B.C.A.

Semester-I

L-3 T-1 P-4 C-6

BCC240: Programming in C

Course Objectives

Course Outcomes (COs)

Articulation Matrix

CO/PO/PSO	PO1	PO2	PO3	PO4	PO5	PO6	PSO1	PSO2
CO1								
CO2								
CO3								
CO4								
CO5								

High-3 Medium-2 Low-1

Unit I **12 Hours**

Algorithms & flowcharts; Rules/conventions of coding, documentation, naming variables; History of C; Structure of a C program, Data types; Constant & Variable; Operators & expressions; Control Constructs – if-else, for, while, do-while; Case statement.

Unit II **12 Hours**

Arrays; Formatted & unformatted I/O; Type modifiers & Storage classes; Ternary operator; Type conversion & type casting; Priority & associativity of operators.

Unit III **12 Hours**

Functions; Arguments; Return value; Parameter passing – call by value, call by reference; Return statement; Scope, visibility and life time rules for various types of variables, static variable; Calling a function; Recursion – basics, comparison with iteration, tail recursion, when to avoid recursion examples.

Unit IV **12 Hours**

Special constructs – Break, continue, exit (), goto & labels; Pointers - &and * operators, pointer expression, pointer arithmetic, dynamic memory management functions like malloc (), calloc(), free(), String;

Unit V **12 Hours**

Structure – basic, declaration, membership operator, pointer to structure, referential operator, self-referential structures, structure within structure, array in structure, array of structures; Union – basic, declaration; Typedef

List of Experiments

1. Write a program for simple arithmetic operations?
2. Write a program for finding greatest number among two numbers?
3. Write a program for the greatest number among the three numbers?
4. Write a program for finding an even or odd number?

5. Write a program for finding leap year?
6. Write a program to swap two numbers using a third variable?
7. Write a program to swap two numbers without third variable?
8. Write a program for printing of table which is given by the user?
9. Write a program for printing of table with valid condition?
10. Write a program to print in * in the pattern pyramid?
11. Write a program to print binary number (0, 1) in pyramid pattern?
12. Write a program to find the largest number among two numbers using ternary operator?
13. Write a program to check given number is prime or not?
14. Write a program to generate the Fibonacci series?
15. Write a program for finding sum & average of array element?
16. Write a program to calculate the area of giving the shapes: 1. Circle 2. Triangle 3. Rectangle 4. Square using switch case statement?
17. Write a program to swap two numbers using a third variable to function?
18. Write a program to swap two numbers without using a third variable to function?
19. Write a program for triangle to the given pattern

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

20. Write a program for pyramid to the given pattern

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

21. Write a program for finding reverse number which is given by the user?
22. Write a program for finding the sum of the given number?
23. Write a program to find even or odd number using functions?
24. Write a program to find largest and smallest element from an array?
25. Write a program for finding the sum of two matrices?
26. Write a program for finding the factorial number?

27. Write a program finding factorial using recursion?
28. Write a program finding power of a given number using recursion?
29. Write a program to print Fibonacci series using GOTO?
30. Write a program of special constructs using continue?
31. Write a program of special constructs using break?
32. Write a program to store information of student using structure?
33. Write a program to find the address of a variable using pointer variable?
34. Write a program finding power of a given number?
35. Write a program to connect two strings using string function?
36. Write a program to compare one string to another string using string function?
37. Write a program to calculate the length of string using string function?
38. Write a program to copy one string to another string using string function?
39. Write a program to copy one string to another string without string function?
40. Write a program to calculate the area of a circle using the macro function?
41. Write a program to include user defined header file in C Program.?
42. Write a program to check macros which is defined or not in the program?
43. Write a program to a read one character from the file using file function?
44. Write a program to a write one character to the file using file function?
45. Write a program to append one character to the file using file function?
46. Write a program to read numbers and characters from the file using file function?
47. Write a program to write numbers and characters to the file using file function?
48. Write a program to append numbers and characters to the file using file function?

Total: 90 Hours

Reference Books:

1. Kerninghan & Richie: The C Programming language, PHI
2. Cooper Mullish: The Spirit of C, Jaico Publishing House, Delhi
3. Kanetkar Y: Let us C
4. Kanetkar Y: Pointers in C.

Subject Name	L	T	P	Credits
Computer Fundamentals	3	1	-	4

Course Objectives:

- Give students an in-depth understanding of why computers are essential components in business, education and society.
- Gain in-depth knowledge about the general features of a computer
- Learn various types of memory &I/O management schemes.
- Provides knowledge about fundamentals of organization of a computer
- To study different OS and compare their features.

Unit I

Introduction to Computers: Introduction, Characteristics of Computers, Block diagram of computer, Generation of Computers, Types of computers, Mini Computers, Micro Computers, Mainframe Computers, Super Computers etc., Applications of Computers. **Computer Software:** Introduction, Software: Definition, Relationship between Software and Hardware, Software Categories, System Software, Application Software**. Number System:** Decimal, Binary, Octal, Hexadecimal, Conversions of number systems.

Unit II

Basic computer organization: Block diagram of computer, **Input devices**: classification of input devices, **Output devices**: classification of output devices, Printer, types of printers, **Central Processing Unit (CPU)**, Introduction, Elements of CPU: Control Unit (CU), Arithmetic Logical Unit (ALU), Registers, Instruction format Instruction set, Processor Speed, **Memory**: Introduction, memory measuring units, main memory, types of primary memory chips, Secondary storage: Introduction, types of secondary storage devices.

Unit III

SDLC: Software development life cycle, Algorithm: Definition, Characteristics, Advantages and disadvantages, Flowchart: Definition, Define symbols of flowchart, Advantages and disadvantages. **Programming Logic Buildings:** Introduction, Logic Buildings using flowchart and algorithms.

Unit IV

Computer Languages: Machine language, Assembly language, High level language, Program Language Translators: Assembler, Compiler, Interpreter, **Programming Languages**: Introduction, Evolution of Programming Languages, Classification of Programming Languages, Generations of Programming Languages, Features of a Good Programming Language, What are the characteristics of a good program, Top-down design, Bottom-up design.

Unit V

Operating System: Introduction, Operating System, Evolution of Operating System, Types of Operating System, Functions of an Operating System, **Dos**–History, Files and Directories, Internal and External Commands, Batch Files, etc. **Networking Basics:** Introduction, Types of Networks, Topology, Client-Server Concepts.

Reference Books:

1. Computer Fundamental Organization, B. Ram
2. Computer Fundamentals, Anita Goel, Pearson, 2010.
3. Fundamental of Computers – By V.Rajaraman B.P.B. Publications
4. Fundamental of Computers – By P.K. Sinha
5. Computer Today- By Suresh Basandra
6. Computer Networks- By Andrew S. Tanenbaum

Course Outcomes:

- Bridge the fundamental concepts of computers with the present level of knowledge of the students.
- Familiarise operating systems, programming languages, peripheral devices, networking, multimedia and internet
- Understand binary, hexadecimal and octal number systems and their arithmetic.
- Understand how logic circuits and Boolean algebra forms as the basics of digital computer.
- At the completion of this course students will be introduced to the basics of networking and Logic Building concepts of programming.

List of Experiments

1. Study of Hardware devices like keyboard, Mouse, Monitor, CD –ROM etc.
2. Study of Motherboard and its components.
3. Assembling and disassembling a computer.
4. Study of BIOS settings.
5. Formatting and partitioning Hard disk.
6. Installation of Windows Operating system.
7. Installation of Linux Operating system.
8. Installation of various device drivers like printer, scanner, webcam and motherboard etc.
9. How to create virtual machine and dual boot.

10. Installation of utility software like MS-Office, Photoshop, PDF Readers.
11. Study of Computer Network LAN, MAN, WAN and various networking cables and networking devices.
12. Study of IP-Addressing Schemes.
13. Creating LAN using crossover cable and straight through cable.
14. Sharing and Mapping printer, drives and folders in computer network.
15. Making image of a system.
16. Making bootable pen drive.
17. How to extend the RAM space using pen drive.
18. Accessing Remote Computer using team weaver and windows remote desktop.
19. Study of troubleshooting of hardware and software generated problems.
20. Some Dos (Internal & External commands) and Net Commands.
21. Perform these commands internal commands.
    DIR,TYPE,DEL,ERASE,MD,CD,COPY,RMDIR,VER,DATE,TIME,PAT H,CLS,RMDIR,VER,DATE,TIME,PATH,CLS,BREAK, SET,EXIT.
22. Perform external commands. APPEND, CHKDISK,ATTRIB,SYS,EDIT.
23. Write an algorithm for adding 2 no.
24. Write an algorithm for swapping two no using third variable.
25. Write an algorithm for swapping two no without using third variable.
26. Write an algorithm for finding simple interest.
27. Write an algorithm for finding area of circle.
28. Write an algorithm for finding whether a given no is even or odd.
29. Write an algorithm for finding largest no among two no.
30. Draw a flowchart for adding 2 no.
31. Draw a flowchart for swapping two no using third variable.
32. Draw a flowchart for swapping two no without using third variable.
33. Draw a flowchart for finding simple interest.
34. Draw a flowchart for finding area of circle.
35. Draw a flowchart for finding whether a given no is even or odd.
36. Draw a flowchart for finding largest no among two no.

Subject Name	L	T	P	Credits
Cloud Computing Concepts-1	3	1	4	6

Course Objectives

- Introduction to Cloud Computing and Key concepts of virtualization.
- Lear about the Growth of Internet and types.
- Study about the Different Cloud Computing services and Cloud Implementation, Programming and Mobile cloud computing.
- To Study of Key components of Amazon Web Services Cloud Backup and solutions

Unit I

Internet Vs Intranet, Growth of Internet, ISP, ISP in India, WORLD WIDE WEB (WWW) - Web server, Introduction: Historical development, Characteristics of cloud computing as per NIST, Cloud Stakeholders, Advantages & Disadvantages of Cloud Computing.

Unit II

Cloud Computing Service Models: IaaS, SaaS, PaaS,Types of Cloud Computing, Cloud computing environments, Cloud services requirements, Cloud and dynamic infrastructure, Cloud Adoption and rudiments, Vision of Cloud Computing, Cloud Service Providers.

Unit III

Cloud Deployment Models ,Grid computing, Grid- The Way to cloud, Grid Computing Vs Cloud Computing, Grid Computing and Utility Computing, Types of utility cloud services.

Unit IV

Cloud Computing Architecture: Cloud Reference Model, Cloud Interoperability & Standards, Scalability, High Availability and Fault Tolerance, Cloud Solutions: Cloud Ecosystem, Cloud Business Process Management, Cloud Service Management, Cloud Offerings: Cloud Analytics, Testing Under Control.

Unit V

Overview of cloud applications: ECG Analysis in the cloud, Protein structure prediction, Gene Expression Data Analysis ,Satellite Image Processing ,CRM and ERP ,Social networking.

Reference Books:

1. “Cloud Computing for Dummies” (Wiley India Edition), 2010, Bloor R., Kanfman M., Halper F. Judith Hurwitz.
2. “Cloud Computing: Principles and Paradigms”, Rajkumar Buyya, James Broberg, Andrzej M. Goscinski, John Wiley and Sons Publications, 2011.
3. “Cloud Computing: Insights into New-Era Infrastructure”, Dr Kumar Sourabh, John Wiley and Sons Publications, 2011.
4. “Cloud Computing: Black Book”, Kailash Jayaswal, Jagannath Kallakurchi, Donald

J. Houde Deven Shah, Kogent Learning Solutions, Dreamtech Press.
5. Krutz , Vines, “Cloud Security “ , Wiley Pub.
6. “Mastering Cloud Computing”, Rajkumar Buyya, C. Vecchiola & S. Thamarai
7. Selvi, McGRAW Hill Publication.

Course Outcomes:

- Define Cloud Computing and memorize the different Cloud service and deployment models.
- Describe importance of virtualization along with their technologies.
- Use and Examine different cloud computing services analyze the components of open stack & Google Cloud platform and understand Mobile Cloud Computing
- Describe the key components of Amazon web Service

List of Experiments

1. Study of Cloud Computing & Architecture.
2. Virtualization in Cloud.
3. To study of cloud computing basics, service and deployments models.
4. Study and implementation of Infrastructure as a Service.
5. Study and installation of Storage as Service.
6. To study and implementation of basic networking devices Like NIC Card, Cables, Switch, Topologies, and Connectors.
7. Study of IP Addressing.
8. Accessing Mobile and computer to each other using Teamweawer
9. Installation of software.
10. To study and implementations of Remoter desktop connection
11. To study and implementation of basic networking commands like ping, tracert, ipconfig etc.
12. To study and implementation of Google Drive.
13. To study of VMware Workstation and Creating Virtual Machine and Installation of Windows7.
14. Create a VM and Installation of Ubantu (Linux OS)
15. Case Study: PAAS (Facebook, Google App Engine)
16. Case study on Amazon EC2.
17. Case study on Microsoft azure.

Engineering &Technology (EEE/CSE/CE/ME/BCA/CC/SACS)
Semester- I

L-2 T-1 P-2 C-4

Business Communication & Presentation Skills-CSS020

Course Objectives:

- To provide an outline to effective Organizational Communication.
- To understand the variations of Business communication.
- To impart the correct practices of the strategies of Effective Business writing.
- To Apply Business Communication process in professional life.
- To focus on making students aware of the general requirements of business communication and effective presentation skills.

Course Outcomes (Cos) On completion of this course, the students will be able to:

CO1. Understand various levels of organizational communication and communication barriers while developing an understanding of Communication as a process in an organization.
CO2. Apply his/her ability to write error free while making an optimum use of correct Business Communication.
CO3. Apply to draft effective business correspondence with brevity and clarity.
CO4. Apply their Critical thinking by designing and developing clean and lucid writing skills.
CO5. Apply verbal and non-verbal communication ability through Effective presentation skills.

Articulation Matrix

(Program Articulation Matrix is formed by the strength of correlation of COs with POs and PSOs. The strength of correlation is indicated as 3 for substantial (high), 2 for moderate (medium) correlation, and 1 for slight (low) correlation)

CO/PO/PSO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	2	1	2	1	-	-	-	-	1	1	-	-	-	-		
CO2	2	-	1	2	-	-	-	2	-	2	-	-	-	1		
CO3	2	2	1	1	-	-		-	-	2	-	-	-	-		
CO4	1	2	1	1	-	-	-	-	-	2	-	-	1	-		
CO5	1	1	2	1	-	-	-	-	-	2	-	-	-	-		

High-3 Medium-2 Low-1

UNIT -1 Fundamentals of Communication and Business Communication Process 9 hours

Nature, meaning, scope and importance of business communication.
Process of communication, Barriers to communication, Types of communication (formal and informal, Oral and written)
Business Correspondence:
Business Communication, Importance of business communication; ABC of Technical Communication - Accuracy, Brevity, Clarity; Channels of communication - Downward communication, Upward communication, Diagonal communication, Horizontal communication.

UNIT - 2 Application of Business Communication Skills (Verbal/ Written) 9 hours

Interpersonal Communication and Personality Development: Models of interpersonal development, Johari window, Knapp's model, styles of communication; Team work; Persuasion techniques; Mobile Etiquette, e-mail Etiquette.
Technical Written Communication: Differences between Technical writing and General writing; Report writing-types of reports, structure / format, language style, writing technical reports; Writing scientific papers

UNIT - 3 Skills of Business Correspondence **9 hours**

Career Oriented Written Communication: Writing SOPs; Job Application; Language style and format; Resume writing- design and style; Cover Letter; Business Letters; Letters of enquiry and responses, Letters of complaint, Letters of adjustment, Sales letters; Agenda and minutes of the meeting.

UNIT - 4 Effective Presentation Skills **9 hours**

Structure of presentations. Use of aids like power point, Do's and Don'ts of presentation, Body language during presentations, Types of presentations.

UNIT- 5 Employability and Corporate Skills **9 hours**

Interview Skills and Group discussions: Interviews- Purpose, Planning, Preparation, Language and Stye, Sample interview questions and answers; • Group Discussions- Types of GD's, Features of good GDs, Preparing for a group discussion and Leadership skills.

Practical

Lab Sessions with the help of Language lab software:
Tense Buster, Study Skills.

Topics to be covered in the Language Laboratory Sessions:

- Self- Introduction
- JAM Sessions
- Extempore/ Role plays
- Picture description
- Debates/ Group discussions
- Working in teams
- Oral Presentations
- Telephone etiquettes
- Movies & Videos (Based on Learning English, With Hindi & English Subtitles.
- Assignments-Letter Writing/Technical Communication/Submission of CV/Models
- Worksheets

15 hours
Total 45=15=60 Hours

References:

1. Communication Skills – Dr Nageshwar Rao and Dr Rajendra Das, Himalya Publishing House,2014 edition.
2. Business Communication – Shalini Verma, Vikas Publishing House Second Edition
3. Effective business communication – Krizan, Merrier, Logan and Williams, Cengage Learning, 2008.
4. https://presentationskills.me/body-language/
5.A.J. Thomson and A.V. Martinet, A practical English Grammar,
6.Business Correspondence and Report Writing - By Sharma;
7. TMH. Living English Structure – By W.S. Allen; Longmans
8.English Grammar – Ehrlich, Schaum Series;
9.TMH. Spoken English for India – By R.K. Bansal and IB Harrison Orient Longman. New International Business English – by Joans and Alexander; OUP.
10. Communication Skills – Dr Neeta Sharma, Effective Technical Communication – Rizvi; TMH. Communication for Science & Engineering, by Dr Binod Mishra, Business Communication by Dr R.C. Sharma.

List of e-Learning Resources

1. **https://nptel.ac.in**
2. **https://www.coursera.org/**
3. **https://www.envision-creative.com/top-10-powerpoint-tips-dos-and-donts/**
4. **https://education4fun.com/cse-it/year-i/sem-ii/business-communication-and-presentation- skills-bcps/**

Lila Prabhu

Subject Name	L	T	P	Credits
Mathematics & Statistics	3	1	-	4

Unit I: SETS AND RELATIONS

Set Theory: Definition of sets, countable and uncountable sets, Venn Diagrams, proofs of some general identities on sets. Relation: Definition, types of relation, composition of relations, Pictorial representation of relation, Equivalence relation, Partial ordering relation.

Unit II: GRAPH THEORY

Introduction and basic terminology of graphs, Planer graphs, Multi graphs and weighted graphs, Isomorphic graphs, Paths, Cycles and connectivity, Shortest path in weighted graph, Introduction to Eulerian paths and circuits, Hamiltonian paths and circuits, Isomorphism and Homomorphism of graphs.

Unit III: ERRORS AND SOLUTION OF TRANSCENDENTAL EQUATIONS

Errors & Approximations, Solution of Algebraic & Transcendental Equations: Regular Falsi, Newton- Raphson, Solution of simultaneous linear equations by Gauss Elimination, Gauss Jordan, and Gauss- Siedel Iterative methods.

Unit IV: PROBABILITY

Significant digits and rounding of numbers, data collection, Measures of central tendency, measures of dispersion, Mean, Median, Mode, Range, Standard deviation, Mean deviation, Quartile deviation, Coefficient of Range, Coefficient of QD & QV, Coefficient of Variation, Skewness, Dispersion.

Unit V:

Probability and events, probability distributions, Elements of binomial and poisson distribution, Normal distribution curve and properties, Karl Pearson Coefficients of Correlation or covariance, Rank Correlation Methods, Regression, Properties of Regression Coefficients, Curve Fitting (Method of Least Square).

Reference Books:

1. Advance Engg. Mathematics. By Ramana, Tata McGraw hill.
2. Higher Engineering Mathematics by BS Grewal, Khanna Publication.
3. Advance Engineering Mathematics by D. G. Guffy.
4. Engineering Mathematics by S S Sastri. P.H.I.
5. Mathematics for Engineers by S.Arumungam, SCITECH Publuication.
6. Advanced Engineering Mathematics by Erwin Kreyszig, Wiley India.
7. Deo, Narsingh, “Graph Theory With application to Engineering and Computer Science.”, PHI