D. Y. Patil Education Society's

D. Y. Patil Technical Campus
Faculty of Engineering & Faculty of Management
Talsande

(An Autonomous Institute)

Approved by AICTE and Affiliated to Shivaji University, Kolhapur

(Accredited by NAAC 'A' Grade with 3.25 CGPA in First Cycle)

Curriculum Structure

With Effective from Academic Year 2024-25

LIST OF ABBREVIATIONS

Sr. No	Abbreviations	Courses
1	BSC	Basic Science Course
2	ESC	Engineering Science Course
3	PCC	Programme Core Course
4	PEC	Programme Elective Course
5	MDM	Multidisciplinary Minor
6	OE	Open Elective
7	VSEC	Vocational and Skill Enhancement Course
8	AEC	Ability Enhancement Course
9	HSSM	Humanities Social Science and Management
10	IKS	Indian Knowledge System
11	VEC	Value Education Course
12	FP	Field Project
13	ELC	Experiential Learning Courses
14	CC	Co-curricular Courses
15	MC	Mandatory Course
16	ISE	In Semester Evaluation
17	MSE	Mid Semester Examination
18	CA	Continuous Assessment
19	POE	Practical Oral Examination
20	ESE	END Semester Examination

CURRICULUM FRAMEWORK

The Course and Credit Distribution

Sr. No	Type of Course	No. of Courses		Total No. Credit	
		Sem I	Sem II	Sem I	Sem II
1	Basic Science Course (BSC)	2	2	8	8
2	Engineering Science Course (ESC)	2	1	8	5
3	Programme Core Course (PCC)		1		2
4	Programme Elective Course (PEC)				
5	Multidisciplinary Minor (MDM)				
6	Open Elective (OE)				
7	Vocational and Skill Enhancement Course (VSEC)	1	1	2	2
8	Ability Enhancement Course (AEC)		1		1
9	Humanities Social Science and Management (HSSM)				
10	Indian Knowledge System (IKS)	1		2	
11	Value Education Course (VEC)				
12	Field Project (FP)				
13	Experiential Learning Courses (ELC)				
14	Co-curricular Courses (CC)	1	1	2	2
15	Mandatory Course (MC)				
Total		7	7	22	20

Semester wise Course Distribution										Total
Sr. No	Course Category	Number of Courses per Semester								
		1	2	3	4	5	6	7	8	
1	Basic Science Course (BSC)	2	2							4
2	Engineering Science Course (ESC)	2	1							3
3	Programme Core Course (PCC)		1	3	3	3	3	2	2	17
4	Programme Elective Course (PEC)					1	2	2	1	6
5	Multidisciplinary Minor (MDM)			1	1	1	1	1	1	6
6	Open Elective (OE)			1	1	1				3
7	Vocational and Skill Enhancement Course (VSEC)	1	1		1		1			4
8	Ability Enhancement Course (AEC)		1		1					2
9	Entrepreneurship Management Courses			1	1					2
10	Indian Knowledge System (IKS)	1								1
11	Value Education Course (VEC)			1	1					2
12	Research Methodology							1		1
13	Field Project (FP)			1						1
14	Project							1		1
15	Internship								1	1
16	Co-curricular Courses (CC)	1	1							2
Total		7	7	8	9	6	7	7	5	56

CREDIT DISTRIBUTION : SEMESTER WISE										Total	Total Credits GR
1 Lecture hour = 1 Credit 2 Lab Hours = 1 Credit 1 Tutorial Hour = 1 Credit											
Sr. No	Type of Course	No of Credits/ Semester									
		1	2	3	4	5	6	7	8		
1	Basic Science Course (BSC)	8	8							16	14-18
2	Engineering Science Course (ESC)	8	5							13	16-12
3	Programme Core Course (PCC)		2	10	10	12	10	6	4	54	44-56
4	Programme Elective Course (PEC)					4	8	2	6	20	20
5	Multidisciplinary Minor (MDM)			2	2	4	2	2	2	14	14
6	Open Elective (OE)			4	2	2				8	8
7	Vocational and Skill Enhancement Course (VSEC)	2	2		2		2			7	8
8	Ability Enhancement Course (AEC)		1							4	4
9	Humanities Social Science and Management (HSSM)			2	2					4	4
10	Indian Knowledge System (IKS)	2								2	2
11	Value Education Course (VEC)			2	2					4	4
12	Research Methodology								4	4	4
13	Field Project			2						2	2
14	Project								4	4	4
15	Internship							12		12	12
16	Co-curricular Courses (CC)	2	2							4	4
Total		22	20	22	22	22	22	22	20	172	160-176

D. Y. Patil Education Society's

D. Y. Patil Technical Campus
Faculty of Engineering & Faculty of Management
Talsande

(An Autonomous Institute)

Approved by AICTE and Affiliated to Shivaji University, Kolhapur

(Accredited by NAAC 'A' Grade with 3.25 CGPA in First Cycle)

Department of Computer Science and Engineering

Curriculum Structure

First Year Computer Science and Engineering Program (Course 2024-25)

With Effective from Academic Year 2024-25

Curriculum Structure

First Year Computer Science and Engineering

D. Y. PATIL TECHNICAL CAMPUS

FACULTY OF ENGINEERING & FACULTY OF MANAGEMENT, TALSANDE

(An Autonomous Institute)

(Approved by AICTE, New Delhi, Recognized by DTE Maharashtra & Affiliated to Shivaji University, Kolhapur)

(Accredited by NAAC 'A' Grade with 3.25 CGPA in First Cycle)

SCHEME OF INSTRUCTION & CURRICULUM

Programme: - Computer Science and Engineering

Semester - I

Sr. No.	Course Category	Course Code	Course Title	L	T	P	Course Credits	EXAM SCHEME				
								ISE	MSE	ESE	INT	TOTAL
1	BSC	AS24FE111	Algebra and Statistics	3	1	-	4	20	30	50	25	125
2		PHY24FE112	Applied Physics	3	-	-	3	20	30	50	-	100
		PHY24FE112P	Applied Physics Laboratory	-	-	2	1	-	-	-	25	25
3	ESC	PSCL24FE113	Problem Solving with C-Language	3	-	-	3	20	30	50	-	100
		PSCL24FE113P	Problem Solving with C-Language Laboratory	-	-	2	1	-	-	-	25	25
4		CNF24FE114	Computer and Network Fundamentals	3	-	-	3	20	30	50	-	100
		CNF24FE114P	Computer and Network Fundamentals Laboratory	-	-	2	1	-	-	-	25	25
5	VSEC	DTTI24FE115	Design Thinking Through Innovation	1	-	-	1	25	-	-	-	25
		DTTI24FE115P	Design Thinking Through Innovation Laboratory	-	-	2	1	-	-	-	25	25
6	IKS	ITPA24FE116	Indian Town Planning and Architecture	2	-	-	2	20	-	30	-	50
7	CCA	YOGA24FE117	Yoga	1	-	2	2	-	-	-	50	50
Total				**16**	**1**	**10**	**22**	**125**	**120**	**230**	**175**	**650**
Non Credit Mandatory Course												
8	MC	MC24FE118	Finishing School Training I	3	-	-	NC	-	-	-	Grade	Grade
9		MC24FE119	Rural/ Social Internship	-	-	-	NC	-	-	-	Grade	Grade

Note: This structure is approved by Academic Council in the meeting dated 03.09.2024

D. Y. PATIL TECHNICAL CAMPUS

FACULTY OF ENGINEERING & FACULTY OF MANAGEMENT, TALSANDE

(An Autonomous Institute)

(Approved by AICTE, New Delhi, Recognized by DTE Maharashtra & Affiliated to Shivaji University, Kolhapur)

(Accredited by NAAC 'A' Grade with 3.25 CGPA in First Cycle)

SCHEME OF INSTRUCTION & CURRICULUM

Programme: - Computer Science and Engineering

Semester - II

Sr. No.	Course Category	Course Code	Course Title	L	T	P	Course Credits	EXAM SCHEME				
								ISE	MSE	ESE	INT	TOTAL
1	BSC	DIC24FE121	Differential & Integral Calculus	3	1	-	4	20	30	50	25	125
2		CHEM24FE122	Applied Chemistry	3	-	-	3	20	30	50	-	100
		CHEM24FE122P	Applied Chemistry Laboratory	-	-	2	1	-	-	-	25	25
3	ESC	GENAI24FE123	Generative AI	3	-	-	3	20	30	50	-	100
		GENAI24FE123P	Generative AI Laboratory	-	-	2	1	-	-	-	25	25
4	PCC	DS24FE124	Data Structure	2	-	-	2	-	-	50	-	50
5	VSEC	PSD24FE125	Object Oriented Programming Skill Development	1	-	-	1	25	-	-	-	25
		PSD24FE125P	Object Oriented Programming Skill Development Laboratory	-	-	2	1	-	-	-	25	25
6	AEC	PC24FE126	Professional Communication	1	-	-	1	25	-	-	-	25
		PC24FE126P	Professional Communication Laboratory	-	-	2	1	-	-	-	25	25
7	CCA	NSS24FE127	NSS	1	-	2	2	-	-	-	50	50
Total				**15**	**1**	**8**	**20**	**135**	**90**	**200**	**150**	**575**
Non Credit Mandatory Course												
8	MC	MC24FE128	Finishing School Training II	3	-	-	NC	-	-	-	Grade	Grade
9		MC24FE129	Capstone Project	-	-	-	NC	-	-	-	Grade	Grade

Note: This structure is approved by Academic Council in the meeting dated 03.09.2024

Course Title: Differential and Integral Calculus	
Course Code: DIC24FE121	**Semester: II**
Teaching Scheme L-T-P : 3 – 1 – 0	**Credits : 4**
Evaluation Scheme: ISE-I (10 Marks), MSE (30 Marks), ISE-II (10 Marks)	**ESE Marks : 50**

Prior Knowledge of:	Derivatives.

Course Objectives:

1.	To teach mathematical methodology.
2.	To develop mathematical skills and enhance logical thinking power of students.
3.	To provide students with skills in Differential and Integral Calculus.
4.	To imbibe graduates with mathematical knowledge, computational skills and the ability to deploy the skills effectively in solution of engineering problems.

Curriculum Details

Course Contents	Duration
Unit-I: Partial Differentiation • Introduction. • Partial derivatives • Total derivatives • Euler's theorem on homogeneous functions • Jacobian and its properties • Maxima and Minima	**07 Hrs**
Unit-II: Ordinary Differential Equations of First Order and First Degree • Definition of differential equation, order and degree of differential equation • Exact differential equations • Non-exact differential equations • Linear differential equations • Bernoulli's differential equations	**08 Hrs**
Unit-III: Numerical methods to solve Ordinary Differential Equations • Introduction • Picard's method • Taylor's series method • Euler's method • Runge-Kutta's method (Fourth order)	**07 Hrs**
Unit-IV: Expansion of Functions and Indeterminate forms	**08 Hrs**

Course Contents	Duration
• Expansion of Functions by using Taylor's theorem. a) Expansion in powers of h b) Expansion in powers of x c) Expansion in powers of (x-a) • Indeterminate forms and L' Hospital's rule. a) Form 0/0, ∞/∞, $\infty - \infty$, $0.\infty$ b) Exponential form ; $0^o, 1^\infty, \infty^0, 0^\infty$	
Unit-V : Integral Calculus • Introduction of improper integral. • Gamma function and its properties. • Beta function and its properties. • Error Function and its properties	**07 Hrs**
Unit-VI : Multiple Integrals • Introduction of Double integrals • Method of evaluation of Double integrals • Change of order of integration • Area enclosed by plane curves • Mass of a plane lamina	**08 Hrs**

Course Outcomes (COs): After successful completion of the course, students will be able to:

CO	Statements
1	**understand** the partial differentiation and **apply** such knowledge to find maxima and minima
2	**solve** ordinary differential equations of first order and first degree and **apply** the numerical methods to **solve** differential equations of first order and first degree
3	**solve** problems on expansions of functions, indeterminate forms.
4	**apply** multiple integrals to calculate areas and mass of lamina and **evaluate** the integral using Beta, Gamma function and error function

Course Articulation Matrix: Mapping of Course Outcomes (COs) with Program Outcomes (POs)

POs / COs	BTL	1	2	3	4	5	6	7	8	9	10	11	12
1	2 , 3	2	2	2	-	-	-	-	-	-	-	-	-
2	3	3	3	3	-	-	-	-	-	-	-	-	-
3	3	2	2	2	-	-	-	-	-	-	-	-	-
4	3	3	3	3	-	-	-	-	-	-	-	-	-

Suggested Learning Resources:

Text Books:

Sr. No	Title	Edition	Author(s)	Publisher	Year
1	Advanced Engineering Mathematics	7th	Peter V.O' Neil	Cengage Learning	2012
2	Advanced Engineering Mathematics	1st	H.K.Dass	S. Chand Publications, New Delhi	2011
3	A Text Book of Applied Mathematics	7th	P.N.Wartikar, J.N.Wartikar	Vidyarthi Griha Prakashan, Pune.	2006
4	Higher Engineering Mathematics	36th	B.S.Grewal	Khanna Publishers	2001

Reference Books:

Sr. No	Title	Edition	Author(s)	Publisher	Year
1	Advanced Engineering Mathematics	5th	Erwin Kreyszig	India Pvt., Ltd.	2014
2	Higher Engineering Mathematics	6th	B.V.Ramana	Tata M/cGraw-Hill Publication	2010
3	Numerical Methods for Scientific and Engineering Computation	5th	M.K.Jain	New Age International Pvt. Ltd. New Delhi	2007
4	A Textbook of Engineering Mathematics	6th	N.P.Bali, Iyengar	Laxmi Publication	2004

Useful Link /Web Resources:

1. DELNET- http://www.delnet.in
2. NDL-http://ndl.iitkgp.ac.in
3. N-LIST- http://www.nlist.inflib.ac.in

List of Tutorials:

Tut. No	Title of Tutorials	Duration
01	Partial Differentiation	01 Hr
02	Partial Differentiation	01 Hr
03	Ordinary Differential Equations of First Order and First Degree	01 Hr
04	Ordinary Differential Equations of First Order and First Degree	01 Hr
05	Numerical methods to solve Ordinary Differential Equations	01 Hr
06	Numerical methods to solve Ordinary Differential Equations	01 Hr
07	Expansion of Functions	01 Hr
08	Indeterminate forms	01 Hr
09	Integral Calculus	01 Hr
10	Integral Calculus	01 Hr
11	Multiple Integrals	01 Hr
12	Multiple Integrals	01 Hr

D. Y. PATIL TECHNICAL CAMPUS
Faculty of Engineering & Faculty of Management, Talsande
(An Autonomous Institute)
Department of First Year Engineering
F. Y. B. Tech. Curriculum
(Program – Computer Science and Engineering) w.e.f. A.Y. 2024-2025

Course Title: Applied Chemistry	
Course Code: CHEM24FE122	**Semester: II**
Teaching Scheme: L-T-P: 03/ 00/ 00	**Credits: 03**
Evaluation Scheme: ISE-I (10 marks), MSE (30 marks), ISE-II (10 marks)	**ESE Marks: 50 marks**

Prior Knowledge of:	Periodic properties of elements, physical and chemical properties of water, basic knowledge of fuel and corrosion, e-waste. basic idea about memory devices

Course Objectives:

1.	To analyze quality parameters of water and metallic materials
2.	To develop an interest among students regarding applied and engineering chemistry
3.	To determine the quality of fuel, memory and display systems
4.	To study the corrosion mechanism, rate of corrosion as well as preventive methods.
5.	To understand the E-waste management and extraction of metal from E-waste

Curriculum Details

Course Contents	Duration
UNIT I: WaterTreatment • Types of impurities in natural water. • Water quality parameters total solids, acidity, alkalinity, chlorides, COD and BOD. (definition, causes, significance) • Hardness of water, types of hardness, units of hardness, numerical on hardness. • Ill effects of hard water in steam generation in boilers (scale & sludge formation,caustic embrittlement and boiler corrosion) • Treatment of hard water (Ion exchange and reverse osmosis process)	**07Hrs**
UNIT II:Fuel • Classification of fuels, calorific value of fuel • Definition, units (calorie, kcal, joules, kilojoules), • Characteristics of good fuels, • Comparison between solid, liquid and gaseous fuels, • Types of calorific value (higher and lower), • Bomb calorimeter, • Boy's calorimeter, • Numerical problems on Bomb and Boy's calorimeter	**07 Hrs**
UNIT III: Materials for Memory and Display Systems **Memory Devices**: • Basic concepts of electronic memory, Classification of electronicmemory devices (organic, polymeric and hybrid material).	**07 Hrs**

• Manufacturing of semiconducting chips. • Green computing: Bio-composite based memory devices **Display Systems**: • Nanomaterials and organic materials for display technology(Light absorbing and emitting materials) used in optoelectronic devices. • Liquid crystals display (LC's) –Introduction, classification, properties and application in Liquid Crystal Displays (LCD's). • Properties and application of Organic Light Emitting Diodes (OLED's) and light emitting electrochemical cells	
UNIT IV: Corrosion and its Control • Corrosion definition, types of corrosion - atmospheric corrosion (oxidation corrosion), electrochemical corrosion - hydrogen evolution and oxygen absorption mechanism, • Factors affecting the rate of corrosion, • Prevention of corrosion by proper selection of material and proper designing, cathodic protection – sacrificial anodic method and external current method, hot dipping- galvanizing and tinning, electroplating, metal spraying and metal cladding.	**07 Hrs**
UNIT V: **Sustainable chemistry and E-waste management:** • Sources of e-waste, Composition, Characteristics, and Need of e-waste management. • Toxic materials used in manufacturing electronic and electrical products; healthhazards due to exposure to e-waste. • Recycling and Recovery: Different approaches of recycling (separation, thermal treatments, hydrometallurgical extraction, direct recycling). • Extraction of Metal from E-waste. Role of stakeholders in environmental management of e-waste (producers, consumers, recyclers, and statutory bodies).	**07 Hrs**
UNIT VI: Advanced Engineering Materials and Green chemistry • Classifications of polymer • Synthesis, properties & applications of Bakelite and Urea-formaldehyde resin. • Conducting Polymers: Synthesis & Mechanism of conduction in polyaniline. • Biodegradable polymers: requirements, synthesis, properties and applications of Polylactic acid. **Green Chemistry:** • Aims, goals and applications of green chemistry. • Twelve principles of green chemistry. • Green Fuels: Construction and working of solar photovoltaic cell, advantages, and disadvantages.	**07 Hrs**

Course Outcomes (COs): After successful completion of the course, students will be able to:

CO	Statements
122.1	**Understand** the quality of water and efficiency of fuel from given data
122.2	**Discuss** the major role of chemistry in various engineering field and advanced material
122.3	**Memorise** the corrosion mechanism and related problems and its prevention mechanism
122.4	**Interpret** the extraction of metal from e-waste and role of stakeholders in environmental management of e-waste.

Course Articulation Matrix: Mapping of Course Outcomes (COs) with Program Outcomes (POs)

POs / COs	BTL	1	2	3	4	5	6	7	8	9	10	11	12
122.1	2	3	2	-	-	-	-	-	-	-	-	-	1
122.2	2	3	2	-	-	-	-	-	-	-	-	-	1
122.3	1	3	2	-	-	-	-	-	-	-	-	-	1
122.4	3	3	2	-	-	-	-	-	-	-	-	-	1

Text Books:

Sr. No	Title	Edition	Author(s)	Publisher	Year
1	Functional and smart materials,	--	Chander Prakash, Sunpreet Singh, J. Paulo Davim	CRC Press, ISBN: 978-036-727-510	2020
2	A Textbook of Engineering Chemistry	12th	S. S. Dara, S. S. Umare	S. Chand & Company Ltd., New Delhi.	2011
3	A Text Book of Engineering Chemistry	--	Shashi Chawla	Dhanpat Rai & Co.	2017
4	A textbook of Engineering Chemistry	--	Jain and Jain,	Dhanpatrai Publication.	2015

Reference Books:

Sr. No	Title	Edition	Author(s)	Publisher	Year
1	Energy storage and conversion devices: Super capacitors, batteries and hydroelectric cells	1st edition, I	Anurag Gaur, A. L. Sharma, Anil Arya.	CRC press, SBN: 978-1-003-14176-1	2021
2	E-waste recycling and management: present scenarios and environmental issues	Vol. 33.	Khan, Anish, and Abdullah M. Asiri.	Springer, ISBN: 978-3-030-14186-8.	2019
3	Functional and smart materials,	--	Chander Prakash, Sunpreet Singh, J. Paulo Davim	CRC Press, ISBN: 978-036-727-510	2020
4	A Textbook of Engineering Chemistry	12th	S. S. Dara, S. S. Umare	S. Chand & Company Ltd., New Delhi.	2011

Useful Link /Web Resources:

1. https://ndl.iitkgp.ac.in/
2. https://www.youtube.com/watch?v=faESCxAWR9k

D. Y. PATIL TECHNICAL CAMPUS
Faculty of Engineering & Faculty of Management, Talsande
(An Autonomous Institute)
Department of First Year Engineering
F. Y. B. Tech. Curriculum
(Program – Computer Science and Engineering) w.e.f. A.Y. 2024-2025

Course Title: Applied Chemistry Laboratory	
Course Code: CHEM24FE122P	**Semester: II**
Teaching Scheme: L-T-P:0-0-2	**Credit: 01**
Evaluation Scheme: INT(25 marks)	**ESE Marks: 00**

Prior Knowledge of:	Handling of glassware's and simple equipment's, experiments based on titration.

Course Objectives:

1.	To test water quality parameters using various titration analysis methods.
2.	To synthesize simple advanced materials and estimate concentration of elements in material's.
3.	To analyze various samples by using various instruments.
4.	To prepare various advanced materials and to understand their applications.

List of Experiments- Minimum 8 practical's need to perform from the following list

Exp. No	Title of Experiments	Duration
01	Determination of total hardness of water sample by EDTA method (Complexometric Titration).	02 Hrs
02	Determination of acidity of given water sample.	02 Hrs
03	Determination of alkalinity of given water sample.	02 Hrs
04	Determination of chloride content of water sample by Mohr's method.	02 Hrs
05	To determine the normality of given strong acid by titrating against strong alkali solution by conductometer.	02 Hrs
06	To determine the normality of given weak acid by titrating against strong alkali solution by conductometer.	02 Hrs
07	Determination of pH of various samples by using digital pH meter.	02 Hrs
08	Estimation of iron from a solution by colorimetry.	02 Hrs
09	Estimation of copper from a solution by colorimetry	02 Hrs
10	To determine the approximate analysis of coal.	02 Hrs
11	Determination of rate of corrosion of aluminum in acidic and basic medium.	02 Hrs
12	Preparation of urea-formaldehyde resin.	02 Hrs

Course Outcomes (COs): After successful completion of the course, students will be able to:

CO	Statements
122.1	**Interpret** the calculation of various water quality parameters using titration methods
122.2	**Apply** the corrosion knowledge to know the process of corrosion
122.3	**Remember** the synthesis method of the advanced materials like urea and phenol formaldehyde resin
122.4	**Explaining** the use of pH meter, colorimeter for the analysis

Course Articulation Matrix: Mapping of Course Outcomes (Cos) with Program Outcomes (PO's)

PO's / COs	BTL	1	2	3	4	5	6	7	8	9	10	11	12
122.1	2	3	2	-	-	-	-	-	-	-	-	-	1
122.2	3	3	-	-	-	-	-	-	-	-	-	-	1
122.3	1	3	-	-	-	-	-	-	-	-	-	-	1
122.4	2	3	-	-	-	-	-	-	-	-	-	-	1

Reference Books:

Sr. No	Title	Edition	Author(s)	Publisher	Year
1	Laboratory manual on engineering chemistry	1st	S. K. Bashin, Dr. Sudha Rani	Dhanpat Rai Publishing company Ltd., New Delhi	2012
2	Engineering Chemistry	15th	P. C. Jain,	Dhanpat Rai Publishing Company Ltd., New Delhi	2014

Useful Link / Web Resources:

1. https://www.vlab.co.in/broad-area-chemical-science

Course Title :-Generative AI	
Course Code:- CS24FE123	**Semester: II**
Teaching Scheme L-T-P : 3-0-0	**Credits : 3**
Evaluation Scheme: ISE-I (10 Marks), MSE (30 Marks), ISE-II (10 Marks)	**ESE Marks: 50 marks**

Prior Knowledge of:	Basic mathematics, Statistics

Course Objectives:

1.	To explain the fundamental concepts, principles and technology of generative AI
2.	To prepare the students with demanding industry skills
3.	To provide an opportunity to develop expertise in AI tools & technologies.
4	To apply theoretical understanding to hands-on interdisciplinary projects, solving problems using Generative AI models

Curriculum Details:

Course Contents	Duration
Unit-I Introduction to Generative AI • Basics of AI And ML. and DL • Definition and scope of Generative AI • Generative AI Origin • Overview of generative models and their applications • Difference between generative and discriminative models • Understanding Risks & Limitations	**08 Hrs**
Unit-II Basics on NLP • What is NLP? History of NLP • Components of NLP- Syntax, Semantics, Pragmatics, Discourse • Introduction to NLP techniques and methods • Various NLP Tasks • Application of NLP- Industry application and Everyday applications • Challenges and future of NLP	**06 Hrs**
Unit-III Language Models and LLM Architectures • Introduction to language models and their role in AI • Traditional approaches to language modelling • Deep learning-based language models and their advantages • Overview of popular LLM architectures: RNNs, LSTMs, and Transformers	**07 Hrs**
Unit-IV Understanding GPT (Generative Pre-trained Transformer) and ChatGPT • Introduction to GPT and its significance • Pre-training and fine-tuning processes in GPT Architecture and working of GPT models	**09 Hrs**

Course Contents	Duration
• Overview of GPT variants and their use cases • Introduction to ChatGPT and its purpose • Training data and techniques for ChatGPT • Handling user queries and generating responses • Tips for improving ChatGPT's performance.	
Unit-V Prompt Engineering • The Fundamentals of Prompt Engineering • Components of a prompt • Techniques for prompt engineering • Applications of Prompt Engineering • Potential prompt misuses	**07 Hrs**
Unit-VI Future of generative AI and Ethical Considerations in Generative AI • Emerging trends in Generative AI • Generative AI technology evolution • Opportunities for innovations and growth • Understanding the ethical implications of generative models • Addressing bias and fairness in generative AI systems • Ensuring responsible use and deployment of generative models	**08 Hrs**

Course Outcomes (COs): After successful completion of the course, students will be able to:

CO	Statements
1	Explain the fundamental concepts, principles and technology of generative AI.
2	Describe the generative AI landscape and its practical applications across various industries.
3	Apply prompt engineering from understanding its techniques and patterns.
4	Discuss emerging trends and future directions in generative AI, including ethical considerations and challenges associated with its use.

Course Articulation Matrix: Mapping of Course Outcomes (COs) with Program Outcomes (POs)

POs / COs	BTL	1	2	3	4	5	6	7	8	9	10	11	12
1	2	2	1	-	-	-	2	-	-	-	-	-	-
2	2	2	1	-	-	-	1	1	-	-	-	-	-
3	3	2	2	1	1	3	1	-	-	-	-	-	-
4	6	2	2	2	2	2	1	-	-	-	-	-	-

Suggested Learning Resources:

Text Books:

Sr. No	Title	Edition	Author(s)	Publisher	Year
1	"Generative AI for everyone: Understanding the essentials and applications of this breakthrough technology".	-	Altaf Rehmani	-	-
2	"Introduction to Generative AI".	Kindle Edition	Numa Dhamani		2024

Reference Books:

Sr. No	Title	Edition	Author(s)	Publisher	Year
1	"Generative Adversarial Networks Cookbook: Over 100 recipes to build generative models using Python, TensorFlow, and Keras" by Josh Kalin.	-	Josh Kalin	-	-
2	"Generative AI in Software Development: Beyond the Limitations of Traditional Coding" Jesse Sprinter, 2024.	-	Jesse Sprinter	-	2024

Useful Link /Web Resources:

1. https://elearn.nptel.ac.in/shop/iit-workshops/completed/leveraging-generative-ai-for-teaching-programming-courses/?v=c86ee0d9d7ed
2. https://elearn.nptel.ac.in/shop/iit-workshops/completed/introduction-to-language-models/?v=c86ee0d9d7ed

Course Title: Generative AI Laboratory	
Course Code : CS24FE123P	**Semester: II**
Teaching Scheme: L-T-P: 0-0-2	**Credit : 1**
Evaluation Scheme: ISE: INT-25 Marks	**ESE/POE/OE Marks: -**

Prior Knowledge of:	Basic mathematics, Statistics

Course Objectives:

1.	To provide fundamental knowledge of AI
2.	To prepare the students with demanding industry skills
3.	To provide an opportunity to develop expertise in AI tools & technologies.
4.	To apply theoretical understanding to hands-on interdisciplinary projects, solving problems using Generative AI models

List of Experiments-

Exp. No	**Title of Experiments**	**Duration**
01	Generative AI tools and platforms	2 Hrs
02	NLP use cases in business- Social Media Monitoring, Autocorrect, Spell Check Speech Recognition, Machine Translation	2 Hrs
03	Study of ChatGPT to conduct a simple conversation and analyze the responses.	2 Hrs
04	Study of Scribe.	2 Hrs
05	Study of AlphaCode.	2 Hrs
06	Study of GitHub Copilot.	2 Hrs
07	Study of GPT-4.	2 Hrs
08	Study of Chatbots and Text Generators.	2 Hrs
09	Study of Colormind.	2 Hrs
10	Study of Kite.	2 Hrs

Course Outcomes (COs): After successful completion of the course, students will be able to:

CO	**Statements**
1	Understand with basic AI.
2	Understand the evolution of AI.
3	Apply AI tools to various business models.
4	Generate innovative ideas, contents & outputs for industry applications.

Course Articulation Matrix: Mapping of Course Outcomes (Cos) with Program Outcomes (PO's)

PO's / CO's	BTL	1	2	3	4	5	6	7	8	9	10	11	12
1	2	2	1	-	-	-	2	-	-	-	-	-	2
2	2	2	1	-	-	-	1	1	-	-	-	-	2
3	3	2	2	1	1	3	1	-	-	-	-	-	2
4	6	2	2	2	2	2	1	-	-	-	-	-	2

Suggested Learning Resources: --

Text Books:

Sr. No	Title	Edition	Author(s)	Publisher	Year
1	"Generative AI for everyone: Understanding the essentials and applications of this breakthrough technology".	-	Altaf Rehmani	-	-
2	"Introduction to Generative AI'	Kindle Edition	Numa Dhamani		2024

Reference Books:

Sr. No	Title	Edition	Author(s)	Publisher	Year
1	"Generative Adversarial Networks Cookbook: Over 100 recipes to build generative models using Python, TensorFlow, and Keras" by Josh Kalin. .	-	Josh Kalin	-	-
2	"Generative AI in Software Development: Beyond the Limitations of Traditional Coding" Jesse Sprinter, 2024.	-	Jesse Sprinter	-	2024

Useful Link /Web Resources:

1. https://elearn.nptel.ac.in/shop/iit-workshops/completed/leveraging-generative-ai-for-teaching-programming-courses/?v=c86ee0d9d7ed
2. https://elearn.nptel.ac.in/shop/iit-workshops/completed/introduction-to-language-models/?v=c86ee0d9d7ed

Course Title :--Data structure	
Course Code:--CS24FE125	**Semester:-Semester-II**
Teaching Scheme L-T-P : 2-0-0	**Credits : 2**
Evaluation Scheme: ISE-I (10 Marks), MSE (30 Marks), ISE-II (10 Marks)	**ESE Marks: 50 marks**

Prior Knowledge of:	C programming

Course Objectives:

1.	To make the students familiar with basic data structures.
2.	To provide students with foundation in computer programming/problem.
3.	To provide the students with the details of implementation of various data structures.
4.	To teach the students to select appropriate data structures in computer applications.

Curriculum Details

Course Contents	Duration
Unit-I Basics of Data structures • Data structure- Definition • Types of data structures • Data Structure Operations • Algorithms: Complexity- Time and Space complexity • Stack: Definition, operations • Array representation of stack, applications • Queue: Definition, operations • Array representation of queue, applications • Circular queue • Deque	**9 Hrs**
Unit-II Searching and Sorting Techniques • Searching Techniques-Linear search, • Binary search • Sorting Techniques- Bubble sort, Selection sort, Insertion sort, Merge sort, Quick sort • Complexity and analysis	**6 Hrs**
Unit-III Linked Lists • Singly, Doubly, Circular linked list- Definition, representation, operations, implementation and applications • Linked representation of stack and Queue.	**6 Hrs**
Unit-IV Trees and Graphs • Tree-Terminology • Representation • Binary tree	**9 Hrs**

Course Contents	Duration
• Traversal methods • Binary search tree • B tree • B+ tree • Heaps- Operations and their applications • Heap sort • Basic concept of graph theory and storage representation • Graph traversal techniques- BFS and DFS • Graph representation using sparse matrix	

Course Outcomes (COs): After successful completion of the course, students will be able to:

CO	Statements
1	Identify the appropriate data structure for specific application.
2	Design and analyze programming problem statements.
3	Choose appropriate sorting and searching algorithms.
4	Outline the solution to the given software problem with appropriate data structure.

Course Articulation Matrix: Mapping of Course Outcomes (COs) with Program Outcomes (POs)

POs / COs	BTL	1	2	3	4	5	6	7	8	9	10	11	12
1	2	2	2	-	-	-	-	-	-	-	-	-	-
2	3	2	2	2	2	-	-	-	-	-	-	-	-
3	2	2	2	-	2	-	-	-	-	-	-	-	-
4	3	2	3	3	2	-	-	-	-	-	-	-	-

Strongly Contribution: 3 Moderate Contribution:2 Weak Contribution:1 No Contribution--

Suggested Learning Resources:

Text Books:

Sr. No	Title	Edition	Author(s)	Publisher	Year
1	Schaum's Outlines Data Structures		Seymour Lipschutz	MGH	
2	Data structures, Algorithms and Applications in C++	2nd	SartajSahni	Universities Press	
3	Data structures and Algorithms in C++	4th	Adam Drozdek	Cengage learning	

Reference Books:

Sr. No	Title	Edition	Author(s)	Publisher	Year
1	Data Structures using C and C++		YedidyahLangsam, Moshe J. Augenstein, Aaron M. Tenenbaum	Pearson Education	

Sr. No	Title	Edition	Author(s)	Publisher	Year
2	Schaum's Outlines Data Structures with C++		J. Hubbard	TMH	
3	Data structures and Algorithms in C++		M.T. Goodrich, R. Tamassia and D. Mount	Wiley India	
4	Data structures and Algorithm Analysis in C++	3rd	2M. A. Weiss	Pearson	

Useful Link /Web Resources:

1. DELNET- http://www.delnet.in
2. NDL-http://ndl.iitkgp.ac.in
3. N-LIST- http://www.nlist.inflib.ac.in

Course Title :-Object Oriented Programming skills development	
Course Code:-CS24FE127	**Semester:-- II**
Teaching Scheme L-T-P : 1-0-0	**Credits : 1**
Evaluation Scheme: ISE-I (10 Marks), INT (30 Marks),ISE-II (10 Marks)	**ESE Marks: 50 marks**

Prior Knowledge of:	Basics of C Programming Language

Course Objectives:

1.	Introduces Object Oriented Programming concepts using the C++ language.
2.	Introduces the principles of data abstraction, inheritance and polymorphism
3.	Introduces the principles of virtual functions and polymorphism

Curriculum Details

Course Contents	**Duration**
Unit-I Introduction to Object Oriented Programming:: • The Origins of C++ • Features of Object Oriented Programming • Classes & Objects, Encapsulation • Data Abstraction • Inheritance • Inline Function • Constructor & Destructor • Function overloading & Operator overloading • Static class member • Static Member Function • Scope resolution Operator • Defining member functions • Passing Object to Functions • Nested classes, local classes • Friend functions, Friend class • Arrays:-Arrays, Storage of arrays in memory, Initializing Arrays, Multi-Dimensional Arrays • Pointers: Pointers, Pointer Declaration, accessing array elements through pointers, passing pointers as function arguments • Arrays of pointers	**8Hrs**

Course Contents	Duration
• Pointers to pointers	
Unit-II Inheritance and Polymorphism • Introduction to Inheritance, • Types of Inheritance: -single Inheritance, Multiple Inheritance, Multi-level inheritance, hierarchical inheritance, hybrid inheritance • Virtual Base class • Abstract class • Constructor in derived class • Introduction of polymorphism • Types of polymorphism:- Compile time and Run time Polymorphism	**7 Hrs**

Course Outcomes (COs): After successful completion of the course, students will be able to:

CO	Statements
1	To Developed C++ programs to solve problems using Procedure Oriented Approach.
2	To Develop C++ programs using classes and objects.
3	Implement Inheritance in C++ program.
4	Use Polymorphism in C++ program

Course Articulation Matrix: Mapping of Course Outcomes (COs) with Program Outcomes (POs)

POs / COs	BTL	1	2	3	4	5	6	7	8	9	10	11	12
1	3	2	-	-	-	-	-	-	-	-	-	-	-
2	3	2	2	2	-	2	-	-	-	-	-	-	-
3	3	2	3	3	-	2	-	-	-	-	-	-	-
4	4	2	3	2	-	2	-	-	-	-	-	-	-

Suggested Learning Resources:

Text Books:

Sr. No	Title	Edition	Author(s)	Publisher	Year
1	The Complete Reference C++	4th Edition andonwards	Herbert Schild	(Tata McGraw Hill)	2017
2	Object oriented Programming in C++		Rajesh K.Shukla	(Wiley) IndiaEdition	2008

Reference Books:

Sr. No	Title	Edition	Author(s)	Publisher	Year
1	Object-Oriented Programming with C++	6th Edition and onwards	Balaguruswamy	(Tata McGraw-Hill)	
2	Object oriented Programming withC++	2ndedition	SouravSahay	Oxford	
3	C++ Primer	3rd Edition,	S.B.Lippman and J.Lajoie,	Pearson Education	
4	The C++ Programming Language	3rd Edition	B.Stroutstrup	Pearson Educ	

Useful Link /Web Resources:

1. Virtual Lab - http://cse02-iiith.vlabs.ac.in/
2. NPTEL - https://onlinecourses.nptel.ac.in/noc21_cs02/preview
3. NPTEL-https://onlinecourses.nptel.ac.in/noc24_cs44/preview

Course Title: Object Oriented Programming skills development Laboratory	
Course Code : CS24FE127P	**Semester: II**
Teaching Scheme: L-T-P: 0-0-2	**Credit : 1**
Evaluation Scheme: INT: 30 Marks	**ESE/POE/OE Marks: -**

Prior Knowledge of:	Basics of C Programming Language

Course Objectives:

1.	To make the student learn an object oriented way of solving problems.
2.	To learn how to design and implement software using OOP concepts.
3.	To write and execute programs in C++ to solve problems using data structures such as arrays, linked lists, stacks, queues, trees, graphs
4.	To write and execute write programs in C++ to implement various sorting and searching methods.

List of Experiments-

Exp. No	**Title of Experiments**	**Duration**
01	Write a C++ program to sort the elements in ascending and descending order.	2 Hrs
02	Develop a program that implements a class and use it with objects.	2 Hrs
03	Write a C++ program to swap 2 values by writing a function that uses call by reference technique.	2 Hrs
04	Implement a Rectangle class with attributes for length and width. Include constructors, a destructor, and member functions to calculate the area and perimeter.	2 Hrs
05	Write a program to implement all types of constructors with destructor.	2 Hrs
06	Implement a program to perform multiple inheritance for Educational Institute database.	2 Hrs
07	Write a C++ programs to implement to searching techniques.	2 Hrs
08	Write a C++ program that implements to Sorting Techniques.	2 Hrs
09	Write a C++ program that implement Stack Operations.	2 Hrs
10	Write a C++ program that implement Queue Operations.	2 Hrs
11	Write a C++ program that implement linked list.	2 Hrs
12	Write a C++ program to perform the following operations a) Insertion into a B-tree b) Deletion from a B-tree	2 Hrs

Course Outcomes (COs): After successful completion of the course, students will be able to:

CO	Statements
1	To gain proficiency in Object Oriented Programming Concepts
2	To demonstrate a thorough understanding of core OOP concepts such as classes, objects, inheritance, polymorphism
3	Ability to identify the appropriate data structure for given problem.
4	Be able to design and analyze the time and space efficiency of the data structure

Course Articulation Matrix: Mapping of Course Outcomes (Cos) with Program Outcomes (PO's)

PO's / CO's	BTL	1	2	3	4	5	6	7	8	9	10	11	12
1	2	2	-	-	-	-	-	-	-	-	-	-	-
2	3	2	2	2	-	2	-	-	-	-	-	-	-
3	1	2	-	-	1	-	-	-	-	-	-	-	-
4	4	2	-	-	1	-	1	-	-	-	-	-	-

Suggested Learning Resources: --

Text Books:

Sr. No	Title	Edition	Author(s)	Publisher	Year
1	Object oriented Programming withC++	2nd	SouravSahay	Oxford	
2	Data structures, Algorithms and Applications in C++,	2nd	S.Sahni,	Universities Press Orient Longman Pvt. Ltd.	

Reference Books:

Sr. No	Title	Edition	Author(s)	Publisher	Year
1	Object Oriented Programming Through C++	6th	E. Balaguruswamy	Mc Graw Hill Education	2017
2	Data Structures and Algorithm Analysis in C++	3rd	Mark Allen WeissMark Allen Weiss	Low Price Edition	2007

Useful Link /Web Resources:

1. https://nptel.ac.in/courses/106102064

D.Y. PATIL TECHNICAL CAM PUS

FACULTY OF ENGINEERING & FACULTY OF MANAGEMENT,

(An Autonomous Institute)

Department of First Year Engineering

F. Y. B. Tech. Curriculum

Programme: Computer Science & Engineering

w. e. f. A.Y. 2024-2025

Course Title : Professional Communication	
Course Code: PC24FE126	**Semester:** II
Teaching Scheme L-T-P :1-0-0	**Credits : 1**
Evaluation Scheme: ISE 25	**ESE Marks: --**
Prior Knowledge of: 1. Basic knowledge of grammar. 2. Basic knowledge of Listening and Reading comprehension.	

Course Objectives:

1	To acquaint students with basic English Grammar and help students in improving language skills
2	To familiarize students with concept, various types, barriers and filters of communication
3	To assist students in developing Vocabulary
4	To train the students to compose and write the business letters effectively

Curriculum Details

Course Contents	Duration
Unit I: Language and Communication • Need for effective communication • The process of communication • Technical communication • Barriers to communication and solutions	2 Hrs
Unit II: Behavioural Skills • Positive attitude • Introduction to behavioural skills • Understanding Self • Corporate etiquettes and ethics	3 Hrs

Unit III: Grammar & Vocabulary • Tenses • Parts of speech • Modal auxiliaries • Vocabulary building • Common Errors in communication	3 Hrs
Unit IV: Communicative skills • Listening • Speaking • Reading • Writing	3 Hrs
Unit V: Career Skills • Job application writing • Resume writing • E-mail Writing • Interview skills	3 Hrs

Course Outcomes (COs): After successful completion of the course, students will be able to:

CO	Statements
1	Understand basic concepts of communication.
2	Apply LSRW skills in real life.
3	Explain communicative techniques
4	Recall appropriate vocabulary

Course Articulation Matrix: Mapping of Course Outcomes (COs) with Program Outcomes (POs)

POs / COs	BTL	1	2	3	4	5	6	7	8	9	10	11	12
CO1	2	-	-	-	-	-	-	-	2	2	2		1
CO2	2	-	-	-	-	-	-	-	2	2	2		1
CO3	2	-	-	-	-	-	-	-	2	2	2		1
CO4	2	-	-	-	-	-	-	-	2	2	2		1

Suggested Learning Resources:

Text Books:

Sr. No	Title	Edition	Author(s	Publisher	Year
1	Business Communication	Third Edition	S. Kalia and S. Agarwal Wiley	Wiley	2015
2	Technical Communication	Fourth Edition	Meenakshi Raman and Sangeeta Sharma	OUP	2013

Reference Books:

Sr. No	Title	Edition	Author(s)	Publisher	Year
1	High School English Grammar and Composition	Second Edition	Wren and Martin	Blackie	2000
2	Business Communication	Second Edition	Raymond Lesikar et al.	McGraw Hill	2007

D.Y. PATIL TECHNICAL CAM PUS

FACULTY OF ENGINEERING & FACULTY OF MANAGEMENT,

(An Autonomous Institute)

Department of First Year Engineering

F. Y. B. Tech. Curriculum

Programme: Computer Science & Engineering

w. e. f. A.Y. 2024-2025

Course Title: Professional Communication Laboratory	
Course Code : PC24FE126P	**Semester: II**
Teaching Scheme: L-T-P: 0-0-2	**Credit : 1**
Evaluation Scheme: ISE 25 marks	**ESE Marks: --**
Prior Knowledge of: Basic English grammar, LSRW skills	

Course Objectives:

1.	To practice and assess LSRW skills of the students.
2.	To provide them ample practice for developing their LSRW skills
3.	To strengthen their grammatical competence through practice
4.	To help for technical writing.

List of practical

Exp. No	Title of practical	Duration
01	Introducing self and others Adjectives, phrases and clauses to describe oneself and others Introducing oneself and others-demonstration	2Hrs
02.	Phonetics introduction I	2Hrs
03.	Phonetics introduction II	2Hrs
04	Grammar: Common Errors , Framing Sentences , Vocabulary Building	2Hrs
05	Listening practice Listening comprehension, Strategies for effective listening	2Hrs
06	Speaking practice-Video samples of effective and ineffective public speeches	2Hrs
07	Interview FAQs in detail, video samples, , Do's and Don'ts,	2Hrs
08	Technical writing - Letter writing, report writing, meeting of minutes	2Hrs
09	Group discussion	2Hrs
10	Reading skills Newspaper reading,	2Hrs
11	Professional Correspondence- Email, Resume writing	2Hrs
12	Story telling: Practicing narration methods and techniques for effective narration.	2Hrs

Course Outcomes (COs): After successful completion of the course, students will be able to:

CO	Statements
1	Understand English Sounds, stress patterns and intonation.
3	Use communication skills effectively.
3	Use of grammar rules properly.
4	Prepare oral presentations effectively

Course Articulation Matrix: Mapping of Course Outcomes (Cos) with Program Outcomes (PO's)

PO's / COs	BTL	1	2	3	4	5	6	7	8	9	10	11	12
CO1	2	-	-	-	-	-	-	-	2	2	2		1
CO2	2	-	-	-	-	-	-	-	2	2	2		1
CO3	2	-	-	-	-	-	-	-	2	2	2		1
CO4	2	-	-	-	-	-	-	-	2	2	2		1

Suggested Learning Resources: --
Text Books/ Software
Reference Books:

Sr. No	Title	Edition	Author(s)	Publisher	Year
1	Better English Pronunciation	Second	J.D. O'Connor	OUP	1980
2	A Practical Course in Spoken English	First	J.K. Gangaj	PHI Learning Pvt. Ltd	2014

Course Title : National Service Scheme	
Course Code : NSS24FE127	**Semester: II**
Teaching Scheme L-T-P : 1-0-2	**Credits : 2**
Evaluation Scheme : INT 50 marks	**ESE/POE/OE Marks: ---**

Prior Knowledge of:	**Basic Understanding of Social Issues:** General awareness of common social challenges like poverty, illiteracy, environmental issues, etc. **Interest in Community Service:** A genuine interest in helping others and contributing to society. **Communication Skills:** Basic communication skills will be helpful during community interactions and group activities. **Teamwork:** Openness to working in teams, as many activities are collaborative.

Course Objectives:

1.	**Develop Social Responsibility:** To encourage students to actively contribute to society through community service.
2.	**Foster Personal Growth:** To enhance leadership, teamwork, and communication skills.
3.	**Promote Community Awareness:** To increase understanding of societal issues and challenges.
4.	**Encourage Sustainable Practices:** To instill environmental consciousness and promote sustainable development through practical activities.

Curriculum Details:-

Course Contents	Duration
Unit 1: • **Introduction to NSS** - History and Objectives of NSS - Motto, Symbol, and Badge of NSS - NSS Organizational Structure - Role of NSS in the Personality Development of Students • **Understanding the Community & NGOs** - Identification of Community Needs - Role of NSS Volunteers in Community Development - Role of NGOs in Social Development Process of NGO Formation	**7 Hrs**
Unit 2: • **Health, Hygiene, and Environment Sustainability** - Importance of Health, Hygiene, and Sanitation - First Aid and Emergency Care - Environmental Issues and Challenges - Role of NSS in Environmental Conservation • **Disaster Management** - Types of Disasters and Their Impact - Preparedness and Mitigation Strategies - Role of NSS in Disaster Management	**7 Hrs**

List of Activities:-

Exp. No	Title	Duration (Hrs)
01	**Use of technology for society:** Organize tech-based projects that can address local community issues.	2 Hrs.
02	**Campus Cleanliness Drive:** Organize a cleanliness drive within the campus, encouraging waste segregation and eco-friendly practices.	2 Hrs.
03	**Tree Plantation:** Conduct a tree plantation drive in designated campus areas, emphasizing environmental sustainability.	2 Hrs.
04	**First Aid Workshop:** Hands-on workshop on basic first aid and CPR techniques, to be taught by a professional.	2 Hrs.
05	**Waste Management System:** Introduce waste segregation methods and set up a waste management system in key areas of the campus.	2 Hrs.
06	**Health and Hygiene Awareness: Conduct** an awareness session on personal hygiene and preventive healthcare for students and staff.	2 Hrs.
07	**Energy Conservation Drive: Organize** a campaign promoting energy-saving practices, such as switching off lights and conserving electricity.	2 Hrs.
08	**Water Conservation Project:** Develop a small project on water conservation, like rainwater harvesting or reducing water waste on campus.	2 Hrs.
09	**Swachh Bharat Activity:** Lead a cleanliness drive focused on a specific area of the campus, documenting before-and-after effects.	2 Hrs.
10	**Street Play on Social Issues:** Develop and perform a street play addressing a relevant social issue such as gender equality or literacy.	2 Hrs.
11	**Role of Youth in National Integration:** Host an interactive session or group discussion on how young people can contribute to national integration, fostering a sense of unity and patriotism.	2 Hrs.
12	**Gender Equality Awareness Campaign:** Organize a campaign or workshop to promote gender equality, highlighting the importance of equal opportunities for women in education, employment, and leadership.	2 Hrs.
13	**Female Leadership in Society:** Invite successful women leaders to share their experiences and inspire students to take leadership roles, highlighting the impact of female empowerment in community development.	2 Hrs.
14	**Self-Defense Training for Women:** Conduct a practical session focused on basic self-defense techniques for female students and staff, raising awareness of personal safety and empowerment.	2 Hrs.
15	**NSS Volunteer Interaction:** Hold an interaction session where NSS volunteers share their experiences and discuss the impact of NSS activities.	2 Hrs.

Course Outcomes (COs): After successful completion of the course, students will be able to:

CO	Statements
1	**Social Awareness:** Students will develop a deep understanding of societal issues and their roles in addressing them.
2	**Leadership and Teamwork:** Students will enhance their leadership abilities and teamwork skills through active participation in community service.
3	**Practical Skills:** Students will gain hands-on experience in organizing and executing community service projects.
4	**Civic Responsibility:** Students will foster a sense of civic duty and responsibility, contributing to nation-building and sustainable development.

Course Articulation Matrix: Mapping of Course Outcomes (Cos) with Program Outcomes (PO's)

PO's / CO's	BTL	1	2	3	4	5	6	7	8	9	10	11	12
1	2						3	3	3	3			
2	2						3	3	3	3			
3	2						3	3	3	3			
4	2						3	3	3	3			

Suggested Learning Resources: --

Textbooks:

1. **"National Service Scheme Manual"** - Published by the Ministry of Youth Affairs and Sports, Government of India.
2. **"Community Organization and Development"** by G.R. Madan - A comprehensive guide on social work and community development.
3. **"Social Work: An Integrated Approach"** by Sanjay Bhattacharya - Focuses on social work principles and practices relevant to NSS activities.

Reference Books:

1. **"Leadership and Personality Development"** by Kiran Bedi - Insights into leadership qualities and personal development.
2. **"Environmental Studies: From Crisis to Cure"** by R. Rajagopalan - Covers environmental issues and sustainable practices.
3. **"Disaster Management"** by R.B. Singh - A useful resource for understanding disaster preparedness and management.

Government Websites:

1. **National Service Scheme (NSS) Official Website:** https://nss.gov.in - Official guidelines, resources, and updates from the Ministry of Youth Affairs and Sports.
2. **Ministry of Youth Affairs and Sports:** https://yas.nic.in - Information on youth programs, including NSS.
3. **National Disaster Management Authority (NDMA):** https://ndma.gov.in - Resources on disaster management and preparedness.
4. **Swachh Bharat Mission:** https://swachhbharat.mygov.in - Government initiatives on cleanliness and hygiene.

Activity Details

1. Use of Technology for Society

- **Activity:** Showcase how technology can solve societal problems.
- **Innovative Add-ons:**
  - **Poster Making:** Students design posters on innovative tech solutions (e.g., apps for health, education, farming).
  - **Presentation in Classes:** Groups present tech-based projects that can address local community issues.
  - **Awareness Rally:** Conduct a rally showcasing how technology can improve the quality of life, carrying banners highlighting tech solutions.

---

2. Campus Cleanliness Drive

- **Activity:** Conduct a cleanliness drive on campus.
- **Innovative Add-ons:**
  - **Poster Making:** Create posters on cleanliness and the importance of waste segregation.
  - **Slogan Contest:** Hold a contest for the best slogans encouraging cleanliness.
  - **Awareness Rally:** Organize a campus-wide rally promoting "Swachh Campus" ideals.
  - **Sticker Campaign:** Place stickers in classrooms and common areas reminding students to keep the campus clean.

---

3. Tree Plantation

- **Activity:** Organize a tree plantation drive on campus.
- **Innovative Add-ons:**
  - **Poster Making:** Design posters on the importance of tree plantation for combating climate change.
  - **Tree Adoption:** Each student adopts and takes care of a tree, monitoring its growth.
  - **Awareness Campaign:** Organize a social media campaign highlighting the trees planted, encouraging others to join.
  - **Sticker Campaign:** Create stickers promoting "Go Green" and place them around campus.

---

4. First Aid Workshop

- **Activity:** Hands-on workshop on basic first aid and CPR.
- **Innovative Add-ons:**
  - **Poster Presentation:** Create posters showing basic first aid steps and display them in high-traffic areas.

- **Demo Video:** Record students performing first aid steps and create a tutorial for campus-wide sharing.
- **Awareness Drive:** Organize a demonstration booth where students can teach others basic first aid techniques.

---

5. Waste Management System

- **Activity:** Implement a waste segregation and management system on campus.
- **Innovative Add-ons:**
  - **Poster Making:** Design posters explaining waste segregation and recycling processes.
  - **Awareness Rally:** Organize a rally with slogans promoting recycling and reducing plastic use.
  - **Sticker Campaign:** Place stickers on waste bins to remind students about segregating waste properly (e.g., “Recycle Here”).
  - **Poster Presentation:** Create infographics about the environmental impact of waste, displayed in common areas.

---

6. Health and Hygiene Awareness

- **Activity:** Conduct a session on health and hygiene for students and staff.
- **Innovative Add-ons:**
  - **Poster Making:** Design posters on personal hygiene practices and display them in restrooms and canteens.
  - **Awareness Rally:** Organize a rally promoting personal hygiene and public health.
  - **Interactive Workshop:** Include live demonstrations on handwashing and hygiene habits.
  - **Sticker Campaign:** Create stickers for restrooms reminding people to wash hands regularly.

---

7. Energy Conservation Drive

- **Activity:** Organize a campaign promoting energy-saving practices.
- **Innovative Add-ons:**
  - **Poster Making:** Design posters with energy-saving tips (e.g., "Turn off lights when not in use").
  - **Sticker Campaign:** Create stickers for light switches and equipment reminding users to conserve energy.
  - **Energy Audit:** Conduct a campus energy audit, finding areas where energy is being wasted and suggest solutions.
  - **Presentation in Classes:** Present findings from the energy audit and promote energy-saving practices among peers.

---

8. Water Conservation Project

- **Activity:** Develop a small project for water conservation (e.g., rainwater harvesting).
- **Innovative Add-ons:**
  - **Poster Making:** Design posters promoting water-saving habits (e.g., "Save Water, Save Life").
  - **Sticker Campaign:** Place stickers near taps reminding users to turn off water after use.
  - **Water Audit:** Conduct a campus water usage audit and propose water-saving measures.
  - **Awareness Rally:** Organize a rally promoting the importance of water conservation.

---

9. Swachh Bharat Activity

- **Activity:** Lead a campus cleanliness drive in a specific area.
- **Innovative Add-ons:**
  - **Poster Making:** Design posters on the Swachh Bharat mission and its goals.
  - **Before-and-After Photo Contest:** Organize a contest encouraging students to take "before-and-after" photos of areas cleaned.
  - **Awareness Rally:** Conduct a rally promoting Swachh Bharat ideals across campus.
  - **Social Media Campaign:** Use social media to highlight the impact of your cleanliness drives.

---

10. Street Play on Social Issues

- **Activity:** Develop and perform a street play on social issues like gender equality or literacy.
- **Innovative Add-ons:**
  - **Poster Making:** Create posters that introduce the theme of the play and distribute them before the performance.
  - **Flash Mob:** Combine the street play with a flash mob to gather attention in high-traffic campus areas.
  - **Classroom Presentations:** Perform the street play in various classes to reach more students.

---

11. Role of Youth in National Integration

- **Activity:** Host a session or group discussion on youth's contribution to national integration.
- **Innovative Add-ons:**
  - **Poster Making:** Create posters showing how youth can promote national unity and diversity.

- **Interfaith Dialogue:** Organize a dialogue between students from different religions and cultures to foster understanding.
- **Awareness Rally:** Conduct a unity rally celebrating cultural diversity and national integration.

---

12. Gender Equality Awareness Campaign

- **Activity:** Organize a workshop to promote gender equality.
- **Innovative Add-ons:**
  - **Poster Making:** Design posters showing the importance of gender equality and display them around campus.
  - **Slogan Contest:** Organize a contest for the best gender equality slogan.
  - **Awareness Rally:** Conduct a rally advocating for gender equality with banners and slogans.

13. Female Leadership in Society

- **Activity:** Invite successful women leaders to share their experiences.
- **Innovative Add-ons:**
  - **Poster Making:** Create posters highlighting female leaders from various fields.
  - **Panel Discussion:** Organize a panel discussion with women leaders and encourage students to interact.
  - **Role Model Campaign:** Run a social media campaign featuring stories of inspiring women leaders.

---

14. Self-Defense Training for Women

- **Activity:** Conduct a self-defense workshop for female students and staff.
- **Innovative Add-ons:**
  - **Poster Making:** Create posters on personal safety tips and display them around campus.
  - **Interactive Demo:** Record the self-defense training and create a short tutorial video to share with other students.
  - **Awareness Rally:** Organize a rally promoting women's safety and empowerment.

---

15. NSS Volunteer Interaction

- **Activity:** Hold an interaction session where NSS volunteers share their experiences.
- **Innovative Add-ons:**
  - **Poster Making:** Create posters showcasing key achievements of NSS volunteers and their impact on society.
  - **Panel Discussion:** Invite senior NSS volunteers to discuss challenges and best practices in community service.

- **Experience Sharing Event:** Organize an event where students present their NSS experiences using photos and videos.