



SALESIAN COLLEGE (AUTONOMOUS)
SONADA-SILIGURI

Curriculum Structure
For

Bachelor of Computer Science (B. Sc) Programme
(Basic and Honours Degree)

As per National Education Policy – 2020 guidelines

Department of Computer Science & Applications
2023-2024

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VISION

Vision

Develop young men and women as technocrats, researchers and entrepreneurs in the field of Computer Science and Applications.

Mission

- To conduct and support undergraduate programmes of quality in Computer Science and Applications by means of better teaching-learning methodologies and value-added courses.
- To provide a foundation undergraduate programme which will act as a feeder course for higher studies in the area of Computer Science and Applications.
- To build leadership skills, ethical values and teamwork among the students.
- To provide knowledge and software development skills so students become employable to IT professional and service sectors
- To develop manpower that would provide technical and intellectual leadership to the community.
- To inculcate professional excellence by encouraging projects in industry relevant technologies and through industry interactions.
- To strengthen the collaboration of department and industry through internships, mentorships and professional body activities.
- To foster teaching, research and extension activities for the creation of new knowledge for the development of society.
- To cater to the holistic development of students, following the principles of Don Bosco Institution, so they become intellectually competent, socially sensitive, morally upright and emotionally balanced.

PROGRAM OUTCOMES

Program Outcomes

Degree holders possess knowledge of the relevant field or profession, such that they:	
KNOWLEDGE	PO01: have acquired general understanding and insight into main theories and concepts
	PO02: are aware of the latest knowledge in the relevant field
	PO03: can apply the basic elements of information technology
Degree holders can apply the methods and procedures of the field or profession, such that they:	
SKILLS	PO04: can use the relevant equipment, technology and software
	PO05: can apply critical analytic methods
	PO06: can rationalise their decisions
	PO07: can evaluate critically the methods applied
	PO08: recognise when further data is needed and have the ability to retrieve it, assess its reliability and apply it in an appropriate manner
	PO09: can use reliable data and information resources in the relevant scientific field
	PO10: have acquired an open-minded and innovative way of thinking
Degree holders can apply their knowledge and skills in a practical way in their profession and/or further studies, such that they:	
COMPETENCE	PO11: have developed the competences and independence needed for further studies within the field
	PO12: can work in an independent and organised manner, set goals for their work, devise a work schedule and follow it
	PO13: can participate actively and lead work groups
	PO14: are capable of interpreting and presenting scientific issues and research findings

PROGRAM SPECIFIC OUTCOMES

Program Specific Outcomes

Degree holders possess knowledge of:		PO 01	PO 02	PO 03	PO 04	PO 05	PO 06	PO 07	PO 08	PO 09	PO 10	PO 01	PO 12	PO 13	PO 14	
K N O W L E D G E	PSO01: A number of recurring themes, and a set of general principles that have broad application to the field of computer science	√														
	PSO02: The professional, legal, ethical, security, social and cultural issues and responsibilities inherent in the discipline of computing.	√														
	PSO03: The software systems are used in many different domains. This requires both computing skills and domain knowledge	√	√													
	PSO04: Software development fundamentals, including programming, data structures, algorithms and Complexity	√	√	√												
	PSO05: Systems fundamentals, including architectures and organization, operating systems, networking and communication, parallel and distributed computation, and security	√	√	√												
	PSO06: Mathematics fundamentals, including discrete structures, statistics and calculus	√	√	√												
	PSO07: Software engineering fundamentals, including software analysis and design, evaluation and testing, and software engineering processes	√	√	√												
	PSO08: Application fundamentals, including information management and intelligent applications	√	√	√												
	PSO09: Multiple programming languages, paradigms, and technologies	√	√	√												
Degree holders can apply the methods and procedures as follows:																
S K	PSO10: Know how to apply the knowledge they have gained to solve real issues as they will have the ability to analyse a problem, and identify and define the computing requirements				√			√		√						

PROGRAM SPECIFIC OUTCOMES

I L L S	[including mathematical] appropriate to its solution.															
	PSO11: Realize that there are multiple solutions to a given problem and these solutions will have a real impact on people’s lives						√									
	PSO12: Communicate their solution to others, including why and how a solution solves the problem and what assumptions were made							√								
	PSO13: Successfully apply the knowledge they have gained through project experience as they will have the ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs.					√	√	√								
	PSO14: Encompass an appreciation for the structure of computer systems and the processes involved in their construction and analysis							√				√				
	PSO15: Understand individual and collective responsibility and individual limitations as well as the limitations of technical tools							√	√	√		√				
	PSO16: Understand the range of opportunities and limitations of computing											√				
Degree holders can apply their knowledge and skills, as follows:																
C O M P E T E N C E	PSO17: Understand the multiple levels of detail and abstraction											√				
	PSO18: Recognize the context in which a computer system may function, including its interactions with people and the physical world.											√				
	PSO19: Able to communicate with, and learn from, experts from different domains throughout their careers												√			
	PSO20: Possess a solid foundation that allows and encourages them to maintain relevant skills as the field evolves												√	√		
	PSO21: To be able to manage their own career development and advancement												√			√
	PSO22: Manage their own learning and development,													√		

MODEL PROGRAM STRUCTURE FOR CSC

Model Programme Structure for Bachelor of Computer Application (Basic/Honours) Programme

Sem.	Maor/Core 100 (Credit-4)	Minor/GE/ DSE 100 (Credit-4)	MD (Credit-3)	AECC		SEC-100 (Credit-3)/ Research Project/ Dissertation (Credit-12)	VOC/ Summer internship/ Apprenticeship-50 (Credit-4)	VAC 100 (Credit-4)	Semester Credit
				English-50 (Credit-4)	MIL-50 (Credit-4)				
1st Year									
I	Paper-1 Paper-2	Paper-I (Elective-1)	Business Organisation (MD1)	English (Cr-2)		SEC-1		Understanding India/ VE	20
II	Paper-3 Paper-4	Paper-I (Elective-2)	Accounting & Finance (MD2)		Vernacular / Alt English (Cr-2)	SEC-2	VOC/ Summer internship/ Apprenticeship	ENVS	21
<i>Exit option with Undergraduate Certificate in relevant Discipline on completion of 40 credits with 4 credits in work based vocational course offered during summer term or internship/ apprenticeship, in addition to 6 credits from skill-based courses earned during first and second semester.</i>									
2nd Year									
III	Paper-5 Paper-6	Paper-II (Elective-1)	People Management (MD3)	English (Cr-2)		SEC-3			20
IV	Paper-7 Paper-8 Paper-9	Paper-II (Elective-2)			Vernacular / Alt English (Cr-2)		VOC/ Summer internship/ Apprenticeship		22
<i>Exit option with Undergraduate Diploma in relevant Discipline on completion of 80 credits with 4 credits in skill based vocational course offered during first or second year summer term.</i>									
3rd Year									
V	Paper-10 Paper-11 Paper-12	Paper-III (Elective-1) & DSE-1					VOC (Soft skills & Personality Development)		22
VI	Paper-13 Paper-14 Paper-15	Paper-III (Elective-2) & DSE-2					VOC/ Summer internship/ Apprenticeship		20
<i>Exit option with Bachelor's degree in relevant discipline on securing 120 credits. 4 credits in vocational course offered during first or second year summer term.</i>									
4th Year									
VII	Paper-16, Paper-17	Paper-IV (Elective-1), DSE-3, DSE-4 (Mini Project)							20
	Paper-16, Paper-17	Paper-IV (Elective-1I)				Research Methodologies			
VIII	Paper-18, Paper-19, Paper-20	Paper-V (Elective-1), DSE-5 (Project)							20
	Paper-18, Paper-19	Paper-V (Elective-1I)				Research Project/ Dissertation (Major course based)			20
<i>Students will be awarded Undergraduate (Bachelor's) Honours Degree (with/ without Research) in relevant Discipline</i>									

Question pattern for End-Semester Exam

<Department> (Honours / Program)

Pattern for 60 marks question paper:

Group A (12 marks) – 4 out of 6 questions, each of 3 marks

Group B (18 marks) – 3 out of 5 questions, each of 6 marks

Group C (20 marks) – 2 out of 4 questions, each of 10 marks

PAPER CODE /TITLE:

SEMESTER:

YEAR:

FULL MARKS: 50

ASSESSMENT TYPE: End Semester Examination (Summative) **S:** Short (3mks); **M:** Medium (6mks); **L:** Long (10mks)

QUESTION TYPE: Mixed (Subjective & Objective)

WEIGHTAGE: As per Blueprint

Assessment/ Evaluation scheme for Theory based subjects

Level	Bloom's Taxonomy Level	Continuous Internal Assessment (50% weightage)						Final Examination (50% weightage)	
		CIA-1 (10%)		CIA-2 (15%)		CIA-3 (20%)		Theory	Practice
		Theory	Practice	Theory	Practice	Theory	Practice		
1	Remember	60%		40%		30%		30%	
	Understand								
2	Apply	40%		40%		40%		40%	
	Analyse								
3	Evaluate			20%		30%		30%	
	Create								
Total		100%		100%		100%		100%	

CIA – 3 can be from any combination of these: Assignments, Seminars, Tech Talks, Mini-Projects, Case-Studies, Self-Study, MOOCs, Certifications, Conf. Paper etc.

Attendance – 5 marks

Assessment/ Evaluation scheme for Practical/ LAB based subjects

Level	Bloom's Taxonomy Level	Continuous Internal Assessment (50% weightage)						Final Examination (50% weightage)	
		CIA-1 (10%)		CIA-2 (15%)		CIA-3 (20%)		Theory	Practice
		Theory	Practice	Theory	Practice	Theory	Practice		
1	Remember	30%	30%	20%	20%	15%	15%	15%	15%
	Understand								
2	Apply	20%	20%	20%	20%	20%	20%	20%	20%
	Analyse								
3	Evaluate			10%	10%	15%	15%	15%	15%
	Create								
Total		100%		100%		100%		100%	

CIA–3 can be from any combination of these: Assignments, Seminars, Tech Talks, Mini-Projects, Case-Studies, Self-Study, MOOCs, Certifications, Conf. Paper etc.

Attendance – 5 marks

Assessment/ Evaluation Scheme for Lab Examination

Internal		Final Examination	
Assessment Criteria	Marks	Assessment Criteria	Marks
Attendance	5	Flowchart / Algorithm	10
Task completion	35	Program code	15
Practical Record	10	Execution and Formatting	15
		Viva voce	10
Total	50	Total	50

Possible streams after two years

Code	Description
S1	Full Stack Development
S2	Data Science
S3	Artificial Intelligence & Machine Learning
S4	Cyber Security
S5	Physical Computing

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Semester II

Course Type	Code	Title of Paper	Maximum Marks			Credits Allotted				Weekly Hours
			CIA	ESE	Total	L	T	P	C	
AECC-2		Vernacular/ Alt English	50	50	100	2			2	2
VAC	Two to be taken up by student	VE	25	25	50	1			1	2
		ENVS	25	25	50	1			1	
VOC		Summer internship/ Apprenticeship on vocational course						4	4	
Core/ Major - 3	23CSCMAJ103	Object Oriented Programming with Java	50	50	100	2			2	2
	23CSCMAJ103L	Object Oriented Programming with Java Lab	50	50	100			2	2	4
Core/ Major - 4	23CSCMAJ104	Computer Organisation & Architecture - II	50	50	100	2			2	2
	23CSCMAJ104L	Computer Organisation & Architecture - II Lab	50	50	100			2	2	4
GE/ Minor-2	23STSMIN10X	Paper-I of second minor (Statistics)	50	50	100	4	1	0	4	5
Multi-Disciplinary - 2	23COMOEL101	Accounting and Finance	50	50	100	3	0	0	3	4
SEC	23CSCSEC102	Python Programming	50	50	100	2			2	2
	23CSCSEC102L	Python Programming Lab	50	50	100			1	1	2
Total									22(26)	29

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SEMESTER - I

Course 23CSCMAJ101

Paper Code	Title	Credits		Total Classes (15 weeks)	Hours / Week
		Theory	Practical / Tutorial		
23CSCMAJ101	Programming in C	2		30	2
23CSCMAJ101L	Programming in C Lab		2	60	4

Course Objectives:

This course is designed to give an introduction to programming and provide a comprehensive study of the C programming language.

Course Outcomes:

Code	Outcome description
	Upon successful completion of this course, students will be able to
CO_CSCMAJ101_1	Understand the basic terminology used in computer programming, and have fundamental knowledge on basics of computers hardware and number systems.
CO_CSCMAJ101_2	Write, compile and debug programs in C language.
CO_CSCMAJ101_3	Use different data types in a computer program.
CO_CSCMAJ101_4	Design programs involving decision structures, loops and functions.
CO_CSCMAJ101_5	Understand the dynamics of memory by the use of pointers.
CO_CSCMAJ101_6	Use different data structures and create/update basic data files.
CO_CSCMAJ101_7	Explain the difference between call by value and call by reference

Course Outcomes mapping with Program Specific Outcomes

Outcomes	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10	PSO11	PSO12	PSO13	PSO14	PSO15	PSO16	PSO17	PSO18	PSO19	PSO20	PSO21	PSO22	PSO23	PSO24	PSO25	PSO26
1																										
2																										
3																										
4																										
5																										
6																										
7																										

Unit	Contents	Hours	Outcomes	Revised Bloom's Taxonomy Levels
Unit-1	Introduction to C (a) History of C (b) Overview of Procedural Programming (c) Introduction to Algorithm & Flowcharts	6	CO_BCMAJ101_1	R, U, A1
Unit-2	Compilation and Execution in C (a) Using Basic Header Files (stdio.h, conio.h, etc) (b) Using main() function (c) Compiling and Executing Simple Programs in C	6	CO_BCMAJ101_1 CO_BCMAJ101_2	R, U, A1

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Unit-3	<p>Data Types, Variables, Constants, Operators and Basic I/O</p> <p>(a) Declaring, Defining and Initializing Variables (b) Scope of Variables (c) Using Named Constants, Keywords, Comments (d) Data Types, Casting of Data Types (e) Operators (Arithmetic, Logical and Bitwise) (f) Character I/O (getc, getchar, putc, putchar etc) (g) Formatted and Console I/O (printf(), scanf(), cin, cout)</p>	7	<p>CO_BCAMAJ101_1 CO_BCAMAJ101_2 CO_BCAMAJ101_3</p>	R, U, A1
Unit-4	<p>Expressions, Conditional Statements and Iterative Statements</p> <p>(a) Simple Expressions in C (including Unary Operator Expressions, Binary Operator Expressions) (b) Operators Precedence in Expressions (c) Conditional Statements (if construct, switch-case construct) (d) Syntax and utility of Iterative Statements (while, do-while, and for loops) (e) Use of break and continue statements in loops (f) Nested Statements (Conditional as well as Iterative)</p>	7	<p>CO_BCAMAJ101_1 CO_BCAMAJ101_2 CO_BCAMAJ101_3 CO_BCAMAJ101_4</p>	R, U, A1, A2
Unit-5	<p>Functions</p> <p>(a) Utility of functions (b) Call by Value (c) Call by Reference (d) Return data type of functions (e) Inline Functions (f) Parameters (g) Differentiating between Declaration and Definition of Functions (h) Command Line Arguments/Parameters in Functions (i) Variable number of Arguments</p>	6	<p>CO_BCAMAJ101_1 CO_BCAMAJ101_2 CO_BCAMAJ101_3 CO_BCAMAJ101_4 CO_BCAMAJ101_7</p>	R, U, A1, A2
Unit-6	<p>Arrays and Strings</p> <p>(a) One Dimensional Arrays (Declaring and Defining an Array, Initializing an Array, accessing individual elements in an Array, manipulating array elements using loops) (b) Use of various types of arrays (integer, float and character arrays / Strings) (c) Two-dimensional Arrays (Declaring, Defining and Initializing Two-Dimensional Array, Working with Rows and Columns) (d) Introduction to Multi-dimensional arrays</p>	6	<p>CO_BCAMAJ101_1 CO_BCAMAJ101_2 CO_BCAMAJ101_3 CO_BCAMAJ101_4 CO_BCAMAJ101_7</p>	R, U, A1, A2
Unit-7	<p>User-defined Data Types (Structures and Unions)</p> <p>(a) Understanding utility of structures and unions (b) Declaring, initializing and using simple structures and unions (c) Manipulating individual members of structures and unions (d) Array of Structures, Individual data members as structures</p>	4	<p>CO_BCAMAJ101_1 CO_BCAMAJ101_2 CO_BCAMAJ101_3 CO_BCAMAJ101_4 CO_BCAMAJ101_6 CO_BCAMAJ101_7</p>	R, U, A1, A2, E, C

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	(e) Passing and returning structures from functions (f) Structure with union as members, Union with structures as members.			
Unit-8	Pointers and References in C (a) Understanding a Pointer Variable (b) Simple use of Pointers (Declaring and Dereferencing Pointers to simple variables) (c) Pointers to Pointers, Pointers to structures (d) Passing pointers as function arguments (e) Returning a pointer from a function (f) Using arrays as pointers, Passing arrays to functions (g) Pointers vs. References (h) Declaring and initializing references (i) Using references as function arguments and function return values	8	CO_BCAMAJ101_1 CO_BCAMAJ101_2 CO_BCAMAJ101_3 CO_BCAMAJ101_4 CO_BCAMAJ101_5 CO_BCAMAJ101_6 CO_BCAMAJ101_7	R, U, A1, A2, E, C
Unit-9	Memory Allocation in C (a) Differentiating between static and dynamic memory allocation (b) Use of malloc, calloc and free functions (c) Storage of variables in static and dynamic memory allocation	3	CO_BCAMAJ101_1 CO_BCAMAJ101_2 CO_BCAMAJ101_3 CO_BCAMAJ101_4 CO_BCAMAJ101_5 CO_BCAMAJ101_6 CO_BCAMAJ101_7	R, U, A1, A2, E
Unit-10	File I/O (a) Opening and closing a file (b) Reading and writing Text Files [Using put(), get(), read() and write() functions] (c) Random access files	4	CO_BCAMAJ101_1 CO_BCAMAJ101_2 CO_BCAMAJ101_3 CO_BCAMAJ101_4 CO_BCAMAJ101_5 CO_BCAMAJ101_6	R, U, A1, A2, E, C
Unit-11	Pre-processor Directives (a) Understanding the Pre-processor Directives (#include, #define, #error, #if, #else, #elif, #endif, #ifdef, #ifndef and #undef) (b) Macros	3	CO_BCAMAJ101_1 CO_BCAMAJ101_2	R, U, A1, C

Suggested Readings

1. Schildt, H. (1989). *ANSI C made easy*. Computing McGraw-Hill.
2. Kantaris, N. (1989). *Learning to program in C*.
3. Schildt. (2000). *C: The complete reference*. Tata McGraw-Hill Education.
4. Kernighan, B. W., & Ritchie, D. M. (2017). *C Programming Language*.
5. Thareja, R. (2018). *Programming in C*.

Course Faculty (Prepared by)	Head of the Department (Checked and verified by)	Director (Approved by)
Name:	Name:	Name:
Signature:	Signature:	Signature:

(Seal)

(Seal)

(College Seal)

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Course 23CSCMAJ102

Paper Code	Title	Credits		Total Classes (15 Weeks)	Hours / Week
		Theory	Practical / Tutorial		
23CSCMAJ102	Computer Organisation and Architecture - I	3		45	3
23CSCMAJ102L	Computer Organisation and Architecture - I Lab		1	30	2

Course Overview:

This course:

- a. Explores the design, organization, and functioning of modern computer systems.
- b. Students will gain insights into the interaction between hardware and software components, enabling them to analyze, design, and optimize computer architectures for various applications.
- c. Explains instruction set architecture, CPU design, memory hierarchy, input/output systems, pipelining, and emerging trends in computer architecture.

Course Objectives:

To enable a student to:

- Explain the basics of digital electronics.
- Elaborate basic computer organization, control unit and central processing unit.
- Do binary addition, subtraction, multiplication and division.
- Explain the working of the control unit.
- Differentiate between various types of memories.

Course Outcomes:

Code	Outcome description
	Upon successful completion of this course, students will have or be able to
CO_CSCMAJ102_1	Describe the history and architecture of a general-purpose computer
CO_CSCMAJ102_2	Understand basic digital circuits and working of a processor
CO_CSCMAJ102_3	Analyse the different techniques used in execution of an instruction
CO_CSCMAJ102_4	Derive circuits and memory configuration based on the problem statements
CO_CSCMAJ102_5	Construct circuits and memory configuration based on the problem statements
CO_CSCMAJ102_6	Create and Design circuit diagram based on the problem statement

Course Outcomes mapping with Program Specific Outcomes

Outcomes	PSO01	PSO02	PSO03	PSO04	PSO05	PSO06	PSO07	PSO08	PSO09	PSO10	PSO11	PSO12	PSO13	PSO14	PSO15	PSO16	PSO17	PSO18	PSO19	PSO20	PSO21	PSO22	PSO23	PSO24	PSO25	PSO26
1																										
2																										
3																										
4																										
5																										
6																										

Units	Content	Lecture Hours	COs	RBT
Unit-1	Introduction to Computer Organization and Architecture <ol style="list-style-type: none"> a. Basic concepts and definitions. b. Computer evolution and generations. 	9	CO1	R U

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	<ul style="list-style-type: none"> c. Von Neumann architecture and its components. d. Computer components and their functions 			
Unit-2	Digital Logic Fundamentals <ul style="list-style-type: none"> a. Binary representation of data. b. Number systems and conversion. c. Two's complement representation. d. Boolean algebra and logic gates e. Combinational and sequential logic 	8	CO2 CO4	R U A1 A2 E C
Unit-3	Instruction Set Architecture (ISA) <ul style="list-style-type: none"> a. Data representation and data types b. Machine instructions and formats. c. Addressing modes and instruction types. d. RISC vs. CISC architectures. 	10	CO2 CO3 CO4	R U A1 A2 E C
Unit-4	Central Processing Unit (CPU) Organization <ul style="list-style-type: none"> a. CPU components: ALU, control unit, registers b. Instruction fetch, decode, and execute stages c. Control unit design and operations. d. Microprogramming and control signals. 	10	CO2 CO3	A1 A2
Unit-5	Memory Systems and Hierarchy <ul style="list-style-type: none"> a. Memory hierarchy: cache, main memory, and secondary storage. b. Cache memory and its organization. c. Virtual memory and memory management. 	8	CO1 CO4	R U A1 A2 E C

Learning Resources:

Text Books

1. M. Moris Mano (2006), Computer System Architecture, 3rd edition, Pearson/PHI, India.

Suggested readings

1. Carl Hamacher, Zvonks Vranesic, SafeaZaky (2002), Computer Organization, 5th edition, McGraw Hill, New Delhi, India.
2. William Stallings (2010), Computer Organization and Architecture- designing for performance, 8th edition, Prentice Hall, New Jersey.
3. Anrew S. Tanenbaum (2006), Structured Computer Organization, 5th edition, Pearson Education Inc,
4. John P. Hayes (1998), Computer Architecture and Organization, 3rd edition, Tata McGrawHill

Open online resources

Video links:

1. <https://archive.nptel.ac.in/courses/106/105/106105163/>

2. Course Faculty 3. (Prepared by)	Head of the Department (Checked and verified by)	Director (Approved by)
Name:	Name:	Name:
Signature:	Signature:	Signature:

(Seal)

(Seal)

(College Seal)

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SEMESTER - II

Course 23CSCMAJ103

Paper Code	Title	Credits		Total Classes (15 weeks)	Hours / Week
		Theory	Practical / Tutorial		
23CSCMAJ103	Object Oriented Programming with Java	2		30	2
23CSCMAJ103L	Object Oriented Programming with Java Lab		2	60	4

Course Objectives:

- To introduce students to the Java programming language.
- To create Java programs that leverage the object-oriented features of the Java language, such as encapsulation, inheritance and polymorphism; use data types, arrays and other data collections;
- To implement I/O functionality to read from and write to text files.

Course Outcomes:

Code	Outcome description
	Upon successful completion of this course, students will be able to
CO_ CSCMAJ103_1	Understand the principles and practices of object-oriented analysis and design in the construction of robust, maintainable programs which satisfy their requirements.
CO_ CSCMAJ103_2	Implement, compile, test and run Java programs comprising more than one class, to address a particular software problem.
CO_ CSCMAJ103_3	Demonstrate the principles of object-oriented programming.
CO_ CSCMAJ103_4	Demonstrate the ability to use simple data structures like arrays in a Java program.
CO_ CSCMAJ103_5	Understand the concept of package, interface, multithreading and File handling in java.
CO_ CSCMAJ103_6	Ability to make use of members of classes found in the Java API (such as the Math class).

Course Outcomes mapping with Program Specific Outcomes

Outcomes	PSO01	PSO02	PSO03	PSO04	PSO05	PSO06	PSO07	PSO08	PSO09	PSO10	PSO11	PSO12	PSO13	PSO14	PSO15	PSO16	PSO17	PSO18	PSO19	PSO20	PSO21	PSO22	PSO23	PSO24	PSO25	PSO26
1																										
2																										
3																										
4																										
5																										
6																										

Unit 1: Introduction to Java (4 Lectures)

Java Architecture and Features, Understanding the semantic and syntax differences between C++ and Java, Compiling and Executing a Java Program, Variables, Constants, Keywords Data Types, Operators (Arithmetic, Logical and Bitwise) and Expressions, Comments, Doing Basic Program Output, Decision Making Constructs (conditional statements and loops) and Nesting, Java Methods (Defining, Scope, Passing and Returning Arguments, Type Conversion and Type and Checking, Built-in Java Class Methods),

Unit 2: Arrays, Strings and I/O (8 Lectures)

Creating & Using Arrays (One Dimension and Multi-dimensional), Referencing Arrays Dynamically, Java Strings: The Java String class, Creating & Using String Objects, Manipulating Strings, String Immutability &

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Equality, Passing Strings To & From Methods, String Buffer Classes. Simple I/O using System.out and the Scanner class, Byte and Character streams, Reading/Writing from console and files.

Unit 3: Object-Oriented Programming Overview (4 Lectures)

Principles of Object-Oriented Programming, Defining & Using Classes, Controlling Access to Class Members, Class Constructors, Method Overloading, Class Variables & Methods, Objects as parameters, final classes, Object class, Garbage Collection.

Unit 4: Inheritance, Interfaces, Packages, Enumerations, Autoboxing and Metadata (14 lectures)

Inheritance: (Single Level and Multilevel, Method Overriding, Dynamic Method Dispatch, Abstract Classes), Interfaces and Packages, Extending interfaces and packages, Package and Class Visibility, Using Standard Java Packages (util, lang, io, net), Wrapper Classes, Autoboxing/Unboxing, Enumerations and Metadata.

Unit 5: Exception Handling, Threading, Networking and Database Connectivity (15 Lectures)

Exception types, uncaught exceptions, throw, built-in exceptions, Creating your own exceptions; Multi-threading: The Thread class and Runnable interface, creating single and multiple threads, Thread prioritization, synchronization and communication, suspending/resuming threads. Using java.net package, Overview of TCP/IP and Datagram programming. Accessing and manipulating databases using JDBC.

Unit 6: Applets and Event Handling (15 Lectures)

Java Applets: Introduction to Applets, Writing Java Applets, Working with Graphics, Incorporating Images & Sounds. Event Handling Mechanisms, Listener Interfaces, Adapter and Inner Classes. The design and Implementation of GUIs using the AWT controls, Swing components of Java Foundation Classes such as labels, buttons, text fields, layout managers, menus, events and listeners; Graphic objects for drawing figures such as lines, rectangles, ovals, using different fonts. Overview of servlets.

Suggested Readings

1. Arnold, K., Gosling, J., & Holmes, D. (2000). *The Java programming language*. Addison-Wesley Professional.
2. James Gosling, Bill Joy, Guy L Steele Jr, Gilad Bracha, Alex Buckley (2014). *The Java Language Specification, Java SE (Java Series)*, 8/e. Addison Wesley.
3. Bloch, J. (2008). *Effective java*. Addison-Wesley Professional.
4. Cay S. Horstmann, Gary Cornell (2012). *Core Java 2 Volume 1*, 9/e. Prentice Hall.
5. Cay S. Horstmann, Gary Cornell (2013), *Core Java 2 Volume 2 - Advanced Features*, 9/e. Prentice Hall.
6. Bruce Eckel (2002). *Thinking in Java*, 3/e, PHI.
7. E. Balaguruswamy (2009). *Programming with Java*, 4/e, McGraw Hill.
8. Paul Deitel, Harvey Deitel (2011). *Java: How to Program*, 10/e. Prentice Hall.
9. Krishna, P. R. (2007). *Object oriented programming through Java*.

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Course 23CSCMAJ104

Paper Code	Title	Credits		Total Classes (15 weeks)	Hours / Week
		Theory	Practical / Tutorial		
23CSCMAJ104	Computer Organisation and Architecture - II	3		45	3
23CSCMAJ104L	Computer Organisation and Architecture - II LAB		1	30	2

Course Overview:

This course:

- a. Elaborates communication at machine level using assembly language
- b. Explains multiprocessing computers and its principles.
- c. Comprehend the features and performance parameters of different types of computer architectures.

Course Objectives:

To enable a student to:

- Understand how arithmetic operations are executed at machine level.
- Understand how I/O devices communicate to transfer data.
- Understand how processor achieves parallel processing
- Measure the efficiency of a computer
- Understand multiprocessor systems

Course Outcomes:

Code	Outcome description
	Upon successful completion of this course, students will be able to
CO_ CSCMAJ104_1	Draw the internal architecture of a computer
CO_ CSCMAJ104_2	Understand how computer performs several tasks together
CO_ CSCMAJ104_3	Analyse arithmetic algorithms for execution of instructions efficiently
CO_ CSCMAJ104_4	Understand how peripherals communicate to transfer data.
CO_ CSCMAJ104_5	Write programs in machine language for execution of instructions
CO_ CSCMAJ104_6	Compare and measure the performance of a computer

Course Outcomes mapping with Program Specific Outcomes

Outcomes	PSO01	PSO02	PSO03	PSO04	PSO05	PSO06	PSO07	PSO08	PSO09	PSO10	PSO11	PSO12	PSO13	PSO14	PSO15	PSO16	PSO17	PSO18	PSO19	PSO20	PSO21	PSO22	PSO23	PSO24	PSO25	PSO26
1																										
2																										
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Units	Content	Lecture Hours	COs	RBT
Unit-1	Computer Arithmetic a. Introduction, Addition and subtraction. b. Multiplication Algorithms (Booth Multiplication Algorithm) c. Division Algorithms	9	CO1	R U

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	d. Floating Point Arithmetic operations e. Decimal Arithmetic Unit.			
Unit-2	Parallel Processing and Pipelining a. Pipelining concepts, stages, and hazards. b. Superscalar and VLIW architectures. c. SIMD and MIMD parallelism. Impact of pipelining and parallelism on performance.	8	CO2 CO4	R U A1 A2 E C
Unit-3	Input/Output (I/O) Systems a. I/O devices, controllers, and interfaces. b. I/O operations and programming. c. Polling vs. interrupt-driven I/O. Interrupts and DMA (Direct Memory Access).	10	CO2 CO3 CO4	R U A1 A2 E C
Unit-4	Assembly Language Programming a. Introduction to assembly language programming. b. Addressing modes and instruction set usage. c. Arithmetic and logic operations, looping constructs, Subroutines, I-O Programming d. Assembly language programming examples.	10	CO2 CO3	A1 A2
Unit-5	Multiprocessors a. Characteristics of Multiprocessors, Interconnection Structures, Inter-processor Arbitration b. Inter-processor Communication and Synchronization c. Cache Coherence, Shared Memory Multiprocessors.	8	CO1 CO4	R U A1 A2 E C

R: Remembering, U: Understanding, A1: Applying, A2: Analysing, E: Evaluating, C: Creating

Learning Resources:

Text Books

1. M. Moris Mano (2006), Computer System Architecture, 3rd edition, Pearson/PHI, India.

Suggested readings

1. Carl Hamacher, Zvonks Vranesic, SafeaZaky (2002), Computer Organization, 5th edition, McGraw Hill, New Delhi, India.
2. William Stallings (2010), Computer Organization and Architecture- designing for performance, 8th edition, Prentice Hall, New Jersey.
3. Anrew S. Tanenbaum (2006), Structured Computer Organization, 5th edition, Pearson Education Inc,
4. John P. Hayes (1998), Computer Architecture and Organization, 3rd edition, Tata McGrawHill

Open online resources

Video links:

1. <https://archive.nptel.ac.in/courses/106/105/106105163/>

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Unit	Contents	Hours	Outcomes	Revised Bloom's Taxonomy Levels
Unit-1	Introduction to Cyber Security (a) Defining Cyberspace and Overview of Computer and Web-technology (b) Architecture of cyberspace (c) Communication and web technology (d) Internet infrastructure for data transfer and governance (e) Regulation of cyberspace (f) Concept of cyber security (g) Issues and challenges of cyber security	4	CO_BCASEC101_1	R, U, A1
Unit-2	Cyber Crime and Cyber Law (a) Classification of cyber crimes (b) Common cyber crimes (c) Cybercriminals modus-operandi (d) Reporting of cyber crimes (e) Remedial and mitigation measures (f) Legal perspective of cyber crime 1. IT Act 2000 and its amendments 2. Cybercrime and offences (g) Organisations dealing with Cybercrime and Cyber security in India	6	CO_BCASEC101_1 CO_BCASEC101_2	R, U, A1
Unit-3	Social media Overview and Security (a) Introduction to Social networks (b) Types of Social media (c) Social media platforms (d) Social media monitoring (e) Hashtag (f) Social media marketing (g) Social media privacy (h) Challenges, opportunities and pitfalls in online social network (i) Security issues related to social media (j) Flagging and reporting of inappropriate content (k) Laws regarding posting of inappropriate content (l) Best practices for the use of Social media	7	CO_BCASEC101_1 CO_BCASEC101_2 CO_BCASEC101_3	R, U, A1
Unit-4	E-Commerce and Digital Payments (a) Definition of E- Commerce (b) Components of E-Commerce (c) Elements of E-Commerce security (d) E-Commerce threats (e) E-Commerce security best practices (f) Introduction to digital payments (g) Components of digital payment and stake holders (h) Modes of digital payments 1. Banking Cards 2. Unified Payment Interface (UPI)	7	CO_BCASEC101_1 CO_BCASEC101_2 CO_BCASEC101_3 CO_BCASEC101_4	R, U, A1, A2

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	3. e-Wallets 4. Unstructured Supplementary Service Data (USSD) 5. Aadhar enabled payments (i) Digital payments related common frauds and preventive measures (j) RBI guidelines on digital payments and customer protection in unauthorised banking transactions (k) Relevant provisions of Payment Settlement Act,2007			
Unit-5	Digital Devices Security, Tools and Technologies for Cyber Security (a) End Point device and Mobile phone security (b) Password policy (c) Security patch management (d) Data backup (e) Downloading and management of third-party software (f) Device security policy (g) Cyber Security best practices 1. Significance of host firewall and Antivirus 2. Management of host firewall and Anti-virus 3. Wi-Fi security 4. Configuration of basic security policy and permissions	6	CO_BCASEC101_1 CO_BCASEC101_2 CO_BCASEC101_3 CO_BCASEC101_4 CO_BCASEC101_7	R, U, A1, A2

References

- Mishra, R. C (2010). *Cyber Crime Impact in the New Millennium*, Auther Press.
- Belapure, Sumit and Godbole, Nina (2011). *Cyber Security Understanding Cyber Crimes, Computer Forensics and Legal Perspectives*. Wiley India Pvt. Ltd.
- Oliver, Henry A. (2001). *Security in the Digital Age: Social Media Security Threats and Vulnerabilities*. Create Space Independent Publishing Platform.
- Awad, Elias M. *Electronic Commerce*. Prentice Hall of India Pvt Ltd.
- Kumar K. *Cyber Laws: Intellectual Property & E-Commerce Security*. Dominant Publishers.
- Eric Cole, Ronald Krutz, James W. Conley. *Network Security Bible*, 2nd Edition. Wiley India Pvt. Ltd.
- E. Maiwald. *Fundamentals of Network Security*. McGraw Hill.

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Course 23BCASEC102

Paper Code	Title	Credits		Total Classes (15 Weeks)	Hours / Week
		Theory	Practical / Tutorial		
23BCASEC102	Python Programming	2		30	2
23BCASEC102L	Python Programming Lab		1	30	2

Course Objectives:

Course Outcomes:

Code	Outcome description
	Upon successful completion of this course, students will have or be able to
CO_BCASE102_1	
CO_BCASE102_2	
CO_BCASE102_3	
CO_BCASE102_4	

Course Outcomes mapping with Program Specific Outcomes

Outcomes	PSO01	PSO02	PSO03	PSO04	PSO05	PSO06	PSO07	PSO08	PSO09	PSO10	PSO11	PSO12	PSO13	PSO14	PSO15	PSO16	PSO17	PSO18	PSO19	PSO20	PSO21	PSO22	PSO23	PSO24	PSO25	PSO26
1																										
2																										
3																										
4																										

Unit-1: Components, control structures, functions [12 Hours]

Components: Python Interpreter/Shell, Identifiers, Keywords, Statements and Expressions, Variables, Operators, Precedence and Associativity, Data types, Indentation, Comments, Reading Input, Print Output, Type Conversions, The type() function and Is operator, Dynamic and Strongly Typed Language;

Control Flow Statements: The if Decision Control Flow Statement, The if...else Decision Control Flow Statement, The if...elif...else Decision Control Statement, Nested if Statement, The while Loop, The for Loop, The continue and break Statements;

Functions: Built-In Functions, Commonly Used Modules, Function Definition and Calling the Function, The return Statement and void Function, Scope and Life time of Variables, Default Parameters, Command Line Arguments;

Strings: Creating and Storing Strings, Basic String operations, Accessing Characters in String by Index Number, String Slicing and Joining, String methods

Unit-2 [12 Hours]

Lists: Creating Lists, Basic List Operations, Indexing and Slicing in Lists, Built-In Functions Used on Lists, List Methods, The del Statement,

Dictionaries: Creating Dictionary, Accessing and modifying key:value pairs in Dictionaries, Built-In Functions Used on Dictionaries, Dictionary methods, The del Statement.

Tuples and Sets: Creating tuples, basic tuple operations, indexing and slicing in tuples, built-in functions used on tuples, relations between tuples and lists, relations between tuples and dictionaries, tuple methods, using zip() function,

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Sets: Set Methods, Frozen set.

Unit-3 [12 Hours]

Files: Types of files, creating and reading text data, file methods to read and write data, reading and writing binary files, the Pickle module, reading and writing CSV files,

Object-oriented programming: Classes and Objects, Creating Classes in Python, Creating Objects in Python, The constructor method, classes with multiple objects, class attributes versus data attributes; encapsulation, inheritance, polymorphism.

Text Books:

1. Gowrishankar S, Veena A (2018). *Introduction to Python Programming*, 1st Edition. CRC Press/Taylor & Francis. ISBN-13: 978-0815394372. [Unit I&II- 2,3,4,5,6,7,8,9 Unit III-11,12].
2. Eric Matthes (2019). *Python Crash Course- A Hands-On, Project-Based Introduction to Programming*, 2nd Edition. No Starch Press. [Unit III-15, Unit IV-16]
3. Wesley J. Chun (2016). *Core Python Applications Programming*, 3rd Edition. Pearson Education. [Unit IV-2,5].

Reference Books:

1. Kamthane, A. N., & Kamthane, A. A (2017). *Programming and Problem Solving with Python*. McGraw Hill Education.
2. Mark Lutz (2013). *Learning Python*, 5th edition. O'reilly Publication, ISBN 978- 1449355739.
3. Ljubomir Perkovic (2012). *Introduction to Computing Using Python- An Application Development Focus*. Wiley.

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Course 23CSAVAC101

Paper Code	Title	Credits		Total Classes (15 Weeks)	Hours / Week
		Theory	Practical / Tutorial		
23CSAVAC101	Website Designing using WordPress		1	30	2

Course Overview:

This course introduces:

- a. A comprehensive introduction to WordPress, one of the most popular content management systems (CMS) for website development.
- b. Students will learn how to create, customize, and manage websites using WordPress.
- c. Students will be able to build and maintain functional and visually appealing websites for personal blogs, portfolios, small businesses, and more.

Course Objectives:

To enable a student to:

- Understand the basics of WordPress and its role in website development.
- Create and set up a WordPress website from scratch.
- Customize website appearance using themes and templates.
- Add and manage content, including text, images, and multimedia.
- Troubleshoot common issues and perform website maintenance.

Course Outcomes:

Code	Outcome description
	Upon successful completion of this course, students will have or be able to
CO_CSAVAC101_1	Enumerate key features and basics of WordPress
CO_CSAVAC101_2	Understand the structure of a website and the importance of tools.
CO_CSAVAC101_3	Classify plugins and tools for content management and optimization.
CO_CSAVAC101_4	Create a simple website or blog.
CO_CSAVAC101_5	Optimize and enhance website security
CO_CSAVAC101_6	Create and Set Up a WordPress Website

Units	Content	Lecture Hours	COs	RBT
Unit-1	Introduction to WordPress <ol style="list-style-type: none"> a. CMS and its uses b. WordPress- Advantages & Disadvantages c. Creating a Blog website on wordpress.org, installation on localhost and FTP d. Choosing and installing WordPress themes. e. Customizing website appearance through theme settings. f. Creating custom menus and navigation. g. Working with widgets and sidebars. h. Creating and formatting posts and pages. i. Inserting images, videos, and other media. j. Organizing content using categories and tags. k. Managing comments and discussions. 	15	CO1 CO2 CO3 CO4	R U A1 A2
Unit-2	Optimization, Maintenance & Security <ol style="list-style-type: none"> a. Optimizing content for search engines. b. Improving website performance and load times. c. Ensuring responsive design for various devices. d. Creating user accounts and assigning roles. e. Setting up user permissions and access levels. 	15	CO4 CO5 CO6	A1 A2 E C

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	f. Implementing basic security measures. g. Identifying and resolving common WordPress issues. h. Backing up and updating the website. i. Regular maintenance tasks for a healthy website. j. Create a 4-page website			
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Learning Resources:

Open online resources

1. https://www.tutorialspoint.com/wordpress/wordpress_tutorial.pdf

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Course 23CSAVAC102

Paper Code	Title	Credits		Total Classes (15 Weeks)	Hours / Week
		Theory	Practical / Tutorial		
23CSAVAC102	Graphics Designing		1	30	2

Course Objectives:

The objective of this Graphic Designing (Basic) course is to provide students with a comprehensive introduction to the fundamental principles and techniques of graphic design. Through a balanced blend of theoretical instruction and practical hands-on exercises, students will develop a strong foundation in design concepts, software proficiency, and creative problem-solving skills. By the conclusion of the course, students will be equipped to produce visually appealing and effective designs tailored for both print and digital media. The course aims to enable students to:

- Understand the pivotal role and significance of graphic design in various industries and contexts.
- Comprehend and apply key elements and principles of design, such as line, shape, colour, texture, balance, and contrast, to create visually engaging compositions.
- Familiarize themselves with essential design software, including Adobe Photoshop and Illustrator, to execute design tasks efficiently.
- Demonstrate practical skills through hands-on exercises, culminating in the creation of a basic digital artwork that incorporates fundamental design elements.
- Develop a solid grasp of typography fundamentals, encompassing typefaces, fonts, hierarchy, kerning, and leading, and effectively apply them in layout design.
- Apply principles of effective layout design to craft visually compelling posters, integrating typography and layout techniques learned during the course.
- Gain proficiency in image editing and manipulation, including image resolution, file formats, colour modes, cropping, retouching, and colour adjustments using Photoshop tools.
- Enhance a photograph through practical application of image editing techniques, showcasing an understanding of digital image enhancement.
- Cultivate skills in designing for digital media, producing web graphics and social media posts that communicate effectively in the digital realm.
- Explore the realm of vector graphics and logo design, acquiring a foundational understanding of logo creation.
- Successfully conceive, design, and execute a final project consisting of a simple logo and business card, applying learned design principles and software skills.
- Present and articulate their final design projects, engage in constructive critique, and evaluate design choices effectively.
- By achieving these objectives, students will be well-prepared to embark on their graphic design journey, equipped with a strong foundation that supports further exploration and advancement in the field.

Course Outcomes:

Code	Outcome description
CO_CSAVAC102_1	Upon successful completion of this course, students will have or be able to A comprehensive understanding of the fundamental concepts that underpin the world of graphic design. They will appreciate the pivotal role that graphic design plays in shaping visual communication across various industries and contexts. Students will be adept at identifying and applying essential design elements and principles, including line, shape, colour, texture, balance, and contrast, to create visually captivating compositions. By successfully completing this module, students will have established a strong foundation in graphic design, enabling them to approach design tasks with a critical eye and an informed perspective. They will be equipped to analyze visual compositions, comprehend the interplay of design elements, and initiate their creative journey in the realm of graphic design.
CO_CSAVAC102_2	Developed a comprehensive understanding of the art and science of typography, as well as the principles governing effective layout design. Students will possess the

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	ability to discern and select appropriate typefaces and fonts based on design objectives, and they will have a keen grasp of establishing visual hierarchy through techniques such as kerning and leading. The students will be adept at applying the principles of effective layout design, employing concepts such as alignment, proximity, contrast, and balance to create visually harmonious and compelling compositions. Through hands-on experience, students will have honed their skills by designing a poster that emphasizes the integration of typography and layout elements.
CO_CSAVAC102_3	Developed a proficient skill set in image editing techniques and manipulation, enabling them to effectively enhance and transform digital images. Students will have gained a solid understanding of key technical aspects, including image resolution, file formats, and colour modes, allowing them to make informed decisions when working with visual content. By successfully completing this module, students will possess the practical skills needed to manipulate digital images with precision and creativity. They will be equipped to make visual improvements to photographs, create visually appealing compositions, and effectively convey desired moods and messages through image manipulation. This proficiency in image editing will serve as a valuable asset in various design projects and provide students with a strong foundation for further exploration in the realm of graphic design.
CO_CSAVAC102_4	Acquired the essential skills to excel in the realm of digital design. They will be adept at crafting impactful visuals tailored for digital media, including web graphics and social media posts, effectively engaging audiences in the digital landscape. The students will have a foundational understanding of vector graphics and logo design principles, empowering them to create distinctive and versatile visual identities. Through hands-on experience, students will have successfully conceptualized, designed, and executed a simple logo and business card, showcasing their ability to apply learned concepts to real-world design projects.

Unit	Contents	Hours	Outcomes	Revised Bloom's Taxonomy Levels
Unit-1	Introduction to Graphics Design (a) Understanding the role and importance of graphic design (b) Elements and principles of design: line, shape, colour, texture, balance, contrast, etc. (c) Introduction to design software (e.g., Adobe Photoshop, Illustrator, InDesign) (d) Hands-on: Creating a simple digital artwork using basic design elements	6	CO_CSAVAC102_1	R, U, A1
Unit-2	Typography and Layout Design (a) Typography fundamentals: typefaces, fonts, hierarchy, kerning, leading (b) Principles of effective layout design (c) Hands-on: Designing a poster with emphasis on typography and layout	8	CO_CSAVAC102_2	R, U, A1
Unit-3	Image Editing and Manipulation (a) Introduction to image resolution, file formats, and colour modes (b) Basic image editing techniques: cropping, retouching, colour adjustments (c) Hands-on: Enhancing a photograph using Photoshop tools	10	CO_CSAVAC102_3	R, U, A1
Unit-4	Digital Design	6	CO_CSAVAC102_4	R, U, A1

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	(a) Designing for digital media: web graphics, social media posts (b) Introduction to vector graphics and logo design			
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Recommended Resources:

1. Ellen Lupton. *Thinking with Type*.
2. Williams, Robin. *The Non-Designer's Design Book*.
3. Dabner, David., Stewart, Sandra. and Vickress, Abbie. *Graphic Design School: The Principles and Practice of Graphic Design*.
4. Adobe Creative Cloud Tutorials and Documentation

Websites and Blogs:

Smashing Magazine: A great resource for design articles, tutorials, and inspiration.
 Behance: A platform to showcase and discover creative work, offering inspiration and insights.

YouTube Channels:

The Futur: Offers insightful videos on design principles, typography, and more.
 Tutpad: Provides a variety of graphic design tutorials for beginners.

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Course 23CSAVAC104

Paper Code	Title	Credits		Total Classes (15 Weeks)	Hours / Week
		Theory	Practical / Tutorial		
23CSAVAC104	Desktop Publishing		1	30	2

Course Objectives:

This course offers students the chance to create a collection of publications suitable for inclusion in their portfolios. Participants will work with industry-standard page layout and graphics software, acquiring a comprehensive understanding of print production technology and processes. This includes learning how to effectively communicate with other print experts, estimate expenses, and manage digital output.

Course Outcomes:

Code	Outcome description
	Upon successful completion of this course, students will have or be able to
CO_CSAVAC104_1	Gain and employ the abilities to craft both fiction and non-fiction pieces, engage in professional editing, generate digital content, formulate print and web-based materials, and oversee the progression of writing and editing projects.
CO_CSAVAC104_2	Utilize theoretical and technical expertise in innovative ways to align with diverse readerships and markets, addressing their unique needs and expectations.

Unit	Contents	Hours	Outcomes	Revised Bloom's Taxonomy Levels
Unit-1	Introduction to DTP (a) Preliminary understanding of DTP-related terms (b) Text and graphics formats (c) Difference between drawings and images (d) Image storage formats such as BMP, GIF, TIFF, and JPG/JPEG	4	CO_CSAVAC104_1	R, U, A1
Unit-2	Adobe PageMaker Basics (a) Workspace overview Preferences, menus, toolbox, palettes, converting documents from other programs, saving and closing documents, document pages, master pages, printing a document. (b) Working with Text Utilizing text in PageMaker, importing text, text frames, story editor, character formatting, paragraph formatting, type utilities, working with styles, editing existing styles, working with tables. (c) Working with objects Rectangles and ellipses, polygons, manipulating objects, filling and stroking objects. (d) Working with colour Colours palette, adding new colours, editing and deleting colours, verifying colour suitability for printing, trapping. (e) Working with images and graphics	12	CO_CSAVAC104_1 CO_CSAVAC104_2	R, U, A1

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	<p>Image/graphic file formats, image resolution, placing images, modifying images and graphics, working with frames, text wrap, image masks.</p> <p>(f) Exporting as HTML and PDF files Options for exporting, exporting pages, exporting PDF files.</p>			
Unit-3	<p>CorelDraw</p> <p>(a) Basics of CorelDraw Menus, expanded menus and dialog boxes, toolbars, property bar, status bar, toolbox, zoom tool (zooming in and out), pan tool, document viewing, desktop power tools, starting or opening documents, saving, importing, and exporting files.</p> <p>(b) Rectangles and Ellipses Paths, Objects, Properties, drawing rectangles, rounding rectangle corners, creating ellipses, transforming ellipses into a pie shape or arc.</p> <p>(c) Select, Move, and Size Selecting and deselecting objects, marquee selection, moving an object, copying and pasting objects, cloning objects, copying/moving an object between documents, handles and scaling, altering object dimensions.</p> <p>(d) Polygons, Stars, and Spirals Creating polygons; drawing stars; creating polygons as stars; Creating symmetrical spirals; drawing logarithmic spirals.</p> <p>(e) Nodes and Paths Adding, deleting, joining, and converting using various types of nodes.</p> <p>(f) Lines and Curves Freehand tool, Bezier tool, knife tool, eraser tool, artistic media tool.</p> <p>(g) Colour and Fills Closing object paths, filling with uniform colour, changing outline colour, eyedropper tool, paint bucket tool, interactive mesh fill tool.</p> <p>(h) Working with Text Adding artistic text and paragraph text, using handles, text formatting, flowing text between paragraph text frames, directing paragraph text onto a path and into an object, making text flow around an object, rotating text, free skew tool, interactive drop shadow tool, vector extrusions.</p>	14	CO_CSAVAC104_1 CO_CSAVAC104_2	R, U, A1

Suggested Readings

1. Roger C. Parker and Kate Shoup. *Desktop Publishing & Design For Dummies*.
2. Deke McClelland and Mark Abdelnour. *CorelDRAW for Dummies*.

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Course 23CSAMDC101

Paper Code	Title	Credits		Total Classes (15 Weeks)	Hours / Week
		Theory	Practical / Tutorial		
23CSAMDC101	Introduction to MS-Word, Excel and PowerPoint	2		30	2
23CSAMDC101L	Introduction to MS-Word, Excel and PowerPoint Lab		1	30	2

Course Overview:

This course introduces:

- a. How to use MS Office applications use in office work such as creating professional-quality documents; store, organize and analyse information.
- b. How to perform arithmetic operations and functions.
- c. How to create dynamic slide presentations with animation, narration, images, and writing professional emails.

Course Objectives:

To enable a student to:

- Create digital documents of professional quality.
- Organize numerical and financial data for analysis
- Create dynamic presentations with animations
- Differentiate and decide type of document to be used for a given task.
- Write emails of professional quality.

Course Outcomes:

Code	Outcome description
	Upon successful completion of this course, students will have or be able to
CO_CSAMDC101_1	List the uses and features of MS Word, Excel, PowerPoint
CO_CSAMDC101_2	Understand various text formatting techniques, including fonts, styles, sizes, and alignment.
CO_CSAMDC101_3	Build and manage spreadsheets for data entry, analysis, and organization.
CO_CSAMDC101_4	Apply Formatting techniques, tables, and charts to present data and information effectively.
CO_CSAMDC101_5	Design and create documents for a given event.
CO_CSAMDC101_6	Create documents of professional quality for business and academic purposes.

Units	Content	Lecture Hours	COs	RBT
Unit-1	Introduction to MS Word <ol style="list-style-type: none"> a. Creating, editing, saving and printing text documents b. Font and paragraph formatting c. Simple character formatting d. Inserting tables, smart art, page breaks e. Using lists and styles f. Working with images g. Using Spelling and Grammar check h. Understanding document properties i. Mail Merge 	13	CO1 CO6	R U A1 A2 E C
Unit-2	Introduction to MS Excel <ol style="list-style-type: none"> a. Spreadsheet basics b. Creating, editing, saving and printing spreadsheets Working with functions & formulas 	14	CO1 CO3 CO6	R U A1 A2 E

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	c. Modifying worksheets with color & autoformats Graphically representing data: Charts & Graphs			C
Unit-3	Introduction to MS PowerPoint a. Opening, viewing, creating, and printing slides Applying auto layouts b. Adding custom animation c. Using slide transitions d. Graphically representing data: Charts & Graphs Creating Professional Slide for Presentation.	13	CO1 CO4 CO6	R U A1 A2 E C
Unit-4	Internet & e-mails a. What is Internet? Receiving Incoming b. Messages Sending Outgoing Messages, c. Email addressing Email attachments, Browsing, Search engines	5	CO2 CO6	R U E C

R: Remembering, U: Understanding, A1: Applying, A2: Analysing, E: Evaluating, C: Creating

Learning Resources:

Open online resources

1. <https://support.microsoft.com/en-us/office/powerpoint-for-windows-training-40e8c930-cb0b-40d8-82c4-bd53d3398787>
2. <https://support.microsoft.com/en-us/office/excel-video-training-9bc05390-e94c-46af-a5b3-d7c22f6990bb>
3. <https://support.microsoft.com/en-us/office/word-for-windows-training-7bcd85e6-2c3d-4c3c-a2a5-5ed8847eae73>

Course Faculty (Prepared by)	Head of the Department (Checked and verified by)	Director (Approved by)
Name:	Name:	Name:
Signature:	Signature:	Signature:

(Seal)

(Seal)

(College Seal)

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Core/ Major Courses:

Course Code	Title
23CSCMAJ101	Programming in C
23CSCMAJ102	Digital Electronics
23CSCMAJ103	Object Oriented Programming with Java
23CSCMAJ104	Computer Organisation & Architecture
23CSCMAJ201	Data Structures
23CSCMAJ202	Operating Systems
23CSCMAJ203	Graphics programming using OpenGL
23CSCMAJ204	Software Engineering
23CSCMAJ205	Database Management Systems
23CSCMAJ301	Introduction to Artificial Intelligence
23CSCMAJ302	Data analysis using spreadsheet
23CSCMAJ303	Computer Networks
23CSCMAJ304	Digital Marketing
23CSCMAJ305	Information Security
23CSCMAJ306	Design & Analysis of Algorithms
23CSCMAJ401	Software Project Management
23CSCMAJ402	Cloud Computing
23CSCMAJ403	Theory of Computation
23CSCMAJ404	Software Testing
23CSCMAJ404	Project

Skill Enhancement Courses:

Course Code	Title
23CSCSEC101	Introduction to Cyber Security
23CSCSEC102	Python Programming
23CSCSEC201	Introduction to Web Technology
23CSCSEC202	Introduction to R Programming

Discipline Specific Electives:

Course Code	Title
23CSCDSE301	Programming with Java Script
23CSCDSE302	Introduction to Data Science
23CSCDSE303	Introduction to Machine Learning
23CSCDSE304	Ethical Hacking-I
23CSCDSE305	IoT with Arduino
23CSCDSE306	NoSQL Database
23CSCDSE307	Data Visualization using Python
23CSCDSE308	Ethical Hacking-II
23CSCDSE309	IoT with Raspberry Pi
23CSCDSE401	Android Programming

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23CSCDSE402	Data Mining & Warehousing
23CSCDSE403	Optimization Techniques in ML
23CSCDSE404	Pen Testing-I
23CSCDSE405	IoT Security
23CSCDSE406	ASP.Net Programming with C#
23CSCDSE407	Data Analytics & Visualization
23CSCDSE407	Pen Testing-II

Open Electives (Multi- Disciplinary) in Computer Science & Applications:

(For BA, BSc, BCom, BSW, BBA, BBM students studying Core Courses other than Computer Science/ Computer Applications)

Course Code	Title
23CSAMDC01	Introduction to Microsoft Word, Excel and PowerPoint

Value Added Courses in Computer Science & Applications:

(For BA, B. Sc, B. Com, BSW, BBA, BBM students studying Core Courses other than Computer Science/ Computer Applications)

Course Code	Title
23CSAVAC01	Introduction to Web Designing with WordPress
23CSAVAC02	Introduction to Graphics Design
23CSAVAC03	Introduction to Computer Hardware and Networking
23CSAVAC04	Introduction to Desktop Publishing