

Sant Gadge Baba Amravati University, Amravati

Part B

Syllabus Prescribed for 03 Year UG Programme

Programme: B.Sc. Part I (Computer Science/ Computer Application [Voc/Non-Voc]/IT)

Semester 1

Code of the Course/Subject	Title of the Course/Subject	(Total Number of Periods)
ICS1	Fundamentals of Computer and C Programming	84

COs Upon completion of this course successfully, Students would be able to -

1. Understand the computer, I/O and peripheral devices.
2. Understand concept of Operating systems.
3. Apply the Programming concepts.
4. Learn C language.
5. Write Simple C Programs.

Unit	Content
Unit I	Introduction to Computer, Characteristics, Generations of Computers, Block diagram of Computer. Memories: Primary Memories : RAM, ROM, and its types, Cache Memory, Secondary Storage Devices : Hard Disk, SSD, Pen drives. I/O Devices: Keyboard, Mouse, Scanner, Touch Screen, Monitors: LCD & LED. Printers: Impact and non-impact. (14 periods)
Unit II	Operating System: Definition, Functions of Operating System, Types: Batch Mode, Multiprogramming, Time sharing , Online Real Time, Distributed O.S. Booting process. Windows: Introduction, Features and taskbars, Desktop, Customizing Desktop. (14 periods)
Unit III	Programming Concept: Algorithm, flowcharting, Types of programming languages, Programming process: Program design, Coding, Compilation & Execution, Testing & Debugging, Documentation. Structured Programming : History of C language, Advantages, Structure of C program, Character set, Identifiers, Keywords, Constants and Variables, Symbolic constants, Qualifiers, Type conversion. Operators and Expressions. (14 periods)
Unit IV	I/O Operations : Formatted I/O : scanf(), printf() Unformatted I/O : getch(), getchar(), gets(), putchar(), puts(). Control structures: Branching: if, if-else, Conditional operator(? :), nested if, switch. Looping: while, do-while, for statements, comma operator, goto, break, continue, nested loops. (14 periods)
Unit V	Arrays - Declaration and initialization of one and two dimensional array. Structure - Definition, declaration, initialization, array of structure, nested structure, union. Pointers - Declaration, initialization, pointers arithmetic (11 periods)
Unit VI	Functions in C: Introduction, definition of function, function prototype, categories of function, actual argument, formal argument, function calling: call by value, call by reference, function parameters, local and global variable, functions with array, function recursion. String functions - String functions : strlen(), strcpy(), strcmp() & strcat() (14 periods)
*SEM: Assignment, Class test, Study tour, Industrial visit, Group discussion or any other innovative practice/activity	

COs:	
<ol style="list-style-type: none"> To draw flowchart, learn Algorithms and write simple programs. To assess the curricular skills acquired by students at college level through Assignments, Unit test, Internal Test, Group Discussion/Seminar/Mini Project, Study Tour 	
Activities	<ol style="list-style-type: none"> Assignment Group discussion Study tour/ Industrial visit (4 periods)

Course Material/Learning Resources

Text books:

- Computer Fundamentals & Networking - P.K.Sinha
- Programming in C: E Balagurusamy : TMH Publication.

Reference Books:

- Fundamentals of Computer - V.Rajaraman
- Computer Network-Andrew Tanenbaum
- ABC of Internet - Christian Crumlish (BPB)
- ANSI C- Dennis Ritchie
- Programming in C - V.Rajaraman
- Programming with C: Venugopal K.R. TMH, Publication.
- Programming with C: Byron Gottfried , Schaum Series Publication.
- Fundamentals of IT and C programming by C H Sawarkar, A P Chendke, G P Gawali Dnyanpath Publication.
- Web Technology and Advance Programming by Dr. P N Mulkalwar, M M Bhonde, A A Tayade. Dnyanpath Publication.

Weblink to Equivalent MOOC on SWAYAM if relevant:

- https://onlinecourses.swayam2.ac.in/cec19_cs06/preview
- https://onlinecourses.swayam2.ac.in/nou20_cs03/preview
- <https://www.classcentral.com/course/swayam-computer-fundamentals-13950>
- https://onlinecourses.nptel.ac.in/noc19_cs42/preview
- https://onlinecourses.swayam2.ac.in/aic20_sp06/preview
- https://onlinecourses.swayam2.ac.in/cec20_cs02/preview
- <https://www.classcentral.com/course/swayam-introduction-to-programming-in-c-2486>
- https://swayamprabha.gov.in/asset/new_team/images/course_files/R12-Introduction%20to%20Programming%20in%20C%20.pdf

Any pertinent media (recorded lectures, YouTube, etc.) if relevant:

- https://www.youtube.com/watch?v=eEo_aacpwCw
- <https://www.youtube.com/watch?v=OGM2BJ29Syg>
- https://www.youtube.com/playlist?list=PLWPirh4EWFpF_2T13UeEgZWZHc8nHBuXp



Syllabus Prescribed for –BSc-I Year UG Programme**Programme: B.Sc. Part-I Sem-I (Computer Science / Computer Application [Voc/Non-Voc]/IT)****Semester 1**

Code of the Course/Subject	Title of the Course/Subject	(No. of Periods/Week)
1CSLAB1	Laboratory/Practical of Fundamentals of Computer and C Programming	06 periods per Batch per Week

* **List of Practical/Laboratory Experiments/Activities etc.****Course Name: Fundamentals of Computer and C Programming****COs**

Upon completion of this course successfully, Students would be able to demonstrate/perform/accomplish the following

1. Write word processing task.
2. Create worksheet and perform operations on it.
3. Design, compile and debug programs in C language.
4. Classify conditional expressions and looping statement to solve problems associated with conditions and repetitions.
5. Demonstrate the programs using arithmetic and relational operators.
6. Implement the concept of various string handling functions.
7. Classify programming components that efficiently solve computing problems in real-world.

List of Practical:

1. Practical on Word Processing.
2. Practical on Spread Sheets.
3. Practical on Design of Presentation.
4. Write a program in 'C' to demonstrate Arithmetic Operations.
5. Write a program in 'C' to demonstrate If -Else Statement.
6. Write a program in 'C' to demonstrate Nested If Statement.
7. Write a program in 'C' to demonstrate Else..If ladder Statement.
8. Write a program in C to demonstrate Switch-case Statement.
9. Write a program in 'C' to demonstrate For Loop Statement.
10. Write a program in 'C' to demonstrate Nested For Loop Statement.
11. Write a program in 'C' to demonstrate While Loop Statement.
12. Write a program in 'C' to demonstrate Nested While Loop Statement.
13. Write a program in 'C' demonstrate Do-While Loop Statement.
14. Write a program in 'C' demonstrate Nested Do-While Loop Statement.
15. Write a program in 'C' demonstrate One-Dimensional Array.
16. Write a program in 'C' demonstrate Two-Dimensional Array.
17. Write a program in 'C' demonstrate String Functions.
18. Write a program in 'C' demonstrate Pointers.
19. Write a program in 'C' demonstrate Function.
20. Write a program in 'C' demonstrate Function Recursion.

Weblink to Equivalent Virtual Lab if relevant:

- <https://www.programiz.com/c-programming/online-compiler/>
- https://www.onlinegdb.com/online_c_compiler
- https://www.tutorialspoint.com/compile_c_online.php

Distribution of Marks for Practical Examination**Time: 4 hours (One Day Examination) Marks: 50****Exercise-I 15****Exercise-II..... 15****Viva-Voce..... 10****Record 10****Total: 50**

INSTRUCTIONAL GUIDELINES

Laboratory/practical/practicum/hands-on/activity-based learning is a learning that occurs in a space where students can observe, practice, do some activity, get hands-on, get practical training, gain programming knowledge and ideas either individually or in groups. This learning is not confined within a physical laboratory space, but can also occur in various forms of space such as the e-learning management system and computer-simulated virtual laboratories. Within the laboratory, learning may occur in many ways, often through observing a case or phenomena, performing hands-on practical trainings.

Sample Examples for COs of some Lab/Practical Courses are as follows, which may be used for Reference purpose only.

BOS should decide the COs for practical/lab courses/practicum/activities conscientiously.

By the end of the Lab/Practical Course, generally students should be able to:

1. Design Algorithm and flowchart, develop data base, procedure iteratively, reflectively, and responsively
2. Design and execute program, work independently, interpret results, and draw a reasonable, accurate conclusion.
3. Evaluate the process and outcomes of an experiment quantitatively and qualitatively,
4. Communicate the process and output of program and
5. Design Conduct an experiment collaboratively and ethically.