



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

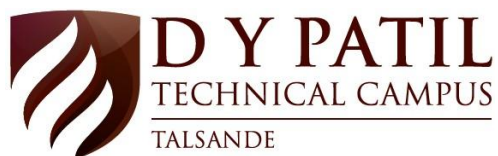
CURRICULUM FRAMEWORK

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



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Department of Electrical Engineering

Curriculum Structure

First Year Electrical Engineering Program (Course 2024-25)

With Effective from Academic Year 2024-25

Curriculum Structure

First Year Electrical 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: - Electrical 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	AM24FE111	Applied Mathematics-I	3	1	-	4	20	30	50	25	125
		CHEM24FE112	Applied Chemistry	3	-	-	3	20	30	50	-	100
2		CHEM24FE112P	Applied Chemistry 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
		EGCAD24FE114	Engineering Graphics & Computer Aided Drawing	3	-	-	3	20	30	50	-	100
4		EGCAD24FE114P	Engineering Graphics & Computer Aided Drawing Laboratory	-	-	2	1	-	-	-	25	25
		DTTI24FE115	Design Thinking Through Innovation	1	-	-	1	25	-	-	-	25
5	VSEC	DTTI24FE115P	Design Thinking Through Innovation Laboratory	-	-	2	1	-	-	-	25	25
6	AEC	PC24FE116	Professional Communication	1	-	-	1	25	-	-	-	25
		PC24FE116P	Professional Communication Laboratory	-	-	2	1	-	-	-	25	25
7	CCA	NSS24FE117	NSS	1	-	2	2	-	-	-	50	50
Total 15 1 12 22 130 120 200 200 650												
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



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SCHEME OF INSTRUCTION & CURRICULUM
Programme: - Electrical Engineering



Semester - II

Sr. No.	Course Category	Course Code	Course Title	L	T	P	Course Credits	EXAM SCHEME				TOTAL				
								ISE	MSE	ESE	INT					
1	BSC	AM24FE121	Applied Mathematics-II	3	1	-	4	20	30	50	25	125				
2		PHY24FE122	Applied Physics	3	-	-	3	20	30	50	-	100				
		PHY24FE122P	Applied Physics Laboratory	-	-	2	1	-	-	-	25	25				
3	ESC	GENAI24FE123	Generative AI	3	-	-	3	20	30	50	-	100				
		GENAI 24FE123P	Generative AI Laboratory	-	-	2	1	-	-	-	25	25				
4	PCC	FEE24FE124	Fundamentals of Electrical Engineering	2	-	-	2	-	-	50	-	50				
5	VSEC	PES24FE125	Plumbing and Electrical Skills	1	-	2	2	25	-	-	25	50				
6	IKS	ITPA24FE126	Indian Town Planning and Architecture	2	-	-	2	20	-	30	-	50				
7	CCA	YOGA24FE127	Yoga	1	-	2	2	-	-	-	50	50				
Total								15	1	8	20	105	90	230	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

Department of First Year Engineering
F. Y. B. Tech. Curriculum (Programme-Electrical Engineering)
w. e. f. A.Y. 2024-2025

Course Title : Applied Mathematics II	
Course Code: AM24FE121	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:	Differentiation , Integration
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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 equation, Laplace Transform Vector Calculus 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: Ordinary Differential Equations of First Order and First Degree - Definition of differential equation of First order and First degree. - Exact differential equations. - Non-exact differential equations. - Linear differential equations. - Bernoulli's differential equations.	08 Hrs
Unit-II: 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-III : Vector Calculus - Introduction. - Gradient of scalar point function. - Divergence of vector point function. - Curl of a vector point function. - Irrotational, Solenoidal vector field	07 Hrs
Unit-IV: Laplace Transform Laplace transforms of elementary functions	08 Hrs

Department of First Year Engineering
F. Y. B. Tech. Curriculum (Programme-Electrical Engineering)
w. e. f. A.Y. 2024-2025

Suggested Learning Resources:

Text Books:

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

Reference Books:

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

Department of First Year Engineering
F. Y. B. Tech. Curriculum (Programme-Electrical Engineering)
w. e. f. A.Y. 2024-2025

List of Tutorials:

Tut. No	Title of Tutorials	Duration
01	Ordinary Differential Equations of First Order and First Degree	01 Hr
02	Ordinary Differential Equations of First Order and First Degree	01 Hr
03	Numerical methods to solve Ordinary Differential Equations	01 Hr
04	Numerical methods to solve Ordinary Differential Equations	01 Hr
05	Vector Calculus	01 Hr
06	Vector Calculus	01 Hr
07	Laplace Transform	01 Hr
08	Laplace Transform	01 Hr
09	Integral Calculus	01 Hr
10	Integral Calculus	01 Hr
11	Multiple Integrals	01 Hr
12	Multiple Integrals	01 Hr

Department of First Year Engineering
F. Y. B. Tech. Curriculum

(Programme - Electrical Engineering) w. e. f. A.Y. 2024-2025

Course Title : Applied Physics	
Course Code: PHY24FE122	Semester: II
Teaching Scheme L-T-P : 3-0-0	Credits : 03
Evaluation Scheme: ISE-I (10 marks), MSE (30 marks), ISE-II (10 marks)	ESE Marks: 50 marks

Prior Knowledge of:	Fundamentals of optics, semiconductors, nature of radiation, photo electric effect.
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Course Objectives:

1.	To provide basic concept of modern optics.
2.	To make the students grasp the working principles of LASER and its applications
3.	To expose electronic properties of materials for semiconductors from a quantum mechanical point of view and grasp the basics of transducers and their applications.
4	To understand the concepts of nanomaterials and quantum mechanics for their applications in engineering fields

• **Curriculum Details**

Course Contents	Duration
UNIT I: Diffraction and Polarization of Light Diffraction: • Diffraction- Concept and types (Fresnel and Fraunhofer diffraction), • Diffraction grating – construction and theory, • Resolving power of plane transmission grating. Polarization: • Introduction, double refraction, • Huygens' theory (positive and negative crystals), • Optical Activity, Specific Rotation, • Laurent's half shade polarimeter.	7 Hrs
UNIT-II: Lasers and Fibre Optics Lasers: • Introduction to interaction of radiation with matter, • Coherence, • Principle and working of Laser, Population inversion, Pumping, • Types of Lasers: Ruby laser, He-Ne laser, • Applications of laser. Fibre Optics: • Introduction, Optical fibre as a dielectric wave guide, • Total internal reflection, Acceptance angle, Acceptance cone and Numerical	7 Hrs

Course Contents	Duration
aperture, - Fibre optic communication system, - Applications of optical fibres.	
UNIT-III: Semiconductor Physics - Intrinsic and Extrinsic semiconductors, - Dependence of Fermi level on carrier-concentration and temperature, - Carrier generation and recombination, - Carrier transport: diffusion and drift, - Hall effect, - p-n junction diode, Zener diode, and their V-I Characteristics.	7 Hrs
UNIT-IV: Transducers: Transducers: For study Range, Specifications and Limitations of; - Displacement (LVDT), - Temperature (RTD), - Pressure (Strain Gauge), - Speed (Shaft Encoder), , Appliances: Operation of Appliances- - Digital Thermometer, - Weighing Machine, - Washing Machine, - Microwave Oven and - Tachometer.	7 Hrs
UNIT-V: Nano Technology - Introduction to nanotechnology, nanoscience, nanomaterials, - Synthesis Method-Top-down Process: Ball milling method, - Synthesis Method-Bottom-up Approach: Colloidal method, - Tools- Scanning Tunneling Microscope and Atomic Force Microscope, - Applications of nanomaterials.	7 Hrs
UNIT-VI: Quantum Mechanics - Introduction to quantum physics, - Black body radiation, Planck's law, Photoelectric effect, - Compton effect, - de-Broglie's hypothesis, - Wave-particle duality, - Heisenberg's Uncertainty principle, - Born's interpretation of the wave function, - Schrodinger's time independent wave equation.	7 Hrs

Department of First Year Engineering
F. Y. B. Tech. Curriculum

(Programme - Electrical Engineering) w. e. f. A.Y. 2024-2025

Self-learning topics: Crystal structures, Optical fiber as sensors, CO₂ LASER.

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

CO	Statements
122.1	Describe the principle of diffraction and relate concepts in various engineering applications
122.2	Apply electronic properties of semiconductors, laser the working mechanism and applications of LASER and optical fibre
122.3	Explain the basic block diagram of transducers and need for nanomaterials in science and technology
122.4	Solve problems using principles of quantum mechanical phenomenon

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	3	3	3	3	-	-	-	-	-	-	-	-	-
122.2	3	2	2	2	-	-	-	-	-	-	-	-	-
122.3	2	3	3	3	-	-	-	-	-	-	-	-	-
122.4	3	2	2	2	-	-	-	-	-	-	-	-	-

Suggested Learning Resources:

Text Books:

Sr. No	Title	Edition	Author(s)	Publisher	Year
1	Engineering Physics	1 st	H. K. Malik	Tata McGraw Hill Education	2019
2	A Text Book of Engineering Physics	Revised	M. N. Avadhanulu, P. G. Kshirasagar	S. Chand Publications	2018
3	Engineering Physics	Revised	L.N. Singh	Synergy Knowledge Ware	2016
4	Engineering Physics	Revised	V. Rajendran	Tata McGraw Hill Education	2010
5	Engineering Physics	1 st	R.K. Gaur, S.L. Gupta	Dhanpat Rai Publications	1993

Reference Books:

Sr. No	Title	Edition	Author(s)	Publisher	Year
1	Fundamentals of Physics	Revised	J. Walker, D. Halliday, R. Resnick	Wiley Publications	2018
2	Engineering Physics	1 st	B.K. Pandey and Chaturvedi	Cengage learning Publications	2017
3	Nanotechnology- Principles & Practices	3 rd	Sulabha K. Kulkarni	Capital Publication Co. New Delhi	2014
4	Introduction to Solid State Physics	8 th	Charles Kittel	John Willey and Sons Inc.	2009
5	Solid State Physics	6 th	S.O.Pillai	New edge Internationals	2009

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>
4. <http://hyperphysics.phy-astr.gsu.edu/hbase/index.html>
5. https://en.wikipedia.org/wiki/Wave_interference
6. https://en.wikipedia.org/wiki/Introduction_to_quantum_mechanics

Department of First Year Engineering
F. Y. B. Tech. Curriculum

(Programme - Electrical Engineering) w. e. f. A.Y. 2024-2025

Course Title: Applied Physics Laboratory	
Course Code : PHY24FE122P	Semester: II
Teaching Scheme: L-T-P: 0-0-2	Credit : 01
Evaluation Scheme: INT (25 marks)	ESE/POE/OE Marks: --

Prior Knowledge of:	Optics, semiconductor basics, graph plotting, slope calculation
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Course Objectives:

1	To make the students understand the physics concept for effective application in engineering and technology.
2	To use the knowledge of optics in a laboratory by using a spectrometer, diffraction grating, etc. for their use in different applications.

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

Exp. No	Title of Experiments	Duration
01	To study a Linear Variable Differential Transformer (LVDT) and use it in a simple experimental set up to measure a small displacement.	02 Hrs
02	To measure the stress & strain using strain gauges mounted on cantilever beam.	02 Hrs
03	Calculation of divergence of LASER beam.	02 Hrs
04	Determination of wavelength of LASER using diffraction grating.	02 Hrs
05	Wavelength of different spectral lines of mercury using grating.	02 Hrs
06	Calculation of R. P. of grating by using spectrometer.	02 Hrs
07	To find specific rotation by using half shaded Polarimeter.	02 Hrs
08	Verification of inverse square law of intensity of light.	02 Hrs
09	To find Resolving power of Telescope	02 Hrs
10	Measurement of band gap energy of semiconductor.	02 Hrs
11	To study the forward and reverse characteristics of P-N junction diode.	02 Hrs
12	Zener Diode as Voltage Regulator	02 Hrs
13	To study Hall effect in semiconductors and measure the Hall coefficient.	02 Hrs

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

CO	Statements
122.1	Interpret knowledge related to optics to use for suitable purposes in applied physics
122.2	Identify band theory of semiconductor in terms of energy and carrier concentration
122.3	Explain different types of crystal structure and their characteristics.
122.4	Interpret knowledge related to LASER for suitable purposes in applied physics

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
122.1	3	3	3	3	-	-	-	-	-	3	-	-	-
122.2	2	3	3	3	-	-	-	-	-	3	-	-	-
122.3	2	3	3	3	-	-	-	-	-	3	-	-	-
122.4	3	3	3	3	-	-	-	-	-	3	-	-	-

Suggested Learning Resources: --

Text Books:

Sr. No	Title	Edition	Author(s)	Publisher	Year
1	Engineering Physics	1 st	H.K. Malik	Tata McGraw Hill Education	2019
2	A Text Book of Engineering Physics	Revised	M. N. Avadhanulu, P. G. Kshirasagar	S. Chand Publications	2018
3	Engineering Physics	Revised	L. N. Singh	Synergy Knowledge Ware	2016
4	Engineering Physics	Revised	V. Rajendran	Tata McGraw Hill Education	2010
5	Engineering Physics	1 st	R.K. Gaur, S.L. Gupta	Dhanpat Rai Publications	1993

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Reference Books:

Sr. No	Title	Edition	Author(s)	Publisher	Year
1	Fundamentals of Physics	Revised	J.Walker, D.Halliday, R.Resnick	Wiley Publication	2018
2	Engineering Physics	1 st	B.K. Pandey and Chaturvedi	Cengage Learning Publications	2017
3	Nanotechnology- Principles & Practices	3 rd	Sulabha K. Kulkarni	Capital Publication Co. New Delhi	2014
4	Introduction to Solid State Physics	8 th	C.Kittel	John Willey and Sons Inc.	2009
5	Solid State Physics	6 th	S.O.Pillai	New edge Internationals,	2009

Useful Link /Web Resources:

1. <https://vlab.amrita.edu/?sub=1>
2. <http://vlabs.iitb.ac.in/vlab/labsps.html>

Course Title :-Generative AI	
Course Code:- EE24FE123	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
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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 : EE24FE123P	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
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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 :-Fundamental of Electrical Engineering	
Course Code:-FEE24FE124	Semester:- II
Teaching Scheme L-T-P :-2 - 0 - 0	Credits : 2
Evaluation Scheme:---	ESE Marks: 50 marks

Prior Knowledge of:	This course provides the student with the skills to understand the basic fundamentals of electric circuits as current, voltage, resistance, power, Ohm's law, Kirchhoff's law, Electromagnetism as Magnetic field, Flux, Flux density, MMF, Reluctance, permeability, earthing essentials, lamps and domestic appliances
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Course Objectives:

1.	To understand the basic concept of Electrical and Magnetic circuits
2.	To learn the fundamentals of single phase Alternating quantities
3.	To explain the relation between line and phase quantities for three phase connection
4.	To facilitate understanding of Earthing and lamps

Curriculum Details:

Course Contents	Duration
Unit- ID.C. Circuits & Magnetic Circuit • Concept of E.M.F • Potential Difference, • Current, Resistance, • Ohm's Law, • Kirchhoff's laws, • Concept of mmf, • Reluctance, • Magnetic flux, • Magnetic Flux density, • Magnetic field strength, • BH curve, • Magnetic leakage, • Comparison of Electric and Magnetic circuit.	08 Hrs
Unit-II Single phase AC Circuits • Fundamentals of Alternating quantities, • Faraday's Law, • Types of Induced E.M.F,	07 Hrs

Course Contents	Duration
• Generation of sinusoidal voltage, • concept of R.M.S. & Average value, • form factor, • Peak Factor, • Powers and power factor	
Unit-III Three phase A.C. Circuits • Advantages of 3 phase system, • Generation of 3 phase AC supply, • Balanced 3 phase load, • Relation between line and phase quantities for star connected circuit and delta connected circuit.	07 Hrs
Unit-IV Earthing and lamps • Necessity of Earthing, • Earthing methods, • Fuse (rewireable and HRC), • MCB, • Incandescent Lamp, • Fluorescent tube, • CFL, • LED lamp, • Mercury vapour lamp.	08 Hrs

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

CO	Statement
124.1	Explain the basic electric and magnetic circuits
124.2	Interpret the fundamentals of single phase alternating quantities
124.3	Examine relation between line and phase quantities for three phase connection
124.4	Analyze necessity of earthing and lamps

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	3	2	-	-	-	-	2	-	-	-	2
2	3	3	2	2	-	-	-	-	-	-	-	-	-
3	4	3	2	2	-	-	-	-	-	-	-	-	-
4	4	3	-	3	-	-	3	2	2	-	-	-	-

Suggested Learning Resources:

Text Books:

Sr. No	Title	Edition	Author(s)	Publisher	Year
1	Basic Electrical Engineering	4 th	Nagrath I.J. and D.P.kothari	Tata McGraw Hill	2009
2	Basic Electrical Engineering	6 th	V.K Mehta, Rohit Mehta	S. Chand	2008

Reference Books:

Sr. No	Title	Edition	Author(s)	Publisher	Year
1	Fundamentals of Electrical Engineering	2 nd	Bharati Dwivedi and Anurasg Tripathi	Wiley Precise	2013
2	Electrical Engineering concepts and Applications	1 st	P.V.Prasad and S.ShivanRaju	Cengage learning	2012

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 : Plumbing and Electrical Skills	
Course Code: PES24FE125	Semester: II
Teaching Scheme L-T-P :1-0-0	Credits : 1
Evaluation Scheme : ISE-25	ESE Marks: - --

Prior Knowledge of:	The formal education of plumbing and electrical skill will improve the plumbing and electrical system design and installation standards, thereby, ensuring health and safety of people and structures.
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Course Objectives:

1.	To study the basic terminology of plumbing and its materials.
2.	To understand the Plumbing water supply system and drawings.
3.	To know the fundamentals of electricity and its materials used in work.
4	To discuss the alternating currents and earthing system.

CurriculumDetails

Course Contents	Duration
Unit-I Plumbing 1.Introduction to Plumbing Accessories: • Various type of pipes and their purpose, connectors, types of joints • Traps- Types and functions • CP Fittings- • Sanitary wares- Types and purpose 2.Plumbing Systems: • External plumbing and internal plumbing • Testing • One pipe and Two pipe system • Water supply and Drainage system, chambers • Septic Tank- Purpose, Mechanism and Design • Disposal of waste water, soak pit 3. Rain Water Harvesting: • Rain water harvesting system • Bore well recharge • Underground water tanks 4.Plumbing codes: • Plumbing codes and standards	8Hrs

Course Contents	Duration
Unit-II Electrical skills • Introduction to Electrical Systems Concept of E.M.F, • Electrical Circuits: Basics and Components Potential Difference, Current, Resistance, Ohm's Law Kirchhoff's Laws, Comparison between Direct Current (D.C) and Alternating Current A.C, • Wiring Methods and Materials types of wires, wiring system and wiring methods, Comparison of different types of wiring, Specifications of Different types of wiring materials, Accessories Different types of wiring tools. • Electrical Lighting: Types and Installations Incandescent Lamp, Fluorescent tube, CFL, LED lamp, Mercury vapour lamp. • Electrical Power Distribution: Single-Phase and Three-Phase • Electrical Safety and Earthing Necessity of Earthing, Earthing methods, Fuse (rewireble and HRC). MCB • Electrical Codes and Standards	7Hrs

Course Outcomes (COs):

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

CO	Statements
125.1	Understand the fundamentals of plumbing and electrical systems
125.2	Identify various plumbing and electrical materials and fixtures
125.3	Learn installation and testing procedures
125.4	Acquire competency in plumbing and electrical codes and standards

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	3	2										
3	2	3	2										
4	2	3	2										

Suggested Learning Resources:

Text Books:

Sr. No	Title	Edition	Author(s)	Publisher	Year
1	V.N.Mittal and Arvind Mittal "Basic Electrical Engineering" Tata McGraw Hill, (Revised Edition)	2	V.N.Mittal and Arvind Mittal	Tata McGraw Hill	2011
2	B.L. Theraja, "Electrical Engineering" Vol. – I and II	23	B.L. Theraja	S. Chand Publications	2020
3	V.K. Mehta, "Fundamentals of Electrical Technology", S. Chand Publications		V.K. Mehta	S. Chand Publications	2008

Reference Books:

Sr. No	Title	Edition	Author(s)	Publisher	Year
1	Uniform Illustrated Plumbing Code-India (UIPC-I) published by IPA and IAPMO (India)		--	IPA and IAPMO (India)	2017
2	'A Guide to Good Plumbing Practices', a book published by IPA.	2	--	IPA.	2016
3	L.S. Bobrow, Fundamentals of Electrical Engineering, Oxford University Press, 2011.		L.S. Bobrow	Oxford University Press	2011
4	D.C. Kulshreshtha, Basic Electrical Engineering, McGraw Hill, 2009.		D.C. Kulshreshtha	McGraw Hill	2009

Course Title: Plumbing and Electrical Skill Laboratory	
Course Code : CE24FE127P	Semester: II
Teaching Scheme: L-T-P: 0-0-2	Credit :1
Evaluation Scheme: INT: 25	ESE/POE/OE Marks: ---

Prior Knowledge of:	The formal education of plumbing and electrical skill will improve the plumbing and electrical system design and installation standards, thereby, ensuring health and safety of people and structures.
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Course Objectives:

1.	To study the plumbing joints and drawings.
2.	To understand the plumbing fitting and level system.
3.	To expose the students for practical training through experiments to understand about fundamental parameters such as resistance, inductance, capacitance and magnetic, AC and DC circuits.
4.	To make them understand electrical safety precautions

List of Experiments-

Exp. No	Title of Experiments	Duration (Hrs)
01	Pipe Cutting and Threading Cut and thread pipes using different tools and techniques	2
02	Pipe Fitting and Joining Assemble and connect pipe fittings (elbows, tees, couplings)	2
03	Fixture Installation Install sinks, toilets, and faucets	2
04	Water Supply System Assembly Assemble a mock water supply system	2
05	Drainage System Assembly Assemble a mock drainage system	2
06	Wire Stripping and Terminations Strip and terminate wires using different tools and techniques	2
07	Circuit Assembly Assemble simple electrical circuits	2
08	Lighting Installation Install lighting fixtures and switches	2
09	Earthing and Bonding Understand and demonstrate earthing and bonding techniques	2

Exp. No	Title of Experiments	Duration (Hrs)
10	Electrical Testing and Measurement Use multimeters to measure voltage, current, and resistance	2

Additional Practical Activities

- Visit to a plumbing and electrical materials market
- Site visit to observe plumbing and electrical installations
- Group project: Design and propose a plumbing and electrical system for a small building

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

CO	Statements
1	Develop hands-on skills in plumbing and electrical installations
2	Understand practical applications of theoretical concepts
3	Familiarize with tools, materials, and safety procedures
4	Enhance problem-solving and critical thinking skill

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

[illegible]

Suggested Learning Resources: --

Text Books:

Sr. No	Title	Edition	Author(s)	Publisher	Year
1	Fundamentals of Electrical Engineering by Ashfaq Husain, Dhanpat Rai Company	4	Ashfaq Husain	Dhanpat Rai Company	2007

Reference Books:

Sr. No	Title	Edition	Author(s)	Publisher	Year
1	A Guide to Good Plumbing Practices, a book published by IPA.	2	--	IPA.	2016
2	L.S. Bobrow — Fundamentals of Electrical Engineering, Oxford University Press, 2011		L.S. Bobrow	Oxford University Press	2011

Course Plan:

Course Title: Indian Town Planning and Architecture	
Course Code: ITPA24FE126	Semester: II
Teaching Scheme: L-T-P:1-0-2	Credits: 02
Evaluation Scheme: ISE 20 marks	ESE Marks: 30 marks

Course Description:

Students would be introduced to the glorious past and achievements of the Indian subcontinent ranging from the “ancient period” to the “medieval period” concerning architecture and town planning. And develop a sense of pride and belongingness amongst the students towards Indian Knowledge Systems and further motivate them to bridge the gap between knowledge and application.

Course Objectives:

1.	To develop the knowledge and analysis on the understanding of eco-friendly, robust and scientific planning and architecture system of ancient India.
2.	To understand the importance of functional, aesthetic, psychological, culture and socio religious concept of ancient India architecture.
3.	To help the learners to trace, identify and develop the approach, process and material used in town and planning, construction and architecture
4.	To review and analyse the importance and significance of visual and performing arts and design in temples, houses, forts, caves and community places.
5.	To understand the various eco-friendly technology accepted in ancient civilization.

Course Outcomes (COs): At the end of the course, the students should be able to:

CO	Statements	BTL
126.1	Learn the importance of functional, aesthetic, psychological, culture and socio religious concept of ancient India architecture & Understand scientific planning and architecture system of ancient India.	1
126.2	Understand the various eco-friendly technology accepted in ancient civilization. And Inculcate the understanding of eco-friendly, robust and scientific planning.	2

Course Content:

Content	Duration
Unit 1: The Introduction to ancient Architecture - Introduction to relationship between Man, Nature, Culture and city forms. Study of determinants (Natural and man-made) influencing location, growth & pattern of human settlements including types of settlements growth (Organic and Planned) and settlement forms. - Architecture as satisfying human needs: functional, aesthetic and psychological outline of components and aspects of architectural form-site, structure, skin, materials, services, use, circulation, expression, character, experience	05 Hrs
Unit II: Ancient Architecture as Expression of Art & Design - Pre-Harappa and Sindhu Valley Civilization, Engineering Science and Technology in the Vedic Age. - Post-Vedic Records, Iron Pillar of Delhi, Rakhigarh, Mehrgarh. - Marine Technology, and Bet-Dwarka, conventional building material, green building, heritage sites, fortification and maintenance, anthills.	07 Hrs
Unit III: Ancient Architecture Materials& Planning - Clay products: Classification of bricks, Fire Brick, Fly Ash Bricks, Tiles, Terra-cotta, Earthenware, Porcelain, Stoneware. Stones: Uses of Stones, Qualities of Good Building Stones, Dressing, Common Building Stones of India. Glass: Different glass Forms and their Suitability, Timber: Different Forms and their Suitability Metals: Ferrous & Nonferrous Metals and Alloys, and, their Suitability, limitations, precautions Paints and Varnishes: Different types and their Suitability, limitations, precautions - Planning: Residence- site selection, site orientation- aspect, prospect, grouping, circulation, privacy, furniture requirements, services and other factors. Vastu shastra and its importance in building interrelationship with human, nature and cosmos - Town Planning: Town plans of Harappa, Mohenjodaro, Pataliputra, Delhi. Vastu shastra and its application in city layout.	07 Hrs
Unit IV: Ancient Architecture - Important architecture:Walled towns, structures developed e.g.: Stupas, Stambhas, sacred railing etc. Study of worshipping places with special reference to Mahalaxmi Temple &KopeshwarTemple. - Tradition Indian villages & House: Regional house construction, interior & importance. - Scientific achievements though ancient architect: Musical Pillars of Vitthal temple, Sundial of KonarkTemple, construction of eight shiva temple in straight line from Kedarnath to Rameswaram, Veerbhadra temple with 70 hanging pillars, Ellora caves excavating the mountain, Jaipur plan pink city etc.	07 Hrs

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
126.1 P	1	-	-	-	-	-	-	-	-	-	-	-	2
126.2 P	2	-	-	-	-	-	-	-	-	-	-	-	2

Suggested Learning Resources:

Text Books:

Sr. No	Title	Author(s)	Publisher	Year
1.	Indian Knowledge Systems, Vol. 1.	Kapur K and Singh A K	Central Chinmay mission trust, Bombay, 1995	2005
2.	Mayamata: An Indian Treatise on Housing Architecture and Iconography	B Dagens,	Pustak Mahal, Delhi	2013
3.	The Miracles of Vaastu Shastra	S S Das	O'Reilly	2017
4.	Ancient India	R. C. Majumdar	--	2015

Course Title: Yoga	
Course Code: YOGA24FE127	Semester: II
Teaching Scheme: L-T-P: 1-0-2	Credits: 02
Evaluation Scheme: INT 50 marks	ESE:--

Course Objectives:

1.	To make the students understand the importance of sound health and fitness principles As they relate to better health.
2.	To expose the students to a variety of physical and yogic activities aimed at Stimulating their continued inquiry bout Yoga, physical education, health and fitness.
3.	To develop among students an appreciation of physical activity as a lifetime pursuitanda Means to better health.

Curriculum Details

Course Contents	Duration
Unit I: Physical Fitness, Wellness & Life style • Meaning & Importance of Physical Fitness & Wellness • Components of Physical fitness • Components of Health related fitness • Components of wellness • Preventing Health Threats through Lifestyle Change • Concept of Positive Lifestyle • Meaning & Importance of Yoga • Elements of Yoga • Introduction- Asanas, Pranayama, Meditation & Yogic Kriyas	7 Hrs
Unit II: Physical Fitness, Wellness & Lifestyle • Yoga for concentration & related Asanas (Sukhasana; Tadasana; Padmasana & Shashankana) • Relaxation Techniques for improving concentration-Yog-nidra • Asanas preventive measures. • Hypertension: Tadasana, Vajrasana, Pavan Muktasana, Ardha Chakrasana, Bhujangasana, Sharasana. • Obesity: Procedure, Benefits & contra indications for Vajrasana, Hastasana, Trikonasana, Ardh Matsyendrasana. • Back Pain: Tadasana, Ardh Matsyendrasana, Vakrasana, Shalabhasana, Bhujangasana. • Diabetes: Procedure, Benefits & contraindications for Bhujangasana, Paschimottasana, Pavan Muktasana, Ardh Matsyendrasana. • Asthema: Procedure, Benefits & contra indications for Sukhasana, Chakrasana, Gomukhasana, Parvatasana, Bhujangasana, Paschimottasana, Matsyasana.	8 Hrs

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

CO	Statements
117.1	To learn techniques for increasing concentration and decreasing anxiety this leads to stronger academic performance.
117.2	To understand basic skills associated with yoga and physical activities including Strength and flexibility, balance and coordination.
117.3	To perform yoga movements in various combination and forms.

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

PO's CO's	BTL	1	2	3	4	5	6	7	8	9	10	11	12
117.1	1	-	-	-	-	-	-	-	-	-	-	-	2
117.2	1	-	-	-	-	-	-	-	-	-	-	-	2
117.3	1	-	-	-	-	-	-	-	-	-	-	-	2

Suggested Learning Resources:

Text Books:

Sr. No.	Title
1	Modern Trends and Physical Education by Prof. Ajmer Singh.
2	Light On Yoga by B. K. S. Iyengar.

Course Objectives:

1.	To make the students understand the importance of sound health and fitness principles As they relate to better health.
2.	To expose the students to a variety of physical and yogic activities aimed at Stimulating their continued inquiry about Yoga, physical education, health and fitness.
3.	To develop among students an appreciation of physical activity as a lifetime pursuit and a Means to better health.

Curriculum Details

Course Contents	Duration
1. Introduction- Asanas, Pranayama, Meditation & Yogic Kriyas	2Hrs
2. Yoga for concentration & related Asanas (Sukhasana; Tadasana; Padmasana & Shashankasana)	2Hrs
3. Relaxation Techniques for improving concentration-Yog-nidra	2Hrs
4. Hypertension: Tadasana, Vajrasana, Pawanuktasana, Ardha Chakrasana, Bhujangasana, Shavasana	2Hrs
5. Obesity: Procedure, Benefits & contraindications for Vajrasana, Hastasana, Trikonasana, Ardha Matsyendrasana	2Hrs
6. Back Pain: Tadasana, Ardha Matsyendrasana, Vakrasana, Shalabhasana, Bhujangasana	2Hrs
7. Procedure, Benefits & contraindications for Sukhasana, Chakrasana, Gomukhasana, Parvatasana, Bhujangasana, Paschimottasana, Matsyasana	2Hrs
8. Procedure, Benefits & contra indications for Bhujangasana, Paschimottasana, Pawanuktasana, Ardha Matsyendrasana	2Hrs

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

CO	Statements
117.1 P	To practice Physical activities and Hatha Yoga focusing on yoga for strength, flexibility, and relaxation.
117.2 P	To physically perform yoga movements in various combination and forms.

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

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

Suggested Learning Resources:

Text Books:

Sr. No.	Title
1	Modern Trends and Physical Education by Prof. Ajmer Singh.
2	Light On Yoga by B. K. S. Iyengar.