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 Computer Application

Board of Studies

Computer Application

Rajarshi Shahu Mahavidyalaya, Latur

(Autonomous)

[UG II Year]

w.e.f. June, 2024

(In Accordance with NEP-2020)

Review Statement

The NEP Cell reviewed the Curriculum of **B.Sc.(Degree) in Computer Application** to be effective from the **Academic Year 2024-25.** It was found that, the structure is as per the NEP-2020 guidelines of Govt. of Maharashtra.

Date: 04/06/2024

Place: Latur

NEP CELL

Rajarshi Shahu Mahavidyalaya, Latur

(Autonomous)

CERTIFICATE

I hereby certify that the documents attached are the Bonafide copies of the curriculum of **B.Sc. (Degree) in Computer Application** Programme to be effective from the **Academic Year 2024-25.**

Date: 01/06/2024

Place: Latur

(V.D. Panchal)
Chairperson
Board of Studies in Computer Application
Rajarshi Shahu Mahavidyalaya, Latur
(Autonomous)

Shiv Chhatrapati Shikshan Sanstha's

Rajarshi Shahu Mahavidyalaya, Latur

(Autonomous)

Members of Board of Studies in the Subject Computer Application

Under the Faculty of Science and Technology

Sr. No.	Name	Designation	In position
1	**Mr. Vishwanath D Panchal** Head, Department of Information Technology, Rajarshi Shahu Mahavidyalaya (Autonomous), Latur	Chairperson	HoD
2	**Dr. Nilesh Deshmukh** Asso. Professor, School of Computational Science, SRTM, University, Nanded	Member	V.C. Nominee
3	**Dr. Ranjit Patil** Head, Dept. of Computer Science, Dr. D. Y. Patil, A.C.S. College, Pimpri, Pune.	Member	Academic Council Nominee
4	**Dr. Smita Bhanap** Asst. Professor, Department of Computer Science, Fergusson College (Autonomous), Pune.	Member	Academic Council Nominee
5	**Mr. Shashikant Swami** Head, Department of BCA, DCC, Latur	Member	Expert from outside for Special Course
6	**Mr. Sudhakar Gavhane** Senior Consultant with HSBC India Pvt. Ltd Pune	Member	Expert from Industry
7	**Mr. Sandeep Parandekar** Architects, Congnizant Technology Solution, Pune	Member	Alumni
8	**Dr. Upkar Varshney** Asso. Professor, Department of CIS Georgia State University Atlanta	Member	Invitee
9	**Mr. Shaikh R. S. S.**	Member	Faculty Member
10	**Mrs. Chandraprabha Kulkarni**	Member	Faculty Member
11	**Mrs. Manjusha Shinde**	Member	Faculty Member
12	**Mrs. Chetna Ahale**	Member	Faculty Member
13	**Mr. Prashant Joshi**	Member	Faculty Member
14	**Mr. Manoj Birajdar**	Member	Faculty Member
15	**Dr. Dnyaneshwar Rathod**	Member	Member from same Faculty

From the Desk of the Chairperson…

It is the great pleasure and honor that I share the syllabi for Second Year of B.C.A (Degree) under NEP-2020 which will be implemented from the academic year 2024-25.

While framing the syllabus draft, the feedbacks received from stakeholders, the technological advancements and global industrial requirements are considered.

The department is dedicated to offering a helpful, welcoming, and demanding learning environment. In general, it aspires to become a hub of excellence in education, producing knowledgeable workers who will contribute to the nation's growth sustainably and improve people's lives through technology. Our goal is to help the students become globally competent by strengthening their problem-solving abilities and exposing them to the newest advancements in the field of computer applications and information technology.

The Bachelor of Computer Applications (BCA) is made available through the Department of Information Technology. The programme is made to give new students the basic and advanced knowledge of computer and its applications that are required by business and academia to address current issues.

The department has a team of passionate academic staff with sound technical support staff. The faculty members of Department have very teaching experience and are sound knowledge in their respective areas.

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 under NEP-2020.

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

I am sincerely appreciated to all who are involved in the process of syllabus designing.

Thank you.

(Mr. Vishwanath D Panchal)

Chairperson

Board of Studies in Computer Application

Rajarshi Shahu Mahavidyalaya, Latur

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Rajarshi Shahu Mahavidyalaya, Latur

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Faculty of Science and Technology

Structure for Four Year Multidisciplinary Undergraduate Degree Programme in Computer Application 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**
II 5.0	III	DSC V: 04 Cr. DSC VI: 04 Cr.	NA	DSM I 04 Cr.	GE-III: 02 Cr.	SEC-III: 02 Cr.	AEC-I ENG: 02 Cr.	CC-II: 02 Cr. (NSS, NCC, Sports, Cultural)/ (SES-I)/ FP: 02 Cr.	22	44 Cr. UG Certificate
	IV	DSC VII: 04 Cr. DSC VIII: 04 Cr.	NA	DSM II 04 Cr.	GE-IV: 02 Cr.	SEC-IV: 02 Cr.	AEC-II ENG: 02 Cr. VEC-II: 02 Cr.	CC-III: 02 Cr. (NSS, NCC, Sports, Cultural)/ CEP-I: 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. **OE : 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. **VEC : Value Education Courses**
12. **OJT : On Job Training**
13. **FP : Field Projects**
14. **CEP : Fostering Social Responsibility & Community Engagement (FSRCE)**
15. **CC : Co-Curricular Courses**
16. **RP : Research Project/Dissertation**
17. **SES : Shahu Extension Services**

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Faculty of Science & Technology

Programme Outcomes (POs) for B.Sc. Programme	
PO 1	Learn the foundational ideas, fundamental ideas, and scientific theorems related to the fundamental science subjects and their application to daily life.
PO 2	Improve interpersonal relationships, life skills, and communication, and raise levels of living
PO 3	Acquired the knowledge with facts and figures related to various papers in Information Technology and Computer Science
PO 4	Apply the problem solving skills using programming languages
PO 5	Recognize that seeking knowledge is a lifetime endeavor that can help you succeed in life.
PO 6	Become role models to the younger generation in Application / Web Development
PO 7	Pursue higher education after completing this course.
PO 8	Work in various multinational companies / establish their own startup.

Programme Specific Outcomes (PSOs) for B.Sc. Computer Application (Degree)	
PSO No.	After completion of this programme the students will be able to-
PSO 1	An ability to communicate effectively by oral, written, computing and graphical skills and presentation.
PSO 2	An ability to enhance the application of knowledge of theory subjects in diverse fields.
PSO 3	Preparing students in various disciplines of technologies such as computer applications, computer networking, software engineering, Web Technologies, JAVA, database concepts and programming
PSO 4	Enhances programming skills of the young IT professionals through project development in each language/technology learnt during the programme
PSO 5	To enhance logical ability and programming concepts by implementing programming lab
PSO 6	Preparing students for future aspects by building and improving their creativity, social awareness, and general knowledge
PSO 7	Ability to identify, formulate, analyse and solve problems of programming using different languages.
PSO 8	Encouraging students to convert their start-up idea to reality by implementing it to become a software entrepreneur.
PSO 9	An ability to communicate effectively by oral, written, computing and graphical skills and presentation.

Shiv Chhatrapati Shikshan Sanstha's

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Department of Information Technology

B.Sc. (Degree) Computer Application

Year & Level	Semester	Course Code	Course Title	Credits	No. of Hrs.
II 5.0	III	201COA3101 DSC-V	GUI Programming Using C#	03	45
		201COA3103	Lab Course – V	01	30
		201COA3102 DSC-VI	Web Designing using Angular	03	45
		201COA3104	Lab Course – VI	01	30
		201COA3301 DSM-I	Discrete Mathematical Structure	03	45
		201COA3302	Lab Course – I	01	30
		GE-III	From Basket	02	30
		SEC-III	From Basket	02	30
		201ENG3702 AEC-III	English for Professionals – III	02	30
		CC-I	CC-II	02	30
		AIPC/OJT-II	Field Project	02	30
	Total Credits			**22**	
	IV	201COA4101 DSC-VII	Core Java	03	45
		201COA4103	Lab Course – VII	01	30
		201COA4102 DSC-VIII	Data Structures	03	45
		201COA4104	Lab Course – VIII	01	30
		201COA4301 DSM-II	Operating System	03	45
		201COA4302	Lab Course – II	01	30
		GE-IV	From Basket	02	30
		SEC-IV	From Basket	02	30
		201ENG4702 AEC-IV	English for Professionals – IV	02	30
		CC	CC-III	02	30
		AIPC/OJT-II	CEP-I	02	30
	Total Credits			**22**	
Total Credits (Semester III & IV)				**44**	

Curriculum

Major Courses

Semester - III

Shiv Chhatrapati Shikshan Sanstha's

Rajarshi Shahu Mahavidyalaya, Latur

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Department of Information Technology

Course Type: DSC-V

Course Title: GUI Programming Using C#

Course Code: 201COA3101

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

Learning Objectives:

LO 1. To get knowledge about .net Framework and basic console application

LO 2. To understand Windows Form and MDI

LO 3. To work with basic and advanced controls

LO 4. To develop and desktop applications.

LO 5. To develop application that make use of database.

Course Outcomes:

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

CO 1. Analyze the structure of .net framework

CO 2. Analyze use of array, string classes within the application

CO 3. Develop a simple console based application

CO 4. Design windows based application making use of Forms and various controls

CO 5. Apply concepts of menus with MDI in desktop application

CO 6. Develop applications in C# dealing with database.

Unit No.	Title of Unit & Contents	Hrs.
I	**Introduction to .net, and Console Application**	**10**
	What is .Net?, .Net Framework, Visual Studio.Net & .Net Languages, Project types, Characteristics of c#.net. Console Application Basics: I/O Statement, Short Circuiting Operators and Programming Constructs, Array & ArrayList class, String Class	
	Unit Outcomes: UO 1. Understand the concept of .net framework UO 2. Apply the concepts of I/O statements, arrays, strings.	
II	**Windows Form and MDI Strategy**	**08**
	Event Driven Programming, Building windows application with visual studio,	

Unit No.	Title of Unit & Contents	Hrs.
	Windows Form basics, Properties, Events and Methods of Windows Form, A new MDI forms strategy, Menustrip, Toolstrip, Status Strip, MessageBox	
	Unit Outcome: UO 1. Develop application using WinForm UO 2. Design and develop programmes with menus, strips.	
III	**Basic and Advanced Controls**	**17**
	Basic Controls (with Properties, Events and Methods): Button, TextBox, Label, RadioButton, CheckBox, DateTimePicker, PictureBox, ComboBox, ListBox, RichTextBox, **Container & Dialog and Other Controls:** GroupBox, Panel, Common Dialog boxes, , Timer, ProgressBar, TreeView, MaskedTextBox	
	Unit Outcomes: UO 1. Design the user friendly desktop application using different controls UO 2. Efficiently implement various common dialog boxes	
IV	**Ado.Net and Database Connectivity**	**10**
	What is Ado.net?, Advantages of Ado.net, Connected & Disconnected Architecture, Data Sources And .Net Data Providers, DataTable and DataAdapter, Connecting to Database, Handling DataGridView Control, Developing Ado.net Based Application, Insert, Update & Delete operation on table, ADO.NET exception. Creating and Executable File/Application.	
	Unit Outcomes: UO 1. Abel to develop applications which will make use of database UO 2. Efficiently execute different queries on database.	

Learning Resources:

1. Pro C# 2010 and the .NET 4 Platform, Andrew Troelsen, Fifth edition, A Press, 2010.
2. Programming C# 4.0, Ian Griffiths, Matthew Adams, Jesse Liberty, Sixth Edition, O"Reilly, 2010.
3. Programming in C# A Primer, E Balagurusamy
4. C#.Net Programming, Wrox Publication
5. .net 4.0 programming black book, KOGENT LEARNING SOLUTIONS INC.
6. C# 2010 programming black book, KOGENT LEARNING SOLUTIONS INC.
7. The Complete Reference: C# 4.0, Herbert Schildt, Tata Mc Graw Hill, 2012.
8. Professional C# 2012 with .NET 4.5, Christian Nagel et al., Wiley India, 2012
9. https://www.geeksforgeeks.org/
10. https://www.c-sharpcorner.com/

Shiv Chhatrapati Shikshan Sanstha's

Rajarshi Shahu Mahavidyalaya, Latur

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Department of Information Technology

Course Type: Lab Course -V

Course Title: Lab Course-V (GUI Programming Using C#)

Course Code: 201COA3103

Credits: 01 **Max. Marks: 50** **Hours: 30**

Leaning Objectives

LO 1. To get knowledge about, net Framework and basic console application

LO 2. To understand Windows Form and MDI

LO 3. To work with basic and advanced controls

LO 4. To develop and desktop applications.

LO 5. To develop application that make use of database.

Course outcomes

After completion of course the student will be able to-

CO 1. Analyze use of array, string classes within the application

CO 2. Design windows based application making use of Forms and various controls

CO 3. Apply concepts of menus with MDI in desktop application

CO 4. Develop applications in C# dealing with database.

Practical No.	Unit
1	Create Console application for I/O statement
2	Develop Console application for foreach loop with Array class
3	Create Console application for HashTable
4	Develop Windows application for MDI form
5	Create Windows application to create Menus
6	Windows application to show MessageBox in different type
7	Windows application to perform Addition of two TextBox
8	Windows application to work with ComboBox
9	Windows application to work with ProgressBar and Timer
10	Windows application to work with TreeView
11	Windows application to connect with MS-Aceess
12	Windows application to connect with Oracle

13	Windows application to Perform DML operation on Table
14	Windows application to show database record in DataGridView
15	Creating an .exe file of the project

N.B.: Any Ten Practical from above.

Shiv Chhatrapati Shikshan Sanstha's

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Department of Information Technology

Course Type: DSC-VI

Course Title: Web Designing using Angular

Course Code: 201COA3102

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

Learning Objectives

LO 1. To get fundamental knowledge of Typescript

LO 2. To acquire knowledge about Angular environment.

LO 3. To understand Typescript programming

LO 4. To work with various concepts like Forms, Pipes, Directives, etc.

Course Outcomes:

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

CO 1. Identify the basic structure of typescript programming environment

CO 2. Efficiently handle Typescript program

CO 3. Adequately explain functioning of Angular application

CO 4. Design simple angular programmes

CO 5. Explain the process of web page designing using angular

Unit No.	Title of Unit & Contents	Hrs.
I	**Introduction to JavaScript and Typescript**	**12**
	1. Introduction to JavaScript, Basic structure, DOM **2.** Introduction to Typescript, Environment Setup, Basic Syntax, Datatypes and Variables, Operators **3.** Decision Making, Loops, Numbers, String, Arrays **4.** Functions, Classes.	
	Unit Outcome: UO 1. Identify the different programming constructs in Typescript UO 2. Efficiently handle Typescript program	
II	**Introduction to Angular**	**07**
	1. Introduction to Angular, History of Angular, Development Environment, Angular Life Cycle 2. Project Setup, Basics of Angular Application, Installation.	

Unit No.	Title of Unit & Contents	Hrs.
	Unit Outcome: UO 1. Identify and setup Angular development environment UO 2. Abel to create simple angular applications.	
III	**Directives and Components**	**12**
	1. **Directives-** Definition, scope, Built-In Attribute Directives, Structural Directives, Passing data into a Directive. 2. **Components**- Defining Component, Component and Module, Input and Output, Lifecycle.	
	Unit Outcomes: UO 1. Identify the scope of Directives and Components. UO 2. Able to work with components.	
IV	**Forms, Pipes and Routing**	**14**
	1. **Forms-** Working with Reactive Forms 2. **Pipes-** Introduction, Parameterizing Pipes, Multiple pipes, Custom pipes 3. **Routing-** Routing modes, Advance Routing	
	Unit Outcome: UO 1. Work with forms UO 2. Apply concept of Pipes and Routing	

Learning Resources:

1. Angular Up & Running, Shyam Seshadri, O'Reilly, Second Edition, 2019
2. ng-book: The Complete Guide to Angular, Nathan Murray, Felipe Coury, Kindle Edition
3. Angular 16 for beginners, Raman Developer,
4. Pro Angular, Adam Freeman, APress, Second Edition, 2017
5. Learning Angular, Aristeidis Bampakos, Expert Insight, Third Edition, 2023
6. A Journey to Angular Development, Sukesh Marla, Kindle Edition, BpB publication, 2021
7. Angular: From Theory To Practice, Asim Hussain, Code Craft, 2017
8. https://angular.dev/tutorials/first-app
9. https://v17.angular.io/docs
10. https://www.w3schools.com/angular/
11. https://www.geeksforgeeks.org/angular-cheat-sheet-a-basic-guide-to-angular/

Shiv Chhatrapati Shikshan Sanstha's

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Department of Information Technology

Course Type: Lab Course -VI

Course Title: Lab Course –VI (Web Designing Using Angular)

Course Code: 201COA3104

Credits: 01 **Max. Marks: 50** **Hours: 30**

Learning Objectives

LO 1. To get fundamental knowledge of Typescript

LO 2. To acquire knowledge about Angular environment.

LO 3. To understand Typescript programming

LO 4. To work with various concepts like Forms, Pipes, Directives, etc.

Course Outcomes:

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

CO 1. Identify the basic structure of typescript programming environment

CO 2. Efficiently handle Typescript program

CO 3. Adequately explain functioning of Angular application

CO 4. Design simple angular programmes

CO 5. Explain the process of web page designing using angular

Practical No.	Unit
1	Program to demonstrate use of JavaScript
2	Study of Typescript Setup Environment
3	Simple program of Typescript
4	Program to demonstrate decision making statements in Typescript
5	Program to demonstrate Loops in Typescript
6	Making use of Function and Classes in Typescript
7	Study of Angular Setup Environment
8	Simple Angular Program
9	Program for demonstrating directives in Angular
10	Program to demonstrate use of Components in Angular
11	Program for creating Forms in Angular
12	Program to demonstrate Pipes in Angular
13	Program to demonstrate Routing in Angular

N.B.: Any Ten Practical from above.

Shiv Chhatrapati Shikshan Sanstha's

Rajarshi Shahu Mahavidyalaya, Latur

(Autonomous)

Department of Information Technology

Course Type: DSM-I

Course Title: Discrete Mathematical Structure

Course Code: 201COA3301

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

Learning Objectives:

LO 1. To understand the concepts of set theory, functions and relations

LO 2. To develop mathematical logic using concepts like Propositions, Tautology, etc.

LO 3. To get acquainted with algebra of matrices and determinants

LO 4. To study graph and tree concepts in software, networking and circuits

Course Outcomes:

After completion of course the student will be able to-

CO 1. Demonstrate notations and operations of sets, functions and relations.

CO 2. Construct compound statements using logical connectives and verify the validity

CO 3. Apply operations of matrices and determinants in solving numerical problems

CO 4. Construct graphs and trees to be used in software, networking and circuits

Unit No.	Title of Unit & Contents	Hrs.
I	**Sets, Functions and Relations**	**12**
	Sets: Definition and types of sets**,** Equal sets, Subsets, Cardinal of sets, Universal sets, Venn diagram, Set operations**,** Properties of set union and intersection**,** Cartesian product**.** Function: Domain and co-domain, Range, Types of functions: One-to- one function, onto function, into function and composite function. Relation: Types of relation: Reflexive, Symmetric, Antisymmetric, Transitive, Equivalence and Partial order relation	
	Unit Outcomes: UO 1. Understand the fundamental concepts of set theory, function and relation UO 2. Explain various types of sets, functions and relations	
II	**Propositional Logic: Logic and Proofs**	**08**

Unit No.	Title of Unit & Contents	Hrs.
	Propositions, Truth values and truth table, Logical connectives and compound statements, Statement pattern and logical equivalence, Tautology, Contradiction, Contingency	
	Unit Outcomes: UO 1. Identify and prove the mathematical statement based on truth table	
III	**Matrices and Determinants**	**12**
	Definition and types of matrices, Equality of Matrices, Transpose of matrices, Algebra of matrices: addition, subtraction, scalar, multiplication of matrices, Adjoint of Matrix, Inverse of Matrix, Definition of determinant and numerical examples	
	Unit Outcomes: UO 1. Analyze types of matrices while solving mathematical problems UO 2. Solve matrix and determinant related numerical problem	
IV	**Graphs and Tree**	**13**
	Graph Theory: Definition and types of graph, Incidences and degree of vertices, Subgraphs, Isomorphism of graphs, Connected and disconnected graphs, Walks, paths and circuits, Directed graph, Hamiltonian path & graph, Operations on graphs. Tree: Definition, Eccentricity, Centre of Tree, Binary Tree, Spanning tree, Edge connectivity and Vertex connectivity.	
	Unit Outcome: UO 1. Implement graphs and trees which is to be used in software, networking and fabricating circuits	

Learning Resources:

1. Elements of Discrete Mathematics: A Computer Oriented Approach, C Liu, D. Mohapatra, 4th Edition, 2017
2. Discreet Mathematics, Olympia Nicodemi, Aakash, VISIONIAs, 2015
3. Mathematical Structures for Computer Science, Alon Doerr, K. Levasieur, University of Massachusetts Lowell
4. Graph Theory with Applications to Engineering and Computer Science, Narsingh Deo, Prentice Hall, 1979
5. Mittal and Agarwal, Basic Mathematics, S K Mittal, Anu Books, 2019

6. Discrete Mathematical Structures with Application to Computer Science, Tremblay and Manohar, McGraw Hill Book Company, 2017
7. Essential Discrete Mathematics for Computer Science, Harry Lewis, Rachel Zax, Princeton University Press, 2019

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Department of Information Technology

Course Type: Lab Course (DSM-I)

Course Title: Lab Course –I (Practical Based on DSM-I)

Course Code: 201COA3302

Credits: 01 **Max. Marks: 50** **Hours: 30**

Learning Objectives:

LO 1. To understand the concepts of set theory, functions and relations

LO 2. To develop mathematical logic using concepts like Propositions, Tautology, etc.

LO 3. To get acquainted with algebra of matrices and determinants

LO 4. To study graph and tree concepts used in software, networking and fabricating circuits

Course Outcomes:

After completion of course the student will be able to-

CO 1. Demonstrate notations and operations of sets, functions and relations

CO 2. Construct compound statements using logical connectives and verify the validity

CO 3. Apply operations of matrices and determinants in solving numerical problems

CO 4. Construct graphs and trees to be used in software, networking and fabricating circuits

Practical No.	Unit
1	MATLAB Overview
2	Study of MATLAB environment
3	Study of basic commands used in MATLAB
4	Study of input output formatting of data
5	Study of various types of files used in MATLAB
6	Performing Trivial Calculations
7	Creating and printing simple 2D plot
8	Study of publishing report in HTML and Word document
9	Creating matrix and indexing
10	Accept elements from user and demonstrate working of various types of matrices
11	Solving algebra of matrix
12	Study of inverse and determinant of matrix

Semester - IV

Shiv Chhatrapati Shikshan Sanstha's

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Department of Information Technology

Course Type: DSC -VII

Course Title: Core Java

Course Code: 201COA4101

Credits: 03 **Max. Marks: 75** **Hours: 45**

Learning Objectives:

LO 1. To understand object-oriented programming concepts

LO 2. To learn the concepts and programming of inheritance and polymorphism

LO 3. To acquaint with concepts of package, interface concepts of exception handling and multithreading.

LO 4. To acquire knowledge of development of GUI applications using applets and swing controls with JDBC

Course Outcomes:

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

CO 1. Describe an Object Oriented Programming concepts

CO 2. Implement applications using concepts like packages, interfaces and multithreading

CO 3. Demonstrate programs on exceptions, multithreading and applets

CO 4. Develop GUI applications using AWT and Swing components with JDBC.

CO 5. Get job opportunities in IT industry as a software/app/web developer

Unit No.	Title of Unit & Contents	Hrs.
I	**Basics of Java Programming**	**8**
	Object Oriented Programming concepts, History of Java, Features of java, Comments, Data types, Variables, Constants, Operators, Type conversion, Conditional statements, Loops, Array, Simple Java standalone programs	
	Unit Outcomes: UO 1. Learn Object Oriented Programming concepts UO 2. Develop programs using conditional and looping statements of Java	
II	**Object Oriented Programming**	**15**
	Class, Object, Constructors and its types, Static fields and methods, Inheritance: Inheritance types, super keyword, final classes and methods, Polymorphism: Method overloading and overriding, Abstract classes and	

Unit No.	Title of Unit & Contents	Hrs.
	methods. Interfaces: Interfaces Vs Abstract classes, Defining an interface, Implement interfaces, Extending interface. Packages: Defining, Creating and accessing a package, Importing packages.	
	Unit Outcome: UO 1. Implement concepts of Class and object UO 2. Write programs using constructors, packages and interfaces concepts	
III	**Exception handling and Multithreading**	**10**
	Exception handling: Defining exception, Advantages of exception handling, Exception hierarchy, Usage of try, catch, throw, throws and finally Multithreading: Defining thread, Multithreading, Thread life cycle, Creating and running threads, Interrupting threads, Thread priorities	
	Unit Outcomes: UO 1. Identify and handle exceptions occurred in programs UO 2. Implement the Multithreading concept effectively	
IV	**Database Connectivity**	**12**
	Connecting to Database: JDBC Type 1 to 4 drivers, Connecting to a database, Querying a database and processing the results, Updating data with JDBC.	
	Unit Outcomes: UO 1. Develop GUI applications using AWT and Swing UO 2. Implement database oriented programs / applications	

Learning Resources:

1. Programming with Java, E. Balgurusamy, 6th Edition, McGraw-Hill, 2019
2. Java The Complete Reference, Herbert Schildt, 11th edition, McGraw Hill Education, 2019
3. Core and Advanced Java Black Book, Dr. R. Nageswara Rao, Dreamtech Press, 2008
4. The Java Programming Language, Ken Arnold James Gosling, David Holmes, 4th edition, Sun Microsystems, 2005
5. Thinking in Java, Bruce Eckel, 4t edition, Prentice Hall, 2006
6. Java: A Beginner's Guide, Herbert Schildt, 8th edition, McGraw Hill Education, 2011
7. The Java Programming Language, ken Arnold, David holmes, James Gosling, Prakash Goteti, 3rd edition, Pearson Education India, 2008
8. Introduction to Java Programming and Data Structures, Y. Daniel Liang, 13th edition, 2023
9. Learn Java for Android Development, Jeff Friesen, 2nd edition, Apress, 2013
10. Advanced Java Programming, Uttam K. Roy, Oxford University Press, 2015

11. https://www.javatpoint.com/java-tutorial
12. https://www.w3schools.com/java/
13. https://www.geeksforgeeks.org/java/
14. https://www.programiz.com/java-programming/
15. https://www.studytonight.com/java/

Shiv Chhatrapati Shikshan Sanstha's

Rajarshi Shahu Mahavidyalaya, Latur

(Autonomous)

Department of Information Technology

Course Type: Lab Course-VII

Course Title: Lab Course-VII (Based on DSC-VII)

Course Code: 201COA4103

Credits: 01 **Max. Marks: 50** **Hours: 30**

Learning Objectives:

LO 1. To understand object-oriented programming concepts

LO 2. To learn the principles of inheritance and polymorphism

LO 3. To acquaint with concepts of package, interface concepts of exception handling and multithreading.

LO 4. To acquire knowledge of design of GUI applications using applets and swing controls with JDBC.

Course Outcomes:

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

CO 1. Describe an Object Oriented Programming concepts.

CO 2. Implement applications using concepts like packages, interfaces and multithreading

CO 3. Demonstrate programs on exceptions, multithreading and applets

CO 4. Develop GUI applications using AWT and Swing components with JDBC.

CO 5. Get job opportunities in IT industry as a software/app/web developer

Practical No.	Unit
1	Write a java program to demonstrate use of operators.
2	Write a java program to print the odd numbers from 54 to 23.
3	Write a java program to calculate the addition of 2 matrices
4	Write a java program to demonstrate class and object.
5	Write a java program to demonstrate inheritance.
6	Program to demonstrate method overloading in java.
7	Program to demonstrate method overriding in java.
8	Write a program to demonstrate use of constructor in java.
9	Program to demonstrate creating and using package in java.
10	Program to demonstrate creating and using interface in java.

11	Program to demonstrate use of try, catch and finally in java.
12	Create a simple Multithreading application in java.
13	Write a program to connect to the database and create table in database.

N.B.: Any Ten Practical from above.

Shiv Chhatrapati Shikshan Sanstha's

Rajarshi Shahu Mahavidyalaya, Latur

(Autonomous)

Department of Information Technology

Course Type: DSC-VIII

Course Title: Data Structures

Course Code: 201COA4102

Credits: 02 **Max. Marks: 75** **Lectures: 45 Hrs.**

Learning Objectives:

LO 1. To learn to Identify and use appropriate data structures for a given problem with effective utilization of space

LO 2. To apply the linear and nonlinear data structure

LO 3. To understand the different methods of organizing large amount of data

LO 4. To analyze the complexities of different sorting techniques

Course Outcomes:

After completion of course the student will be able to-

CO 1. Use well-organized data structures in solving various problems

CO 2. Explore and understand the concepts of data structures and its significance in programming

CO 3. Differentiate the usage of various structures in problem solution

CO 4. Implement algorithms to solve problems using appropriate data structures using C or C++ language

Unit No.	Title of Unit & Contents	Hrs.
I	**Introduction to Data Structures**	**10**
	1. Need of data structure, types of data structures, data structure operations. 2. Algorithms: Definition and Characteristics, Time and space complexity, 3. Arrays: Array terminology, characteristics of arrays. 4. Storage representation of 1D, 2D and Multi-dimensional arrays, operations on arrays	
	Unit Outcomes: UO 1. Understand the types of data structures. UO 2. Understand basics concepts of Arrays.	
II	**Stack and Queue**	**14**
	1. Stacks: Definition, Stack implementation, Operations on stack,	

	Evaluation of arithmetic Expressions. 2. Conversion of Expressions - Prefix, Infix and Postfix, Function Calling, Applications of Stacks 3. Queues: Definition, Operations on queues. 4. Types of queues: Circular queue, Dequeue and Priority queues, Applications of Queues	
	Unit Outcomes: UO 1. Acquaint stack, prefix, infix and concept of Queue	
III	**Linked Lists**	**10**
	1. Concept of linked list, Operations on Linked list. 2. Types of linked list: Singly linked list, Circular linked list, doubly linked list. **3.** Implementation of linked list, Applications of linked list.	
	Unit Outcome: UO 1. Acquire the operations on linked list UO 2. Implementation of stack , queue concept with programming	
IV`	**Study of Flip flop**	**06**
	1. Tree terminology, Binary trees, Traversing binary trees, Graphs: Graph terminologies, 2. Graph representation: sequential and linked. 3. Traversing a graph: Depth First Search and Breadth First Search 4. Sorting: Selection sort, Insertion sort, Bubble sort, 5. Searching: Linear search and Binary search	
	Unit Outcomes: UO 1. Understand the concept of trees and graph UO 2. Write a code for different sorting and searching technique	

Learning Resources:

1. Data Structure using C., A.M. Tanenbaum, Yecidyan lang
2. Fundamentals of Data Structures, Ellis Horowitz and Sartaj Sahni, Galgotia Publications
3. Introduction to Data Structures in C, Ashok N. Kamthane, Pearson Education
4. Theory and Problems of Data Structures, Seymour Lipschutz, Schaum's Outline Series
5. Data Structure Through C- By Dr. Sahani
6. Data Structures Using C Yashwant Kanitkar – BPB Publication
7. Data Structures Through C (A Practical Approach), G.S Baluja Danapat Rai &Co.
8. http://nptel.ac.in/courses/106106127/
9. https://www.nptel.ac.in/courses/10610206/

Shiv Chhatrapati Shikshan Sanstha's

Rajarshi Shahu Mahavidyalaya, Latur

(Autonomous)

Department of Information Technology

Course Type: Lab Course-VIII

Course Title: Lab Course-VIII (Based on DSC-VIII)

Course Code: 201COA4104

Credits: 01 **Max. Marks: 50** **Hours: 30**

Learning Objectives:

LO 1. To design and analyze linear and nonlinear dat.

LO 2. To acquire programming skills to implement sorting and searching

LO 3. To identify and apply the suitable data structure for the given real world problems

LO 4. To perform sorting and searching operations on data structure

Course Outcomes:

After completion of course the student will be able to-

CO 1. Implement insert, delete, search, sort and traverse operations on array

CO 2. Develop applications using stack

CO 3. Apply nonlinear data structures to solve problem.

CO 4. Implement optimized sorting technique for a given data set.

Practical No.	Unit
1	Implementation of simple queue using an array.
2	Implementation of insertion and deletion algorithms of stack.
3	Implementation of: **a.** Infix to Postfix conversion, **b.** Postfix Eva.
4	Implementation of the following **a.** Simple queue **b.** Circular queue
5	Implementation of Linked list algorithm for insertion and deletion of an item.
6	Implementation of Binary Tree traversal
7	Implementation of Linear Search algorithm to find an item in a list.
8	Implementation of Binary search algorithm to find an item in an ordered list..
9	Implementation Sorting Algorithms: Bubble sort
10	Implementation Sorting Algorithms: Insertion sort
11	Implementation Sorting Algorithms: Selection sort.

N.B.: Any Ten Practical from above

Shiv Chhatrapati Shikshan Sanstha's

Rajarshi Shahu Mahavidyalaya, Latur

(Autonomous)

Department of Information Technology

Course Type: DSM – II

Course Title: Operating System

Course Code: 201COA4301

Credits: 03 **Max. Marks: 75** **Hours: 45**

Learning Objectives:

LO 1. To learn basic concepts and functions of operating systems

LO 2. To acquaint with various memory management techniques

LO 3. To understand the concepts of process synchronization and deadlock

LO 4. To familiarize with role of operating system in device and file management

Course Outcomes:

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

CO 1. Explain the role of Operating System in computer system

CO 2. Analyze and compare the working of memory management techniques

CO 3. Describe the concepts of process such as race condition and deadlock

CO 4. Implement different process scheduling algorithms

CO 5. Configure and maintain devices connected to the computer

Unit No.	Title of Unit & Contents	Hrs.
I	**Basics of Operating System**	**8**
	What is an Operating System?, Functions of Operating System, Types of Operating Systems, Operating System as resource manager, Hierarchical structure of Operating System	
	Unit Outcomes: UO 1. Describe the fundamental concepts of operating system UO 2. Analyse working of different types of operating systems	
II	**Memory management**	**15**
	Single contiguous allocation, Partitioned allocation: Static and Dynamic, Best-Fit Versus First-Fit Allocation, Paged memory allocation, Segmented memory allocation, Virtual memory, Demand paged allocation	
	Unit Outcome: UO 1. Analyse and compare the working of various memory management	

Unit No.	Title of Unit & Contents	Hrs.
	techniques	
III	**Processor Management**	**10**
	What is process?, Process Control Block, Process states, Job Scheduling Vs Process Scheduling, Process Scheduling Policies: First-Come, First-Served, Shortest Job First, Round Robin, Race condition, Process Synchronization, Deadlock	
	Unit Outcome: UO 1. Explain process, process states and related concepts UO 2. Implement process scheduling algorithms	
IV	**Device Management and Information Management**	**12**
	Types of Devices: Dedicated, Shared, Virtual Devices. Device Characteristics: Direct Access Storage Devices, Components of the I/O Subsystem: Channels and Control Units. Basic file elements, A Simple file system, General Model of file system, Symbolic file system.	
	Unit Outcomes: UO 1. Identify, Configure and maintain devices connected to computer UO 2. Implement file protection mechanism in computer	

Learning Resources:

1. Operating Systems, Stuart E. Madnick, John J. Donovan, McGraw-Hill, 1974
2. Operating Systems, Achyut Godbole, Atul Kahate, Third edition, McGraw Hill Education, 2017
3. Operating Systems Concepts and Design, Milan Milenkovic, McGraw Hill, 2001
4. Understanding Operating Systems, Ann McIver McHoes Ida M. Flynn, Sixth Edition, Cengage Learning
5. Operating Systems, William Stallings, Ninth edition, Pearson, 2018
6. Modern Operating Systems, Tanenbaum, Fourth edition, Pearson, 2016
7. Operating Systems - A Concept-based Approach, D M Dhamdhere, 3rd Edition, Tata McGraw-Hill, 2012
8. Operating System Principles, Abraham Silberschatz, Peter Baer Galvin, Greg Gagne, 7th Edition,Wiley, 2006
9. Operating System Concepts, Abraham Silberschatz, Peter Baer Galvin, Greg Gagne 10th Edition, Wiley, 2021
10. Operating Systems: Design and Implementation, Andrew Tanenbaum, Albert S Woodhull, Pearson, 2006

Shiv Chhatrapati Shikshan Sanstha's

Rajarshi Shahu Mahavidyalaya, Latur

(Autonomous)

Department of Information Technology

Course Type: Lab course-II (DSM-II)

Course Title: Lab Course-II (Based on DSM-1I)

Course Code: 201COA4302

Credits: 01 **Max. Marks: 50** **Hours: 15**

Learning Objectives:

LO 1. To learn basic concepts and functions of operating systems

LO 2. To acquaint with various memory management techniques

LO 3. To understand the concepts of process synchronization and deadlock

LO 4. To familiarize with role of operating system in device and file management

Course Outcomes:

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

CO 1. Explain the role of Operating System in computer system

CO 2. Analyze and compare the working of memory management techniques

CO 3. Describe the concepts of process such as race condition and deadlock

CO 4. Implement different process scheduling algorithms

CO 5. Configure and maintain devices connected to the computer

Practical No.	Unit
1	Comparative study of various operating systems
2	Study of DOS internal commands
3	Study of DOS external commands
4	Installation of Windows O.S./Linux O.S.
5	Study of user management in Windows O.S.
6	Study of file and directory related commands used in Linux O.S.
7	Study of process related commands used in Linux
8	Write a program to demonstrate memory allocation

9	Write a program to demonstrate first come first served process scheduling algorithm
10	Write a program to demonstrate round robin process scheduling algorithm

N.B.: Any Ten Practical from above.

Open Elective Courses Offered by the Department

Shiv Chhatrapati Shikshan Sanstha's

Rajarshi Shahu Mahavidyalaya, Latur

(Autonomous)

Department of Information Technology

Course Type: OE-III
Course Title: Multimedia and Foundation of Animation
Course Code:
Credits: 02 **Max. Marks: 50** **Lectures: 30 Hrs.**

Learning Objectives:

LO 1. To learn theoretical as well as practical approach of Multimedia and animation
LO 2. To understand Multimedia hardware and software
LO 3. To acquaint animation techniques
LO 4. To acquire knowledge related to multimedia and animation

Course Outcomes:

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

CO 1. Differentiate between computers, multimedia and animation
CO 2. Learn about animation basics
CO 3. Apply multimedia knowledge for animation
CO 4. Identify the different effects of animation
CO 5. Get job opportunities as animation developer

Unit No.	Title of Unit & Contents	Hrs.
I	**Introduction to Multimedia**	**10**
	1. Multimedia Hardware 2. Multimedia Software 3. Multimedia Applications 4. Multimedia communication systems 5. Career opportunities in multimedia	
	Unit Outcomes: UO 3. Manage problems occur in information and multimedia UO 4. Gain knowledge related to Multimedia Hardware	
II	**Content Development and Distribution**	**10**
	1. Desktop publishing 2. Multimedia Animation & Special effects (Flash) 3. Social Networking &Publishing 4. Content Distribution Systems (CD/DVD, Internet, Radio, Television)	
	Unit Outcome: UO 2. Implement Multimedia applications.	
III	**Art and Science of Multimedia**	**06**

Unit No.	Title of Unit & Contents	Hrs.
	1. Audio fundamentals (Audio quality, formats and devices) 2. Understanding Image and Video (Resolution, Color, Video standards, formats) 3. Film and Digital photography (technology, techniques, composition & lighting etc.) 4. Introduction to Printing technology	
	Unit Outcomes: UO 3. Analyze audio, image and video in digital technology. UO 4. Identify photography, Printing	
IV	**Introduction to 2D Animation**	**04**
	1. Basics of Animation 2. Introduction to 2D Animation 3. Drawing concept 4. Color theory & basics 5. Incorporating sound into 2D animation	
	Unit Outcome: UO 3. Explain animation basics.	
V	**Practicals based on the above 4 units**	

Learning Resources:

1. Macromedia Flash MX 2004: The Complete Reference, Brian Underdahl, Second Edition, McGraw-Hill Osborne, 2003
2. Multimedia: Computing Communications and Applications, Ralf Steinmetz, Klara Nahrstedt, Pearson, 2002
3. Multimedia: Making It Work, Tay Vaughan, Ninth Edition, Osborne/McGraw-Hill, 2014
4. Fundamentals of Multimedia, Ze-Nian Li, Mark S Drew, Prentice Hall, 2005
5. Multimedia Systems, John F. Koegel Pearson Education India, 2008
6. http://www.webdevelopersnotes.com/tutorials/flash/

Skill Enhancement Courses Offered by the Department

Shiv Chhatrapati Shikshan Sanstha's

Rajarshi Shahu Mahavidyalaya, Latur

(Autonomous)

Department of Information Technology

Course Type: SEC-III
Course Title: Software Development Techniques
Course Code: 201COA3601
Credits: 02 **Max. Marks: 50** **Lectures: 30 Hrs.**

Learning Objectives:

LO 6. To enhance employability skill of students
LO 7. To learn how to design simple software.
LO 8. To develop software applications for different field
LO 9. To use of different testing methods

Course Outcomes:

After completion of the course, students will be able to-
CO 7. Explain the basics of Software engineering
CO 8. Study phases of software engineering
CO 9. Use of different models for developing software

Unit No.	Title of Unit & Contents	Hrs.
I	**Role of Software**	**8**
	1. Introduction to Software Engineering: The evolving role of software, Software: Software Characteristics and Software applications, Software myths, Changing nature of software 2. Process and Project Software Process Models: Waterfall model, Prototyping model, RAD Model, Spiral Model	
	Unit Outcomes: UO1.Understand the fundamental concepts of software engineering UO 2. Explain the basic role of different software models	
II	**Requirement Analysis**	**15**
	1. Requirement Analysis: Value of good SRS, requirement process, functional specification with use cases 2. Effort estimation: project schedule and staffing, quality planning, Risks, types of risks. 3. AI in Software Engineering	
	Unit Outcome: UO 1. To understand basic phases of software UO 2.Explain the different types of software risks	
III	**Software Architecture**	**10**
	1. Role of software architecture 2. Architecture view 3. Design: Function oriented design, Object oriented design 4. Verification and metrics.	

Unit No.	Title of Unit & Contents	Hrs.
	Unit Outcomes: UO 1. Learn how to develop designing of software UO 2. Learn how to verify and validation	
IV	**Coding and Unit Testing**	**12**
	1. Unit testing, integration testing 2. Black box, white box 3. A strategic approach of software testing: verification and validation	
	Unit Outcomes: UO 1. Learn how to do coding and testing of software UO 2. Explain the basic testing methods .	

Learning Resources:

1. Software Engineering: By Roger S Pressman, MC Graw Hill
2. Software Engineering, New Age International, R. K. Agrawal and Y. Sing
3. Software Project Management in practice- Pearson: By P.Jalote

Shiv Chhatrapati Shikshan Sanstha's

Rajarshi Shahu Mahavidyalaya, Latur

(Autonomous)

UG Second Year (Semester III / IV)

Basket I: Open Elective (OE)

(GEs offered to the Science and Technology students in Sem.-III/IV)

Sr. No.	BoS Proposing OE	Course Title	Credits	Hrs.
1.	Commerce	Digital Marketing	2	30
2	Commerce	Introduction to Personal Taxation	2	30
3	Commerce	Fundamentals of Accounting	2	30
4	Hindi	Rojgar Abhimulak Hindi	2	30
5	English	English Proficiency Course	2	30
6	Geography	Fundamentals of GIS & RS	2	30

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

Shiv Chhatrapati Shikshan Sanstha's

Rajarshi Shahu Mahavidyalaya, Latur

(Autonomous)

UG Second Year (Semester III / IV)

Basket II: Skill Enhancement Courses (SEC)

(SEC offered to the Commerce and Management students in Sem.-III/IV)

Sr. No.	BoS Proposing SEC	Course Title	Credits	Hrs.
1	Commerce	Financial Management	2	30
2	Analytical Chemistry	Skills In Chemistry	2	30
3	Commerce	Wealth Management	2	30
4	Biotechnology	Good Laboratory Practices	2	30
5	Biotechnology	Dairy Technology	2	30
6	Botany	Herbal Technology	2	30
7	Information technology	Software Development Techniques	2	30
8	Information technology	Information Security	2	30
9	Computer Science	Web Development using WordPress	2	30
10	Electronics	Internet of Things	2	30
11	English	English for Careers	2	30
12	Geography	Disaster Management	2	30
13	Commerce	Business Law	2	30
14	Microbiology	Production of Bio fertilizers	2	30
15	Physics	Applied Optics	2	30
16	Political Science	Political Journalism	2	30
17	Chemistry	Chemistry of Biomolecules	2	30
18	Mathematics	Essential Statistics for Data Science	2	30
19	Information Technology	Android Aap Development	2	30
20	English	English for Competitive Examinations	2	30

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

Shiv Chhatrapati Shikshan Sanstha's

Rajarshi Shahu Mahavidyalaya, Latur

(Autonomous)

UG Second Year

Basket III: Ability Enhancement Courses (AEC)

(AEC offered to the Science & Technology students in Sem.-III/IV)

Sr. No.	BoS Proposing AEC	Course Title	Credits	Hrs.
1.	English	English Communication	2	30
2.	English	English for Professionals	2	30

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

Shiv Chhatrapati Shikshan Sanstha's

Rajarshi Shahu Mahavidyalaya, Latur

(Autonomous)

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.

Shiv Chhatrapati Shikshan Sanstha's

Rajarshi Shahu Mahavidyalaya, Latur

(Autonomous)

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/SEC (Science & Technology)	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