PROGRAMME GUIDE

DEPARTMENT OF INFORMATION TECHNOLOGY & COMPUTER SCIENCE

DIPLOMA IN COMPUTER APPLICATION (DCA)

* **Scheme of Examination (CBCS/ELECTIVE)**
* **Detailed Structure of Syllabus**

SESSION 2024-25

DR. C. V. RAMAN UNIVERSITY

KARGI ROAD (KOTA), BILASPUR (C.G.)

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DEPARTMENT OF INFORMATION TECHNOLOGY & COMPUTER SCIENCE

INTRODUCTION -

DCA programme is a UGC approved 1 year full time Diploma programme of 40 credits divided in 2 semesters (20 credits and 20 credits in 1st and 2nd semester respectively). The DCA program at Dr. C. V. Raman University aims to make an interest into the students to study and use of computer and be familiar with information technology field. It provides platform to the student to find jobs in information technology fields.

VISION -

To Outshine in the emerging areas of IT & Computer Science by conveying skill-based education with relevant practices and inculcating human values to transform the students as potential resources to contribute innovatively to the society through advanced computing in real time situations.

MISSION -

- To provide skill-based knowledge for building world class professionals and entrepreneurs with human and spiritual values.
- To adopt and apply innovative teaching skills to develop fundamentals and technical skills for Computer Science applications.
- To produce healthy research environment by providing state-of-the-art training and hands on experience for researchers.
- To team up with industry and academia around the world for achieving quality technical education and excellence in education/research.

PROGRAMME EDUCATIONAL OBJECTIVE -

- **PEO1 :** -The objective of the programme is to develop high computer skills to the students.
- **PEO2 :** -This program provides initial knowledge of computer that will support the learners to improve their skills in the field of information technology.
- **PEO3 :** -The target is to provide overall knowledge of computer which includes both software and hardware.
- **PEO4 :** -The learners also have the knowledge of both theoretical and practical aspect of computer.

PROGRAMME OUTCOME -

- **PO1 :** -This program opens the opportunity for learners that come from any stream to learn a skill based subject.
- **PO2 :** -Learners can get initial knowledge of computer and can improve their skills. The students are also motivated for doing computer graduation programme like DCA.
- **PO3 :** -They can also work as computer operator or program developer in government or private sectors.
- **PO4 :** -This program provides competitive environment for the learners which enable to stand and complete themselves.

PROGRAMME SPECIFIC OUTCOME -

- **PSO1 :** -The specific outcome of the programme is to achieve the well computer literates' and educated learners who will be able to become a member of the growth of information technology industries.
- **PSO2 :** -The aim of DCA programme is to produce next generation person with the knowledge and skills to get prizing careers into the world of information technology.

DR. C. V. RAMAN UNIVERSITY

KARGI ROAD, KOTA, BILASPUR (C.G.)

SEMESTER- 1st **Course Code: 2TDCA-101**
PROGRAMME: - DCA **Theory Max. Marks: 50**
COURSE: INFORMATION TECHNOLOGY TOOLS AND NETWORK BASICS **Theory Min. Marks: 17**

COURSE OBJECTIVE: Student will be able

- To acquire knowledge of computer hardware, software, and operating systems, including their applications.
- To develop proficiency in creating, editing, and formatting documents using word processing software.
- To learn to create and analyze data in spreadsheets using formulas, functions, and data visualization tools.
- To gain skills in internet usage, digital communication, and financial tools for secure online transactions.

Syllabus:

Unit	Unit wise course contents	Methodology Adopted
Unit – I	**Introduction to Computer:** Computer and Latest IT gadgets, Evolution of Computers & its applications, IT gadgets and their applications, Basics of Hardware **Input Devices -** Introduction, Input Device, Typing Input Devices, Pointing Input Devices, Scanning Input Devices, Audio Visual Input Devices **Output Devices -** Introduction, Output Devices, Soft Copy Vs Hard Copy Output, Monitor, Printers, Plotter, Electrostatic Technique, Special Purpose Output Equipments **Central Processing Unit -** Introduction, What is Central Processing Unit, Arithmetic and Logic Unit, Control Unit, Registers, Instruction set, Processor Speed **Storage Devices** - Introduction, Storage and its needs, Brain Vs Memory, Storage Evaluation Units, Data Access Methods, Primary Storage, Secondary Storage, Hard Disk Operations, Floppy Disk Drives, Winchester Disk, Optical Disk, VCD, CD-R, CD-RW, DVD, Zip Drive, Flash Drives, Blue Ray Disk, Memory Card, Driving Naming Conventions In a PC	ICT based class room teaching, Group Discussion, Case Analysis, Individual Presentations
Unit – II	**Types of Computers and Generations of Computers** **Personal Computer -** Introduction, Personal computer, Uses of personal computers, Components of personal computers, Evolution of PCs **Number System -** Introduction, Digital and Analog Operations, Binary Data, Binary Number System, Decimal Number System, Octal Number System, Hexadecimal Number System **Data Representation and Binary Arithmetic -** Introduction, Bits, Nibbles, Bytes and Words, Data Representation, Coding system, Binary Arithmetic, Binary Addition, Binary Subtraction	ICT based class room teaching, Case Analysis, Individual Presentation, Visit to Venture Capitalists
Unit – III	**Basics of Software-** Introduction, What Does Software Stand For? Needs of software, Types of software, Application Software, Systems Software, Utility Software, Open source and Proprietary Software, Mobile Apps, Integrated Development Environment (IDE) **Introduction to Operating System:** Operating System, Basics of Operating System, Functions of Operating System, The Booting Process, Types of Reboot, Booting From Different Operating System, Types of Operating System, Some Prominent Operating Systems for Desktop and Laptop,	ICT based class room teaching, Case Analysis, Group Presentation

	Operating Systems for Mobile Phone and Tablets, User Interface for Desktop and Laptop, Task Bar, Icons & shortcuts, running an application, Operating System simple setting, using mouse and changing its properties, changing system date and time, changing display properties, to add or remove Program and its features, adding, removing & sharing Printers, File and Folder management, types of file extensions.	
Unit – IV	**Programming Languages -** Introduction, Data, information And Knowledge, Characteristics of Information, Comparison between human language and , Computer Language, What is a program?, What is a Programming language?, Programming development cycle, Algorithm, Program Flowcharts, Pseudo code, Programming approaches, Programming Paradigms, Types of Programming Language, Third Generation Language, Fourth Generation Language **Computer Virus -** Introduction, Virus, History, Mechanism of virus, How A Virus Spreads , How is virus named, A few Prominent Viruses, Types of Computer Virus, Related Concepts :, Anti Virus Programs, Norton Anti - Virus (NAV), Execution of Norton Anti-Virus **Communication and IT -** Introduction, Computer Network, Communication Process, Communication Types, Transmission Media, Wireless Media, Communication Channels/Media, Modem, Characteristics of a Modem, Types of Modem	ICT based class room teaching, Case Analysis, Individual Presentation
Unit - V	**Introduction to Internet and WWW, E-mail, Social Networking and e-Governance Services** - Basic of Computer Networks, Local Area Network (LAN), Wide Area Network (WAN), Network Topology , Internet, Concept of Internet & WWW, Applications of Internet, Website Address and URL, Introduction to IP Address, ISP and Role of ISP, Internet Protocol, Modes of Connecting Internet (HotSpot, Wifi, LAN Cable, BroadBand, USB Tethering), Identifying and uses of IP/MAC/IMEI of various devices, Popular Web Browsers (Internet Explorer/Edge, Chrome, Mozilla Firefox, Opera etc.), Exploring the Internet , Surfing the web, Popular Search Engines, Searching on Internet, Downloading Web Pages, Printing Web Pages. **Digital Financial Tools and Applications, Overview of Future Skills & Cyber Security -** Digital Financial Tools, Understanding OTP [One Time Password]and QR [Quick Response] Code, UPI [Unified Payment Interface], AEPS [Aadhaar Enabled Payment System], USSD[Unstructured Supplementary Service Data], Card [Credit / Debit], eWallet, PoS [Point of Sale], Internet Banking, National Electronic Fund Transfer (NEFT), Real Time Gross Settlement (RTGS), Immediate Payment Service (IMPS), Online Bill Payment	ICT based class room teaching, Case Analysis, Individual Presentation

COURSE OUTCOMES:-

- **CO1: -** Students will demonstrate an understanding of computer hardware, software, and operating systems, effectively navigating their functionalities.
- **CO2:**- Students will proficiently create, edit, and format professional documents and presentations using word processing and presentation software.
- **CO3:** - Students will apply spreadsheet functions for data analysis and utilize digital financial tools for secure online transactions.

PRACTICALS : -

1. How do you convert a decimal number (e.g., 45) into its binary, octal, and hexadecimal equivalents?
2. What is the significance of the octal number system in computing, and how is it related to the binary number system?
3. How many bits are required to represent the decimal number 255 in binary, and what is its binary equivalent?
4. Perform the binary addition of `1011` and `1101`. What is the result, and how does binary addition differ from decimal addition?

5. Explain how binary subtraction works using 2's complement. Subtract binary numbers `1011` from `1100` and show the result.
6. What is ASCII, and how does it relate to binary data representation? Provide an example of how the letter 'A' is represented in binary.
7. Explain the differences between third-generation languages (3GLs) and fourth-generation languages (4GLs). Provide examples of each.
8. Write a simple algorithm and corresponding flowchart for a program that calculates the sum of two numbers.
9. How does a computer virus spread through a network or removable devices? Explain how antivirus software can help prevent such infections.
10. What are the main features of Norton Anti-Virus (NAV) or similar antivirus programs? How does NAV detect and remove viruses from an infected system?
11. What is the difference between LAN (Local Area Network) and WAN (Wide Area Network), and where would each be typically used?
12. How do you identify the IP address and MAC address of your device, and what are their respective roles in networking?
13. How can you safely use digital financial tools such as UPI and Internet Banking while ensuring cyber security?
14. Explain the steps to connect to the internet using different methods (WiFi, USB tethering, LAN cable). What factors should be considered when selecting a mode of connection?

TEXT BOOKS:

- Introduction to Computers and Information Technology Anurag Seetha (Ram Prasad & Sons, Bhopal.)
- Fundamentals of Information technology, Alexis Leon & Mathews Leon (Vikas Publishing House, NewDelhi.)
- Computer System Architecture MORRIS MANO (PHI Publication)
- Computer fundamental , V .Rajaraman; (PHI Publication)
- Basics of Computer & Information Technolog, Naik Nitin K. , (Kamal Prakashan)

REFERENCE BOOKS:

1. Anurag Seetha, "Introduction to Computers and Information Technology", Ram Prasad & Sons, Bhopal.
2. Galgotia Publications, "Computers Today ", Galgotia Publications.
3. Alexis Leon & Mathews Leon, "Fundamentals of Information technology ", Vikas Publishing House, NewDelhi.
4. Rajeev Mathur, " DOS Quick reference", Galgotia Publications
5. MORRIS MANO, "Computer System Architecture" PHI Publication
6. Computer fundamental: by V .Rajaraman; PHI

Job Opportunities	Employability Skill Developed	Local/National/UNDP Goal Achieved	Entrepreneurship Opportunity
Computer Operator, Office Assistant, Training and Support in Institutions/universities,Research and Academics,System Analyst in State and Central Research organization,Consultant in Software firms,Quality Assurance and Testing in Public and Private sectors, Application Customization and Development, Start own venture	**Digital transformation skill**	1. No Poverty 4. Quality Education, 9. Industry Innovation and Infrastructure.	Can start own Computer Assistance services.

DR. C. V. RAMAN UNIVERSITY

KARGI ROAD, KOTA, BILASPUR (C.G.)

SEMESTER- 1st **Course Code : 2TDCA-102**
PROGRAMME: DCA **Theory Max. Marks: 50**
COURSE: WINDOWS AND MS OFFICE **Theory Min. Marks: 17**

COURSE OBJECTIVE: Student will be able

- To familiarize with the Windows 10 interface, features, and essential functions.
- To know the applications within Microsoft Office.
- To equip with the skills to create, edit, and format documents in Microsoft Word.
- To utilize Microsoft Excel for data analysis and PowerPoint for effective presentation creation.

Syllabus:

Unit	Unit wise course contents	Methodology Adopted
Unit – I	**Introduction to Windows 10 -** Introduction, Overview, Installation, Getting Started, GUI Basics, Navigation, Start Menu, Taskbar, Tablet Mode, File Explorer, Cortana, Notifications, Quick Actions, Cloud, Universal Apps **Working with Windows 10 -** Multiple Desktops, Users Management, Security, Parental Control, Applications, Web Browsing, Networking, Virtualization, Remote Access, Backup & Recovery, Project Spartan, Apps Management, Email Management, Keyboard Shortcuts, System Tray, Media Management, Favourite Settings, Shortcuts, Phones.	Usage of ICT :-Power Points, PDF, Video lectures, Black board, Workshop on Probability for Data Analysis.
Unit – II	**Microsoft Office Introduction -** Introduction to MS Office Suite, Understanding the different applications in the suite, Versions of Microsoft Office, Understanding the Interface, Customizing the Quick Access toolbar, Adding and removing commands, moving the toolbar, creating custom commands, using the Ribbon Interface, tabs and groups, customizing the ribbon, keyboard shortcuts	Usage of ICT :-Power Points, PDF, Video lectures, Black board
Unit – III	**Getting Started Word Basic (2019) -** Introduction of word, understanding OneDrive, creating and opening documents, saving and sharing documents, text basics, formatting text, using find and replace, indents and tabs, line and paragraph spacing, lists, links, page layout, printing documents, breaks, columns, headers and footers, page numbers **Working with Object Word (2019) -** Pictures and text wrapping, formatting pictures, shapes, text boxes, aligning, ordering, and grouping objects, list and tables, creating lists, creating tables, formatting tables, charts, checking spelling and grammar, track changes and comments, inspecting and protecting documents, SmartArt graphics, inserting and formatting images, wrapping text around images, applying and modifying styles, mail merge, new features in office 2019.	Us1age of ICT :-Power Points, PDF, Video lectures, Black board
Unit – IV	**Getting Started with Excel (2019) -** Introduction, Understanding OneDrive, understanding spreadsheets, the Excel interface, the Excel ribbon, Creating and Opening Workbooks, Saving and opening files, Working with Cells and Sheets, Cell Basics, Modifying Columns, Formatting Cells, Understanding Number Formats, Working with Multiple Worksheets, Grouping and ungrouping worksheets, Using Find & Replace, Checking Spelling, Page Layout and Printing, Formulas and Functions: Intro to Formulas, Creating More Complex Formulas, Relative and Absolute Cell References, Functions,	Usage of ICT :-Power Points, PDF, Video lectures, Black board

	Working with Data with Excel (2019) - Basic Tips for Working with Data, Freezing Panes and View Options, Sorting Data, Filtering Data, Advanced filter option, Groups and Subtotals, Tables, Charts and graphs, Conditional Formatting, Doing More with Excel: Comments and Co-authoring, Inspecting and Protecting Workbooks, Intro to PivotTables, Doing More with PivotTables, Pivot charts, What-if Analysis, Extras: New Features in Office 2019, What are Reference Styles?, Office Intelligent Services.	
Unit - V	**Getting Started with Power Point (2019) -** PowerPoint Basics: Understanding OneDrive, Creating and Opening Presentations, Saving Presentations, Working with Slides: Slide Basics, Text Basics, Applying Themes, slide layout, slide background, Applying Transitions, Managing Slides, Using Find & Replace, Printing, Presenting Your Slide Show. **Text and Objects with Power Point (2019) -** Lists, Indents and Line Spacing, Inserting Pictures, Formatting Pictures, Shapes, Aligning, Ordering, and Grouping Objects, Animating Text and Objects, More Objects: Inserting Videos, Inserting Audio, formatting multimedia, animating objects, Tables, Charts, SmartArt Graphics, Review and Collaborating: Checking Spelling and Grammar, Reviewing Presentations, Inspecting and Protecting Presentations, Customizing Your Presentation: Modifying Themes, Slide Master View, Links, Action Buttons, Rehearsing and Recording Your Presentation, Sharing Your Presentation Online, What is Office 365?, New features in office 2019, Office Intelligence Services.	Usage of ICT :-Power Points, PDF, Video lectures, Black board

COURSE OUTCOMES: –

- **CO1: -** Students will demonstrate proficiency in using Windows 10, including navigation, file management, and system settings.
- **CO2:** - Students will effectively create and format documents in Word and utilize spreadsheets in Excel for data management and analysis.
- **CO3:**- Students will develop engaging PowerPoint presentations, incorporating multimedia elements and advanced formatting techniques.

PRACTICAL:-

1. Creation of file and folder in MS Windows.
2. Introduction of Microsoft windows.
3. Introduction of MS Word.
4. Inserting Number, Bullets, Footer and Header.
5. Creating text, document and table in MS Word.
6. Write steps for mail merge.
7. Introduction of Microsoft excel.
8. Write steps to inserting formula in MS Excel.
9. Creating text, row and Column in MS Excel.
10. Introduction of Microsoft Power Point.
11. Write steps how to using graphics in power point.
12. Create a presentation in PowerPoint to demonstrate use of transition and animation.

TEXT BOOKS:

- MS-Office 2010 Mr. Kalpesh Patel (Computer World (2014))
- PC Software MS Office Naik Nitin K (Kamal Prakashan)

REFERENCE BOOKS:

- Introducing Windows 10 for IT Professionals Ed Bott (Microsoft Press)
- GO! with Microsoft Windows 10 Introductory Gaskin & Vargas (Publisher: Pearson)
- Microsoft Office 2010 a Complete Guide Blokdyk Gerardus (5starcooks
- Windows 7 Complete Reference. BPB Publications
- MS Office 7 complete BPB publication
- MS Windows 7 Home edition complete, BPB Publications

- Microsoft Word, Excel, and PowerPoint: Just for Beginners by Dorothy House

Job Opportunities	Employability Skill Developed	Local/National/UNDP Goal Achieved	Entrepreneurship Opportunity
Computer Operator, Office Assistant, Training and Support in Institutions/universities,Research and Academics, System Analyst in State and Central Research organization,Consultant in Software firms,Quality Assurance and Testing in Public and Private sectors, Application Customization and Development, Start own venture	**Report writing and presentation**	1.No Poverty, 4. Quality Education, 9. Industry Innovation and Infrastructure.	Can start own Computer Assistance services.

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KARGI ROAD, KOTA, BILASPUR (C.G.)

SEMESTER- 1st **Course Code : 2TDCA-103**
PROGRAMME: DCA **Theory Max. Marks: 50**
COURSE: DATABASE CONCEPTS AND INTRODUCTION TO SQL **Theory Min. Marks: 17**

COURSE OBJECTIVE: Student will be able

- To learn fundamental concepts of database systems and DBMS architecture.
- To understand the relational data model and its components like tables, keys, and ER diagrams.
- To understand the normalization techniques and database design principles.
- To develop SQL skills for database creation, manipulation, and querying.

Syllabus:

Unit	Unit wise course contents	Methodology Adopted
Unit – I	**Introduction to DBMS :-**What is database**,** Types of database systems**,** Advantages of using a DBMS**,** Different types of database models	Usage of ICT :-Power Points, PDF, Video lectures, Black board, Group projects on Usage of ms-word
Unit – II	An Architecture of the Database system: -Three level of Architecture, Physical, Logical, and View Level, Physical & Logical data independence	Usage of ICT :-Power Points, PDF, Video lectures, Black board
Unit – III	Relational Data Model: - What is the relational data model?, Concepts of tables, attributes, tuples and keys, Primary and foreign keys, Constraints, Entity-Relationship Diagrams (ERDs)	Usage of ICT :-Power Points, PDF, Video lectures, Black board
Unit – IV	Normalization and Database Design:- What is normalization?, Advantages of normalization, First Normal Form (1NF), Second Normal Form (2NF), Third Normal Form (3NF), De-normalization, Database design process.	Usage of ICT :-Power Points, PDF, Video lectures, Black board
Unit - V	SQL Basics :- Introduction to SQL, Data types, Basic SQL syntax and commands, Creating tables, Inserting data into tables, Retrieving data from tables using SELECT statement, Filtering data using WHERE clause, Sorting data using ORDER By clause Advanced SQL: -Join (Inner Join, Right Join, Full Outer Join), Aggregating data using GROUP By clause, Filtering grouped data using HAVING clause, Subqueries, Views, Indexes Database Administration: - Introduction to database administration, Backup and recovery, Performance tuning, Security and access control, Database maintenance, selecting the right database.	Usage of ICT :-Power Points, PDF, Video lectures, Black board, Workshop on Data Analysis using Excel, Group activity to make PPT on latest topics.

COURSE OUTCOMES:-

After study this student will be able to know about

- **CO1: -** Understand the structure, advantages, and types of database systems.
- **CO2: -** Apply relational data model concepts to design databases with appropriate constraints.
- **CO3: -** Normalize database structures for efficient data organization and retrieval.
- **CO4: -** Use SQL to create, manage, and query databases effectively, including advanced operations.

Text Books:

• Database Management System (H) Laad Ameet (Kamal Prakashan)

• Introduction to Database Management Systems Kahate Atul (Pearson)
• An introduction to database system Bipin C.Desai (New Delhi Galgotia)

Reference Books:

• Database Management System Leon & Leon (Vikas Publications)
• Database System Concepts Henry F.Korth & Abraham Silberschatz. (New york. MCGraw)
• An Introduction To Database System C.J.Date (New Delhi Pearson

Job Opportunities	Employability Skill Developed	Local/National/UNDP Goal Achieved	Entrepreneurship Opportunity
Data administrator, database developer, database trainer, oracle engineer, Training and Support in Institutions/universities, Research and Academics, System Analyst in State and Central Research organization,Consultant in Software firms, Quality Assurance and Testing in Public and Private sectors, Application Customization and Development, Start own venture	**Database management and transaction skill**	1.No poverty, 4. Quality Education, 8. Decent Work and Economic Growth, 9. industry innovation and infrastructure	Can start own Data handling company.

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KARGI ROAD, KOTA, BILASPUR (C.G.)

SEMESTER- 1st **Course Code: 2TDCA-104**
PROGRAMME: DCA **Theory Max. Marks: 50**
COURSE: OBJECTS ORIENTED PROGRAMMING WITH C++ **Theory Min. Marks: 17**

COURSE OBJECTIVE: Student will be able

- To know the basic concepts and benefits of Object-Oriented Programming (OOP) in C++.
- To familiarize with C++ programming environment and compilation process.
- To explore C++ features like arrays, functions, classes, objects, and pointers.
- To understand advanced concepts like polymorphism, operator overloading, and inheritance.

Syllabus:

Unit	Unit wise course contents	Methodology Adopted
Unit – I	**Overview of C++ -** Overview of C++, Software crisis, Object oriented programming paradigm, Basic concepts of OOP, Advantages/Benefits of OOP, Usage/applications of OOP **C++ Environment -** Program development environment, The language and the C++ language standards, Introduction to various C++ compilers, The C++ standard library, Prototype of main () function, i/o operator, manipulator, comments, data types **Creating and Compiling C++ Programs -** TURBO C++ IDE, Creating, compiling and running a C++ program using idea and through command line, Elements of C++ Language, Structure of a C++ program, C++ tokens, Type conversion in expressions. **Decision Making and Branching -** Introduction, Sequential statements, Mathematical Functions, Branching statements, looping Statements, Nested loops, Programming examples.	Usage of ICT :-Power Points, PDF, Video lectures, Black board, Workshop on MS-PowerPoint.
Unit – II	**Arrays and Functions-** Arrays, The meaning of an array, Single-dimensional arrays, Two-dimensional arrays (Multi-dimensional arrays), User Defined Functions, Elements of user-defined functions, Return values and their types, Function calls, Categories of functions, Passing parameters to functions, Recursion, Command Line Arguments, Storage Class Specifiers. **Classes and Objects -** Classes, Structures and classes, Unions and classes, Friend function, Friend classes, Inline function, Scope resolution operator, Static class members, Static data members, Static member functions, Passing object to functions, Returning objects, Object assignment **Array, Pointers, References and the Dynamic Allocation Operators -** Array of objects, Pointer to object, Type checking in C++, The this pointer, Pointer to Derived Types, Pointer to class members, References, C++'s Dynamic Allocation Operators. **Constructors and Destructors -** Introduction, Constructors, Default Constructor, Parameterized constructors, Copy Constructors, Multiple Constructors in a class, Constructors with default arguments, Default Arguments, Special Characteristics of Constructor functions, Destructors.	Usage of ICT :-Power Points, PDF, Video lectures, Black board
Unit – III	**Polymorphism-** Introduction to polymorphism, Types of polymorphism, Function overloading, Overloading Constructor Function, Finding the address of an overloaded function, Operator Overloading, Creating a	Usage of ICT :-Power Points, PDF, Video lectures, Black board, Group projects String Manipulations

	Member Operator Function, Creating Prefix and Postfix forms of the increment (++) and decrement (– –) operators (Overloading Unary Operator), Overloading the Shorthand Operators (i.e. +=, == etc), Operator Overloading Restriction (Rules), Operator Overloading using friend function, Overloading new and delete operator, Overloading some special operators, Overloading [ ] (Subscripting) operator, Overloading() (Function Call) operator, Overloading Binary Arithmetic operators, Concatenating String, Overloading Comma (,) operator, Overloading the I/O operators.	
Unit – IV	Base class Access control, Inheritance & protected members, Protected base class inheritance, Inheriting multiple base classes, Constructors, destructors & Inheritance, When constructor & destructor function are executed, Passing parameters to base class constructors, Granting access, Virtual base classes. Virtual function, Pure Virtual functions, early Vs. late binding.	Usage of ICT :-Power Points, PDF, Video lectures, Black board, Quiz competition based on aptitude questions on outlook Express
Unit - V	**The C++ I/O System Basics** - The C++ I/O System basics, C++ predefined streams, Formatting using the ios members, Clearing Format Flags, An Overloaded form of setf( ), Examining the Formatted Flags, Using width( ), Using precision( ), Using fill( ), Using Manipulators to format I/O, Creating your own Manipulators	Usage of ICT :-Power Points, PDF, Video lectures, Black board, Group discussions on Use of HTML

COURSE OUTCOME:-

- **CO1: -**After study this student will be able to write, compile, and run C++ programs using different environments.
- **CO2: -** Student will be able to develop efficient C++ applications using OOP principles.
- **CO3: -**Students have an idea to implement inheritance, polymorphism, and operator overloading in C++.

Practical:

1. WAP to add, subtracts, multiply and divides two numbers using concepts of C++.
2. WAP to show swapping of two numbers using C++.
3. WAP to calculate volume of cube, cylinder, rectangular box using three times function overloading in C++.
4. WAP using virtual function.
5. WAP using copy constructor.
6. WAP to show multiple inheritances.
7. WAP to find mean value of two numbers using friend function.
8. WAP using inline function.
9. WAP to demonstrate the use of Local Object, Static Object & Global Object using C ++.
10. WAP in C++ to demonstrate the creation and the use of dynamic object.
11. Derive the two classes son and daughter and, demonstrate polymorphism in action.

Text Books:

• Object Oriented Programming With C++ R. Subburaj (Vikas Publishing House)
• Programming In C++ M Kumar (TMH Publications)

Reference Books:

• C++ E. Balguruswamy (TMH Publication)
• Object Oriented Programming C++ R. Lafore (Galgotia Publishing)
• C++ The Complete Reference Herbert Schildt (TMH Publication)

Job Opportunities	Employability Skill Developed	Local/National/UNDP Goal Achieved	Entrepreneurship Opportunity
Assistant programmer, software developer, Training and Support in Institutions/universities, Research and Academics, System Analyst in State and Central Research organization, Consultant in Software firms, Quality Assurance and Testing in Public and Private sectors, Application Customization and Development, Start own venture	**Programming and software development**	1.No poverty, 4.Quality Education, 8. Decent Work and Economic Growth, 9. industry innovation and infrastructure	Can teach and learn other computer languages.

DR. C. V. RAMAN UNIVERSITY

KARGI ROAD, KOTA, BILASPUR (C.G.)

SEMESTER- 1st **Course Code: 2TDCA-105**
PROGRAMME: DCA **Theory Max. Marks: 50**
COURSE: COMMUNICATION SKILLS & PERSONALITY DEVELOPMENT **Theory Min. Marks: 17**

COURSE OBJECTIVE:-

1. To understand how to communicate effectively and appropriately in real-life situation.
2. To use English effectively for study purpose across the curriculum.
3. To develop and integrate the use of the four language skills i.e. Reading, Listening, Speaking, Writing

Syllabus:

Unit	Unit wise course contents	Methodology Adopted
Unit – I	**English Language-** Listening, Speech, Pronunciation, Reading, Spelling, Writing Right **nouns :** countable and uncountable, pronouns: Personal, Relative and Others, Articles, the parts of speech, the prepositions, clauses: Coordinate, Subordinate, Relative Adverbs, Adjectives and Adjective Phrases, Verb	Usage of ICT :-Power Points, PDF, Video lectures, Black board
Unit – II	**The Model Auxiliaries**: Adverb, Adverb Phrases Comparisons and Intensification, Linking Devices, Subject Verb Agreement, Tenses, Common Errors, Word Building, Vocabulary developing ability of question and answer, Body Language and Its Use in Speaking, Group Discussions, Interview Skills	Usage of ICT :-Power Points, PDF, Video lectures, Black board, Case studies to understand organization of laptop like Dell, Lenovo etc.
Unit – III	**Composition** - Making a Technical Report, E-Mails and Text Messages Composing, Letter Writing, Paragraph Writing, E-mail Writing, Writing Resume, Writing a Cover Letter Personality development: Soft Skills Development, Body Language, Behavioral and Symptomatic Soft Skills, Etiquette and Manners, Positive Thinking, Motivation, Goal setting, Team building, Self Confidence, Leadership Skills, Time Management introduction to personality) Basic of Personality b) Human growth and Behavior c) Theories in Personality d) Motivation	Usage of ICT :-Power Points, PDF, Video lectures, Black board,
Unit – IV	**Communication skills and Personality Development:** a) Intra personal communication and Body Language b) Inter personal Communication and Relationships c) Leadership Skills d) Team Building and public speaking	Usage of ICT :-Power Points, PDF, Video lectures, Black board, Performed GD for student skill development
Unit - V	**Techniques in Personality development I** a) Self confidence b) Mnemonics c) Goal setting d) Time Management and effective planning techniques in personality development II a) Stress Management b) Meditation and concentration techniques c) Self hypnotism d) Self acceptance and self growth.	Usage of ICT :-Power Points, PDF, Video lectures, Black board

COURSE OUTCOMES: -

- **CO1: -**After study this student will be able to know about how to become active readers, what are the writing skills and process. What are the oral communication skills.
- **CO2:** - After study this student will be able to know about to use of English effectively for study purpose across the curriculum.
- **CO3:** - After study this student will be able to know about to develop and integrate the use of the four language skills i.e.

Reading, Listening, Speaking, Writing.

Text Books:

• A Practical English Grammar A.J. Thomson & A.V. Martinet (New Delhi OxfordUniversity)
• Written Communication in English Sarah Freeman (New Delhi : OrientBlackswan)

Reference Books:

1. "English Language and Indian Culture" - M.P. Universities' 1st year Foundation Course published by M.P. Hindi Granth Academy, Bhopal [Complete]
2. "Written Communication in English" by Sarah Freeman published by Orient Longman [Units I and II only]

Job Opportunities	Employability Skill Developed	Local/National/UNDP Goal Achieved	Entrepreneurship Opportunity
Training and Support in Institutions/universities, Research and Academics, System Analyst in State and Central Research organization, Consultant in Software firms, Quality Assurance and Testing in Public and Private sectors, Application Customization and Development, Start own venture	**Communication Skills**	1.NoPoverty, 4. Quality Education, 8. Decent Work and Economic Growth	Can start their own PD training classes

DR. C. V. RAMAN UNIVERSITY

KARGI ROAD, KOTA, BILASPUR (C.G.)

SEMESTER- 2nd **Course Code: 2TDCA-201**
PROGRAMME: DCA **Theory Max. Marks: 50**
COURSE: INTRODUCTION TO INTERNET & WEB TECHNOLOGY **Theory Min. Marks: 17**

COURSE OBJECTIVE: Student will be able

- To understand the evolution of the Internet, its protocols, and key concepts like URLs, ISPs, and domain names.
- To learn the fundamentals of the World Wide Web, search engines, and web protocols.
- To gain practical knowledge of HTML for web page creation, including text formatting, tables, and forms.
- To explore JavaScript basics and its application in creating dynamic, interactive web pages.

Syllabus:-

Unit	Unit wise course contents	Methodology Adopted
Unit – I	Introduction To Internet- introduction, , growth of internet, internet service provider, anatomy of internet, arpanet and internet history of the world wide web, services available on internet wais , basic internet terminologies, net etiquette, applications, commerce on the internet, governance on/through the internet, impact of internet on society. TCP/IP - Internet Technology And Protocols-introduction, switching technology , internet protocols, overview of TCP/IP reference model, introduction to TCP/IP, routers, internet addressing scheme.	Usage of ICT :-Power Points, PDF, Video lectures, Black board,
Unit – II	Internet Connectivity - connectivity types, level one connectivity, level two connectivity, level three connectivity, hardware requirements, modems, narrow-band/phone-line dialup modems, software requirements, modem configuration:, telephone line options, making a dial-up connection, protocol options, service options, news services, desktop alerts Internet Network- computer networks, applications of networks, common terminologies :, interoperability, network security, the need for security, common threats, security barriers in network pathways, network components : communication media, network devices, types of network : client / server & peers, addressing in internet, domain name system (DNS), domain name and their organization, network topology, internet vs. Intranet. Services Of Internet (Definition And Functions) - introduction, file transfer protocol, ftp related terminologies, ftp servers and authentication, public and private software services, ftp clients, types of ftp client software, displaying files , remote login, chat programs, connecting to a server, search engines.	Usage of ICT :-Power Points, PDF, Video lectures, Black board, Workshop on Computer Networks, Group discussions on Internet Pros and Cons. Individual presentations on Network Devices
Unit – III	Electronic Mail - introduction, what is an e-mail?, email networks and servers, merits of e-mail, limitations, e-mail protocols, structure of an e-mail, e-mail address, Microsoft internet explorer and outlook express, applying stationary, web based emails, working with yahoo, starting the mail program , creating signature in outlook express, creating signature in yahoo, email encryption, why email encryption?, digital certificate. Current Trends On Internet -current trends of internet:, languages used on the internet, internet phones, internet video / internet tv, streaming video & audio, collaborative computing, e-commerce, technical and organizational aspects Web Publishing- overview, SGML (standard generalized markup language), what is the need of a website? , types of web sites, components of web publishing , domain name planning and registration, choosing a web host and signing up for an account, web hosting, web design and development, testing your website, promotion of the site, registering your site with a search engine, publishing tools, html editor, image editor, program to transfer your files to a web server, uploading web pages using Cute ftp.	Usage of ICT :-Power Points, PDF, Video lectures, Black board

Unit – IV	World Wide Web- introduction , evolution of the www, basic features, mechanism of the world wide web, search and meta-search engines, searching the web, using boolean operators in your searches, using advanced , using a metasearch engine, site specific search tools, web protocols, hyper text transfer protocol (http), web server Browsers , introduction, www web browsers, Mozilla Firefox browser, the opera browser, google chrome, what are bookmarks?, adding folders, favorites, deleting favorite folders and pages, history, progress indicator, customizing internet explorer, turning off graphics to display all web pages faster, customizing the toolbar, copying, saving and printing in internet explorer, printing an image from a web page, printing a web page, cookies, what is cache setting ?, internet explorer, the standard toolbar, internet explorer keyboard shortcuts. Hyper Text Markup Language Programming Basics - introduction, html editors, elements of html, definition lists , compact attribute, nested list, type attribute, html links, using alt attribute, background graphics, html document tables, creating tables within tables, html frames, html rules, introduction of multimedia, meaning of multimedia, what is multimedia ?, identifying multimedia elements, audio on the web, video on the web.	Usage of ICT :-Power Points, PDF, Video lectures, Black board
Unit – V	Internet Security Management Concepts, Information Privacy And Copyright Issues - overview , basic security concepts, security events, measures for check threats, firewalls , monitoring tools, security analysis tools, cryptography , information privacy, copyrights and the internet, copyright legislation in India, key points of copyright, encryption & decryption - cryptography, terminology Firewalls - firewalls, firewall design principles, firewall attributes, firewall strengths and weaknesses, types of firewalls, comparison of firewall types, DMZ DNS server, VLAN	Usage of ICT :-Power Points, PDF, Video lectures, Black board, Quiz competition on aptitude question on C++., Project making competition using HTML

COURSE OUTCOMES:-

- **CO1: -** Student will be able to apply HTML and JavaScript to design and develop basic web pages.
- **CO2: -** Student will be able to analyze the working principles of the Internet, WWW, and e-commerce systems.
- **CO3: -** Student will be able to demonstrate an understanding of electronic payment systems and e-governance applications.

Practical:

1. WAP which shows headings five time in ascending order. Align the heading also.
2. Write a program which show four paragraph under four headings.
3. Write a program for formatting the text &marked highlighted text.
4. Write a program for some text using CSS technique.
5. Write a program to insert an image in a page.
6. Write a program to make a table for any company employee's data record.
7. Write a program to make forms for different uses.
8. Write a java script to print the heading and paragraph & also create a button
9. Write a program to upload video on web page.
10. Write a program to change the back ground of any page.
11. Write a program to create a link between page.

Text Books:

• Internet & Web Design, A. Mansoor , Pragya Publications.

Reference Books:

• Learn HTML in a weekend Steven E. Callihan, PHI
• Using HTML, Lee Anne Phillips , PHI
• SAMS Teach YourselfJavascript in 24 Hrs. Michael Moncur, TechMedia
• "Programming In Java", 2nd Edition, E. Balaguruswamy, TMH Publications ISBN 0-07-463542-5
• "Peter Norton Guide To Java Programming", Peter Norton, Techmedia Publications ISBN 81-87105-61-5
• JAVA, How to Program, Deitel&Deitel, PHI, Pearson

Job Opportunities	Employability Skill Developed	Local/National/UNDP Goal Achieved	Entrepreneurship Opportunity
Network administrator, network service provider, network engineer, Training and Support in Institutions/universities, Research and Academics, System Analyst in State and Central Research organization, Consultant in Software firms, Quality Assurance and Testing in Public and Private sectors, Application Customization and Development, Start own venture	**Digital communication and networking skill**	1. No poverty, 4. Quality Education, 8. Decent Work and Economic Growth	Can start own Computer Network assistance

DR. C. V. RAMAN UNIVERSITY

KARGI ROAD, KOTA, BILASPUR (C.G.)

SEMESTER- 2nd **Course Code: 2TDCA-202**
PROGRAMME: DCA **Theory Max. Marks: 50**
COURSE: INTRODUCTION TO FINANCIAL ACCOUNTING WITH TALLY **Theory Min. Marks: 17**

COURSE OBJECTIVE:-

1. To understand the concept of Financial Accounting
2. To understand the knowledge about Tally.
3. To develop and integrate the use of Accounting
4. To understand Cheque Printing, Multi Account printing etc.

Syllabus:

Unit	Unit wise course contents	Methodology Adopted
Unit – I	Accounting, Meaning Of Accounting, Objectives Of Accounting, Important Terms, Accounting Equation, Rules Of Debit And Credit- Journal & Ledger, Journal, Ledger, Cash Book, Subsidiary Books, Financial Statement, Trading & P&L A/C, Balance-sheet, Inventory, Adjustment Entries, Bill Of Exchange Installing Tally 9, Introduction, Tally 9.0 (Release 1.0), Major Enhancements In Tally 9, Minor Enhancements In Tally 9, Multilingual Business Accounting And Inventory Management Features, Performance And Implementation Features, Accounting And Inventory Control Features, Installing Tally 9.0, Application Directory, Data Directory, Configuration Directory, Language Directory, Activating Tally, Activating Tally Gold For Multi User, Registering Tally, Validating Tally, Tally Data Migration Tool, Uninstalling Tally 9	Usage of ICT :-Power Points, PDF, Video lectures, Black board
Unit – II	ABC of Company, Creation Of New Company Selection Of New Company Deletion Of Company Alteration Of Company Shut A Company Company Features, Features Of Company Accounting Features Inventory Features, , Statutory Features Tally Screen Components, Title Bar, Button Bar, Calculator, Working Are, Quitting, Gateway Of Tally, Current Status Area Configuration, General, Numeric Symbols, Accts/Inventory Info, Printing, Connectivity, Licensing, Shop, Quit Budget, Introduction, Budget, Creating Budget, Alter A Budget, Delete Budget, Display Budget/ Budget Variance, Scenarios Job Costing, Introduction, Enabling Or Configure Job Costing In Tally, Master Creation For Job Costing, Voucher Type And Voucher Class, Job Cost Reports	Usage of ICT :-Power Points, PDF, Video lectures, Black board,
Unit – III	Reports, Introduction Accounting Reports, Trial Balance, Balance Sheet, Profit & Loss, Cash Flow Statement, Fund Flow Statement, Ratio Analysis, Day Book, Cash/Bank Book Sales Register Purchase Register Outstanding Interest Cost Centers Job Work Analysis Statistics Inventory Reports Accounts Groups & Ledgers, Introduction Accounts Group Multiple Group Creation Display Group Alter Group Multiple Ledgers Display Ledger Alter Ledger Voucher Types Payroll Accounting, Introduction, To Activate Payroll In Tally 9, Payroll Menu, Display Pay Heads, Multiple Group Creation, Employee Creation, Salary Detail, Attendance, Attendance Type, Voucher Creation.	Usage of ICT :-Power Points, PDF, Video lectures, Black board,Group projects on Tally
Unit – IV	Export & Import, Introduction, Export, Import, ODBC Compliances. Cost Centre, Introduction Cost Centre, Creating Cost Centre, Display Cost Centre, Alter Cost Centre Cost Category, Create Cost Categories, , Display Cost Categories, Alter Cost Categories Voucher Entry Cost Centre Class, Creating Cost Centre, Invoice Entry Using Cost Centre Reports Related To Cost Centre. Foreign Currencies, Introduction Foreign Currency, Create Foreign Currency,	Usage of ICT :-Power Points, PDF, Video lectures, Black board, Workshop on advancement of accounting using Tally

	Alter Foreign Currency, Display Foreign Currency, Exchange Rate Entry Voucher Entry Using Foreign Currency Voucher Entry through Forex Journal Voucher Class Reports Related To Foreign Currency. Interest, Introduction, Interest, Simple Mode, Interest On Outstanding Balances, Reports On Interest Calculated On Outstanding Balances, Advanced Parameter Mode, Interest Calculation Transaction By Transaction/Voucher Interest At Fixed Rate, Voucher Interest At Variable Rate, Statement Of Interest Due On Invoice, Interest Reports, Interest Voucher Class.	
Unit – V	Printing, Introduction Cheque Printing, Multi Account Printing, Printing Options General, Purchase Printing, Sales Transaction, Receipt Voucher, Journal/Contra, Debit/Credit Note, Reminder Letter, Confirmation Statement Reports Printing Button Related Bank Reconciliation, Introduction, Bank Reconciliation In Tally 9, Configuration Of BankReconciliation. Security Control, Introduction Security Levels Access Type Backup & Restore, introduction, Group Company, Create a Group Company, Alter a GroupCompany, Tally Audit, Splitting Company Data Inventory, Introduction Stock Group Stock Item Stock Categories Godowns Units Of Measures RateOf Duty Inventory Vouchers Reorder Level Inventory Reports Inventory Info Inventory BooksStatement Of Inventory Batch Wise Details Price List	Usage of ICT :-Power Points, PDF, Video lectures, Black board

COURSE OUTCOMES:-

- **CO1 :** After study, the student will be able to know about Accounting, Company, Company Features, Features of Company Accounting, Interest Calculation Transaction and Cheque Printing, Multi Account Printing.
- **CO2 :** Students are capable to work with large ledger.
- **CO3 :** Students are capable to fetch there accounting data at anywhere over the internet.

Practicals:

1. How do you create a new company in Tally?
2. How do you record a sales voucher in Tally?
3. How do you generate and print a GST invoice in Tally?
4. What is the use of "Cost Centres" and how do you create them in Tally?
5. How do you manage multiple godowns (warehouses) in Tally?
6. How can you reconcile bank statements with accounting records in Tally?
7. How do you generate financial reports (like Balance Sheet, Profit & Loss Account) in Tally?
8. What are ledgers and groups in Tally, and how do you create them?
9. How do you record an advance payment or receipt in Tally?
10. How do you close the books of accounts at the end of a financial year in Tally?

Reference Book:

1. Implementing Tally 6.3 by Nadhani; BPB Publications
2. BPB Tally 6.3 by BPB Editorial Board (Hindi) BPB Publications
3. Tally 9 (Level 2) Traders Accounting BY ASOK.K.NADHANI
4. Official Guide to Financial Accounting Using Tally. ERP 9 with
5. GST by Tally Education

Job Opportunities	Employability Skill Developed	Local/National/UNDP Goal Achieved	Entrepreneurship Opportunity
Training and Support in Institutions/universities Research and Academics System Analyst in State and Central Research organization,Consultant in Software firms,Quality Assurance and Testing in Public and Private sectors, Application Customization and Development, Start own venture	**Numeracy and accounting skill**	4. Quality Education, 8. Decent Work and Economic Growth	Can start own Accountant consultency

DR. C. V. RAMAN UNIVERSITY

KARGI ROAD, KOTA, BILASPUR (C.G.)

SEMESTER- 2nd **Course Code : 2TDCA-203**
PROGRAMME: DCA **Theory Max. Marks: 50**
COURSE: PROGRAMMING AND PROBLEM SOLVING THROUGH PYTHON **Theory Min. Marks: 17**

COURSE OBJECTIVE: Student will be able

- To understand Python and its basic programming structure.
- To know core Python programming concepts, including control flow, loops, and functions.
- To explore Python data structures like lists, tuples, and dictionaries.
- To learn file handling, object-oriented programming, and exception handling in Python.

Syllabus:

Unit	Unit wise course contents	Methodology Adopted
Unit – I	**Introduction to Python**: What is Python? Advantages of using python Installing python and PyCharm, Writing and running your first Python program.	Usage of ICT :-Power Points, PDF, Video lectures, Black board
Unit – II	**Basic concepts of Python**: Variables and Data Types, Operators, Control Flow, Loops, Function.	Usage of ICT :-Power Points, PDF, Video lectures, Black board
Unit – III	**Data Structure in Python**: Lists, Tuples and Dictionaries, Working with Lists and Tuples, Working with Dictionaries, List Comprehensions.	Usage of ICT :-Power Points, PDF, Video lectures, Black board
Unit – IV	**File Handling in Python:** Reading and Writing Text Files, Working with CSV Files, Working with JSON Files. **Object- Oriented Programming in Python**: Classes and Objects, Inheritance, Polymorphism, Encapsulation.	Usage of ICT :-Power Points, PDF, Video lectures, Black board
Unit – V	**Modules and Packages in Python:** What are Modules and Packages, Creating Modules and Packages**,** Importing Modules and Packages**,** Working with Standard Libraries. **Exception Handling in Python:** What are Exceptions? Handling Exceptions**,** Raising Exceptions**,** Using Try and Except Blocks.	Usage of ICT :-Power Points, PDF, Video lectures, Black board

COURSE OUTCOMES:-

- **CO1: -**The student will develop Python programs using variables, loops, and functions.
- **CO2: -**The student will be able to manipulate data structures like lists, dictionaries, and tuples efficiently.
- **CO3: -**The student will be able to implement file handling and work with different file formats (CSV, JSON).
- **CO4: -** Apply object-oriented programming and handle exceptions in Python applications.

Practical:

1. Write a simple Python program that prints "Hello, World!" and explain how to run it.
2. Define a variable in Python and assign it a value. What are the different data types available in Python?
3. Write a Python expression to demonstrate the use of arithmetic operators.
4. Create a simple if-else statement that checks if a number is even or odd.
5. Write a for loop that prints the numbers from 1 to 10.
6. Define a function in Python that takes two numbers as arguments and returns their sum.
7. Create a list of five fruits and demonstrate how to access elements using indexing.
8. Explain the difference between a list and a tuple in Python, and provide an example of each.
9. Write a Python script to read data from a text file and print its contents.
10. Create a class in Python that represents a Car, including properties like make, model, and a method to display

Reference Books:

- Python for Data Analysis, Wes McKinney, O'Reilly Media
- Fluent Python, Luciano Ramalho, O'Reilly Media
- Head First Python, Paul Barry, O'Reilly Media
- Python Cookbook, David Beazley and Brian K. Jones, O'Reilly Media

Text Books:

- Python Crash Course, Eric Matthes, No Starch Press
- Automate the Boring Stuff with Python, Al Sweigart, No Starch Press
- Learning Python, Mark Lutz, O'Reilly Media

Job Opportunities	Employability Skill Developed	Local/National/UNDP Goal Achieved	Entrepreneurship Opportunity
Data administrator, database developer, database trainer, oracle engineer, Training and Support in Institutions/universities, Research and Academics, System Analyst in State and Central Research organization,Consultant in Software firms, Quality Assurance and Testing in Public and Private sectors, Application Customization and Development, Start own venture	**Database management and transaction skill**	1.No poverty, 4. Quality Education, 8. Decent Work and Economic Growth, 9. industry innovation and infrastructure	Can start own Data handling company.

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KARGI ROAD, KOTA, BILASPUR (C.G.)

SEMESTER- 2nd **Course Code: 2TDCA-204**
PROGRAMME: DCA **Theory Max. Marks: 50**
COURSE: INTRODUCTION TO CYBER SECURITY **Theory Min. Marks: 17**

COURSE OBJECTIVE:-

- To understand the foundational knowledge of cyber threats and vulnerabilities.
- To understanding of essential security principles and practices.
- To know about risk management and the importance of protecting information systems.
- To identify and mitigate common cyber security challenges.

Syllabus:

Unit	Unit wise course contents	Methodology Adopted
Unit – I	**Introduction to Cyber Security -** Defining Cyberspace and Overview of Computer and Web-technology, Architecture of cyberspace, Communication and web technology, Internet, World wide web, Advent of internet, Internet infrastructure for data transfer and governance, Internet society, Regulation of cyberspace, Concept of cyber security, Issues and challenges of Cyber Security.	Usage of ICT :-Power Points, PDF, Video lectures, Black board,
Unit – II	**Cyber Crime and Cyber Law -** Classification of cyber-crimes, Common cyber-crimes cybercrime targeting computers and mobiles, cyber-crime against women and children, financial frauds, social engineering attacks, malware and ransom ware attacks, zero day and zero click attacks, Cybercriminals modus-operandi , Reporting of cyber-crimes, Remedial and mitigation measures, Legal perspective of cyber-crime, IT Act 2000 and its amendments, Cyber-crime and offences, Organizations dealing with Cyber-crime and Cyber security in India, Case studies.	Usage of ICT :-Power Points, PDF, Video lectures, Black board,
Unit – III	**Social Media Overview and Security** - Introduction to Social networks. Types of Social media, Social media platforms, Social media monitoring, Hashtag, Viral content, Social media marketing, Social media privacy, Challenges, opportunities and pitfalls in online social network, Security issues related to social media, Flagging and reporting of inappropriate content, Laws regarding posting of inappropriate content, Best practices for the use of Social media, Case studies.	Usage of ICT :-Power Points, PDF, Video lectures, Black board,
Unit – IV	**E – Commerce and Digital Payments -** Definition of E- Commerce, Main components of E-Commerce, Elements of E-Commerce security, E-Commerce threats, E-Commerce security best practices, Introduction to digital payments, Components of digital payment and stake holders, Modes of digital payments-Banking Cards, Unified Payment Interface (UPI),e-Wallets, Unstructured Supplementary Service Data (USSD), Aadhar enabled payments, Digital payments related common frauds and preventive measures. RBI guidelines on digital payments and customer protection in unauthorized banking transactions. Relevant provisions of Payment Settlement Act,2007,	Usage of ICT :-Power Points, PDF, Video lectures, Black board,
Unit – V	**Digital Devices Security, Tools and Technologies for Cyber Security** - End Point device and Mobile phone security, Password policy, Security patch management, Data backup, Downloading and management of third party software, Device security policy, Cyber Security best practices, Significance of host firewall and Ant-virus, Management of host firewall and Anti-virus,	Usage of ICT :-Power Points, PDF, Video lectures, Black board,

	Wi-Fi security, Configuration of basic security policy and permissions.	

Course Outcomes:-

- **CO1 :** After study Students will be able to recognize various types of cyber threats and vulnerabilities impacting organizations and individuals.
- **CO2 :** Students will gain the skills to apply fundamental security practices and technologies to safeguard information systems..
- **CO3 :** Students are able to assess and manage risks associated with cyber security, including the development of effective mitigation strategies.

PRACTICALS : -

1. What is a strong password, and how can you create one?
2. How do you identify phishing emails?
3. What steps should you take to secure your home Wi-Fi network?
4. What is two-factor authentication (2FA), and how do you enable it on your email or social media accounts?
5. How can you recognize and avoid malicious websites?
6. What is antivirus software, and why is it important?
7. How do you safely download and install software on your computer?
8. What should you do if you suspect that your computer has been infected by malware?
9. How do you back up your data to prevent data loss?
10. What are the risks of using public Wi-Fi, and how can you protect yourself?
11. How do you encrypt an email to ensure that only the intended recipient can read it?
12. What are some tips to avoid downloading malicious apps?

Reference Books:

• "Cybersecurity and Cyberwar: What Everyone Needs to Know" by P.W. Singer and Allan Friedman
• "The Web Application Hacker's Handbook: Finding and Exploiting Security Flaws" by Dafydd Stuttard and Marcus Pinto
• "Hacking: The Art of Exploitation" by Jon Erickson
• "Security Engineering: A Guide to Building Dependable Distributed Systems" by Ross J. Anderson
• "The Cybersecurity Body of Knowledge: The Complete Reference for IT Security in the Digital Age" by Dan Shoemaker, Nancy L. R. Mead, and Carol Woody
• "Computer Security: Principles and Practice" by William Stallings and Lawrie Brown
• "Cybersecurity Essentials" by Charles J. Brooks, Christopher Grow, and Philip Craig

Job Opportunities	Employability Skill Developed	Local/National/UNDP Goal Achieved	Entrepreneurship Opportunity
Cybersecurity offers diverse job opportunities, including roles such as security analyst, penetration tester, security engineer, and incident responder. Professionals are in demand across sectors like finance, healthcare, and government, focusing on protecting sensitive data, mitigating threats, and ensuring compliance with regulations, making it a rewarding career choice.	**Cyber Security Expert skill** .	1. No poverty, 4. Quality Education, 8. Decent Work and Economic Growth, **16. Peace, Justice, and Strong Institutions**:	Can start own Cyber security firm and work as cyber security expert in industry.

DR. C. V. RAMAN UNIVERSITY

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SEMESTER- 2d **Course Code: 2TDCA-205**
PROGRAMME: DCA **Theory Max. Marks: 50**
COURSE: PROJECT REPORT **Theory Min. Marks 17**

PATTERN :

A two-three weeks project topic will be assigned to each of the student in a group on the related topics studied in theSemester on which student shall prepare a project report and submit to the University. Detailed Guidelines related tothe Minor project can be obtained in the contact-class or can be downloaded from the website.

All the candidates of DCA are required to submit a project-report based on the work done by him/her during the project period. A detailed Viva shall be conducted by an external examiner based on the project report.