YMCA University of Science and Technology, Faridabad
BCA Scheme of Studies / Examination
Semester – I

Course No.	Course Title	Schedule				Sessional Marks/ Internal	Marks for End Term Examination		Total Marks	Credits
		L	T	P	Total		Theory	Practical		
BCA-DS-101	Programming in C	3		-	3	25	75	-	100	3
BCA-DS-102	Internet and Web Fundamentals	3		-	3	25	75	-	100	3
BCA-DS-103	Computer Fundamentals and Organization	3		-	3	25	75	-	100	3
BCA-DS-104	Algebra and Calculus	3		-	3	25	75	-	100	3
BCA-DS-105	Self-Guided Improvement	3		-	3	25	75	-	100	3
BCA-DS-106	C Programming Lab	-		4	4	25	-	50	75	2
BCA-DS-107	Internet Fundaments Lab	-		4	4	25	-	50	75	2
BCA-DS-108	PC Software Lab	-		4	4	25	-	50	75	2
BCA-DS-109	Presentation	-		2	2	25	-		25	1
BCA-DS-110	Group Discussion	-		2	2	25	-		25	1
	Total				31	250	375	150	775	23

Note: Exam duration will be as under

(a) Theory exams will be of 3 hours duration

(b) Practical exams will be of 3 hours duration

BCA-DS-101: PROGRAMMINGIN C
BCA I Semester

No. of Credits: 3		Sessional:	25 Marks
L T P Total		Theory:	75 Marks
3 0 0 3		Total :	100 Marks
		Duration of Exam:	3 Hours

Note: Examiner will be required to set *Seven* questions in all having two parts. Part I will have Question Number 1 consisting of total 10 parts (short-answer type questions) covering the entire syllabus and will carry 15 marks. In Part II, there will be *Six* questions. Examiner will set one and a half questions from each Unit of the syllabus and each question will carry 15 marks. Question Number 1 will be compulsory. In addition to compulsory question, student will have to attempt four more questions from Part II.

COURSE OBJECTIVES:

1. To understand the major components of computer system, programming languages and networking concepts.
2. To understand the basic building blocks of C language like variables, data types, managing I/O etc.
3. To understand the different statements like sequential, decision making, iterative such as if-else, loops and derived data types like arrays, structures etc.
4. To learn about the concept of Pointers and understand functions and file handling.

SYLLABUS

UNIT - I

Overview of C: History of C, Importance of C, Elements of C: C character set, identifiers and keywords, Data types, Constants and Variables, Assignment statement, Symbolic constant, Structure of a C Program, printf(), scanf() Functions, Operators.

Expression: Arithmetic, relational, logical, bitwise, unary, assignment, shorthand assignme nt operators, conditional operators and increment and decrement operators, Arithmetic expressions, evaluation of arithmetic expression, type casting and conversion, operator hierarchy & associativity.

UNIT - II

Decision making & branching: Decision making with IF statement, IF-ELSE statement, Nested IF statement, ELSE-IF ladder, switch statement, go to statement.

Decision making & looping: For, while, and do-while loop, jumps in loops, break, continue statement, Nested loops.

UNIT - III

Functions: Standard Mathematical functions, Input/output: Unformatted & formatted I/O functio n in C, Input functions viz. getch(), getche(), getchar(), gets(), output functions viz., putch(), putchar(), puts(), string manipulation functions.

User defined functions: Introduction/Definition, prototype, Local and global variables, passing parameters, recursion.

UNIT - IV

Arrays, strings and pointers: Definition, types, initialization, processing an array, passing arrays to functions, Array of Strings. String constant and variables, Declaration and initialization of string, Input/output of string data, Introduction to pointers. Storage classes in C: auto, extern, register and static storage class, their scope, storage, & lifetime. Algorithm development, Flowcharting and Development of efficient program in C.

COURSE OUTCOMES:

The student will learn:

1. To formulate simple algorithms for arithmetic and logical problems.
2. To translate the algorithms to programs (in C language).
3. To test and execute the programs and correct syntax and logical errors.
4. To implement conditional branching, iteration and recursion.
5. To decompose a problem into functions and synthesize a complete program using divide and conquer approach.
6. To use arrays, pointers and structures to formulate algorithms and programs.
7. To apply programming to solve matrix addition and multiplication problems and searching and sorting problems.

Text Books/ Reference Books:

1. Gottfried, Byron S., Programming with C, Tata McGraw Hill
2. Gill Nasib Singh: Computing Fundamentals and Programming in C, Khanna Books Publishing Co., New Delhi.
3. Balagurusamy, E., Programming in ANSI C, 4E, Tata McGraw-Hill.
4. Jeri R. Hanly& Elliot P. Koffman, Problem Solving and Program Design in C, Addison Wesley.
5. Yashwant Kanetker, Let us C, BPB.
6. Rajaraman, V., Computer Programming in C, PHI.
7. Yashwant Kanetker, Working with C, BPB.

Note: Latest and additional good books may be suggested and added from time to time.

BCA-DS-102: Internet and Web Fundamentals
BCA I Semester

No. of Credits: 3		Sessional:	25 Marks
L T P Total		Theory:	75 Marks
3 0 0 3		Total :	100 Marks
		Duration of Exam:	3 Hours

Note: Examiner will be required to set *Seven* questions in all having two parts. Part I will have Question Number 1 consisting of total 10 parts (short-answer type questions) covering the entire syllabus and will carry 15 marks. In Part II, there will be *Six* questions. Examiner will set one and a half questions from each Unit of the syllabus and each question will carry 15 marks. Question Number 1 will be compulsory. In addition to compulsory question, student will have to attempt four more questions from Part II.

COURSE OBJECTIVES:

1. This course is intended to teach the basics involved in publishing content on the World Wide Web.
2. This includes the 'language of the Web' – HTML, the fundamentals of how the Internet
3. and the Web function, a basic understanding of graphic production with a specific stress on creating graphics for the Web, and a general grounding introduction to more advanced topics such as programming and scripting.
4. This will also expose students to the basic tools and applications used in Web publishing.

SYLLABUS

Unit 1

Electronic Mail and Internet: Introduction, advantages and disadvantages, Userids, Pass words, e-mail addresses, message components, message composition, mailer features, E-mail inner workings, E-mail management, Mime types, Newsgroups, mailing lists, chat rooms. Introduction to networks and internet, history, Working of Internet, Internet Congestion, internet culture, business culture on internet. Collaborative computing & the internet. Modes of Connecting to Internet, Internet Service Providers(ISPs), Internet address, standard address, domain name, DNS, IP.v6.Modems and time continuum, communications software; internet tools.

UNIT 11

World Wide Web: Introduction, Miscellaneous Web Browser details, searching the www: Directories search engines and meta search engines, search fundamentals, search strategies, working of the search engines, Telnet and FTP.

Browser: Introduction to Browser, Coast-to-coast surfing, hypertext markup language, Web page installation, Web page setup, Basics of HTML & formatting and hyperlink creation, Using FrontPage Express, Plug-ins.

UNIT 111

Languages: Basic and advanced HTML, java script language, Client and Server Side Programming in java script. Forms and data in java script, XML basics.

Introduction to Web Servers: PWS, IIS, Apache; Microsoft Personal Web Server. Accessing & using these servers.

UNIT IV

Privacy and security topics: Introduction, Software Complexity, Encryption schemes, Secure Web document, Digital Signatures, Firewalls.

COURSE OUTCOMES:

At the end of the course/session the student would be able to

1. Understand the basics of internet &search engines.
2. Have a hands onHTML
3. Learn the need and basics of CSS
4. Learn the concepts of client side and server side scripting.

Text Book/ Reference Books:

1. Fundamentals of the Internet and the World Wide Web, Raymond Greenlaw and Ellen Hepp – 2001, TMH
2. Internet & World Wide Programming, Deitel,Deitel& Nieto, 2000, Pearson Education
3. Complete idiots guide to java script, Aron Weiss, QUE, 1997
4. Network firewalls, Kironjeetsyan -New Rider Pub.
5. Alfred Glkossbrenner-Internet 101 Computing MGH, 1996

Note: Latest and additional good books may be suggested and added from time to time.

BCA-DS-103: COMPUTER FUNDAMENTALS AND ORGANIZATION

BCA I Semester

No. of Credits: 3	Sessional:	25 Marks
L T P Total	Theory:	75 Marks
3 0 0 3	Total :	100 Marks
	Duration of Exam:	3 Hours

Note: Examiner will be required to set *Seven* questions in all having two parts. Part I will have Question Number 1 consisting of total 10 parts (short-answer type questions) covering the entire syllabus and will carry 15 marks. In Part II, there will be *Six* questions. Examiner will set one and a half questions from each Unit of the syllabus and each question will carry 15 marks. Question Number 1 will be compulsory. In addition to compulsory question, student will have to attempt four more questions from Part I

COURSE OBJECTIVES:

1. Describe the organization and operation of a computer processor, primary and secondary memory, peripheral devices and to give computer specifications;
2. Explain the representation of data and information in computer systems, use standard word, and spreadsheets, graphics generation packages,

SYLLABUS

UNIT-I

Computer Fundamentals: Generations of Computers, Definition, Block Diagram along with its components, characteristics & classification of computers, Limitations of Computers, Human-Being VS Computer, Applications of computers in various Fields, I/O devices, definition of software.

UNIT- II

Memory: Flynn's classification of computers (SISD, MISD, MIMD), Concept of prima ry &secondary memory, RAM, ROM, types of ROM, Cache Memory, flash memory, Secondary storage devices: Sequential & direct access devices viz. magnetic tape, magnetic disk, optical disks i.e. CD, DVD, virtual memory, Memory Hierarchy, Need for memory hierarchy.

UNIT-III

Computer Languages: Analogy with natural language, machine language, assembly language, high-level languages, fourth generation languages, compiler, interpreter, assembler, Linker, Loader , characteristics of a good programming language, Planning the Computer Program: Concept of problem solving, Problem definition, Program design, Debugging, Types of errors in programming, Documentation, Structured programming concepts, Programming methodolo gies viz. top-down and bottom-up programming, Advantages and disadvantages of Structured programming.

UNIT-IV

Instruction Set Architecture: Instruction set based classification of processors (RISC, CISC, and their comparison); addressing modes: register, immediate, direct, indirect, indexed; Operations in the instruction set; Arithmetic and Logical, Data Transfer, Control Flow.

Overview of Networking:
What is networking? Introduction to LAN, MAN and WAN.

COURSE OUTCOMES:

After completion of this course, student will be able to

1. Understand the fundamentals of computer.
2. Understand about different types of memory and the need of memory hierarchy.
3. Learn the basics of networking.
4. Learn basic approaches of Programming

Text Books/ Reference Books:

1. Gill Nasib Singh: Computing Fundamentals and Programming in C, Khanna Books Publishing Co., New Delhi.
2. Balagurusamy E, Computing Fundamentals and C Programming, Tata McGraw Hill.
3. Norton, Peter, Introduction to Computer, McGraw-Hill
4. Leon, Alexis & Leon, Mathews, Introduction to Computers, Leon Tech World
5. Rajaraman, V., Fundamentals of Computers, PHI
6. Ram, B., Computer Fundamentals, Architecture & Organization, New Age Internationa l(P) Ltd.
7. Chhillar, Rajender Singh: Application of IT to Business, Ramesh Publishers, Jaipur.
8. Gill, Nasib Singh: Essentials of Computer and Network Technology, Khanna Books Publishing Co., New Delhi

Note: Latest and additional good books may be suggested and added from time to time.

BCA-DS-104: ALGEBRA AND CALCULUS

BCA I Semester

No. of Credits: 3	Sessional:	25 Marks
L T P Total	Theory:	75 Marks
3 0 0 3	Total :	100 Marks
	Duration of Exam:	3 Hours

Note: Examiner will be required to set *Seven* questions in all having two parts. Part I will have Question Number 1 consisting of total 10 parts (short-answer type questions) covering the entire syllabus and will carry 15 marks. In Part II, there will be *Six* questions. Examiner will set one and a half questions from each Unit of the syllabus and each question will carry 15 marks. Question Number 1 will be compulsory. In addition to compulsory question, student will have to attempt four more questions from Part II.

COURSE OBJECTIVES

1. Learn the general concept of function and its applications to real-world situations.
2. Learn to work with exponential, logarithmic and trigonometric functions and their applications in applied problems.
3. Learn the concepts of the derivative and its underlying concepts such as limits and continuity.
4. Learn to calculate derivative for various type of functions using definition and rules.
5. Apply the concept of derivative to completely analyze graph of a function.
6. Learn about various applications of the derivative in applied problems.

SYLLABUS

UNIT I

MATRICES: Symmetric – Skew-Symmetric - Orthogonal and Unitary matrices - Rank of a Matrix - Consistency - Characteristic equation – Eigen values and Eigen vectors - properties –Cayley, Hamilton's Theorem (proof not needed) - Simple applications.

UNIT II

THEORY OF EQUATIONS: Partial Fractions- Theory of equations- Polynomial Equations with real coefficients -Irrational roots - Complex roots - Symmetric functions of roots - Transformation of equation by increasing or decreasing roots by a constant -Reciprocal equations.

UNIT III

DIFFERENTIAL CALCULUS: Rules of differentiation - Derivative of implicit function - Successive differentiation nth derivatives - Leibnitz theorem (without proof) and applications - maxima and minima of functions of two variables - Partial differentiation - Euler's Theorem.

UNIT IV

INTEGRAL CALCULUS: Integration of rational functions - algebraic expressions involving only one irrational quantity-rational functions of sinx and cosx - Trigonometric substitutions - Bernoulli's formula for integration by parts - reduction formulae - properties of definite integral -Evaluation of double and triple integrals.

COURSE OUTCOMES:

After completing this course, student will be able:

1. Plot points and equations and interpret information using the rectangular coordinate system.
   (This would include finding equations of lines, parallel lines, and perpendicular lines.)
2. Solve linear and rational equations in one variable.
3. Use mathematical equations to model real-life problems.
4. Perform operations with real and complex numbers.
5. Solve quadratic equations by factoring, completing the square, and by the quadratic formula.
6. Use function notation and identify the domain and range.
7. Solve systems of linear equations in two or three variables.
8. Learning outcomes of Calculus:
9. Understand the relationship between the derivative and the definite integral as expressed in both parts of the Fundamental Theorem of Calculus.
10. Locate the x and y intercepts, any undefined points, and any asymptotes.
11. Determine asymptotes for rational expressions
12. Determine if there is any symmetry to aid in the graphing process.
13. Determine the point(s) of intersection of pairs of curves.

Text Books/Reference Books:

1. Narayanan, S. and Manicavachagom Pillay, T.K. (2015) Calculus Vol. I,II&III S.Viswanathan (Printers & publishers) Pvt. Ltd., Chennai.
2. Venkataraman, M.K., "Higher Mathematics for Engineering and Science",Third Edition, The National Publishing Co., Madras, 1986.
3. Kandasamy P, K. Thilagavathi and K. Gunavathy- Allied Mathematics aper-I, First semester, 1/e, S. Chand & Co., New Delhi, 2003
4. Stewart J - Single Variable Calculus (4th edition) Brooks / Cole, Cenage Learning 2010.
5. Tom M. Apostol - Calculus, Vol. I (second edition) John Wiley and Sons, Inc., Jan 2007.
6. Burnside W.S. and A.W. Panton - The Theory of Equations, Dublin University Press, 1954.
7. MacDuffee, C.C. - Theory of Equations, John Wiley & Sons Inc., 1954.
8. Ushri Dutta, A.S.Muktibodh and S.D. Mohagaonkar: Algebra and Trigonometry, PHI India, 2006

Note: Latest and additional good books may be suggested and added from time to time.

BCA-CC-105: SELF GUIDED IMPROVEMENT
BCA I Semester

No. of Credits: 3	Sessional:	25 Marks
L T P Total	Theory:	75 Marks
3 0 0 3	Total :	100 Marks
	Duration of Exam:	3 Hours

Note: Examiner will be required to set *Seven* questions in all having two parts. Part I will have Question Number 1 consisting of total 10 parts (short-answer type questions) covering the entire syllabus and will carry 15 marks. In Part II, there will be *Six* questions. Examiner will set one and a half questions from each Unit of the syllabus and each question will carry 15 marks. Question Number 1 will be compulsory. In addition to compulsory question, student will have to attempt four more questions from Part II.

COURSE OBJECTIVES/OUTCOMES:

1. Developing and implementing a sound self-improvement program.
2. Setting appropriate life and career goals.
3. Accepting new ideas, as it can bring positivity in life.
4. Making or creating not only self but to others also as a team.

SYLLABUS

UNIT I

SELF ANALYSIS: SWOT Analysis, Who am I, Attributes, Importance of Self Confidence, Self Esteem, What is personality? Why does it matter? How do personalities develop?

UNIT-II

PERSONALITY AND CAREER CHOICE: Matching your career and personality, why it matters, Self-efficacy, Basic Personality Traits: Values, Beliefs, Interactions, Experiences, Environmental influences, The big five dimensions, Changing Your Personality, Can personalit ies change? Being yourself, being adaptable, Positive attitude, Individuality, Controlling emotions

UNIT III

CREATIVITY AND PERSONAL GROWTH: Out of box thinking, Lateral Thinking, Personal Growth: Ways you can try to improve, Helpful tools and exercises, setting goals, focusing on positives.

ATTITUDE AND MOTIVATION: Factors influencing Attitude, Challenges and lessons from Attitude, Etiquette, Factors of motivation, Self-talk, Intrinsic & Extrinsic Motivators.

UNIT IV

GOAL SETTING: Wish List, SMART Goals, Blue print for success, Short Term, Long Term, Life Time Goals. Time Management: Value of time, Diagnosing Time Management, Weekly Planner, To do list, Prioritizing work.

Text Books / Reference Books:

1. Covey Sean, Seven Habits of Highly Effective Teens, New York, Fireside Publishers, 1998.
2. SOFT SKILLS, 2015, Career Development Centre, Green Pearl Publications.
3. Carnegie Dale, How to Win Friends and Influence People, New York: Simon & Schuster, 1998.
4. Thomas A Harris, I am ok, You are Ok , New York-Harper and Row, 1972
5. Daniel Coleman, Emotional Intelligence, Bantam Book, 2006

Note: Latest and additional good books may be suggested and added from time to time.

BCA-DS-106: C PROGRAMMING LAB
BCA I Semester

No. of Credits: 2	Sessional: 25 Marks
L T P Total	Practical: 50 Marks
0 0 4 4	Total : 75 Marks
	Duration of Exam: 3 Hours

List of Programs:

Data Types, Expression and Operators:

1. Write a program to add, subtract, multiply and divide two numbers.
2. Write a program to find the average mail height & average female heights in the class (input is in the form of gender code, height).
3. Write a program to calculate area of triangle using Heron's formula

Decision Making and Branching:

4. Write a program to check entered number is even or odd.
5. Write a program to find the number entered is positive or negative.
6. Write a program to find the largest of three numbers. (if-then-else).
7. Write a program to find roots of a quadratic equation using functions and switch statements.

Decision making & looping:

8. Write a program to find the largest of ten numbers. (While loop)
9. Write a program to calculate sum of n numbers using do-while loop.
10. Write a program to print the table of any entered Integer (For loop).
11. Write a program to print even series numbers.
12. Write a program to print odd series numbers.

Function and Recursion:

13. Write a program to find the sum of two numbers using function without argument s and with no return type.
14. Write a program to find the sum of two numbers using function with arguments and with no return type.
15. Write a program to find the sum of two numbers using function with arguments and with return type.
16. Write a program to swap two integers entered by the user using call by value.
17. Write a program to swap two integers entered by the user using call by Reference.
18. Write a program to find factorial of a number using function.

19. Write a program to calculate a^b using function.
20. Write a program to print Fibonacci series using recursion.
21. Write a program to generate a series of 10 Fibonacci numbers with using recursion

Arrays and String:

22. Write a program to find the sum of enter elements (Using Array)
23. Write a program using arrays to find the largest and second largest number out of given 50 numbers.
24. Write a program to add and subtract two matrices.
25. Write a program to multiply two matrices.
26. Write a program to transpose a given matrix.
27. Write a program to find length, reverse, concatenate, compare, copy, change case of a string with using string library functions. (7 programs).
28. Write a program to find length, reverse, concatenate, compare, copy, change case of a string without using string library functions (7 programs).
29. Write a program to check that the input string is a palindrome or not.

Pointers and file handling:

30. Write a program to print the value and address of a pointer variable.
31. Write a program to swap two integers entered by the user.
32. Write a program to print the value and address of a pointer of pointer variable.
33. Write a program to open a file using File Handling.
34. Write a program to copy text from a file to another file using File Handling.

BCA-DS-107: INTERNET FUNDAMENTALS LAB
BCA I Semester

No. of Credits: 2	Sessional: 25 Marks
L T P Total	Practical: 50 Marks
0 0 4 4	Total : 75 Marks
	Duration of Exam: 3 Hours

List of Programs:

1. Sending and receiving mails.
2. Chatting on the net.
3. Using FTP and Tel net server.
4. Using HTML Tags (table, form, image, anchor etc.).
5. Write a program to create various types of list.
6. Write a program to create chess board and time table using table tag.
7. Write a program to create frames.
8. Write a program to use various tags in HTML.
9. Write a program to use CSS in HTML.
10. Making a Web page of your college using HTML tags

Note: At least 10 exercise to be given by the teacher concerned.

BCA-DS-108: PC SOFTWARE LAB
BCA I Semester

No. of Credits: 2		Sessional:	25 Marks
L T P Total		Practical:	50 Marks
0 0 4 4		Total :	75 Marks
		Duration of Exam:	3 Hours

List of Programs:

1. To prepare your CV using MS Word.
2. Create a mail merge letter using MS Word.
3. Create a macro for inserting a picture and formatting the text.
4. Create a simple presentation to list simple dos commands, hardware and software using MS Power Point.
5. Add text, pictures, sounds, movies, and charts to your presentations.
6. Set up slide shows and rehearse timings for your slides.
7. Create a worksheet with 4 columns, enter 10 records and find the sum of all columns using MS Excel.
8. Create a student result sheet.
9. Create a simple bar chart to highlight the sales of a company for 3 different periods.
10. Create, record and use macro in MS Excel.
11. Sorting and filtering of data
12. Create pivot tables and pivot charts.