SANDIP UNIVERSITY
School of Engineering and Technology
Department of Mechanical Engineering

CURRICULUM STRUCTURE

B. Tech. Program

in

Mechanical Engineering

(Sem III To VIII)

Batch 2025-2026

SANDIP UNIVERSITY

School of Engineering and Technology

Department of Mechanical Engineering

Course Structure-B. Tech. Mechanical Engineering

Semester – III

Sr. No.	Core	Course Code	Course Name	Teaching Scheme (Hrs./Week)				Examination Scheme				Total Marks
				L	T	P	C	Formative Assessment CIA		Summative Assessment ESE		
								Course	Lab	Course	Lab	
1	PCC	NYME301	Applied Thermodynamics	2	1	0	3	50	-	100	-	150
2	PCC	NYME302	Strength of Materials	2	1	0	3	50	-	100	-	150
3	PCC	NYME303	Manufacturing Processes	2	-	-	2	50	-	100	-	150
4	OE	–	Open Elective-I	3	0	0	3	50	-	100	-	150
5	MDM	–	Minor Course 1	2	0	0	2	50	-	100	-	150
6	PCC	NYME311	Applied Thermodynamics Laboratory	0	0	2	1	-	50	-	50*	100
7	PCC	NYME312	Strength of Materials Laboratory	0	0	2	1	-	50	-	50*	100
8	VEC	NLWV01	The Constitution & Human Rights	2	0	0	2	50	-	100	-	150
9	VSEC	NYME313	Manufacturing Process Laboratory	0	0	4	2	-	50	-	50*	100
10	AEC	NHSA11	Key Competencies for Career Growth	0	0	4	2	-	50	-	50*	100
11	CEP/FP	NYME314	Community Engagement Project*/ Field Project*	--	--	4	2		50		50*	100
TOTAL				13	02	16	23	300	250	600	250	1400
Value Added Course												
12	VAC		Solid Modelling & Drafting	-	-	2	-	-	-	-	-	-

		Formative Assessment		
CIA: Continuous Internal Assessment **L**: Theory Lecture **T**: Tutorial **P**: Practical **ESE**: End Semester Exam	***:** Oral Examination **PCC**: Program Core course **PEC**: Programme elective Core **OE:** Open Elective **VAC:** Value Added Courses **AEC :**Ability Enhancement Courses **CEP/FP:** Community Encouragement Project/ Field project **VSEC:** Vocational and Skill Enhancement Course **MDM:** Multidisciplinary minor course	**CIA**	**Weightage**	**Description**
		CIA 1	10%	Home Assignment
		CIA 2	20%	Written Exam
		CIA 3	10%	Seminar Presentation
		CIA 4	10%	• Behavioural Attitude + General Discipline (5%) • Theory + practical attendance 5%)
		TOTAL	**50%**	

23.06.2025

SANDIP UNIVERSITY

School of Engineering and Technology

Department of Mechanical Engineering

Course Structure-B. Tech. Mechanical Engineering
Semester – IV

Sr. No.	Core	Course Code	Course Name	Teaching Scheme (Hrs./Week)				Examination Scheme				Total Marks
				L	T	P	C	Formative Assessment CIA		Summative Assessment ESE		
								Course	Lab	Course	Lab	
1	PCC	NYME 401	Kinematics of Machinery	3	-	-	3	50	-	100	-	150
2	PCC	NYME402	Fluid Mechanics	3	-	-	3	50	-	100	-	150
3	PCC	NYME403	Engineering Materials and Metallurgy	3	-	-	3	50	-	100	-	150
4	PCC	NYME411	Kinematics of Machinery Laboratory	-	0	2	2	50	-	100	-	150
5	OE	–	Open Elective-II	3	-	-	3	50	-	100	-	150
6	VSEC	NYME412	Fluid Mechanics Laboratory	-	-	2	1	-	50	-	50*	100
7	MDM	–	Minor Course 2	2	0	0	2	50	-	100	-	150
8	PCC	NYME413	Industrial Work Study	3	-	-	3	-	50	-	50*	100
9	VSEC	NYME414	IC Engine Laboratory	-	-	2	1	-	50	-	50*	100
10	VEC	NHSA12	Strategic Communication for Professionals	0	0	4	2	-	50	-	50*	100
TOTAL				17	0	10	23	300	200	600	250	1300
Value Added Course												
11	VAC		Geometric Dimensioning & Tolerancing (GD&T)	-	-	2	-	-	-	-	-	-

CIA: Continuous Internal Assessment
L: Theory Lecture
T: Tutorial
P: Practical
ESE: End Semester Exam

***: Oral Examination
PCC: Program Core course
PEC: Programme elective Core
OE: Open Elective
VAC: Value Added Courses
AEC : Ability Enhancement Courses
CEP/FP: Community Encouragement Project/ Field project
VSEC: Vocational and Skill Enhancement Course
MDM: Multidisciplinary minor course

Formative Assessment

CIA	Weightage	Description
CIA 1	10%	Home Assignment
CIA 2	20%	Written Exam
CIA 3	10%	Seminar Presentation
CIA 4	10%	• Behavioural Attitude + General Discipline (5%) • Theory + practical attendance 5%)
TOTAL	**50%**	

SANDIP UNIVERSITY

School of Engineering and Technology

Department of Mechanical Engineering

Sr. No.	Core	Course Code	Course Name	Teaching Scheme (Hrs./Week)				Examination Scheme				Total Marks
				L	T	P	C	Formative Assessment CIA		Summative Assessment ESE		
								Course	Lab	Course	Lab	
Course Work (for Exit Criterion to UG Diploma)												
13		NYMEX01	Internship (2 Weeks)	--	--	--	8	--	50	--	--	50
14		NYMEX02	CADD	2	--	2	4	--	50	--	100	150

SANDIP UNIVERSITY

School of Engineering and Technology

Department of Mechanical Engineering

Course Structure-B. Tech. Mechanical Engineering
Semester – V

Sr. No.	Core	Course Code	Course Name	Teaching Scheme (Hrs./Week)				Examination Scheme				Total Marks
				L	T	P	C	Formative Assessment CIA		Summative Assessment ESE		
								Course	Lab	Course	Lab	
1	PCC	NYME501	Machine Design-I	3	-	-	3	50	-	100	-	150
2	PCC	NYME502	Heat Transfer	3	-	-	3	50	-	100	-	150
3	PCC	NYME503	Metrology and Quality Control	3	-	-	3	50	-	100	-	150
4	PCC	NYME511	Machine Design-I Laboratory	3	-	-	3	50	-	100	-	150
5	PEC	NYMEE__	Program Elective 1	3	-	-	3	50	-	100	-	150
6	OE	–	Open Elective-III	2	-	-	2	50	-	100	-	150
7	MDM	–	Minor Course 3	4	0	0	4	50	-	100	-	150
8	VSEC	NYME512	Heat Transfer Laboratory	0	0	2	1	-	50	-	50*	100
9	PCC	NYME513	Metrology and Quality Control Laboratory	-	-	2	1	50	-	100	-	150
10	AEC	NHSA13	Essential Aptitude Skills	0	0	4	2	-	50	-	50*	100
Total				21	-	08	25	400	100	800	100	1400
Value Added Course												
11	VAC		Python Programming for Mechanical Engineers	-	-	2	-	-	-	-	-	-

CIA: Continuous Internal Assessment
L: Theory Lecture
T: Tutorial
P: Practical
ESE: End Semester Exam

***: Oral Examination
PCC: Program Core course
PEC: Programme elective Core
OE: Open Elective
VAC: Value Added Courses
AEC : Ability Enhancement Courses
CEP/FP: Community Encouragement Project/ Field project
VSEC: Vocational and Skill Enhancement Course
MDM: Multidisciplinary minor course

Formative Assessment

CIA	Weightage	Description
CIA 1	10%	Home Assignment
CIA 2	20%	Written Exam
CIA 3	10%	Seminar Presentation
CIA 4	10%	• Behavioural Attitude + General Discipline (5%) • Theory + practical attendance 5%)
TOTAL	**50%**	

Date: 23/06/2025

SANDIP UNIVERSITY

School of Engineering and Technology

Department of Mechanical Engineering

Course Structure-B. Tech. Mechanical Engineering
Semester – VI

Sr. No.	Core	Course Code	Course Name	Teaching Scheme (Hrs./Week)				Examination Scheme				Total Marks
				L	T	P	C	Formative Assessment CIA		Summative Assessment ESE		
								Course	Lab	Course	Lab	
1	PCC	NYME601	Machine Design-II	3	-	-	3	50	-	100	-	150
2	PCC	NYME602	Refrigeration and Air Conditioning	3	-	-	3	50	-	100	-	150
4	PCC	NYME603	Turbo Machines	3	-	-	3	50	-	100	-	150
5	PEC	NYMEE__	Program Elective 2	3	-	-	3	50	-	100	-	150
6	PEC	NYMEE__	Program Elective- 3	3	-	-	3	50	-	100	-	150
7	MDM	–	Minor Course 4	2	0	0	2	50	-	100	-	150
8	PCC	NYME611	Machine Design-II Laboratory	-	-	2	1	-	50	-	50*	100
9	PCC	NYME612	Refrigeration and Air Conditioning Laboratory	-	-	2	1	-	50	-	50*	100
10	PCC	NYME613	Turbo Machines Laboratory	-	-	2	1	-	50	-	50*	100
11	VSEC	NYME614	Computer Oriented Numerical Methods	-	-	4	2		50	-	50*	100
12	AEC	NHSA14	Employability Skills and Career Advancement	0	0	4	2	-	50	-	50*	100
TOTAL				17	-	14	24	300	250	600	250	1400
Value Added Course												
13	VAC		E-Vehicle Technology	-	-	2	-	-	50	-	-	50

CIA: Continuous Internal Assessment
L: Theory Lecture
T: Tutorial
P: Practical
ESE: End Semester Exam

***: Oral Examination
PCC: Program Core course
PEC: Programme elective Core
OE: Open Elective
VAC: Value Added Courses
AEC : Ability Enhancement Courses
CEP/FP: Community Encouragement Project/ Field project
VSEC: Vocational and Skill Enhancement Course
MDM: Multidisciplinary minor course

Formative Assessment

CIA	Weightage	Description
CIA 1	10%	Home Assignment
CIA 2	20%	Written Exam
CIA 3	10%	Seminar Presentation
CIA 4	10%	• Behavioural Attitude + General Discipline (5%) • Theory + practical attendance 5%)
TOTAL	**50%**	

Date: 23/06/2025

SANDIP UNIVERSITY

School of Engineering and Technology

Department of Mechanical Engineering

Sr. No.	Core	Course Code	Course Name	Teaching Scheme (Hrs./Week)				Examination Scheme				Total Marks
				L	T	P	C	Formative Assessment CIA		Summative Assessment ESE		
								Course	Lab	Course	Lab	
Course Work (for Exit Criterion to UG Diploma)												
13		NYMEX03	Internship (4 Weeks)	--	--	--	8	--	50	--	--	50
14		NYMEX04	Design of E-Vehicle System	4	--	--	4	--	50	--	100	150

SANDIP UNIVERSITY

School of Engineering and Technology

Department of Mechanical Engineering

Course Structure-B. Tech. Mechanical Engineering
Semester – VII

Sr. No.	Core	Course Code	Course Name	Teaching Scheme (Hrs./Week)				Examination Scheme				Total Marks
				L	T	P	C	Formative Assessment CIA		Summative Assessment ESE		
								Course	Lab	Course	Lab	
1	PCC	NYME701	Dynamics of Machinery	2	1	-	3	50	-	100	-	150
2	PCC	NYME702	Energy Engineering	2	-	-	2	50	-	100	-	150
3	PEC	NYMEE__	Program Elective 4	3	-	-	3	50	-	100	-	150
4	MDM	–	Minor Course 5	2	0	0	2	50	-	100	-	150
5	PCC	NYME711	Dynamics of Machinery Laboratory	-	-	2	1	-	50	-	50*	100
6	INT/OJT	NYME712	INTERNSHIP/OJT*	-	-	-	12	-	50	-	50*	100
7	AEC	NHSA15	Corporate Readiness and Entrepreneurial Excellence	0	0	4	2	-	50	-	50*	100
TOTAL				09	01	06	25	200	150	400	150	900
Value Added Course												
8	VAC		Finite Element Analysis	-	-	2	-	-	-	-	-	-

CIA: Continuous Internal Assessment
L: Theory Lecture
T: Tutorial
P: Practical
ESE: End Semester Exam

#: Internship for 45 days.
*****: Oral Examination
PCC: Program Core course
PEC: Programme elective Core
OE: Open Elective
VAC: Value Added Courses
AEC : Ability Enhancement Courses
CEP/FP: Community Encouragement Project/ Field project
VSEC: Vocational and Skill Enhancement Course
MDM: Multidisciplinary minor course

Formative Assessment

CIA	Weightage	Description
CIA 1	10%	Home Assignment
CIA 2	20%	Written Exam
CIA 3	10%	Seminar Presentation
CIA 4	10%	• Behavioural Attitude + General Discipline (5%) • Theory + practical attendance 5%)
TOTAL	**50%**	

Date: 23/06/2025

SANDIP UNIVERSITY

School of Engineering and Technology

Department of Mechanical Engineering

Course Structure-B. Tech. Mechanical Engineering
Semester – VIII

Sr. No.	Core	Course Code	Course Name	Teaching Scheme (Hrs./Week)				Examination Scheme				Total Marks
				L	T	P	C	Formative Assessment CIA		Summative Assessment ESE		
								Course	Lab	Course	Lab	
1	PCC	NYME801	Advance Manufacturing Techniques	2	-	-	2	50	-	100	-	150
2	PCC	NYME802	Mechanical System Design	2	-	-	2	50	-	100	-	150
3	PEC	NYMEE__	Program Elective-5	4	-	-	4	50	-	100	-	150
4	ELC	NRDP107	Research Methodology	4	-	-	4	50	-	100	-	150
5	PEC	NYMEE__	Program Elective-6	4	-	-	4	50	-	100	-	150
6	MDM	--	Minor Course 6	2	0	0	2	50	-	100	-	150
7	CEP/FP	NYME811	Project	-	-	8	4	-	50	-	100*	150
			TOTAL	18	-	8	22	300	50	600	100	1050
Value Added Course												
8	VAC		Quality Management System	-	-	2	-	-	-	-	-	-

CIA: Continuous Internal Assessment
L: Theory Lecture
T: Tutorial
P: Practical
ESE: End Semester Exam

***: Oral Examination
PCC: Program Core course
PEC: Programme elective Core
OE: Open Elective
VAC: Value Added Courses
AEC : Ability Enhancement Courses
CEP/FP: Community Encouragement Project/ Field project
VSEC: Vocational and Skill Enhancement Course
MDM: Multidisciplinary minor course

Formative Assessment

CIA	Weightage	Description
CIA 1	10%	Home Assignment
CIA 2	20%	Written Exam
CIA 3	10%	Seminar Presentation
CIA 4	10%	• Behavioural Attitude + General Discipline (5%) • Theory + practical attendance 5%)
TOTAL	**50%**	

Date: 23/06/2025

SANDIP UNIVERSITY

School of Engineering and Technology

Department of Mechanical Engineering

Programme Elective Core (PEC) Basket

Sr. No.	Course Code	PEC-I
1	NYMEE01	Automobile Engineering
2	NYMEE02	Industrial Engineering
3	NYMEE03	Advanced Manufacturing Techniques
4	NYMEE04	Energy systems for sustainable building

Sr. No.	Course Code	PEC-II
1	NYMEE05	Computational Fluid Dynamics
2	NYMEE06	Modern Machining Processes
3	NYMEE07	Composite Material
4	NYMEE08	Renewable Energy System

Sr. No.	Course Code	PEC-III
1	NYMEE09	Energy Audit and Management
2	NYMEE10	Quality and Reliability Engineering
3	NYMEE11	Maintenance and Safety Engineering
4	NYMEE12	Product Design and Development

Sr. No.	Course Code	PEC-IV
1	NYMEE13	Tribology
2	NYMEE14	Heat Exchanger Design
3	NYMEE15	Powder Processing Techniques
4	NYMEE16	Material Handling System

Sr. No.	Course Code	PEC-V
1	NYMEE17	Process Equipment Design
2	NYMEE18	Product Design and Development
3	NYMEE19	Computational Fluid Dynamics
4	NYMEE20	Tool and Die design

Sr. No.	Course Code	PEC-VI
1	NYMEE21	Operation Research
2	NYMEE22	Surface Engineering
3	NYMEE23	Internet of Things
4	NYMEE24	Production Engineering

SANDIP UNIVERSITY

School of Engineering and Technology

Department of Mechanical Engineering

Open Elective Basket offered by the Mechanical Engineering Department

Open Elective	Sr. No.	Course Code	Open Elective offered by the Mechanical Engineering Department
Open Elective 1	1	NYMEO01	Sustainable & Green Energy
	2	NYMEO02	Production Processes in Industries
Open Elective 2	1	NYMEO03	Robotics
	2	NYMEO05	Automation in Manufacturing
Open Elective 3	1	NYMEO05	Electrical and Hybrid Vehicle
	2	NYMEO06	Composite Materials

Multidisciplinary Honors/Minor offered by Mechanical Engineering Department

Honors/Minor (Mechatronics)

Sr. No.	Course Name	Course Code	Scheme	Credit	Semester
1	Basics of Mechatronics	NYMEM01	2-0-0	2	3
2	Sensors and Actuators	NYMEM02	2-0-0	2	4
3	Microcontrollers and Interfacing	NYMEM03	4-0-0	4	5
4	Robotics and Automation	NYMEM04	2-0-0	2	6
5	Mechatronics System Design	NYMEM05	2-0-0	2	7
6	Robotics / IOT in Mechatronics	NYMEM06	2-0-0	2	8
			Total	**14**	

Exit options under B. Tech. in Mechanical Engineering Program

Courses	Credits
After 2nd Year (6 credits) Any two of three course courses	
Outcome	• Junior Engineer • Draftsman / AutoCAD Technician • Machine Operator • Material Testing Lab Technician • Trainee Engineer
After 3rd Year (6 Credits) Either 2 courses or an internship	
Outcome	• Junior Engineer • Trainee Engineer • Quality Control / Testing Engineer • Assistant Design Engineer

SANDIP UNIVERSITY

School of Engineering and Technology

Department of Mechanical Engineering

Credit Distribution

1

Semester		Total Credits as per GR	Total Credits SUN Mechanical
Basic Science Course	BSC/ESC	14-18	16
Engineering Science Course		16-12	12
Programme Core Course (PCC)	Program Courses	44-56	60
Programme Elective Course (PEC)		20	20
Multidisciplinary Minor (MDM)	Multidisciplinary Courses	14	14
Open Elective (OE) Other than a particular program		08	8
Vocational and Skill Enhancement Course (VSEC)	Skill Courses	08	6
Ability Enhancement Course (AEC -01, AEC-02)	Humanities Social Science and Management (HSSM)	04	10
Entrepreneurship/ Economics / Management Course		04	
Indian knowledge System (IKS)		02	2
Value Education Course (VEC)		04	4
Research Methodology	Experiential Learning Courses	04	4
Comm. Engg. Project (CEP) / Field Project (FP)		02	2
Project		04	4
Internship/ OJT		12	12
Co-curricular Course (CC)	Liberal Learning Courses	04	4
Total Credits (Major)		**160-176**	**174**