

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.	True of Course	No. of	Courses	Total No. Credit			
No	Type of Course	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													
Sr.	Course Category	Nı			Cou		per S	eme		Total			
No	Course Category	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											
	1 Lecture hour = 1 Credit 2 Lab Hours = 1 Credit 1 Tutorial Hour = 1 Credit											
Sr.	Type of Course			No of			GR					
No	Type of Course	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 Mechanical Engineering

Curriculum Structure

First Year Mechanical Engineering Program (Course 2024-25)

With Effective from Academic Year 2024-25

Curriculum Structure

First Year Mechanical Engineering



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: - Mechanical Engineering





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	TOTAL	125	100	25	100	25	100	25	25	25	25	25	50	029		Grade	Grade	
ME	INT	25	-	25	ı	25		25	1	25	,	25	50	200		Grade	Grade	
EXAMS CHEME	ESE	90	90	-	50	-	50	-	-	-	ı	-	-	200		-		
EX	MSE	30	30	-	30	1	30	1	-	1	1	-	-	120		-	ı	
	ISE	20	20	-	20		20	,	25	-	25	-	-	130		-	1	
Course	Credits	4	3	1	8	1	3	1	1	1		1	2	22		NC	Ŋ	
	Ь	ı	-	2	1	2	ı	2		2		2	2	12	rse	ı		
	T	1	-	-	1	ı	ı	ı	ı	-	ı	-	-	1	Aandatory Cou	Noncredit Mandatory Course	1	1
	Γ	3	3	-	3	1	ж	,	1	-		-	1	15			Iandator	3
i	Course Title	Applied Mathematics-I	Applied Chemistry	Applied Chemistry Laboratory	Problem Solving with C-Language	Problem Solving with C-Language Laboratory	Engineering Graphics & Computer Aided Drawing	Engineering Graphics & Computer Aided Drawing Laboratory	Design Thinking Through Innovation	Design Thinking Through Innovation Laboratory	Professional Communication	Professional Communication Laboratory	NSS	Total	Noncredit 1	Finishing School Training I	Rural/Social Internship	
Course	Code	AM24FE111	CHEM24FE112	CHEM24FE112P	PSCL24FE113	PSCL24FE113P	EGCAD24FE114	EGCAD24FE114P	DTTI24FE115	DTT124FE115P	PC24FE116	PC24FE116P	NSS24FE117			MC24FE118	MC24FF119	
rse	,					ט				ЕС		ر	A			,		
Course	Category		BSC			ESC				VSEC	4	AEC	CCA				MC	

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



FACULTY OF ENGINEERING & FACULTY OF MANAGEMENT, TALSANDE

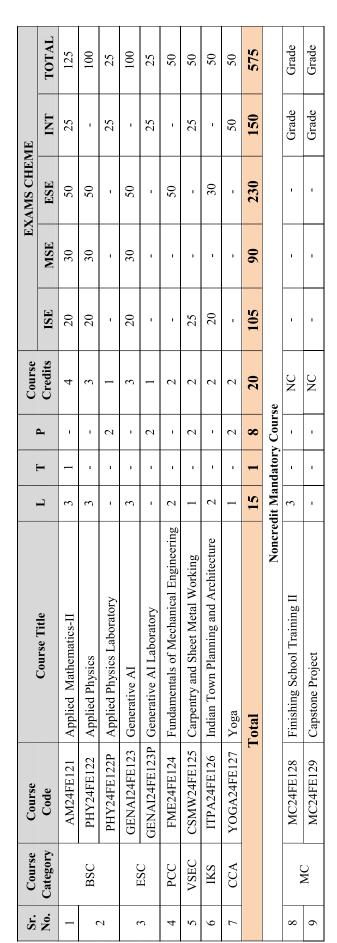
(3.25 CGPA)

(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 & SYLLABI

Programme: - Mechanical Engineering

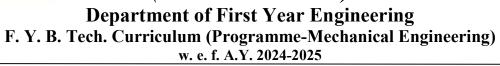




Note: This structure is approved by Academic Council in the meeting dated 03.09.2024



(An Autonomous Institute)





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

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.
	To imbibe graduates with mathematical knowledge, computational skills and the ability to
4.	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	08 Hrs
 Definition of differential equation of First order and First degree. 	
Exact differential equations.	
Non-exact differential equations.	
Linear differential equations.	
Bernoulli's differential equations.	
Unit-II: Numerical methods to solve Ordinary Differential Equations	07 Hrs
Introduction	
Picard's method.	
Taylor's series method.	
Euler's method.	
Runge-Kutta's method (Fourth order)	
Unit-III: Vector Calculus	07 Hrs
• Introduction.	
Gradient of scalar point function.	
Divergence of vector point function.	
• Curl of a vector point function.	
Irrotational, Solenoidal vector field	
Unit-IV: Laplace Transform	08 Hrs
Laplace transforms of elementary functions	



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Department of First Year Engineering



F. Y. B. Tech. Curriculum (Programme-Mechanical Engineering) w. e. f. A.Y. 2024-2025

Course Contents	Duration
Properties of Laplace transforms (First Shifting ,Change of scale property ,	
Multiplication & Division by t)	
Inverse Laplace transforms by partial fraction	
Unit-V: Numerical Integration	07 Hrs
Trapezoidal Rule.	
• Simpson's 1/3 rd Rule.	
• Simpson's 3/8 th Rule.	
Weddle's Rule.	
Unit-VI : Multiple Integrals	08 Hrs
Introduction of Double integrals	
Method of evaluation of Double integrals	
Change of order of integration	
Area enclosed by plane curves	
Mass of a plane lamina	

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

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

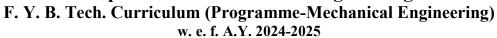
Course Articulation Matrix: Mapping of Course Outcomes (COs) with Program Outcomes (POs)

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	-	-	-	-	_	-	-	-	-



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Department of First Year Engineering





Suggested Learning Resources:

Text Books:

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

Reference Books:

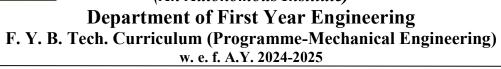
Sr. No	Title	Edition	Author(s)	Publisher	Year
1	Advanced Engineering	5 th	Erwin Kreyszig	India Pvt., Ltd.	2014
	Mathematics				
2	Higher Engineering	6 th	B.V.Ramana	Tata M/cGraw-	2010
	Mathematics			Hill Publication	
3	Numerical Methods for	5th	M.K.Jain	New Age	2007
	Scientific and Engineering			International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

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



(An Autonomous Institute)





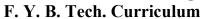
List of Tutorials:

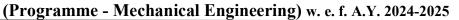
Tut. No	Title of Tutorials	Duration
01	Ordinary Differential Equations of First Order and First Degree	01 Hr
02	Ordinary Differential Equations of First Order and First Degree	01 Hr
03	Numerical methods to solve Ordinary Differential Equations	01 Hr
04	Numerical methods to solve Ordinary Differential 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



(An Autonomous Institute)

Department of First Year Engineering







Course Title: Applied Physics	
Course Code: PHY24FE122	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:	Fundamentals of optics, Newton's laws etc.
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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
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. 	7.11
Polarization:	7 Hrs
Introduction, double refraction,	
 Huygens' theory (positive and negative crystals), 	
Optical Activity, Specific Rotation,	
• Laurent's half shade polarimeter.	
Unit -II: Rotational motion	
 Definition of - M.I., K.E. of rotating body, Rolling motion, 	
 Physical significance of M.I., 	7 Hrs
• Radius of gyration, Torque,	
 Principle of parallel and perpendicular axes, 	
 M.I. of some regular shaped bodies about specific axes- rod, cylinder, sphere, 	
Angular momentum and its conservation.	
Unit -III: Properties of materials	



(An Autonomous Institute)

Department of First Year Engineering

F. Y. B. Tech. Curriculum

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



 Deforming Force and Restoring Force, Elasticity, Plasticity, Rigidity. Stress and Strain and their types, Elastic limit and Hooke's law, Types of moduli of elasticity. Stress-Strain diagram, Poisson's ratio, Behaviour of metal wire under increasing load, Factors affecting elasticity. Unit -IV: Properties of fluids Pressure-depth relation (P = ρ h g), Atmospheric pressure, Pascal's law, Archimedes' principle. Viscous force, definition of viscosity, velocity gradient, Newton's law of viscosity, coefficient of viscosity and its SI unit, Streamline and turbulent flow with examples, critical velocity, Reynold's number, and its significance. Up thrust force, terminal velocity, Stokes law. Derivation of coefficient of viscosity by Stoke's method. Unit -V: Nano Technology Introduction to nanotechnology, nanoscience, nanomaterials, Synthesis Method-Bottom-up Approach: Colloidal method, Tools- Scanning Tunneling Microscope and Atomic Force Microscope, Applications of nanomaterials 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. 	Course Contents	Duration
Stress and Strain and their types, Elastic limit and Hooke's law, Types of moduli of elasticity. Stress -Strain diagram, Poisson's ratio, Behaviour of metal wire under increasing load, Factors affecting elasticity. Unit -IV: Properties of fluids Pressure-depth relation (P = ρ h g), Atmospheric pressure, Pascal's law, Archimedes' principle. Viscous force, definition of viscosity, velocity gradient, Newton's law of viscosity, coefficient of viscosity and its SI unit, Streamline and turbulent flow with examples, critical velocity, Reynold's number, and its significance. Up thrust force, terminal velocity, Stokes law. Derivation of coefficient of viscosity by Stoke's method. 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 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,	Deforming Force and Restoring Force,	
Elastic limit and Hooke's law, Elastic limit and Hooke's law, Types of moduli of elasticity. Stress -Strain diagram, Poisson's ratio, Behaviour of metal wire under increasing load, Factors affecting elasticity. Unit -IV: Properties of fluids Pressure-depth relation (P = ρ h g), Atmospheric pressure, Pascal's law, Archimedes' principle. Viscous force, definition of viscosity, velocity gradient, Newton's law of viscosity, coefficient of viscosity and its SI unit, Streamline and turbulent flow with examples, critical velocity, Reynold's number, and its significance. Up thrust force, terminal velocity, Stokes law. Derivation of coefficient of viscosity by Stoke's method. Unit -V: Nano Technology Introduction to nanotechnology, nanoscience, nanomaterials, Synthesis Method-Pottom-up Approach: Colloidal method, Tools- Scanning Tunneling Microscope and Atomic Force Microscope, Applications of nanomaterials 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,	Elasticity, Plasticity, Rigidity.	
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 Stress-Strain diagram, Poisson's ratio, Behaviour of metal wire under increasing load, Factors affecting elasticity. Unit-IV: Properties of fluids Pressure-depth relation (P = ρ h g), Atmospheric pressure, Pascal's law, Archimedes' principle. Viscous force, definition of viscosity, velocity gradient, Newton's law of viscosity, coefficient of viscosity and its SI unit, Streamline and turbulent flow with examples, critical velocity, Reynold's number, and its significance. Up thrust force, terminal velocity, Stokes law. Derivation of coefficient of viscosity by Stoke's method. Unit-V: Nano Technology Introduction to nanotechnology, nanoscience, nanomaterials, Synthesis Method-Top-down Process: Ball milling method, Tools- Scanning Tunneling Microscope and Atomic Force Microscope, Applications of nanomaterials 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, 	Elastic limit and Hooke's law,	
 Behaviour of metal wire under increasing load, Factors affecting elasticity. Unit -IV: Properties of fluids Pressure-depth relation (P = ρ h g), Atmospheric pressure, Pascal's law, Archimedes' principle. Viscous force, definition of viscosity, velocity gradient, Newton's law of viscosity, coefficient of viscosity and its SI unit, Streamline and turbulent flow with examples, critical velocity, Reynold's number, and its significance. Up thrust force, terminal velocity, Stokes law. Derivation of coefficient of viscosity by Stoke's method. 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 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, 	Types of moduli of elasticity.	
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 Viscous force, definition of viscosity, velocity gradient, Newton's law of viscosity, coefficient of viscosity and its SI unit, Streamline and turbulent flow with examples, critical velocity, Reynold's number, and its significance. Up thrust force, terminal velocity, Stokes law. Derivation of coefficient of viscosity by Stoke's method. 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 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, 	Atmospheric pressure, Pascal's law, Archimedes' principle.	- TT
 Streamline and turbulent flow with examples, critical velocity, Reynold's number, and its significance. Up thrust force, terminal velocity, Stokes law. Derivation of coefficient of viscosity by Stoke's method. 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 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, 	Viscous force, definition of viscosity, velocity gradient,	7 Hrs
 critical velocity, Reynold's number, and its significance. Up thrust force, terminal velocity, Stokes law. Derivation of coefficient of viscosity by Stoke's method. 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 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, 	 Newton's law of viscosity, coefficient of viscosity and its SI unit, 	
 Up thrust force, terminal velocity, Stokes law. Derivation of coefficient of viscosity by Stoke's method. 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 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, 	Streamline and turbulent flow with examples,	
 Derivation of coefficient of viscosity by Stoke's method. 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 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, 	critical velocity, Reynold's number, and its significance.	
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 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,	Up thrust force, terminal velocity, Stokes law.	
 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 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, 	Derivation of coefficient of viscosity by Stoke's method.	
 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 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, 	Unit -V: Nano Technology	
 Synthesis Method-Bottom-up Approach: Colloidal method, Tools- Scanning Tunneling Microscope and Atomic Force Microscope, Applications of nanomaterials 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, 	 Introduction to nanotechnology, nanoscience, nanomaterials, 	
 Tools- Scanning Tunneling Microscope and Atomic Force Microscope, Applications of nanomaterials 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, 	Synthesis Method-Top-down Process: Ball milling method,	7 Hrs
 Applications of nanomaterials 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, 	Synthesis Method-Bottom-up Approach: Colloidal method,	
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,	Tools- Scanning Tunneling Microscope and Atomic Force Microscope,	
 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, 	Applications of nanomaterials	
 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, 	Unit -VI: Quantum Mechanics	
 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, 	Introduction to quantum physics,	
 Photoelectric effect, Compton effect, de-Broglie's hypothesis, Wave-particle duality, Heisenberg's Uncertainty principle, Born's interpretation of the wave function, 		
 de-Broglie's hypothesis, Wave-particle duality, Heisenberg's Uncertainty principle, Born's interpretation of the wave function, 		
 Wave-particle duality, Heisenberg's Uncertainty principle, Born's interpretation of the wave function, 	_	7 Hrs
 Heisenberg's Uncertainty principle, Born's interpretation of the wave function, 		
Born's interpretation of the wave function,		
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FACULTY OF ENGINEERING & FACULTY OF MANAGEMENT, Talsande

(An Autonomous Institute)





(Programme - Mechanical 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	Describe the principle of diffraction and relate concepts in various engineering
122,1	applications.
122.2	Apply the concepts of moment of inertia, elasticity in various engineering applications.
122.3	Apply the concepts of properties of fluids in various engineering applications.
122.4	Explain the need for nanomaterials in science and technology and quantum mechanics
122.4	concepts.

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

POs	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	Title Edition		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

Reference Books:



FACULTY OF ENGINEERING & FACULTY OF MANAGEMENT, Talsande

(An Autonomous Institute)

Department of First Year Engineering



F. Y. B. Tech. Curriculum (Programme - Mechanical 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	1st	B.K. Pandey and Chaturvedi	Cengage learning Publications	
3	Nanotechnology- Principles & Practices	3rd	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

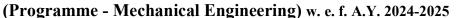


FACULTY OF ENGINEERING & FACULTY OF MANAGEMENT, Talsande

(An Autonomous Institute)

Department of First Year Engineering

F. Y. B. Tech. Curriculum





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.

 To use the knowledge of optics in a laboratory by using a spectrometer, diffraction grating,
- 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-

Exp. No	Title of Experiments	Duration
01	Calculate the wavelength of a monochromatic lightby 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



FACULTY OF ENGINEERING & FACULTY OF MANAGEMENT, Talsande

(An Autonomous Institute)

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



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

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

СО	Statements
122.1	Interpret knowledge related to optics to use for suitable purposes in applied physics
122.2	Interpret knowledge related to properties of fluids for suitable purposes in applied physics
122.3	Explain applications of M.I., elasticity, surface tension.
122.4	Interpret 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	-	-	ı
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 st	H.K. Malik	Tata McGraw Hill	2019
1	Lingineering Thysics			Education	
2	A Text Book of	Revised	M. N. Avadhanulu,	S. Chand	2018
2	Engineering Physics		P. G. Kshirasagar	Publications	

Reference Books:

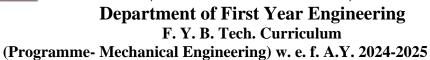
Sr. No	Title	Edition	Author(s)	Publisher	Year
3	Engineering Physics	Revised	L. N. Singh	Synergy Knowledge Ware	2016
4	Engineering Physics	Revised	V. Rajendran	Tata McGraw Hill Education	2010
5	Engineering Physics	1 st	R.K. Gaur, S.L. Gupta	Dhanpat Rai Publications	1993

Useful Link /Web Resources:

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



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Course Title :-Generative AI	
Course Code:- ME24FE123	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



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



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

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	07 Hrs
Techniques for prompt engineering	0/1118
Applications of Prompt Engineering	
Potential prompt misuses	
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	08 Hrs
Understanding the ethical implications of generative models	
Addressing bias and fairness in generative AI systems	
Ensuring responsible use and deployment of generative models	

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)

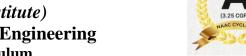
POs	BTL	1	2	3	4	5	6	7	8	9	10	11	12
1	2	2	1	-	1	ı	2	-	-	-	-	-	-
2	2	2	1	-	-	-	1	1	-	-	-	-	-
3	3	2	2	1	1	3	1	-	-	-	-	-	-
4	6	2	2	2	2	2	1	-	-	-	-	-	-



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



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

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		1
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



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

(3.25 CGPA) NAAC CYCLE 7:

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

Course Title: Generative AI Laboratory	
Course Code: ME24FE123P	Semester: II
Teaching Scheme: L-T-P: 0-0-2	Credit: 1
Evaluation Scheme: ISE: INT-25 Marks	ESE/POE/OE Marks: -

Prior Knowledge of:	Basic mathematics, Statistics

Course Objectives:

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

List of Experiments-

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

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

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

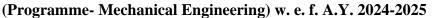


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Department of First Year Engineering

F. Y. B. Tech. Curriculum





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	-	1	1	-	-	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	-	1
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



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

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



Course Title: Fundamentals Mechanical Engineering				
Course Code: FME24FE124	Semester: II			
Teaching Scheme L-T-P: 2-0-0	Credits: 02			
Evaluation Scheme:	ESE Marks : 50 marks			

Prerequisite	1. Fundamental concepts of physics like Volume, Pressure, Velocity, Energy, Heat, Work
	2. Basics of Mathematics.

Course Objectives:

1.	To make aware of basics of thermodynamics and heat engines						
2.	To provide adequate knowledge of different types of power plant and energy sources						
3.	To get familiar with power transmission and power conversion						
4	To get comprehensive knowledge of manufacturing processes used within the manufacturing industry						

Course Content:-

Course Contents	Duration Hours
Unit-I: Introduction to Thermodynamics and Heat Engines	
• Introduction to Thermodynamics,	
• Laws of thermodynamics,	
• Introduction to IC Engines,	07
Construction and Working of C.I. and S.I. Engines.	
• Introduction to refrigeration systems and air conditioning. Applications of	
refrigeration and air conditioning	
Unit-II Energy Sources and power plants	
Renewable and non-renewable, fuels, hydraulic energy, solar energy, wind	
energy, nuclear energy, biogas, biodiesel.	07
Wind power plant, Hydropower plant, Steam Power plant, Solar water heater	
and photovoltaic cell	
Unit-III Mechanical Power Transmission and Energy conversion devices	
Type of Belt and belt drives, chain drive, Types of gears and gear Trains	07
Introduction to Pumps, Compressors and Turbines	
Unit-IV Manufacturing Processes	
• Introduction to manufacturing processes - Casting Process, Steps involved in	
casting processes, and their applications,	
Metal removing processes (Lathe, milling & drilling operations)	07
• Metal Joining Processes – Arc welding, soldering and brazing and their applications.	01
• Introduction and components of CNC, advantages and applications of CNC,	
Introduction to Mechatronics and robotics,	

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

CO	Statements
124.1	Remember the laws of thermodynamics as well ascomponents and working of heat engines
124.2	Understand different types of energy sources and power plants
124.3	Explain construction ,working and select devices used for mechanical power transmission and energy conversion
124.4	Understand different types of manufacturing process

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

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

Suggested Learning Resources:

Text Books:

Sr. No	Title	Edition	Author(s)	Publisher	Year
1	Non-Conventional Sources of Energy	Second	G.D. Rai	Khanna Publication	2014
2	Basic Mechanical Engineering	Second	Pravinkumar	Pearson	2018
3	Basic Mechanical Engineering by	Second	Basant Agrawal & C. M. Agrwal	Wiley India Pvt. Ltd.	2018
4	Elements of Workshop Technology, Vol.I and II by HajaraChoudhari, MediaPromoters	Second	Hajara Choudhari	MediaPromoters	2014

Reference Books:

Sr. No	Title	Edition	Author(s)	Publisher	Year
1	Thermal Engineering	Ninth	R.K. Rajput	, Laxmi Publication,Delhi	2013
2	Non-Conventional Sources of Energy by	Fifth	G.D. Rai	Khanna Publication Delhi	2015
3	Power Plant Engineering	Fourth	Arora and Domkunwar	DhanpatRai andSons	2015
4	Theory of Machines	Fourth	S.S.Ratan	Tata McGraw Hill Education Private Limited Delhi	2014

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



(An Autonomous Institute)





Programme - Mechanical Engineering w. e. f. A.Y. 2024-2025

Course Title: Carpentry and Sheet Metal Working	
Course Code: ME24FE127	Semester: II
Teaching Scheme: L-T-P: 1-0-0	Credits: 1
Evaluation Scheme: ISE-25	INT Marks: 25

Prior Knowledge of:	For effectively working in sheet metal one should have knowledge of
	hand tools, sheet metal machines, properties of metals, proper knowledge of timber frames, basics of a skeletal structure of a building
	and Timber frames

Course Objectives:

1.	To train the students to use different tools and equipment's involved in manufacturing processes.					
2	To develop the skills to handle the basic hand tools required to manufacture Sheet metal&					
2.	Carpentry model for specific application					
2	Introduce to different materials in engineering practices with respect to their workability,					
3.	formability and machinability with different equipment's					
4	To develop the skills to handle the basic hand tools required to manufacture Carpentry model for					
4.	specific application					

Curriculum Details

Course Contents	Duration		
Unit-I Sheet Metal Work			
 Specifications of metal sheets, working tools, 	6 Hrs		
• Sheet metal operations like-cutting, bending, folding, punching, reverting and	0 1115		
joining by brazing and soldering.			
Unit-II Carpentry			
 Introduction, Classifications of wood, 			
Common varieties of Indian timber,	8 Hrs		
• Carpentry tools like- Marking tools, cutting tools, planes, striking tools,	0 1115		
holding tools. Carpentry operations- marking, sawing, chiselling, grooving etc.			
carpentry joints			



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Programme - Mechanical Engineering w. e. f. A.Y. 2024-2025

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

CO	Statements
1	Identify Basic engineering workshop practices
2	Identify different tools used for Sheet metal and Carpentry operations
3	Enhance their knowledge skill sets with hand-on experience and teamwork inculcating analysis and lifelong learning by making a component with Sheet metal and carpentry tools at a defined accuracy.
4	Develop Carpentry model for specific application

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	1	3	2	-	-	2	-	-	1	-	-	-	1
2	1	3	2	-	-	-	-	-	-	-	-	-	1
3	2	3	2	-	-	-	1	-	-	-	-	-	1
4	2	3	2	-	-	-	-	-	1	-	-	-	1

Reference Books:

Sr. No	Title	Edition	Author(s)	Publisher	Year
1	A Course in Workshop Technology	Vol –I	B. S. Raghuvanshi,.	DhanapatRai and Sons	2017
2	Elements of Workshop Technology,	Vol –I	HajaraChaudhari,	Media Promoters	2018
3	Workshop Technology,	Vol –I	Gupta and Kaushik,	New Heights.	2016
4	Workshop Technology,	Vol –I	Chapman	The English Language Book Society.	2016

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









Programme - Mechanical Engineering w. e. f. A.Y. 2024-2025

Course Title: Carpentry and Sheet Metal Working				
Course Code: ME24FE127	Semester: II			
Teaching Scheme: L-T-P: 0-0-2	Credits: 1			
Evaluation Scheme: INT- 25 marks	ESE Marks :			

Prior Knowledge of:	Preliminary knowledge of Physics and Mathematics
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Course Objectives:

1	To train the students to use different tools and equipment's involved in manufacturing
1.	processes.
	To develop the skills to handle the basic hand tools required to manufacture Sheet metal
2.	for specific application
2	To develop the skills to handle the basic hand tools required to manufacture Carpentry
3.	model for specific application
4	introduce to different materials in engineering practices with respect to their workability,
4	formability and machinability with different equipment's

Curriculum Details

Course Contents					
Term	Work:				
1.	Sheet Metal: To make small job like Pan, Tray, Box etc. Using sheet metal	6 Hrs			
	operation like Cutting, Bending, Folding etc				
2.	Carpentry: One composite job involving dovetail joint, T joint, cross	8 Hrs			
	halving joint, pen stand etc.				

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

1	
CO	Statements
1	Identify Basic engineering workshop practices
2	Identify different tools used for Sheet metal and Carpentry operations
3	Enhance their knowledge skill sets with hand-on experience and teamwork inculcating analysis and lifelong learning by making a component with Sheet metal and carpentry tools at a defined accuracy.
4	Develop Carpentry model for specific application



FACULTY OF ENGINEERING & FACULTY OF MANAGEMENT, (An Autonomous Institute)



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

Programme - Mechanical 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	1	3	2	-	-	2	-	-	1	-	-	-	1
2	1	3	2	-	-	-	-	-	-	-	-	-	1
3	2	3	2	-	-	-	1	-	-	-	-	-	1
4	2	3	2	-	-	-	-	-	1	-	-	-	1

Reference Books:

Sr. No	Title	Edition	Author(s)	Publisher	Year
1	A Course in Workshop Technology	Vol –I	B. S. Raghuvanshi,.	DhanapatRai and Sons	2017
2	Elements of Workshop Technology,	Vol –I	HajaraChaudhari,	Media Promoters	2018
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4	Workshop Technology,	Vol –I	Chapman	The English Language Book Society.	2016

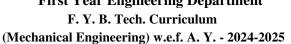
Useful Link /Web Resources:

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



FACULTY OF ENGINEERING & FACULTY OF MANAGEMENT, TALSANDE (An Autonomous Institute)

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





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 technologies accepted in ancient civilization.

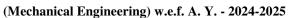
Course Outcomes (COs): At the end of the course, the students should be able to:

CO	Statements	BTL
126.1	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 technologies accepted in ancient civilization. And Inculcate the understanding of eco-friendly, robust and scientific planning.	2



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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 & Kopeshwar Temple. 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



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

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

POs	BTL	1	2	3	4	5	6	7	8	9	10	11	12
126.1 P	1	-	1	1	-	-	-	1	1	1	-	-	2
126.2 P	2	-	-	-	-	-	-	-	-	-	-	-	2

Suggested Learning Resources:

Text Books:

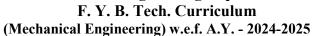
Sr. No	Title	Author(s)	Publisher	Year
1.	Indian Knowledge Systems, Vol. 1.	Kapur K and Singh A K	Central Chinmay mission trust, Bombay, 1995	2005
2.	Mayamata: An Indian Treatise on Housing Architecture and Iconography	B Dagens,	Pustak Mahal, Delhi	2013
3.	The Miracles of Vaastu Shastra	S S Das	O'Reilly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



FACULTY OF ENGINEERING & FACULTY OF MANAGEMENT,

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First Year Engineering Department F. V. B. Tech. Curriculum





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:

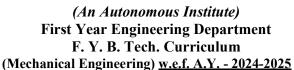
1.	To make the students understand the importance of sound health and fitness principles As they relate to better health.
2.	To expose the students to a variety of physical and yogic activities aimed at Stimulating their continued inquiry bout Yoga, physical education, health and fitness.
3.	To develop 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	7 Hrs
Concept of Positive Lifestyle	
Meaning & Importance of Yoga	
Elements of Yoga	
 Introduction- Asanas, Pranayama, Meditation & Yogic Kriyas 	
Unit II: Physical Fitness, Wellness & Lifestyle	
 Yoga for concentration & related Asanas (Sukhasana; Tadasana; Padmasana & 	
Shashankana)	
Relaxation Techniques for improving concentration-Yog-nidra	
Asanasas preventive measures.	
Hypertension: Tadasana, Vajrasana, Pavan Muktasana, Ardha Chakrasana,	
Bhujangasana, Sharasana.	
Obesity: Procedure, Benefits & contra indications for Vajrasana, Hastasana,	8 Hrs
Trikonasana, Ardh Matsyendrasana.	0 1115
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.	



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

СО	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	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.



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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 pursuitanda Means to better health.

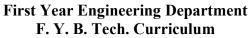
Curriculum Details

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



FACULTY OF ENGINEERING & FACULTY OF MANAGEMENT,

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

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

СО	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	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.						