AC: 29.06.2024
Item No. : 1.1.7

SIES (Nerul) College of Arts, Science and Commerce (Autonomous)
Syllabus for Approval
B.Sc (Information Technology)

Sr. No.	Heading	Particulars
1	Title of the Programme	B.Sc Information Technology
2	Year	Second Year
3	Semesters	III
4	Level	UG
5	Pattern	3-4 years & 6-8 semesters Choice Based Grading System
6	Status	New
7	To be implemented from	From Academic year 2024-25 in a progressive manner

* Students who have passed first year in CBCS Non-NEP, need to complete and clear 2 credit course examination per semester as per the equivalence committee guidelines.

Date: 29th June, 2024

Signature:

Dr. Koel Roychoudhury
AC Chairperson

Dr. Anu T.Thomas
Head of the Department

SIES COLLEGE OF ARTS, SCIENCE AND COMMERCE (AUTONOMOUS) NERUL NAVI MUMBAI 400 706.

Sri Chandrasekarendra Saraswati Vidyapuram, Plot I-C, Sector V,
Nerul, Navi Mumbai – 400706 India
Tel No: 61196409, 61196410, 61196402, 61196413, 61196414, 61196415, 27708371
Fax No: 022-27713356, **Email:** ascnsies@sies.edu.in / siesascn@yahoo.in **Website:** www.siesascn.edu.in

AC: 30/07/2024
Item No.: 1.1.7

SIES (Nerul) College of Arts, Science and Commerce (Autonomous)

B.Sc. (Information Technology)

Sr. No.	Heading	Particulars
1	Title of the course	B. Sc.(Information Technology)
2	Eligibility for admission in S.Y.BSc.IT	Candidate who have passed Diploma (Three years after S.S.C. – Xth Std.) in Information Technology/ Computer Technology/ Computer Engineering/Computer Science/ Electrical, Electronics and Video Engineering and Allied Branches/Mechanical and Allied Branches/ Civil and Allied branches are eligible for direct admission to the Second Year of the B.Sc. (I.T.) degree course. However, the Diploma should be recognized by the Board of Technical Education or any other recognized Government Body. Minimum marks required 45% aggregate for open category candidates and 40% aggregate for reserved category candidates. OR Candidates with post HSC-Diploma in Information Technology/Computer Technology/ Computer Engineering/ Computer Science/ and Allied branches will be eligible for direct admission to the Second Year of B.Sc. (I.T.). However, the Diploma should be recognized by the Board of Technical Education or any other recognized Government Body Minimum Marks required 45% aggregate for open category candidates and 40% aggregate for reserved category candidates. Diploma (10 + 3) awarded by MSBTE or equivalent by any other Government body in following branches of engineering : i) Mechanical ii) Electronics iii) Electrical iv) Computer v) Information Technology vi) Automobile vii) Industrial Electronics viii) Radio Engineering and Telecommunication ix) Instrumentation Students from other universities OR board of secondary or intermediate education or any other statutory examining body should refer to University

NERUL NAVI MUMBAI 400 706

		ordinance (0.111)
3	Minimum Percentage for admission	45%
4	Passing Marks	40%
5	Semesters	III
6	Level	UG
7	Pattern	3-4 years & 6-8 semesters Choice Based Grading System
8	Status	New
9	To be implemented from	From Academic year 2024-25 in a progressive manner

Date: 29.06.2024.

Name of BOS Chairperson: Dr Ann Thomas Signature: _____

B.Sc. Information Technology Programme
(To be implemented from Academic Year- 2024-25)

Semester III			
Course Code	**Course Type**	**Course Title**	**Credit**
U24IT3MJ01	Major	Core Java	3
U24IT3MJP01		Core Java Practical	1
U24IT3MJ02	Major	Advanced Python	3
U24IT3MJP02		Advanced Python Practical	1
U24IT3MJ03	Major	Data Structure	1
U24IT3MJP03		Data Structure Practical	1
U24IT3MI01	Minor	Linear Algebra	2
U24MMC3E01	OE	Social Media Marketing	2
U24ES3E01		Natural Resource Management	
U24IT3VSC01	VSC	Transaction Management Systems	1
U24IT3VSCP01		PL/SQL Practicals	1
U24IT3AEC01	AEC	Understanding Basic Forms of English Literature-1	2
U24IT3FP01	FP	Field project	2
U24CC3NSS02	CC	National Service Scheme (NSS) Studies Paper-II	2
U24CC3DLLE02		DLLE - NGO Collaboration	
U24CC3SP02		Sports- Training in Sports	
U24CC3DC01		SIESITDevClub-Learning	
Total			**22**

SIES (Nerul) College of Arts, Science & Commerce
RISE WITH EDUCATION

CELEBRATING 25 YEARS 1998-2023

SIES (Nerul) College of Arts, Science and Commerce (Autonomous)
(Affiliated to the University of Mumbai)
RE-ACCREDITED GRADE "A" BY NAAC (3rd CYCLE) BOARD OF STUDIES SYLLABUS FOR
B.Sc. (Information Technology)
(WITH EFFECT FROM THE ACADEMIC YEAR 2024-2025)

OBJECTIVES OF THE PROGRAMME:

- To strengthen the fundamentals and basics of Information Technology and to boost technical development skills.
- To develop the ability to apply the knowledge acquired through analysis of algorithms, mathematical and statistical techniques
- To develop skills to work efficiently in designing solutions to various software and hardware problems by implementing various tools.
- To inculcate professional ethics, and managerial skills to encourage entrepreneurship and promote teamwork to manage diverse projects.
- To enhance employability skills and provide scope for higher education and research in the field of information technology.

Major (Credit 3+1)
Core Java

COURSE CODE: U24IT3MJ01 **COURSE CREDIT: 03**
1 credit - 15 lectures **1 lecture is 60 minutes**

Course Objectives:
The objectives of the Course are:

1. To understand the Object Oriented Principles of Java
2. To provide the knowledge of core programming aspects of Java
3. To understand the new features in Java.
4. To develop solutions using Java.

Course Outcomes:
After successful completion of this course, students would be able to :

1. To develop applications using Java
2. To implement the OOPs principles of Programming
3. To create error free code using the concepts of exception handing, generics and reflections in the program.
4. To create industry level solutions to problems using collections.

Unit	Topic	Hours
I	**Introduction:** History, Features of Java, Java Development Kit, Java Virtual Machine **Fundamental Programming Structures**: Our First Program, Primitive Types, Variables, Arithmetic Operations, Strings, Input and Output, Control Flow, Arrays and Array Lists, Functional Decomposition **Object-Oriented Programming**: Introduction, Class, Object, Static Keywords, Constructors, this keyword, Inheritance, Inner class, Anonymous Inner class, super keyword, Polymorphism (overloading and overriding), Abstraction, Encapsulation, Abstract Classes, Packages	15
II	**Interfaces And Lambda Expressions:** Interfaces, Static, Default, and Private Methods, Examples of Interfaces, Lambda Expressions, Method and Constructor References, Processing Lambda Expressions, Lambda Expressions and Variable Scope **Exceptions:** Introduction, Pre-Defined Exceptions, try-catch, finally, throws, throw, User-Defined Exceptions **Multithreading:** Thread Creations, Thread Life Cycle, Life Cycle Methods, Synchronization, wait() notify() notify all() methods	15
III	**Generic Programming:** Generic Classes, Generic Methods **Collections:** An Overview of the Collections Framework, Iterators, Sets, Maps, Other Collections **Processing Input and Output:**Input/Output Streams, Readers, and Writers	15

Books and References:

1. Core Java SE 9 for the Impatient, 2nd Edition, Cay Horstmann, Addison-Wesley
2. Java 2: The Complete Reference, Fifth Edition, Herbert Schildt

MERUL NAVI MUMBAI 400 706

3. Core Java, Volume I: Fundamentals, Twelfth Edition, Cay S. Horstmann, Addison-Wesley

Core Java Practical

COURSE CODE:U24IT3MJP01 **COURSE CREDIT: 01**
1 credit - 15 lectures **1 lecture is 120 minutes**

Course Outcomes:
After completion of the course, a student should be able to:

1. To understand the implementation of foundational Object Oriented Principles in Java
2. To provide the knowledge of Inheritance for reusability of Code.
3. To understand the new features in Java for reducing errors in code.
4. To develop solutions using Java.

Learning Outcomes:
After successful completion of this course, students would be able to :

1. To develop efficient applications using Java using features like Inheritance and Generics.
2. To implement the OOPs principles of Programming.
3. To reduce errors in code using exception handling and reflections.
4. To create industry level solutions to problems using collections.

Sr. No	List of Practicals
1	a. Write a java program to demonstrate Terminal Input and Output in Java. b. Write a java program to demonstrate String Handling. c. Write a java program to demonstrate working with arrays in Java.
2	a. Write a java program to demonstrate Class, Methods and Objects b. Write a java program to demonstrate Encapsulation in Java.
3	a. Write a java program to implement single level inheritance. b. Write a java program to implement multiple inheritance.
4	a. Write a program to create a class and implement the concepts of Constructor Overloading b. Write a program to implement Method Overloading
5	Write a java program to implement method Overriding.
6	a. Write a program to implement the concepts of Abstract classes and methods b. Write a program to implement the concept of interfaces
7	Create a package, Add the necessary classes and import the package in java class.
8	a. Write a java program to demonstrate lambda expressions with Single Parameter. b. Write a java program to demonstrate lambda expressions with multiple Parameters.
9	a. Write a program to demonstrate try catch block and finally. b. Write a program to define user defined exceptions and raise them as per the requirements
10	a. Write a java program to define and implement an Interface. b. Write a java program to demonstrate working with multiple Interfaces.
11	a. Write a java program to implement thread life cycle. b. Write a java program to implement multithreading.
12	Write a java program to demonstrate Generics.

	a. Class b. Type c. Method d. Interface
13	Write a program to demonstrate the methods of: a. List interface b. Set interface c. Map interface
14	a. Write a java program to open a file and display the contents in the console window. b. Write a java program to copy the contents from one file to other file. c. Write a java program to read the student data from user and store it in the file.
15	Write a program to demonstrate BufferedReader and BufferedWriter Class in Java.

Major
Advanced Python (Credit 3+1)

COURSE CODE: U24IT3MJ02 **COURSE CREDIT: 03**
1 credit - 15 lectures **1 lecture is 60 minutes**

Course Objectives:

To learn the basics of object-oriented programming, as well as NumPy and Pandas library usage, data science tools, and data plotting techniques using suitable Python visualization libraries

Course Outcome:

On completing the course, the student will be able to:

1. Understand advanced Python programming concepts and techniques, building on their foundational knowledge.
2. Learn how to use NumPy in Python for data manipulation and numerical computation.
3. Develop the skill of data analysis and manipulation using the panda's library.

UNIT	Topic	HRS
I	**Object Oriented Programming:** Overview of OOP (Object Oriented Programming), Class Definition, Creating Objects, Instances as Arguments, Instances as return values, Built-in Class Attributes, Inheritance, Method Overriding, Data Encapsulation, Data Hiding.	15
II	**Extracting Data:** Connect to Database, creation of Table, insertion of data, Extraction of data.**NumPy**: Introduction to NumPy, NumPy basics, NumPy Attributes and Functions, Creating Arrays from Existing Data, Creating Array from Ranges, Indexing and Slicing in NumPy, Advanced Slicing in NumPy, Append and Resize function, NumPy Matrix Library.	15
III	**Pandas:** Introduction to Pandas, Panda's data structures - Series and Data Frame, Data wrangling using pandas: Loading a dataset into a data frame Selecting Columns from a data frame, Selecting Rows from a data frame, adding new data in a data frame, deleting data from a data frame, data preprocessing using some real time Datasets.**Data Visualization using matplotlib:** Plotting with Matplotlib, Scatter plot, Line plot, Bar plot, Histogram, Box plot.	15

References:

1. Python Made Easy: Step by Step Guide to Programming and Data Analysis using Python for Beginners and Intermediate Level. (2020). (n.p.): Notion Press.
2.Josef, J., Lal, S. P. (2016). Introduction to Computing & Problem Solving With PYTHON.India: Khanna book publishing Company (P) Limited.
3.Jake VanderPlas, "Python Data Science Handbook", 1st Edition, O'Reilly Media Inc., 2016, ISBN: 978-1491912058.

Advanced Python Practicals

COURSE CODE:U24IT3MJP02 **COURSE CREDIT: 01**
1 credit - 15 lectures **1 lecture is 120 minutes**

Sr.No.	List of Practical's
1.	Design a class that stores the information of students and display the same
2.	Implement the concept of inheritance using python
3.	Implement the concept of Method Overriding in Python
4.	Create a class called Numbers, which has a single class attribute called MULTIPLIER, and a constructor which takes the parameters x and y (these should all be numbers). i. Write a method called add which returns the sum of the attributes x and y. ii. Write a class method called multiply, which takes a single number parameter a and returns the product of a and MULTIPLIER.
5.	Design an application on Connection to Database in Python
6.	Design an application on creation of table in Python.
7.	Design a simple database application that stores the records
8.	Design a simple database application that extract the data from database
9.	Implementation of NumPy basics in Python
10.	Implementation of NumPy Arrays
11.	Implementation of Indexing and Slicing in NumPy
12.	Implementation of Pandas Series
13.	Implementation of Pandas Data Frames
14.	Implementation of Programs on Data Preprocessing
15.	Implementation of Data Visualization using matplotlib

Major (Credit 2)
Data Structure

COURSE CODE: U24IT3MJ03 **COURSE CREDIT: 01**
1 credit – 15 lectures **1 lecture is 60 minutes**

Course Objectives :

1. Allow to assess how the choice of data structures and algorithm design methods impacts the performance of programs
2. To choose the appropriate data structure and algorithm design method for a specified application.
3. To solve problems using data structures such as linked lists, stacks, queues.

Course Outcomes: At the end of this course student will:

1. Analyze the concepts of algorithm evaluation and find time and space complexities for searching and sorting algorithms.
2. Implement linear data structure such as stacks, queues, linked lists and their applications.

Sr.No.	Syllabus	No. of lectures
Unit I	**Introduction:**Introduction and Definition of Data Structure, Classification of Data Structures, Primitive Data Types, Abstract Data Types, Data structure vs. File Organization, Operations on Data Structure, Importance of Algorithm Analysis, Complexity of an Algorithm, Asymptotic Analysis and Notations. **Stacks and Queue :-** Introduction, Operations on the Stack Memory Representation of Stack, Array Representation of Stack, Applications of Stack, Evaluation of Arithmetic Expression, Matching Parenthesis, infix and postfix operations, Recursion,Introduction to Queue, Definition, Queue Implementation, Operations on the Queue, Circular Queue, De-queue and Priority Queue. **Linked List:** Introduction, Representation and Operations of Linked Lists, Singly Linked List, Doubly Linked List, Circular Linked List, And Circular Doubly Linked List.	15

References:

1. Trembley, J. P. and Soresan, P.G. (1983), An introduction to data structures with applications, Mc-Graw Hill International Editions, ISBN-13: 978-0070651579,ISBN10: 0070651574
2. Horowitz, E., and Sahani, S. (1973), Data Structures :Galgotia publication
3. Aho, Hopcroft, Ulman J.V. (1983), Data Structures and Algorithms, ISBN-13: 9780201000238 ,ISBN-10: 0201000237
4. Nikaulus, W. (1976) Algorithms- Data Structures Programs, ISBN-13: 978130224187, ISBN-10: 0130224189

NERUL NAVI MUMBAI 400 706

5. Tannenbaum, A. M. (1995), Data Structures using C and C++; PHI., ISBN-13: 9780130369970,ISBN-10: 0130369977

Data Structures Practicals

COURSE CODE : U24IT3MJP03 **COURSE CREDIT: 01**
1 credit - 15 lectures **1 lecture is 120 minutes**

Course objectives:

- To learn how to program linear data structures.
- To practice basic techniques of algorithm analysis ,recursion techniques To develop ability to write a computer program to solve specified problems.

Course outcome:

Students will be able to-

- Apply and implement learned algorithms, data structures to solve problems.
- Meet the desired programming needs.

(Note : Implement all practical using "C" Language)

Sr.No.	List of Practical
1.	**Implement the following:**
a.	Write a program to store the elements in 1-D array and perform the operations like searching, sorting and reversing the elements. [Menu Driven]
b.	Read the two arrays from the user and merge them and display the elements in sorted order.[Menu Driven]
c.	Write a program to perform the Matrix addition, Multiplication and Transpose Operation. [Menu Driven]
2.	**Implement the following for Stack:**
a.	Write a program to implement the concept of Stack with Push, Pop, Display and Exit operations.
b.	Write a program to convert an infix expression to postfix and prefix conversion.
c.	Write a program to implement Tower of Hanoi problem.
3.	**Implement the following for Queue:**
a.	Write a program to implement the concept of Queue with Insert, Delete, Display and Exit operations.
b.	Write a program to implement the concept of Circular Queue
c.	Write a program to implement the concept of Deque.
4.	**Implement the following for Linked List:**
a.	Write a program to create a single linked list and display the node elements in reverse order.
b.	Write a program to search the elements in the linked list and display the same
c.	Write a program to create double linked list and sort the elements in the linked list.
5.	**Implement the following sorting techniques:**
a.	Write a program to implement bubble sort.

NERUL NAVI MUMBAI 400 706

b.	Write a program to implement selection sort.
6.	**Implement the following sorting techniques:**
a.	Write a program to implement insertion sort.
b.	Write a program to implement merge sort.
7.	**Implement the following data structure techniques:**
a.	Write a program to search the element using sequential search.
b.	Write a program to search the element using binary search.
8.	**Implement the following data structure techniques:**
a.	Write a program to create the tree and display the elements.
b.	Write a program to construct the binary tree.
c.	Write a program for inorder, postorder and preorder traversal of tree
9.	**Implement the following data structure techniques:**
a.	Write a program to insert the element into maximum heap.
b.	Write a program to insert the element into minimum heap.
10.	Write a program to implement the collision technique.
11.	Write a program to implement the concept of linear probing.
12.	Write a program to generate the adjacency matrix.
13.	Write a program for the shortest path diagram.
14.	Write a program to implement Breadth First Search.
15.	Write a program to implement Depth First Search.

Minor(Credit 2)
Linear Algebra

COURSE CODE: U24IT3MI01 **COURSE CREDIT: 02**
1 credit - 15 lectures **1 lecture is 60 minutes**

Course Objectives:

To offer basic concepts of vectors, matrices, system of linear equations, Eigen value Eigen vector and linear transformation.

Course Outcome:

The learner will be able to;

1. Appreciate the relevance and applications of Linear Algebra in the field of Information Technology.
2. Express clear understanding of the concept of a solution to a system of equations.
3. Find eigenvalues and corresponding eigenvectors for a square matrix.
4. Understand the concept of linear transformation.

UNIT	Topic	HRS
I	**Vectors in Rn and Cn** Introduction to vectors, Vector addition, Scalar-vector multiplication, Combining vector addition and scalar multiplication, Dictionary-based representations of vectors, Dot-product, Vectors in Rn, Introduction to Complex numbers, Vectors in **Cn.** **Matrices** Matrices, Algebra of matrices, Elementary Transformation, Rank of Matrix, Echelon or Normal Matrix, Singularity of matrix, Inverse of matrix, Linear dependence and linear independence of vectors, System of Linear equation, Gaussian Elimination method.	**15**
II	**Eigenvalues and Eigenvectors** Characteristic Polynomials of degree 2 and 3, Eigenvalues and eigenvectors, Properties of eigenvalues and eigenvectors, Cayley–Hamilton Theorem, Minimal Polynomial. Coordinate representation in terms of eigenvectors, Google PageRank algorithm. **Linear Transformation** Introduction to Linear Transformation, Null space and Range of a Linear Transformation, Matrix Representation of a Linear Transformation.	**15**

References:

1. Coding the Matrix Linear Algebra through Applications to Computer Science, First Edition, Philip N. Klein, Newtonian Press 2013.
2. 2. Schaum's Outline of Linear Algebra, Sixth Edition by Seymour Lipschutz, Marc Lipson, McGraw Hill 2017.
3. Linear Algebra and Its Applications, David C Lay, Pearson Education India; 3rd Edition, 2002.

MERUL NAVI MUMBAI 400 706

Open Elective(Credit 2)
Social Media Marketing

COURSE CODE: U24MMC3E01 **COURSE CREDIT: 02**
1 credit - 15 lectures **1 lecture is 60 minutes**

Course Objectives:
Learn to communicate and tell stories through the web.

1. Students learn real-world skills from leading designers, artists, and entrepreneurs.
2. The primary goal is to create problem solvers who strike a balance between traditional art and technology, and between individual vision and teamwork.
3. With a fundamental understanding of digital tools and their creative applications, graduates meet the demands of a diverse and expanding job market in visual story telling.
4. Identify and apply strategies to improve and succeed no matter what their initial skills.
5. Solve problems and learn from creative risks by using people skills, design principles, and processes.
6. Build a strong foundation in all aspects of design and production for storytelling in motion.
7. Use inspiration in fields outside of digital media such as poetry, science, music, astronomy, history, dance, and more.
8. Develop a professional commitment to their field, their work, and themselves; preparing them to be members and leaders in their profession, as well as learning how to act both as individuals and as team members to support the whole.

Syllabus			
Sr. No.	**Module**	**Details**	**Lectures**
1.	**Introduction to Digital Marketing**	**1.1** Understanding Digital Media Marketing **1.2** Advantages of Digital Media **1.3** Principles of Digital Media Marketing **1.4** Key Concepts in Digital Media **1.5** Traditional vs. Digital Media	*06*
2.	**Types of Digital Marketing**	**2.1** Types E- mail marketing **2.2** Types Internet marketing **2.3** Types of Mobile marketing **2.4** Digital Marketing and AI	*06*

NERUL HAVI MUMBAI 400 706

3.	**Introduction to Social Media Marketing**	**3.1** Meaning and Importance **3.2** Myths about Social media marketing **3.3** Brief History Characteristics of Social Media Marketer **3.4** Careers in Social media marketing	*06*
4.	**Content Strategy For Social Media Marketing**	**4.1** 10- step framework for creating successful SMM strategy **4.2** Building content for sharing **4.3** Generating Ideas and Creating content for Multiple platforms	*06*
5.	**Ethics and Careers**	**5.1** Code of ethics **5.2** 9 Rules of engagement for Social Media Marketing **5.3** Careers in Social media marketing 5.4 Code of Ethics in AI	*06*
Total Lectures			**30**

References:

1. **Digital marketing by Vandana Ahuja**
2. **Social Media Marketing: a strategic approach by Barker and Barker.**

SCHEME OF EXAMINATION (for 50 marks 2 credits Theory)

The scheme of examination shall be divided into two parts:

- **Internal assessment 40% i.e., 20 marks**
- **Semester end examination 60% i.e., 30 marks**

A) Internal Assessment 20 marks

Description	**Marks**
Internal test of 10 marks Q.1. Attempt 2 questions out of 4 questions (5 marks each)- 10 Marks	10
One Project and Viva voce/Presentation/Case studies/Assignments	10
Total	20

B) Semester end examination 30 marks PAPER PATTERN

Duration: 1 hour
Total Marks: 30

Q.1 Attempt Q1 a) or b)- 10 marks Attempt Q2 a) or b)- 10 marks Attempt Q3 a) or b)- 10 marks	10 10 10
Total	30
Note: **Q.1, 2, 3** - 10 marks questions may be divided into sub questions if required.	

Passing criteria: Minimum 40% in Internal (08 out of 20) and 40% (12 out of 30) in semester end examination.

OR

Natural Resource Management

COURSE CODE: U24ES3E01
1 credit - 15 lectures

COURSE CREDIT: 02
1 lecture is 60 minutes

Course Objective: The students will get acquainted with the primitive to advanced levels of plant and animal diversity.

Learning Outcome: The knowledge of students will be upgraded in the areas of unicellular and multicellular organisms and their cell structures.

Sr. No	Syllabus	No. of Lectures
Module-I: Introduction to Natural Resources	Definition, Classification of natural resources • Distribution of natural resources (National and Global) • Importance and application of natural resources • Demands of Natural Resources due to Population, lifestyle. • Need for natural resource management. Agricultural practices in India, exploitation of agricultural land, development of wasteland • Land use changes in India (case studies), future demand of forest land • Forest management practices: Afforestation, Joint Forest Management, Agroforestry, social forestry, urban forestry, protected forest area management. (Case studies).	**15**

Module-II: Water and Mineral Resource	Water and Mineral Resources Management - Concept and classification • Management Practices: Integrated water resource management; Watershed development; Rainwater harvesting. National Lake and River Conservation Programmes. • Wetland management. Coastal zone management- concept, scope, issues and strategies. • Implications of National River linking programme on environment. • Conservation of Mineral resources of India. Oceans as new areas for exploration of mineral resources. Oceans ore and recycling of resources. • Case studies.	**15**

References:

1. Agarwal, K.M., Sikdar, P.K., Deb., S.C (2005) A Textbook of Environment, Macmillan India Limited
2. Rao, M. S. (1979). Introduction to Social Forestry. India: Oxford & IBH Publishing Company.
3. Anand S. Bal. (2005). An Introduction to Environmental Management, Himalaya Publishing House.
4. Oliver S. Owen. (1980). Natural resources conservation – An Ecological approach, 3rd edition, Macmillan publishing Co. Inc. New York.
5. Agarwal and Rana S.V.S. (1985). Environment & Natural resources, society of Biosciences.
6. Sharma V.K. (1985). Water resources planning and management, Himalaya Pub. House.
7. Maheshwar Dayal. (1992). Renewable energy. Konark publishers Pvt. Ltd.

VSC (Credit 2)
Transaction Management Systems

Course Code: U24IT3VSC01
1 credit - 15 lectures

Course Credit: 1
1 lecture is 60 minutes

Course Objectives:

1. To understand database design by normalization.
2. To explore relational database design and dependencies.
3. To make students aware about importance of protecting data from unauthorized users

Course Outcome:

1. Learners will be able to do database design using all normalization techniques.
2. Learners can implement various dependencies in the database.
3. Learners can explore database recovery management.

UNIT	Topic	HRS
I	**Database Design theory and normalization:** Basics of functional dependencies and normalization ((1NF, 2NF, 3NF, BCNF) for relational databases. Relational database design and further dependencies. **Transaction management and Concurrency:** Control Transaction management: ACID properties, serializability and concurrency control, Lock based concurrency control (2PL, Deadlocks), Time stamping methods, optimistic methods, database recovery management.	15

Text Books

1. "Fundamentals of Database System", Elmasri Ramez, Navathe Shamkant, Pearson Education, Seventh edition, 2017
2. Database Management Systems", Raghu Ramakrishnan and Johannes Gehrke, 3rd Edition, 2014
3. Database Systems: Design implementation and management by Carlos Coronel, Steven Morris, Peter Rob

PL/SQL- Practicals

COURSE CODE: U24IT3VSCP01 **COURSE CREDIT: 01**
1 credit - 30 lectures **1 lecture is 120 minutes**

Sr. No.	List of Practical
1	**PL/SQL Basics** a. Write a PL/SQL program to implement the Use of variables. b. Write executable statement.
2	a.Write a PL/SQL program to Interact with Oracle Server b.Write a PL/SQL program to Create anonymous PL/SQL block
3	**Control Structure in PL/SQL .** **a.**Write a PL/SQL program Using while loop **b.** Write a PL/SQL program to implement Do loop
4	a.Write a PL/SQL program to implement For loop b.Write a PL/SQL program to implement GOTO statement
5	**a. Create conditional statement using PL/SQL** Using if statement **b. Create conditional statement using PL/SQL** Using if else statement
6	**a.** Write a PL/SQL program Using elsif ladder **b.** Write a PL/SQL program Using case expression
7	**Creation of Sequence** Write a PL/SQL program **in PL/SQL**
8	**a. Create cursor in PL/SQL using** Implicit cursor **b. Create cursor in PL/SQL using Explicit Cursor**
9	a. **Create cursor in PL/SQL using** Parameterized cursor b. **Create cursor in PL/SQL using** Cursor for loop
10	**Creation of Procedures in PL/SQL**
11	**Functions in PL/SQL** **a.** Compute and returns the maximum value **b.** Compute factorial of given number
12	a. Write a PL/SQL program to Create Row level trigger b. Write a PL/SQL program to Create Statement level trigger
13	a. Write a PL/SQL program to Create instead of trigger b. Write a PL/SQL program using Conditional trigger
14	**Handling exceptions** **a.** Creation of user defined exception **b.** Creation of system defined exception
15	**Creation of Package in PL/SQL**

Ability Enhancement Course
Understanding Basic Forms of English Literature-1

COURSE CODE: U24IT3AEC01
1 credit - 15 lectures

COURSE CREDIT: 02
1 lecture is of 60 minutes

Course Objectives:

1. To develop analytical skills and critical thinking through close reading of literary texts
2. To cultivate appreciation of language as an artistic medium and to help students to understand the importance of forms, elements and style that shape literary works

Course Outcomes:

1. Learner will be able to recognize the culture and context of the work of literature
2. Learner will be able to imbibe the underlying philosophy and values reflected in literature

Module-1 Study of Poetry (Total 15 Lectures)

1. William Wordsworth: *The Solitary Reaper*
2. Edgar Albert Guest:*Don't Quit*
3. Nissim Ezekiel : *Island*
4. Kamala Das:*An Introduction*
5. Arun Kolatkar :*The Breakfast Time at Kala Ghoda*

Module-2 Study of Novel (Total 15 Lectures)

Lord of The Flies by William Golding

SCHEME OF EXAMINATION

The scheme of examination shall be divided into two parts:

- **Internal assessment 40% i.e.20 marks**
- **Semester end examination 60% i.e.30 marks**

- **A) Internal Assessment: Total 20 Marks**

1	* Continuous Evaluation	10 Marks
2	Poetry Recitation /Presentation	05 Marks
3	Attendance	05 Marks

**Application oriented activities will be conducted*

PADMABHUSHAN VASANTDADA PATIL PRATISHTHAN'S COLLEGE OF ARTS, SCIENCE AND COMMERCE (AUTONOMOUS) NERUL NAVI MUMBAI 400 706.

B) Semester end examination 30 marks

Question no.1	A) OR B) Descriptive Question Module no.1	10 Marks
Question no.2	A) OR B) Descriptive Question Module no.2	10 Marks
Question no.3	A) Short Notes 2 out of 3 Module no.1 (5 Marks each) OR B) Short Notes 2 out of 3 Module no.2 (5 Marks each)	10 Marks

Passing Criteria: 40% in Internal as well as in External(i.e.8 Marks in Internal exam of 20 marks and 12 marks in External exam of 30 marks respectively)

***

Field Project(Credit 2)

COURSE CODE: U24IT3FP01 **COURSE CREDIT: 02**
1 credit - 15 lectures **1 lecture is 60 minutes**

Course Objectives:

1. Provide learners with essential skills and knowledge to develop a project
2. Offer hands-on experience in data collection,analysis and report making

Course Outcome:

On completing the course, the student will be able to:
1.Understand research Methodology
2.Data analysis

The main objective of inclusion of Field project work is to inculcate the element of research analysis and scientific temperament challenging the potential of the learner as regards to his/ her eagerness to enquire and ability to interpret aspects of the study.
It is expected that the guiding teacher should undertake the mentoring sessions and make the learners about the methodology of formulation, preparation, and evaluation pattern of the project work.

Project work based on research methodology in the study area.
Field Project Report Contains

1. Introduction
- Topic
- Statement of problem and Need of the study
- Rational of study

2. Research Methodology
- Objective
- Hypothesis (if any)
- Scope of the study
- Limitations
- Review of Literature
- Data Analysis, Interpretation and Presentation

Conclusion and Suggestions

- References
- Appendices
  - Questions
  - Abbreviations

Rubric for Continuous Evaluation of Students

Criteria	Marks
Participation and Data Collection	10
Data Analysis and Interpretation	10
Innovation of topic and social relevance	10
Report and Presentation	20

ARTS, SCIENCE AND COMMERCE
NERUL
NAVI
MUMBAI
400 706.

Co-Curricular Activities(Credit 2)

National Service Scheme

Sr. No.	Heading	Particulars
1	Title of the course	National Service Scheme (NSS)
2	Semesters	III
3	Level	UG
4	Pattern	03 years & 06 semesters CBGS
5	To be implemented from	From Academic year 2024-25 in a progressive manner

National Service Scheme (NSS) Studies Paper-II

Course Code: U24CC3NSS02 **Credits: 2**
Total Lectures per week (1 Period is 60 minutes) :2

Unit No.	Topic	No. of Lectures required
Unit-I	**Social Integration:** • Social Integration Meaning of value and types • Human values and social responsibilities **Concept of NGOS:** • Definition, Formation, objective, functions, types • Government Organizations Vs NGO's • Case studies	15
Unit-II	**Community Welfare in Association with NGO -** • Environment awareness • Water Management • Energy conservation • Gender sensitization, • Healthy society	15
	Total Lectures	**30**

Course Outcomes (CO):

- Upon successful completion of this course, students will be able to:
  - CO1: Define and analyze the concept of social integration and its value in a community.

- CO2: Explain the various types of NGOs and their function in promoting social integration and community development.
- CO3: Evaluate the impact of NGO initiatives on specific areas of community well-being (environment, water management, energy conservation, gender equality, health).
- CO4: Develop strategies for collaborating with NGOs to address community needs in the aforementioned areas.

Learning Outcomes (LO):

Unit 1: Social Integration

- LO 1.1: Define social integration and explain its importance in a diverse society.
- LO 1.2: Analyze the different types and values of social integration.
- LO 1.3: Explain how human values and social responsibilities contribute to a more integrated society.
- LO 1.4: Discuss the potential challenges to social integration and their impact on communities.

Unit 2: Concept of NGOs

- LO 2.1: Define NGOs and differentiate between various types (e.g., charitable organizations, advocacy groups, service providers).
- LO 2.2: Explain the core objectives and functions of NGOs in promoting social good.
- LO 2.3: Analyze a case study to understand the practical work of an NGO.
- LO 2.4: Evaluate the strengths and limitations of NGOs as agents of social change.

Unit 3: Community Welfare in Association with NGOs

- LO 3.1: Identify the specific areas of community development addressed by NGOs (environment, water management, energy conservation, gender equality, health).
- LO 3.2: Analyze strategies employed by NGOs to promote community participation and empowerment in these areas.
- LO 3.3: Critically evaluate the effectiveness of specific NGO interventions related to environment, water management, energy conservation, gender sensitization, or healthy society initiatives.
- LO 3.4: Develop strategies for building and maintaining successful partnerships between NGOs and communities to address these specific needs.

Unit	Topics
Unit 1	**Social Integration**
Unit 2	**Concept of NGOS**
Unit 3	**Community Welfare in Association with NGO**

	Semester – III
Course Name: National Service Scheme (NSS)	**Course Code:**
Course Type	**Co-curricular**
Focuses on	**Skill Development**
Caters to	**Local, National, Global**

Total Lectures per week (1 Period is 60 minutes)		2	
Credits		2	
Evaluation System		Hours	Marks
	Continuous Evaluation	30	50
		Total Marks	50

***For the Unit III – Students will be assigned Community Activity as per availability. They will be divided in a group of 20 and will be engaged for 20 hrs.**

The scheme of Examination shall be divided as follows.

- **Continuous Evaluation Pattern**

Description	Marks
30 hours activity related work such as • Attending lectures/ training sessions (10 Marks) • Field work & Maintenance of work record (25)	35
Project Report/Poster	5
Viva-voce by faculty in charge/ Internal Test	10
Total	**50**

References:

1. National Service Scheme Manual (Revised) Government of India, Ministry of Youth Affairs and Sports, New Delhi
2. National Service Scheme Manual University of Mumbai
3. National Service Scheme Manual for NSS District Coordinators National Service Scheme Cell, Dept. of Higher and Technical Education, Mantralaya
4. Rashtriya Seva Yojana Sankalpana Prof. Dr. Sankey Chakane, Dr. Pramod Diamond Publication, Pune
5. Annual Report of National Service Scheme (NSS) Dept. of Higher and Technical Education Mantralaya. Dept. of Higher and Technical Education Mantralaya.
6. Training Programme on National Programme scheme, TISS.
7. Orientation Courses for N.S.S. Programme officers, TISS.
8. Social Problems in India, Ram Ahuja.
9. National Service Scheme in India : A Case Study of Karnataka, M. B. Dishad, Trust Publications,2001
10. http://www.thebetterindia.com/140/national-service-scheme-nss/
11. http://en.wikipedia.org/wiki/national-service-scheme
12. http://nss.nic.in/adminstruct
13. http://nss.nic.in/propexpan
14. http://nss.nic.in
15. http://socialworkness.org/about.html

DLLE

Co- Co-curricular Course (CC) Department of Lifelong Learning and Extension

Sr. No.	Heading	Particulars
1	Title of the course	NGO Collaboration
2	Semesters	III
3	Level	UG
4	Pattern	03 years & 06 semesters CBGS
5	To be implemented from	From Academic year 2024-25 in a progressive manner

DLLE - NGO Collaboration

COURSE CODE: U24CC3DLLE02 **COURSE CREDIT: 02**
1 credit - 15 lectures **1 lecture is 60 minutes.**

Course Objectives:

1. Students will have a thorough understanding working of NGOs, their contributions to society, and the skills needed to work effectively within or alongside these organizations.

2. Interns would develop skills in project management, communication, research, and advocacy while working on impactful projects addressing poverty, education, healthcare, and human rights. The experience fosters professional growth, facilitates networking, and would help to promote and develop social responsibilities towards society.

Learning Outcome:

1. It will enable learners to contribute their best skills to society through social work.
2. Internship will give hands-on training to work along with various social groups through NGOs

2.

Sr. No.	Syllabus	No of Hrs.
1	Module - I: Introduction to NGO Concept of NGO, Role, and formation of NGO in India, Contribution of NGO in services in India i.e. Social Services, Advocacy, and Human Rights, Economic Development and Skill Enhancement, Environmental Conservation, Disaster Relief and Rehabilitation, Community Development, Gender	15

NERUL NAVI MUMBAI 400 706

	Equality, Research, and Innovation. Contribution to weaker sections of the community i.e. Old age homes, Orphanages, children's homes, and Rehabilitation centres. Examples of Local, State, National, and International Level NGOs. Scope of Social Entrepreneurship	
2	Module II: Social Internship Collaboration with any NGO or any other organization at an individual level or in a group of 5-8 volunteers. Students can work on Community Development, Environmental Conservation, Healthcare Services, Human Rights and Advocacy, Education, and Youth Programs Students are expected to work at least for 15-20 hrs with an NGO. The interns are expected to work on projects like community surveys, educational workshops, or program implementation. With the training on the organization's mission and procedures paired with mentors for guidance. Engagement in fieldwork with communities and participation in research, data collection, and report preparation.	15
	.Total Lectures	30

SCHEME OF EXAMINATION
Total Marks: 50
Continuous evaluation pattern.

Evaluation Criteria	Marks
MCQ/ Class test	10
Skit/ Short film/ content development in the form of posters, leaflets or any other form on NGO worked with collaboration	10
Collaboration with NGO for any of the project from 20-30 hrs. per semester and detail report based on social internship and Viva	30
Total	**50**

References :

- Brager, G., & Specht, H. (1973). Community organizing. New York: Columbia University Press
- Chambers, R. (1992). Rural Appraisal: Rapid, Relaxed and Participatory. Sussex: Institute of Development Studies 9
- Chatterjee, P. (1975). Towards a typological paradigm of community organization The Indian Journal of Social Work, XXXVI (1),1-14
- Dunham, A. (1958). Community Welfare Organization. Principles and practice. New York: Thomas Y. Crowell.
- Meenai, Z. (2007). Participatory Community work. New Delhi : Concept publications
- Ross, M G. (1967). Community Organization; Theory, Principles, and Practice. New York: Harper & Row.
- Siddiqui, H.Y. (1997). Working with Communities: An Introduction to Community

Work. New Delhi: Hira Publications.

- York, A. S. (1984). Towards a conceptual model of community social Work. The British Journal of Social Work, 14(3), 241-255.
- Wilson, G., & Ryland, G. (1949). Social group work practice: The creative use of the social process. Boston: Houghton Mifflin.
- Konopka, G. (1983). Social Group Work: A Helping Process (3rd Edition). New Jersey: Prentice Hall InternationalPathak, S. H. (1981).
- https://www.mudlle.ac.in

Co- Co-curricular Course (CC) SPORTS

Sr. No.	Heading	Particulars
1	Title of the course	**TRAINING IN SPORTS**
2	Semesters	III
3	Level	UG
4	Pattern	03 years & 06 semesters CBGS
5	To be implemented from	From Academic year 2024-25 in a progressive manner

COURSE CODE: U24CC3SP02 **CREDIT: 02**
1 Credit: 15 lectures **1 lecture: 60 minutes**

Course Objective:

1. Students will learn about the different cycles used in the training process.
2. To create norms and criterion reference standards, formative and summative evaluation.
3. To understand about different training cycles.

Course outcome:

1. Students will understand the concept of talent identification and methodsused for talent development in sports.
2. Students will understand sports training and the different cycles used in thetraining process.
3. Students will understand different types and methods to develop
4. strength, endurance, and speed in sports training
5. Flexibility and coordinative ability.
6. Definition of Test, Measurement, and Evaluation.
7. The difference between norms and criterion-referenced standards, formativeand summative evaluation.

Sr. No.	Semester 3 Syllabus	No. of Lectures
	Unit - I: Test, Measurement and evaluation	
	1) Define test, measurement and evaluation 2) Importance of Test, Measurement and evaluation in sports 3) Classification of tests in Physical Education and sports. 4) Test administration guidelines in Physical education and sports 5) BMI, Waist Hip ratio, Skinfold measurement (3 sites)	15
	Unit II- Training in Sports	
	1) Concept of talent identification and talent development in sports. 2) Introduction to the sports training cycle - Micro, Meso Macro cycle 3) Types and methods to develop - Flexibility and coordinate, Ability 4) Types and methods to develop - Strength, Endurance and speed.	15
	.Total Lectures	30

Scheme of examination
Total Marks: 50
Continuous evaluation pattern.

Evaluation Criteria	Marks
Sports training/practice/coaching sessions on a regular basis (choose any game/sport).	25
Participation in the organisation of sporting events, workshops, seminars, andso on	15
Participation/performance in sports events at the District, State, National, International, University, and Intercollegiate levels.	05
Performance in practical conducted during lectures/ timely submission ofassignments	05
Total	**50**

SIESITDevClub-Learning

Sr. No.	Heading	Particulars
1	**Title of the course**	SIESITDevClub-Learning
2	**Semesters**	III
3	**Level**	UG
4	**Pattern**	03 years and 6 semesters
5	**To be implemented from**	**From academic year 2024-2025 in a progressive manner**

SIESITDevClub-Learning

COURSE CODE: U24CC3DC01
1 credit - 15 lectures

COURSE CREDIT: 02
1 lecture is 60 minutes

Course Objectives:

1. Provide students with essential skills for application of their learning in a non-academic context
2. Foster leadership, teamwork, and organizational abilities through real-world event management scenarios.

Course Outcome:

On completing the course, the student will be able to:

1. Understand their technological domain better.
2. Reflect on practical experience gained and lessons learned from hands-on involvement in the Training.
3. Show enhanced teamwork, leadership, and communication skills developed through the collaborative process of running Club.

Activities

A Student can select any one of these activities at the start of the academic year for the current semester.

1. **Coding Competitions**
   A Student has to participate and win in Coding Competitions. It is mandatory to win in atleast 2 competitions.
2. **Learning a new Technology**
   A Student can learn a new Technology Online/Offline and produce a certificate for the same. The Course should be of minimum 30 hours.
3. **Volunteering/Assisting for Training Workshop**

A Student has to assist in atleast 2 trainings for Student or Staff under the SIESITDevClub.

4. **Contributing to the Discord Group**
   A student has to contribute atleast 15 articles to the Discord Group of the SIESITDevClub. These articles will be further screened to be published in the College Magazine.
5. **Organizing Activities under the SIESITDevClub**
   A student must show 30 hrs of work under organizing and managing the Club. It includes organizing events, conducting meetings, generating reports and other activities that are part of running a club.

General Policy Guidelines for Co-curricular activities

1. Coding Competitions should be from reputed colleges or Online Forums.
2. The student has to ensure that he/ she is participating in the entire duration of the activity or his/her participation can be counted as null & void.
3. The student is expected to submit a report for the activities alongwith prior approval letter from faculty incharge.
4. Training conducted ONLY for SIES(Nerul) College of Arts,Science and Commerce(Autonomous) shall be considered for allotment of credits under CC Course.
5. The articles can be review articles or tutorials. Selected articles will be published in the Departmental Magazine.

Rubric for Continuous Evaluation of Students

The student will be awarded 30 marks for the Activity and 20 marks for the report.

Activity Selected	Minimum Criteria
Coding Competitions	2 Competitions
Conducting Training	1 Training
Volunteering/Assisting for Training Workshop	2 Workshops
Contributing to the Discord Group	15 Articles
Organizing Activities under the SIESITDevClub	2 Activities

Revised Scheme of Examination
Faculty of Science
(Undergraduate Programme)

SCHEME OF EXAMINATION (for 100 marks 3 credits)

The scheme of examination shall be divided into two parts:

- **Internal assessment 40% i.e.40 marks**
- **Semester end examination 60% i.e.60 marks**

(A)Internal Assessment 40 marks

Description	Marks
An internal test of 20 marks Q.1 a. Multiple choice Questions - 05 Marks b. True/False - 05 Marks Q.2. Attempt 2 questions out of 3 questions (5 marks each) - 10 Marks	20
Presentation/Case Studies/Assignments	15
Attendance and Class Participation	5
Total	40

B) Semester End examination 60 marks
PAPER PATTERN

Duration: 2 hours	
Total Marks:60	
Q.1 15 marks OR 15 marks (7 and 8 marks)-Unit 1	15
Q.2 15 marks OR 15 marks (7 and 8 marks)-Unit 2	15
Q.3 15 marks OR 15 marks (7 and 8 marks)-Unit 3	15
Q.4 15 marks-attempt any 3 out of 6 (from Unit 1, Unit 2, Unit 3)	15
Total	60

Passing criteria: Minimum 40% in Internal (16 out of 40) and 40% (24 out of 60) in semester-end examination.

SCHEME OF EXAMINATION (for 50 marks ,2 credits)

The scheme of examination shall be divided into two parts:

- **Internal assessment 40% i.e.20 marks**
- **Semester end examination 60% i.e.30 marks**

(A)Internal Assessment 20 marks(Theory)

Description	Marks
Internal test Q.1 Multiple choice Questions/True or False - 05 Marks Q.2. Attempt 1 questions out of 2 questions (5 marks each) - 05 Marks	10
Presentation/Case Studies/Assignments	05
Attendance and Class Participation	05
Total	20

OR

(A)Internal Assessment 20 marks(Practical)

Description	Marks
Practical Question	10
Journal	05
Viva	05
Total	20

B) Semester End examination 30 marks

PAPER PATTERN

Duration: 1 hour	
Total Marks:30	
Q.1 15 marks OR 15 marks (7 and 8 marks)-Unit 1	15
Q.2 15 marks OR 15 marks (7 and 8 marks)-Unit 2	15
Total	30

OR

PAPER PATTERN(1 credit Theory)

Duration: 1 hour	
Total Marks:30	
Q.1 15 marks OR 15 marks (7 and 8 marks)-Unit 1	15
Q.2 15 marks OR 15 marks (7 and 8 marks)-Unit 1	15
Total	30

Passing criteria: Minimum 40% in Internal (08 out of 20) and 40% (12 out of 30) in semester-end examination.

SCHEME OF PRACTICAL EXAMINATION
(for 50 marks , 1 credit)

The scheme of examination shall be divided into two parts:

- **Internal assessment 40%, i.e. 20 marks**
- **Semester end examination 60%, i.e. 30 marks**

(A) Internal Assessment (20 marks)

Description	Marks
Practical Internal Assessment	10
Viva	05
Journal	05
Total	20

B) Semester end examination(30 marks)
PAPER PATTERN

Duration: 1.5 hours	
Total Marks:30	
Q.1 Practical Q1	15
Q.2 Practical Q2	15
Total	30

Passing Standards

The learners to pass a course shall have to obtain a minimum of 40% marks in each head of passing, consisting of Internal Assessment and Semester End Examination. The learners shall obtain a minimum of 40% marks (i.e. 16 out of 40 or 8 Out of 20) in the Internal Assessment and 40% marks in the Semester End Examination (i.e. 24 Out of 60 or 12 Out of 30) separately, to pass the course and a minimum of Grade D, wherever applicable, to pass a particular semester. A learner will be said to have passed the course if the learner passes the Internal Assessment and Semester End Examination together.

AC: 29.06.2024
Item No. : 1.1.7

SIES (Nerul) College of Arts, Science and Commerce (Autonomous)
Syllabus for Approval
B.Sc (Information Technology)

Sr. No.	Heading	Particulars
1	Title of the Programme	B.Sc Information Technology
2	Year	Second Year
3	Semesters	IV
4	Level	UG
5	Pattern	3-4 years & 6-8 semesters Choice Based Grading System
6	Status	New
7	To be implemented from	From Academic year 2024-25 in a progressive manner

* Students who have passed first year in CBCS Non-NEP, need to complete and clear 2 credit course examination per semester as per the equivalence committee guidelines.

Date: 29 June, 2024

Signature:

Dr. Koel Roychoudhury
AC Chairperson

Dr. Anu T.Thomas
Head of the Department

Sri Chandrasekarendra Saraswati Vidyapuram, Plot I-C, Sector V,
Nerul, Navi Mumbai – 400706 India
Tel No: 61196409, 61196410, 61196402, 61196413, 61196414, 61196415, 27708371
Fax No: 022-27713356, **Email:** ascnsies@sies.edu.in / siesascn@yahoo.in **Website:** www.siesascn.edu.in

SIES (Nerul) College of Arts, Science & Commerce
RISE WITH EDUCATION

CELEBRATING 25 YEARS 1998-2023

SIES (Nerul) College of Arts, Science and Commerce (Autonomous)
B.Sc.(Information Technology)

Sr. No.	Heading	Particulars
1	Title of the course	B. Sc.(Information Technology)
2	Eligibility for admission in S.Y.BSc.IT	Candidate who have passed Diploma (Three years after S.S.C. – Xth Std.) in Information Technology/ Computer Technology/ Computer Engineering/Computer Science/ Electrical, Electronics and Video Engineering and Allied Branches/Mechanical and Allied Branches/ Civil and Allied branches are eligible for direct admission to the Second Year of the B.Sc. (I.T.) degree course. However, the Diploma should be recognized by the Board of Technical Education or any other recognized Government Body. Minimum marks required 45% aggregate for open category candidates and 40% aggregate for reserved category candidates. OR Candidates with post HSC-Diploma in Information Technology/Computer Technology/ Computer Engineering/ Computer Science/ and Allied branches will be eligible for direct admission to the Second Year of B.Sc. (I.T.). However, the Diploma should be recognized by the Board of Technical Education or any other recognized Government Body Minimum Marks required 45% aggregate for open category candidates and 40% aggregate for reserved category candidates. Diploma (10 + 3) awarded by MSBTE or equivalent by any other Government body in following branches of engineering : i) Mechanical ii) Electronics iii) Electrical iv) Computer v) Information Technology vi) Automobile vii) Industrial Electronics viii) Radio Engineering and Telecommunication ix) Instrumentation Students from other universities OR board of secondary or intermediate education or any other statutory examining body should refer to University ordinance (0.111)
3	Minimum Percentage for admission	45%
4	Passing Marks	40%
5	Semesters	IV
6	Level	UG
7	Pattern	3-4 years & 6-8 semesters Choice Based Grading System
8	Status	New
9	To be implemented from	From Academic year 2024-25 in a progressive manner

Date:

Name of BOS Chairperson: Dr Ann. Thomas Signature:

B.Sc. Information Technology Programme

(To be implemented from Academic Year- 2024-25)

Semester IV			
Course Code	**Course Type**	**Course Title**	**Credit**
U24IT4MJ01	Major	Computer Network	3
U24IT4MJP01		Computer Network Practical	1
U24IT4MJ02	Major	Java Web Application Development	3
U24IT4MJP02		Java Web Application DevelopmentPractical	1
U24IT4MI01	Minor	Statistical Techniques	3
U24IT4MIP01		Statistical Techniques Practical	1
U24IT4E01	OE	To Be Opted from the list	2
U24IT4SEC01	SEC	Introduction to Software Engineering andProject Management	1
U24IT4SECP01		Introduction to Software Engineering andProject Management Practical	1
U24IT4AEC01	AEC	Understanding Basic Forms of EnglishLiterature-2	2
Co-Curricular (To be opted one)			
U24CC4NSS03	CC	NSS-Paper III	4
U24CC4DLLE03		DLLE-SOCIAL WORK PERFORMANCE	
U24CC4SP03		SPORTS- PSYCHOLOGY IN SPORTS AND ADAPTED PHYSICAL EDUCATION	
U24CC4DC02		SIESITDevClub-BackToSociety	
Total			**22**

Open Elective (To be Opted)

Sr. No.	Course Code	Course Name	Credits
1	U24BE4E01	Introduction to International Economics (Economics)	2
2	U24MMC4E01	Photography (BAMMC)	2
3	U24ES4E01	Toxicology and Risk Assessment (EVS)	2
4	U24MS4E01	Digital Marketing Tools (BMS)	2
5	U24COM4E01	Advertising and Brand Management II (Commerce)	2
6	U24BI4E01	Financial Literacy	2
7	U24IT4E01	Marketing Analytics Using Phyton	2
8	U24PT4E01	Packaging Design and Development	2
9	U24CS4E01	Advance Multimedia and Designing	2
10	U24AF4E01	Investment Management	2

SIES (Nerul) College of Arts, Science and Commerce (Autonomous)

(Affiliated to University of Mumbai)

RE-ACCREDITED GRADE "A" BY NAAC (3rd CYCLE)

BOARD OF STUDIES
SYLLABUS FOR
B.Sc (Information Technology)

(WITH EFFECT FROM THE ACADEMIC YEAR 2024-2025)

OBJECTIVES OF THE PROGRAMME:

- To strengthen the fundamentals and basics of Information Technology and to boost technical development skills.
- To develop the ability to apply the knowledge acquired through analysis of algorithms, mathematical and statistical techniques
- To develop skills to work efficiently in designing the solution to various software and hardware problems by implementing various tools.
- To inculcate professional ethics, managerial skills to encourage entrepreneurship and promote teamwork to manage diverse projects.
- To enhance employability skills and provide scope for higher education and research in the field of information technology.

Major(Credit 4)
Computer Network

Course Code : U24IT4MJ01 **Course credit: 03**

1 credit - 15 lectures **1 lecture is 60 minutes**

Course Objectives:

1. An understanding of computer networking theory, including principles embodied in the protocols designed for the application layer, transport layer, network layer, and link layer of a networking stack.
2. An understanding of specific implemented protocols covering the application layer, transport layer, network layer, and link layer of the Internet (TCP/IP) stack
3. An understanding of security issues.

Course outcome:

1. To analyze the classification of network services, protocols and architectures.
2. To understand key Internet applications and their protocols.
3. To learn basic concepts of protocols and demonstrates wireless lan.
4. To design and analysis of the routing Protocols.

Sr.No.	Syllabus	No. of Lectures
I	**Introduction:** Computer Network, Evolution of Computer Networks Different types of Computer Network, Difference between LAN, MAN and WAN, Hardware Devices used for Networking: Network Interface Card (NIC), Modem, Hub, Switch L1 and L2 switches, Comparison between switch and hub, Bridge, Router, Gateway. Standards and administration. Network Models: Protocol layering, TCP/IP protocol suite, The OSI model.	15
II	**Introduction to Physical layer:** Data and signals, periodic analog signals, digital signals, transmission impairment, data rate limits, performance. **Introduction to the Data Link Layer**: Link layer addressing, Data Link Layer Design Issues, Error detection and correction, block coding **Wireless LANs:** Introduction, IEEE 802.11 project, Bluetooth, WiMAX, Cellular telephony, Satellite networks **Network Layer:** IPv4 Addresses, IPv4 Protocol, ARP, ICMP, IPv6	15
III	**Routing:** RIP, OSPF, BGP **Transport Layer:** UDP, TCP **Application Layer:** WWW, HTTP, DNS, SMTP, POP3, MIME, IMAP, DHCP, TELNET, SSH, FTP	15

REFERENCE BOOKS:

1. Computer Communications and Networking Technologies, Michael A. Gallo, William M. Hancock, Cengage Learning.
2. Computer Networks, Bhushan Trivedi, Oxford.
3. Computer Networks: Principles, Technologies and Protocols for Network Design, Natalia Olifer, Victor

Olifer, Wiley India.
4. Data Communications and Networking, Behrouz A. Forouzan, Fourth Edition, Tata McGraw Hill.
5. Understanding Communications and Networks, Third Edition, W.A.Shay, Cengage Learning.
6. Computer and Communication Networks, Nader F. Mir, Pearson Education

COMPUTER NETWORK PRACTICAL

COURSE CODE: U24IT4MJP01 **COURSE CREDIT: 01**

1 credit - 15 lectures **1 lecture is 120 minutes**

Sr.No.	List of Practical's
1.	Study of different types of Network cables and practically implement color code for crimping LAN cable.
2.	Study of following Network Devices in Detail
3.	Study of network IP Experiment • Classification of IP address • Subnetting • Super netting
4.	Study the basic networking commands arp, ipconfig, netstat, ARP, ping, trace route etc
5.	Given an IP address and network mask, determine other information about the IP address such as: • Network address • Network broadcast address • Total number of host bits • Number of host
6.	Performing an Initial Switch Configuration.
7.	Performing an Initial Router Configuration.
8.	Configure IP static routing.
9.	Configure IP routing using RIP.
10.	Configuring Simple OSPF.
11.	Configuring WEP on a Wireless Router
12.	Configuring OSPF with multiple areas.
13.	Configuring DHCP server and client.
14.	Configuring DNS Server and client.
15.	Configuring RIP.

NERUL COLLEGE OF ARTS, SCIENCE AND COMMERCE AUTONOMOUS
NERUL NAVI MUMBAI 400 706

Major(4 Credits)
Java Web Application Development

Course Code : U24IT4MJ02 **Course Credit: 03**

1 Credit: 15 Lectures **1 Lecture: 60minutes**

Course Objectives:

- To provide knowledge of web based applications through servlet and jsp.
- To provide understanding and implementation of basic database handling with java
- To use framework in java for handling data and creating web based applications.
- To provide understanding and learning of the basic Spring core.

Course Outcomes:

After successful completion of this course, students would be able to

- Design basic web based applications in java using Servlets and jsp.
- The learner will be able to connect databases with java through Servlets and API .
- The learner will be able to build Hibernate based Web applications.
- The learners will be able to build basic spring Core applications.

Unit	Syllabus	No of Lectures
I	**Java Server Technologies** :Servlet Web Application Basics, Architecture and challenges of Web Application, Introduction to servlet, Servlet life cycle, Developing and Deploying Servlets, Exploring Deployment , Descriptor (web.xml),Using annotations , Handling Request and Response. **Working with Databases**: What is JDBC? JDBC Architecture, Accessing Database, The Servlet GUI and Database Example. **Java Server Pages (JSP):** Life Cycle of a JSP Page, JSP Scripting Elements,JSP Implicit Objects,JSP Directive Elements,JSP Exception Handling,Action Elements	15L
II	**Hibernate** Introduction **Framework** -Introduction,ORM Principle and implementation **Hibernate Architecture** **Hibernate CRUD** -Setting up Project, Configuring JARs, XML files, Setting Connection to DB, Performing CRUD Operations, Object Identity generator type classes, Using SQL with Hibernate, Using HQL, Using Criteria Queries, Create a simple calculator application using servlet. Mapping Collections and Associations, Using Hibernate Annotations	15L
III	**Spring core**: Introduction,Spring Framework,Why use Spring? Advantages of Spring Framework,Core principles of Spring Framework,Features of Spring,Inversion of Control, BeanFactory,ApplicationContext,Dependency Injection,Injecting objects by constructor injection,Setter injection, Dependency injection with Factory/Setter Method, Setter /Constructor injection with Non-string Map, Setter /Constructor injection with Dependent object, Setter /Constructor injection with Collection and Non-string collection, Injecting Literal Values with Setter/Constructor, Spring IoC container, Different ways to create a Spring Bean. Dispatcher Servlet with Spring application.Introduction to Microservices	15L

COLLEGE OF ARTS, SCIENCE AND COMMERCE NERUL NAVI MUMBAI 400 706

Java Web Application Development Practical

Course Code : U24IT4MJP02 **Course Credit: 01**

1 Credit: 15 Lectures **1 Lecture: 120 minutes**

Course Objectives:

- To provide knowledge of web-based applications through servlet and jsp.
- To provide understanding and implementation of basic database handling with java
- To use framework in java for handling data and creating web-based applications.
- To provide understanding and learning of the basic Spring core.

Course Outcomes:

After successful completion of this course, students would be able to

- Design basic web-based application in java using Servlets and jsp.
- The learner will be able to connect databases with java through Servlets and API .
- The learner will be able to build Hibernate based Web applications.
- The learners will be able to build basic spring Core applications.

1	Create a simple servlet to print "Hello World" on the web browser window.
2	Create a simple calculator application using servlet.
3	Create a servlet for a login page. If the username and password are correct then it says message "Hello <username>" else a message "login failed"
3	Create a registration servlet in Java using JDBC. Develop a simple JSP application to display values obtained from the use of intrinsic objects of various types.
5	Validate the above created registration .On correct registration details display a welcome page or an error page otherwise.
6	Develop a simple JSP application to display values returned by use of intrinsic objects.
7	Create a registration and login JSP application to register and authenticate the user based on username and password using JDBC.
8	Create a java web application using hibernate technology.
9	Create a java web application using hibernate annotations.
10	Create java web application using HQL
11	Create a simple Spring application which displays "Hello Spring Java method"

12	Create a simple Spring application to display username.
13	Create a simple Spring application to enter user details in the database.
14	Create a simple Spring application to read user login and password details from the database.
15	Create a Spring application for modifying data in the database.

Reference Books:

1. Herbert Schildt, Java The Complete Reference, Eleventh Edition, McGraw-Hill Education, 2020
2. Bryan Basham, Kathy Sierra, Bert Bates, Head First Servlets and JSP, O'reilly (SPD), 2018
3. Cay S. Horstmann, Gary Cornell, Core Java™ 2: Volume II–Advanced Features Prentice Hall PTR, 2004
4. James Elliott, Timothy M. O'Brien, Ryan Fowler , Harnessing Hibernate, O'Reilly Media, Inc, April 2008
5. Madhusudhan Konda, Just Hibernate ,June 2014, O'Reilly Media, Inc.
6. Sachin Malhotra &SaurabhChoudhary,Programming in JAVA, 2nd Ed, Oxford Press, 20
7. Joe Wigglesworth and Paula McMillan, Java Programming: Advanced Topics, Thomson Course Technology
8. Eric Jendrock, Jennifer Ball, D Carson and others, The Java EE 5 Tutorial, Pearson Education The Java Tutorials: http://docs.oracle.com/javase/tutorial/

Minor(Credit 4)
Statistical Techniques (Credit 3)

COURSE CODE: U24IT4MI01 **COURSE CREDIT: 03**

1 credit - 15 lectures **1 lecture is 60 minutes**

Course Objectives:

1. To make learners aware about the different types of data and the use of different measures of central tendency and dispersion wherever relevant.
2. To make learners aware about the techniques to check the Skewness and Kurtosis of data.
3. To make learners enable to find the correlation between different variables and further apply the regression analysis to find the exact relation between them and develop the ability to analyze statistical data through R software.

Course Outcome:

The learner will be able to;

1. Organize, Analyze and present data.
2. Analyze Statistical data using measures of central tendency and dispersion.
3. Develop the relationship between variables using techniques of correlation and regression.

UNIT	Topic	HRS
I	**Data Types:** Attribute, Variable, Discrete and Continuous variable, Univariate and Bivariate distribution, Different types of scales: Nominal, Ordinal, Interval and Ratio. **Data presentation:** Frequency Distribution, Bar Chart, Pie Chart, Histogram, Frequency Polygon, Ogive, Stem-and-leaf Chart. **Measures of Central Tendency:** Concept of Central tendency, characteristics of good measure of central tendency. Arithmetic Mean , Median, Mode, merits, and demerits. Combined mean, Weighted mean, Quartiles, Deciles and Percentiles - examples for ungrouped and grouped data	15
II	**Measures of Dispersion**: Concept of dispersion, Absolute and Relative measure of dispersion,. Range, Semi-interquartile range, Quartile deviation, Standard deviation - Definition, examples for ungrouped and grouped data, merits and demerits. Combined standard deviation, Variance. Coefficient of range, Coefficient of quartile deviation and Coefficient of variation (C.V.) Moments: Concept of Moments, Raw moments, Central moments, Relation between raw and central moments. Measures of Skewness and Kurtosis: Concept of Skewness and Kurtosis, measures based on moments, quartiles.	15
III	**Correlation:** Concept of correlation, Types and interpretation, Measure of Correlation: Scatter diagram and interpretation; Karl Pearson's coefficient of correlation (r): Definition, examples for ungrouped and grouped data, effect of shift of origin and change of scale, properties; Spearman's rank correlation coefficient: Definition, examples of with and without repetition. **Regression:** Concept of dependent (response) and independent (predictor) variables, concept of regression, Types and interpretation, Difference between correlation and regression, Relation between correlation and regression.	15

	Linear Regression - Definition, examples using least square method and regression coefficient.	

References:

1. Goon, A. M., Gupta, M. K. and Dasgupta, B. (1983). Fundamentals of Statistics, Vol. 1, Sixth Revised Edition, The World Press Pvt. Ltd., Calcutta.

2. Gupta, S.C. and Kapoor, V.K. (1987): Fundamentals of Mathematical Statistics, S. Chand and Sons, New Delhi

3. Schaum's Outline Of Theory And Problems Of Beginning Statistics, Larry J. Stephens, Schaum's Outline Series McGraw-Hill. 2009

4. Agarwal, B. L. (2003). Programmed Statistics, Second Edition, New Age International Publishers, New Delhi.

Statistical Techniques Practical (Credit 1)

COURSE CODE: U24IT4MIP01
1 credit - 30 lectures

COURSE CREDIT: 01
1 lecture is 60 minutes

Note: The following practicals are to be implemented using R.

Sr.No.	List of Practicals
1	Using R execute the basic commands, array, list and frames.
2	Create a Matrix using R and Perform the operations addition, inverse, transpose and multiplication operations.
3	Using R draw the following: Frequency Distribution, Grouped Frequency Distribution Diagrams and Graphs.
4	Using R Execute the statistical functions:mean, median, mode.
5	Using R import the data from Excel / .CSV file and Perform the above functions.
6	Using R Execute the statistical functions: quartiles, range, inter quartile range.
7	Using R import the data from Excel / .CSV file and Perform the above functions.
8	Using R import the data from Excel / .CSV file and Calculate the standard deviation, variance, co-variance.
9	Using R import the data from Excel / .CSV file and draw the skewness.
10	Using R import the data from Excel / .CSV file and draw the Kurtosis.
11	Using R perform the binomial and normal distribution on the data
12	Perform the Linear Correlation using R.
13	Perform the Linear Regression using R.
14	Compute the Least squares means using R.
15	Compute the Linear Least Square Regression.

Open Elective
Marketing Analytics using Python

COURSE CODE : U24ITOEP01 **COURSE CREDIT: 02**

1 credit - 15 lectures **1 lecture is 60 minutes**

Course Objectives:

- To introduce the fundamentals of marketing analytics using Python and EDA
- To Evaluate and Optimize Marketing Campaigns

Course outcome:

- Students will effectively use Python and key libraries for marketing data analysis and they will acquire data analysis skills
- Students will apply A/B testing, and optimize marketing campaigns using real-world case studies.

Unit	Topic	Hours
1	**Introduction to Marketing Analytics and Python** Introduction to Marketing Analytics: marketing analytics and its significance in modern marketing. Python for Marketing Analytics: Benefits of using Python for marketing data analysis. Brief about Python and essential libraries. **Data Acquisition and Cleaning** Data Sources: Identify common data sources for marketing campaigns (website analytics, social media data, CRM systems).Importing Data: Import data using pandas. Data Cleaning and Wrangling: Handle missing values, outliers, and data inconsistencies. **Exploratory Data Analysis (EDA)** Introduction to EDA: Understand the role of EDA in marketing analytics. Data Visualization: using seaborn and matplotlib. Descriptive Statistics: Calculate key metrics (click-through rates, conversion rates, customer acquisition cost).	15
2	**Customer Segmentation and Targeting** Customer Segmentation: Define segmentation and its benefits. Segmentation Techniques in Python: k-means clustering and RFM analysis. Analyze Customer Behavior: Study customer journeys, touchpoints, and purchase patterns. **Marketing Campaign Analysis** A/B Testing and Attribution: Learn A/B testing concepts and attribution models for campaign effectiveness. Advanced Python Libraries: Use scikit-learn for machine learning models to predict customer behavior and optimize campaigns.	15

Evaluation Pattern

Sr No	Course Assessment	Marks
1	Attendance and class participation	10
2	Presentation of Project	10
3	Develop a comprehensive marketing analytics project using Python to analyze a real-world marketing dataset and present actionable insights.	30

Resources:

Books:

- **Python for Data Analysis** by Wes McKinney (covers core Python libraries like pandas and NumPy)
- **Marketing Analytics** by Wayne L. Winston (marketing analytics fundamentals)
- **Data Science for Business** by Foster Provost and Tom Fawcett (covers data analysis techniques)
- **Hands-On Machine Learning with Scikit-Learn, Keras & TensorFlow** by Aurélien Géron (introduction to machine learning for marketing)
- **Marketing Analytics: A Practical Approach** by Stephan Maximilian Schmid (case studies and applications)

Online Resources:

- **DataCamp:** https://www.datacamp.com/tracks/marketing-analytics-with-python (Interactive tutorials and tracks for marketing analytics with Python)
- **Kaggle:** https://www.kaggle.com/ (Marketing datasets and competitions for practice)
- **Seaborn Documentation:** https://seaborn.pydata.org/ (Seaborn library documentation for data visualization)
- **Scikit-learn Documentation:** https://scikit-learn.org/ (Scikit-learn library documentation for machine learning)
- **Google Analytics Academy:** https://analytics.google.com/analytics/academy/ (Free courses on marketing analytics concepts)
- **Marketing Dive:** https://www.marketingdive.com/ (Articles and resources on marketing trends and best practices)

Skill Enhancement Course

INTRODUCTION TO SOFTWARE ENGINEERING AND PROJECT MANAGEMENT

COURSE CODE: U24IT4SEC01
1 credit - 15 lectures

COURSE CREDIT: 01
1 lecture is 60 minutes

Course Objectives:

1) To introduce and understand the fundamental principles of software engineering and project management.
2) To have a good knowledge of the responsibilities of a project manager.
3) To be familiar with the different methods and techniques used for project management.

Learning Outcome:
Learners will be able to:

1) Apply project management concepts and techniques to a project.
2) Explain project management in terms of the software development process.

Unit	Details	Lectures
I	**Introduction to Software Engineering and Project Management:** Introduction to Software Engineering: Software, Evolving role of software, Project phases and the project life cycle. **Software Process Models:** Waterfall Model, Evolutionary Process Model: Prototype and Spiral Model, Incremental Process model: Iterative approach, RAD, JAD model, Agile Development: Extreme programming, Scrum. **Software Requirement Analysis:** Types of Requirement, Feasibility Study, Requirement Analysis and Design: DFD etc. **Project Scheduling** – Introduction to Project Scheduling – Principles guide for Software Project Scheduling – Work Breakdown Structure (WBS) – Concept of Task network and Scheduling Tool: Timeline Chart (Gantt Chart) Schedule Monitoring Tools - Gantt Chart, PERT and Critical Path.	15

Reference Books:

1. Software Engineering, A Precise Approach: Pankaj Jalote, Wiley India-2010
2. Project Management, Harvey Maylor, Pearson Education, 3rd edition.
3. Projects, Prasanna Chandra, Tata McGraw Hill
4. Project Management- A Managerial Approach", Jack Meredith, Samuel J. Mantel Jr., John Wiley and Sons
5. Project Management – The Managerial Process, Clifford F. Gray& Erik W. Larson, Tata McGraw Hill

INTRODUCTION TO SOFTWARE ENGINEERING AND PROJECT MANAGEMENT PRACTICAL

COURSE CODE: U24IT4SECP01 **COURSE CREDIT: 01**

1 credit - 15 lectures **1 lecture is 120 minutes**

Sr.No.	List of Practical's
1.	Develop and write the complete problem statement for any project.
2.	Develop requirements specification for a given problem.
3.	Draw the entity relationship diagram.
4.	Develop DFD Model (level 0 and level 1 DFD) of the problem.
5.	Develop use case diagrams
6.	Develop activity diagrams to show flow from one activity to another activity.
7.	Design and implement any system through Class Diagram.
8.	Design and implement any system through Object Diagram.
9.	Design and implement any system through Sequence Diagram.
10.	Design and implement any system through Collaboration Diagram
11.	Write test cases to validate requirements of assigned projects.
12.	Use a project management tool such as Use Timeline charts or Microsoft project or Gantt project to track progress of the assigned project.
13.	Schedule all the activities and sub-activities using the PERT charts
14.	Schedule all the activities and sub-activities using the CPM charts
15.	Design the Work Breakdown Structure for the system to be automated.

Ability Enhancement Course

Understanding Basic Forms of English Literature-2

[Syllabus for SY B.Com (General), SY B.Com.(B.A.F/B.B.I./B.F.M.), SY B.Sc.(Computer/I.T./E.V.S./Packaging Technology),SY BMS and SY BAMMC]

COURSE CODE: U24IT4AEC01 **COURSE CREDIT: 02**

1 credit - 15 lectures **1 lecture is of 60 minutes**

Course Objectives:

1. To develop creative skills and narrative skills through close reading and appreciation of literary texts
2. To cultivate appreciation of language as an artistic medium and to help students to understand the performative aspect of the literary work.

Course Outcomes:

1. Learner will be able to utilize the literary characteristics of the work of literature for professional development
2. Learner will be able to express effectively after understanding the performative aspect of the literary work

Module-1 Study of Short Stories (Total 15 Lectures)

1.O'Henry :*The Last Leaf*
2.Doris Lessing: *The Habit of Loving*
3. Ruskin Bond: *The Night Train at Deoli*
4.R.K.Narayan: *An Astrologer`s Day*
5.SudhaMurty: *In Sahyadri Hills-A Lesson in Humility*

Module-2 Study of Drama (Total 15 Lectures)

A Doll's House by Henrik Ibsen

SCHEME OF EXAMINATION

The scheme of examination shall be divided into two parts:

- **Internal assessment 40% i.e.20 marks**
- **Semester end examination 60% i.e.30 marks**

- **A) Internal Assessment: Total 20 Marks**

1	*Continuous Evaluation	10 Marks
2	Role Plays / Group Discussion/Group Presentation	05 Marks
3	Attendance	05 Marks

**Application oriented activities will be conducted*

B) Semesterend examination30marks

Question no.1	A) OR B) Descriptive Question Module no.1	10 Marks
Question no.2	A) OR B) Descriptive Question Module no.2	10 Marks
Question no.3	A) Short Notes 2 out of 3 Module no.1 (5 Marks each) OR B) Short Notes 2 out of 3 Module no.2 (5 Marks each)	10 Marks

Passing Criteria: 40% in Internal as well as in External (i.e.8 Marks in Internal exam of 20 marks and 12 marks in External exam of 30 marks respectively)

***

SIES (Nerul) College of Arts, Science and Commerce (Autonomous)

CC- National Service Scheme

Sr. No.	Heading	Particulars
1	Title of the course	National Service Scheme (NSS)
2	Semesters	IV
3	Level	UG
4	Pattern	03 years & 06 semesters CBGS
5	To be implemented from	From Academic year 2024-25 in a progressive manner

National Service Scheme (NSS) Studies Paper-III **Course Code:**
Course Type: Co-curricular
Total Lectures per week (1 Period is 60 minutes) : **Credits: 4**

Unit No.	Topic	No. of Lectures required
Unit-I	**Gender sensitivity and woman empowerment:** • Concept of gender- causes behind gender-related problems • Meaning of empowerment- schemes for woman empowerment in India	5
Unit-II	**Special campaigning activity:** • Concept of camp: Identification of community problems- importance of group living- team building- adaption of village- planning for camp- pre, during and post campaigning activities	10
Unit-III	**Disaster management:** • Disaster its meaning- its types and methods of preparedness • Basic principles of disasters management, Disaster Management cycle	5
Unit-IV*	**Community Welfare field work/ Training** • Community work in adopted village • Disaster management training • social awareness, street play, creative dance etc.	40
	Total Lectures	**60**

Course Outcomes (CO):

- Upon successful completion of this course, students will be able to:
  - CO1: Analyse the concept of gender and its impact on women's lives.
  - CO2: Advocate for women's empowerment and evaluate existing initiatives in India.
  - CO3: Design and implement a community campaign to address a specific social issue.
  - CO4: Explain the different types of disasters and essential preparedness methods.
  - CO5: Participate effectively in community fieldwork activities, including disaster management training and social awareness campaigns.

Learning Outcomes (LO):

- Define gender and differentiate it from sex. Analyse the root causes of gender-related problems in society and explain the concept of women's empowerment and its significance.

NERUL NAVI MUMBAI 400 706.

- Define the concept of a social campaign and its purpose. Identify a pressing social issue within a specific community and explain the importance of group work and team building for successful campaigns.

- Define disaster and differentiate between various types (natural, human-made). Explain methods for disaster preparedness in different scenarios and analyse the basic principles of disaster management and its cyclical nature.
- Apply disaster management training in a simulated or real-world scenario.
- Develop and deliver creative awareness campaigns using street plays, dance, or other artistic mediums.

Unit	Topics		
Unit 1	**Gender sensitivity and woman empowerment**		
Unit 2	**Special campaigning activity**		
Unit 3	**Disaster management**		
Unit 4	**Community Welfare field work/ Training**		

		Semester – IV	
Course Name: National Service Scheme (NSS)		**Course Code:**	
Course Type		**Co-curricular**	
Focuses on		**Skill Development**	
Caters to		**Local, National, Global**	
Total Lectures per week (1 Period is 60 minutes)		2	
Credits		4	
Evaluation System		**Hours**	**Marks**
	Continuous Evaluation	**60**	**50**
		Total Marks	**100**

***For the Unit III – Students will be assigned Community Activity as per availability. They will be divided in a group of 20 and will be engaged for 20 hrs.**

The scheme of Examination shall be divided as follows.

- **Continuous Evaluation Pattern**

Description	Marks
60 hours activity related work such as • Attending lectures • Field work • Maintenance of work record	30
Completion of Training	20
Viva-voce by faculty in charge/ Internal Test	20
Poster/ Presentation	20
Project Report	10
Total	**100**

References:

31. National Service Scheme Manual (Revised) Government of India, Ministry of Youth Affairs and Sports, New Delhi
32. National Service Scheme Manual University of Mumbai
33. National Service Scheme Manual for NSS District Coordinators National Service Scheme Cell, Dept. of Higher and Technical Education, Mantralaya
34. Rashtriya Seva Yojana Sankalpana Prof. Dr. Sankey Chakane, Dr. Pramod Diamond Publication, Pune
35. Annual Report of National Service Scheme (NSS) Dept. of Higher and Technical Education Mantralaya. Dept. of Higher and Technical Education Mantralaya.
36. Training Programme on National Programme scheme, TISS.
37. Orientation Courses for N.S.S. Programme officers, TISS.
38. Social Problems in India, Ram Ahuja.
39. National Service Scheme in India : A Case Study of Karnataka, M. B. Dishad, Trust Publications,2001
40. http://www.thebetterindia.com/140/national-service-scheme-nss/
41. http://en.wikipedia.org/wiki/national-service-scheme
42. http://nss.nic.in/adminstruct
43. http://nss.nic.in/propexpan
44. http://nss.nic.in
45. http://socialworkness.org/about.html

SIES (Nerul) College of Arts, Science and Commerce (Autonomous)

Co-curricular Course (CC)Department of Lifelong Learning and Extension

Sr. No.	Heading	Particulars
1	Title of the course	Social Work Performance
2	Semesters	IV
3	Level	UG
4	Pattern	03 years & 06 semesters CBGS
5	To be implemented from	From Academic year 2024-25 in a progressive manner

DLLE - Social Work Performance

COURSE CODE: U24CC4DLLE03 COURSE CREDIT: 04

1 credit - 15 lectures **1 lecture is 60 minutes.**

Course Objectives:

1. Students will acquire knowledge on Importance of social work and its benefits for their careers.
2. Learners will develop an understanding about the application of group behaviour and approaches in group work
3. Students will gain knowledge and will develop communication skills while spreading awareness on various government schemes.
4. Students will develop skills of communication while doing the surveillance, interview, discussion while working on impactful projects addressing various social issues.

Learning outcome:

1. Learners will be able to apply their knowledge and become socially responsible citizen.
2. Understanding group behaviour and social attitude will help students to work with social groups in a smooth manner and achieve the goals
3. It will enable learners to develop communication skills while explaining government schemes to the people in society in a simpler manner.
4. Conducting various surveys and interviews will help students to develop interaction skills

Module No.	Syllabus	No of Hrs.
1	Importance of social work. History & philosophy of social work. Scope for a career in social work. Contribution of self help groups in society like gruh udyog/ mahila bachat gat (savings group) etc. Skit/street play/ various creative tools for social awareness	15
2	Groups- Definition, Types & Relevance Group Behavior and Social Attitude Group Work as a Method of Social Work Practice & Its Scope Importance of Community networking/ Social networking Team Building activities	15
3	Spreading Awareness and preparing Reports on various Government Schemes - Beti bachao,Beti padhao /Ayushman bharath/Swachh bharat abhiyan/Pradhan Mantri awas yojana /Digital india/ Sensitivity towards environment education/ Health and mental stability or any other government scheme.	15
4	Surveillance / Interview/ Discussion /Survey and detailed Report on the same	15
Total Lectures		**60**

SCHEME OF EXAMINATION
Total Marks: 100
Continuous evaluation pattern.

Evaluation Criteria	Marks
MCQ/ Class test	20
Skit/ Short film/ content development in the form of posters, leaflets or any other form.	20
Activities performed for any of the projects 20-25 hours per semester and detail report/presentation	20
Surveillance / Interview/ Discussion /Survey and detailed Report/Presentation and viva voce	20
Field visit/ NGO visit / Community visit and report	20
Total	**100**

References:

- Toseland, R.W., & Rivas, R.F. (2009). An introduction to group work practice (6th ed). Boston: Pearson/Allyn and Bacon.
- Trecker, H. (1972). Social group work, principles and practices. New York: Association
- Press.
- Wilson, G., & Ryland, G. (1949). Social group work practice: The creative use of the social process. Boston: Houghton Mifflin.
- Corsini, R. J. (2004). Current Psychotherapies with Case Studies, Hawaii: Wadsworth Publications
- Konopka, G. (1983). Social Group Work: A Helping Process (3rd Edition). New Jersey: Prentice Hall InternationalPathak, S. H. (1981).
- Social Welfare: An Evolutionary and Development Perspective, New Delhi: MacMillan Publications
- Payne, M. (2015). Modern social work theory. New York, NY: Oxford University Press.
- Skidmore, R. A., & Thackeray, M. G. (1982). Introduction to social work. Englewood Cliffs, NJ: Prentice Hall.
- https://www.mudlle.ac.in

SIES (Nerul) College of Arts, Science and Commerce (Autonomous)

Co-curricular Course (CC) SPORTS

Sr. No.	Heading	Particulars
1	Title of the course	**PSYCHOLOGY IN SPORTS AND ADAPTED PHYSICAL EDUCATION**
2	Semesters	IV
3	Level	UG
4	Pattern	03 years & 06 semesters CBGS
5	To be implemented from	From Academic year 2024-25 in a progressive manner

PSYCHOLOGY IN SPORTS AND ADAPTED PHYSICAL EDUCATION

COURSE CODE:U24CC4SP03 CREDIT: 04
1 Credit: 15 lectures 1 lecture: 60 minutes

Course objective:

1. To make the students understand the relationship between leadership throughphysical activity and sports.
2. To learn about sports training and its principles.
3. To make the students understand the importance of warming up, limberingdown in sports training.
4. To learn the importance of wellness.
5. To learn the different steps used in first aid – PRICE.

Course outcome: (After completion of the course the students will understand)

1. To relate leadership through physical activity and sports.
2. The issues related to adolescent behavior and team cohesion in sports.
3. The concept and principles of sports training.
4. The concept of training load, warming up, and limbering down in sports training and their types, methods, and importance.
5. The importance and components of wellness.
6. The different steps used in first aid – PRICE.

Sr.no	Semester 4 Syllabus	No. of lectures
	Module 1: Psychology and sports	15
1) 2) 3) 4)	Definition and importance of psychology in physical education and sports. Development characteristics at different stages of development. Adolescent problems and their management. Team cohesion and sports.	
	Module 2: Training and doping in sports	15
1) 2) 3) 4)	Concept and principles of sports training. Training load: Overload, adaptation and recovery. Warming up and limbering down - types method and importance. Concept of skill, technique, tactics and strategies.	

	Module 3: Physical education and sports for children withspecial needs	15
1) 2) 3) 4)	Concept of disability and disorder. Types of disability, its causes and nature. (intellectual disability, physical disability) Disability etiquettes. Aims and objective of adaptive physical education.	
	Module 4: Physical fitness, Health and wellness	15
1) 2) 3) 4)	Meaning and importance of wellness, health and physical fitness. Components/ Dimensions of wellness, health and physical fitness. Traditional sports and regional games for promoting wellness.Introduction of first aid- PRICE.	
	Total lectures	60

Scheme of examinationTotal Marks: 100
Continuous evaluation pattern.

Evaluation Criteria	**Marks**
Sports training/practice/coaching sessions on a regular basis (choose any game/sport).	35
Participation in the organisation of sporting events, workshops, seminars, andso on	20
Participation/performance in sports events at the District, State, National, International, University, and Intercollegiate levels, intra college sports activities	15
Performance in practical conducted during lectures/ timely submission ofassignments	10
Performance in practical conducted during lectures/ timely submission ofassignments.	10
Viva voce	10
Total	**100**

SIES (Nerul) College of Arts, Science and Commerce (Autonomous)
Department of Information Technology

Sr. No.	Heading	Particulars
1	**Title of the course**	SIESITDevClub-BackToSociety
2	**Semesters**	IV
3	**Level**	UG
4	**Pattern**	03 years and 6 semesters
5	**To be implemented from**	**From academic year 2024-2025 in a progressive manner**

SIESITDevClub-BackToSociety

COURSE CODE: U24CC4DC02 **COURSE CREDIT: 04**

1 credit - 15 lectures

1 lecture is 60 minutes

Course Objectives:

1. Helps gain insight into the domain of their choice by practical implementation
2. Provide an opportunity for sharing their knowledge with their peers
3. Foster leadership, teamwork, and organizational abilities through real-world event management scenarios.
4. Inculcate social values and to develop social skills and empathy.

Course Outcome:

On completing the course, the student will be able to:

1. Understand the practical aspects of their technological domain better.
2. Exhibit proficiency in a particular technology by developing projects
3. Create technical solutions for real world problems.
4. The interactions or conversations elicited by these activities helps students build relationships, understand different perspectives, and engage other cultures.

Activities

A Student can select any one of these activities at the start of the academic year for the current semester.

1. **Student Mentoring/Teaching in an NGO**
   A Student can select a FY student and mentor them for learning programming languages. It is mandatory to finish 30 hours of training. Records for which should be maintained.
2. **Develop and Present a new Research Based Project**
   A student can develop his own project which can be of a Technology of his choice. The project should be substantial to meet the credit requirements.
3. **Contribute to Open Source Projects**
   Contributing to open-source projects is an excellent way to build your computer science skills in a practical and impactful way. Open source is a software that is available to people for free, where they can edit and distribute projects, allowing for collaboration to improve existing projects.
4. **Creating a Website or Desktop Application**
   A Student can help the organisation by Automating/Updating any process in the College.
5. **Conducting Training**
   A Student has to conduct atleast one training for Student or Staff under the SIESITDevClub.

General Policy Guidelines for Co-curricular activities

1. The project topic should be approved by the Teacher In-charge.
2. The student mentoring should be conducted beyond college hours and records should be maintained for the same.
3. The Technology selected should be advanced and not part of the curriculum.
4. The student should submit proof of their contribution made to open source projects.
5. The student is expected to submit a report for the activities alongwith prior approval letter from faculty incharge.
6. A student should work with an NGO/Student for minimum 30 hours to earn a credit of 4.
7. The student will fill a timesheet on the day of their engagement with the NGO/STUDENT.
8. The Timesheet should have a signature and seal from the NGO/STUDENT. Additional sheets can be attached if the number of hours are extensive.
9. The Student is expected to write a report based on their experiences while working on the NGO/STUDENT. The report format is given in the Annexures.

10. The College will provide the certification letter introducing the student to the NGO. The CEP Co-ordinator should evaluate the report and assign marks accordingly.
11. The Report should contain details about the number of hours completed, the activities performed and the take away from the Programme. It is mandatory to submit geo-tagged photos of the activity performed at the NGO/STUDENT.

Rubric for Continuous Evaluation of Students

The minimum criteria for the Activity is:

Activity Selected	Minimum Criteria
Student Mentoring	1-1 Mentoring for 30 hrs
Creating a Website/Project	1 Project
Learning a new Technology	1 Technology 30 hrs
Develop and Present a new Research Based Project	Innovative Projects
Contribute to Open Source Projects	1 Contribution

The student will be awarded 50 marks for the Activity and 20 marks for the report.

Activity Selected	Marks
Project/Activity	50
Report	30
Presentation	20

ANNEXURE
CERTIFICATION LETTER

Date: _

To,

The Supervisor,

Madam / Sir,

This is to certify that Ms./ Mr. , who is volunteering with your NGO, is a student from SIES(Nerul) College of Arts,Science and Commerce (Autonomous), Mumbai. She / He studies in and her / his Roll. No. is .
Her / His C.E.P. service duration is and the minimum field work hours requirement is . We are grateful to your organization for accepting this student as a volunteer in your organization. We look forward to your mentoring and monitoring so as to make this experience meaningful for her / him as well as fruitful for your target group.

Please contact us as and when the need arises. Thank you,

Principal **CC Co-ordinator**

SPECIMEN REPORT WRITING SHEET (CC)

Month: Jan; Feb; Mar; Apr; May; Jun; Jul; Aug; Sep; Oct; Nov; Dec

No. of hours completed:

Service Activities (Nature of service rendered): (20 marks)

Reflections drawn from the service-activity: (10 Marks)

- Observations
- Experiences
- Feelings
- Learnings
- Visuals(Geo-tagged Images), with captions, date and venue

Report Evaluated by (to be filled by College CC Coordinator):

Signature

Date

Revised Schemes of Examination
Faculty of Science
(Undergraduate Programme)

SCHEME OF EXAMINATION (for 100 marks 3 credits)

The scheme of examination shall be divided into two parts:

- **Internal assessment 40% i.e.40 marks**
- **Semester end examination 60% i.e.60 marks**

(A)Internal Assessment 40 marks

Description	Marks
An internal test of 20 marks Q.1 a. Multiple choice Questions - 05 Marks b. True/False - 05 Marks Q.2. Attempt 2 questions out of 3 questions (5 marks each) - 10 Marks	20
Presentation/Case Studies/Assignments	15
Attendance and Class Participation	5
Total	40

B) Semester End examination 60 marks

PAPER PATTERN

Duration: 2 hours	
Total Marks:60	
Q.1 15 marks OR 15 marks (7 and 8 marks)-Unit 1	15
Q.2 15 marks OR 15 marks (7 and 8 marks)-Unit 2	15
Q.3 15 marks OR 15 marks (7 and 8 marks)-Unit 3	15
Q.4 15 marks-attempt any 3 out of 6 (from Unit 1, Unit 2, Unit 3)	15
Total	60

Passing criteria: Minimum 40% in Internal (16 out of 40) and 40% (24 out of 60) in semester-end examination.

SCHEME OF EXAMINATION (for 50 marks ,2 credits)

The scheme of examination shall be divided into two parts:

- **Internal assessment 40% i.e.20 marks**
- **Semester end examination 60% i.e.30 marks**

(A)Internal Assessment 20 marks(Theory)

Description	Marks
An internal test of 10 marks Q.1 Multiple choice Questions/True or False - 05 Marks Q.2. Attempt 1 questions out of 2 questions (5 marks each) - 05 Marks	10
Presentation/Case Studies/Assignments	05
Attendance and Class Participation	05
Total	20

OR

(A)Internal Assessment 20 marks(Practical)

Description	Marks
Practical Question	10
Journal	05
Viva	05
Total	20

B) Semester End examination 30 marks

PAPER PATTERN

Duration: 1 hour	
Total Marks:30	
Q.1 15 marks OR 15 marks (7 and 8 marks)-Unit 1	15
Q.2 15 marks OR 15 marks (7 and 8 marks)-Unit 2	15
Total	30

OR

PAPER PATTERN(1 credit Theory)

Duration: 1 hour	
Total Marks:30	
Q.1 15 marks OR 15 marks (7 and 8 marks)-Unit 1	15
Q.2 15 marks OR 15 marks (7 and 8 marks)-Unit 1	15
Total	30

Passing criteria: Minimum 40% in Internal (08 out of 20) and 40% (12 out of 30) in semester-end examination.

SCHEME OF PRACTICAL EXAMINATION (for 50 marks , 1 credit)

The scheme of examination shall be divided into two parts:

- **Internal assessment 40%, i.e. 20 marks**
- **Semester end examination 60%, i.e. 30 marks**

(A) Internal Assessment (20 marks)

Description	Marks
Practical Internal Assessment	10
Viva	05
Journal	05
Total	20

B) Semester end examination(30 marks)

PAPER PATTERN

Duration: 1.5 hours	
Total Marks:30	
Q.1 Practical Q1	15
Q.2 Practical Q2	15
Total	30

Passing Standards

The learners to pass a course shall have to obtain a minimum of 40% marks in each head of passing, consisting of Internal Assessment and Semester End Examination. The learners shall obtain a minimum of 40% marks (i.e. 16 out of 40 or 8 Out of 20) in the Internal Assessment and 40% marks in the Semester End Examination (i.e. 24 Out of 60 or 12 Out of 30) separately, to pass the course and a minimum of Grade D, wherever applicable, to pass a particular semester. A learner will be said to have passed the course if the learner passes the Internal Assessment and Semester End Examination together.