointers to functions, idea of call by reference, Some C standard functions and libraries. Recursion: Simple programs, such as Finding Factorial, Fibonacci series etc., Limitations of Recursive functions Dynamic memory allocation: Allocating and freeing memory.



UNIT – IV

PREPROCESSOR AND FILE HANDLING IN C: Pre-processor: Commonly used Pre-processor commands like include, define, undef, if, ifdef, ifndef. Files: Text and Binary files, Creating and Reading and writing text and binary files, Appending data to existing files, Writing and reading structures using binary files, Random access using fseek, ftell and rewind functions.

TEXT & REFERENCES:

1. Jeri R. Hanly and Elliot B.Koffman, Problem solving and Program Design in C 7th Edition, Pearson.
2. PROGRAMMING IN ANSI C, E. Balagurusamy, 8TH EDITION, McGraw-Hill.
3. Let Us C, Yashavant Kanetkar, 18th Edition, BPB.
4. Schaum's Outline of Programming with C, Byron Gottfried, McGraw-Hill.
5. How to solve it by Computer, R.G. Dromey, Pearson (16th Impression).

**2nd SEMESTER
COMPUTER APPLICATIONS
(WEB DEVELOPER)
SKILL ENHANCEMENT COURSE (SEC)**

WDP222S: JAVA SCRIPT AND CSS BASICS

CREDITS: THEORY: 2, PRACTICAL: 2

THEORY (2 CREDITS)

UNIT 1 – JAVA SCRIPT (15 LECTURES)

Introduction, Script Tag, Data Types, Variables, Literals, Expressions, Operators, Conditional Statements (if, if-else, if-else-if-else), switch-case, Looping Statements (while, for, do-while), Array, Associative Arrays, Functions, Event Handling, Javascript Objects (Browser, Document, Window etc.)

UNIT 2 – CSS (15 LECTURES)

DHTML introduction, Style Sheets-EMBEDDED Styles, Inline Styles, External Style Sheets, Using Classes, Style Sheet Properties- Fonts Properties, Background and Colour Properties, Text Properties, Box Properties, Classification Properties-Display Property, Whitespace Property, , CSS Units, URL's , DIV and SPAN Tags, Dynamic Positioning, Layering, DHTML Events.

REFERENCE BOOKS:

1. Java Script Bible Wrox Publications
2. DHTML BPB Publications

PRACTICAL (2 CREDITS)

LAB SHEET- JAVA SCRIPT AND CSS BASICS

1. Write a JavaScript program to display the current day and time in the following format
2. Write a JavaScript program to get the current date
3. Write a JavaScript program that accept two integers and display the larger
4. Write a JavaScript conditional statement to sort three numbers. Display an alert box to show the result
5. Write JavaScript to demonstrate loops: while, for, do-while
6. Write a JavaScript for loop that will iterate from 0 to 15. For each iteration, it will check if the current number is odd or even, and display a message to the screen
7. Write a JavaScript function to check whether an 'input' is an array or not
8. Write a JavaScript program to sort the items of an array
9. WAP to show blinking effect on a web page using JavaScript.
10. Write CSS for *Fonts, Background, Color, Text*
11. Design a digital clock using JavaScript and CSS.
12. Design a calculator using HTML & JavaScript.
13. Write a JavaScript program to demonstrate Event Handling.
14. WAP to validate Email Address in JavaScript.
15. Write a program to demonstrate exception handling in JS.

Govt. Degree College Baramulla
Department of Statistics
MULTIDISCIPLINARY COURSE (Syllabus)

CREDITS: 03

BST22M103: STATISTICS (BASIC STATISTICS)

Course outcomes: After completing this course a student will have:

- Knowledge of Statistics, its scope and importance in various fields.
- Ability to understand concepts of samples. Population and difference between different types of data.
- Knowledge of methods for summarizing data sets, including common graphical tools (such as box plots, histograms and stem plots). Interpret histograms and box plots.
- Ability to describe data with measures of central tendency and measures of dispersion.

UNIT-I

Introduction to Statistics and Basic Concepts:

Meaning, origin, definition, functions, limitations and applications of Statistics. Primary and secondary data, different methods of collection of primary data with merits and demerits. Sources of secondary data. Classification: meaning, objectives, types of classifications- Chronological, Geographical, Qualitative and Quantitative classifications with illustrations. Formation of discrete and continuous frequency distributions.

Tabulation: meaning, objectives and rules of tabulation, format of a statistical table and its parts. Types of table, examples of preparation of a blank table and tables with numerical information.

Diagrammatical Graphical representation of Data: Diagrams: Meaning, importance of diagrams and general rules of construction of diagrams. Types of Diagrams - simple, multiple, component, percentage bar diagrams and pie diagrams with simple illustrations.

Graphs: Types of Graphs-Histogram, frequency Polygon, frequency curve and ogives, simple problems, location of mode, median and partition values from the graphs. Difference between diagrams and graphs.

UNIT-II

Measures of Central Tendency:

Meaning of central tendency and essentials of a good measure of central tendency. Types of measures of central tendency: Arithmetic mean, Median, Mode, Geometric mean and Harmonic mean - definition, merits and demerits. Properties of arithmetic mean. Problems on both grouped and ungrouped data for all the measures.

UNIT-III

Measures of Dispersion:

Meaning and objectives of measures of dispersion. Essentials of a good measure of dispersion, absolute and relative measures of dispersion. Types of measures of dispersion- Range, Quartile deviation, Mean deviation and standard deviation with relative measures-definition, merits and demerits. Simple problem on ungrouped and grouped data.

References:

1. Gupta S.C.Fundamentals of Statistics,Himalaya Publishing House, Bombay
2. Mukhopadhyaya,P.Applied Statistics, New Central Book Agency(P)Ltd.,Calcutta
3. Gupta S.P.and V.K Kapoor Fundamentals of Mathematical Statistics, Sultan Chand,New Delhi
4. Goon,A.M.,Gupta,M.K. and Das Gupta,B. (2013).Fundamental of Statistics,Voll, World Press , Kolkata.
5. Goon, A.M.,Gupta,M.K.and Das Gupta,B.(2011).Fundamental of Statistics,Vol II,World Press,Kolkata.
6. Gupta, S.C. and Kapoor, V.K. (2000). Fundamentals of Mathematical Statistics (10th ed.), Sultan Chand and Sons.
7. Hanagal, D. D. (2009). Introduction to Applied Statistics: A Non-Calculus Based Approach. Narosa Publishing Comp. New Delhi.
8. Miller,I.and Miller, M. (2006).John E.Freund's Mathematical Statistics with Applications,(7thEdn.), Pearson Education, Asia.
9. Mood, A.M. Graybill, F.A. and Boes, D.C. (2011). Introduction to the Theory of Statistics, 3rd Edn., Tata McGraw-Hill Pub. Co.Ltd.
10. Weatherburn, C.E. (1961). A First Course in Mathematical Statistics, The English Lang. Book Society and Cambridge Univ. Press.

گورنمنٹ ڈگری کالج بارہمولہ، کشمیر

BUL22A104

شعبہ اردو

MODERN INDIAN LANGUAGE (MIL/AEC)

Bachelors Degree(NEP)Batch 2022 (Total Credits: 2+1)

1st To 3rd SEMESTER

(Learning Objectives): مقاصد:

- ☆ طلباء کو اردو زبان کے مزاج اور تواعده سے روشناس کرنا
- ☆ طلباء کو تکمیلی و تحریری زبان میں عام طور پر وار ہنے والی کوتاہیوں سے باخبر کرنا
- ☆ طلباء میں اردو زبان کی کسی تحریر کے حسن و فتح کو تصحیح کی صلاحیت پیدا کرنا
- ☆ طلباء کو دفتری و نجی خطوط کے اصول و ضوابط سے باخبر کرنا

(Expected Learning Outcomes): متوقع تدریسی محتاج

یہ پرچ کامیاب کرنے کے بعد طلبہ سے امید کی جاتی ہے کہ انہوں نے اردو تقریر و تحریر میں عام طور آنے والی کمیوں کی نشانہ ہی کرنے کی صلاحیت کی ہو گئی نیز انہوں نے معیاری انشا پردازی پر بھی قدرت حاصل کی ہو گئی۔

یونٹ اول:

- ☆ جملہ اور جملہ کے اجزاء
- ☆ اقسام جملہ بلحاظ بناؤٹ
- ☆ مرکب جملے کی اقسام
- ☆ رموز و اوقاف
- ☆ تواعد کی چند اصطلاحات کی تعریف اور مثالیں (ذکر، مونث، واحد، جمع، جمع اجمع)
- ☆ خطوط نویسی (اصول و نمونے)
- ☆ مضمون نگاری (اصول و نمونے)

یونٹ دوم:

- ☆ محاورات، ضرب الامثال، مترادفات، متصاد اور متشابہ (ہم معنی / ہم صورت) الفاظ کی تعریف، مثالیں اور استعمال
- ☆ تخلیقی، سائنسی، سماجی اور ادبی اقتباسات کی تفہیم
- ☆ ان دیکھے اقتباس سے متعلق سوالات

Tutorial Credits=01

- ☆ اردو قواعد پر کمرہ جماعت میں بحث و مباحثہ کا اہتمام
- ☆ طلباء سے کسی ادبی یا سائنسی موضوع پر مضمون لکھوائیں
- ☆ چند اہم سماجی مسائل پر ذمہ دار اکتوخوانے کی ہدایت

امدادی کتب:

اصول املاء	رشید حسن خان	1
قواعد اردو	مولوی عبدالحق	2
اصول تحریر	امن وجود	3
ایم۔ آئی۔ ایل اردو	شعبہ اردو کشمیر یونیورسٹی	4

**SEMESTER 1st to 3^r
VALUE ADDED COURSE**

UIN022V UNDERSTANDING INDIA

CREDITS: 02

Learning Objectives

- 1. To make student aware of the trajectories of cultural development of India and the making of unity in diversity.***
- 2. To understand the major forms and phases of freedom struggle.***
- 3. To make student aware of the contributors to our struggle for independence.***
- 4. To familiarize students with the process of constitutional developments and its emergence as one of the largest democratic states in the world.***
- 5. To make student aware of the major contributions of India to world civilization in the field of science and technology.***

UNIT-I

- I. Bharatavarsha: concept and its evolution; Vedic, Epic and Puranic traditions and the making of Modern India.
- II. Development of literary traditions: Panini, Kalidasa, Veda Vyasa, Valmiki.
- III. India's contribution to the world, Medical Scence: Charaka, Sushruta.
- IV. Mathematics and Astronomy: Aryabhata, Baudhyana, Brahmagupta, Ramanujam.
- V. Physics: Kanad, P. C. Roy, Raman

UNIT-II

- I. State and Imperial formation: Rise of Janapadas, the Mauryas, the Kushanas, the Guptas, Pallava, Cholas and Vijaynagra Empire.
- II. Origin and growth of major religious streams: Vedic, Jainism, Buddhism, Bhakti and Sufism, Brahmo Samaj, Arya Samaj, Religious philosophy of Sri Aurobindo
- III. India's struggle for freedom: 1857 as the First War of Independence.
- IV. Important heroes of Freedom struggle: Birsa Munda, Bhagat Singh, Chanderasheikher Azad, Subash Chandra Bose.
- V. Formation of Indian National Congress and contribution of Mahatama Gandhi; Making of Indian constitution and its salient features.
- VI. Re-emergence of Swadeshi Movement in India; Flagship Programmes: Jan Dhan Yojna; Skill India Mission; Make in India; Atam Nirbar Bharat.

READINGS:

- I. Basu, D. (2012) 'Introduction to the Constitution of India'. New Delhi. Lexis Nexis.
- II. Bhikku, Parekh (1989). Colonialism. Tradition and Reforms: An Analysis of Gandhi's Political Discourses. Neu Delhi. Sage Publications.
- III. Bipan Chandra (1987). India's Struggle for Independence. Penguin. Delhi.
- IV. Dhar, P. K. (2000): Growing Dimensions of Indian Economy. Kalyani Publishers. New Delhi.
- V. Dhingra, I. C. (2020): Indian Economy. Sultan Chand & Sons. New Delhi.
- VI. Dutt, R. and Sundharam (2018): Indian Economy. S. Chand & Co. Ltd. New Delhi
- VII. Gautam A (2009): Advanced Geography of India. Sharda Pustak Bhawan. Allahabad.
- VIII. Godschalk, D.R. (et.al.) (1999): Natural Hazard Mitigation Recasting Disaster Policy and Planning. Island Press. Washington. D.C.
- IX. Gore, M. S. (2002) Unity in Diversity: The Indian Experience in Nation-Building. Rauat Publication. Jaipur.
- X. Government of India, Economic Survey (Annual). Economic Division. Ministry of Finance, New Delhi.
- XI. K. Roy, C. Saunders and J. Kincaid (2006) (eds.) 'A Global Dialogue on Federalism'. Volume 3Montreal, Queen's University Press.
- XII. Kabir, Humayun (1946). Our Heritage. National Information and Publications Ltd., Mumbai.
- XIII. L. Rudolph and S. Rudolph. (2008) 'Explaining Indian Institutions: A Fifty-Year Perspective, 1956-2006'. Volume 2. Neu Delhi. Oxford University Press.
- XIV. M. Singh, and R. Saxena (2011) (eds.), 'Indian Politics: Constitutional Foundations and Institutional Functioning'. Delhi: PHI Learning Private Ltd.
- XV. Malik, S. C. (1975). Understanding Indian Civilization: A Framework of Enquiry. Indian Institute of Advanced Study. Shimla.
- XVI. Ministry of Human Resource Development.
- XVII. Ministry of Skill Development and Entrepreneurship.
- XVIII. Misra, S.K and Puri (2020), V.K.: Indian Economy. Himalaya Publishing House, Mumbai.
- XIX. MoEF. 2006: National Environmental Policy-2006. Ministry of Environment and Forests. Government of India
- XX. MoEF. 2006: National Environmental Policy-2006. Ministry of Environment and Forests. Government of India
- XXI. Romila Thapar (2016) History of India. Tylor and Francis.
- XXII. S. Chaubc. (2009) 'The Making and Working of the Indian Constitution*. Neu Delhi. National Book Trust
- XXIII. S. Cohen. (2002) India: Emerging Power. Brookings Institution Press
- XXIV. Satish Chandra (2009) History of Medieval India, Orient Black Swan. Neu Delhi.
- XXV. Schneider, T. and Collins, L. (1998): Disaster Management and Preparedness. Lewis Publishers. Washington, D.C. 12.
- XXVI. Sharma, T.C. (2013) Economic Geography of India. Rauat Publication. Jaipur.
- XXVII. Tiwari, R.C. (2007) Geography of India. Prayag Pustak Bhauan. Allahabad.