



**K J's EDUCATIONAL INSTITUTES**

**Trinity College of Engineering & Research,  
Pune, Maharashtra, India**

**(Accredited by NAAC with 'A+' Grade in Cycle-II)**

**Approved by AICTE, Government of Maharashtra and**

**Affiliated to Savitribai Phule Pune University, Pune, Maharashtra, India**

**Faculty of Science and Technology**

**National Education Policy (NEP)-2020 Compliant Curriculum Structure**

**Master of Technology in Mechanical  
Engineering (Design)**

**[2025 pattern]**

**(with effect from A.Y. 2025-26)**

# NEP 2020 Compliant Curriculum Structure

## F. Y M. Tech (2025 Pattern) – Master of Technology Mechanical Engineering

### (Design Engineering)

### Semester-I

Course Code	Course Type	Course Name	Teaching Scheme (Hrs./week)		Examination Scheme and Marks					Credits		
			Theory	Practical	CIE*	End-Sem	Practical	Oral	Total	Theory	Oral	Total
	Major Core Course	Advanced Stress Analysis	4	-	50	50	-	-	100	4	-	4
	Major Core Course	Material Science and Mechanical Behavior of Materials	4	-	50	50	-	-	100	4	-	4
	Major Core Course	Advanced Mathematics	3		50	50			100	3		3
	Major Core Course	Laboratory Practice-I	-	4	-	-	-	50	50	-	2	2
	Major Elective	<b>Elective-I</b> A. Condition Monitoring	4	-	50	50	-	-	100	4	-	4
		B. Design for Manufacturing and Assembly										
		C. Fracture Mechanics										
	Humanities social science and Management (Mandatory Course)	Human Rights	1		-	50	-	-	50	1	-	1
	Experiential learning	Research Methodology	4	-	50	50	-	-	100	4	-	4
<b>Total</b>			<b>20</b>	<b>4</b>	<b>250</b>	<b>300</b>	<b>-</b>	<b>50</b>	<b>600</b>	<b>20</b>	<b>2</b>	<b>22</b>

CIE\*: Continuous Internal Evaluation

## NEP 2020 Compliant Curriculum Structure

### F. Y M. Tech (2025 Pattern) – Master of Technology Mechanical Engineering

#### (Design Engineering)

#### Semester-II

Course Code	Course Type	Course Name	Teaching Scheme (Hrs./week)		Examination Scheme and Marks					Credits		
			Theory	Practical	CIE*	End-Sem	Practical	Oral	Total	Theory	Oral	Total
	Major Core Course	Advanced Mechanical Vibration	4	-	50	50	-	-	100	4	-	4
	Major Core Course	Analysis and Synthesis of Mechanisms	4	-	50	50	-	-	100	4	-	4
	Major Core Course	Finite Element Method	3	-	50	50	-	-	100	3	-	3
	Major Core Course	Laboratory Practice-II	-	4	-	-	-	50	50	-	2	2
	Major Elective Course (Elective –II)	<b>Elective - II</b>	4	-	50	50	-	-	100	4	-	4
		A. Product Design and Development										
		B. Tribology										
		C. Vehicle Dynamics										
	Humanities social science and Management (Mandatory Course)	Universal Human values	1	-	-	50	-	-	50	1	-	1
	Experiential learning	Seminar-I	-	8	50	-		50	100	-	4	4
<b>Total</b>			<b>16</b>	<b>12</b>	<b>250</b>	<b>250</b>	<b>-</b>	<b>100</b>	<b>600</b>	<b>16</b>	<b>6</b>	<b>22</b>

CIE\*: Continuous Internal Evaluation

## NEP2020 Compliant Curriculum Structure

### S. Y M. Tech (2025 Pattern) – Master of Technology Mechanical Engineering

#### (Design Engineering)

#### Semester-III

Course Code	Course Type	Course Name	Teaching Scheme (Hrs./week)		Examination Scheme and Marks					Credits		
			Theory	Practical	CIE*	End-Sem	Practical	Oral	Total	Theory	Practical	Total
	Major Core Course	Optimization Techniques	4	-	50	50	-	-	100	4	-	4
	Open Elective I	Open Elective (Interdisciplinary– (NPTEL Online))	4	-	-	100	-	-	100	4	-	4
	Mandatory Course	Cyber Security	4	-	50	50	-	-	100	4		4
	Vocational and Skill Enhancement Course (Mandatory Course)	Skill Development I	-	4	-	-	-	50	50	-	2	2
	Experiential learning	Research Project-I	-	16	100	-	-	100	200	-	8	8
<b>Total</b>			<b>12</b>	<b>20</b>	<b>200</b>	<b>200</b>	<b>-</b>	<b>150</b>	<b>550</b>	<b>12</b>	<b>10</b>	<b>22</b>

**CIE\*: Continuous Internal Evaluation**

**NEP 2020 Compliant Curriculum Structure**  
**S. Y M. Tech (2025 Pattern) – Master of Technology Mechanical Engineering**  
**(Design Engineering)**  
**Semester-IV**

Course Code	Course Type	Course Name	Teaching Scheme (Hrs./week)		Examination Scheme and Marks					Credits		
			Theory	Practical	CIE*	End-Sem	Practical	Oral	Total	Theory	Oral	Total
	Value Education (Mandatory Course)	Indian Constitution	2	-	-	50	-	-	50	2	-	2
	Vocational and Skill Enhancement Course (Mandatory Course)	Skill Development II	-	4	-	-	-	50	50	-	2	2
	Experiential learning	Seminar II	-	8	50	-	-	50	100	-	4	4
	Research Project	Research Project II	-	24	100	-	-	100	200	-	12	12
<b>Total</b>			<b>2</b>	<b>36</b>	<b>150</b>	<b>50</b>	<b>-</b>	<b>200</b>	<b>400</b>	<b>2</b>	<b>18</b>	<b>20</b>

**CIE\*: Continuous Internal Evaluation**

**Elective Courses:**

Elective-I (SEM -I)	Elective-II (SEM -II)	OpenElective-I (SEM -III)
<b>Elective-I</b> A. Condition Monitoring	A. Product Design and Development	(Interdisciplinary– NPTEL online)
B. Design for Manufacturing and Assembly	B. Tribology	
. Fracture Mechanics	C. Vehicle Dynamics	

