

University of Mumbai



No. AAMS_UGS/ICC/2024-25/ 103

CIRCULAR:-

Attention of the Principals of the Affiliated Colleges, Directors of the Recognized Institutions and the Head, University Departments is invited to this office circular No. AAMS_UGS/ICC/2024-25/4 dated 11th June, 2024 relating to the NEP UG & PG Syllabus.

They are hereby informed that the recommendations made by the **Ad-hoc Board of Studies in Computer Science** at its meeting held on 01st July, 2024 and subsequently passed by the Board of Deans at its meeting held on 10th July, 2024 **vide** item No. 6.5 (R) have been accepted by the Academic Council at its meeting held on 12th July, 2024 **vide** item No.6.5 (R) and that in accordance therewith to correction in the syllabus 1) on page 10 Subject Table for Sem- II –VSC subject title to be read as Web Technologies instead of Web designing 2) on page 50 the Title of the VSC subject to be read as Web Technologies instead of Web Designing for the **B.Sc. (Computer Science) (Sem. I & II)** as per appendix (NEP 2020) with effect from the academic year 2024-25.

(The circular is available on the University's website www.mu.ac.in).

MUMBAI – 400 032

22nd August, 2024

To

(Prof.(Dr) Baliram Gaikwad)
I/c Registrar

The Principals of the Affiliated Colleges, Directors of the Recognized Institutions and the Head, University Department.

A.C/6.5(R)/12/07/2024

Copy forwarded with Compliments for information to:-

- 1) The Chairman, Board of Deans,
- 2) The Dean, Faculty of Science & Technology,
- 3) The Chairman, **Ad-hoc Board of Studies in Computer Science**,
- 4) The Director, Board of Examinations and Evaluation,
- 5) The Director, Board of Students Development,
- 6) The Director, Department of Information & Communication Technology,
- 7) The Director, Institute of Distance and Open Learning (IDOL Admin), Vidyanagari.
- 8) The Deputy Registrar, Admissions, Enrolment, Eligibility & Migration Department (AEM),

Copy forwarded for information and necessary action to :-	
1	The Deputy Registrar, (Admissions, Enrolment, Eligibility and Migration Dept)(AEM), dr@eligi.mu.ac.in
2	The Deputy Registrar, Result unit, Vidyanagari drresults@exam.mu.ac.in
3	The Deputy Registrar, Marks and Certificate Unit,. Vidyanagari dr.verification@mu.ac.in
4	The Deputy Registrar, Appointment Unit, Vidyanagari dr.appointment@exam.mu.ac.in
5	The Deputy Registrar, CAP Unit, Vidyanagari cap.exam@mu.ac.in
6	The Deputy Registrar, College Affiliations & Development Department (CAD), deputyregistrar.uni@gmail.com
7	The Deputy Registrar, PRO, Fort, (Publication Section), Pro@mu.ac.in
8	The Deputy Registrar, Executive Authorities Section (EA) eau120@fort.mu.ac.in He is requested to treat this as action taken report on the concerned resolution adopted by the Academic Council referred to the above circular.
9	The Deputy Registrar, Research Administration & Promotion Cell (RAPC), rapc@mu.ac.in
10	The Deputy Registrar, Academic Appointments & Quality Assurance (AAQA) dy.registrar.tau.fort.mu.ac.in ar.tau@fort.mu.ac.in
11	The Deputy Registrar, College Teachers Approval Unit (CTA), concolsection@gmail.com
12	The Deputy Registrars, Finance & Accounts Section, fort draccounts@fort.mu.ac.in
13	The Deputy Registrar, Election Section, Fort drelection@election.mu.ac.in
14	The Assistant Registrar, Administrative Sub-Campus Thane, thanesubcampus@mu.ac.in
15	The Assistant Registrar, School of Engg. & Applied Sciences, Kalyan, ar.seask@mu.ac.in
16	The Assistant Registrar, Ratnagiri Sub-centre, Ratnagiri, ratnagirisubcentre@gmail.com

Copy for information :-

1	P.A to Hon'ble Vice-Chancellor, vice-chancellor@mu.ac.in
2	P.A to Pro-Vice-Chancellor pvc@fort.mu.ac.in
3	P.A to Registrar, registrar@fort.mu.ac.in
4	P.A to all Deans of all Faculties
5	P.A to Finance & Account Officers, (F & A.O), camu@accounts.mu.ac.in

1	The Chairman, Board of Deans
2	The Dean, Faculty of Humanities,
3	Chairman, Board of Studies,
4	The Director, Board of Examinations and Evaluation, dboee@exam.mu.ac.in
5	The Director, Board of Students Development, dsd@mu.ac.in@gmail.com DSW direcotr@dsw.mu.ac.in
6	The Director, Department of Information & Communication Technology,
7	The Director, Institute of Distance and Open Learning (IDOL Admin), Vidyanagari, director@idol.mu.ac.in

As Per NEP 2020

University of Mumbai



Title of the program

- A- U.G. Certificate in Computer Science
- B- U.G. Diploma in Computer Science
- C- B.Sc. (Computer Science)
- D- B.Sc. (Hons.) in Computer Science
- E- B.Sc. (Hons. with Research) in Computer Science

Syllabus for

Semester – 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



(As per NEP 2020)

Sr. No.	Heading	Particulars	
1	Title of program O: _____ A	A	U.G. Certificate in Computer Science
	O: _____ B	B	U.G. Diploma in Computer Science
	O: _____ C	C	B.Sc. (Computer Science)
	O: _____ D	D	B.Sc. (Hons.) in Computer Science
	O: _____ E	E	B.Sc. (Hons. with Research) in Computer Science
2	Eligibility O: _____ A	A	<p>A candidate for being eligible for admission must have passed Higher Secondary School Certificate Examination (Std. XII) in Science stream conducted by the Maharashtra State Board of Secondary and Higher Secondary Education with Mathematics and Statistics as one of the subject or its equivalent. Admission will be on merit, based on order of preference as follows:</p> <ol style="list-style-type: none"> 1. Aggregate Marks at H.S.C. or equivalent. 2. Aggregate Marks in Science Group (Physics, Chemistry and Mathematics) 3. Marks in Mathematics and Statistics and Physics. Marks in Mathematics and Statistics. <p style="text-align: center;">OR</p> <p>Passed Equivalent Academic Level 4.0 with Mathematics and Statistics as one of the subject</p>
	O: _____ B	B	Under Graduate Certificate in Computer Science Academic Level 4.5
	O: _____ C	C	Under Graduate Diploma in Computer Science Academic Level 5.0
	O: _____ D	D	Bachelors of Science in Computer Science with minimum CGPA of 7.5 Academic Level 5.5
	O: _____ E	E	Bachelors of Science in Computer Science with minimum CGPA of 7.5 Academic Level 5.5

3	Duration of program R: _____	A	One Year
		B	Two Years
		C	Three Years
		D	Four Years
		E	Four Years
4	Intake Capacity R: _____		
5	Scheme of Examination R: _____	NEP 40% Internal 60% External , Semester End Examination Individual Passing in Internal and External Examination	
6	Standards of Passing R: _____	40% in each component	
7	Credit Structure Sem. I - R: _____ A Sem. II - R: _____ B	Attached herewith	
	Credit Structure Sem. III - R: _____ C Sem. IV - R: _____ D		
	Credit Structure Sem. V - R: _____ E Sem. VI - R: _____ F		
8	Semesters	A	Sem I & II
		B	Sem III & IV
		C	Sem V & VI
		D	Sem VII & VIII
		E	Sem 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: 2024-25	

This syllabus is applicable to IDOL students as well, w. e. f. 2025-26.

Sign of the BOS Chairman
Dr. Jyotshna Dongardive
Ad-hoc BOS (Computer Science)

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

In the era of Information and Communication Technology (ICT), the transformative impact of computers on society is undeniable. The pervasive applications of computing across diverse fields have given rise to dynamic industries, evolving in tandem with the swift pace of technological change. As the landscape of the computing field continues to advance, it becomes imperative for students to cultivate a robust foundation that not only facilitates their current skills but also empowers them to adapt to the evolving nature of the field.

In line with the National Education Policy (NEP) 2020, our revised Computer Science program is designed to instill in students the ability to navigate the ever-changing technological terrain. Recognizing that specific languages and platforms may undergo transformations, the curriculum places a strong emphasis on fostering adaptability. Students will not only be exposed to a diverse array of programming languages, tools, paradigms, and technologies but will also delve into the fundamental principles that underpin the realm of computer science.

The core of our program encompasses essential courses such as programming languages, data structures, computer architecture and organization, algorithms, database systems, operating systems, and software engineering. Complementing these foundational elements are specialized courses in areas such as artificial intelligence, computer-based communication networks, distributed computing, information security, graphics, human-computer interaction, multimedia, scientific computing, web technology, and other cutting-edge topics in computer science.

Key Philosophy of the Program:

- **Form Strong Foundations:** Lay the groundwork for a comprehensive understanding of Computer Science.
- **Nurture Skills:** Develop programming, analytical, and design skills to tackle real-world problems effectively.
- **Introduce Gradually:** Familiarize students with emerging trends in a gradual and coherent manner.
- **Prepare for Industry Challenges:** Groom students to meet the challenges of the ICT industry with confidence and competence.

In acknowledgement of the evolving aspirations of students, our program not only prepares them for careers in the industry but also opens doors to research opportunities. The primary goal is to deliver a modern curriculum that equips graduates with both theoretical depth and practical acumen, empowering them to excel in the workplace while fostering a mindset of lifelong learning.

This program not only paves the way for a successful career in the software industry but also inspires students to pursue further studies and research opportunities. Graduates can seamlessly transition into postgraduate programs in Computer Science, leading to research and development roles, employment in IT industries, or even a career in business management.

As we unveil this syllabus, we invite students on a journey of exploration, learning, and innovation, ensuring they are not only prepared for the present but also poised to shape the future of Computer Science.

2) Aims and Objectives

Understanding and Knowledge Base: Develop a profound understanding and knowledge of the fundamental theories, systems, and applications that form the bedrock of Computer Science. This includes establishing a strong foundation in theoretical concepts and cultivating expertise in the practical application of Computer Science theories.

Analytical Abilities and Problem Solving: Foster essential skills and analytical abilities required for devising computer-based solutions to real-life problems. This involves developing critical thinking skills for problem identification and analysis, as well as cultivating the ability to design and implement effective solutions using computational tools.

Training in Emerging Technologies: Provide training in emergent computing technologies, facilitating the development of innovative solutions for both industry and academia. This includes exposing students to cutting-edge technologies and their applications, as well as encouraging exploration and experimentation with emerging tools and platforms.

Preparation for Post-Graduate Studies: Develop the necessary study skills and knowledge for students to pursue further post-graduate study in Computer Science or related fields. This involves equipping students with the academic rigor required for advanced studies and fostering a passion for continuous learning and research in the field.

Professional Skillset Development: Develop the professional skillset required for a successful career in an information technology-oriented business or industry. This includes providing practical exposure to industry-relevant tools and practices, as well as instilling a sense of professional ethics and responsibility.

Independent and Collaborative Work: Enable students to work independently and collaboratively, communicate effectively, and become responsible, competent, confident, insightful, and creative users of computing technology. This involves cultivating independence in problem-solving and project execution, as well as enhancing communication and collaboration skills for effective teamwork.

3) Learning Outcomes

At the end of three year Bachelor of Computer Science the students will be able:

- Formulate, model, and design solutions and procedures, utilizing software tools to address real-world problems effectively.
- Design and develop computer programs and computer-based systems in diverse areas such as networking, web design, security, cloud computing, IoT, data science, and other emerging technologies.
- Familiarize themselves with modern-day trends in industry and research-based settings, fostering the ability to innovate novel solutions to existing problems.
- Apply concepts, principles, and theories related to computer science to new and challenging situations.
- Demonstrate proficiency in using current techniques, skills, and tools essential for computing practice.
- Apply standard Software Engineering practices and strategies in real-time software project development.
- Pursue higher studies of specialization and confidently enter technical employment.
- Work independently or collaboratively as effective team members on substantial software projects, showcasing project management and teamwork skills.
- Communicate and present their work effectively and coherently, both in oral and written formats.
- Display ethical conduct in the usage of the Internet and Cyber systems, understanding and adhering to ethical standards in computing practices.
- Engage in independent and life-long learning, adapting to the rapidly changing IT industry and staying abreast of evolving technologies.

4) Credit Structure of the Program (Sem I, II, III & IV) (Table as per Parishisht 2 with sign of HOD and Dean)

Under Graduate Certificate in Computer Science

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							
4.5	I	MJ1: Digital Systems & Architecture (TH) – 2	-	-	2+2	VSC:2 Introduction to Programming with Python – 2	AEC:2, VEC:2, IKS:2	CC:2	22	UG Certificate 44
		MJ2: Fundamentals of Database Systems (TH) – 2				SEC:2 Statistics with R Programming – 2				
		MJP1: Computer Science Practical 1 (PR) – 2				OR Linux Operating System – 2				
	6									
R: _____ B										
4.5	II	MJ3: Design & Analysis of Algorithms (TH) – 2	-	2	2+2	VSC:2 Web Technologies – 2	AEC:2, VEC:2	CC:2	22	UG Certificate 44
		MJ4: Object Oriented Programming (TH) – 2				SEC:2 Database Management Systems using PL/SQL – 2				
		MJP2: Computer Science Practical 2 (PR) – 2				OR Advanced Python Programming – 2				
6										
Cum Cr.		12	-	2	8	4+4	4+4+2	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 Major and Minor										

Under Graduate Diploma in Computer Science

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							
5.0	III	MJ5: Principles of Operating Systems (TH) – 2	-	4	2	VSC:2 Java Programming – 2	AEC:2	FP: 2CC:2	22	UG Diploma 88
		MJ6: Theory of Computation (TH) – 2								
		MJ7: Data Structures (TH) – 2								
		MJP3: Computer Science Practical 3 (PR) – 2								
	8									
R: _____ D										
5.0	IV	MJ8: Computer Networks (TH) – 2	-	4	2	SEC:2 Mobile Application Development – 2 OR MEAN Stack Development – 2	AEC:2	CEP: 2 CC:2	22	UG Diploma 88
		MJ9: Software Engineering (TH) – 2								
		MJ10: IoT Technologies (TH) – 2								
		MJP4: Computer Science Practical 4 (PR) – 2								
8										
Cum Cr.		28	-	10	12	6+6	8+4+2	8+4	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 Continue with Major and Minor										

B.Sc. (Computer Science)

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								
5.5	V	MJ11: Artificial Intelligence (TH) – 2 MJ12: Cyber & Information Security (TH) – 2 MJ13: Moral & Ehtical AI (TH) – 2 MJP5: Computer Science Practical 5 (PR) – 2 MJP6: Mini Project – I (PR) – 2 <hr/> 10	MJEL1: Software Testing & Quality Assurance (TH) – 2 OR MJEL2: Wireless & Sensor Networks (TH) – 2 MJELP1: Software Testing & Quality Assurance Practical (PR) – 2 OR MJELP2: Wireless & Sensor Networks Practical (PR) – 2 <hr/> 4	4	-	VSC: 2 Ethical Hacking – 2	-	FP/CEP:2	22	UG Degree 132	
	R: _____ F										
	VI	MJ14: Data Science (TH) – 2 MJ15: Cloud Computing (TH) – 2 MJ16: Software Project Management (TH) – 2 MJP7: Computer Science Practical 6 (PR) – 2 MJP8: Mini Project – II (PR) – 2 <hr/> 10	MJEL3: Information Retrieval (TH) – 2 OR MJEL4: Linux Server Administration (TH) – 2 MJELP3: Information Retrieval Practical (PR) – 2 OR MJELP4: Linux Server Administration Practical (PR) – 2 <hr/> 4	4	-	-	-	OJT:4	22		
Cum Cr.		48	8	18	12	8+6	8+4+2	8+6+4	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

Component	Major		Minor	OE	VSC	SEC	AEC	VEC	IKS	CC	Total
	Mandatory	Electives									
Credits	2+2+2	---	---	2+2	2	2	2	2	2	2	22

Component	Subject	Total Credits
Major	Digital Systems & Architecture	2
Major	Fundamentals of Database Systems	2
Major	Computer Science Practical 1	2
VSC	Introduction to Programming with Python	2
SEC (any one)	Statistics with R Programming	2
	Linux Operating System	

Semester II

Component	Major		Minor	OE	VSC	SEC	AEC	VEC	IKS	CC2	Total
	Mandatory	Electives									
Credits	2+2+2	---	2	2+2	2	2	2	2	---	2	22

Component	Subject	Total Credits
Major	Design & Analysis of Algorithms	2
Major	Object Oriented Programming using C++	2
Major	Computer Science Practical 2	2
VSC	Web Technologies	2
SEC (any one)	Database Management Systems using PL/SQL	2
	Advanced Python Programming	

Sem – I

Name of the Course: Digital System and Architecture

Sr. No.	Heading	Particulars
1	Description the course:	<p>Introduction: The Digital Systems and Architecture course serves as a foundational exploration into the fundamental principles governing digital systems and computer architecture. This course delves into the design and organization of digital circuits and systems that form the backbone of modern computing devices.</p> <p>Relevance: In the era of rapid technological advancement, understanding digital systems and architecture is paramount. From smartphones to supercomputers, digital systems are pervasive. This course is essential for anyone aspiring to comprehend the inner workings of these systems and contribute to their development.</p> <p>Usefulness: The course equips students with the knowledge and skills to design, analyze, and optimize digital systems. It serves as a gateway for students to explore various aspects of computer architecture, laying the groundwork for more advanced studies and applications in the field.</p> <p>Application: Knowledge gained in this course finds practical applications in diverse domains, including embedded systems, computer networks, signal processing, and beyond. Students will learn how to translate theoretical concepts into tangible solutions, bridging the gap between abstraction and real-world implementation.</p> <p>Interest: Digital System and Architecture is an intellectually stimulating course that captivates students with its blend of theoretical concepts and hands-on application. The allure of creating efficient and high-performing digital systems often sparks curiosity and enthusiasm among students.</p> <p>Connection with Other Courses: This course establishes crucial linkages with other courses in computer science. It provides a solid foundation for more advanced courses such as computer organization, microprocessor systems, and hardware description languages. The knowledge gained here forms a seamless continuum in the study of computer systems.</p>

		<p>Demand in the Industry: As the demand for faster, more efficient computing systems continues to rise, professionals well-versed in digital systems and architecture are highly sought after. Industries ranging from electronics and telecommunications to automotive and healthcare actively seek individuals with expertise in designing and optimizing digital systems.</p> <p>Job Prospects: Graduates with proficiency in digital systems and architecture find themselves well-positioned for a myriad of career opportunities. Roles may include digital design engineer, embedded systems developer, hardware architect, and systems analyst. The skills acquired in this course open doors to a wide array of industries where digital technology plays a pivotal role.</p>
2	Vertical:	Major
3	Type:	Theory
4	Credits:	2 credits
5	Hours Allotted:	30 Hours
6	Marks Allotted:	50 Marks
7	<p>Course Objectives(CO): CO 1. To understand fundamentals of Logic gates, Number system and Flip Flops. CO 2. To have an understanding of Digital System and Operation of a Digital Computer. CO 3. To Learn Different Architecture & Organization of memory system, processor organization and control unit. CO 4. Basic understanding of 8085 microprocessor and its applications.</p>	
8	<p>Course Outcomes (OC): After successful completion of this course, students would be able to - OC 1. Learn how number system and codes are useful in computer system design. OC 2. Learn how Flip Flops are useful in memory design and data communication through CPU and Memory and I/O devices. OC 3. Learn about basics of instruction sets and its types. OC 4. Learn about Processor Internal Architecture and Design.</p>	
9	<p>Modules:- Module 1 (15 hours): Fundamentals of Digital Logic: Boolean algebra, Logic Gates, Simplification of Logic Circuits: Algebraic Simplification, Karnaugh Maps. Combinational Circuits: Adders, Subtractors, Multiplexer, De-Multiplexer. Sequential Circuits: Flip- Flops (SR, JK & D), Counters: synchronous and asynchronous Counter.</p>	

	<p>Computer System: Comparison of Computer Organization & Architecture, Computer Components and Functions, Interconnection Structures. Bus Interconnections, Input / Output: I/O Module Programmed I/O, Interrupt Driven I/O, Direct Memory Access.</p>	
	<p>Module 2 (15 hours):</p>	
	<p>Memory System Organization: Classification and design parameters, Memory Hierarchy, Internal Memory: RAM, SRAM and DRAM, Interleaved and Associative Memory. Cache Memory: Design Principles, Memory mappings, Replacement Algorithms, Cache performance, Cache Coherence. Virtual Memory, External Memory: Magnetic Discs, Optical Memory, Flash Memories, RAID Levels</p> <p>Instructions: Instruction Formats, Instruction Sets, Addressing Modes, Addressing Modes Examples with Assembly Language [8085/8086 CPU].</p> <p>Processor Organization: Structure and Function. Register Organization [8085/8086 CPU]. Basic Microprocessor operations: Data Transfer (Register / Memory) Operations, Arithmetic & Logical Operations.</p> <p>Instruction Cycle, Instruction Pipelining. Introduction to RISC and CISC Architecture, Instruction Level Parallelism and Superscalar Processors, Design Issues.</p>	
10	<p>Text Books</p> <ol style="list-style-type: none"> 1. M. Mano, Computer System Architecture 3rd edition, Pearson 2. Carl Hamacher et al., Computer Organization and Embedded Systems, 6 ed., McGraw-Hill 2012 3. R P Jain, Modern Digital Electronics, Tata McGraw Hill Education Pvt. Ltd. , 4th Edition, 2010 	
11	<p>Reference Books</p> <ol style="list-style-type: none"> 1. William Stallings (2010), Computer Organization and Architecture- designing for performance, 8th edition, Prentice Hall, New Jersey. 2. Anrew S. Tanenbaum (2006), Structured Computer Organization, 5th edition, Pearson Education Inc, 3. John P. Hayes (1998), Computer Architecture and Organization, 3rd edition, Tata McGrawHill 4. Ramesh Gaonkar (2013), Microprocessor Architecture, Programming and Application with 8085, 6th edition, Penram. 	
12	Internal Continuous Assessment: 40%	Semester End Examination: 60%
13	<p>Continuous Evaluation through:</p> <p>Class Test on Module 1: 10 marks Class Test on Module 2: 10 marks</p> <hr/> <p>Average of 2 Class Tests: 10 marks</p> <p>Assignment on Module 1: 5 marks Assignment on Module 2: 5 marks</p> <hr/> <p>Total of 2 Assignments: 10 marks</p> <p>Total: 20 marks</p>	<p>Evaluation through:</p> <p>A Semester End Theory Examination of 1 hour duration for 30 marks as per the paper pattern given below.</p> <hr/> <p>Total: 30 marks</p>

14

Format of Question Paper:

Total Marks: 30

Duration: 1 Hour

Question	Based On	Options	Marks
Q. 1	Module 1	<i>Any 2 out of 4</i>	10
Q. 2	Module 2	<i>Any 2 out of 4</i>	10
Q. 3	Module 1 & 2	<i>Any 2 out of 4</i>	10

Name of the Course: Fundamentals of Database Systems

Sr. No.	Heading	Particulars
1	Description the course:	<p>Introduction:</p> <p>The Fundamentals of Database Systems course is a foundation in the study of information management and technology. It provides students with a comprehensive understanding of the principles, design, and implementation of databases, which are critical components in virtually every domain where data is utilized.</p> <p>Relevance:</p> <p>In today's data-driven world, the management and retrieval of information are paramount. This course is highly relevant as it addresses the core concepts essential for organizing, storing, and manipulating data efficiently.</p> <p>Usefulness:</p> <p>This course is immensely useful for individuals aspiring to work with data in various capacities. Whether designing databases, developing applications that interact with databases, or analyzing data trends, a solid understanding of database fundamentals is crucial.</p> <p>Application:</p> <p>The principles learned in this course find application across diverse sectors, including business, healthcare, finance, and technology. Students will gain the skills to model real-world scenarios, design efficient databases, and implement systems that store and retrieve information seamlessly.</p> <p>Interest:</p> <p>This course often attracts students due to its practical and tangible applications. The ability to structure and manage data effectively, ensuring its integrity and accessibility, can be intellectually stimulating and applicable to numerous real-world scenarios.</p> <p>Connection with Other Courses:</p> <p>This course forms a vital connection with various other courses in computer science and information technology. It is foundational to courses like database management, data warehousing, and data mining. Additionally, it complements courses related to software development, ensuring a holistic understanding of system architecture.</p>

		<p>Demand in the Industry:</p> <p>As businesses and organizations amass ever-growing volumes of data, there is an increasing demand for professionals versed in database systems. Industries such as finance, healthcare, e-commerce, and technology actively seek individuals who can design, implement, and manage robust databases.</p> <p>Job Prospects:</p> <p>Graduates proficient in the fundamentals of database systems enjoy promising job prospects. Potential roles include database administrator, data analyst, database developer, and business intelligence analyst. These professionals play a pivotal role in ensuring the efficient and secure management of an organization's data assets.</p>
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	<p>Course Objectives(CO):</p> <p>CO 1. To make students aware fundamentals of database system.</p> <p>CO 2. To give idea how ERD components helpful in database design and implementation.</p> <p>CO 3. To experience the students working with database using MySQL.</p> <p>CO 4. To familiarize the student with normalization, database protection and different DCL Statements.</p> <p>CO 5. To make students aware about importance of protecting data from unauthorized users.</p> <p>CO 6. To make students aware of granting and revoking rights of data manipulation.</p>	
8	<p>Course Outcomes (OC):</p> <p>After successful completion of this course, students would be able to -</p> <p>OC 1. To appreciate the importance of database design.</p> <p>OC 2. Analyze database requirements and determine the entities involved in the system and their relationship to one another.</p> <p>OC 3. Write simple queries to MySQL related to String, Maths and Date Functions.</p> <p>OC 4. Create tables and insert/update/delete data, and query data in a relational DBMS using MySQL commands.</p> <p>OC 5. Understand the normalization and its role in the database design process.</p> <p>OC 6. Handle data permissions.</p> <p>OC 7. Create indexes and understands the role of Indexes in optimization search.</p>	

9	<p>Modules</p> <p>Module 1 (15 hours):</p> <p>Introduction to DBMS: Database, DBMS – Definition, Overview of DBMS, Advantages of DBMS, Levels of abstraction, Data independence, DBMS Architecture</p> <p>Data models: Client/Server Architecture, Object Based Logical Model, Record Based Logical Model (relational, hierarchical, network)</p> <p>Entity Relationship Model and ER to Table: Entities, attributes, entity sets, relations, relationship sets, Additional constraints (key constraints, participation constraints, weak entities, aggregation / generalization, Conceptual Design using ER (entities VS attributes, Entity Vs relationship, binary Vs ternary, constraints beyond ER) Entity to Table, Relationship to tables with and without key constraints.</p> <p>DDL Statements: Creating Databases, Using Databases, datatypes, Creating Tables (with integrity constraints – primary key, default, check, not null), Altering Tables, Renaming Tables, Dropping Tables, Truncating Tables</p> <p>DML statements: Viewing the structure of a table insert, update, delete, Select all columns, specific columns, unique records, conditional select, in clause, between clause, limit, aggregate functions (count, min, max, avg, sum), group by clause, having clause</p> <hr/> <p>Module 2 (15 hours):</p> <p>Relational data model: Domains, attributes, Tuples and Relations, Relational Model Notation, Characteristics of Relations, Relational Constraints - primary key, referential integrity, unique constraint, Null constraint, Check constraint</p> <p>Functions: String Functions (concat, instr, left, right, mid, length, lcase/lower, ucase/upper, replace, strcmp, trim, ltrim, rtrim), Math Functions (abs, ceil, floor, mod, pow, sqrt, round, truncate) Date Functions(adddate, datediff, day, month, year, hour, min, sec, now, reverse)</p> <p>Joining Tables and Subqueries: inner join, outer join (left outer, right outer, full outer)</p> <p>subqueries with IN, EXISTS, subqueries restrictions, Nested subqueries, ANY/ALL clause, correlated subqueries</p> <p>Normal forms: Functional dependencies, first, second, third, and BCNF normal forms based on primary keys, lossless join decomposition.</p> <p>Database Protection: Security Issues, Threats to Databases, Security Mechanisms, Role of DBA, Discretionary Access Control, Backing Up and Restoring databases</p> <p>Views: Creating, altering dropping, renaming and manipulating views</p> <p>DCL Statements: Creating/dropping users, privileges introduction, granting/revoking privileges, viewing privileges), Transaction control commands – Commit, Rollback</p>
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10	Text Books 1. Fundamentals of Database System, ElmasriRamez, NavatheShamkant, Pearson Education, Seventh edition, 2017 2. Database Management Systems, Raghu Ramakrishnan and Johannes Gehrke, 3rd Edition,2014 3. Murach's MySQL, Joel Murach, 3rd Edition, 3rd Edition, 2019																		
11	Reference Books 1. Database System Concepts, Abraham Silberschatz, HenryF.Korth, S.Sudarshan, McGraw Hill,2017 2. MySQL: The Complete Reference, VikramVaswani , 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 on Module 1: 10 marks Class Test on Module 2: 10 marks <hr/> Average of 2 Class Tests: 10 marks Assignment on Module 1: 5 marks Assignment on Module 2: 5 marks <hr/> Total of 2 Assignments: 10 marks Total: 20 marks		Evaluation through: A Semester End Theory Examination of 1 hour duration for 30 marks as per the paper pattern given below. <hr/> Total: 30 marks																
14	Format of Question Paper: Total Marks: 30 Duration: 1 Hour <table border="1" data-bbox="344 1196 1401 1370"> <thead> <tr> <th>Question</th> <th>Based On</th> <th>Options</th> <th>Marks</th> </tr> </thead> <tbody> <tr> <td>Q. 1</td> <td>Module 1</td> <td>Any 2 out of 4</td> <td>10</td> </tr> <tr> <td>Q. 2</td> <td>Module 2</td> <td>Any 2 out of 4</td> <td>10</td> </tr> <tr> <td>Q. 3</td> <td>Module 1 & 2</td> <td>Any 2 out of 4</td> <td>10</td> </tr> </tbody> </table>			Question	Based On	Options	Marks	Q. 1	Module 1	Any 2 out of 4	10	Q. 2	Module 2	Any 2 out of 4	10	Q. 3	Module 1 & 2	Any 2 out of 4	10
Question	Based On	Options	Marks																
Q. 1	Module 1	Any 2 out of 4	10																
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Q. 3	Module 1 & 2	Any 2 out of 4	10																

Name of the Course: Computer Science Practical 1

Sr. No.	Heading	Particulars
1	Description the course:	<p>Introduction:</p> <p>The Major Computer Science Practical Course, encompassing Digital Systems and Architecture as well as Database Systems, is a comprehensive and hands-on exploration into the foundational aspects of both hardware and software that underpin modern computing. This practical course is designed to provide students with a holistic understanding of digital systems, computer architecture, and the effective management of data within databases.</p> <p>Relevance:</p> <p>In an era where seamless integration of hardware and software is pivotal, the combination of Digital Systems and Architecture with Database Systems is highly relevant. This practical course addresses the symbiotic relationship between the two, offering students a holistic perspective on building robust computing solutions.</p> <p>Usefulness:</p> <p>This course is immensely useful for students aiming to bridge the gap between hardware and software. By integrating digital systems with database concepts, students gain a unique skill set that enables them to design, implement, and optimize computing systems comprehensively.</p> <p>Application:</p> <p>The skills acquired in this practical course find direct application in the development of efficient and integrated computing solutions. Students learn to design digital systems, optimize hardware performance, and seamlessly integrate these systems with databases to handle and manipulate data effectively.</p> <p>Interest:</p> <p>The Major Computer Science Practical Course is designed to spark interest by offering a hands-on approach to both hardware and software components. Students engage in practical exercises that involve designing digital circuits, implementing database solutions, and integrating these components, fostering a deeper understanding and appreciation for the intricacies of computing systems.</p>

		<p>Connection with Other Courses:</p> <p>This practical course serves as a nexus, connecting various other courses in the computer science curriculum. It lays a foundation for advanced courses in computer organization, embedded systems, software engineering, and database management. The integrated approach ensures students comprehend the synergies between different aspects of computer science.</p> <p>Demand in the Industry:</p> <p>Professionals who can seamlessly navigate both digital systems and database management are in high demand. Industries ranging from electronics and telecommunications to software development and data analytics actively seek individuals proficient in both hardware and software aspects, recognizing the practical value of this dual expertise.</p> <p>Job Prospects:</p> <p>Graduates from this practical course enjoy promising job prospects in roles that require a holistic understanding of computing systems. Potential job titles include systems architect, database administrator, embedded systems developer, and hardware-software integration specialist. These professionals are well-positioned to contribute to diverse industries seeking comprehensive computing solutions.</p>
2	Vertical:	Major
3	Type:	Practical
4	Credits:	2 credits (1 credit = 30 Hours of Practical work in a semester)
5	Hours Allotted:	60 hours
6	Marks Allotted:	50 Marks
7	<p>Course Objectives(CO):</p> <p>CO 1. To verify the truth tables of various logic gates</p> <p>CO 2. Develop proficiency in designing and implementing digital circuits.</p> <p>CO 3. Explore various components of digital systems, including processors, memory units, and input/output interfaces.</p> <p>CO 4. Develop skills in designing and creating relational databases.</p> <p>CO 5. Explore the principles of database querying using SQL.</p> <p>CO 6. Gain practical knowledge of transaction management and data control in database systems.</p>	

8	<p>Course Outcomes (OC): After successful completion of this course, students would be able to -</p> <p>OC 1. Verify truth tables of various logic gates</p> <p>OC 2. Simplify given Boolean expressions and implement them using Logisim.</p> <p>OC 3. Design and validate the operation of various combinational circuits using Logisim.</p> <p>OC 4. Understand the behavior and applications of flip-flops in digital systems.</p> <p>OC 5. Design and implement expressions using multiplexers/demultiplexers in Logisim.</p> <p>OC 6. Create and maintain relational databases, applying normalization principles.</p> <p>OC 7. Write simple queries to MySQL related to String, Maths and Date Functions.</p> <p>OC 8. Create tables and insert/update/delete data, and query data in a relational DBMS using MySQL commands.</p> <p>OC 9. Handle data permissions.</p>
9	<p>Modules:-</p> <p>Module 1 (30 hours):</p> <hr/> <p>Digital Systems & Architecture – Practical</p> <hr/> <p>Logic Gates Truth Table Verification: Study and verify the truth table of various logic gates (NOT, AND, OR, NAND, NOR, EX-OR, EX-NOR) using Logisim.</p> <p>Boolean Expression Simplification: Simplify given Boolean expressions and realize them using Logisim.</p> <p>Half/Full Adder Design: Design and verify the operation of a half/full adder using Logisim.</p> <p>Half/Full Subtractor Design: Design and verify the operation of a half/full subtractor using Logisim.</p> <p>4-Bit Magnitude Comparator: Design a 4-bit magnitude comparator using combinational circuits in Logisim.</p> <p>Flip-Flop Implementation: Verify the operation of flip-flops (e.g., D, JK) using logic gates in Logisim.</p> <p>Counter Operation Verification: Verify the operation of a counter using Logisim.</p> <p>4-Bit Shift Register Operation: Verify the operation of a 4-bit shift register using Logisim.</p> <p>Multiplexer/Demultiplexer Design: Design and implement expressions using multiplexers/demultiplexers in Logisim.</p>

3-Bit Binary Ripple Counter:

Design and implement a 3-bit binary ripple counter using JK flip-flops in Logisim. The above practical can be performed using any open source simulator (like Logisim) (Download it from <https://sourceforge.net/projects/circuit/>)

Module 2 (30 hours):**Fundamentals of Database Systems – Practical****Conceptual Design Using ER Diagrams:**

Identify entities, attributes, keys, and relationships. Apply generalization and specialization.

Database Management Operations:

View all databases, create a database, view all tables in a database, create tables with and without constraints, perform CRUD operations.

Table Management Operations:

Alter a table, drop/truncate/rename tables, perform backup/restore operations on a database.

Basic Queries and Aggregate Functions:

Execute simple queries and utilize aggregate functions (e.g., COUNT, SUM, AVG).

Advanced Query Functions:

Utilize date, string, and math functions in queries.

Join Queries:

Execute inner and outer join queries.

Subqueries:

Apply subqueries with IN and EXISTS clauses.

ER Model to Relational Model Conversion and Normalization:

Convert ER model to a relational model and apply normalization up to 3rd Normal Form.

Views:

Create views with and without check options, drop views, select data from views.

Data Control Language (DCL) Statements:

Implement DCL statements for granting and revoking permissions. Demonstrate COMMIT and ROLLBACK statements.

These experiments can be implemented using a database management system like MySQL.

10	Text Books 1. R P Jain, Modern Digital Electronics, Tata McGraw Hill Education Pvt. Ltd. , 4th Edition, 2010 2. Murach's MySQL, Joel Murach, 3rd Edition, 3rd Edition, 2019													
11	Reference Books 1. MySQL: The Complete Reference, VikramVaswani , McGraw Hill, 2017 2. 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	The internal evaluation will be determined by the completion of practical tasks and the submission of corresponding write-ups for each session. Each practical exercise holds a maximum value of 5 marks. The total evaluation, out of 100 marks, should be scaled down to a final score of 20 marks. <hr/> Total: 20 marks	A Semester End Practical Examination of 2 hours duration for 30 marks as per the paper pattern given below. Certified Journal is compulsory for appearing at the time of Practical Exam <hr/> Total: 30 Marks												
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Q. 2	Module 2	12												
Q. 3	Viva	06												

Name of the Course: Introduction to Programming with Python

Sr. No.	Heading	Particulars
1	Description the course:	<p>Introduction:</p> <p>Introduction to Programming with Python Course serves as an entry point into the world of coding, introducing learners to the versatile and beginner-friendly Python language. Python is renowned for its readability and simplicity, making it an ideal choice for individuals taking their first steps in programming.</p> <p>Relevance:</p> <p>In today's digital era, programming skills are increasingly essential across various disciplines. Python, being an interpreted, high-level language, is relevant for diverse applications, from web development and data analysis to artificial intelligence and automation.</p> <p>Usefulness:</p> <p>The course provides a foundational understanding of Python syntax, data structures, and control flow, empowering learners to write functional and efficient code. Python's broad applicability makes the skills acquired in this course valuable for numerous programming tasks.</p> <p>Application:</p> <p>Upon completion, participants can apply Python to solve real-world problems, automate repetitive tasks, and create simple applications. The practical knowledge gained serves as a stepping stone for more advanced Python courses or specialization in areas like data science or web development.</p> <p>Interest:</p> <p>Python's user-friendly syntax and extensive libraries make it an enjoyable language for beginners. The course is designed to spark interest by combining theory with hands-on projects, fostering a passion for coding and problem-solving.</p> <p>Connection with Other Courses:</p> <p>Python is a gateway language that seamlessly integrates with other programming languages and technologies. The skills acquired in a Basic Python Programming Course provide a solid foundation for advanced programming</p>

		<p>languages and specialized courses in data science, machine learning, and more.</p> <p>Demand in the Industry:</p> <p>Python's popularity in the industry is soaring. Its versatility, readability, and extensive community support have led to its widespread adoption. Professionals proficient in Python are in high demand across various sectors, including technology, finance, healthcare, and academia.</p> <p>Job Prospects:</p> <p>Completion of this Course opens doors to entry-level positions in software development, quality assurance, data analysis, and scripting. Python developers are sought after for their ability to quickly prototype solutions and contribute to various stages of software development.</p>
2	Vertical:	VSC
3	Type:	Practical
4	Credits:	2 credits (1 credit = 15 Hours for Theory or 30 Hours of Practical work in a semester)
5	Hours Allotted:	60 Hours
6	Marks Allotted:	50 Marks
7	<p>Course Objectives(CO):</p> <p>CO 1. Master Python features, execution, and diverse data types.</p> <p>CO 2. Demonstrate expertise in if statements, loops, and control statements.</p> <p>CO 3. Efficiently create and manipulate arrays, strings, and data structures.</p> <p>CO 4. Apply functions, modules, and strings for versatile programming tasks.</p> <p>CO 5. Effectively manage files, utilize regular expressions, and work with date and time.</p>	
8	<p>Course Outcomes (OC):</p> <p>OC 1. Apply Python features for diverse programming tasks confidently.</p> <p>OC 2. Implement control flow statements for precise program execution.</p> <p>OC 3. Manipulate arrays, strings, and data structures with precision and ease.</p> <p>OC 4. Create modular, efficient code using functions, modules, and strings.</p> <p>OC 5. Skillfully manage files, utilize regular expressions, and work with date and time for program efficiency.</p>	
9	<p>Modules:-</p> <p>Module (30 hours):</p> <p>Overview and Basic Elements of Python Programming: Features of Python, Execution of a Python Program, Flavours of Python, Innards of Python, Python Interpreter, Comments, Docstrings, IDLE, Data types, Dictionary, Sets, Mapping, Basic Elements of Python, Variables, Input Function, Output Statements, Command Line Arguments. Operators, Precedence of Operators, Associativity of Operators</p>	

	<p>Control Statements: The if statement, The if ... else Statement, The if ... elif ... else Statement, Loop Statement- while loop, for loop, Infinite loop, Nested loop, The else suite, break statement, continue statement, pass statement, assert statement, return statement.</p> <p>Arrays: Creating Arrays, Indexing and Slicing of Arrays, Basic Array Operations, Arrays Processing, Mathematical Operations on Array, Aliasing Arrays, Slicing and Indexing in NumPy Arrays, Basic slicing, Advanced Indexing, Dimensions and Attributes of an Array</p> <p>Functions: Function definition and call, Returning Results, Returning Multiple Values from a Function, Built-in Functions, Difference between a Function and a Method, Pass Value by Object Reference, Parameters and Arguments, Recursive Functions, Anonymous or Lambda Functions. Modules in Python.</p> <p>Strings: Creating Strings, Functions of Strings, Working with Strings, Formatting Strings, Finding the Number of Characters and Words, Inserting Substrings into a String.</p>
	<p>Module (30 hours):</p> <p>Exploring List, Tuples and Dictionaries: Lists, List Functions and Methods, List Operations, List Slices, Nested Lists, Tuples, Functions in Tuple.</p> <p>Working with Dictionaries: Creating a Dictionary, Operators in Dictionary, Dictionary Methods, Using for Loop with Dictionaries, Operations on Dictionaries</p> <p>Files in Python: Opening and Closing a File, Working with Text Files, , Working with Binary Files, The ‘with’ statement, Pickle in Python, The seek() and tell() Methods, Random Accessing of Binary Files, Zipping and Unzipping Files, Working with Directories</p> <p>Regular Expressions: Introduction, Sequence Characters in Regular Expressions, Special Characters in Regular Expressions, Using Regular Expression on Files, Retrieving Information from an HTML File</p> <p>Date And Time in Python: Time, Date, Date and Time Now, combining date and times, formatting date and time, Finding and comparing dates, Sorting dates, Knowing the Time taken by a Program, Working with Calendar Module</p>
<p>10</p>	<p>Text Books</p> <ol style="list-style-type: none"> 1. Practical Programming: An Introduction to Computer Science Using Python 3, Paul Gries , Jennifer Campbell, Jason Montojo, Pragmatic Bookshelf, 2nd Edition, 2014 2. Programming through Python, M. T Savaliya, R. K. Maurya & G M Magar, Sybgen Learning India, 2020
<p>11</p>	<p>Reference Books</p> <ol style="list-style-type: none"> 1. Python: The Complete Reference, Martin C. Brown, McGraw Hill, 2018 2. Beginning Python: From Novice to Professional, Magnus Lie Hetland, Apress, 2017

	<p>3. Programming in Python 3, Mark Summerfield, Pearson Education, 2nd Ed, 2018</p> <p>4. Python Programming: Using Problem Solving Approach, ReemaThareja, Oxford Univeristy Press, 2017</p> <p>5. Let Us Python, Yashwant. B. Kanetkar, BPB Publication, 2019</p>													
12	Internal Continuous Assessment: 40%	Semester End Examination: 60%												
13	<p>The internal evaluation will be determined by the completion of practical tasks and the submission of corresponding write-ups for each session. Each practical exercise holds a maximum value of 5 marks. The total evaluation, out of 50 marks, should be scaled down to a final score of 20 marks.</p> <hr/> <p>Total: 20 marks</p>	<p>A Semester End Practical Examination of 2 hours duration for 30 marks as per the paper pattern given below.</p> <p>Certified Journal is compulsory for appearing at the time of Practical Exam</p> <hr/> <p>Total: 30 Marks</p>												
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Q. 3	Viva	06												

Name of the Course: Statistics with R Programming

Sr. No.	Heading	Particulars
1	Description the course:	<p>Introduction:</p> <p>This course provides an immersive exploration into the world of statistical computing and data analysis. Developed specifically for statistical computing and graphics, R is an open-source language that has become a standard tool for professionals in various fields.</p> <p>Relevance:</p> <p>In the era of big data and analytics, R programming is highly relevant. It is widely used for statistical modeling, data visualization, and machine learning, making it an indispensable skill for individuals in data-centric roles.</p> <p>Usefulness:</p> <p>The course equips participants with the ability to manipulate data, perform statistical analyses, and create visualizations. R's versatility makes it valuable for both beginners entering the field and seasoned professionals enhancing their analytical toolkit.</p> <p>Application:</p> <p>R programming finds application across diverse domains, including finance, healthcare, marketing, and academia. Participants can apply R to solve real-world problems, extract insights from data, and make informed decisions.</p> <p>Interest:</p> <p>The R programming course often sparks interest due to its hands-on nature. Participants engage in practical exercises, exploring datasets, creating visualizations, and developing statistical models, fostering a deep understanding of data analytics.</p> <p>Connection with Other Courses:</p> <p>This course forms a symbiotic connection with other data-centric courses. It complements studies in statistics, machine learning, and data science, providing a foundation for advanced analytics.</p> <p>Demand in the Industry:</p> <p>Professionals with R programming skills are in high demand. Industries ranging from finance to healthcare seek individuals who can leverage R for data analysis and</p>

		<p>decision-making, contributing to evidence-based practices.</p> <p>Job Prospects:</p> <p>Graduates from an R programming course find diverse job prospects. Roles may include data analyst, statistician, business intelligence analyst, and data scientist. These professionals are sought after for their ability to derive actionable insights from data.</p>
2	Vertical:	SEC
3	Type:	Practical
4	Credits:	2 credits (1 credit = 15 Hours for Theory or 30 Hours of Practical work in a semester)
5	Hours Allotted:	60 Hours
6	Marks Allotted:	50 Marks
7	<p>Course Objectives(CO):</p> <p>CO 1. Understand R basics, set up R Studio, and customize the environment..</p> <p>CO 2. Master R expressions, assignments, loops, and decision-making.</p> <p>CO 3. Develop proficiency in using R data structures: vectors, matrices, lists, and data frames.</p> <p>CO 4. Demonstrate expertise in character strings manipulation in R.</p> <p>CO 5. Apply built-in statistical functions, regression analysis, and distribution functions fluently.</p>	
8	<p>Course Outcomes (OC):</p> <p>OC 1. Confidently navigate Studio, R GUI, and manage data in R.</p> <p>OC 2. Fluent implementation of expressions, assignments, and loops in R.</p> <p>OC 3. Use R data structures for effective data management.</p> <p>OC 4. Efficiently manipulate and operate on character strings in R.</p> <p>OC 5. Apply statistical functions, regression analysis, and distribution functions with confidence.</p>	
9	<p>Modules:-</p> <p>Module 1 (30 hours):</p> <p>Exploring R Language and Setting Up environment: Introduction to R, Terminologies in R, R Environment, Installing R, Studio, and R Commander, Customizing Studio, Data Management in Studio, R Graphical User Interface (R GUI), Working with R Scripts</p> <p>Implementing Expression: Expressions, assignment, Decision making, Loops, data and time options in R</p> <p>Essential Data Structures in R: Vectors, Matrix, Arrays, Lists, Data frames, Functions</p> <p>Implementing Strings in R: Character strings in R, Character Strings, , Strings and R objects, String Manipulation: Printing Characters, Basic String Manipulations, String Operations</p>	

	Module 2 (30 hours):													
	<p>Built-in statistical functions in R: mean() function, Median, Standard Deviation, Some other built-in statistical functions,</p> <p>Regression Analysis: Regression Analysis-Linear Regression and Multiple Regression, Normal Distribution- dnorm(),pnorm(),qnorm(),rnorm()</p> <p>Binomial Distribution: dbinom(),pbinom(),qbinom(),rbinom() Functions, Time Series Analysis</p> <p>Visualizing and analysing Data in R: Tabulation, Contingency Tables, Making R Contingency Tables, Making R Custom Contingency Tables, Selection of Parts in a Table Object, Conversion of an Object into the Table, Testing Table Objects, Making R Complex Tables, Representing data through Cross Tabulation</p> <p>Graphical Models & analysis: Plots made of Single Plots made of Two Variables , Variable, Plots made of Multiple Variables, Special Plots, Storing Graphics</p>													
10	<p>Text Books</p> <ol style="list-style-type: none"> 1. Statistical Programming in R, K.G. Srinivasa G.M. Siddesh,Chetan Shetty , Oxford University Press, 2017 2. Learning R: A Language for Data Analytics and Visualization, Sybgen Learning, R. K. Maurya, 2021 3. Introduction to Statistics and Data Analysis With Exercises, Solutions and Applications in R: Heumann, Christian, Schomaker, Michael, Shalabh, Publisher” Springer 2016 													
11	<p>Reference Books</p> <ol style="list-style-type: none"> 1. Learning R Programming, Kun Ren, Packt Publishing, 2018 2. R Programming for Statistics and Data Science(Video), 365 Careers, Packt, 2018 3. R Programming Fundamentals, Kaelen Medeiros, Oreily-Packt Publishing 													
12	Internal Continuous Assessment: 40%	Semester End Examination: 60%												
13	<p>The internal evaluation will be determined by the completion of practical tasks and the submission of corresponding write-ups for each session. Each practical exercise holds a maximum value of 5 marks. The total evaluation, out of 100 marks, should be scaled down to a final score of 20 marks.</p> <hr/> <p>Total: 20 marks</p>	<p>A Semester End Practical Examination of 2 hours duration for 30 marks as per the paper pattern given below.</p> <p>Certified Journal is compulsory for appearing at the time of Practical Exam</p> <hr/> <p>Total: 30 Marks</p>												
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Name of the Course: LINUX Operating System

Sr. No.	Heading	Particulars
1	Description the course:	<p>Introduction:</p> <p>The Linux Operating System course is a foundational exploration into the world of computing, providing students with essential knowledge about this open-source and widely used operating system.</p> <p>Relevance:</p> <p>Linux is integral to various industries, from server administration to software development, cybersecurity, cloud computing, and IoT, making the course highly relevant in today's digital landscape.</p> <p>Usefulness:</p> <p>Linux dominates global server environments, making it a crucial skill for managing and maintaining servers efficiently. Many development tools and environments are Linux-based, enhancing a developer's capabilities. Linux, well-known for its robust security features, plays a pivotal role in the field of cybersecurity, making Linux knowledge invaluable for professionals in this domain. Popular cloud platforms extensively use Linux, making familiarity with it beneficial for cloud administrators. Linux's prevalence in IoT devices and embedded systems underscores its importance for professionals working in these emerging fields.</p> <p>Application:</p> <p>The course introduces students to the core principles and practical applications of Linux, covering areas such as server administration, software development, cybersecurity, cloud computing, and IoT.</p> <p>Interest:</p> <p>With its open-source nature and versatile applications, Linux attracts individuals who appreciate efficient command-line tools and those interested in stability, reliability, and the command-line interface.</p> <p>Connection with Other Courses:</p> <p>The course seamlessly integrates with network administration courses by incorporating essential Linux commands. It also aligns with various software development courses, fostering a comprehensive</p>

		<p>understanding of computing environments.</p> <p>Demand in the Industry:</p> <p>The industry recognizes the stability, security, and cost-effectiveness of Linux, resulting in a consistently high demand for professionals with Linux expertise.</p> <p>Job Prospects:</p> <p>Graduates of the Linux Operating System course are well-positioned for diverse roles, including system administrators, network administrators, DevOps engineers, cloud administrators, cybersecurity analysts, and software developers.</p>
2	Vertical:	SEC
3	Type:	Practical
4	Credits:	2 credits (1 credit = 15 Hours for Theory or 30 Hours of Practical work in a semester)
5	Hours Allotted:	60 Hours
6	Marks Allotted:	50 Marks
7	<p>Course Objectives(CO):</p> <p>CO 1. To learn basic concepts of Linux in terms of operating system</p> <p>CO 2. To learn use of various shell commands with regular expressions</p> <p>CO 3. To set Linux Environment variables and learn setting file permissions to maintain Linux security implementation</p> <p>CO 4. To learn various editors available in Linux OS and learn shell scripting.</p> <p>CO 5. To learn installation of compilers and programming using C and Python languages on Linux platform.</p>	
8	<p>Course Outcomes (OC):</p> <p>OC 1. Work with Linux file system structure, Linux Environment</p> <p>OC 2. Handle shell commands for scripting, with features of regular expressions, redirections</p> <p>OC 3. Implement file security permissions</p> <p>OC 4. Work with vi, sed and awk editors for shell scripting using various control structures</p> <p>OC 5. Install software like compilers and develop programs in C and Python programming languages on Linux Platform</p>	
9	<p>Modules:-</p> <p>Module (30 hours):</p> <p>Introduction to Linux Operating System and Basics: History of Linux, GNU Info and Utilities, Various Linux Distributions, The Unix/Linux architecture, Features of Unix/Linux</p> <p>Installation of Ubuntu Linux Operating System: Booting and Installing from USB/DVD, Using Ubuntu Software Center / Using Synaptic, Exploring useful</p>	

	<p>software packages</p> <p>Becoming an Ubuntu Power User: Administering system and user settings, Learning Unity keyboard shortcuts, Using the Terminal</p> <p>Linux Basics: Starting the shell, Shell prompt, Command structure, File Systems and Directory Structure, man pages, more documentation pages</p> <p>File System Commands: touch, help, man, more, less, pwd, cd, mkdir, rmdir, ls, find, etc.</p> <p>File Handling Commands: cat, cp, rm, mv, more, file, wc, od, cmp, diff, comm, gzip, gunzip, zip, unzip, tar, ln, umask, etc.</p> <p>General Purpose Utility Commands: cal, date, echo, man, printf, passwd, script, who, uname, tty, stty, etc.</p> <p>Linux File Permissions: Understanding Linux file permissions, Using Linux groups. Decoding file permissions, Changing security settings, chmod, chown, chgrp</p> <hr/> <p>Module (30 hours):</p> <p>Linux Security: Understanding Linux Security, Uses of root, sudo command, Working with passwords, Understanding ssh</p> <p>Networking Commands: who, whoami, ping, telnet, ftp, ssh, etc.</p> <p>Editors: vi, sed, awk</p> <p>Simple Filters and I/O Redirection: head, tail, cut, paste, sort, grep family, tee, uniq, tr, etc.</p> <p>Shell Scripting: Defining variables, reading user input, exit and exit status commands, expr, test, [], if conditional, logical operators, Conditions (for loop, until loop, and while loop), arithmetic operations, Redirecting input/output in scripts, creating your own redirection.</p> <p>Working and Managing Processes: sh, ps, kill, nice, at, batch, etc.</p> <p>Job scheduling commands: ps, nice, renice, at, batch, cron table</p> <p>Installation of C/C++/Java/Python Compiler and Environment Setup and Basic programming using C and Python languages.</p>
<p>10</p>	<p>Text Books</p> <ol style="list-style-type: none"> 1. Linux Command line and Shell Scripting Bible, Richard Blum, Wiley India. 2. Unix: Concepts and Applications, Sumitabha Das, 4th Edition, McGraw Hill. 3. Official Ubuntu Book, Matthew Helmke& Elizabeth K. Joseph with Jose Antonio Rey and Philips Ballew, 8th Ed.
<p>11</p>	<p>Reference Books</p> <ol style="list-style-type: none"> 1. Linux Administration: A Beginner's Guide, Fifth Edition, Wale Soyinka, Tata McGraw-Hill, 2008. 2. Linux: Complete Reference, Richard Petersen, 6th Edition, Tata McGraw-Hill 3. Beginning Linux Programming, Neil Mathew, 4th Edition, Wiley Publishing, 2008.

12	Internal Continuous Assessment: 40%	Semester End Examination: 60%												
13	<p>The internal evaluation will be determined by the completion of practical tasks and the submission of corresponding write-ups for each session. Each practical exercise holds a maximum value of 5 marks. The total evaluation, out of 100 marks, should be scaled down to a final score of 20 marks.</p> <hr/> <p>Total: 20 marks</p>	<p>A Semester End Practical Examination of 2 hours duration for 30 marks as per the paper pattern given below.</p> <p>Certified Journal is compulsory for appearing at the time of Practical Exam</p> <hr/> <p>Total: 30 Marks</p>												
14	<p>Format of Question Paper:</p> <p>Total Marks: 30 Duration: 2 Hours</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 25%;">Question</th> <th style="width: 50%;">Practical Question Based On</th> <th style="width: 25%;">Marks</th> </tr> </thead> <tbody> <tr> <td>Q. 1</td> <td>Module 1</td> <td>12</td> </tr> <tr> <td>Q. 2</td> <td>Module 2</td> <td>12</td> </tr> <tr> <td>Q. 3</td> <td>Viva</td> <td>06</td> </tr> </tbody> </table>		Question	Practical Question Based On	Marks	Q. 1	Module 1	12	Q. 2	Module 2	12	Q. 3	Viva	06
Question	Practical Question Based On	Marks												
Q. 1	Module 1	12												
Q. 2	Module 2	12												
Q. 3	Viva	06												

As Per NEP 2020

University of Mumbai



Syllabus for Basket of Open Electives	
Ad- hoc Board of Studies in B. Com. (Management Studies)	
UG First Year Programme	
Semester	1
Title of Paper	Credits 2/ 4
Marketing Mix - I	2
From the Academic Year	2024-25

Sr. No.	Heading	Particulars
1	Description the course: Including but not limited to:	Management is not only an essence in all fields but it is a prevalent tool in the hands of corporates to governments. From planning to controlling and from budgeting to reporting, all managerial elements are the most essential parts of daily life. So the learners need to know about all aspects from rural development to creating artificial intelligence. They will understand how to develop India, one of the fifth most powerful economies in the world. It is expected that the learners should learn how to develop our economy and management for the future generation from these managerial facets.
2	Vertical :	Major/Minor/ Open Elective /Skill Enhancement / Ability Enhancement/Indian Knowledge System (Choose By √)
3	Type :	Theory / Practical
4	Credit:	2 credits
5	Hours Allotted :	30 Hours
6	Marks Allotted:	50 Marks
7	Course Objectives: <ol style="list-style-type: none"> 1. To familiarize with the basic concepts of marketing management. 2. To create awareness of marketing mix elements. 3. To understand the basics of Product and Price mix. 	

8	<p>Course Outcomes:</p> <ol style="list-style-type: none"> 1. The students will learn about the various elements of Marketing Mix 2. Understand the key concepts and components of product and price mix strategies 3. Analyze the factors influencing product development, pricing decisions, and brand positioning
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9	<p>Modules: -</p> <hr/> <p>Module 1: Marketing Mix- Product</p> <hr/> <ol style="list-style-type: none"> 1. Introduction to Marketing and Marketing Management, Marketing Concepts – Elements of Marketing mix- Product Mix. 2. Product Classification: Consumer goods and Industrial goods classification- Product Life Cycle: Stages, Meaning and significance of Product Positioning: Meaning and need of Branding <hr/> <p>Module 2 Marketing Mix- Price</p> <hr/> <ol style="list-style-type: none"> 1. Meaning and objective of Pricing- Price decisions: Factors affecting pricing decisions- Pricing policies and constraints 2. Significance of pricing- Methods of pricing - Steps in Pricing- Types of Pricing Strategies
10	<p>Text Books:</p> <ul style="list-style-type: none"> • <i>Ramaswamy. V S & Namakumari. S, MARKETING MANAGEMENT-PLANNING IMPLEMENTATION AND CONTROL, Macmillan Business Books, New Delhi, 2002, Hall Of India, New Delhi,</i>

11	Reference Books: <ol style="list-style-type: none"> 1. Philip Kotler, <i>MARKETING MANAGEMENT- ANALYSIS PLANNING AND CONTROL</i>, Prentice K.S. Chandrasekar, <i>MARKETING MANAGEMENT TEXT AND CASES</i>, Tata Mcgraw-Hill Publication, New Delhi.2010 2. Govindarajan, <i>MARKETING MANAGEMENT CONCEPTS, CASES, CHALLENGES AND TRENDS</i>, Prentice Hall Of India, New Delhi. 2009 3. Michael Porter – <i>Competitive Advantage</i> 4. Theodore Levitt – <i>Marketing Management</i> 5. <i>Fundamentals Of Marketing</i> – William Stanton 6. <i>Customer Driven Services Management (1999) Response Books</i> 																				
12	Internal Continuous Assessment: 40%	External, Semester End Examination Individual Passing in Internal and External Examination : 60%																			
13	Continuous Evaluation through: Quizzes, Class Tests, presentation, project, role play, creative writing, assignment etc.(at least 3)																				
14	Format of Question Paper: for the final examination External Paper Pattern (30 Marks) <table style="width: 100%; border: none;"> <tr> <td style="width: 80%;">Q1. Case Study Analysis</td> <td style="width: 20%; text-align: right;">10 Marks</td> </tr> <tr> <td>Q2. Answer the following (Any One)</td> <td style="text-align: right;">10 marks</td> </tr> <tr> <td style="padding-left: 20px;">A</td> <td></td> </tr> <tr> <td style="padding-left: 20px;">Or</td> <td></td> </tr> <tr> <td style="padding-left: 20px;">B</td> <td></td> </tr> <tr> <td>Q3. Answer the following (Any One)</td> <td style="text-align: right;">10 Marks</td> </tr> <tr> <td style="padding-left: 20px;">A</td> <td></td> </tr> <tr> <td style="padding-left: 20px;">Or</td> <td></td> </tr> <tr> <td style="padding-left: 20px;">B</td> <td></td> </tr> </table>			Q1. Case Study Analysis	10 Marks	Q2. Answer the following (Any One)	10 marks	A		Or		B		Q3. Answer the following (Any One)	10 Marks	A		Or		B	
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 Prin. Kishori Bhagat
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 Management**

**Sign of the
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 Prof. Kavita Laghate
 Faculty of Commerce
 & Management**

As Per NEP 2020

University of Mumbai



Syllabus for Basket of Open Electives	
Ad- hoc Board of Studies in B. Com. (Management Studies)	
UG First Year Programme	
Semester	I
Title of Paper	Credits 2/ 4
Case Studies in Management	2
From the Academic Year	2024-25

Sr. No.	Heading	Particulars
1	Description the course: Including but not limited to:	Management is not only an essence in all fields but it is a prevalent tool in the hands of corporates to governments. From planning to controlling and from budgeting to reporting, all managerial elements are the most essential parts of daily life. So the learners need to know about all aspects from rural development to creating artificial intelligence. They will understand how to develop India, one of the fifth most powerful economies in the world. It is expected that the learners should learn how to develop our economy and management for the future generation from these managerial facets.
2	Vertical :	Major/Minor/ Open Elective /Skill Enhancement / Ability Enhancement/Indian Knowledge System (Choose By √)
3	Type :	Theory / Practical
4	Credit:	2 credits
5	Hours Allotted :	30 Hours
6	Marks Allotted:	50 Marks
7	Course Objectives: <ol style="list-style-type: none"> 1. Identify the usages of case studies in the management 2. Analyse case studies using relevant theoretical frameworks 3. Develop and present well-supported recommendations for business challenges through case studies 	

8	<p>Course Outcomes:</p> <ol style="list-style-type: none"> 1. Learners should understand the importance of case studies in management. 2. Students should develop analytical skills to dissect complex business problems. 3. Learners should apply theoretical frameworks to real-world case studies.
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9	<p>Modules: -</p>
	<p>Module 1: Importance of Case Studies in Management</p>
	<ol style="list-style-type: none"> a) Meaning of Case Study, Features of Case study, Need of Case study, Advantages of case studies in management b) Approach of Theoretical case studies and Practical case studies, difference between theory and practical case studies, Usages of case studies in the industry
	<p>Module 2: Types and Examples of Case Studies</p>
	<ol style="list-style-type: none"> a) Types: By Purpose, By Focus, By the role of the researcher, By types of the Industry, By Role models b) Examples of the case studies: Indian business houses, famous overseas businesses, famous personalities.
10	<p>Text Books:</p> <ul style="list-style-type: none"> ● <i>Ramaswamy. V S & Namakumari. S, MARKETING MANAGEMENT-PLANNING IMPLEMENTATION AND CONTROL, Macmillan Business Books, New Delhi, 2002,</i> ● <i>Hall Of India, New Delhi,</i> ● Sanjay Mohapatra: 2011: Case Studies in Strategic Management: A Practical Approach: Pearson Education Publication India

11	<p>Reference Books:</p> <ul style="list-style-type: none"> ● Case Studies in Strategic Management by Sanjay Mohapatra ● Business Cases and How to Crack Them by Mimi Hoang ● The Case Study Handbook by Robert Yin ● Case in Point: Complete Guide to Case Study Analysis by Judith Rae Weston ● Harvard Business School Cases.
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12	Internal Continuous Assessment: 40%	External, Semester End Examination Individual Passing in Internal and External Examination : 60%
13	Continuous Evaluation through: Quizzes, Class Tests, presentation, project, role play, creative writing, assignment etc.(at least 3)	
14	Format of Question Paper: for the final examination External Paper Pattern (30 Marks) Q1. Case Study Analysis 10 Marks Q2. Answer the following (Any One) 10 marks A Or B Q3. Answer the following (Any One) 10 Marks A Or B	

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Prof. Dr. Kanchan
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Management**

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Faculty of Commerce
& Management**

AC –20.04.2024
Item No. –5.6 (N) Sem I (1a)

As Per NEP 2020

University of Mumbai



Syllabus for Basket of AEC	
Board of Studies in English	
UG First Year Programme B.Sc	
Semester	I
Title of Paper	Credits
Introduction to Communication Skills in English I	2
From the Academic Year	2024-2025

Sr. No.	Heading	Particulars
1	Description of the course: Including but Not limited to:	<p>Introduction to Communication Skills in English I</p> <p>Effective academic communication skills are essential for success in scholarly pursuits. In the academic realm, proficiency extends beyond verbal articulation to encompass precise and coherent written expression. Students are not only required to engage in thoughtful discussions and articulate complex ideas verbally but must also demonstrate their understanding through well-crafted written assignments, and presentations. Academic communication involves the mastery of scholarly conventions, such as adherence to academic writing styles, and the ability to engage in dialogue with peers and scholars. It encompasses the skillful navigation of academic discourse, fostering an environment where ideas are shared, challenged, and refined. Developing strong academic communication skills empower individuals to contribute meaningfully to intellectual conversations, enriching both their academic journey and the broader scholarly community.</p> <p>This course with its 30:20 pattern will also help in accomplishing this goal. The course is aimed at honing their cognitive, analytical, linguistic and creative skills. It is hoped that by the end of the academic year, the learners will have developed confidence in using the English language both for oral and written communication as well as develop interest in enhancing these skills later on.</p>
2	Vertical:	AEC (Ability Enhancement Course)
3	Type:	Theory
4	Credit:	2 credits (1credit=15 Hours for Theory in a semester)
5	Hours Allotted:	30Hours
6	Marks Allotted:	50Marks
7	Course Objectives:	<ol style="list-style-type: none"> 1. To cultivate a comprehensive understanding of communication skills 2. To enhance reading proficiency with a diverse range of written texts with different genres and styles of written communication. 3. To develop proficiency in grammatical accuracy with specific focus on common grammatical errors and provide targeted exercises for improvement. 4. To equip learners with proficient presentation and conversation skills by integrating practical exercises for public speaking and interpersonal communication. 5. To provide practical experience in formal writing, including Statement of Purpose (SoP) preparation.

8 Course Outcomes:

At the end of the course, learners will:

- Demonstrate an understanding of essential aspects of communication skills
- Exhibit the ability to Read a variety of written text using subskills such as skimming and scanning.
- Identify and rectify common grammatical errors in English.
- Show competence in delivering compelling presentations and engage in articulate and effective conversations in English across different contexts.
- Display advanced formal writing skills in crafting job application letters, CVs, and Statements of Purpose.

9 Modules: -

Module1: (15 Lectures)

A) Introduction to Communication Skills

- The Seven Cs of Effective Communication
- Verbal and Non-Verbal Communication
- Cross-cultural communication
- Technology-enabled Business Communication
- Features of Effective Written Communication
- Characteristics of an Effective Speech
- Effective Listening Skills

B) Reading Skills:

- Scanning a text for information
- Skimming a passage to look for main ideas, understanding text type
- Guessing meaning of an expression (word/phrase/clause)
- Building inference skills

Passages from academic, professional, and literary domains around 200- 250 words, could be chosen in this section.

C) Grammar

- Subject Verb Agreement
- Tenses
- Question Tag
- Change the Voice
- Framing Interrogative sentence
- Synonyms and Antonyms
- Misplaced modifiers

Grammar should be taught with a remedial approach so as to enable learners to avoid common errors in their written and spoken communication.

Module 2: (15 Lectures)

A) Speaking Skills in English

Conversation skills

- Opening a conversation
- Introducing oneself in various contexts
- Introducing others formally and informally

Presentation Skills

- Introduction: Essentials of Presentation skills
- Analysis of model Presentations
- Planning and Delivering the Presentation
- Developing & Displaying Visual Aids
- Handling Questions from the Audience

B) Formal Writing Skills:

- Interpreting and describing different types of visual information
- Job applications with bio data (solicited and unsolicited)
- Statement of Purpose

10 Text Books: N.A.

11 References:

- Bellare, Nirmala. *Reading & Study Strategies*. Books. 1 and 2. Oxford University Press, 1997, 1998
- Bellare, Nirmala. *Easy Steps to Summary Writing and Note-Making*. Amazon Kindle Edition, 2020
- Comfort, Jeremy, et al. *Speaking Effectively: Developing Speaking Skills for Business English*. Cambridge University Press, 1994.
- Das, Bikram K., et. al. *An Introduction to Professional English and Soft Skills*. Cambridge University Press India Pvt. Ltd., 2010
- Das, Yadjnaseni & R. Saha (eds.) *English for Careers*. Pearson Education India, 2012.
- Dimond-Bayir, Stephanie. *Unlock Level 2 Listening and Speaking Skills Student's Book and Online Workbook: Listening and Speaking Skills Student's Book+ Online Workbook*. Cambridge University Press, 2014.
- Doff, Adrian and Christopher Jones. *Language in Use* (Intermediate and Upper Intermediate). CUP, 2004.
- Glendinning, Eric H. and Beverley Holmstrom. Second edition. *Study Reading: A Course in Reading Skills for Academic Purposes*. CUP, 2004
- Goodale, Malcolm. *Professional Presentations Video Pack: A Video Based Course*. Cambridge University Press, 1998.
- Grellet, F. *Developing Reading Skills*. Cambridge: Cambridge University Press, 1981
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- Sasikumar, V., et al. *A Course in Listening & Speaking I*. 2005. Cambridge University Press India Pvt. Ltd. (under the Foundation Books Imprint), 2010
- Savage, Alice, et al *Effective Academic Writing*. Oxford: OUP, 2005
- Sethi, J. *Standard English and Indian usage: Vocabulary and grammar*. PHI Learning Pvt. Ltd., 2011.
- Taylor, Grant. *English Conversation Practice*. 1967. Tata McGraw-Hill, 2013
- Turton, Nigel D. *A B C of Common Grammatical Errors*. 1995. Macmillan India Ltd., 1996
- Vas, Gratian. *English Grammar for Everyone*. Mumbai, Shree Book Centre, 2015
- Watson, T. *Reading Comprehension Skills and Strategies: Level 6*. Saddleback Educational Publishing, 2002

Web link Resources:

- A conversation about household appliances: <https://youtu.be/rAPI0fSborU> 13.
- Video on psychology: Why do we dream? <https://youtu.be/2W85Dwxx218>
- Video on social media: What is a social media influencer? <https://youtu.be/39A3og7enz8>
- Tips on communication (TED Talk): The Secrets of Learning a New Language https://youtu.be/o_XVt5rdpFY
- Expressing opinions: If Cinderella Were a Guy: <https://youtu.be/p40yCNctKXg>
- Video on the English language: Where did English come from? <https://youtu.be/YEaSxhcns7Y>

12	Internal Continuous Assessment: 40%	Semester End Examination: 60%								
13	<p>Continuous Evaluation through:</p> <ul style="list-style-type: none"> • Participation in an activity based on Presentation Skills and Conversation skills each (Module 2 A) (10 marks) The class may be divided into batches by creating formal schedule for the same before the semester End Examination. • Participation in two classroom activities involving skills other than presentation and conversation skills (05 marks) • Overall attendance (05 marks) (Percentage of learners' attendance in class to be considered) <p>Suggested Activities:</p> <ul style="list-style-type: none"> ▪ Listening to audio clips/ books to enhance listening skills ▪ Reading aloud from newspapers, magazines, stories, non-fiction followed by classroom discussion on these to enhance reading and speaking skills 									
14	<p>Format of Question Paper: for the final examination</p> <table border="0" style="width: 100%;"> <tr> <td>Q.1. Short notes (2 out of 4) – On Module 1 (A)</td> <td style="text-align: right;">10 marks</td> </tr> <tr> <td>Q.2. A. Unseen Passage (200-250 words) (Module 1 B)</td> <td style="text-align: right;">06 marks</td> </tr> <tr> <td> B. Questions on grammar (Module 1 C)</td> <td style="text-align: right;">04 marks</td> </tr> <tr> <td>Q. 3. Writing Skills (1 out of 2) on Module 2 (B)</td> <td style="text-align: right;">10 marks</td> </tr> </table>		Q.1. Short notes (2 out of 4) – On Module 1 (A)	10 marks	Q.2. A. Unseen Passage (200-250 words) (Module 1 B)	06 marks	B. Questions on grammar (Module 1 C)	04 marks	Q. 3. Writing Skills (1 out of 2) on Module 2 (B)	10 marks
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Board of Studies in
English**

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As Per NEP 2020

University of Mumbai



Title of the Course

Foundation of Behavioural skills – Basic level

Semester – Sem I

Syllabus for Two Credit

(With effect from the academic year 2024-25)

PROGRAM	BA /BSc/ BCOm
SEMESTER	I
COURSE TITLE	Foundation of Behavioural skills Basic level
VERTICLE /CATEGORY	E (Value Education Course)
COURSE LEVEL	50
COURSE CODE	
COURSE CREDIT	2
HOURS PER WEEK THEORY	2
HOURS PER WEEK PRACTICAL/TUTORIAL	

COURSE OBJECTIVE

1. To develop understating about behavioural Skills.
2. To develop communication skills of students through experiential learning.
3. Life skill development through work life balance and stress management training.
4. To developing effective leadership quality among the learners.

COURSE OUTCOME

CO1: Learners will be able to Define and Identify different life skills required in personal and professional life

CO2: Learners will develop an awareness of the self and apply well-defined techniques to cope with emotions and stress.

CO3: Learners will be able to explain the basic mechanics of effective communication and demonstrate these through presentations and take part in group discussions

CO4: Learners will be able to use appropriate thinking and problem-solving techniques to solve new problems

ORGANISATION OF THE COURSE

UNIT NO	COURSE UNITS	HOURS PER WEEK
1	Module 1: Behavioural skills	2*5=10
2	Module 2: Stress Management	2*2=04
3	Module 3: 21st-century skills	2*5=10
4	Module 4: Understanding Value Education	2*3=6
TOTAL HOURS		30

COURSE DESIGN

UNIT TITLE	OUTCOME	DESCRIPTION	PEDAGOGICAL APPROACH
Behavioural skills	Learners will be able to Define and Identify different life skills required in personal and professional life.	<p>Overview of Life Skills: Meaning and significance of life skills, skills identified by WHO: Self-awareness, Empathy, Critical thinking, Creative thinking, Decision making, problem solving, Effective communication, interpersonal relationship, coping with stress, coping with emotion.</p> <p>Life skills for professionals: positive thinking, right attitude, attention to detail, having the big picture, learning skills, research skills, perseverance, setting goals and achieving them, helping others, leadership, motivation, self-motivation, and motivating others, personality development, IQ, EQ, and SQ2.</p>	Examples, TED Talks, videos.

Stress Management	Learners will develop an awareness of the self and apply well-defined techniques to cope with emotions and stress.	Stress, reasons and effects, identifying stress, stress diaries, the four A's of stress management, techniques, Approaches: action-oriented, emotion-oriented, acceptance-oriented, resilience, Gratitude Training, Coping with emotions: Identifying and managing emotions, harmful ways of dealing with emotions, PATH method and relaxation techniques.	Examples, Role Plays, Behavioral Simulations and Games
21st-century skills	Learners will be able to explain the basic mechanics of effective communication and demonstrate these through presentations and take part in group discussions	Creativity, Critical Thinking, Collaboration, Problem Solving, Decision Making, Need for Creativity in the 21st century, Imagination, Intuition, Experience, Sources of Creativity, Lateral Thinking, Myths of creativity, Critical thinking Vs Creative thinking,	Case Discussions, Games and simulations, Group discussions.
Understanding Value Education	Learners will be able to use appropriate thinking and problem-solving techniques to solve new problems	Introduction – Definition, Importance, Process & Classifications of Value Education: Understanding the need, basic guidelines, content and process for Value Education Understanding the thought-provoking issues; need for Values in our daily life Choices making – Choosing, Cherishing & Acting, Classification of Value Education: understanding Personal Values, Social Values, Moral Values & Spiritual Values.	Case Discussions, Games and simulations, Community Service, Presentations

CONTINUOUS ASSESSMENT TESTS (CAT) & SEMESTER END EXAMINATION (SEE)			
NATURE OF ASSESSMENT	MARKS	METHODOLOGY	COURSE OUTCOME
CAT 1 *	10	Online Quiz, Open book test, Presentations, Projects and Viva	CO1
CAT 2 *	05	Presentations, Projects and Viva	CO1, CO2
CAT 3 *	10	Online Quiz, Open book test, Presentations, Project Assignment and Viva	CO3
CAT 4 *	05	Presentations, Projects and Viva	CO4
SEE	30	Five questions of 10 marks each (from each course unit), to be attempted any 3, 10 marks may be subdivided into two sub questions of 5 marks	CO1, CO2, CO3, CO4

*Any Two for 20 marks

ESSENTIAL READINGS	<ol style="list-style-type: none"> 1. R R Gaur, R Sangal, G P Bagaria, 2009, A Foundation Course in Human Values and Professional Ethics. 2. Shiv Khera, "You Can Win", Macmillan Books, New York, 2003. 3. Barun K. Mitra, "Personality Development & Soft Skills", Oxford Publishers, Third impression, 2017.
ADDITIONAL READINGS	The 7 Habits of Highly Effective People: Powerful Lessons in Personal Change Stephen Covey Free Press (first published August 15th 1989)

Syllabus Drafting Committee

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Signature

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Dr. Vinita Pimple

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
D) 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 \surd)
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)	<ol style="list-style-type: none"> 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)	<ol style="list-style-type: none"> 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)	
		<ol style="list-style-type: none"> 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)	
	<ol style="list-style-type: none"> 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)	
	<ol style="list-style-type: none"> 1. Aesthetics 2. Town Planning 3. Strategic Studies 4. Krishi Shastra 5. Vyakaran & Lexicography 6. Natyashastra 7. Ancient Sports 8. Astronomy 	<ol style="list-style-type: none"> 9. Yoga and Wellbeing 10. Linguistics 11. Chitrasutra 12. Architecture 13. Taxation 14. Banking 15. Trade and Commerce
10	Reference Books <ol style="list-style-type: none"> 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 FIVE 12 Marks Q3. Attempt any THREE Questions out of FIFTEEN. 12 Marks	



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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

**Co-Curricular Course
NATIONAL SERVICE SCHEME**

SEM I & SEM II

Syllabus for Two Credit

(With effect from the academic year 2024-25)

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.
10. Arnold, K. (2018). What is R.E.S.P.E.C.T. When it comes to teamwork? Available at: <https://www.extraordinaryteam.com/what-is-r-e-s-p-e-c-t-when-it-comes-to-teamwork/>
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12. Barrett, R. (2013). The Values-driven Organisation: Unleashing Human Potential for Performance and Profit. London: Fulfilling Books
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18. Clarke, S. (2018). Why your values are key to your leadership. Leaderonomic.com Available: <https://leaderonomics.com/leadership/values-key-leadership>
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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 Sports person 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	<p>Introduction to Structure of Sports associations, Fitness Training & Yogic Asanas</p> <p>2.1 Various government schemes, awards and famous sports personalities</p> <p>2.2 Sports Structure of Sports Federations, Khelo India, Sports Tournaments of University of Mumbai and Indian Olympic Association</p> <p>2.3 Fundamental Principles of Fitness training and Yoga</p> <p>2.4 Components of health related and skill related physical fitness</p> <p>2.5 Types of Yogic practices – Asanas, Pranayama and Meditation</p>	15	1
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References –

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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 <ul style="list-style-type: none">• 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 <ul style="list-style-type: none">□ Role of student cultural activities□ History of student cultural activities in India	05

		<ul style="list-style-type: none"> • 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	<p>3.1 Forms / Types of Literary and Fine Arts Activities and its Applied Skills</p> <p>3.1.1 Various Forms of Literary Arts</p> <ul style="list-style-type: none"> • 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 <p>3.1.2 Various Forms of Fine Arts</p> <ul style="list-style-type: none"> • 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

		<ul style="list-style-type: none"> • 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	<p>4.1 Forms / Types of Performing Arts Activities and its Applied Skills</p> <p>4.1.1 Various Forms of Dance</p> <ul style="list-style-type: none"> • 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 <p>4.1.2 Various Forms of Theatre</p> <ul style="list-style-type: none"> • History of Indian Theatre • Types and their Uniqueness • Significance of Indian Theatre • Various Forms of Theatre: One Act Play, Skit, Mime, Mimicry <p>4.1.3 Various Forms of Music</p> <ul style="list-style-type: none"> • History of Indian Music, • Types and their Uniqueness, • Significance of Music in India • Various Forms of Music: Classical Singing, Light Vocal, Percussion, Non-Percussion, Nattasangeet, 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
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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 text- Past, Present and Future. Colorado Springs, Colo, 2017.
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AC –28/06/204

Item No. – 5.6 (N)

University of Mumbai



Syllabus for Extension Work in Vertical VI - CC

Board of Studies in Extension Work

UG First Year Program

Semester

I

Title of Paper

Credit

Extension Work

2

From the Academic Year

2024-25

Introduction

The National Education Policy (NEP) 2020 is a comprehensive framework introduced by the Government of India to revamp the country's education system. It has replaced the previous National Policy on Education, which has aim to ensure universal access to quality education from preschool to higher education, including vocational education. NEP 2020 emphasizes a more holistic, multidisciplinary, and flexible curriculum which lays emphasis on conceptual understanding rather than rote learning allowing students to choose subjects across disciplines without strict boundaries.

The National Education Policy (NEP) 2020 of India addresses the role of higher education institutions in fostering community engagement and extension work. It highlights the social responsibility of higher education institutions towards their communities. It encourages institutions to engage with local communities, address societal challenges, and contribute to sustainable development. The policy promotes the implementation of outreach programs by higher education institutions to disseminate knowledge, provide services, and support community development. These programs may include literacy campaigns, career development programs, social issues awareness programs, health and hygiene initiatives, skill development workshops, and technology-oriented activities. The policy suggests integrating extension work into the curriculum of higher education programs. This allows learners to gain practical experience, develop leadership skills, and contribute to community development while pursuing their studies. It recognizes incentives to encourage active engagement in community service and extension activities.

Overall, NEP 2020 recognizes the significant role of higher education institutions in promoting community engagement, social responsibility, and sustainable development through extension work. By integrating extension activities into their mission and operations, institutions can contribute to building inclusive and resilient societies.

Extension work in the context of education refers to the activities and programs conducted by educational institutions to engage with communities, address societal needs, and promote social development.

Aim of Extension Work under NEP:

- Extension work aims to identify and address the specific needs and challenges faced by communities. NEP 2020 encourages higher education institutions to engage with local communities and contribute to their development by offering programs and services that

address social needs, such as literacy programs, health awareness campaigns, and vocational training.

- Extension work aims to empower communities by providing them with the knowledge, skills, and resources they need to address their own requirements and improve their quality of life.

Key objectives of Extension Work under NEP:

- To ensure equal access to quality education and educational opportunities to aspirants.
- To support the government initiatives in achieving universal foundational literacy and numeracy as per sustainable development program.
- To organize remedial programs to address the learning breaches among the youth and provide unending education opportunities.
- To offer more holistic, multidisciplinary, and flexible curricular activities with an emphasis on conceptual understanding and personality development.
- To offer a wide range of activities & promote critical thinking, creativity, and innovation.
- To provide aspirants with multiple pathways for skill development and employment.
- To implement outreach programs to disseminate knowledge, provide services, and support community development.

Extension Work Activities:

Extension Work activities introduced by DLLE are a crucial aspect of the educational environment, offering multifaceted benefits that extend beyond academic learning. Many extension activities focus on social issues, sustainability, and environmental conservation. These activities educate the communities on sustainable practices which promote inclusivity and social justice. These activities focus especially on training women in various skills, including entrepreneurship and digital literacy through various vocational skill-oriented projects offered by the department. These activities have significantly contributed to skill development among community members, leading to improved employment opportunities and personality development. Learners participate in extension work activities as part of their curriculum, to gain practical experience and to contribute to community development. Thus, engaging in extension work fosters a sense of social responsibility and civic engagement among the learners and facilitators.

THE EXTENSION DIMENSION (Reach to Unreached)

The college students are enrolled for extension work and perform various activities for the **social awareness based on various issues / problems in the society such as Save Girl Child, Pollution, Aids, Global Warming, Environment, Tree Plantation, Importance of Education, Illiteracy, Child Labour, Dowry Deaths, Malnutrition, Watershed Management and so many.** The students are creating awareness about these social problems / issues through various activities such as Street Play, Exhibition, Poster Making, Songs, Speech, Survey, Elocution, and participation in Seminar & Conferences. For this purpose, students are going to remote areas and involve the community and make them aware of our role in eradicating social problems faced by the society and trying to convince the people human duties as an ideal citizen.

To facilitate the sensitization of the student to the socio-cultural realities, the Department offers extension work projects encompassing social issues for the student. There are many Extension Work Projects being offered by the department under the two different units for enhancing the employability and IT skills of the student. The projects are given below, for which the details are available on DLLE website at www.mudlle.ac.in.

I) Vocational Career Oriented Projects

1. Career Project [CP]
2. Industry Orientation Project [IOP]
3. Anna Poorna Yojana [APY]
4. Skill Development (SD)

II) Community Oriented Projects

1. Population Education Club (PEC)
2. Survey Research
3. Education for All (EFA- NIOS, IDOL)
4. Environment Education
5. Civic Sense (CS)
6. Consumer Guidance

Given below are the activities / programs to be conducted by the colleges as a part of Extension Work Syllabus as enlisted. The learner will participate in the following activities during Semester I in this academic year.

ACTIVITIES FOR SEMESTER I = TOTAL 2 Credits

Sr. No.	Unit / Activities	No. of Lectures
1	<p><u>Exhibit your talent (Talent Search Program)</u></p> <p>Talent Search: Need, Aim and Objectives, Nurturing Talent. Usefulness in Extension Work.</p> <p><u>Organizing Talent Search Program.</u></p> <p>The Extension Work Teacher will orient the learners and organize such program during lecture hours.</p> <p style="padding-left: 40px;">A talent search program is a critical component of modern human resource management that compel sensitization of self-awareness. By systematically identifying, attracting, and nurturing talent, the colleges can build a workforce that is capable, diverse, and aligned with their strategic goals to achieve objectives of extension work.</p> <p style="padding-left: 40px;">The following talents / skills are expected from learners to conduct training, extension work and field outreach activities. (Organization, Crowd control, Storytelling, Stage performance (singing, acting, musical instrument playing), Script writing, Poetry composition, Drawing & painting, Collage, Drafting and writing report, PPT presentation and Video Making.</p>	<p>Total 8 Lectures including guidance for preparations and actual conduct of program.</p>
2	<p><u>Organizing & Participation in Training Session and Note Making</u></p> <p>Every learner should attend the training session organized by their college for orientation of annual extension work program. Attendance is compulsory.</p> <p>In this session the learners will be oriented about all the extension work topics / activities as enlisted followed by question-and-answer session.</p> <p>The learner must read resource material and guidelines carefully</p>	

	<p>and understand the structure of Extension Work under NEP 2020 and accordingly plan for participation in various programs, college level and field outreach activities as given below. Documentation of the activity and report preparation needs to be completed by the learners.</p>	
3	<p><u>Self- Introductory Video / Stage Performance</u></p> <p>All learners enrolled in Extension Work subject can make self-introductory video or stage performance (3-4 minutes duration) stating his / her name, college, areas of interest, reason to join Extension Work, goals, why did he / she choose the particular topic /activity, how will he/she perform & achieve his/her objectives etc. followed by 2-page report writing to be submitted to college. Report writing proforma to be prepared by college.</p> <p>In this session the learners will be oriented about making self-introductory video/ stage performance, prior preparations, grooming styles and presentation skills, practice sessions and other requirements.</p>	
4	<p><u>Participation in Activities /Programs</u> as given below.</p> <p>- Organize and participate in activities / programs related to five enlisted social issues / government policies. The Learners will be oriented to following activities and motivated to participate in:</p> <ol style="list-style-type: none"> 1. Seminar /conferences, discussion sessions, debate, rallies 2. Competitions (essay/creative writing, elocution, poster/ video/ rangoli making etc.- Minimum 2 competitions) 3. Extension Work group activities of other groups in the college. 4. Prepare your PPT, design your posters / charts. 5. Survey / short term academic courses / innovative programs. <p>Learners should perform and <u>participate in above activities (Minimum 3)</u> related to enlisted topics and strictly follow the guidelines. All the activities / programs must be related to extension work topics to fulfil the DLLE objectives.</p>	<p>20 Lectures including guidance for practice session, preparations and actual conduct of program.</p>

	<p>The learners will be oriented about <u>any 5 Topics</u> selected by college for awareness under Extension Work. The college may select more than 5 topics if the enrolment of learners is more than 200. The learners will participate in above activities based on these topics selected by college.)</p> <ol style="list-style-type: none"> 1. Maharashtra Policy for women. 2. Status of women in India. / Women achievers of modern India 3. Banking procedures. 4. Legal procedures. 5. Violence against women / Laws protecting women/ Inheritance laws. 6. Child Labour. 7. Environment- pollution and its effect / Save Trees and Natural Resources 8. Water Harvesting. 9. Pollution (Noise pollution / industrial pollution etc.) 10. Issues related to LGBT. 11. HIV –AIDS / Covid 19 etc. 12. Consumer Awareness (Act 2019), Need and Importance 13. E-waste management 14. Stress and Harassment. 15. Global warming 16. Importance of Ethics and Values 17. Old Age Homes / Status of Senior Citizens 18. Distance Education Opportunities 19. First Aid Awareness 20. Election Literacy / Voting rights / Human Rights 	
5	<p><u>Report Writing and Final submission of assignment / report</u></p> <p>The learners will be oriented to prepare final assignment / report of the activities to the college. Present report during the college program. Proforma of Report to be prepared by college.</p> <ul style="list-style-type: none"> - College will organize a program in the hall / classroom for all learners and give them opportunity to present their assignment 	2 Lectures

	/ report with PPT presentation followed by question answer session / test / interview by the college.	
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Evaluation Pattern

Internal Assessment

Sr. No.	Assessment Criteria	Maximum Marks
1	Attendance, punctuality, completion of hours, participation in programs, presentations and feedback.	10
2	Proficiency in required skill sets, overall performance, submission of written report / assignments and expected development.	10
	Total	20 Marks

External Assessment

(Based on Extension Work guidelines and five enlisted topics chosen by the college.)

Question Paper Pattern

Time: 1.00 Hours

Total Marks 30

Instructions: 1. All questions are compulsory.

2. Figures to the right indicate maximum marks.

Q.1. Rewrite the following statement by choosing correct alternative given below. - 06 Marks
(6 statements. One mark each)

Q.2. Write short Notes On (Any Two out of Four) - 06 Marks

Q.3. Answer the following questions. (Any Three out of Five) - 18 Marks

References:

- Guidelines for Extension Work published by Department of Lifelong Learning and Extension, University of Mumbai.
- Agricultural Extension: Principles and Methods" by "Ray V. Herren (2008)
- Agricultural Extension by G. S. R. Murthy (2010)
- Introduction to Agricultural Extension by S. S. Acharya (2015)
- Agricultural Extension in Developing Countries by R. W. Snapp (2012)
- Extension Communication and Management by B. M. Panda (2016)

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