Shiv Chhatrapati Shikshan Sanstha's

Rajarshi Shahu Mahavidyalaya, Latur

(Autonomous)

Structure and Curriculum of Four Year Multidisciplinary Degree (Honors) Programme with Multiple Entry and Exit option

Undergraduate Programme of Science and Technology

B.Sc. (Degree) in Computational Science

Board of Studies

in

Computational Science

Rajarshi Shahu Mahavidyalaya, Latur

(Autonomous)

w.e.f. June, 2023

(In Accordance with NEP-2020)

Review Statement

The NEP Cell reviewed the Curriculum of **B.Sc. (Degree) in Compuational Science** Programme to be effective from the **Academic Year 2023-24.** It was found that, the structure is as per the NEP-2020 guidelines of Govt. of Maharashtra.

Date: 09/08/2023

Place: Latur

NEP Cell
Rajarshi Shahu Mahavidyalaya, Latur
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CERTIFICATE

I hereby certify that the documents attached are the Bonafide copies of the Curriculum of **B.Sc. (Degree) in Computational Science** Programme to be effective from the **Academic Year 2023-24.**

Date: 14/07/2023

Place: Latur

(Ms. J. V. Mashalkar)
Chairperson
Board of Studies in Computational Science
Rajarshi Shahu Mahavidyalaya, Latur
(Autonomous)

Rajarshi Shahu Mahavidyalaya, Latur

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Members of Board of Studies in the Subject Computational Science

Under the Faculty of Science and Technology

Sr. No.	Name	Designation	In position
1	**Ms. J.V. Mashalkar** Coordinator, Department of Information Technology, Rajarshi Shahu Mahavidyalaya, Latur (Autonomous)	Chairperson	Coordinator
2	**Dr. Parag Bhalchandra** Assistant Professor, School of Computational Science, S.R.T.M.U. Nanded	Member	V.C. Nominee
3	**Dr. S. S. Phulari** Incharge CCC, Vasantrao Naik Marathwada Krushi Vidyapeeth, Parbhani	Member	Academic Council Nominee
4	**Prof. Smita R. Bhanap** Assistant Professor, Assistant Professor, Fergusson College (Autonomous), Pune	Member	Academic Council Nominee
5	**Dr. B. G. Kodge** Associate Professor, Swami Vivekanand Mahavidyalaya, Udgir	Member	Expert from outside for Special Course
6	**Mr. Sudhakar Gavhane** Senior Consultant Specialist with HSBC India Pvt. Ltd., Pune	Member	Expert from Industry
7	**Mr. Amol Kalekar** Associate Technical Architect, Sagitec Solutions Pvt. Ltd., Pune	Member	P.G. Alumni
8	**Dr. Upkar Varshney** Associate Professor, Department of CIS, Georgia State University, Atlanta, GA	Member	Invitee Member
9	**Dr. S. V. Patil**	Member	Faculty Member
10	**Prof. J. M. Jadhav**	Member	Faculty Member
11	**Prof. M. B. Bhatade**	Member	Faculty Member
12	**Prof. A. K. Shaikh**	Member	Faculty Member
13	**Prof. S. R. Jadhav**	Member	Faculty Member
14	**Prof. B. S. Gorde**	Member	Faculty Member
15	**Dr. Manisha Dhotre** Assistant Professor, R. S. M. Latur	Member	Member from same Faculty

From the Desk of the Chairperson…

It is the great pleasure and honor that I share the syllabi for First Year of B.Sc. (Honors) in Computational Science under NEP-2020 which will be implemented from the academic year 2023-24.

Keeping in mind, the mission statement of institution *Pursuit for Excellence* and adhering to the core values *Academic Excellence*, *Expand horizons of knowledge*, *Learning for Life* and *Service to Nation*, the implementation of NEP-2020 for UG FY programmes is to be start from the academic year 2023-24.

NEP-2020 focuses on key reforms in higher education by providing multidisciplinary approach for holistic development of students. It makes students the carrier of knowledge, wisdom and values with capability to adapt the changes.

While framing the draft syllabus of first year, the feedbacks received from stakeholders, the technological advancements and global IT industry requirements are considered. On the successful completion of courses designed under NEP-2020 will promote the overall development of students and enhance their employability.

I acknowledge with gratitude all the guidance given by our Principal, Dr Mahadev Gavhane and Vice Principal Prof Sadashiv Shinde during the course of framing the syllabus of B.Sc. (Honors) in Computational Science First Year in accordance with NEP-2020.

I also acknowledge with gratitude all the members of the Board of Studies for their valuable suggestions and contributions while designing all the courses of first year of this programme.

I would like to express grateful thanks to all who are involved in the process of syllabus designing.

Thank you.

(Ms. J. V. Mashalkar)
Chairperson
Board of Studies in Computational Science

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Faculty of Science and Technology

Structure for Four Year Multidisciplinary Undergraduate Degree Programme in Computational Science Multiple Entry and Exit (In accordance with NEP-2020)

Year & Level	Sem	Major		Minor	GE/OE	VSC/ SEC (VSEC)	AEC/ VEC	OJT,FP,CEP, RP	Credit per Sem.	Cum./Cr. per exit
		DSC	DSE							
1	**2**	**3**		**4**	**5**	**6**	**7**	**8**	**9**	**10**
I 4.5	I	DSC I: 04 Cr. DSC II: 04 Cr.	NA	NA	GE-I: 04 Cr.	VSC-I: 02 Cr. SEC-I: 02 Cr.	AEC-I MIL: 02 Cr. VEC-I: 02 Cr.	CC-I: 02 Cr. (NSS, NCC, Sports, Cultural)/ CEP-I: 02 Cr. (SES-I)/ OJT: 02 Cr. / Mini Project: 02 Cr.	22	44 Cr. UG Certificate
	II	DSCIII: 04 Cr. DSC IV: 04 Cr.	NA	NA	GE-II: 04 Cr.	VSC-II: 02 Cr. SEC-II: 02 Cr.	AEC-II MIL: 02 Cr. VEC-II: 02 Cr.	Generic IKS: 02 Cr.	22	
	Cum. Cr.	16	-	-	08	04+04=08	04+02+02=08	04	44	
Exit Option: Award of UG Certificate in Major with 44 Credits and Additional 04 Credits Core NSQF Course/Internship or continue with Major and Minor										

Abbreviations:

1. DSC : Discipline Specific Core (Major)
2. DSE : Discipline Specific Elective (Major)
3. DSM : Discipline Specific Minor
4. GE/OE : Generic/Open Elective
5. VSEC : Vocational Skill and Skill Enhancement Course
6. VSC : Vocational Skill Courses
7. SEC : Skill Enhancement Course
8. AEC : Ability Enhancement Course
9. MIL : Modern Indian Languages
10. IKS : Indian Knowledge System
11. FSRCE : Fostering Social Responsibility & Community Engagement
12. VEC : Value Education Courses
13. OJT : On Job Training
14. FP : Field Projects
15. CEP : Community Engagement and Service
16. CC : Co-Curricular Courses
17. RP : Research Project/Dissertation
18. SES : Shahu Extension Services

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Department of Information Technology

B.Sc. (Degree) Computational Science

Year & Level	Semester	Course Code	Course Title	Credits	No. of Hrs.
I 4.5	I	101COM1101 (DSC-I)	Programming in C	03	45
		101COM1103	Lab Course-I	01	30
		101COM1102 (DSC-II)	Computer Fundamentals and Office Automation	03	45
		101COM1104	Lab Course-II	01	30
		GE-I	From Basket	04	60
		101COM1501 (VSC-I)	Statistical Computing	02	45
		(SEC-I)	From Basket	02	30
		101ENG1701 (AEC-I)	English for Professionals	02	30
		(VEC-I)	Constitution of India	02	30
		AIPC/OJT-I	Case Study	02	60
	Total Credits			**22**	
	II	101COM2105 (DSC-III)	C++ Programming	03	45
		101COM2107	Lab Course-III	01	30
		101COM2106 (DSC-IV)	Web Programming with HTML and CSS	03	45
		101COM2108	Lab Course-IV	01	30
		GE-II	From Basket	04	60
		101COM2502 (VSC-II)	Fundamentals of Digital Electronics	02	45
		(SEC-II)	From Basket	02	30
		(AEC-II)	From Basket	02	30
		(VEC-II)	FSRCE (CBPR)	02	30
		Generic IKS	Introduction to Indian Knowledge System	02	60
	Total Credits			**22**	
Total Credits (Semester I & II)				**44**	

Programme Outcomes (POs) for B.Sc. Programme	
PO 1	Develop problem solving skills through programming
PO 2	Enhance critical thinking, logical and communication skill
PO 3	Train to have hands on various programming languages for application development
PO 4	Prepare for project management, effective presentations and teamwork
PO 5	Augment the current trends of IT in the domain of research and development
PO 6	Provide training to students in order to enhance employability
PO 7	Develop entrepreneurial skills to initiate startups

Programme Specific Outcomes (PSOs) for B.Sc. Computational Science (Degree)	
PSO No.	Upon completion of this programme, the students will be able to
PSO 1	Analyze and write appropriate algorithms for given problem
PSO 2	Analyze, explore and build up computer programs for designing computer-based systems
PSO 3	Explain the history of the discipline of Computer Science and understand the conceptual underpinnings of the subject
PSO 4	Apprise the basic theory of computer architectures, including nature of operating systems and compilers, computer hardware and networking
PSO 5	Apply standard software engineering practices and strategies in the software development process using programming with proper documentation
PSO 6	Design and develop software applications of various domains using one or two programming languages
PSO 7	Learn latest development and technologies in IT and Communication system
PSO 8	Apply in-depth expertise to address local/regional/national/global real world research problems

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Department of Information Technology

Course Type: DSC-I
Course Title: Programming in C
Course Code: 101COM1101
Credits: 03 **Max. Marks: 75** **Lectures: 45 Hrs.**

Learning Objectives:

LO 1. Understand the fundamental concepts and techniques of C programming
LO 2. Learn formulation of algorithm for a given problem and drawing flowchart for it
LO 3. Learn input, output, control and iterative statements in C
LO 4. Study concepts of C programming such as arrays, functions
LO 5. Write programs for given problem and execute it
LO 6. Develop logical and programming skill

Course Outcomes:

After completion of the course, students will be able to-
CO 1. Formulate an algorithm for the given problem and draw flowchart for it
CO 2. Explain basic concepts of C
CO 3. Make use of control and iterative statements for problem solving
CO 4. Employ the major concepts of C such as arrays, structure and union in applications
CO 5. Describe and analyze various problem solving methods using C
CO 6. Enhance an understanding of the logical flow of a program

Unit No.	Title of Unit & Contents	Hrs.
I	**Overview of C**	**12**
	1. Algorithm, Flowchart and its symbols 2. Introduction to C: History of C, Importance of C, Basic structure of C program, Data Types, C tokens, Keywords, Identifiers, Constants, Variables: Declaration of variables, assigning values to variables, Defining symbolic constants, Sample C programs, Execution of C program 3. Input and Output Statements: Input statements, Output statements, Reading character, Writing character, Formatted input and output statements, Command line arguments, Simple Programs	
	Unit Outcomes: UO 1. Formulate an algorithm for the given problem and draw flowchart for it UO 2. Explain the basic concepts of C	

Unit No.	Title of Unit & Contents	Hrs.
II	**Branching and Looping**	**12**
	1. Operators and Expressions: Arithmetic operators, Relational operators, Logic al operators, Assignment operators, Increment and Decrement operators, Conditional operators, Bitwise operators, Special operators, Type Conversion in expressions, Operator precedence 2. Storage Classes: auto, register, static, external 3. Branching and Looping: Simple if statement, Nested, Ladder if-else statement. Switch statement, break, continue, goto, exit statement, while statement, do-while statement, for statement, Simple programs on branching and looping	
	Unit Outcomes: UO 1. Make use of control and iterative statements for solving given problem UO 2. View and manage execution flow of program	
III	**Arrays and Strings**	**11**
	1. Arrays: Introduction, One dimensional, Two dimensional and Multidimensional arrays, Initialization of arrays 2. Handling of Character Strings: Declaring and Initializing string variables, Reading string from terminal, Writing string to screen, Arithmetic operations on characters, putting strings together 3. String handling functions: strlen, strcpy, strcat, strcmp, strlwr, strupr	
	Unit Outcome: UO 1. Employ the major concepts of C such as arrays and strings while developing applications	
IV	**Advance Concepts of C**	**10**
	1. Functions: Definition of function. Return values and their types, Function declaration, Function calls, Categories of function, Nesting of function, Recursion, Mathematical functions 2. Structure and Union: Defining structure, Declaring structure members and structure variables, Arrays as structure, Arrays within structure, Union 3. Pointers: Understanding Pointers, Accessing the address of variables, Declaring and initializing pointers, Accessing a variable through pointers 4. File Handling: Opening and closing file, I/O statements used for file handling: fprintf(), fscanf()	
	Unit Outcomes: UO 1. Utilize function, structure and union concepts for developing console projects	

Learning Resources:

1. Programming in ANSI C, E. Balgurusamy, 7th Edition, TMH Publications, 2018
2. Programming with ANSI and TURBO C, Ashok N. Kamthane, Pearson Education, 2002
3. Programming with C, S. Byron Gottfried, TMH, 2018
4. The C Programming Language, Kernighan & Ritche, Prentice-Hall, 1988
5. Let us C, Yashwant Kanetkar, 13th Edition, BPB, 2013
6. Programming in C, P.B. Kotur, Sapna Book House, 2013
7. Computer Programming and IT, Ashok N. Kamthane, Pearson Education, 2011
8. Thinking in C, Mahapatra, PHI Publications, 1998.
9. C: The Complete Reference, Herbert Schildt, 4th edition, McGraw Hill Publication, 2017
10. Computer Programming In C, V. Rajaraman, PHI Learning, 2019

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Department of Information Technology

Course Type: Lab Course
Course Title: Lab Course –I (Based on DSC-I)
Course Code: 101COM1103
Credits: 01 **Max. Marks: 50** **Hours: 30**

Leaning Objectives

LO 1. Understand the fundamental concepts and techniques of C programming
LO 2. Learn input-output, control and iterative statements in C
LO 3. Study concepts of C programming such as arrays, functions
LO 4. Write programs for given problem and execute it
LO 5. Develop logical and programming skill

Course Outcomes:

After completion of the course, students will be able to-

CO 1. Explain basic concepts of C and implement given algorithm using C programming
CO 2. Demonstrate control and iterative statements through programming
CO 3. Employ the major concepts of C such as arrays, structure and union in applications
CO 4. Describe and analyze various problem-solving methods using C
CO 5. Enhance an understanding of the logical flow of a program

Practical No.	Unit
1	Write a C program to find the area of a circle. Accept radius from user.
2	Input length and breadth from user and implement a C program to find the area of a rectangle.
3	Write C program to calculate simple interest and compound interest and demonstrate it.
4	Design, write and execute a C program to convert temperature in Fahrenheit to Celsius and Celsius to Fahrenheit.
5	Write C program to find the GCD and LCM of two integer numbers.
6	Design C program to check whether the given integer is even or odd using if condition statement.
7	Write a C program to accept three integers and determine largest among them using if statement.
8	Implement C program to simulate a simple calculator with addition, subtraction, multiplication, division using switch case.

9	Write a C program to print number from 1 to 100 which are divisible by 7 and display their sum and count using for loop.
10	Write a C program to reverse a given integer number and check whether the number is palindrome or not using while loop.
11	Write a C program to check whether given number is prime or not using while loop.
12	Design and implement C program to display the pattern given below using nested for loop * * * * * * * * * * * * * * *
13	Write a C program to read N integers into an array and find sum of all numbers.
14	Design and implement C program to find the addition of two matrices.
15	Implement and demonstrate C program to calculate the factorial of a number using function.
16	Implement C program to demonstrate use of string handling functions.
17	Create structure named as “employee”. Add empid, emp_name and salary as members of it. Display values of these members on screen.
18	Create structure named as “book”. Add bookid, book_name, author_name and price as members of it. Display values of these members on screen.
19	Write a program to demonstrate pointer concept.
20	Create and open a file having name “student.txt”. Write contents to file and read it.

N.B.: Any ten practical from above.

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Department of Information Technology

Course Type: DSC-II

Course Title: Computer Fundamentals and Office Automation

Course Code: 101COM1102

Credits: 03 **Max. Marks: 75** **Lectures: 45 Hrs.**

Learning Objectives

LO 1. Study computer peripherals, software and office tools
LO 2. Learn how to install and use MS-Office applications
LO 3. Understand office tools to create professional and academic documents
LO 4. Acquire basics of spreadsheets and presentations
LO 5. Enhance employability skill of students

Course Outcomes

After completion of the course, students will be able to-
CO 1. Explain the basics of computer system
CO 3. Study computer peripherals, software and office tools
CO 2. Install and use MS-Office applications effectively
CO 3. Use Microsoft Office tools to create professional and academic documents
CO 4. Apply advanced formulas and functions on given data and create charts
CO 5. Create effective presentations using MS-Powerpoint

Unit No.	Title of Unit & Contents	Hrs.
I	**Computer System Organization**	**11**
	1. Introduction to Computer System: Characteristics of Computers, Generations of computer, 2. Classification of computers: Notebook computers, Personal Computers, Workstations, Mainframes system, Supercomputers 3. Basic Computer Organization: Input Unit, Output Unit, Storage Unit, Arithmetic and Logic Unit (ALU), Control Unit(CU), Central Processing Unit(CPU) 4. Data Representation within Computer: Bit, Byte, Word 5. Codes: ASCII, EBCDIC, BCD	
	Unit Outcomes: UO 1. Explain basics of Computer System UO 2. Describe data representation in computer	
II	**Computer Peripherals and Software**	**13**

Unit No.	Title of Unit & Contents	Hrs.
	1. Input Devices: Keyboard, Pointing devices: Mouse, Joystick, Touch Screen, Data Scanning devices, Digitizer, Electronic Card Reader, Voice Recognition devices 2. Output Devices: Monitor, Printer, Plotter, Screen image projector, voice response system 3. Primary Storage Devices: RAM, ROM, PROM, EPROM, EEPROM, Base Memory, Extended memory, expanded memory, cache memory 4. Secondary Storage Devices: Tape, FDD, HDD, CD ROM, Pen drive 5. Computer Software: Definition of software, Types of software 6. Types of Programming Languages: Machine Language, Assembly Language, High Level Language	
	Unit Outcome: UO 1. Use computer peripherals such as input, output and storage devices effectively	
III	**MS-Word**	**11**
	1. MS-Word Screen and its Components 2. Working with Text: Typing and inserting text, selecting text, deleting text, Undo, formatting toolbar, Format Painter 3. Formatting Paragraphs: Moving, Copying, and Pasting text, the clipboard, Columns, Drop caps 4. Lists and Table Manipulations: Bulleted and numbered lists, Insert table, Drawing a table, Inserting rows and columns, Moving and resizing a table, Tables and Borders 5. Page Formatting: Page margins, Page size and orientation, Headers and footers, Page numbers, Print preview and printing	
	Unit Outcomes: UO 1. Differentiate between various office related software applications UO 2. Utilize MS-Word tool effectively to perform documentation work	
IV	**MS-Excel and MS-Powerpoint**	**10**
	1. Working with worksheet: Adding worksheets, Rows and columns, Resizing rows and columns, Selecting cells, Moving and copying cells, Freezing panes 2. Formulas and Functions: Formulas, linking worksheets, Relative, absolute, and mixed referencing, Basic functions, Function Wizard, Autosum 3. Sorting and Filling: Basic ascending and descending sorts, Autofill, Alternating text and numbers with Autofill 4. Charts: Chart Wizard, Resizing a chart, Moving a chart, Chart formatting toolbar	

Unit No.	Title of Unit & Contents	Hrs.
	5. MS-PowerPoint: Introduction, Creating a presentation from a template, Create a blank presentation, Open an existing presentation 6. Working with Slides: Insert a new slide, Applying a design template, Changing slide layouts, Reordering slides, Hide slides, Create a custom slide show, Edit a custom slide show 7. Slide Effects: Slide animation, Animation preview, Slide transitions, Slide show options, Master Slides, Slide master, Header and footer, Slide numbers, Date and time	
	Unit Outcomes: UO 1. Use advanced formulas and functions to represent data in MS-Excel UO 2. Create effective presentations on a particular topic	

Learning Resources:

1. Computer Fundamentals, Pradeep K. Sinha and Priti Sinha, Sixth Edition, BPB Publication, 2017
2. Fundamentals of Computers, V Rajaraman, Neeharika Adabala, PHI Learning Pvt. Ltd., 2015
3. Introduction to Computers, Peter Norton, Tata McGraw Hill, 1995
4. Fundamentals of Information Technology, Chetan Srivastava, Kalyani Publishers, Third edition, 2010
5. PC Hardware: The Complete Reference, Tata McGraw Hill, 2017
6. Fundamentals of Computer and Information Technology, R.S. Salaria, Khanna Publishers, 2022
7. Computer Fundamentals, Anita Goel, Pearson Education, 2010
8. Fundamentals of Computers, Reema Thareja, Oxford, 2014
9. Foundations of Computing, Pradeep K. Sinha, Priti Sinha, Fifth Edition, BPB Publications, 2022
10. Fundamentals of Computers and Information System by Niranjan Shrivastava, Wiley India, 2013
11. MS OFFICE 2000 Complete, BPB Publications, New Delhi, 1999
12. Working with MS OFFICE, Ron Mansfield, Tata Mc Graw Hill, 2000
13. Microsoft Office 2016 Step By Step, Curtis Frye, Joan Lambert, Microsoft Press, 2015
14. Microsoft Excel 2019 Bible, Michael Alexander, Wiley, 2019

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Department of Information Technology

Course Type: Lab Course
Course Title: Lab Course –II (Based on DSC-II)
Course Code: 101COM1104
Credits: 01 **Max. Marks: 50** **Hours: 30**

Learning Objectives

LO 1. Study computer peripherals, software and office tools
LO 2. Learn how to install and use MS-Office applications
LO 3. Understand office tools to create professional and academic documents
LO 4. Acquire basics of spreadsheets and presentations
LO 5. Enhance employability skill of students

Course Outcomes:

After completion of the course, students will be able to-
CO 1. Explain the basics of computer system
CO 3. Study computer peripherals, software and office tools
CO 2. Install and use MS-Office applications
CO 3. Use Microsoft Office tools to create professional and academic documents
CO 4. Apply advanced formulas and functions on given data and create charts
CO 5. Create effective presentations using MS-Powerpoint

Practical No.	Unit
1	Identify computer hardware and software
2	Study of elements of Windows OS
3	Study of Windows explorer: a. Create a new folder and a file b. Copy the created file to a new folder c. Rename, Copy and Delete the created file and folder
4	Study of control panel
5	Demonstrate the usage of various storage devices
6	Create an application and prepare a resume to apply for a job in a IT company. Apply page and paragraph formatting to the above document.
7	Create a newspaper document with at least 200 words in two column format and having an image.
8	Create a table using two columns: the left column contains all the short-cut keys and right side column contains the function of the short-cut keys

<table>
<tr><td>9</td><td>Create a letter to invite your friend for a family function with at least 100 words and two paragraphs. The date must be in top-right corner.</td></tr>
<tr><td>10</td><td>Create a table “Student_Result” in MS-Excel with following fields. Sr. No., Name, Sub1, Sub2, Sub3, Total, Percentage, Result. Calculate Total and Percentage.</td></tr>
<tr><td>11</td><td>Create a sales table using the following data and draw the bar-graph to compare the sales of the five items for three years:
<table>
<tr><th>Item</th><th>2019</th><th>2020</th><th>2021</th></tr>
<tr><td>Item1</td><td>1000</td><td>1200</td><td>1100</td></tr>
<tr><td>Item2</td><td>950</td><td>1200</td><td>1150</td></tr>
<tr><td>Item3</td><td>1100</td><td>900</td><td>1250</td></tr>
</table>
</td></tr>
<tr><td>12</td><td>Create presentation of seminar on a particular topic with minimum five slides. Apply animation to the presentation</td></tr>
<tr><td>13</td><td>Create presentation of books of Computer Science with all its details. Apply text formatting animation to the presentation</td></tr>
</table>

N.B.: Any ten practical from above.

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(Autonomous)

Department of Information Technology

Course Type: DSC-III
Course Title: C++ Programming
Course Code: 101COM2105
Credits: 03 **Max. Marks: 75** **Lectures: 45 Hrs.**

Learning Objectives:

LO 1. Understand the key concepts of Object Oriented Programming (OOP)
LO 2. Implement the object-oriented paradigm in program design
LO 3. Create C++ programs to solve problems
LO 4. Study the polymorphism and inheritance concepts
LO 5. Handle exceptions occurred in programs

Course Outcomes:

After completion of the course, students will be able to-
CO 1. Analyze the strengths of object oriented programming
CO 2. Implement C++ programs to solve problems
CO 3. Apply OOP concepts to develop applications using C++
CO 4. Percept the utility and applicability of OOP
CO 5. Manage exceptions generated in program execution

Unit No.	Title of Unit & Contents	Hrs.
I	**Overview of Object Oriented Programming**	**10**
	1. Introduction: Object Oriented Programming (OOP) paradigm. 2.Basic concepts of OOP: Object, class, data Abstraction, encapsulation, inheritance, polymorphism, dynamic binding and message passing 3. C++ Features: The iostream class, data types, keywords, comments, variable declaration, I/O statement, structure of C++ program, scope resolution operator, new and delete operators 4. Manipulators: endl, setw, setprecision	
	Unit Outcomes: UO 1. Develop a deep understanding of key concepts of OOP UO 2. Understand basics of C++ programming	
II	**Class and Object**	**14**

Unit No.	Title of Unit & Contents	Hrs.
	1. Functions: Function declaration and definition, calling the function, pass by value, pass by reference, default arguments, inline functions 2. Classes and Objects: Specifying a class, class member visibility: private, public, protected. creating objects, accessing class members, defining member functions, array of objects, friend function 3. Constructors and Destructors: Constructors, types of constructor: default constructor, parameterized constructor and copy constructor, destructor	
	Unit Outcomes: UO 1. Acquaint with functions, class and object concepts	
III	**Polymorphism**	**10**
	1. Polymorphism: Compile time and run time polymorphism, function overloading 2. Operator Overloading: Concept of operator overloading, defining operator overloading, overloading unary and binary operators 3. Type Conversions: Basic to class type, class to basic type	
	Unit Outcome: UO 1. Acquire the polymorphism concept with programming	
IV	**Inheritance and Exception Handling**	**11**
	1. Inheritance: Derived class and base class, Specifying the derived class, Accessing the base class members 2. Level of inheritance: Introduction, visibility of inherited members, single inheritance, multilevel inheritance, multiple inheritance, hybrid inheritance, virtual base classes, virtual function, pure virtual functions 3. Exception handling mechanism**:** Try, catch and throw blocks, sample programs	
	Unit Outcomes: UO 1. Develop applications using C++ programming UO 2. Handle exceptions occurred in programs	

Learning Resources:

1. Complete reference C++, Herbert Schildt, Tata McGraw Hill, 2017
2. Object Oriented Programming with C++, E. Balagurusami, Fourth Edition, Tata Mc-Graw Hill, 2008
3. Object Oriented Programming with ANSI & Turbo C++, Ashok N. Kamthane, First Edition, Pearson Education, 2006
4. Programming with C++, John R. Hubbard, Schaum's Outline Series, McGraw Hill, 2000
5. The C++ Programming Language, Bjarne Stroustrup, Third Edition, Addison-Wesley Publishing Company, 1997
6. A Complete Reference to C++, Salaria, R. S., First Edition, Khanna Book Publishing, 2017
7. Object-Oriented Programming in C++, Robert Lafore, Fourth Edition, Sams Publishing, 2001
8. Let Us C++, Yashavant Kanetkar, Second Edition, BPB Publications, 2003
9. The C++ Programming Language, Bjarne Stroustrup, Third Edition, Addison-Wesley Educational Publishers Inc, 2014
10. Object Oriented Programming and C++, R. Rajaram, New Age International Publisher, 2007

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Department of Information Technology

Course Type: Lab Course
Course Title: Lab Course –III (Based on DSC-III)
Course Code: 101COM2107
Credits: 01 **Max. Marks: 50** **Hours: 30**

Learning Objectives:

LO 1. Understand the key concepts of Object Oriented Programming (OOP)
LO 2. Implement the object-oriented paradigm in program design
LO 3. Create C++ programs to solve problems
LO 4. Study the polymorphism and inheritance concepts
LO 5. Handle exceptions occurred in programs

Course Outcomes:

After completion of the course, students will be able to-
CO 1. Analyze the strengths of object oriented programming
CO 2. Explain in depth the core concepts of C++
CO 3. Apply OOP concepts to develop applications using C++
CO 4. Percept the utility and applicability of OOP
CO 5. Manage exceptions generated in program execution

Practical No.	Unit
1	Write and execute C++ program to demonstrate I/O statements and manipulators.
2	Implement a C++ program to demonstrate use of scope resolution operator
3	Write a program using area () function that returns the area of a circle with given radius. Use function like float area (float r)
4	Write a program using min () and max () function that returns the smallest and largest number among two numbers respectively. Declare functions like int min (int x,int y) and int max(int x,int y)
5	Construct a C++ program to demonstrate working of class and object concept
6	Implement C++ Program to demonstrate constructor and its types. (Three types to be implement)
7	Write and execute C++ program to demonstrate destructor
8	Implement C++ program to find area and circumference of rectangle and triangle using function overloading
9	Write C++ program to illustrate the concept of operator overloading
10	Write a program in C++ to demonstrate single inheritance

11	Write and execute a program in C++ to demonstrate multilevel inheritance
12	Write and execute a program in C++ to demonstrate multiple inheritance
13	Write and implement C++ program to demonstrate concept of virtual function
14	Implement C++ program to demonstrate exception handling mechanism

N.B.: Any ten practical from above.

Course Type: DSC-IV
Course Title: Web Programming with HTML and CSS
Course Code: 101COM2106
Credits: 03 **Max. Marks: 75** **Lectures: 45 Hrs.**

Learning Objectives:

LO 1. Learn the basic concepts of website development
LO 2. Acquaint with HTML tags and its attributes
LO 3. Apply CSS and Javascript for web page designing
LO 4. Design interactive web pages using HTML, CSS and Javascript

Course Outcomes:

After completion of the course, students will be able to-
CO 1. Explain different web technologies and application development issues and trends
CO 2. Distinguish between server-side and client-side web technologies
CO 3. Write valid and concise code for web page
CO 4. Validate web form fields using Javascript
CO 5. Create interactive web pages using HTML, CSS and Javascript

Unit No.	Title of Unit & Contents	Hrs.
I	**Web Basics and HTML**	**10**
	1. The Internet: Web clients, Web servers, Web browser, Internet protocols, Client Server Architecture, HTTP Request and Response, URL 2. Phases of website development, Cross browser testing, how to publish a website 3. Introduction to HTML: Basic structure of an HTML document 4. Markup Tags: Basic HTML Tags, Physical style tags, Paragraphs, Line breaks, HR, Heading levels, Center, Div, Span, Address, working with text, Lists	
	Unit Outcomes: UO 1. Describe the basics of website development UO 2. Gain knowledge of HTML and its tags	
II	**Hyperlinks and Forms**	**13**

Unit No.	Title of Unit & Contents	Hrs.
	1. Working with hyperlink: Hyperlink, Mailto anchor 2. Working with Images: Image file formats, <img> tag with its attributes, Images as background, Internal and External image 3. Image map: server side and client side image maps, Image as hyperlink 4. Adding multimedia Elements: Audio file formats, Adding audio in html document, Video file formats, Adding video in html document 5. Tables: <table> tag with its attributes, Rowspan, colspan 6. Frames: Overview of frames, <frameset> tag and all attributes, Frame targeting, Floating frames 7. Working with Forms and controls:<form> tag with its attributes, Form controls, <input> tag with its attributes	
	Unit Outcomes: UO 1. Make interactive web pages using hyperlinks, forms and tables	
III	**Cascading Style Sheets**	**12**
	1. Concept of CSS 2. Creating Style Sheet: Ways to insert CSS, CSS Properties, CSS Styling (Background, Text Format, Controlling Fonts) 3. Working with block elements and objects 4. Working with Lists and Tables 5. CSS Id and Class 6. Box Model: Introduction, Border properties, Padding Properties, Margin properties 7. CSS Advanced: Grouping, Dimension, Display, Positioning, Floating, Align, Pseudo class, Navigation Bar, Image Sprites, Attribute sector, Color 8. Creating page layout and Site designs	
	Unit Outcome: UO 1. Explain CSS terminologies and implement it on different web pages	
IV	**Javascript Programming**	**10**
	1. Adding script to document 2. Working with local and global variable 3. Javascript: Data types, Operators, Control statements, Looping statements 4. Document Object Model (DOM) 5. DOM Objects (window, navigator, history, location) 6. Predefined functions: Math & string functions 7. Array in Javascript 8. Event handling in Javascript	
	Unit Outcomes: UO 1. Acquaint with Javascript and event handling	

Learning Resources:

1. Web Publishing, Monica D'Souza, Tata McGraw Hill Publishing, 2001
2. Mastering HTML, CSS & Java Script Web Publishing, Laura Lemay, Rafe Colburn, Jennifer Kyrnin, BPB Publications, 2016
3. HTML & CSS: The Complete Reference, Thomas A. Powell, Fifth Edition, 2010
4. HTML 5 in simple steps, Kogent Learning Solutions Inc., Dreamtech Press
5. Web Development and Design Foundation with HTML 5, Terry Felke-Morris, Ninth Edition, Pearson, 2019
6. A beginner's guide to HTML, NCSA
7. Web Enabled Commercial Application Development Using HTML, JavaScript, DHTML and PHP, Ivan Bayross, BPB, 2005
8. C. Xavier, Web Technology And Design, New Age International (P) Limited
9. JavaScript The Complete Reference, Thomas Powell, Fritz Schneider, 3rd Edition , McGraw-Hill Education, 2012
10. Responsive Web Design with HTML5 and CSS, Ben Frain, Packt Publishing Limited, 2022

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Department of Information Technology

Course Type: Lab Course
Course Title: Lab Course –IV (Based on DSC-IV)
Course Code: 101COM2108
Credits: 01 **Max. Marks: 50** **Hours: 30**

Learning Objectives:

LO 1. Learn the basic concepts of website development
LO 2. Acquaint with HTML tags and its attributes
LO 3. Apply CSS and Javascript for web page designing
LO 4. Design interactive web pages using HTML, CSS and Javascript

Course Outcomes:

After completion of the course, students will be able to-
CO 1. Explain different web technologies and application development issues and trends
CO 2. Distinguish between server-side and client-side web technologies
CO 3. Write valid and concise code for web page
CO 4. Validate web form fields using Javascript
CO 5. Create interactive web pages using HTML, CSS and Javascript

Practical No.	Unit
1	Prepare a survey document of five websites and find out prerequisite for designing it.
2	Design web pages for your college containing a description of the courses, departments, faculties, library etc, Make use of <a> and list tags.
3	Create your class timetable using <table> tag.
4	Create Student feedback form (use textbox, text area, checkbox, radio button, select box etc.)
5	Create a web page using frame. Divide the page into two parts with Navigation links on left hand side of page (width=20%) and content page on right hand sideof page (width = 80%). On clicking the navigation Links corresponding content must be shown on the right hand side.
6	Create your resume using HTML tags and make use of colors, text, link, size and also other tags you studied.
7	Design a web page of your home town with an attractive background color, text color, an Image, font etc. (use internal CSS).
8	Use Inline CSS to format your resume that you have created inexperiment-6.
9	Use External CSS to format your class timetable as you have created in experiment-3.

10	Use External, Internal, and Inline CSS to format college web page that you have created in experiment-2.
11	Write a JavaScript program to display system date.
12	Write a JavaScript program to develop simple calculator for arithmetic operations.
13	Write a JavaScript program to determine whether a given year is a leap year or not.
14	Write a JavaScript program to convert temperatures to and from celsius, Fahrenheit.
	Design signup form to validate username, password using Java script

N.B.: Any ten practical from above.

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Department of Information Technology

Course Type: VSC-I

Course Title: Statistical Computing

Course Code: 101COM1501

Credits: 02 **Max. Marks: 50** **Lectures: 30 Hrs.**

Learning Objectives:

LO 1. Acquire a strong foundation in statistical analytics
LO 2. Cultivate statistical thinking
LO 3. Understand the fundamental principles, concepts and methods of statistics
LO 4. Analyze, classify, tabulate and represent the data graphically
LO 5. Compute and interpret various measures of central tendency and dispersion

Course Outcomes:

After completion of the course, students will be able to-

CO 1. Explain descriptive statistics
CO 2. Analyze data and apply measures of central tendency on data
CO 3. Apply fundamental techniques of data representation on data
CO 4. Work with range of data to find the variance and coefficient
CO 5. Apply knowledge of statistics in career fields like Data Science

Unit No.	Title of Unit & Contents	Hrs.
I	**Statistics and Graphical Representation**	**8**
	1. Introduction: Definitions of Statistics, Importance of statistics, Collection of Data, Types of Data, Attributes and variables, Construction of Frequency, Cumulative Frequency Distribution 2. Graphical representation of frequency distribution: Histogram, Frequency Polygon, Frequency Curve and Cumulative Frequency curves (Ogive curves), Diagrammatic representations: Simple bar, Subdivided bar, Pie diagrams	
	Unit Outcome: UO 1. To acquire a strong foundation in statistical analytics by applying techniques of data representation	
II	**Measures of Central Tendency**	**7**
	1. Concept of central tendency 2. Arithmetic Mean: Definition, Formulae and computation for ungrouped and grouped, data, Merits and Demerits 3. Median: Definition, Formulae and Computation for ungrouped and grouped data, Merits and Demerits 4. Mode: Definition, Formulae and Computation for ungrouped and grouped data, Merits and Demerits	

	Unit Outcome: UO 1. Compute and interpret various measures of central tendency such as mean, median, mode etc.	
III	**Measures of Dispersion**	**8**
	1. Concept of Dispersion 2. Range: Definition, Formulae and Computation for ungrouped and grouped data 3. Standard Deviation: Definition, Formulae and Computation for ungrouped and grouped data 4. Variance: Definition, Formulae and Computation for ungrouped and grouped data	
	Unit Outcome: UO 1. To compute and interpret various measures of dispersion	
IV`	**Correlations and Time Series**	**7**
	1. Correlations: Definition of Correlation, Types of Correlation, Karl Pearson's coefficient of correlations for ungrouped data and problems. 2. Time Series: Definition and components of time series, Measures of trends, Moving average method and problems	
	Unit Outcome: UO 1. Utilize concepts of co-relations and time series	
V	**Practicals (included in above 04 units)**	
	1. Study of histogram: Construct histogram for given statistical data 2. Construct frequency polygon for given statistical data 3. Draw frequency curve for given statistical data 4. Draw and construct ogive for given statistical data 5. Construct simple bar diagram for given statistical data 6. Draw subdivided bar diagram for given statistical data 7. Draw pie diagram for given statistical data 8. Calculate various measures of central tendency (mean, median, mode) on given data 9. Compute various measure of dispersion (range, standard deviation, CV) of given data 10. Compute coefficient of correlation of given statistical data	

Learning Resources:

1. Fundamentals of Statistics by A.M. Gun, M. K. Gupta and B. Dasgupta, World Press, 2016
2. Statistical Methods by S.P. Gupta, Sultan Chand and Sons, 2021
3. Business Mathematics and Statistics by R K Ghosh & S Saha, New Central Book Agency (p). Ltd, 2016
4. Modern Elementary Statistics by J.E. Freund, Pearson Education, 2000
5. Fundamentals of Mathematical Statistics by S C. Gupta & V.K. Kapoor, Sultan Chand & Sons, 2000
6. Fundamentals of Applied Statistics, S.C. Gupta, Sultan Chand and Sons, 2014
7. Probability and statistics with reliability queuing and computer science applications by K. S. Trivedi, Wiley, 2016
8. Elements of Statistics 1: Descriptive Statistics And Probability / 1st, Edition, Stephen Bernstein, Ruth Bernstein, McGraw Hill, 2020
9. The Art of Statistics: Learning from Data, David Spiegelhalte, Pelican Book, 2020
10. Practical Statistics for Data Scientists: 50+ Essential Concepts Using R and Python, Second Edition, Peter Bruce, Andrew Bruce, Peter Gedeck, Oreilly, 2020

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Department of Information Technology

Course Type: VSC-II
Course Title: Fundamentals of Digital Electronics
Course Code: 101COM2502
Credits: 02 **Max. Marks: 50** **Lectures: 30 Hrs.**

Learning Objectives:

LO 1. Understand common forms of number representation in computer system
LO 2. Learn in depth the basic and universal logic gates
LO 3. Use Boolean algebra to express logic operations as equations.
LO 4. Gain knowledge of combinational and sequential circuits

Course Outcomes:

After completion of the course, students will be able to-
CO 1. Explain number systems and their conversions in different forms
CO 2. Implement and prove the truth tables of basic and universal logic gates
CO 3. Apply Boolean logic to simplify the Boolean expressions
CO 4. Analyze and design combinational and sequential circuits

Unit No.	Title of Unit & Contents	Hrs.
I	**Number System and Codes**	**10**
	1. Number System: Binary number system, decimal number system, octal number system, hexadecimal number system 2. Bases inter conversions, 3. Binary Subtraction using 1'2 and 2's complement method, 4. Decimal subtraction using 9's and 10's complement method, 5. Codes: BCD, GRAY, EXCESS-3	
	Unit Outcomes: UO 1. Explain various number systems and their conversions UO 2. Differentiate codes used in computer	
II	**Logic Gates and Boolean Algebra**	**13**
	1. Basic gates (AND, OR, NOT): Truth table, Definition, Boolean expression and symbols 2. Universal gates (NAND, NOR): Truth table, Definition, Boolean expression and symbols, Design of basic gates using NAND and NOR gates, Universal property of NAND and NOR gate 3. Boolean algebra: Fundamental concepts of Boolean algebra, Symbol, Boolean equation, Basic laws of Boolean algebra and simplification of Boolean	

Unit No.	Title of Unit & Contents	Hrs.
	Unit Outcomes: UO 1. Explain the operation of basic and universal logic gates UO 2. Apply Boolean laws for minimizing Boolean expressions	
III	**Combination and Sequential Logic Circuits**	**10**
	1. Combination logic: Introduction, Design procedure, Design of half adder and full adder, half subtractor and full subtractor, Encoder, decoder, multiplexer (4:1 and 8:1), de-multiplexer (1:4 and 1:8) 2. Sequential logic: Introduction, Flip-flops- SR flip flop, D flip flop, JK flip flop and T flip flop 3. Microprocessors: Introduction, Basic components of microprocessor	
	Unit Outcomes: UO 1. Design and illustrate various combinational and sequential logic circuits. UO 2. Explain working of microprocessor	
IV	**Practicals ((included in above 04 units)**	**12**
	1. Perform an experiment to verify the truth tables of basic gates 2. Perform an experiment to verify the truth tables of derived gates 3. Perform an experiment to verify the truth tables of EX-OR and EX-NOR gate 4. Perform an experiment to verify the universal property of NAND gate and NOR gate 5. Implement and verify the truth table of any two Boolean equations 6. Implement and verify the truth table of half adder and full adder 7. Implement and verify the truth table of multiplexer 8. Study of microprocessor block diagram and identify its components	
	Unit Outcomes: UO 1. Design and implement the logic gates and prove their truth tables UO 2. Implement sequential and combinational logic circuits	

Learning Resources:

1. Computer System Architecture, M. Moris Mano, Second Edition, Prentice Hall of India, 1982
2. Computer Systems Design and Architecture, Heuring and Jordan, Pearson Education, 1996
3. Computer Organization and Architecture, William Stallings, Pearson Education 2003
4. Structured Computer Organization, Andrew S Tenenbaum, Third Edition, Prentice Hall of India (1990)
5. Modern Digital Electronics, R.P. Jain, Fourth edition, Mc Graw Hill, 2009
6. Digital electronics, G.K. Kharate, Oxford, 2010
7. Digital Computer Electronics, Albert Malvino, McGraw Hill Education, 2017
8. Digital Electronics: Principles and Applications, Roger Tokheim, McGraw Hill Education, 2017
9. Digital Electronics: An Introduction to Theory and Practice, Gothmann W.H., Prentice Hall India Learning Private Limited, 1982
10. Introduction to Electronic Devices, Michael Shur, John Wiley & Sons Inc., 2000.

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UG First Year

Basket I: Generic/Open Elective (GE/OE)

(GEs offered to the Science & Technology students in Sem.-I/II)

Sr. No.	BoS Proposing GE/OE	Code	Course Title	Credits	Hrs.
1	Commerce	101AAF1401	Mutual Fund Management	04	60
2	Commerce	101MAE1401	Fundamentals of Statistics	04	60
3	English	101ENG1402	English for Science and Technology	04	60
4	Geography	101GEO1401	General Geography	04	60
5	Commerce	101BAI1401	Personal Financial Management	04	60
6	Marathi	101MAR1401	स्पर्धा परीक्षा आणि मराठी भाषा	04	60
7	Political Science	101POL1401	Human Rights	04	60
8	Biotechnology	101BIO1401	Nutrition, Health and Hygiene	04	60
9	Music	101MUS1401	Indian Vocal Classical & Light Music	04	60
10	NCC Studies	101NCC1401	Introduction to NCC	04	60
11	Sports	101SPO1401	Counseling and Psychotherapy	04	60

Note: Student can choose any one GE from the basket.

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UG First Year

Basket II: Skill Enhancement Courses (SEC)

(SEC offered to the Science & Technology students in Sem.-I/II)

Sr. No.	BoS Proposing SEC	Code	Course Title	Credits	Hrs.
1	Chemistry	101CHE1601	Pesticides and Green Chemistry	02	30-45
2	Information Technology	101COM1601	Basics of Python Programming	02	30-45
3	Physics	101PHY1601	Physics Workshop Skills	02	30-45
4	Biotechnology	101BIO1601	Food Processing Technology	02	30-45
5	Botany	101BOT1601	Mushroom Cultivation Technology	02	30-45
6	English	101ENG1601	Proof Reading and Editing	02	30
7	Information Technology	101COA1601	PC Assemble and Installation	02	30-45
8	Marathi	101MAR1601	कथा/पटकथालेखन	02	30
9	Zoology	101ZOO1601	Bee Keeping	02	30-45

Note: Student can choose any one SEC from the basket.

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UG First Year

Basket III: Ability Enhancement Courses (AEC)

(AEC offered to the Science & Technology students in Sem.-I/II)

Sr. No.	BoS Proposing AEC	Code	Course Title	Credits	Hrs.
1	English	101ENG1701	English for Professionals - I	02	30
2.	English	101ENG2701	English for Professionals – II	02	30

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UG First Year

Extra Credit Activities

Sr. No.	Course Title	Credits	Hours T/P
1	MOOCs	Min. of 02 credits	Min. of 30 Hrs.
2	Certificate Courses	Min. of 02 credits	Min. of 30 Hrs.
3	IIT Spoken English Courses	Min. of 02 credits	Min. of 30 Hrs.

Guidelines:

Extra -academic activities

1. All extra credits claimed under this heading will require sufficient academic input/ contribution from the students concerned.
2. Maximum 04 extra credits in each academic year will be allotted.
3. These extra academic activity credits will not be considered for calculation of SGPA/CGPA but will be indicated on the grade card.

Additional Credits for Online Courses:

1. Courses only from SWAYAM and NPTEL platform are eligible for claiming credits.
2. Students should get the consent from the concerned subject Teacher/Mentor/Vice Principal and Principal prior to starting of the course.
3. Students who complete such online courses for additional credits will be examined/verified by the concerned mentor/internal faculty member before awarding credits.
4. Credit allotted to the course by SWAYAM and NPTEL platform will be considered as it is.

Additional Credits for Other Academic Activities:

1. One credit for presentation and publication of paper in International/National/State level seminars/workshops.
2. One credit for measurable research work undertaken and field trips amounting to 30 hours of recorded work.
3. One credit for creating models in sponsored exhibitions/other exhibits, which are approved by the concerned department.
4. One credit for any voluntary social service/Nation building exercise which is in collaboration with the outreach center, equivalent to 30 hours
5. All these credits must be approved by the College Committee.

Additional Credits for Certificate Courses:

1. Students can get additional credits (number of credits will depend on the course duration) from certificate courses offered by the college.
2. The student must successfully complete the course. These credits must be approved by the Course Coordinators.
3. Students who undertake summer projects/ internships/ training in institutions of repute through a national selection process, will get 2 credits for each such activity. This must be done under the supervision of the concerned faculty/mentor.

Note:

1. The respective documents should be submitted within 10 days after completion of Semester End Examination.
2. No credits can be granted for organizing or for serving as office bearers/ volunteers for Inter-Class / Associations / Sports / Social Service activities.
3. The office bearers and volunteers may be given a letter of appreciation by the respective staff coordinators. Besides, no credits can be claimed for any services/activities conducted or attended within the college.
4. All claims for the credits by the students should be made and approved by the mentor in the same academic year of completing the activity.
5. Any grievances of denial/rejection of credits should be addressed to Additional Credits Coordinator in the same academic year.
6. Students having a shortage of additional credits at the end of the third year can meet the Additional Credits Coordinator, who will provide the right advice on the activities that can help them earn credits required for graduation.

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Examination Framework

Theory:

40% Continuous Assessment Tests (CATs) and 60% Semester End Examination (SEE)

Practical:

50% Continuous Assessment Tests (CATs) and 50% Semester End Examination (SEE)

Course	Marks	CAT & Mid Term Theory				CAT Practical		Best Scored CAT & Mid Term	SEE	Total
1	2	3				4		5	6	5 + 6
		Att.	CAT I	Mid Term	CAT II	Att.	CAT			
DSC/DSE/ GE/OE/Minor	100	10	10	20	10	-	-	40	60	100
DSC	75	05	10	15	10	-	-	30	45	75
Lab Course/AIPC/ OJT/FP	50	-	-	-	-	05	20	-	25	50
VSC/SEC/ AEC/VEC/CC	50	05	05	10	05	-	-	20	30	50

Note:

1. All Internal Exams are compulsory
2. Out of 02 CATs best score will be considered
3. Mid Term Exam will be conducted by the Exam Section
4. Mid Term Exam is of Objective nature (MCQ)
5. Semester End Exam is of descriptive in nature (Long & Short Answer)
6. CAT Practical (20 Marks): Lab Journal (Record Book) 10 Marks, Overall Performance 10 Marks.