AC -24/11/2023
Item No. - 6.2 (N)

As Per NEP 2020

University of Mumbai

Title of the program

A- U.G. Certificate in Information Technology
B- U.G. Diploma in Information Technology
C- B.Sc. (Information Technology)
D- B.Sc. (Honours) in Information Technology
E- B.Sc. (Honours with Research) in Information Technology

Syllabus for Semester –

Sem I & II

Ref: GR dated 20th April, 2023 for Credit Structure of UG

(With effect from the academic year 2024-25 Progressively)

University of Mumbai

Syllabus for Approval

(As per NEP 2020)

Sr. No.	Heading	Particulars	
1	**Title of program** **O. SU-503A**	A	Title of the program U.G. Certificate in Information Technology
	O. SU-503B	B	U.G. Diploma in Information Technology
	O. SU-503C	C	B.Sc. (Information Technology)
	O. SU-503D	D	B.Sc. (Honours) in Information Technology
	O. SU-503E	E	B.Sc. (Honours with Research) in Information Technology
2	**Eligibility** **O.SU-504A**	A	10+2 (A learner must have completed HSC or equivalent with 45% of aggregate for open category and 40% of aggregate in case of reserved candidates in one attempt with Mathematics and/or Statistics as one of the subjects **(OR)** Passed Equivalent Academic Level 4.0 with CGPA equivalent to 45% for open category and 40% in case of reserved candidates with Mathematics and/or Statistics as one of the subjects
	O.SU-504B	B	Under Graduate Certificate in Information Technology Academic Level 4.5
	O.SU-504C	C	Under Graduate Diploma in Information Technology Academic Level 5.0
	O.SU-504D	D	Bachelors of Science in Information Technology with minimum CGPA of 7.5 Academic Level 5.5
	O.SU-504E	E	Bachelors of Science in Information Technology with minimum CGPA of 7.5 Academic Level 5.5

3	**Duration of program** **R. SU-506**	A	One Year
		B	Two Years
		C	Three years
		D	Four years
		E	Four years
4	**Intake Capacity** **R. SU-507**		
5	**Scheme of Examination** **R. SU-508**	NEP 40% Internal 60% External, Semester End Examination Individual Passing in Internal and External Examination	
6	**Standards of Passing** **R.SU-509**	40% in each component	
7	**Sem. I & II Credit Structure** **R: SU-510A** **R: SU-510B** **Sem. III & IV Credit Structure** **R: SU-510C** **R: SU-510D** **Sem. V & VI Credit Structure** **R: SU-510E** **R: SU-510F**	Attached herewith	
8	**Semesters**	A	Sem I & II
		B	Sem I, II, III& IV
		C	Sem I, II, III, IV, V & VI
		D	Sem I, II, III, IV, V, VI, VII & VIII
		E	Sem I, II, III, IV, V, VI, VII & VIII
9	**Program Academic Level**	A	4.5
		B	5.0
		C	5.5
		D	6.0
		E	6.0
10	**Pattern**	Semester	
11	**Status**	New	
12	**To be implemented from Academic Year Progressively**	From Academic Year: 2023-24	

Sign of Chairperson
Dr. Mrs. R. Srivaramangai
Ad-hoc BoS (IT)

Sign of the
Offg. Associate Dean
Dr. Madhav R. Rajwade
Faculty of Science & Technology

Sign of Offg. Dean,
Prof. Shivram S. Garje
Faculty of Science & Technology

Preamble

1) Introduction

Information technology (IT) continues to be a dynamic and rapidly evolving field with high demand for skilled professionals. The demand for IT workers is driven by various factors, and the landscape may have evolved over a period of time. NEP envisages the multidisciplinary approach thus making IT much more applicable in all fields of life. This facilitates multi-institutional mobility of the students within India as well as abroad thus making the students attain different proficiency levels right from certificate to B.Sc Honours with Research. This new syllabus under NEP will thus enables the students for higher education, research and career in the field of IT

2) Aims and Objectives

The aims and objectives of a Bachelor of Science (B.Sc) program in Information Technology (IT) generally revolve around providing students with a comprehensive understanding of the principles, technologies, and applications within the field of information technology. The entire program collectively aim to produce graduates who are well-rounded IT professionals, capable of contributing to the design, development, and management of information technology systems in various industries. The specific details of the curriculum may vary among institutions offering B.Sc in Information Technology programs.

3) Learning Outcomes

The B. Sc. (Information Technology) Programme shall prepare and enable the graduates to:

- ✓ Demonstrate proficiency in programming languages, Data structures, Design and implement software solutions with their technical competence
- ✓ Analyze user requirements and design effective IT systems or applications.
- ✓ Apply system analysis and design methodologies to address complex business challenges.
- ✓ Acquire the skills of Database Management, Networking and Security, Web Technologies
- ✓ Plan, execute, monitor, and control IT projects.
- ✓ Analyze and solve complex IT problems using critical thinking skills.
- ✓ Apply concepts of artificial intelligence, machine learning, cloud computing, and IoT
- ✓ Effectively communicate technical information both orally and in writing.

4) Any other point (if any)

PROGRAMME SPECIFIC OUTCOMES (PSO)

On completing the B. Sc.(Information Technology) at the University of Mumbai, the graduates shall be able to

- Technical Proficiency:
  - Demonstrate a comprehensive understanding of fundamental concepts, principles, and technologies in information technology.
  - Apply programming and software development skills to design and implement IT solutions.
- System Thinking and Analysis:
  - Apply system analysis and design methodologies to analyze and address

complex problems.
    - Design and develop IT systems that meet user requirements and organizational needs.
- Database Management:
    - Design, implement, and manage relational databases to store and retrieve information effectively.
    - Demonstrate proficiency in using database management systems and querying languages.
- Networking and Security:
    - Understand and implement computer networks, protocols, and security measures.
    - Evaluate and implement security solutions to protect information systems.
- Web Technologies:
    - Develop web applications using a variety of technologies and programming languages.
    - Design and create user interfaces that adhere to web design principles.
- Project Management:
    - Apply project management principles to plan, execute, and deliver IT projects.
    - Demonstrate the ability to work effectively within project teams.
- Emerging Technologies:
    - Stay informed about and adapt to emerging technologies in the IT field.
    - Apply concepts of artificial intelligence, machine learning, cloud computing, and IoT to solve real-world problems.
- Critical Thinking and Problem-Solving:
    - Analyze and solve complex IT problems using critical thinking skills.
    - Apply problem-solving strategies to troubleshoot and resolve technical issues.
- Communication Skills:
    - Effectively communicate technical information to diverse audiences, both orally and in writing.
    - Collaborate with team members and stakeholders to achieve common goals.
- Ethics and Professionalism:
    - Demonstrate ethical behavior and professionalism in all aspects of the IT profession.
    - Adhere to ethical standards and legal considerations related to information technology.

5) Credit Structure of the Program (Sem I, II, III, IV, V and VI)
Under Graduate Certificate in Information Technology

(Credit Struture Sem I & II)

	R: _____A									
Level	**Semester**	**Major**		**Minor**	**OE**	**VSC, SEC (VSEC)**	**AEC, VEC, IKS**	**OJT, FP, CEP, CC, RP**	**Cum. Cr. / Sem.**	**Degree/ Cum. Cr.**
		Mandatory	**Electives**							
	I	**6**		**-**	**2+2**	**VSC:2, SEC:2**	**AEC:2, VEC:2, IKS:2**	**CC:2**	**22**	
		• Programming with C - 02 • Database Management Systems - 02 • Practical I - 02				**VSC :** Combinational and Sequential Design- 02 **SEC – 02** Office Tools for Data Management **OR** Fundamentals of Telecommunication Systems				**UG Certificate 44**
	R: _____B									
	II	**6**		**2**	**2+2**	**VSC:2, SEC:2**	**AEC:2,VEC:2**	**CC:2**	**22**	
		• OOPs with C++ - 02 • Web Designing - 02 • Practical II - 02				• VSC : Assembly Language Programming – 02 • SEC: 02 • Web Programming **OR** • PL/SQL				
	Cum Cr.	**12**	**-**	**2**	**8**	**8**	**10**	**4**	**44**	
Exit option: Award of UG Certificate in Major with 40-44 credits and an additional 4 credits core NSQF course/ Internship OR Continue with Majorand Minor										

Under Graduate Diploma in Information Technology

Credit Structure (Sem. III & IV)

	R: _____C									
Level	**Semester**	**Major**		**Minor**	**OE**	**VSC, SEC (VSEC)**	**AEC, VEC, IKS**	**OJT, FP, CEP, CC, RP**	**Cum. Cr. / Sem.**	**Degree/ Cum. Cr.**
		Mandatory	**Electives**							
	III	**8**		**4**	**2**	**VSC:2**	**AEC:2,**	**FP :2 CC:2**	**22**	
		• Python Programming -02 • Python Programming Practical-02 • Data Structures-02 • Data Structures Practical-02				VSC : Operating Systems-02				**UG Diploma 88**
	R: _____D									
	IV	**6**		**4**	**2**	**SEC:2**	**AEC: 2**	**CEP : 2 CC: 2**	**22**	
		• Core Java - 02 • Core Java Practical-02 • Software Engineering-02 • Software Engineering Practical-02				• Computer Graphics and Animation -02 **OR** • Mojo-02 **OR** • Mobile Programming-02				
	Cum Cr.	28		10	12	12	14	12	88	
Exit option; Award of UG Diploma in Major and Minor with 80-88 credits and an additional 4 credits core NSQF course/ Internship OR Continuewith Major and Minor										

B.Sc. (Information Technology)

Credit Structure (Sem. V & VI)

	R: _____E								
Level	**Semester**	**Major**		**Minor**	**OE**	**VSC, SEC (VSEC)**	**AEC, VEC, IKS**	**OJT, FP, CEP, CC, RP**	**Cum. Cr. / Sem.**	**Degree/ Cum. Cr.**
		Mandatory	**Electives**							
	V	**10**	**4**	**4**		**VSC: 2**		**FP/CEP:2**	**22**	
		• Advanced Web Programming-02 • Advanced Web Programming Practical-02 • Business Intelligence-02 • Business Intelligence Practical-02 • Software Project Management-02	• Linux Administration-02 • Linux Administration Practical-02 OR • EARN-02 • EARN Practical-02 OR • Enterprise Java-02 Enterprise Java Practical-02			• Advanced Mobile Programming-02		FP: Project Dissertation-02	22	**UG Degree 132**
	R: _____F									
	VI	**10**	**4**	**4**				**OJT:4**	**22**	
		• Security in Computing -02 • Security in Computing Practical-02 • AI and ML-02 • AI and ML Practical-02 • Software Quality Assurance-02	• Enterprise Networking-02 • Enterprise Networking Practical-02 OR • Principles of GIS-02 • Principles of GIS Practical-02					• OJT: Project Implementation-04		
	Cum Cr.	**48**	**8**	**18**	**12**	**14**	**14**	**18**	**132**	
Exit option: Award of UG Degree in Major with 132 credits OR Continue with Major and Minor										

[Abbreviation - OE – Open Electives, VSC – Vocation Skill Course, SEC – Skill Enhancement Course, (VSEC), AEC – Ability Enhancement Course, VEC – Value Education Course, IKS – Indian Knowledge System, OJT – on Job Training, FP – Field Project, CEP – Continuing Education Program, CC – Co-Curricular, RP – Research Project]

SEMESTER I

Syllabus
B.Sc. (Information Technology)
(Sem.- I)

Major Courses

Name of the Course: Programming with C

Sr.No.	Heading	Particulars	
1	**Description the course : Including but Not limited to:**	This course allows the students to understand the fundamental concepts of programming which will allow them to program applications in C.	
2	**Vertical :**	Major	
3	**Type :**	Theory	
4	**Credits :**	2 credits (1 credit = 15 Hours for Theory in a semester)	
5	**Hours Allotted :**	30 Hours	
6	**Marks Allotted:**	50 Marks	
7	**Course Objectives(CO):** CO 1. To understand the concepts of computer programming. CO 2. To understand syntax and semantics of the C language CO 3. To understand loops and decision making in programming. CO 4. To understand the use of arrays, structures, union and pointers. CO 5. To understand functions for modular code and handle errors.		
8	**Course Outcomes (OC):** OC 1. Students can build flowcharts, pseudocode for C programs. OC 2. Students can use C language syntax and semantics in their programs. OC 3. Students can implement loops and decision making. OC 4. Students can use different types of data structures in their programs. OC 5. Students can write well-structured, readable, and maintainable C code and debug programs if there are any errors.		
9	**Modules:-** **Module 1:**		
	1. Introduction: Algorithms, History of C, Structure of C Program. Program Characteristics, Compiler, Linker and preprocessor, pseudo code statements and flowchart symbols, Desirable program characteristics. Program structure. Compilation and Execution of a Program, C Character Set, identifiers and keywords, data types and sizes, constants and its types, variables, Character and character strings, typedef, typecasting **2. Type of operators**: Arithmetic operators, relational and logical operators, Increment and Decrement operators, assignment operators, the conditional operator, Assignment operators and expression, Precedence and order of Evaluation Block Structure, Initialization, C Preprocessor	**15 Hrs**	
	Module 2:		

	1. Control Flow: Statements and Blocks, If-Else, Else-If, Switch, Loops- While and For Loops Do-while, Break and Continue, Goto and Labels **2.** Basics of functions. User defined and Library functions **3.** Pointer and Addresses, Pointer and Function Arguments, Pointer and Arrays. **4.** User-defined data types- structure and union	**15 Hrs**
10	**Books and References:** 1. C Programming Language, Brian W. Kernighan, Dennis M. Ritchie , 2017 2. Let Us C, Yashvant Kanetkar, BPB Publications,2008. 3. Mastering in C, K. R. Venugopal and Sudeep R. Prasad, Tata McGraw-Hill Publications. 4. A Computer Science –Structure Programming Approaches using C, Behrouz Forouzan, Cengage Learning. 5.. Schaum's outlines Programming with C, Byron S. Gottfried, Tata McGraw- Hill Publications. 6. Basics of Computer Science, by Behrouz Forouzan, Cengage Learning. 7. Programming Techniques through C, by M. G. Venkateshmurthy, Pearson Publication.	
12	**Internal Continuous Assessment: 40%**	**Semester End Examination: 60%**
13	**Continuous Evaluation through:** Class test of 1 of 15 marks Class test of 2 of 15 marks Average of the two: 15 marks Quizzes/ Presentations/ Assignments: 5 marks Total: 20 marks	**Format of Question Paper: External Examination (30 Marks)– 1 hr duration**
14	**Format of Question Paper:** (**Semester End Examination : 30 Marks. Duration:1 hour)** Q1: Attempt any two (out of four) from Module 1 (15 marks) Q2: Attempt any two (out of four) from Module 2 (15 marks)	

Name of the Course: Database Management System

Sr.No.	Heading	Particulars	
1	**Description the course : Including but Not limited to:**	The objective of the course is to present an introduction to fundamentals of database management systems, with an emphasis on how to organize, maintain and retrieve - efficiently, and effectively -information from a DBMS.	
2	**Vertical :**	Major	
3	**Type :**	Theory	
4	**Credits:**	2 credits (1 credit = 15 Hours for Theory)	
5	**Hours Allotted :**	30 Hours	
6	**Marks Allotted:**	50 Marks	
7	**Course Objectives(CO):** CO 1. To make students aware fundamentals of database system. CO 2. To give idea how ERD components helpful in database design and implementation. CO 3. To experience the students working with database using MySQL. CO 4. To familiarize the student with normalization, database protection and different DDL, DML, DQL, DCL Statements CO 5. To make students aware about importance of protecting data from unauthorized users.		
8	**Course Outcomes (OC):** OC 1. Define and describe the fundamental elements of relational database management system. OC 2. To relate the basic concepts of relational data model, entity-relationship model, relational database OC 3. Design ER-models to represent simple database application scenarios. OC 4. Understand the normalization and its role in the database design process OC 5. Transform the ER-model to relational tables, populate relational database and formulate SQL OC 6. Understand basic database storage structures and access techniques: file and page organizations, indexing methods and hashing.		
9	**Modules:-** **Module 1:**		
	1. Introduction to Databases and transactions What is database system, purpose of database system, view of data, relational databases, database architecture, transaction management **2. Data Models** The importance of data models, Basic building blocks, Business rules, The evolution of data models, Degrees of data abstraction **3. Database Design, ER-Diagram** Database design and ER Model: overview, ER-Model, Constraints, ER-Diagrams, ERD Issues, Codd's rules, Relational Schemas **4. Relational database model** Logical view of data, keys, integrity rules		**15 Hrs**

	Module 2:	
	1. Database Design theory and normalization: Basics of functional dependencies and normalization for relational databases. Relational database design and further dependencies. **2. SQL, Indexing:** Introduction to SQL, Complex queries, triggers, views, joining database tables and schema modification. Query Processing and optimization. File structure, hashing and indexing **3. Transaction management and concurrency control and recovery:** Introduction to transaction processing concepts and theory. Concurrency control technique. Database recovery technique	. **15 Hrs**
10	**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	
11	**Reference Books** 1. "Database System Concepts", Abraham Silberschatz, Henry F. Korth, S. Sudarshan, McGraw Hill, 2017 2. "MySQL: The Complete Reference", Vikram Vaswani , McGraw Hill, 2017 3. "Learn SQL with MySQL: Retrieve and Manipulate Data Using SQL Commands with Ease", Ashwin Pajankar, BPB Publications, 2020	
12	**Internal Continuous Assessment: 40%**	**Semester End Examination: 60%**
13	**Continuous Evaluation through:** Class test of 1 of 15 marks Class test of 2 of 15 marks Average of the two: 15 marks Quizzes/ Presentations/ Assignments: 5 marks Total: 20 marks	**Format of Question Paper: External Examination (30 Marks)– 1 hr duration**
14	**Format of Question Paper: (Semester End Examination : 30 Marks. Duration:1 hour)** Q1: Attempt any two (out of four) from Module 1 (15 marks) Q2: Attempt any two (out of four) from Module 2 (15 marks)	

Name of the Course: Major Practical 1

Sr.No.	Heading	Particulars
1	**Description the course : Including but Not limited to:**	Programming with C -practical This course is stepping stone to learn other languages. This course provides students hands on experiences of coding exercises and projects. . Database Management System's practical approach is useful to gain the knowledge for software backend development. It benefits to user by providing data definition, data access, reduced data redundancy, data integrity, data sharing, data organizing, data consistency, data accuracy, and security
2	**Vertical :**	Major
3	**Type :**	Practical
4	**Credits :**	2 credits (60 Hours of Practical work in a semester)
5	**Hours Allotted :**	30 Hours (C Programming Practical) + 30 Hours(DBMS - Practical)
6	**Marks Allotted:**	50 Marks
7	**Course Objectives(CO):** CO 1. To provide exposure in developing algorithm, flowchart and to write efficient code. CO 2. To understand loops and decision making in programming. CO 3. To understand the arrays, structures, union. CO 4. To understand the use of function and pointers. CO 5. To Identify entities and its relationship with relational model structure. CO 6. To understand relational database using SQL and constraints implementation using create table queries. CO 7. To Understand DML operations and backing of database CO 8. To understand how to retrieve data from database and learn how to retrieve single value after performing calculations on group of values CO 9. To understand built-in functions to perform operations on data CO 10. To understand how to fetch data from two or more tables, which is joined to appear as single set of data CO 11. To understand nested and larger query as advanced fetching of data to understand concept of virtual table. CO 12. To understand how to control user access in a database.	

8	**Course Outcomes (OC):** OC 1. Students can demonstrate the concepts of datatypes, variables and operators in C. OC 2. Students can implement the concept of control statements and looping in C program. OC 3. Students can demonstrate the use of arrays, strings and structures in C OC 4. Students can implement modular C program using functions and pointers. OC 5. Students can demonstrate the use of arrays, strings and structures in C. OC 6. Students able to perform various operations such as insert, update delete and retrieve data from database using SQL queries. OC 7. Students able to perform alteration in tables and can restore and take backup of the database. OC 8. Students able to perform operations using simple SQL Queries to fetch data and learns various aggregate functions to get single value. OC 9. Students able to perform SQL Queries using JOIN keyword for joining two or more tables. OC 10. Students able to perform nested queries using in, exists operators. OC 11. Students able to create new table by joining one or more tables and learn how to hide attribute from end user. OC 12. Students able to restrict the user from accessing data in database. OC 13. Students should be able to create, manipulate the database management system to evaluate the business information problem.

9	**Module 1:- Programming with C** **1. Practical 1**:- a. To calculate simple interest taking principal, rate of interest and number of years as input from user. Write algorithm & draw flowchart for the same. b. Write a program to find greatest of three numbers using conditional operator. Write algorithm & draw flowchart for the same. c. Write a program to check if the year entered is leap year or not. Write algorithm & draw flowchart for the same. **2. Practical 2:-** a. Write a program to calculate roots of a quadratic equation. b. Write a menu driven program using switch case to perform add / subtract / multiply / divide based on the users choice. c. Write a program to print the pattern of asterisks. **3. Practical 3** a. Write a program using while loop to reverse the digits of a number. b. Write a program to calculate the factorial of a given number. c. Write a program to print the Fibonacci series. **4. Practical 4** a. Write a program to print area of square using function. b. Write a program using recursive function. c. Write a program to square root, abs() value using function. d. Write a program using goto statement . **5. Practical 5** a. Write a program to print rollno and names of 10 students using array. b. Write a program to sort the elements of array in ascending or descending order **6. Practical 6** a. Write a program to extract the portion of a character string and print the extracted part. b. Write a program to find the given string is palindrome or not. c. Write a program to using strlen(), strcmp() function . **7. Practical 7** Write a program to swap two numbers using a function. Pass the values to be swapped to this function using call-by-value method and call-by-reference method. **8. Practical 8** a. Write a program to read a matrix of size m*n. b. Write a program to multiply two matrices using a function. **9. Practical 9** Write a program to print the structure using Title Author Subject Book ID Print the details of two students. **10. Practical 10** Create a mini project on “Bank management system”. The program should be menu driven.	**30 Hrs**

		Module 2 1. Conceptual Designing using ER Diagrams (Identifying entities, attributes, keys and relationships between entities, cardinalities, generalization, specialization etc.) 2. Perform the following: • Viewing all databases • Creating a Database • Viewing all Tables in a Database • Creating Tables (With and Without Constraints) • Inserting/Updating/Deleting Records in a Table 3. Perform the following: • Altering a Table • Dropping/Truncating/Renaming Tables • Backing up / Restoring a Database 4. Perform the following: • Simple Queries • Simple Queries with Aggregate functions 5. Queries involving • Date Functions • String Functions • Math Functions 6. Join Queries • Inner Join • Outer Join 7. Subqueries • With IN clause • With EXISTS clause 8. Converting ER Model to Relational Model and apply Normalization on database. (Represent entities and relationships in Tabular form, Represent attributes as columns, identifying keys and normalization up to 3rd Normal Form). 9. Views • Creating Views (with and without check option) • Dropping views • Selecting from a view 10. DCL statements • Granting and revoking permissions • Saving (Commit) and Undoing (rollback)	**30 Hrs**
10	**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		
11	**Reference Books:** 1. MASTERING C, K. R. Venugopal and Sudeep R. Prasad, Tata McGraw-Hill Publications. 2. "A Computer Science –Structure Programming Approaches using C", Behrouz		

	Forouzan, Cengage Learning. 3. Schaum's outlines "Programming with C", Byron S. Gottfried, Tata McGraw-Hill Publications. 4. "Basics of Computer Science", Behrouz Forouzan , Cengage Learning. 5. "Programming Techniques through C", M. G. Venkateshmurthy, Pearson Publication. 6. "Programming in ANSI C", E. Balaguruswamy, Tata McGraw-Hill Education. 7. "MySQL: The Complete Reference", Vikram Vaswani , McGraw Hill, 2017. 8. "Learn SQL with MySQL: Retrieve and Manipulate Data Using SQL Commands with Ease", Ashwin Pajankar, BPB Publications, 2020.	
12	**Internal Continuous Assessment: 40%**	**Semester End Examination: 60%**
13	**Continuous Evaluation through:** Students are expected to attend each practical and submit the written practical of the previous session. Performing Practical and writeup submission will be continuous internal evaluation. 2.5 marks can be awarded for each practical performance and writeup submission totalling to 50 marks and can be converted to 20 marks.	30 marks practical exam of 2 hours duration
14	**Format of Question Paper: Duration 2 hours. Certified copy of Journal is compulsory to appear for the practical examination** Practical Slip: Q1. From Module 1 13 marks Q2. From Module 2 12marks Q3. Journal and Viva 05 marks	

Vocational Skill Course (VSC)

Name of the course: Combinational and Sequential Design

Sr.No.	Heading	Particulars
1	**Description the course : Including but Not limited to:**	Combinational and Sequential Design is a course that focuses on digital electronics and the design of circuits that combine multiple digital components. The course covers the theoretical and practical aspects of both combinational and sequential circuit design, as well as their applications. Digital circuits are used in many electronic devices, including computers, smartphones, and communication systems. The design of these circuits is critical to the performance and functionality of these devices. Understanding the basics of combinational and sequential design is essential for anyone interested in pursuing a career in the field of digital electronics. The course will cover the various techniques and tools used in digital circuit design, including Boolean algebra and K-map simplification. The course is highly relevant in today's technological landscape, as all modern electronics devices are based on digital circuits. The skills learned in the course are highly useful in various fields, such as computer and electronics engineering, telecommunications, and robotics. The application of combinational and sequential design is quite broad, and the skills acquired from the course can be applied in various areas. Students will be able to design digital circuits, troubleshoot and repair digital circuits, and optimize circuit performance. The course is highly interesting and engaging, providing students with the opportunity to explore and analyze complex digital circuitry. It is also connected to other courses such as Digital Logic Design, Computer Organization, and Microcontrollers. The demand for professionals with digital circuit design skills is high in various industries such as electronics, semiconductors, telecommunications, and computing. There is an increasing demand for professionals with these skills,

		and job prospects are promising for those with a solid background in digital circuit design. In summary, Combinational and Sequential Design is a course that offers students a comprehensive understanding of digital circuits' design principles and techniques. The knowledge and skills gained from this course are highly useful and applicable in various industries, with promising career prospects.
2	**Vertical :**	Vocational Skill Course(VSC)
3	**Type :**	Practical
4	**Credits :**	2 credits (60 hours in a semester)
5	**Hours Allotted :**	60 Hours
6	**Marks Allotted:**	50 Marks
7	**Course Objectives(CO):** CO 1.To provide students with a comprehensive understanding of combinational and sequential circuit design principles and techniques. CO 2.To enable students to apply Boolean algebra, K-map simplification, and other design techniques to create optimized digital circuits. CO 3.To equip students with the necessary tools and skills to implement arithmetic circuits, data path circuits, and memory circuits. CO 4.To enable students to analyze and troubleshoot digital circuits to ensure optimal performance. CO 5.To provide students with hands-on practical experience in designing and implementing digital circuits using simulation software and real-world hardware.	
8	**Course Outcomes (OC):** OC 1. Students can explain the differences between combinational and sequential circuits, and identify their different applications. OC 2. Students can define the concept of Boolean algebra and its importance in digital circuit design. OC 3. Students can explain and apply the principles of K-map simplification and other design techniques. OC 4. Students can design and construct combinational circuits using Boolean algebra and K-maps. OC 5. Students can design and implement arithmetic circuits such as adders, subtractors, and multipliers. OC 6. Students can design and implement data path circuits such as registers, multiplexers, and decoders. OC 7. Students can implement digital circuits using breadboards, logic probes, and oscilloscopes. OC 8. Students can troubleshoot and verify the correctness of digital circuits using real-world hardware and measure their performance using various metrics.	
9	**Modules:-** **Module 1:**	

	1. Study of Logic gates and their ICs and universal gates: a. Study of AND, OR, NOT, XOR, XNOR, NAND and NOR gates b. Study of IC 7400, 7402, 7404, 7408, 7432, 7486, 74266 c. Implement AND, OR, NOT, XOR, XNOR using NAND gates. d. Implement AND, OR, NOT, XOR, XNOR using NOR gates. **2. Implement the given Boolean expressions using minimum number of gates.** a. Verifying De Morgan's laws. b. Implement other given expressions using minimum number of gates. c. Implement other given expressions using minimum number of ICs. **3. Implement combinational circuits.** a. Design and implement combinational circuit based on the problem given and minimizing using K-maps. (Various Equations, SOP, POS forms can be given) **4. Implement code converters.** a. Design and implement Binary – to – Gray code converter. b. Design and implement Gray – to – Binary code converter. c. Design and implement Binary – to – BCD code converter. d. Design and implement Binary – to – XS-3 code converter. **5. Implement Adder and Subtractor Arithmetic circuits.** a. Design and implement Half adder and Full adder. b. Design and implement BCD adder. c. Design and implement XS – 3 adder. d. Design and implement binary subtractor. e. Design and implement BCD subtractor. b. Design and implement XS – 3 subtractor.	**30 Hrs**
	Module 2:	
	6. Implement Arithmetic circuits. a. Design and implement a 2-bit by 2-bitultiplier. b. Design and implement a 2-bit comparator. **7. Implement Encode and Decoder and Multiplexer and Demultiplexers.** a. Design and implement 8:3 encoder. b. Design and implement 3:8 decoder. c. Design and implement 4:1 multiplexer. Study of IC 74153, 74157 d. Design and implement 1:4 demultiplexer. Study of IC 74139 e. Implement the given expression using IC 74151 8:1 multiplexer. f. Implement the given expression using IC 74138 3:8 decoder. **8. Study of flip-flops and counters.** a. Study of flip-flops and counters. b. Study of IC 7473. c. Study of IC 7474. d. Study of IC 7476. e. Conversion of Flip-flops.	**30 Hrs**

	f. Design of 3-bit synchronous counter using 7473 and required gates. g. Design of 3-bit ripple counter using IC 7473. **9. Study of counter ICs and designing Mod-N counters.** a. Study of IC 7490, 7492, 7493 and designing mod-n counters using these. b. Designing mod-n counters using IC 7473 and 7400 (NAND gates) **10. Design of shift registers and shift register counters.** a. Design serial – in serial – out, serial – in parallel – out, parallel – in serial – out, parallel – in parallel – out and bidirectional shift registers using IC 7474. b. Study of ID 7495. c. Implementation of digits using seven segment displays.	
10	**Text Books** 1. Digital Electronics and Logic Design, N. G. Palan, Technova	
11	**Reference Books** 1. Digital Principles and Applications, Malvino and Leach, Tata McGrawHill 2. Modern Digital Electronics, R. P. Jain, Tata McGrawHill 3. Digital Design, M. Morris R. Mano, Michael D. Ciletti, Pearson Education, 2012	
12	**Internal Continuous Assessment: 40%**	**Semester End Examination: 60%**
13	**Continuous Evaluation through:** Students are expected to attend each practical and submit the written practical of the previous session. Performing Practical and writeup submission will be continuous internal evaluation. 2.5 marks can be awarded for each practical performance and writeup submission totalling to 50 marks and can be converted to 20 marks.	30 marks practical exam of 2 hours duration
14	**Format of Question Paper: Duration 2 hours. Certified copy of Journal is compulsory to appear for the practical examination** Practical Slip: Q1. From Module 1 13 marks Q2. From Module 2 12marks Q3. Journal and Viva 05 marks	

Skill Enhancement Course (SEC)

Name of the Course: Office Tools for Data Management

Sr.No.	Heading	Particulars
1	**Description the course:**	• **Introduction:** The MS Access course offers a comprehensive understanding of Microsoft's relational database management system, making it a valuable skill in today's data-driven environment. This course is designed to empower individuals with the tools needed to efficiently organize, manage, and analyse data. • **Relevance and Usefulness:** It provides practical insights into leveraging a relational database system for enhanced efficiency and organization. The MS Access course is useful for individuals seeking to enhance their data management skills. • **Applications:** With applications in various sectors, from business to research and project management, MS Access is versatile. It facilitates the creation of databases for tasks ranging from contact management to complex systems for inventory and financial analysis. • **Interest and Connection with Other Courses:** Its practical applications and user-friendly interface make it attractive to individuals looking to boost their data management skills. The MS Access course establishes a practical link with other data-related courses, offering foundational knowledge in database management. It complements courses in data analysis, business intelligence, and information systems. • **Demand in the Industry:** As businesses increasingly rely on data for decision-making, there is a growing demand for professionals skilled in database management. Proficiency in MS Access is particularly sought after in roles involving data organization, analysis, and reporting. • **Job Prospects:** Professionals completing the MS Access course are well-positioned for roles requiring efficient data management and analysis. Job prospects include positions in database administration, data analysis, and business intelligence, where MS Access proficiency is a valuable asset.
2	**Vertical :**	Skill Enhancement Course(SEC)
3	**Type :**	Practical
4	**Credits :**	2 credits
5	**Hours Allotted :**	60 Hours
6	**Marks Allotted:**	50 Marks
7	**Course Objectives (CO):**	

	CO 1. Participants will grasp essential database concepts, including tables, relationships, and normalization principles. CO 2. Participants will design and construct well-organized databases in MS Access, showcasing proficiency in table design and data validation. CO 3. Participants will master the creation of complex queries in MS Access, enabling them to extract specific information efficiently. CO 4. Participants will develop expertise in crafting user-friendly forms and interfaces in MS Access, optimizing data entry processes. CO 5. Participants will generate comprehensive reports in MS Access, demonstrating skills in grouping, sorting, and presenting data for meaningful analysis.	
8	**Course Outcomes (OC):** OC 1. Participants can explain normalization importance, identify table relationships, and justify database design choices. OC 2. Participants create well-structured MS Access databases with proper relationships, data types, and normalization. OC 3. Participants execute advanced queries in MS Access, retrieving specific information based on diverse criteria. OC 4. Participants design intuitive MS Access forms, incorporating controls for an efficient and user-friendly data entry experience. OC 5. Participants produce insightful MS Access reports, organizing and presenting data effectively for analysis.	
9	**Modules:- All Practicals are based on MS Access** **Module 1:**	
	Practical 1: A. Getting familiar with MS Access Ribbon options. B. With the help of access wizard Create Database. Add 2 Tables. In each table add 5 columns of different data types. Add 10-10 entries in each table. Add necessary integrity constraints. C. Use the Table Wizard to create a table. Add and delete fields in an existing table. Establish an input mask and validation rule for fields within a table. Switch between the Design and Datasheet views of a table. **Practical 2:** A. Create and use an Input Mask to enter the data in sample table. B. Adding records in table by using Datasheet View, using a Form and using SQL. C. Create the Employee Database with necessary table and data and then implement the following transitions: • Delete the record for Kelly Marder. • Change Pamela Milgrom's salary to $59,500. • Use the Replace command to change all occurrences of "Manager" to "Supervisor". **Practical 3:** A. Create the Bookstore database with necessary table and data and modify the database to accommodate the following:	**30 Hrs**

	i. Add the book Exploring Microsoft Office 2000 Vol II (ISBN: 013-011100-7) by Grauer/Barber, published in 1999 by Prentice Hall, selling for $45.00. ii. Change the price of Memory Management for All of Us to $29.95. iii. Delete The Presentation Design Book. B. Create a table employ with (idno, name, job, age, salary). Insert 10 records. Create a query to display the information of all managers. Create a query to display the names of employs who‟s salary is >15000. C. Use the Form Wizard to create a form, Move and size controls within a form. Use the completed form to enter data into the associated table. **Practical 4:** A. Add fields to an existing table. Use the Lookup Wizard to create a combo box. Add controls to an existing form to demonstrate inheritance. Add command buttons to a form. B. Generate and use various the queries using Query Wizards. C. Generate and use various the Query with User Input. D. Demonstrate use of Expression Builder. **Practical 5:** A. Use the report wizard to create a new report. Modify an existing report by adding, deleting, and/or modifying its controls. B. Create a query containing a calculated control. Then, create report based on that query. Use the Sorting and Grouping command to add a group header and group footer to a report. C. Use action queries to modify a database. Create a crosstab query to display summarized values from a table.	
	Module 2:	
	Practical 6: A. Create and Open a database with multiple tables; Identify the one-to-many relationships within the database and to produce reports based on those relationships. B. Create and Open a database with multiple tables; Identify the one-to-one relationships within the database and to produce reports based on those relationships. C. Create and Open a database with multiple tables; Identify the Many-to-Many relationships within the database and to produce reports based on those relationships. **Practical 7:** A. Demonstrate use of look up tables. B. Use the Report Wizard to create a report having the following requirements: i. Select the LastName field from the Author table. ii. Select the Title and Price fields from the Book table. iii. Select the PubName field from the Publisher table.	**30 Hrs**

	iv. View the data by Publisher. v. Add a grouping level using LastName. vi. Sort the report by the Title field in ascending order. vii. Choose Stepped layout and Portrait orientation. viii. Type Book List as the report's title. C. Define the relationship between two tables and add a subform to a form. **Practical 8:** A. Import an Access table from an Excel workbook. Create a one-to-many relationship between tables in a database. Create a multiple-table query. B. Import external data from the Excel spreadsheet file Bookstore. i. Make sure Import the source data into a new table in the current database is selected. ii. Select the Author worksheet. iii. Make sure that First Row Contains Column Headings is selected. iv. For the AuthorID field, set the Data Type option to Long Integer and set the Indexed option to Yes (No Duplicates). v. Select Choose my own primary key and make sure the AuthorID field is selected. vi. Save the table with the name Author. C. Export data from access to various formats. **Practical 9:** A. Relationships: Create and Use Author and Book Table. i. Create a relationship between the AuthorID field in the Author table and the AuthorCode field in the Book table. Put a checkmark in the box labeled Enforce Referential Integrity. ii. Create a relationship between the PubID field in the Publisher table and the PubID field in the Book table. Put a checkmark in the box labeled Enforce Referential Integrity. B. Create a switchboard; Use the Link Tables command to associate tables in one database with the objects in a different database. C. Create an AutoExec and a Close Database macro and demonstrate the use. **Practical 10:** A. Create the College Library database find out the following: - i. Total no. of copies of books subject wise. ii. A report displays all books group by Publisher. iii. A report displays all books group by Book Title. iv. A report displays all books group by Book Edition B. Demonstrate the use of Database Splitter Wizard by splitting database. C. Make Access database as an executable-only	
10	**Online reference/Text Books** 1. https://www.quackit.com/microsoft_access/tutorial/	

	2. https://www.tutorialspoint.com/ms_access/index.htm 3. Access 2016 in easy steps, by Mike McGrath, In Easy Steps, 1st Edition, 2017 4. Relational Databases and Microsoft Access, by Ron McFadyen, 1st Edition	
11	**Reference Books** 1. MICROSOFT ACCESS 2019 by David Murray, Kendall Hunt Publishing, 1st Edition, 2020. 2. Step by Step Microsoft Access 2013, by Joyce Cox and Joan Lambert, 1st Edition, Microsoft Press, 2013 3. Access 2019 Bible, by Michael Alexander, Richard Kusleika, Wiley, 1st Edition, 2018 4. Access 2019 For Dummies, by Laurie A. Ulrich, Ken Cook, Wiley, 1st Edition, 2018	
12	**Internal Continuous Assessment: 40%**	**Semester End Examination: 60%**
13	**Continuous Evaluation through:** Students are expected to attend each practical and submit the written practical of the previous session. Performing Practical and writeup submission will be continuous internal evaluation. 2.5 marks can be awarded for each practical performance and writeup submission totalling to 50 marks and can be converted to 20 marks.	30 marks practical exam of 2 hours duration
14	**Format of Question Paper: Duration 2 hours. Certified copy of Journal is compulsory to appear for the practical examination** Practical Slip: Q1. From Module 1 13 marks Q2. From Module 2 12marks Q3. Journal and Viva 05 marks	

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1		

Name of the Course: Quantitative Techniques – I (OE – I)

Sr. No.	Heading	Particulars
1	**Description the course:** **Including but not limited to:**	This course deals with the Basic Mathematics that forms an essential component of Most of the Competitive and Entrance Examinations, such as Banking, Management Entrance, UPSC/MPSC, SET/NET, GMAT/GRE to quote a few. Although the Math-concepts involved in these examinations are of elementary level, the nature of the problems in such exams is far different, and the difficulty level of the questions is much higher, than the typical ones, based on which students are tested in schools. A person appearing for such exams is expected to have a thorough understanding of the concepts, to have ability to think logically, and to be able to interpret the data, presented in different manner.
2	**Vertical:**	Open Elective
3	**Type:**	Theory
4	**Credits:**	2 credits (1 credit = 15 Hours for Theory or 30 Hours of Practical work in a semester)
5	**Hours Allotted:**	30 Hours
6	**Marks Allotted:**	50 Marks
7	**Course Objectives (CO):** This course revises the basic mathematical concepts learned during school career. However, the problems asked in this course would be mostly advanced and indirect, and would demand broader and critical thinking. The course aims to enhance the reasoning power and logical thinking of the learners and nurture their intellect so as to make them competent across all competitive exams. CO1. To reinforce the basic math concepts and ideas within the learners CO2. To enhance the reasoning power of the learners and make them think over and apply concepts/formulae to solve math problems of indirect nature, thereby developing their problem-solving capacity. CO3. To develop logical thinking of the learners CO4. To make learners competent across all competitive and entrance examinations.	
8	**Course Outcomes (OC):** After completion of the course, students will be able to. OC1: understand the integers, rational numbers, real numbers and their operations. OC2: learn the concepts of GCD, LCM. OC3: understand the concepts related to averages and percentages, such as arithmetic mean.	

	geometric mean, harmonic mean OC4: evaluate the ratios and proportions OC5: understand the Profit, Loss, Percentage Profit and Percentage Loss. OC6: learn the concepts related to Time, Speed and Distance.
9	**Modules:-** **Module 1: Elementary Arithmetic - I** 1. Numbers and BODMAS: • Review of the number systems (Integers, Whole Numbers, Rational Numbers and Real Numbers) • Review of the basic operations and their results (like odd + even = odd, odd × even = even, odd raised to even is odd etc) • Easy tricks to do fast calculations (multiplication, squares, square-roots etc) • GCD and CLM of two or more numbers. 2. Averages and Percentage: • The three different means viz. Arithmetic Mean, Geometric Mean, Harmonic Mean • Properties of the three means, such as (a) AM-GM-HM inequality, (b) The mean of two numbers lies in between the two numbers, (c) In case of several numbers, the product of AM and the number of numbers equals the addition of numbers, (d) In case of several numbers, the product of the numbers equals the GM raised to the number of numbers, (e) The effect of adding the same quantity to each number on AM, (f) The effect of multiplying each number by the same quantity on GM • Percentage 3. Ratio and Proportion: • Concept of Ratio of two quantities • Ratio related properties such as invertendo, alternendo, componendo, dividendo etc • Direct and Inverse Proportion [The problems to be asked should be of varied levels of difficulty. A few ones based on directly applying a given formula may be asked at the beginning; however, the latter ones should demand critical analysis of the given information and a thoughtful selection of the method/formula to solve the same.]
	Module 2: Elementary Arithmetic – II 1. Profit and Loss: • Definitions of Profit and Loss • The concept of Percentage Profit and Percentage Loss 2. Time, Speed and Distance: • The concept of average speed based on the total distance crossed and the total time taken • The difference between crossing a pole/tower/tree/human and crossing a tunnel/bridge/station • Crossing a stationary object versus crossing a moving object

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- Moving with/against the current (in a river)

3. Work, Pipes and Cisterns:

- Work done in unit time is reciprocal of the total work done (assuming that the amount of work done in each unit time is same),
- Filling/refilling/emptying cisterns.

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<tr><td></td><td colspan="2"></td></tr>
<tr><td>10</td><td colspan="2">Text Books

1. Bible To Basic Mathematics, Pragati Agarwal
2. Quantitative Aptitude for Competitive Examinations, R. S. Agarwal
3. Logical and Analytical Reasoning: Useful for All Competitive Exams, A. K. Gupta</td></tr>
<tr><td>11</td><td colspan="2">Reference Books

1. Arithmetic : Subjective And Objective For Competitive Examinations, R. S. Agarwal
2. Maths Book For Competitive Exams, Vikas Bhalla
3. Reasoning For Competitive Examinations, Nishit K Sinha</td></tr>
<tr><td></td><td colspan="2"><u>Scheme of the Examination</u></td></tr>
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• Internal Continuous Assessment of 20 marks for each paper.
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<tr><td>12</td><td>Internal Continuous Assessment: 40%</td><td>Semester End Examination: 60%</td></tr>
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(at least 3)
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<tr><td>2</td><td>Project on any one topic related to the syllabus or a quiz (offline/online) on one of the modules.</td><td>05</td></tr>
<tr><td>3</td><td>Seminar/ group presentation on any one topic related to the syllabus.</td><td>05</td></tr>
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	Paper pattern of the Test (Offline Mode with One hour duration): Q1: Definitions/Fill in the blanks/ True or False with Justification. (04 Marks: 4 x 1). Q2: Attempt any 2 from 3 descriptive questions. (06 marks: 2 × 3)	

14 **Format of Question Paper:**

The semester-end examination will be of 30 marks of one hour duration covering the entiresyllabus of the semester.

Note: Attempt any TWO questions out of THREE.			
Q.No.1	Module 1 and 2	Attempt any **THREE** out of **FOUR**. (Each question of 5 marks) (a) Question based on OC1/OC2 (b) Question based on OC3 (c) Question based on OC4 (d) Question based on OC5/OC6	15 Marks
Q.No.2	Module 1 and 2	Attempt any **THREE** out of **FOUR**. (Each question of 5 marks) (a) Question based on OC1/OC2 (b) Question based on OC3 (c) Question based on OC4 (d) Question based on OC5/OC6	15 Marks
Q.No.3	Module 1 and 2	Attempt any **THREE** out of **FOUR**. (Each question of 5 marks) (a) Question based on OC1/OC2 (b) Question based on OC3 (c) Question based on OC4 (d) Question based on OC5/OC6	15 Marks

Sign of the BOS Chairman
Dr. Bhausaheb S Desale
The Chairman, Board of Studies in Mathematics

Sign of the Offg. Associate Dean
Dr. Madhav R. Rajwade
Faculty of Science & Technology

Sign of the Offg. Dean
Prof. Shivram S. Garje
Faculty of Science & Technology

Name of the Course: Logic and Data Interpretation – I (OE – II)

Sr. No.	Heading	Particulars
1	**Description the course:** **Including but Not limited to:**	This course deals with the Logical Thinking and Data Interpretation, that forms an essential component of Most of the Competitive and Entrance Examinations, such as Banking, Management Entrance, UPSC/MPSC, SET/NET, GMAT/GRE to quote a few. The nature of the problems and the difficulty level of the questions is quite high and a person appearing for such exams is expected to have a thorough understanding of the concepts, to have ability to think logically, and to be able to interpret the data, presented in different manner.
2	**Vertical :**	Open Elective
3	**Type :**	Theory
4	**Credits :**	2 credits (1 credit = 15 Hours for Theory or 30 Hours of Practical work in a semester)
5	**Hours Allotted :**	30 Hours
6	**Marks Allotted:**	50 Marks
7	**Course Objectives (CO):** This course revises the basic mathematical concepts learned during school career. However, the problems asked in this course would be mostly advanced and indirect, and would demand broader and critical thinking. The course aims to enhance the reasoning power and logical thinking of the learners and nurture their intellect so as to make them competent across all competitive exams. CO1. To reinforce the basic math concepts and ideas within the learners CO2. To enhance the reasoning power of the learners and make them think over and apply concepts/formulae to solve math problems of indirect nature, thereby developing their problem-solving capacity. CO3. To develop logical thinking of the learners CO4. To make learners competent across all competitive and entrance examinations.	
8	**Course Outcomes (OC):** After completion of the course, the learners will be able to OC1: think logically about the given sequence of numbers/alphabets/symbols OC2: understand the odd/unfit element amongst the set of various elements OC3: develop logical thinking to obtain relations between two people	

	OC4: understand the directions, angles between any two angles OC5: get a general idea about the concept of coding a message and how to decode a coded message OC6: develop logical thinking to check whether or not the given information is sufficient to answer a question.
9	**Modules:-** **Module 1: Fundamentals of Logical thinking - I** 1. Number/Letter/Symbol Series: • Given a finite sequence of numbers, the learners are expected to find a simple rule (difference between or the ratio of consecutive numbers, square-quantities, cube-quantities, recursive rules etc) that binds all the numbers and be able to fill in the gap either at the end or at the beginning or in between. • Given a finite sequence of objects, made up of sets of alphabets/symbols, the learners are expected to observe the pattern that is visible in each set of letters/symbols and be able to predict the missing object/s 2. Odd Man Out: • Given a finite sequence of numbers, the learners are expected to find a simple rule that binds all but one and be able to find out the odd one • Given a finite sequence of objects, made up of sets of alphabets/symbols, the learners are expected to observe the pattern that fits each except one and be able to find out the miss-fit object 3. Relations: • Understanding the terms in relations such as mother, father, son, daughter, grand-mother, grand-father, grandson, grand-daughter, brother, sister, siblings, mother-in-law, father-in-law, cousin, nephew, niece, husband, wife, life- partner, spouse, uncle, aunt. • Forming a tree/diagram based on the information given, vertical aligning of different generations, definite symbols to be used for different people viz. square for male, circle for female, triangle for those whose gender is not specified and cannot be determined, double arrow (↔) for siblings and equality (=) for married couples [The problems to be asked should be of varied levels of difficulty. A few ones based on directly applying a given formula may be asked at the beginning; however, the latter ones should demand critical analysis of the given information and a thoughtful selection of the method/formula to solve the same.]
	Module 2: Fundamentals of Logical Thinking - II 1. Directions: • The eight directions and their names • The angles between any two directions • Revision of simple Pythagorean triplets such as (3-4-5), (6-8-10), (5-12-13), (7-24-25), (8-15-17), (9-12-15), (10-24-26), and their use in finding the distance between two points, say A and B when AC and CB are perpendicular, Revision of 45-45-90 triangle.

<table>
<tr><td></td><td>2. Coding and Decoding
Alphabet Coding, Numerical Coding, Symbol based Coding, Values Coding, Substitution Coding
Deciphering a given Coding
3. Data Sufficiency:
The concept/idea of Data Sufficiency, for example, the lengths of all the sides are sufficient to find the area of a triangle but not of a quadrilateral
Problems based on insufficient data and finding the minimal info needed to obtain the answer (In such case, not the final answer, but the minimal additional required information is to be found out) – The problems may be based on elementary mathematics or day-to-day situations.</td></tr>
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1 A Modern Approach To Verbal & Non-Verbal Reasoning, R. S. Agarwal

2. Quantitative Aptitude for Competitive Examinations, R. S. Agarwal
3. Logical and Analytical Reasoning: Useful for All Competitive Exams, A. K. Gupta</td></tr>
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1. How To Crack Test of Reasoning In All Competitive Exams, Jaikishan and Premkishan
2. Maths Book For Competitive Exams, Vikas Bhalla
3. Reasoning For Competitive Examinations, Nishit K Sinha</td></tr>
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</table>

	mode.	
2	Project on any one topic related to the syllabus or a quiz (offline/online) on one of the modules.	05
3	Seminar/ group presentation on any one topic related to the syllabus.	05

Paper pattern of the Test (Offline Mode with One hour duration):
Q1: Definitions/Fill in the blanks/
True or False with Justification.
(04 Marks: 4 x 1).
Q2: Attempt any 2 from 3
descriptive questions. (06 marks: 2
× 3)

14 **Format of Question Paper:**
The semester-end examination will be of 30 marks of one hour duration covering the entiresyllabus of the semester.

Note: Attempt any TWO questions out of THREE.			
Q.No.1	Module 1 and 2	Attempt any **THREE** out of **FOUR**. (Each question of 5 marks) (a) Question based on OC1/OC2 (b) Question based on OC3 (c) Question based on OC4 (d) Question based on OC5/OC6	15 Marks
Q.No.2	Module 1 and 2	Attempt any **THREE** out of **FOUR**. (Each question of 5 marks) (a) Question based on OC1/OC2 (b) Question based on OC3 (c) Question based on OC4 (d) Question based on OC5/OC6	15 Marks
Q.No.3	Module 1 and 2	Attempt any **THREE** out of **FOUR**. (Each question of 5 marks) (a) Question based on OC1/OC2 (b) Question based on OC3 (c) Question based on OC4 (d) Question based on OC5/OC6	15 Marks

Name of the Course: Fundamentals of People's Skills

Sr. No.	Heading	Particulars
1	**Description the course :** **Including but Not limited to :**	This course deals with the fundamentals of people's skills which are one of the most important aspects of Life Skills required to be developed among students. Acquiring these skills would help them to develop ethical foundation right during their young days. It would foster creativity and innovation among these student while sensitizing them towards respecting social and cultural differences.
2	**Vertical :**	Skill Enhancement
3	**Type :**	Theory / Practical
4	**Credit**:	2 credits
5	**Hours Allotted :**	30 Hours
6	**Marks Allotted**:	50 Marks

Course Objectives	1. To develop ethical foundation among students. 2. To encourage creativity and innovation among young minds. 3. To create awareness among students about the importance of being a good listener. 4. To sensitize students about recognizing and dealing with different social, cultural backgrounds more effectively 5. To enable students to conduct themselves more professionally and put across their views in front of others more effectively.
Course Outcomes	**Students will be able to:** 1. Demonstrate ethical behavior coupled with integrity. 2. Will generate new ideas and create a business plan. 3. Will be able to develop good listening skills which are vital for demonstrating good team qualities. 4. Will build sensitivity about social and cultural differences and illustrate good etiquettes. 5. Will be able to present themselves and their thoughts in front of others more confidence.
Module 1: Ethics and Integrity (6 Hours)	Importance of ethics. (Story-telling) Ethical decision-making. (Discussing biographies) Personal and professional moral codes of conduct. (Discussing biographies) Creating a harmonious life. (Interactive session)
Module 2: Entrepreneurial Skills (6 Hours)	1. Who is an entrepreneur (Story-telling) 2. Traits and qualities of a good entrepreneur (Story-telling) 3. Types of entrepreneurs (Interactive session with Story-telling) 4. Problem identification and idea generation (role play/ simulation)

	5. Idea validation (Interactive session with Story-telling) 6. Pitch-deck presentation (video)
Module 3 Teamwork and Importance of Listening in a Team (6 Hours)	1. What is a team? (Conceptual Clarity) 2. Advantages of being a good listener in a team (Story telling) 3. Listening as a team leader (Case study) 4. Listening as a team member(Interactive session) 5. Improving listening skills (Interactive session)
Module 4 Resume Writing and CV Building (6 Hours)	1. Difference between a Resume and CV (Conceptual Clarity) 2. Essentials of writing a good Resume (Practical Application) 3. How to build a good CV (Practical Application) **4.** Common Mistakes in preparing a good resume/ building a good CV (Conceptual Clarity)
Module 5 Professional, Social and Cultural Etiquettes (6 Hours)	1. Why following etiquettes is important (Interactive session) 2. Types of etiquettes (Conceptual Clarity) 3. Professional etiquettes (Video + Story-telling) 4. Social etiquettes (Video + Story-telling) 5. Cultural etiquettes (Video + Story-telling) 6. Role of etiquettes in creating a better personal and professional image (Video + Story-telling)
Suggested Readings and e-resources	1. Bentley University. (2022, December 7) 7 ways to promote diversity in the workplace.https://www.bentley.edu/news/7-ways-promote-diversity-workplace. 2. Roy, B. D. (2022, August 1). Active listening; its skills and importance in the workplace. Nurture an Engaged and Satisfied Workforce | Vantage Circle HR Blog. https://blog.vantagecircle.com/active-listening/. 3. Hisrich, R. D., Peters, M. P., and Shepherd D. A. (2017). Entrepreneurship. 10 4. th Ed.McGraw Hill Education 5. Ashokan, M. S. (2015). Karmayogi: A Biography of E. Sreedharan. London: Penguin. 6. Nellickappilly, S. (n.d). Ethics. [Video]. NPTEL. https://nptel.ac.in/ 7. courses/109/106/109106117/.
Assessment and Evaluation	Continuous assessment throughout the semester of 30 Marks by maintain a logbook and/ or a journal and final project of 20 marks at the end of the semester
Signature of the Team	

Signature:
Prof. Kavita Laghate
Chairman of Board of Studies in Value Education

AC – 28.06.2024
Item No. – 8.1 (N)

As Per NEP 2020

University of Mumbai

Syllabus for Indian Knowledge System	
Board of Studies in Indian Knowledge System	
UG First Year Programme	
Semester	**I OR II**
Title of Paper	**Credits 2 for either I or II Semester**
I) Indian Knowledge System	
From the Academic Year	**2024-2025**

Sr. No.	Heading	Particulars
1	**Description the course :** **Including but Not limited to :**	Introduction, relevance, Usefulness, Application, interest, connection with other courses, demand in the industry, job prospects etc.
2	**Vertical :**	Major/Minor/Open Elective /Skill Enhancement / Ability Enhancement/Indian Knowledge System (Choose By √)
3	**Type :**	Theory / Practical
4	**Credit**:	2 credits (1 credit = 15 Hours for Theory or 30 Hours of Practical work in a semester)
5	**Hours Allotted :**	30 Hours
6	**Marks Allotted**:	50 Marks
7	**Course Objectives**: (List some of the course objectives) 1. To sensitize the students about context in which they are embedded i.e. Indian culture and civilisation including its Knowledge System and Tradition. 2. To help student to understand the knowledge, art and creative practices, skills and values in ancient Indian system. 3. To help to study the enriched scientific Indian heritage. 4. To introduce the contribution from Ancient Indian system & tradition to modern science & Technology.	
8	**Course Outcomes**: (List some of the course outcomes) 1. Learner will understand and appreciate the rich Indian Knowledge Tradition 2. Lerner will understand the contribution of Indians in various fields 3. Lerner will experience increase subject-awareness and self-esteem 4. Lerner will develop a comprehensive understanding of how all knowledge is ultimately intertwined	
9	**Modules**:-	
	Module 1: (10 Hours)	
	1. Introduction to IKS (What is knowledge System, Characteristic Features of Indian Knowledge System) **2.** Why IKS? (Macaulay's Education Policy and its impact, Need of revisiting Ancient Indian Traditions) **3.** Scope of IKS (The Universality of IKS (from Micro to Macro), development form Earliest times to 18th Century CE) **4.** Tradition of IKS (Ancient Indian Education System: Home, Gurukul, Pathashala, Universities and ancient educational centres) **5**. Relevant sites in the vicinity of the Institute (Water Management System at Kanheri, Temple Management of Ambarnath, etc.)	

	Module 2: (10 Hours)	
	1. Medicine (Ayurveda) **2.** Alchemy **3**. Mathematics **4.** Logic **5.** Art of Governance (Arthashastra)	
	Module 3: **(10 Hours) (Select Any FIVE out of the following)**	
	1. Aesthetics **2.** Town Planning **3**. Strategic Studies **4.** Krishi Shastra **5.** Vyakaran & Lexicography **6**. Natyashastra **7**. Ancient Sports **8**. Astronomy	**9**. Yoga and Wellbeing **10.** Linguistics **11.** Chitrasutra **12.** Architecture **13.** Taxation **14.** Banking **15.** Trade and Commerce
10	**Reference Books** **1.** Concise history of science in India- D.M. Bose, S.N Sen, B.V. Subbarayappa. **2.** Positive sciences of the Ancient Hindus- Brajendranatha seal, Motilal Banrasidas, Delhi 1958. **3.** History of Chemistry in Ancient India & Medieval India, P.Ray- Indian Chemicals Society, Calcutta 1956 **4.** Charaka Samhita- a scientific synopsis, P. Ray & H.N Gupta National Institute of Sciences of India, New Delhi 1965. **5.** MacDonnell A.A- History of Sanskrit literature **6.** Winternitz M- History of Indian Literature Vol. I, II & III **7.** Dasgupta S.N & De S.K- History of Sanskrit literature Vol. I. **8.** Ramkrishna Mission- cultural heritage of India Vol. I, II & III. **9.** Majumdar R. C & Pushalkar A.D- History & culture of the Indian people, Vol. I, II & III. **10.** Keith A.B- History of Sanskrit literature. **11.** Varadachari V- History of Sanskrit literature Chaitanya Krishna- A new History of Sanskrit	
11	**Continuous Internal Assessment: 20 Marks**	**Semester End Examination : 30 Marks**
12	**Continuous Evaluation through:** Assignment/ Presentations/ Projects (Group/Individual) / Field Visit Report **10 Marks,** class Test / MCQ Test **5 Marks,** Overall Conduct and Class Participation **5 Marks**	
13	**Format of Question Paper:** for the final examination Q1. Attempt any TWO Questions out of FIVE. **6 Marks** Q2. Attempt any THREE Questions out of SIX 1**2 Marks** Q3. Attempt any THREE Questions out of SIX. 1**2 Marks**	

Sign of the BOS Chairman
Name of the Chairman
Name of the BOS

Sign of the Offg. Associate Dean
Name of the Associate Dean
Faculty of Interdisciplinary Studies
Name of the Faculty

Sign of the Offg. Dean
Name of the Offg. Dean
Faculty of Interdisciplinary Studies
Name of the Faculty

As Per NEP 2020

University of Mumbai

Title of the Program

Introduction to Cultural Activities

SEM I

Syllabus for Two Credit

(With effect from the academic year 2024-25)

Aims and Objectives

- To study the importance of cultural activities in India.
- To discuss the historical importance of cultural activities.
- To define and describe the overview of cultural practices at Indian and Global level.
- To list the various forms of cultural activities and its applied skills.
- To describe the role of organizations for organizing cultural activities in India.

Learning Outcomes

- Understand the significance of cultural activities
- Sensitize students towards Indian culture and its preservation
- Apply the knowledge and skills of the cultural activities in their practical life
- Participate in the various cultural activities

Modules at Glance Semester I

Module No.	Unit	Content	No. of Hours
1	I	Overview to Cultural Activities	05
	II	History of Student Cultural Activities	05
2	III	Forms / Types of Literary and Fine Arts Activities and its Applied Skills	10
	IV	Forms / Types of Performing Arts Activities and its Applied Skills	10
Total No. of Hours			**30**

Module No.	Unit	Content	No. of Hours
1	**I**	**1.1 Overview to Cultural Activities** • Definition of culture and its manifestations • Understanding cultural diversity and inclusivity • The role of cultural activities in preserving heritage • Overview of Indian cultural practices • Overview of global cultural practices	05
	II	**2.1 History of Student Cultural Activities** □ Role of student cultural activities □ History of student cultural activities in India	05

		• Role of AIU in preserving cultural heritage of India • History of student cultural activities in Maharashtra • Student Cultural activities at University of Mumbai	
2	**III**	**3.1 Forms / Types of Literary and Fine Arts Activities and its Applied Skills** **3.1.1 Various Forms of Literary Arts** • **Elocution**: Reading Skills, Soft Skills, Languages, Communication Skills, etc. • **Debate**: Reading Skills, Soft Skills, Languages, Communication Skills, etc. • **Story Writing**: Introduction, Plot, Characterization, Presentation, Relevance, Language Style, etc. • **Story Telling**: Introduction, Plot, Characterization, Presentation, Relevance, Language Style, etc. • **Quiz**: General Knowledge skills **3.1.2 Various Forms of Fine Arts** • **Painting:** Visualization, Delivery of the Subject, Composition, Colour Application, Presentation and Overall Impact • **Collage:** Visualization, Delivery of the Subject, Handling of Medium, Composition, Presentation and Overall Impact • **Poster Making:** Visualization, Delivery of the Subject, Presentation, Tagline and Overall Impact • **Clay Modeling:** Visualization, Delivery of the Subject, Handling of Medium, Composition, Presentation and Overall Impact • **Cartooning:** Visualization, Delivery of the Subject, Characters, Synchronization, Colour Application, Composition, Presentation and Overall Impact • **Rangoli:** Visualization, Delivery of the Subject, Colour Scheme, Elements, Presentation and Overall Impact • **Mehendi Designing:** Originality, Creativity, Decorative Art with Aesthetic Sense, Presentation and Overall Impact	**10**

		• **Spot Photography:** Impact, Composition, Technical Quality and Suitability for the Specific Theme • **Installation:** Visualization, Delivery of the Subject, Handling of Medium, Synchronization, Composition, Presentation and Overall Impact	
	IV	**4.1 Forms / Types of Performing Arts Activities and its Applied Skills** **4.1.1 Various Forms of Dance** • **Folk Dance:** History and Origin of Folk Dance In India, Types and their Uniqueness, Significance of Folk Dance, Folk Dances in Maharashtra • **Classical Dance:** History of Classical Dance, Types and their Peculiarities, Significance of Classical Dances in India **4.1.2 Various Forms of Theatre** • History of Indian Theatre • Types and their Uniqueness • Significance of Indian Theatre • **Various Forms of Theatre**: One Act Play, Skit, Mime, Mimicry **4.1.3 Various Forms of Music** • History of Indian Music, • Types and their Uniqueness, • Significance of Music in India • **Various Forms of Music**: Classical Singing, Light Vocal, Percussion, Non-Percussion, Natyasangeet, Western Vocal, Western Instrumental	**10**

Scheme of Evaluation

The Scheme of Examination shall be of 50 marks. It will be divided into Internal Evaluation (20 marks) and Semester End Examination (30 Marks).

Semester I (50 Marks, 2 Credits) Internal Evaluation (20 Marks)

Sr. No.	Particulars	Marks

1	Presentation **OR** Project **OR** Assignment	15
2	Participation in Workshop / Conference / Seminar (as decided by the Teacher) **OR** Participation in Online Workshop / Conference / Seminar (as decided by the Teacher) **OR** Field Visit **OR** Attendance	5
Total		**20**

Semester End Examination (30 Marks)

Question No.	Particulars	Marks
1	**Objective Type Questions (All Units)**	6
2	**Descriptive Question(s) on Unit I** [This question may be divided into sub questions like (a) (b) for 3 Marks + 3 Marks or 4 Marks + 2 Marks pattern]	6
3	**Descriptive Question(s) on Unit II** [This question may be divided into sub questions like (a) (b) for 3 Marks + 3 Marks or 4 Marks + 2 Marks pattern]	6
4	**Descriptive Question(s) on Unit III** [This question may be divided into sub questions like (a) (b) for 3 Marks + 3 Marks or 4 Marks + 2 Marks pattern]	6
5	**Descriptive Question(s) on Unit IV** [This question may be divided into sub questions like (a) (b) for 3 Marks + 3 Marks or 4 Marks + 2 Marks pattern]	6
Total		30

Reference Books

1) Rabindranath Tagore, The Centre of Indian Culture. Rupa and Co, India, 2017.
2) Chopra, J. K. Indian Heritage and Culture. Unique Publisher, India, 2013.
3) Patnaik Devdatta, Indian Culture, Art and Heritage. Pearson, India, 2021.
4) Cassady Marsh, An Introduction to the Art of Theatre: A comprehensive test- Past, Present and Future. Colorado Springs, Colo, 2017.
5) Pingle Bhavanrav A., History of Indian Music: with particular reference to theory and practice, Dev Publishers and Distributors, India, 2021.
6) Popley Herbert A., The Music of India. Central Archaeological Library, New Delhi, 1921.

7) Tomory Edith, History of Fine Arts in India and the West. Orient Longman, Mumbai, 1989. 8) Arthur Schopenhauer, The Art of Literature, S. Sonnenschein and co London. 1981.
9) M. Keith Booker, A Practical Introduction to Literary theory and Criticism. Routledge.Michigan, 1996.
10) Vatsyayan Kapila, Indian Classical Dance. Publications Division, Ministry of Information and Broadcasting, Govt. of India, 1992.
11) Phyllia S. Weikart, Teaching folk dance: successful steps. High/Scope Press, Mchigan, 1997.
12) Gosvami O., The story of Indian Music, its growth and synthesis. Bombay, New York, Asia Pub. House, 1961.

AC – 24/11/2023
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As Per NEP 2020

University of Mumbai

Title of the Program

Co-Curricular Course
Introduction to Sports, Physical Literacy, Health and Fitness and Yog

SEM I

Syllabus for Two Credit

(With effect from the academic year 2024-25)

Semester I
Course Structure

Semester	Paper	Title of Paper	No of lecture (Theory)	Internal Evaluation (IE)	End Semester Evaluation	Total Marks	Credits
First	CC	Introduction to Sports, Physical Literacy, Health & Fitness and Yoga	30	20	30	50	02
Second	CC	Introduction to Sports, Physical Literacy, Health & Fitness and Yoga	30	20	30	50	02
Total	**-**	**-**	**60**	**40**	**60**	**100**	**04**

Semester I

1.1 Preamble:

India is growing rapidly as a global super-power. To face the challenges of the century and to keep up with the pace of the world, maintaining health is of prime importance. Giving thrust to healthy society, Physical Education, Sports, Health & fitness and Yoga are of great significance in today's world. The Government of India insists on Physical Fitness, Mental Health and Overall Development of Personality for every citizen. In these lines, the Government has launched Fit India Movement, Khelo India, TOPS and National Sports Day, International Day of Yoga etc. These initiatives have given impetus and awareness among general public, professional and academicians. However, creating efficient and skilled human resource in the field of Physical Education, Sports and Yoga is identified as the need of the hour. Thus, the Governments of India and Government of Maharashtra have included Physical Education, Sports and Yoga as a key area under the NEP 2020.

1.2 Objectives of the Course:

1. To make students familiarize with concepts of Health, Fitness, Yoga, Sports & Physical Literacy.
2. To sensitize the students about background knowledge of Sports structure of Sports Federations, Indian Olympic Association, Khelo India Schemes, FIT India movement, National Sports Day, Intercollegiate Sports structure of University of Mumbai.

3. To familiarize the students with the various physical education concepts and information regarding various Olympic Sports.
4. To make students aware about famous sports personalities and various awards given to Sportsperson and coaches.
5. To educate students regarding various career opportunities in the sports management, sports coaching, sports industry, health and fitness, sports infrastructure, yoga, etc.
6. The course is designed primarily to educate those interested in becoming a Physical Literacy Trainer/Ambassador as well as those who wish to stay lifelong active and want to influence others to be active for life.

1.3 Salient features of the course:

1. The course is designed to enhance the Competency, attitude and skills related knowledge to Physical Literacy, health & fitness, Sports & Yoga.
2. The course is design to implemented as per CBCS pattern .

1.4 Utility of the course:

1. The course may provide opportunity in the field of physical education, sports management, health & fitness, yoga, etc.
2. The course is significant to enhance the abilities of the student to work in the different fields of physical education in the area of coaching, event management, health & fitness, yoga etc.
3. The professional abilities and personality of the students may be enhanced.

1.5 Program outcomes:

By the end of the program the students will be able to:

1. The curriculum would enable the pass out students to be entrepreneur (to start their own fitness center, gym, yoga studio etc.) and device appropriate fitness program for different genders and age groups at all level
2. The curriculum would enable to officiate, supervise various sports events and organize sports events.
3. Students acquire the knowledge of Physical Education, Sports and Yoga and understand the purpose and its development.
4. The student learns to plan, organize and execute sports events.
5. Student will learn theoretical and practical aspects of game of his choice to apply at various levels for teaching, learning and coaching purposes efficiently.
6. Student acquires the knowledge of opted games, sports and yoga and also learns the technical and tactical experience of it.
7. Student will learn to apply knowledge of Physical fitness and exercise management to lead better quality life.
8. Students will understand and learn different dimension of active life style.
9. Student will learn the knowledge of nutrition and diet.
10. Students will be able to assess the physical fitness in a scientific way.
11. The students will be able to continue professional courses and research in Physical Education, sports and yoga.
12. It helps the student to understand theory and practical aspects of physical literacy. These aspects include role of motivation and confidence, how to focus on positive experience, new styles of teaching, inclusive session planning and review the progress in physical activities.

1.6 Programme Duration: The structure of Sports & Physical Literacy has two semesters in total covering a period of two years.

1.7 Duration of the Course:. First Year comprises two semesters. Each semester will have theory paper 30 marks for End Semester Examination and 20 marks for Internal Evaluation for each paper.

1.8 Modes of Internal Evaluation: Assignment, Tutorial, Presentation, MCQs via Google, Field Visits, any other suitable mode along with marks for Attendance of the students.

1.9 Medium of Instruction: English

1.10 Course Structure

Credits: 02 **Lectures: 30** **Marks: 50**

Unit Number	Title of the Unit	No. of Lecture	No. of Credits
1	**Introduction to Sports, Physical Literacy, Health & fitness and Yoga** 1.1 Meaning and Definition of Sports, Physical Literacy, Health & Fitness and Yoga 1.2 Aim, Objectives & Importance of Sports, Physical Literacy, Health & Fitness and Yoga 1.3 History of Sports, Physical Literacy, Physical Education and Yoga 1.4 Modern trends of Sports, Physical Literacy, Health & Fitness and Yoga	15	1

2	**Introduction to Structure of Sports associations, Fitness Training & Yogic Asanas** 2.1 Various government schemes, awards and famous sports personalities 2.2 Sports Structure of Sports Federations, Khelo India, Sports Tournaments of University of Mumbai and Indian Olympic Association 2.3 Fundamental Principles of Fitness training and Yoga 2.4 Components of health related and skill related physical fitness 2.5 Types of Yogic practices – Asanas, Pranayama and Meditation	15	1

References –

1. Bucher, C. A. (n.d.) Foundation of physical education. St. Louis: The C.V. Mosby Co. Deshpande, S. H. (2014). Physical Education in Ancient India. Amravati: Degree college of Physical education.
2. Mohan, V. M. (1969). Principles of physical education. Delhi: Metropolitan Book Dep. Nixon, E. E. & Cozen, F.W. (1969). An introduction to physical education. Philadelphia: W.B. Saunders Co.
3. William, J. F. (1964). The principles of physical education. Philadelphia: W.B. Saunders Co.
4. Coalter, F. (2013) Sport for Development: What game are we playing? .Routledge.
5. Singh Hardayal (1991), Science of Sports Training, DVS Publication, New Delhi
6. Muller, J. P.(2000). Health, Exercise and Fitness. Delhi : Sports.
7. Russell, R.P.(1994). Health and Fitness Through Physical Education. USA : Human Kinetics.
8. Uppal, A.K. (1992). Physical Fitness. New Delhi : Friends Publication.
9. Nagendra, H. R. & Nagarathna, R. (2002). Samagra Yoga Chikitse. Bengaluru: Swami Vivekananda Yoga Prakasana.
10. Kumar, Ajith. (1984) Yoga Pravesha. Bengaluru: Rashtrothanna Prakashana.
11. D.M Jyoti, Yoga and Physical Activities (2015) lulu.com3101, Hills borough, NC27609, United States
12. D.M Jyoti, Athletics (2015) lulu.com3101, Hills borough, NC27609, United States
13. Gharote, M. L. & Ganguly, H. (1988). Teaching methods for yogic practices. Lonawala: Kaivalyadhama.
14. Pinto John and Roshan Kumar Shetty (2021) Introduction to Physical Education, Louis Publications, Mangalore
15. Shekar, K. C. (2003). Yoga for health. Delhi: Khel Sahitya Kendra.
16. Amit Arjun Budhe, (2015) Career aspects and Management in Physical Education, Sports Publication, New Delhi
17. Pinto John and Ramachandra K (2021) Kannada Version, Daihika Shikshanada Parichaya, Louis

UNIVERSITY OF MUMBAI
National Service Scheme

1.1 Preamble:
Students in the National Service Scheme are better able to comprehend all the most recent ideas. These courses include an Introduction to National Service Scheme that covers the concept of social services, which are a variety of public services meant to offer support and help to targeted specific groups, most often the underprivileged. They could be offered by individuals, autonomous, private entities, or under the management of a government body.

1.2 Objectives of the Course:
1. To Introduce National Service Scheme to learners and explain how it is used in current social studies.
2. To make the students aware of the need of having a foundation in social science and NSS.
3. To introduce students to social concepts and issues in society, as well as to get involved in resolving social issues.

1.3 Learning Outcomes of the Course: The students will be able to
1. The course will help students comprehend the foundations of the National Service Program.
2. To understand the unique camping program.
3. Students will learn about the regular activities of NSS.

1.4. Programme Specific Outcomes:
1. Students will be familiar with NSS fundamentals and history, particularly as they pertain to social work.
2. Students will recognize NSS and its ongoing operations.

1.5 Programme Outcomes:
1. Students will comprehend fundamental ideas and facts about the National Service Program.
2. Students will learn the essentials of NSS-related procedures.
3. Students will learn social work skills (such as Voter Awareness, Campus Cleanup, Tree Plantation, and Rallies).

1.6 Modes of Internal Evaluation: Assignment, Tutorial, Presentation, MCQs via Google, Field Visits, any other suitable mode along with marks for Attendance of the students.

UNIVERSITY OF MUMBAI
Semester I
NSS CC
Sub: - Introduction to National Service Scheme

Credits: 02 **Marks:50**

Unit Number	SEMESTER 1 Title of the Unit	No. of Lecture
1	**Introduction to National Services Scheme** NSS- History,Philosophy & Need of Emergence Aims, Objectives, Motto and Emblem of NSS, NSS Theme Song Organizational Structure of NSS-Hierarchy at different levels (National,State,University,College) Roles and Responsibilities of Program Officer Financial Provisions -Grant in Aid for NSS Advisory committees & their functions	15
2	NSS Programmes and Activities (Regular activities) NSS Programmes and Activities (Special Camp activities) Yearly Action Plan of NSS Unit Volunteerism– Meaning, definition, basic qualities of volunteers, need of volunteerism for National development. Opportunities in NSS for Volunteers (Various Camps) Report Writing	15

Evaluation Pattern

Internal Assessment

Assessment Criteria	Marks
Assignment / Project / Quiz/Presentations	**10**
Attendance, Class and Activity Participation	**10**
Total	**20**

External Assessment
Question Paper Pattern

Time: 1:00 Hours **Total Marks: 30**

Introduction:-*1. All questions are compulsory.*
2. Figure to the Right indicates full marks.
3.Draw neat labeled drawings wherever necessary.

Q.1) Rewrite the following by choosing the correct options given below (with four alternatives) 6 Objectives question of 1 mark each **06 marks**.

1. a) b) c) d)
2. a) b) c) d)

Q.2) Short Notes . (Any Two out of Four) **06marks**

1.
2.
3.
4.

Q.3) Answer the following questions (Any Three out of Five) **18 marks**

1.
2.
3.
4.
5.

References:

1. National Service Scheme Manual 2006, Government of India
2. Salunkhe P.B. Ed, Chhtrapati Shahu the Pillar of Social Democracy
3. National Service Scheme Manual, Govt. of India
4. Training Programme on National Programme Scheme TISS
5. Orientation Courses for N.S.S. Programme Officers, TISS
6. Hans Gurmeet, Case Material as a Training Aid for Field Workers
7. Tarachand, History of the Freedom Movement in India Vol.II
8. Kapil K. Krishan, Social Service Opportunities in Hospitals (TISS)
9. Ram, Social Problems in India.
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19. Clarke, N. (2011). An integrated conceptual model of respect in leadership