

**Khandesh Education Society's,  
Pratap College (Autonomous), Amalner  
Dist. Jalgaon.**



**'A+' Grade NAAC  
Reaccredited(CGPA 3.52)  
DST-FIST Assisted College  
UGC Honored "A College with Potential for Excellence"**

**Syllabus for  
F. Y. B. Sc. Computer Science  
Under New Education Policy-2020  
(With effect from June 2024)**

**Semester-wise Code structure for B. Sc (Honors/Research) Programme as per NEP2020, for Affiliated Colleges w.e.f – June 2024.**

**B. Sc (Honors/Research) – First Year, SEMESTER – I, Level – 4.5**

Subject	Course	Course Type	Course Code	Course Title	Credits	Teaching Hours / Week			Marks			
						T	P	Total	Internal (CA)		External (UA)	
									T	P	T	P
(M-1)	DSC-1	DSC	CS-111	C Programming-I	2	2			20	---	30	---
	DSC-2	DSC	CS-112	Lab on C Programming-I	2	-	4	4	---	20	---	30
OE	OE-1	OE	CS-113	Word Processing with Google Docs (Hands on)	2	2	--	2	20	--	30	--
VEC	VEC-1	VEC	ES-118	Environmental Awareness	2	2	--	2	20	--	30	--
IKS	IKS	IKS	IK-119	Indian Knowledge System	2	2	--	2	20	--	30	--
CC	CC-1	CC	CC-120	Sports and Yoga	2	2	--	2	20	--	30	--
AEC	AEC-1	AEC	EG-101	English -1	2	2	--	2	20	--	30	--

**Semester-wise Code structure for B. Sc (Honors/Research) Programme as per NEP2020, for Affiliated Colleges w.e.f – June 2024.**

**B. Sc (Honors/Research) – First Year, SEMESTER – II, Level – 4.5**

Subject	Course	Course Type	Course Code	Course Title	Credits	Teaching Hours / Week			Marks			
						T	P	Total	Internal (CA)		External (UA)	
									T	P	T	P
(M-1)	DSC-3	DSC	CS-121	C Programming-II	2	2	--	2	20	--	30	--
	DSC-4	DSC	CS-122	Lab on C Programming-II	2	--	4	4	--	20	--	30
OE	OE-2	OE	CS-123	Google Apps (Hands on)	4	4	--	4	40	--	60	--
VEC	VEC-2	VEC	CI-129	Constitution of India	2	2	--	2	20	--	30	--
CC	CC-2	CC	CC-130	NSS/ NCC/ Yoga	2	2	--	2	20	--	30	--
AEC	AEC-2	AEC	EG-102	English -2	2	2	--	2	20	--	30	--

**Course Code: CS-DSC-111**  
**Course Title: C Programming-I**

<b>Course Code: CS-DSC-111</b>	<b>Course Category: Core Course (DSC)</b>
<b>Course Title: C Programming-I</b>	<b>Type: Theory</b>
<b>Total Contact Hours: 30 (2/week)</b>	<b>Course Credits: 02</b>
<b>College Assessment (CA) Marks: 20 Marks</b>	<b>University Assessment (UA): 30 Marks</b>
<b>Course Objectives:</b> <ul style="list-style-type: none"> <li>• To develop the logical ability of the student.</li> <li>• Basic concepts to be cleared using suitable examples.</li> <li>• Different approach towards the problem.</li> <li>• To handle the errors and find suitable solution.</li> <li>• Debugging the code</li> </ul>	
<b>Course Outcomes:</b> At the end of the course, students will be able to <ul style="list-style-type: none"> <li>• Learn the basic principles of programming.</li> <li>• Develop of logic using algorithm and flowchart.</li> <li>• Acquire the information about data types.</li> <li>• Understanding of input and output functions.</li> <li>• Enhance advanced concepts using program.</li> </ul>	

**Course Content:**

<b>UNIT-1. Preliminary Concepts</b> Introduction to Computer Block Diagram of Computer Input Devices and Output Devices What is Algorithm? , Steps for creation of Algorithm. What is Flowchart?, Symbols for drawing Flowcharts, Examples Programming Languages: High level, Middle Level, Low Level	<b>(05 L, 09 M)</b>
<b>UNIT-2. Basics of ‘C’ Program</b> History of ‘C’ Programming language Structure of C-program, Compilation, Execution and Debugging of C-program Variables, Declaration of variables, keywords Data types and Qualifiers Constants and types of constants, Comments Input Output Statements (Standard and formatted) Introduction and features of ‘C’ preprocessor Directives: #define, File inclusion (#include)	<b>(07 L, 10 M)</b>
<b>UNIT -3. Operators and Expression</b> Operators –Arithmetic, Relational, Logical, Assignment, Compound assignment operator (short hand assignment), Bitwise, Increment-Decrement, Conditional Operator, Special Operator – Comma, sizeof operator, Type Conversion – implicit and explicit Library Functions: abs (), sqrt(), pow(), ceil(), floor()	<b>(07 L, 08 M)</b>
<b>UNIT -4. Conditional Statements and looping</b> If Statement, if-else Statement, nested if-else Statement, else-if ladder, Switch Statement Break, continue and goto statements Looping Concepts While, do-while, for loop Nested loops Concept	<b>(06 L, 08 M)</b>

## **UNIT-5. Arrays**

**(05 L, 10 M)**

- 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

### **Reference Books:**

1. V. Rajaraman, "Fundamentals of Computers", PHI publication, ISBN: 8120340116, 9788120340114
2. Fundamentals of Computer Algorithms by Ellis Horowitz, Sartaj Sahni, Sanguthever
3. Programming in ANSI C. (6th Ed.) – Balaguruswami - Tata McGraw Hill Publication
4. Programming In C (2nd Ed.) - Ashok N. Kamthane - Pearson Education
5. The C Programming Language - DENNIS M. RITCHIE- AT&T Bell Laboratories Murray Hill, New Jersey
6. Let us C – (15th Ed.) - Yashwant Kanetkar - BPB Publications
7. Programming in C - Reema Thareja - Oxford University Press

**Course Code: CS-DSC-112**  
**Course Title: Lab on C Programming-I**

<b>Course Code: CS-DSC-112</b>	<b>Course Category: Core Course (DSC)</b>
<b>Course Title: Lab on C Programming-I</b>	<b>Type: Practical</b>
<b>Total Contact Hours: 60 (4/week)</b>	<b>Course Credits: 02</b>
<b>College Assessment (CA) Marks: 20 Marks</b>	<b>University Assessment (UA): 30 Marks</b>
<b>Course Objectives:</b> <ul style="list-style-type: none"><li>• To study various data types, arrays and functions in C</li><li>• To understand input-output and, control and iterative statements in C</li></ul>	
<b>Course Outcomes:</b> <p>On completion of the course, students will be able to–</p> <ul style="list-style-type: none"><li>• Formulate an algorithm and draw flowchart for the given problem</li><li>• Implement the given algorithm in C</li><li>• Write programs using appropriate data types and control structures in C</li></ul>	

### **Practical List:**

1. Demonstration of use of data types, simple operators (expressions).
2. Demonstration of Standard Library Function.
3. Demonstration of decision making statements (if and if-else, nested control statements).
4. Demonstration of decision making statements (switch case).
5. Demonstration of use of while loops, for loops, do-while loops, nested loops (Prime no, Palindrome, Factorial, Fibonacci).
6. Demonstration of exit, goto, continue, break.
7. Demonstration of use of arrays (1-D array, 2-D arrays) and functions.

## Course Code: CS-OE-113

### Course Title: Word Processing with Google Docs (Hands on)

<b>Course Code: CS-OE-113</b>	<b>Course Category: Open Elective Course (OE)</b>
<b>Course Title: Word Processing with Google Docs (Hands On)</b>	<b>Type: Theory</b>
<b>Total Contact Hours: 30 (2/week)</b>	<b>Course Credits: 02</b>
<b>College Assessment (CA) Marks: 20 Marks</b>	<b>University Assessment (UA): 30 Marks</b>
<b>Course Objectives:</b> <ul style="list-style-type: none"><li>• To familiarize students with Google Docs</li><li>• To develop students' proficiency in document formatting</li><li>• To facilitate collaborative document editing</li><li>• To explore advanced features and customization options.</li></ul>	
<b>Course Outcomes:</b> <ul style="list-style-type: none"><li>• Proficiency in using Google Docs</li><li>• Effective document formatting skills</li><li>• Enhanced collaboration skills</li><li>• Understanding of advanced features.</li></ul>	

### Course Content:

#### Unit 1: Chapter 1: Introduction to Google Docs (08 L, 12 M)

Overview of word processing and its significance.  
Introduction to Google Docs: history, features, advantages.  
Creating a Google account and accessing Google Docs.  
Exploring the Google Docs interface  
Use of toolbar, menus, and settings.

#### Unit 2: Basic Document Formatting (08 L, 12 M)

Creating and saving documents: naming conventions, choosing templates  
Basic text formatting: font styles, sizes, colors, and alignments.  
Paragraph formatting: indentation, spacing, line spacing.  
Using special characters, symbols, and emojis in documents.  
Working with headers, footers, and page numbers.  
Inserting and formatting images, shapes, and drawings in documents.

#### Unit 3: Advanced Document Editing and Collaboration (08 L, 12 M)

Advanced text editing features: find and replace spelling and grammar check.  
Collaboration tools: sharing documents, commenting, suggesting edits.  
Version history: tracking changes, reverting to previous versions.  
Working offline with Google Docs: enabling offline access, syncing changes.  
Utilizing Google Drive integration for seamless document storage and organization.  
Exporting and importing documents in various formats: Word, PDF, plain text, etc.  
Managing and organizing documents with folders and labels in Google Drive.  
Utilizing advanced search operators in Google Drive for efficient document retrieval.

**Unit 4: Enhancing Productivity with Google Docs****(06 L, 09 M)**

Creating and formatting tables: adding rows, columns, merging cells.

Using Google Docs for research and citations: citing sources, adding footnotes.

Integrating with other Google Workspace apps: Google Drive, Google Sheets, Google Slides.

Automating tasks with Google Docs: using templates, creating custom add-ons.

Inserting and formatting images, shapes, and drawings in documents.

Using advanced table features: sorting, filtering, pivot tables, and conditional formatting.

Collaborative document automation with Google Apps Script.

Creating and using document templates for efficiency and consistency.

Utilizing third-party add-ons for extended functionality and customization.

**Reference Books:**

1. "Google Drive and Docs in 30 Minutes", by Ian Lamont
2. "Google Docs: The Unofficial Guide" by Lisa A. Bucki
3. "Google Workspace for Dummies" by Steve Schwartz

## SEMESTER – II

### Course Code: CS-121 Course Title: C Programming-II

Course Code: <b>CS-DSC-121</b>	Course Category: Core Course (DSC)
Course Title: <b>C Programming-II</b>	Type: Theory
Total Contact Hours: <b>30 (2/week)</b>	Course Credits: <b>02</b>
College Assessment (CA) Marks: <b>20 Marks</b>	University Assessment (UA): <b>30 Marks</b>
<b>Course Objectives:</b> <ul style="list-style-type: none"><li>• To develop the logical ability of the student.</li><li>• Basic concepts to be cleared using suitable examples.</li><li>• Different approach towards the problem.</li><li>• To handle the errors and find suitable solution.</li><li>• Debugging the code</li></ul>	
<b>Course Outcomes:</b> <p>At the end of the course, students will be able to</p> <ul style="list-style-type: none"><li>• Learn the basic principles of programming.</li><li>• Develop of logic using algorithm and flowchart.</li><li>• Acquire the information about data types.</li><li>• Understanding of input and output functions.</li><li>• Enhance advanced concepts using program.</li></ul>	

### Course Content:

#### Unit-1 Function

(05 L, 08 M)

Definition and Need of Function

Declaration and Prototypes

Function calling (Call by value, call by reference)

Function with return and Function with argument

Recursion

String Function : strcpy(), strlen(), strcmp(), strcat(), strrev()

#### Unit-2 Pointers

(07 L, 09 M)

Introduction

Address and arguments

Declaration, accessing value through a pointer

Operations on Pointers: array of pointer, Function and pointer, pointer to pointer

Dynamic memory allocation and releasing dynamically allocated memory.

#### Unit-3 Structure and union

(07 L, 08 M)

Introduction. Declaration and accessing of structure and union

Need of structure and union

Nested structure



Array of structure

**Unit-4 Graphics**

**(06 L, 10 M)**

Introduction to Graphics in C

Graphics functions: Initgraph(), putpixel(),closegraph(),outtextxy(),  
setcolor(),line(),circle(),rectangle(),ellipse(),arc(), bar()

**Unit-5 File handling in C**

**(05 L, 10 M)**

Concept of files, records, field

File Processing-fopen() , fclose(),fprintf(),fscanf(),getc(), putc(),getw(),putw() etc.

Various modes of file opening and closing files.

Command line arguments

**Reference Books:**

1. Programming in ANSI C. (6th Ed.) – Balaguruswami - Tata McGraw Hill Publication
2. Programming In C (2nd Ed.) - Ashok N. Kamthane - Pearson Education
3. The C Programming Language - DENNIS M. RITCHIE- AT&T Bell Laboratories Murray Hill, New Jersey
4. Let us C – (15th Ed.) - Yashwant Kanetkar - BPB Publications
5. Programming in C - Reema Thareja - Oxford University Press

**Course Code: CS-122**  
**Course Title: Lab on C Programming-II**

<b>Course Code: CS-DSC-122</b>	<b>Course Category: Core Course (DSC)</b>
<b>Course Title: Lab on C Programming-II</b>	<b>Type: Practical</b>
<b>Total Contact Hours: 60 (4/week)</b>	<b>Course Credits: 02</b>
<b>College Assessment (CA) Marks: 20 Marks</b>	<b>University Assessment (UA): 30 Marks</b>
<b>Course Objectives:</b> <ul style="list-style-type: none"><li>• To study various data types, arrays and functions in C</li><li>• To understand input-output and, control and iterative statements in C</li></ul>	
<b>Course Outcomes:</b> <p>On completion of the course, students will be able to–</p> <ul style="list-style-type: none"><li>• Formulate an algorithm and draw flowchart for the given problem</li><li>• Implement the given algorithm in C</li><li>• Write programs using appropriate data types and control structures in C</li></ul>	

### **Practical List:**

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(), strev(), 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)

## Course Code: CS-OE-123

### Course Title: Google Apps (Hands on)

<b>Course Code: CS-OE-123</b>	<b>Course Category: Open Elective Course (OE)</b>
<b>Course Title: Google Apps (Hands on)</b>	<b>Type: Theory</b>
<b>Total Contact Hours: 60 (4/week)</b>	<b>Course Credits: 04</b>
<b>College Assessment (CA)Marks: 40 Marks</b>	<b>University Assessment (UA): 60 Marks</b>
<b>Course Objectives:</b> <ul style="list-style-type: none"><li>• Understand the overall structure and components of Google Workspace.</li><li>• Learn to create, organize, and share folders and files in Google Drive.</li><li>• Develop spreadsheets, input data, and perform basic calculations.</li><li>• Create professional presentations using Google Slides.</li><li>• Design and distribute surveys and quizzes using Google Forms also</li><li>• Analyze responses and integrate data with Google Sheets.</li></ul>	
<b>Course Outcomes:</b> <ul style="list-style-type: none"><li>• Students will demonstrate proficiency in using Google Workspace apps, including Google Sheets, Google Slides, Google Forms, and Google Drive.</li><li>• Students will effectively collaborate with others using Google Workspace tools, utilizing features like real-time editing, commenting, and sharing permissions to manage and contribute to group projects.</li><li>• Students will create, format, and manage professional documents, spreadsheets, and presentations using Google Docs, Sheets, and Slides, incorporating advanced features such as templates, add-ons, and custom formatting.</li><li>• Students will analyze data using Google Sheets, performing functions such as sorting, filtering, creating pivot tables, and using complex formulas and functions.</li><li>• Students will organize and manage files and folders in Google Drive, understanding how to use storage efficiently, set permissions, and synchronize files across devices.</li><li>• Students will design, distribute, and analyze surveys using Google Forms, interpreting the data through the integrated response summary and exporting data for further analysis.</li></ul>	

### Course Content:

#### Unit 1: Introduction to Google Workspace

(10 L, 15 M)

Overview of Google Workspace

What is Google Workspace?

Overview of core apps (Gmail, Google Drive, Google Docs, Google Sheets, Google Slides, Google Calendar)

Setting up a Google Account

Creating a Google account

Navigating the Google Workspace interface

#### Unit 2: Google Drive

(10 L, 15 M)

Introduction to Google Drive

Uploading and organizing files

Sharing and collaboration features

File management and storage tips

#### Unit 3: Google Sheets

(10 L, 15 M)

Introduction to Google Sheets

Creating and formatting spread sheets

Basic formulas and functions  
Data visualization (charts and graphs)  
Collaboration and data sharing

**Unit 4: Google Slides** **(10 L, 15 M)**

Introduction to Google Slides  
Creating and designing presentations  
Using themes and templates  
Adding multimedia (images, videos, animations)  
Collaboration and presenting tips

**Unit 5: Google Forms** **(10 L, 15 M)**

Introduction to Google Forms  
Creating surveys and quizzes  
Customizing form settings and appearance  
Analyzing responses  
Integrating with Google Sheets

**Unit 6: Google Mobile Apps** **(10 L, 15 M)**

Introduction to Google Mobile Apps  
Overview of the Google ecosystem and its integration across mobile platforms  
Benefits of using Google Mobile Apps  
Downloading and Installing Apps, Account Management  
Key Productivity Apps: Gmail Mobile App, Google Calendar Mobile App  
Media and Entertainment: Google Photos Mobile App, YouTube and YouTube Music Mobile Apps

**Reference Books:**

- 1 Nancy Conner, "Google Apps: The Missing Manual", O'Reilly Media; 1st edition (July 1, 2008), ISBN-10: 0596515790, ISBN-13: 978-0596515799.
- 2 Scott La Counte, "The Ridiculously Simple Guide to Google Apps (G Suite): A Practical Guide to Google Drive Google Docs, Google Sheets, Google Slides, and Google Forms", SL Editions (August 20, 2019), ISBN-10: 1621077020, ISBN-13: 978-1621077022.
- 3 James Ferreira, "Google Apps Script, 2nd Edition", O'Reilly Media, Inc., ISBN: 9781491946183