



*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**

<b>Sr. No</b>	<b>Abbreviations</b>	<b>Courses</b>
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

<b>Semester wise Course Distribution</b>										
<b>Sr. No</b>	<b>Course Category</b>	<b>Number of Courses per Semester</b>								<b>Total</b>
		<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	
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
<b>Total</b>		<b>7</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>6</b>	<b>7</b>	<b>7</b>	<b>5</b>	<b>56</b>

<b>CREDIT DISTRIBUTION : SEMESTER WISE</b>										<b>Total</b>	<b>Total Credits GR</b>
<b>1 Lecture hour = 1 Credit 2 Lab Hours = 1 Credit 1 Tutorial Hour = 1 Credit</b>											
<b>Sr. No</b>	<b>Type of Course</b>	<b>No of Credits/ Semester</b>									
		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
<b>Total</b>		<b>22</b>	<b>20</b>	<b>22</b>	<b>22</b>	<b>22</b>	<b>22</b>	<b>22</b>	<b>20</b>	<b>172</b>	<b>160-176</b>



*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 Civil Engineering**

**Curriculum Structure**

**First Year Civil Engineering Program (Course 2024-25)**

**With Effective from Academic Year 2024-25**

# **Curriculum Structure**

**First Year Civil Engineering**

**SCHEME OF INSTRUCTION & CURRICULUM**

**Programme: - Civil Engineering**

**Semester - I**

Sr. No.	Course Category	Course Code	Course Title	L	T	P	Course Credits	EXAMS SCHEME				
								ISE	MSE	ESE	INT	TOTAL
1	BSC	AM24FE111	Applied Mathematics-I	3	1	-	4	20	30	50	25	125
2		CHEM24FE112	Applied Chemistry	3	-	-	3	20	30	50	-	100
		CHEM24FE112P	Applied Chemistry Laboratory	-	-	2	1	-	-	-	-	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		EGCAD24FE114	Engineering Graphics & Computer Aided Drawing	3	-	-	3	20	30	50	-	100
	EGCAD24FE114P	Engineering Graphics & Computer Aided Drawing Laboratory	-	-	2	1	-	-	-	25	25	
5	VSEC	DTT124FE115	Design Thinking Through Innovation	1	-	-	1	25	-	-	-	25
		DTT124FE115P	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
<b>Total</b>				<b>15</b>	<b>1</b>	<b>12</b>	<b>22</b>	<b>130</b>	<b>120</b>	<b>200</b>	<b>200</b>	<b>650</b>
<b>Non Credit Mandatory Course</b>												
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



Sr. No.	Course Category	Course Code	Course Title	L	T	P	Course Credits	EXAM S CHEME				
								ISE	MSE	ESE	INT	TOTAL
1	BSC	AM24FE121	Applied Mathematics II	3	1	-	4	20	30	50	25	125
2		PHY24FE122	Applied Physics	3	-	-	3	20	30	50	-	100
3	ESC	PHY24FE122P	Applied Physics Laboratory	-	-	2	1	-	-	-	25	25
		GENAI24FE123	Generative AI	3	-	-	3	20	30	50	-	100
4	PCC	GENAI24FE123P	Generative AI Laboratory	-	-	2	1	-	-	-	25	25
		FCE24FE124	Fundamentals of Civil 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
<b>Total</b>				<b>15</b>	<b>1</b>	<b>8</b>	<b>20</b>	<b>105</b>	<b>90</b>	<b>230</b>	<b>150</b>	<b>575</b>
<b>Non Credit Mandatory Course</b>												
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- Civil Engineering)**  
w. e. f. A.Y. 2024-2025

<b>Course Title : Applied Mathematics II</b>	
<b>Course Code: AM24FE121</b>	<b>Semester: II</b>
<b>Teaching Scheme L-T-P : 3 – 1 – 0</b>	<b>Credits : 4</b>
<b>Evaluation Scheme: ISE-I (10 Marks), MSE (30 Marks), ISE-II (10 Marks)</b>	<b>ESE Marks: 50 marks</b>

<b>Prior Knowledge of:</b>	Differentiation , Integration
----------------------------	-------------------------------

**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
<b>Unit-I: Ordinary Differential Equations of First Order and First Degree</b> <ul style="list-style-type: none"> <li>• Definition of differential equation of First order and First degree.</li> <li>• Exact differential equations.</li> <li>• Non-exact differential equations.</li> <li>• Linear differential equations.</li> <li>• Bernoulli's differential equations.</li> </ul>	<b>08 Hrs</b>
<b>Unit-II: Numerical methods to solve Ordinary Differential Equations</b> <ul style="list-style-type: none"> <li>• Introduction</li> <li>• Picard's method.</li> <li>• Taylor's series method.</li> <li>• Euler's method.</li> <li>• Runge-Kutta's method (Fourth order)</li> </ul>	<b>07 Hrs</b>
<b>Unit-III : Vector Calculus</b> <ul style="list-style-type: none"> <li>• Introduction.</li> <li>• Gradient of scalar point function.</li> <li>• Divergence of vector point function.</li> <li>• Curl of a vector point function.</li> <li>• Irrotational, Solenoidal vector field</li> </ul>	<b>07 Hrs</b>
<b>Unit-IV: Laplace Transform</b>	<b>08 Hrs</b>

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

Course Contents	Duration
<ul style="list-style-type: none"> <li>Laplace transforms of elementary functions</li> <li>Properties of Laplace transforms (First Shifting, Change of scale property, Multiplication &amp; Division by t)</li> <li>Inverse Laplace transforms by partial fraction</li> </ul>	
<b>Unit-V: Numerical Integration</b> <ul style="list-style-type: none"> <li>Trapezoidal Rule.</li> <li>Simpson's 1/3 rd Rule.</li> <li>Simpson's 3/8 th Rule.</li> <li>Weddle's Rule.</li> </ul>	<b>07 Hrs</b>
<b>Unit-VI : Multiple Integrals</b> <ul style="list-style-type: none"> <li>Introduction of Double integrals</li> <li>Method of evaluation of Double integrals</li> <li>Change of order of integration</li> <li>Area enclosed by plane curves</li> <li>Mass of a plane lamina</li> </ul>	<b>08 Hrs</b>

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

CO	Statements
1	<b>solve</b> ordinary differential equations of first order and first degree and <b>apply</b> the methods to solve engineering problems also <b>use</b> the numerical methods to differential equations of first order and first degree
2	<b>use</b> knowledge of vector differentiation to find curl and divergence of vector fields.
3	<b>understand</b> Laplace Transform and to <b>solve the</b> problems on Laplace Transform
4	<b>solve</b> the integrals by numerical methods, <b>apply</b> multiple integrals to calculate areas and mass of lamina

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

**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	3	3	3	-	-	-	-	-	-	-	-	-
2	3	2	2	2	-	-	-	-	-	-	-	-	-
3	2,3	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	7 <sup>th</sup>	Peter V.O' Neil	Cengage Learning	2012
2	Advanced Engineering Mathematics	1 <sup>st</sup>	H.K.Dass	S. Chand Publications, New Delhi	2011
3	A Text Book of Applied Mathematics	7 <sup>th</sup>	P.N.Wartikar, J.N.Wartikar	Vidyarthi Griha Prakashan, Pune.	2006
4	Higher Engineering Mathematics	36 <sup>th</sup>	B.S.Grewal	Khanna Publishers	2001

**Reference Books:**

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

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

---

**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:**

<b>Tut. No</b>	<b>Title of Tutorials</b>	<b>Duration</b>
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 - Civil Engineering) w. e. f. A.Y. 2024-2025**

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

<b>Prior Knowledge of:</b>	Fundamentals of optics, Newton's laws etc.
----------------------------	--

**Course Objectives:**

1.	To provide basic concept of modern optics.
2.	To perceive the concepts of Moment of inertia, elasticity, and their applications in engineering fields
3.	To understand properties of fluid, and their applications in engineering fields.
4.	To understand the students, basic concepts of nanotechnology and quantum mechanics.

**Curriculum Details**

Course Contents	Duration
<b>Unit I: Diffraction and Polarization of Light</b> <b>Diffraction:</b> <ul style="list-style-type: none"> <li>• Diffraction- Concept and types (Fresnel and Fraunhofer diffraction),</li> <li>• Diffraction grating – construction and theory,</li> <li>• Resolving power of plane transmission grating.</li> </ul> <b>Polarization:</b> <ul style="list-style-type: none"> <li>• Introduction, double refraction,</li> <li>• Huygens' theory (positive and negative crystals),</li> <li>• Optical Activity, Specific Rotation,</li> <li>• Laurent's half shade polarimeter.</li> </ul>	<b>7 Hrs</b>
<b>Unit -II: Rotational motion</b> <ul style="list-style-type: none"> <li>• Definition of - M.I., K.E. of rotating body, Rolling motion,</li> <li>• Physical significance of M.I.,</li> <li>• Radius of gyration, Torque,</li> <li>• Principle of parallel and perpendicular axes,</li> <li>• M.I. of some regular shaped bodies about specific axes- rod, cylinder, sphere, Angular momentum and its conservation.</li> </ul>	<b>8 Hrs</b>
<b>Unit -III: Properties of materials</b>	



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

Course Contents	Duration
<ul style="list-style-type: none"><li>• Deforming Force and Restoring Force,</li><li>• Elasticity, Plasticity, Rigidity.</li><li>• Stress and Strain and their types,</li><li>• Elastic limit and Hooke's law,</li><li>• Types of moduli of elasticity.</li><li>• Stress -Strain diagram, Poisson's ratio,</li><li>• Behaviour of metal wire under increasing load,</li><li>• Factors affecting elasticity.</li></ul>	<b>8 Hrs</b>
<b>Unit -IV: Properties of fluids</b> <ul style="list-style-type: none"><li>• Pressure-depth relation (<math>P = \rho h g</math>),</li><li>• Atmospheric pressure, Pascal's law, Archimedes' principle.</li><li>• Viscous force, definition of viscosity, velocity gradient,</li><li>• Newton's law of viscosity, coefficient of viscosity and its SI unit,</li><li>• Streamline and turbulent flow with examples,</li><li>• critical velocity, Reynold's number, and its significance.</li><li>• Up thrust force, terminal velocity, Stokes law.</li><li>• Derivation of coefficient of viscosity by Stoke's method.</li></ul>	<b>7 Hrs</b>
<b>Unit -V: Nano Technology</b> <ul style="list-style-type: none"><li>• Introduction to nanotechnology, nanoscience, nanomaterials,</li><li>• Synthesis Method-Top-down Process: Ball milling method,</li><li>• Synthesis Method-Bottom-up Approach: Colloidal method,</li><li>• Tools- Scanning Tunneling Microscope and Atomic Force Microscope,</li><li>• Applications of nanomaterials</li></ul>	<b>7 Hrs</b>
<b>Unit -VI: Quantum Mechanics</b> <ul style="list-style-type: none"><li>• Introduction to quantum physics,</li><li>• Black body radiation, Planck's law,</li><li>• Photoelectric effect, Compton effect,</li><li>• de-Broglie's hypothesis,</li><li>• Wave-particle duality,</li><li>• Heisenberg's Uncertainty principle,</li><li>• Born's interpretation of the wave function,</li><li>• Schrodinger's time independent wave equation.</li></ul>	<b>8 Hrs</b>

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

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

CO	Statements
122.1	<b>Describe</b> the principle of diffraction and relate concepts in various engineering applications.
122.2	<b>Apply</b> the concepts of moment of inertia, elasticity in various engineering applications.
122.3	<b>Apply</b> the concepts of properties of fluids in various engineering applications.
122.4	<b>Explain</b> the need for nanomaterials in science and technology and quantum mechanics concepts.

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

**Suggested Learning Resources:**

**Text Books:**

Sr. No	Title	Edition	Author(s)	Publisher	Year
1	Engineering Physics	1 <sup>st</sup>	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

**Reference Books:**



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

Sr. No	Title	Edition	Author(s)	Publisher	Year
1	Fundamentals of Physics	Revised	J. Walker, D. Halliday, R. Resnick	Wiley Publications	
2	Engineering Physics	1 <sup>st</sup>	B.K. Pandey and Chaturvedi	Cengage Learning Publications	
3	Nanotechnology- Principles & Practices	3 <sup>rd</sup>	Sulabha K. Kulkarni	Capital Publication Co. New Delhi	2014
4	Introduction to Solid State Physics	8 <sup>th</sup>	Charles Kittel	John Willey and Sons Inc.	2009
5	Solid State Physics	6 <sup>th</sup>	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](https://en.wikipedia.org/wiki/Wave_interference)
6. [https://en.wikipedia.org/wiki/Introduction\\_to\\_quantum\\_mechanics](https://en.wikipedia.org/wiki/Introduction_to_quantum_mechanics)

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

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

<b>Prior Knowledge of:</b>	Optics, semiconductor basics, graph plotting, slope calculation
----------------------------	---

**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	Calculate the wavelength of a monochromatic light by using Bi-prism experiment	02Hrs
02	To study diffraction at Cylindrical obstacle.	02Hrs
03	Wavelength of different spectral lines of mercury using grating.	02Hrs
04	Calculation of R. P. of grating by using spectrometer	02Hrs
05	To find Resolving power of Telescope	02Hrs
06	Verification of inverse square law of intensity of light.	02Hrs
07	To find specific rotation by using half shaded Polarimeter.	02Hrs
08	Calculation of divergence of LASER beam.	02Hrs
09	Determine of surface tension of given liquid by Jeagers method	02Hrs
10	Determine coefficient of viscosity of given liquid using Stoke's method	02Hrs
11	Determine stiffness constant 'K' of a helical spring.	02Hrs
12	Modulus of rigidity by Torsional oscillations	02Hrs



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

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

CO	Statements
122.1	<b>Interpret</b> knowledge related to optics to use for suitable purposes in applied physics
122.2	<b>Interpret</b> knowledge related to properties of fluids for suitable purposes in applied physics
122.3	<b>Explain</b> applications of M.I., elasticity, surface tension.
122.4	<b>Interpret</b> knowledge related to inverse square law for suitable purposes in applied physics

**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	3	3	-	-	-	-	-	3	-	-	-
122.2	3	3	3	3	-	-	-	-	-	3	-	-	-
122.3	3	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 <sup>st</sup>	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

**Reference Books:**

Sr. No	Title	Edition	Author(s)	Publisher	Year
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 <sup>st</sup>	R.K. Gaur, S.L. Gupta	Dhanpat Rai Publications	1993

**Useful Link /Web Resources:**

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

<b>Course Title :-Generative AI</b>	
<b>Course Code:- CE24FE123</b>	<b>Semester: II</b>
<b>Teaching Scheme L-T-P : 3-0-0</b>	<b>Credits : 3</b>
<b>Evaluation Scheme: ISE-I (10 Marks), MSE (30 Marks), ISE-II (10 Marks)</b>	<b>ESE Marks: 50 marks</b>

<b>Prior Knowledge of:</b>	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:**

<b>Course Contents</b>	<b>Duration</b>
<b>Unit-I Introduction to Generative AI</b> <ul style="list-style-type: none"> <li>Basics of AI And ML. and DL</li> <li>Definition and scope of Generative AI</li> <li>Generative AI Origin</li> <li>Overview of generative models and their applications</li> <li>Difference between generative and discriminative models</li> <li>Understanding Risks &amp; Limitations</li> </ul>	<b>08 Hrs</b>
<b>Unit-II Basics on NLP</b> <ul style="list-style-type: none"> <li>What is NLP? History of NLP</li> <li>Components of NLP- Syntax, Semantics, Pragmatics, Discourse</li> <li>Introduction to NLP techniques and methods</li> <li>Various NLP Tasks</li> <li>Application of NLP- Industry application and Everyday applications</li> <li>Challenges and future of NLP</li> </ul>	<b>06 Hrs</b>
<b>Unit-III Language Models and LLM Architectures</b> <ul style="list-style-type: none"> <li>Introduction to language models and their role in AI</li> <li>Traditional approaches to language modelling</li> <li>Deep learning-based language models and their advantages</li> <li>Overview of popular LLM architectures: RNNs, LSTMs, and Transformers</li> </ul>	<b>07 Hrs</b>
<b>Unit-IV Understanding GPT (Generative Pre-trained Transformer) and ChatGPT</b> <ul style="list-style-type: none"> <li>Introduction to GPT and its significance</li> <li>Pre-training and fine-tuning processes in GPT Architecture and working of GPT models</li> </ul>	<b>09 Hrs</b>

Course Contents	Duration
<ul style="list-style-type: none"> <li>Overview of GPT variants and their use cases</li> <li>Introduction to ChatGPT and its purpose</li> <li>Training data and techniques for ChatGPT</li> <li>Handling user queries and generating responses</li> <li>Tips for improving ChatGPT's performance.</li> </ul>	
<b>Unit-V Prompt Engineering</b> <ul style="list-style-type: none"> <li>The Fundamentals of Prompt Engineering</li> <li>Components of a prompt</li> <li>Techniques for prompt engineering</li> <li>Applications of Prompt Engineering</li> <li>Potential prompt misuses</li> </ul>	<b>07 Hrs</b>
<b>Unit-VI Future of generative AI and Ethical Considerations in Generative AI</b> <ul style="list-style-type: none"> <li>Emerging trends in Generative AI</li> <li>Generative AI technology evolution</li> <li>Opportunities for innovations and growth</li> <li>Understanding the ethical implications of generative models</li> <li>Addressing bias and fairness in generative AI systems</li> <li>Ensuring responsible use and deployment of generative models</li> </ul>	<b>08 Hrs</b>

**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>

<b>Course Title: Generative AI Laboratory</b>	
<b>Course Code : CE24FE123P</b>	<b>Semester: II</b>
<b>Teaching Scheme: L-T-P: 0-0-2</b>	<b>Credit : 1</b>
<b>Evaluation Scheme: ISE: INT-25 Marks</b>	<b>ESE/POE/OE Marks: -</b>

<b>Prior Knowledge of:</b>	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>



<b>Course Title :</b> Fundamentals of Civil Engineering	
<b>Course Code:</b> FCE24FE124	<b>Semester:</b> II
<b>Teaching Scheme:</b> L-T-P :2-0-0	<b>Credits :</b> 2
<b>Evaluation Scheme ISE-I (10 Marks), MSE (30 Marks), ISE-II (10 Marks):</b> --	<b>ESE Marks:</b> 50 marks

<b>Prior Knowledge of:</b>	This course is to provide students with a strong foundation in the fundamental principles and concepts of civil engineering. This foundational knowledge is essential for understanding and applying advanced concepts in specialized areas of engineering. Engineering mechanics applies the principle of mechanics to design, taking into account the effects of forces.
----------------------------	--

**Course Objectives:**

1.	To learn basic concepts and system of forces
2.	To develop skills to use the basic principles of mechanics in engineering applications.
3.	To solve problems of statics and dynamics related to engineering domain using principles of mechanics.
4	To inculcate essentials of civil engineering field to the students of all branches of Engineering. And to provide the students an illustration of the significance of Civil Engineering profession in satisfying societal need.

### Curriculum Details

Course Contents	Duration
<p><b>Unit-I</b> <b>Resolution and composition of force system</b></p> <ol style="list-style-type: none"> <li>Introduction to Mechanics,</li> <li>Force system, concept of Resultant,</li> <li>Composition and Resolution of Forces, Equivalent force system,</li> <li>Moment of a force, Couple, law of parallelogram,</li> <li>Varignon's theorem, Resultant of a concurrent and non-concurring force system</li> </ol>	<b>8 Hrs</b>
<p><b>Unit-II</b> <b>Equilibrium of rigid body</b></p> <ol style="list-style-type: none"> <li>Concept of Equilibrium,</li> <li>Free Body Diagram, Lami's theorem,</li> <li>analytical conditions of equilibrium,</li> <li>engineering application to beams and trusses</li> <li>Friction, types of friction, laws of Friction.</li> </ol>	<b>7 Hrs</b>
<p><b>Unit-III</b> <b>Linear and circular motion of a body</b></p> <ol style="list-style-type: none"> <li>Rectilinear motion,</li> <li>Equations of motion, motion diagrams,</li> <li>Motion in vertical direction.</li> <li>Circular motion, motion on curved path, super elevation</li> </ol>	<b>7 Hrs</b>
<p><b>Unit-IV</b> <b>Introduction to Civil engineering and Surveying</b></p> <ol style="list-style-type: none"> <li>Introduction to civil engineering, various disciplines of civil engineering,</li> <li>relevance of civil engineering in overall infrastructural development of the country,</li> </ol> <p><b>Surveying:</b></p> <ol style="list-style-type: none"> <li>Principle and objectives of surveying.</li> <li>Linear measurement: Instrument used, tapes, types of tapes.</li> <li>Angular measurement: Instrument used, meridian, bearing.</li> <li>Problems based on open and closed traversing.</li> </ol>	<b>8 Hrs</b>



**Suggested Learning Resources:**

**Text Books:**

Sr. No	Title	Edition	Author(s)	Publisher	Year
1	S. S. Bhavikattis, "Engineering Mechanics", New Age International Pvt. Ltd	8	S. S. Bhavikatti	New Age International Pvt. Ltd	2021
2	S. Timoshenko, "Engineering Mechanics", McGraw Hill Education	5	S. Timoshenko	McGraw Hill Education	2017
4	S.S.Bhavikattis, "Basic Civil Engineering", New Age International Pvt. Ltd	4	S.S. Bhavikatti	New Age International Pvt. Ltd	2024
5	G.K. Hiraskar, "Basic Civil Engineering", Dhanapat Rai Publications	1	G.K. Hiraskar	Dhanapat Rai Publications	2018

**Reference Books:**

Sr.No	Title	Edition	Author(s)	Publisher	Year
1	Meriam J. L., Kraige L. G., "Engineering Mechanics – Statics, Vol.1", Wiley Student Edition, (8th Edition) 2017	8	Meriam J. L., Kraige L. G.	Wiley Student Edition	2017
2	R.C. Hibbeler, "Engineering Mechanics", Pearson Publication (14th edition)	14	R.C. Hibbeler	Pearson Publication	2016
3	"Strength of Material"-F.L. Singer and Pytel, Harper and Row publication.	4	F.L. Singer and Pytel	Harper and Row publication.	2016
4	B.C. Punmia, "Surveying", Vol.-I, Vol.-II, Vol.-III, Laxmi Publication	18	B.C. Punmia,	Laxmi Publication	2016

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

<b>Prior Knowledge of:</b>	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.
----------------------------	--

**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
<p><b>Unit-I</b> <b>Plumbing</b> <b>1.Introduction to Plumbing Accessories:</b></p> <ul style="list-style-type: none"> <li>• Various type of pipes and their purpose, connectors, types of joints</li> <li>• Traps- Types and functions</li> <li>• CP Fittings-</li> <li>• Sanitary wares- Types and purpose</li> </ul> <p><b>2.Plumbing Systems:</b></p> <ul style="list-style-type: none"> <li>• External plumbing and internal plumbing</li> <li>• Testing</li> <li>• One pipe and Two pipe system</li> <li>• Water supply and Drainage system, chambers</li> <li>• Septic Tank- Purpose, Mechanism and Design</li> <li>• Disposal of waste water, soak pit</li> </ul> <p><b>3. Rain Water Harvesting:</b></p> <ul style="list-style-type: none"> <li>• Rain water harvesting system</li> <li>• Bore well recharge</li> <li>• Underground water tanks</li> </ul> <p><b>4.Plumbing codes:</b></p> <ul style="list-style-type: none"> <li>• Plumbing codes and standards</li> </ul>	<b>8Hrs</b>

Course Contents	Duration
<p><b>Unit-II</b> <b>Electrical skills</b></p> <ul style="list-style-type: none"> <li>• <b>Introduction to Electrical Systems</b> Concept of E.M.F,</li> <li>• <b>Electrical Circuits:</b> Basics and Components Potential Difference, Current, Resistance, Ohm's Law Kirchhoff's Laws, Comparison between Direct Current (D.C) and Alternating Current A.C,</li> <li>• <b>Wiring Methods and Materials</b> 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.</li> <li>• <b>Electrical Lighting: Types and Installations</b> Incandescent Lamp, Fluorescent tube, CFL, LED lamp, Mercury vapour lamp.</li> <li>• <b>Electrical Power Distribution: Single-Phase and Three-Phase</b></li> <li>• <b>Electrical Safety and Earthing</b> Necessity of Earthing, Earthing methods, Fuse (rewireble and HRC). MCB</li> <li>• <b>Electrical Codes and Standards</b></li> </ul>	<b>7Hrs</b>

**Course Outcomes (COs):**

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

CO	Statements
125.1	<b>Understand</b> the fundamentals of plumbing and electrical systems
125.2	<b>Identify</b> various plumbing and electrical materials and fixtures
125.3	<b>Learn</b> installation and testing procedures
125.4	<b>Acquire</b> 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', 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

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

<b>Prior Knowledge of:</b>	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.
----------------------------	--

**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-**

<b>Exp. No</b>	<b>Title of Experiments</b>	<b>Duration (Hrs)</b>
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





**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:**

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

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

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

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

**Course Content:**

Content	Duration
<p><b>Unit 1: The Introduction to ancient Architecture</b></p> <ul style="list-style-type: none"> <li>• Introduction to relationship between Man, Nature, Culture and city forms. Study of determinants (Natural and man-made) influencing location, growth &amp; pattern of human settlements including types of settlements growth (Organic and Planned) and settlement forms.</li> <li>• 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</li> </ul>	<b>05 Hrs</b>
<p><b>Unit II: Ancient Architecture as Expression of Art &amp; Design</b></p> <ul style="list-style-type: none"> <li>• Pre-Harappa and Sindhu Valley Civilization, Engineering Science and Technology in the Vedic Age.</li> <li>• Post-Vedic Records, Iron Pillar of Delhi, Rakhigarh, Mehrgarh.</li> <li>• Marine Technology, and Bet–Dwarka, conventional building material, green building, heritage sites, fortification and maintenance, anthills.</li> </ul>	<b>07 Hrs</b>
<p><b>Unit III: Ancient Architecture Materials &amp; Planning</b></p> <ul style="list-style-type: none"> <li>• 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 &amp; Nonferrous Metals and Alloys, and, their Suitability, limitations, precautions Paints and Varnishes: Different types and their Suitability, limitations, precautions</li> <li>• 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</li> <li>• Town Planning: Town plans of Harappa, Mohenjodaro, Pataliputra, Delhi. Vastu shastra and its application in city layout.</li> </ul>	<b>07 Hrs</b>
<p><b>Unit IV: Ancient Architecture</b></p> <ul style="list-style-type: none"> <li>• Important architecture: Walled towns, structures developed e.g.: Stupas, Stambhas, sacred railing etc. Study of worshipping places with special reference to Mahalaxmi Temple &amp; Kopeshwar Temple.</li> <li>• Tradition Indian villages &amp; House: Regional house construction, interior &amp; importance.</li> <li>• Scientific achievements though ancient architect: Musical Pillars of Vitthal temple, Sundial of Konark Temple, 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.</li> </ul>	<b>07 Hrs</b>

**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
<b>126.1 P</b>	1	-	-	-	-	-	-	-	-	-	-	-	2
<b>126.2 P</b>	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

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

### Course Objectives:

1.	To <b>make</b> the students understand the importance of sound health and fitness principles As they relate to better health.
2.	To <b>expose</b> 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 <b>develop</b> among students an appreciation of physical activity as a lifetime pursuitanda Means to better health.

### Curriculum Details

Course Contents	Duration
<b>Unit I: Physical Fitness, Wellness &amp; Life style</b> <ul style="list-style-type: none"> <li>• Meaning &amp; Importance of Physical Fitness &amp; Wellness</li> <li>• Components of Physical fitness</li> <li>• Components of Health related fitness</li> <li>• Components of wellness</li> <li>• Preventing Health Threats through Lifestyle Change</li> <li>• Concept of Positive Lifestyle</li> <li>• Meaning &amp; Importance of Yoga</li> <li>• Elements of Yoga</li> <li>• Introduction- Asanas, Pranayama, Meditation &amp; Yogic Kriyas</li> </ul>	<b>7 Hrs</b>
<b>Unit II: Physical Fitness, Wellness &amp; Lifestyle</b> <ul style="list-style-type: none"> <li>• Yoga for concentration &amp; related Asanas (Sukhasana; Tadasana; Padmasana &amp; Shashankana)</li> <li>• Relaxation Techniques for improving concentration-Yog-nidra</li> <li>• Asanas preventive measures.</li> <li>• Hypertension: Tadasana, Vajrasana, Pavan Muktasana, Ardha Chakrasana, Bhujangasana, Sharasana.</li> <li>• Obesity: Procedure, Benefits &amp; contra indications for Vajrasana, Hastasana, Trikonasana, Ardh Matsyendrasana.</li> <li>• Back Pain: Tadasana, Ardh Matsyendrasana, Vakrasana, Shalabhasana, Bhujangasana.</li> <li>• Diabetes: Procedure, Benefits &amp; contraindications for Bhujangasana, Paschimottasana, Pavan Muktasana, Ardh Matsyendrasana.</li> <li>• Asthema: Procedure, Benefits &amp; contra indications for Sukhasana, Chakrasana, Gomukhasana, Parvatasana, Bhujangasana, Paschimottasana, Matsyasana.</li> </ul>	<b>8 Hrs</b>

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

CO	Statements
117.1	To <b>learn</b> techniques for increasing concentration and decreasing anxiety this leads to stronger academic performance.
117.2	To <b>understand</b> basic skills associated with yoga and physical activities including Strength and flexibility, balance and coordination.
117.3	To <b>perform</b> 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 <b>make</b> the students understand the importance of sound health and fitness principles As they relate to better health.
2.	To <b>expose</b> 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 <b>develop</b> among students an appreciation of physical activity as a lifetime pursuitanda 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, Pavan Muktasana, Ardha Chakrasana, Bhujangasana, Sharasana	2Hrs
5. Obesity: Procedure, Benefits & contraindications for Vajrasana, Hastasana, Trikonasana, Ardh Matsyendrasana	2Hrs
6. BackPain: Tadasana, Ardh 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, Pavan Muktasana, Ardh Matsyendrasana	2Hrs



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

CO	Statements
117.1 P	To <b>practice</b> Physical activities and Hatha Yoga focusing on yoga for strength, flexibility, and relaxation.
117.2 P	To physically <b>perform</b> 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.