Proposed Syllabus for
F.Y.B.Sc. (Computer Science)

North Maharashtra University, Jalgaon

F.Y.B.Sc. (Computer Science)

(w.e.f. June-2018)

YEAR I: CORE SUBJECTS (DSC)

Semester	Course as per UGC	Course code	Course Title	Lectures	Credits	Workload (hr)
I	CS-DSC 1 A: (Credits: Theory-04, Practicals-02) CS LAB	CS 101	Essentials of Computer	30	02	02
		CS 102	C Programming Language-I	30	02	02
		CS 103	LAB Course on Essential of Computer and C programming	60	02	04
II	CS-DSC 2A: (Credits: Theory-04, Practicals-02) CS LAB	CS 201	Internet Computing	30	02	02
		CS 202	C Programming Language-II	30	02	02
		CS 203	LAB Course on Internet Computing and C Programming	60	02	04

Semester I

Computer Science-DSC 1 A:

(Credits: Theory-04, Practicals-02)

Theory: 30 Hours

CS 101: Essential of Computer Science

Unit-1. Introduction to Computer Components [H: 8]

1.1 Definition of computer, History of computers
1.2 Block Diagram of Computer, Types of computer, Neumann machine
1.3 Input Devices: Keyboard, Mouse, Scanner
1.4 Output Devices: Monitor, Printer, Plotter
1.5 Memory: Primary Memory, RAM, ROM, EPROM, PROM,
1.6 Secondary Memory, Hard Disk, Pen Drive
1.7 Definition: Data, Information, Algorithm, Flowchart, Program, Hardware, And Software: System Software, Application, Software, Firmware, Interpreter, compiler
1.8 Programming Languages: High level, Middle Level, Low Level

Unit -2. Concepts of network [H:6]

2.1 What is Computer Network?
2.2 Types of Networks (with Features and Application): LAN, WAN, MAN
Wired Network, Wireless Network, MANET, Internet
2.3 Study of Web Browsers
2.4 Search Engines

Unit -3. Computer Virus [H: 8]

3.1 Computer Virus: Indication of virus infection
3.2 Types of Viruses: Boot Sector Virus, Programs Virus, Macro Virus, Multipartite Virus, Polymorphic Virus, Worms, Malware: Spyware, Adware, Anti-Virus
3.3 Computer Ethics: Hacking, Software Piracy, Spamming, Phishing

Unit -4. Operating System [H: 8]

4.1 What is booting, POST, Bootstrap, Boot Drive.
4.2 Definition of operating system, functions of operating system
4.3 Introduction of operating systems : DOS, Windows, Linux
4.4DOS: Introduction, Commands: Copy, Del, Ren, Md,Cd, Rd, erase, Dir, MKDir, Date and Time, Copycon

References:

1. V. Rajaraman, “Fundamentals of Computers”, PHI publication, ISBN: 8120340116, 9788120340114
2. Roger Hunt and John Shelley, “Computers and Commonsense ”, PHI publication,ISBN: 0876923651, 9780876923658
3. Abraham Silberschatz, Peter B. Galvin, Greg Gagne,” Operating System concepts”, ISBN:1119017475, 9781119017479
4. Andrew S. Tanenbaum, David J. Wetheral, “Computer Network”, ISBN 0133072622, 9780133072624

Computer Science-DSC 1 A:

(Credits: Theory-04, Practicals-02) Theory: 30 Hours

CS 102: C Programming-I

UNIT-1. Prelimary Concepts (5 Hrs.)

1.1 History of 'C' Programming language
1.2 Applications and Features
1.3 Structure of C-program
1.4 Compilation, Execution and Debugging of C-program

UNIT-2. Basics of 'C' Program (7 Hrs.)

2.1 Variables, Declaration of variables, keywords
2.2 Data types and Qualifiers
2.3 Constants and types of constants, Comments
2.4 Input Output Statements (Standard and formatted)
2.5 Introduction and features of 'C' preprocessor

2.6 Directives: #define, File inclusion (#include)

UNIT -3. Operators and Expression (7 Hrs.)

3.1 Operators –Arithmetic, Relational, Logical, Assignment, Compound assignment operator (short hand assignment), Bitwise, Increment-Decrement, Conditional Operator, Special Operator – Comma, sizeof operator,

3.2 Type Conversion – implicit and explicit

3.3 Library Functions: abs (), sqrt( ), pow( ), ceil( ), floor( )

UNIT -4. Conditional Statements and looping (6 Hrs.)

4.1 If Statement, if-else Statement, nested if-else Statement, else-if ladder, Switch Statement
4.2. Break, continue and goto statements
4.3 Looping Concepts
While, do-while, for loop Nested loops Concept

UNIT-5. Arrays (5 Hrs.)

5.1 Definition: Array: declaration and Initialization
5.2 Types of array(One Dimensional and Multidimensional)
5.3 Advantages and disadvantages of array
5.4 Applications of array

References:-

1. Denis Ritchie. "C" Programming – Prentice Hall Software Series- ***ISBN***. 10 9 8 7
2. Yashwant P. Kanetkar - ANSI C ,BPB publication. ***ISBN***: 9788183333245
3. Byron Gottfried – Programming with C –Tata McGRAW-Hill ***ISBN***-10: 0070145903
4. Yashwant P. Kanetkar -Understanding pointers in "C" -BPB publication. ***ISBN***-13: 978- 8176563581
5. E.Balguruswami -Programming in ANSI- C- Tata McGRAW-Hill- ***ISBN***-10: 933921966X
6. Mike McGrath - C programming in easy step – Wiley publication I***SBN***-10: 1840785446

CS LAB: DSC 1A LAB: Lab Course on Essential of Computer and C Programming

Credit -2

CS 103: LAB (Students should perform at least ten experiments from the following list)

Part –A Lab Course on Basics of Computer

1. Introduction to Computer, Input devices, Output devices, Booting – POST.
2. Installation of Software and operating system
3. DOS Commands
4. Introduction to Web Browsers
5. Creation of an e-mail account, sending and receiving emails with attachment
6. Searching information text, videos
7. How LAN work in laboratory, Sharing of Computer and printer in Network.

Part – B Lab Course on C-programming-I

1. To enter, compile and execute a sample "C" program.
2. To Study various editors and perform program using standard input output Statements.
3. Program using formatted input output statements also study various format String and Escape sequence characters.
4. Program to illustrate various operators like arithmetic, relational, logical, Conditional etc.
5. Program to illustrate various control statement (if, if-else, nesting if-else, Switch) at least one program on each control statement.)
6. Program using various loops (for, while, do-while, nested loops) (eg no. is palindrome, prime ,factorial, fibbonacci, Armstrong etc.)
7. To write sample program using goto, continue, break, and return statement.
8. Program using 1-D arrays (eg:-sorting and searching element of array)

Semester II

Computer Science-DSC 1 B:

(Credits: Theory-04, Practicals-02)

Theory: 30 Hours

CS 201: Internet Computing

Unit-1 Introduction to Website: **[H: 06]**

1.1 Introduction
1.2 Site Types
1.3 Site Structure
1.4 Site Organization Model
1.5 Site Planning and Testing

Unit- 2 Web Design Process: **[H: 04]**

2.1 What is Web Design?
2.2 Web Design Pyramid
2.3Web Process Model
2.4 Modified Waterfall Model
2.5 Joint Application Development Model

Unit-3 Page Types and Navigation Theory: **[H: 03]**

3.1 Page Types
3.2 Page Size and Margins
3.3 What is Navigation and types of Navigation?

Unit-4 Introduction to HTML Programming: **[H: 10]**

4.1 Structure of HTML Document
4.2Text Formatting Tags and Character Entity References
4.3 List Tags
4.4 Image and Anchor Tag
4.5 Media Elements: Audio tag, Video tag
4.6 Table Tags
4.7 Frame and Form Tag with Form elements

Unit-5 Introduction to CSS **[H: 7]**

5.1 What is CSS
5.2 Types of Style sheet (Internal, External, and Inline)
5.3 Syntax of CSS with Example
5.4 Selectors (Class, ID, Group, Element)

References:

1. Thomas A. Powell, "The Complete reference –Web Design", Second Edition, TMH, ISBN:0-07-041186.
2. Internet in easy steps By Dremtech press.
3. James L. Mohler, "How to become web master in 14 days" TechMedia, ISBN:81-87105-74-7.
4. E.Stephen Mack &Janan Platt, "HTML 4.0" BPB publication, ISBN:9780782121438
5. Keith Brophy,"Teach yourself Vbscript in 21 days", SAMS publishing, ISBN-13:9781575211

Computer Science-DSC 1 B:

(Credits: Theory-04, Practicals-02)

CS 202: C Programming-II Theory: 30 Hours

Unit-1 Function (7 Hrs.)

1.1 Definition and Need of Function
1.2 Declaration and Prototypes
1.3Function calling (Call by value, call by reference)
1.4 Function with return and Function with argument
1.5 Recursion
1.6 String Function : strcpy(), strlen(), strcmp(), strcat(), strrev()

Unit-2 Pointers (7 Hrs.)

2.1 Introduction
2.2 Address and arguments
2.3 Declaration, accessing value through a pointer
2.4 Operations on Pointers: array of pointer, Function and pointer, pointer to pointer
2.5 Dynamic memory allocation and releasing dynamically allocated memory.

Unit-3 Structure and union (5 Hrs.)

3.1 Introduction. Declaration and accessing of structure and union
3.2 Need of structure and union
3.3 Nested structure
3.4 Array of structure

Unit-4 Graphics (5 Hrs.)

4.1 Introduction to Graphics in C
4.2 Graphics functions: Initgraph(), putpixel(),closegraph(),outtextxy(), setcolor(),line(),circle(),rectangle(),ellipse(),arc(), bar()

Unit-5 File handling in C (6 Hrs.)

5.1 Concept of files, records, field
5.2 File Processing-fopen() , fclose(),fprintf(),fscanf(),getc(), putc(),getw(),putw() etc.
5.3 Various mode of file opening and closing files.
5.4 Command line arguments

References:-

1. Denis Ritchie. "C" Programming – Prentice Hall Software Series- ***ISBN***. 10 9 8 7
2. Yashwant P. Kanetkar - ANSI C ,BPB publication. ***ISBN***: 9788183333245
3. Byron Gottfried – Programming with C –Tata McGRAW-Hill ***ISBN***-10: 0070145903
4. Yashwant P. Kanetkar -Understanding pointers in "C" -BPB publication. ***ISBN***-13: 978-8176563581
5. E.Balguruswami -Programming in ANSI- C- Tata McGRAW-Hill- ***ISBN***-10: 933921966X
6. Mike McGrath - C programming in easy step – Wiley publication I***SBN***-10: 1840785446

CS LAB: DSC 1A LAB: Lab Course on Essential of Computer and C Programming

Credit -2

CS 203: LAB (Students should perform at least ten experiments from the following list)

Part-A Lab Course on Internet Computing

1. Demonstration of the Basic Tags of HTML
2. Demonstrate the List Tags
3. Design Web Page showing information of your college using various text-
4. Formatting tags.
5. Design Web Page to create image gallery using image and link tags.
6. Demonstrate the use of Audio tag.
7. Demonstrate the use of Video tag.
8. Demonstrate the use of Table tag.

Part-B Lab Course on C-Programming-II

1. Program to illustrate concept of function (call by value, call by reference, recursive)
2. Write program using Function with return and Function with argument
3. Program using user defined function to find length of string
4. Write the program using std. string functions(like strlen(). strcat(),strcmp(), strrev(), strcpy()etc.)
5. Program using pointers (arrays, functions, structures)
6. Program using structures (at least two practical)
7. Program using graphics function (at least two practical using all graphics functions)