Curriculum and Syllabi

B.E. MECHANICAL ENGINEERING

SEMESTERS I to VIII

Regulations 2025

Programme: B.E. MECHANICAL ENGINEERING

2025 Regulations

(2025-29 Batch Onwards)

Curriculum for Semesters I to VIII

SEMESTER I

S. No.	Course Code	Course Title	Hours per week				Hours per sem				Total no. of Hours per semester	Credits	Internal/ External Marks	Course Category
			L	T	P	SL	L	T	P	SL				
1	25IP101	Makerspace - Induction Program	-	-	-	-	-	-	-	-	-	0	-	-
Theory Cum Practical Courses														
2	25ES101	Problem Solving Techniques using Python	3	0	2	3	45	0	30	45	120	4	50/50	ES
3	25HS101	English for Communication	3	0	2	3	45	0	30	45	120	4	50/50	HS
4	25ES102	Innovation and Design Thinking	1	0	2	1	15	0	30	15	60	2	100/0	ES
Theory Courses														
5	25MA101	Matrices and Calculus	3	1	0	4	45	15	0	60	120	4	40/60	BS
6	25PH101	Applied Engineering Physics	3	0	0	3	45	0	0	45	90	3	40/60	BS
7	25ES103	Engineering Graphics	2	1	0	3	30	15	0	45	90	3	40/60	ES
8	25AC101	Heritage of Tamils	1	0	0	1	15	0	0	15	30	1	100/0	AC
Practical Course														
9	25ES104	Engineering Practices Laboratory	0	0	4	0	0	0	60	0	60	2	60/40	ES

SEMESTER II

S. No.	Course Code	Course Title	Hours per week				Hours per sem				Total no. of Hours per semester	Credits	Internal/ External Marks	Course Category
			L	T	P	SL	L	T	P	SL				
Theory Cum Practical Courses														
1	25ES106	Basics of Electrical and Electronics Engineering	3	0	2	3	45	0	30	45	120	4	50/50	ES
2	25ES201	Product Design and Development	1	0	2	1	15	0	30	15	60	2	100/0	ES
3	25ME201	Conventional and Digital Manufacturing	1	0	4	1	15	0	60	15	90	3	50/50	PC
Theory Courses														
4	25MA201	Numerical Techniques	3	1	0	4	45	15	0	60	120	4	40/60	BS

S. No.	Course Code	Course Title	Hours per week				Hours per sem				Total no. of Hours per semester	Credits	Internal/ External Marks	Course Category
			L	T	P	SL	L	T	P	SL				
5	25ES202	Engineering Mechanics	3	0	0	3	45	0	0	45	90	3	40/60	ES
6	25CH201	Engineering Chemistry	3	0	0	3	45	0	0	45	90	3	40/60	BS
7	25HS201	Universal Human Values	2	0	0	2	30	0	0	30	60	2	40/60	HS
8	25HS202	Business Communication	3	0	0	3	45	0	0	45	90	3	40/60	HS
9	25AC201	Tamils and Technology	1	0	0	1	15	0	0	15	30	1	100/0	AC
10		Foreign Language	2	0	0	2	30	0	0	30	60	2	100/0	HS
11		Value Added Course	1	0	0	1	15	0	0	15	30	1	100/0	VAC*

*Value Added Course is Optional

SEMESTER III

S. No.	Course Code	Course Title	Hours per week				Hours per sem				Total no. of Hours per semester	Credits	Internal/ External Marks	Course Category
			L	T	P	SL	L	T	P	SL				
Theory Cum Practical Course														
1	25ME301	Fluid Mechanics and Machinery	1	0	4	1	15	0	60	15	90	3	50/50	PC
Theory Courses														
2	25MA301	Transform Techniques and Partial Differential Equations	3	1	0	4	45	15	0	60	120	4	40/60	BS
3	25ME302	Strength of Materials	3	0	0	3	45	0	0	45	90	3	40/60	PC
4	25ES301	Engineering Thermodynamics	3	0	0	3	45	0	0	45	90	3	40/60	ES
5	25ME303	Engineering Materials and Metallurgy	3	0	0	3	45	0	0	45	90	3	40/60	PC
6	25EEC304	Aptitude and Soft Skills - I	1	0	0	1	15	0	0	15	30	1	100/0	EEC
Practical Courses														
7	25ME304	Strength of Materials Laboratory	0	0	4	0	0	0	60	0	60	2	60/40	PC
8	25ME305	Machine Drawing with GD&T	0	0	4	0	0	0	60	0	60	2	60/40	PC
9	25EEC305	Industrial Training - I	-	-	-	-	-	-	-	-	2 Weeks	1	100/0	EEC

SEMESTER IV

S. No.	Course Code	Course Title	Hours per week				Hours per sem				Total no. of Hours per semester	Credits	Internal/ External Marks	Course Category
			L	T	P	SL	L	T	P	SL				
Theory Cum Practical Course														
1	25ME401	Theory of Machines	1	0	4	1	15	0	60	15	90	3	50/50	PC
Theory Courses														
2	25MA302	Probability and Statistics	3	1	0	4	45	15	0	60	120	4	40/60	BS
3	25ME402	Thermal Engineering	3	1	0	4	45	15	0	60	120	4	40/60	PC
4	25ME403	Green and Sustainable Manufacturing	3	0	0	3	45	0	0	45	90	3	40/60	PC
5		Open Elective I	3	0	0	3	45	0	0	45	90	3	40/60	OE
6	25EEC401	Aptitude and Soft Skills - II	1	0	0	1	15	0	0	15	30	1	100/0	EEC
7	25MC405	Disaster Management and Preparedness	3	0	0	0	45	0	0	0	45	0	100/0	MC
Practical Courses														
8	25ME404	Thermal Engineering Laboratory	0	0	4	0	0	0	60	0	60	2	60/40	PC
9	25ME405	Computer Aided Modelling Laboratory	0	0	4	0	0	0	60	0	60	2	60/40	PC

SEMESTER V

S. No.	Course Code	Course Title	Hours per week				Hours per sem				Total no. of Hours per semester	Credits	Internal/ External Marks	Course Category
			L	T	P	SL	L	T	P	SL				
Theory Cum Practical Courses														
1	25ME501	Heat and Mass Transfer	3	0	2	3	45	0	30	45	120	4	50/50	PC
2	25ES503	Mechatronics and IoT	1	0	4	1	15	0	60	15	90	3	50/50	ES
Theory Courses														
3	25ME502	Smart Manufacturing	3	0	0	3	45	0	0	45	90	3	40/60	PC
4	25ME503	Design of Machine Elements	3	1	0	4	45	15	0	60	120	4	40/60	PC
5		Professional Elective I									90	3		PE
6		Open Elective II	3	0	0	3	45	0	0	45	90	3	40/60	OE
7		Open Elective III	3	0	0	3	45	0	0	45	90	3	40/60	OE
8	25MC501	Industrial Safety	3	0	0	0	45	0	0	0	45	0	100/0	MC
Practical Course														
9	25EEC501	Industrial Training - II	-	-	-	-	-	-	-	-	2 Weeks	1	100/0	EEC
For Honours Degree														
1		Honours Elective I									90	3		
2		Honours									90	3		

S. No.	Course Code	Course Title	Hours per week				Hours per sem				Total no. of Hours per semester	Credits	Internal/ External Marks	Course Category
			L	T	P	SL	L	T	P	SL				
		Elective II												
For Minor Degree														
1		Minor Elective I									90	3		
2		Minor Elective II									90	3		

SEMESTER VI

S. No.	Course Code	Course Title	Hours per week				Hours per sem				Total no. of Hours per semester	Credits	Internal/ External Marks	Course Category
			L	T	P	SL	L	T	P	SL				
Theory Cum Practical Courses														
1	25ME601	Finite Element Analysis	1	0	4	1	15	0	60	15	90	3	50/50	PC
2	25ME602	Mechanical Measurements and Instrumentation	3	0	2	3	45	0	30	45	120	4	50/50	PC
Theory Courses														
3	25ME603	Heating, Ventilation, and Air conditioning Systems	3	0	0	3	45	0	0	45	90	3	40/60	PC
4	25ME604	Design of Transmission Elements	3	1	0	4	45	15	0	60	120	4	40/60	PC
5		Professional Elective II									90	3		PE
6		Professional Elective III									90	3		PE
7		Open Elective IV	3	0	0	3	45	0	0	45	90	3	40/60	OE
Practical Course														
8	25MEP601	Mini Project	0	0	4	0	0	0	60	0	60	2	60/40	EEC
For Honours Degree														
1		Honours Elective III									90	3		
2		Honours Elective IV									90	3		
For Minor Degree														
1		Minor Elective III									90	3		
2		Minor Elective IV									90	3		

SEMESTER VII

S. No.	Course Code	Course Title	Hours per week				Hours per sem				Total no. of Hours per semester	Credits	Internal/ External Marks	Course Category
			L	T	P	SL	L	T	P	SL				
Theory Courses														
1	25ES701	Industrial Automation and IoT	3	0	0	3	45	0	0	45	90	3	40/60	ES
2	25HS706	Principle of Management	3	0	0	3	45	0	0	45	90	3	40/60	HS

S. No.	Course Code	Course Title	Hours per week				Hours per sem				Total no. of Hours per semester	Credits	Internal/ External Marks	Course Category
			L	T	P	SL	L	T	P	SL				
		and Engineering Ethics												
3		Professional Elective IV									90	3		PE
4		Professional Elective V									90	3		PE
Practical Course														
5	25MEP701	Project Work - I	0	0	4	0	0	0	60	0	60	2	100/0	EEC
For Honours Degree														
1		Honours Elective V									90	3		
2		Honours Elective VI									90	3		
For Minor Degree														
1		Minor Elective V									90	3		
2		Minor Elective VI									90	3		

SEMESTER VIII

S. No.	Course Code	Course Title	Hours per week				Hours per sem				Total no. of Hours per semester	Credits	Internal/ External Marks	Course Category
			L	T	P	SL	L	T	P	SL				
Practical Course														
1	25MEP801	Project Work - II	0	0	20	0	0	0	300	0	300	10	60/40	EEC

TOTAL NO. OF CREDITS: 167

FOREIGN LANGUAGE

S. No.	Course Code	Course Title	Hours per week				Hours per sem				Total no. of Hours per semester	Credits	Internal/ External Marks	Course Category
			L	T	P	SL	L	T	P	SL				
Theory Courses														
1	25HS203	German	2	0	0	2	30	0	0	30	60	2	100/0	HS
2	25HS204	Japanese	2	0	0	2	30	0	0	30	60	2	100/0	HS

VALUE ADDED COURSE

S. No.	Course Code	Course Title	Hours per week				Hours per sem				Total no. of Hours per semester	Credits	Internal/ External Marks	Course Category
			L	T	P	SL	L	T	P	SL				
Theory Courses														
1	25VAC01	French	1	0	0	1	15	0	0	15	30	1	100/0	VAC
2	25VAC02	Hindi	1	0	0	1	15	0	0	15	30	1	100/0	VAC

PROFESSIONAL ELECTIVE COURSES : VERTICALS

VERTICAL I Modern Mobility Systems	VERTICAL II Product Design and Development	VERTICAL III Robotics and Automation	VERTICAL IV Digital and Green Manufacturing	VERTICAL V Process Equipment and Piping Design	VERTICAL VI Industrial Automation	VERTICAL VII Computational Engineering	VERTICAL VIII Diversified Courses Group I	VERTICAL IX Diversified Courses Group II
Electric and Hybrid Vehicle Technology	Design for Manufacturing and Assembly	Mobile Robotics	Introduction to Industry 4.0	Piping Systems Design and Analysis	Smart Mobility and Intelligent Vehicles	Computational Fluid Dynamics	Power Plant Engineering	Power Generation Equipment Design
Battery Technology and Management Systems	Materials Science for Design	AI and Machine Learning for Robotics	Digital Twin and Cyber-Physical Systems	Process Equipment Design and Selection	Introduction to Industrial Automation Systems	Finite Element Method in Solid Mechanics	Refrigeration and Air Conditioning	Turbo Machines
Electric Powertrain Design	Geometric Dimensioning and Tolerancing	Industrial Robotics	Additive Manufacturing	Plant Layout and Process Integration	Embedded Systems and Programming	Data Science and Machine Learning for Engineering	Automobile Engineering	Non-Traditional Machining Processes
Vehicle Dynamics and Control for EVs	Human Factors and Ergonomics	Mechatronics Systems Design	Sustainable Manufacturing Processes	Corrosion Engineering and Materials Selection	Factory Automation	Computational Bio Mechanics	Drone Technology	Operations Research
Fuel Cell Systems	Advanced Prototyping and Rapid Manufacturing	Robot Kinematics and Dynamics	Renewable Energy and Energy Management	Pressure Vessel and Tank Design	Digital Technologies with CPS, IIOT and Cloud in Manufacturing	Advanced Statistics and Data Analytics	Non-Destructive Testing	Process Planning and Cost Estimation
Micro-Mobility Systems	Machine Component Design	Fundamentals of Robotics	Recycling and Waste Minimization	Applied Fluid Dynamics	Cognitive Manufacturing – AI and Machine Vision	Theory on Computation and Visualization	Gas Dynamics and Jet Propulsion	Jigs and Fixtures Design
3D Printing for Mobility	Product Development Process and Management	Robot Sensors and Vision	Environmental Compliance and Regulations	Design Codes and Standards	Collaborative Robotic in Manufacturing with AI, ML, IIOT			

VERTICAL I : Modern Mobility Systems

S. No.	Course Code	Course Title	Hours per week				Hours per sem				Total no. of Hours per semester	Credits	Internal/ External Marks	Course Category
			L	T	P	SL	L	T	P	SL				
Theory Courses														
1	25PME11	Electric and Hybrid Vehicle Technology	3	0	0	3	45	0	0	45	90	3	40/60	PE
2	25PME12	Battery Technology and Management Systems	3	0	0	3	45	0	0	45	90	3	40/60	PE
3	25PME13	Electric Powertrain Design	3	0	0	3	45	0	0	45	90	3	40/60	PE
4	25PME14	Vehicle Dynamics and Control for EVs	3	0	0	3	45	0	0	45	90	3	40/60	PE
5	25PME15	Fuel Cell Systems	3	0	0	3	45	0	0	45	90	3	40/60	PE
6	25PME16	Micro-Mobility Systems	3	0	0	3	45	0	0	45	90	3	40/60	PE
7	25PME17	3D Printing for Mobility	3	0	0	3	45	0	0	45	90	3	40/60	PE

VERTICAL II : Product Design and Development

S. No.	Course Code	Course Title	Hours per week				Hours per sem				Total no. of Hours per semester	Credits	Internal/ External Marks	Course Category
			L	T	P	SL	L	T	P	SL				
Theory Courses														
1	25PME21	Design for Manufacturing and Assembly	3	0	0	3	45	0	0	45	90	3	40/60	PE
2	25PME22	Materials Science for Design	3	0	0	3	45	0	0	45	90	3	40/60	PE
3	25PME23	Geometric Dimensioning and Tolerancing	2	1	0	3	30	15	0	45	90	3	40/60	PE
4	25PME24	Human Factors and Ergonomics	3	0	0	3	45	0	0	45	90	3	40/60	PE
Theory Cum Practical Course														
5	25PME25	Advanced Prototyping and Rapid Manufacturing	2	0	2	2	30	0	30	30	90	3	50/50	PE
Theory Courses														
6	25PME26	Machine Component Design	2	1	0	3	30	15	0	45	90	3	40/60	PE
7	25PME27	Product Development Process and Management	3	0	0	3	45	0	0	45	90	3	40/60	PE

VERTICAL III : Robotics and Automation

S. No.	Course Code	Course Title	Hours per week				Hours per sem				Total no. of Hours per semester	Credits	Internal/ External Marks	Course Category
			L	T	P	SL	L	T	P	SL				
Theory Courses														
1	25PME31	Mobile Robotics	3	0	0	3	45	0	0	45	90	3	40/60	PE
2	25PME32	AI and Machine Learning for Robotics	3	0	0	3	45	0	0	45	90	3	40/60	PE
3	25PME33	Industrial Robotics	3	0	0	3	45	0	0	45	90	3	40/60	PE
4	25PME34	Mechatronics Systems Design	3	0	0	3	45	0	0	45	90	3	40/60	PE
5	25PME35	Robot Kinematics and Dynamics	3	0	0	3	45	0	0	45	90	3	40/60	PE
6	25PME36	Fundamentals of Robotics	3	0	0	3	45	0	0	45	90	3	40/60	PE
7	25PME37	Robot Sensors and Vision	3	0	0	3	45	0	0	45	90	3	40/60	PE

VERTICAL IV : Digital and Green Manufacturing

S. No.	Course Code	Course Title	Hours per week				Hours per sem				Total no. of Hours per semester	Credits	Internal/ External Marks	Course Category
			L	T	P	SL	L	T	P	SL				
Theory Courses														
1	25PME41	Introduction to Industry 4.0	3	0	0	3	45	0	0	45	90	3	40/60	PE
2	25PME42	Digital Twin and Cyber-Physical Systems	3	0	0	3	45	0	0	45	90	3	40/60	PE
3	25PME43	Additive Manufacturing	3	0	0	3	45	0	0	45	90	3	40/60	PE
4	25PME44	Sustainable Manufacturing Processes	3	0	0	3	45	0	0	45	90	3	40/60	PE
5	25PME45	Renewable Energy and Energy Management	3	0	0	3	45	0	0	45	90	3	40/60	PE
6	25PME46	Recycling and Waste Minimization	3	0	0	3	45	0	0	45	90	3	40/60	PE
7	25PME47	Environmental Compliance and Regulations	3	0	0	3	45	0	0	45	90	3	40/60	PE

VERTICAL V : Process Equipment and Piping Design

S. No.	Course Code	Course Title	Hours per week				Hours per sem				Total no. of Hours per semester	Credits	Internal/ External Marks	Course Category
			L	T	P	SL	L	T	P	SL				
Theory Courses														
1	25PME51	Piping Systems Design and Analysis	3	0	0	3	45	0	0	45	90	3	40/60	PE

S. No.	Course Code	Course Title	Hours per week				Hours per sem				Total no. of Hours per semester	Credits	Internal/ External Marks	Course Category
			L	T	P	SL	L	T	P	SL				
2	25PME52	Process Equipment Design and Selection	3	0	0	3	45	0	0	45	90	3	40/60	PE
3	25PME53	Plant Layout and Process Integration	3	0	0	3	45	0	0	45	90	3	40/60	PE
4	25PME54	Corrosion Engineering and Materials Selection	3	0	0	3	45	0	0	45	90	3	40/60	PE
5	25PME55	Pressure Vessel and Tank Design	3	0	0	3	45	0	0	45	90	3	40/60	PE
6	25PME56	Applied Fluid Dynamics	3	0	0	3	45	0	0	45	90	3	40/60	PE
7	25PME57	Design Codes and Standards	3	0	0	3	45	0	0	45	90	3	40/60	PE

VERTICAL VI : Industrial Automation

S. No.	Course Code	Course Title	Hours per week				Hours per sem				Total no. of Hours per semester	Credits	Internal/ External Marks	Course Category
			L	T	P	SL	L	T	P	SL				
Theory Courses														
1	25PME61	Smart Mobility and Intelligent Vehicles	3	0	0	3	45	0	0	45	90	3	40/60	PE
2	25PME62	Introduction to Industrial Automation Systems	3	0	0	3	45	0	0	45	90	3	40/60	PE
3	25PME63	Embedded Systems and Programming	3	0	0	3	45	0	0	45	90	3	40/60	PE
4	25PME64	Factory Automation	3	0	0	3	45	0	0	45	90	3	40/60	PE
5	25PME65	Digital Technologies with CPS, IIOT and Cloud in Manufacturing	3	0	0	3	45	0	0	45	90	3	40/60	PE
6	25PME66	Cognitive Manufacturing – AI and Machine Vision	3	0	0	3	45	0	0	45	90	3	40/60	PE
7	25PME67	Collaborative Robotic in Manufacturing with AI, ML, IIOT	3	0	0	3	45	0	0	45	90	3	40/60	PE

VERTICAL VII : Computational Engineering

S. No.	Course Code	Course Title	Hours per week				Hours per sem				Total no. of Hours per semester	Credits	Internal/ External Marks	Course Category
			L	T	P	SL	L	T	P	SL				
Theory Courses														

S. No.	Course Code	Course Title	Hours per week				Hours per sem				Total no. of Hours per semester	Credits	Internal/ External Marks	Course Category
			L	T	P	SL	L	T	P	SL				
1	25PME71	Computational Fluid Dynamics	3	0	0	3	45	0	0	45	90	3	40/60	PE
2	25PME72	Finite Element Method in Solid Mechanics	3	0	0	3	45	0	0	45	90	3	40/60	PE
3	25PME73	Data Science and Machine Learning for Engineering	3	0	0	3	45	0	0	45	90	3	40/60	PE
4	25PME74	Computational Bio Mechanics	3	0	0	3	45	0	0	45	90	3	40/60	PE
5	25PME75	Advanced Statistics and Data Analytics	3	0	0	3	45	0	0	45	90	3	40/60	PE
6	25PME76	Theory on Computation and Visualization	3	0	0	3	45	0	0	45	90	3	40/60	PE

VERTICAL VIII : Diversified Courses Group I

S. No.	Course Code	Course Title	Hours per week				Hours per sem				Total no. of Hours per semester	Credits	Internal/ External Marks	Course Category
			L	T	P	SL	L	T	P	SL				
Theory Courses														
1	25PME81	Power Plant Engineering	3	0	0	3	45	0	0	45	90	3	40/60	PE
2	25PME82	Refrigeration and Air Conditioning	3	0	0	3	45	0	0	45	90	3	40/60	PE
3	25PME83	Automobile Engineering	3	0	0	3	45	0	0	45	90	3	40/60	PE
4	25PME84	Drone Technology	3	0	0	3	45	0	0	45	90	3	40/60	PE
5	25PME85	Non-Destructive Testing	3	0	0	3	45	0	0	45	90	3	40/60	PE
6	25PME86	Gas Dynamics and Jet Propulsion	3	0	0	3	45	0	0	45	90	3	40/60	PE

VERTICAL IX : Diversified Courses Group II

S. No.	Course Code	Course Title	Hours per week				Hours per sem				Total no. of Hours per semester	Credits	Internal/ External Marks	Course Category
			L	T	P	SL	L	T	P	SL				
Theory Courses														
1	25PME91	Power Generation Equipment Design	3	0	0	3	45	0	0	45	90	3	40/60	PE
2	25PME92	Turbo Machines	3	0	0	3	45	0	0	45	90	3	40/60	PE
3	25PME93	Non-Traditional Machining Processes	3	0	0	3	45	0	0	45	90	3	40/60	PE
4	25PME94	Operations Research	3	0	0	3	45	0	0	45	90	3	40/60	PE
5	25PME95	Process Planning and Cost Estimation	3	0	0	3	45	0	0	45	90	3	40/60	PE
6	25PME96	Jigs and Fixtures Design	3	0	0	3	45	0	0	45	90	3	40/60	PE

OPEN ELECTIVES

S. No.	Course Code	Course Title	Hours per week				Hours per sem				Total no. of Hours per semester	Credits	Internal/ External Marks	Course Category
			L	T	P	SL	L	T	P	SL				
Theory Courses														
1	25OHS11	Foundation Skills in Integrated Product Development	3	0	0	3	45	0	0	45	90	3	40/60	OE
2	25OHS12	Human Rights	3	0	0	3	45	0	0	45	90	3	40/60	OE
3	25OHS13	Intellectual Property Rights	3	0	0	3	45	0	0	45	90	3	40/60	OE
4	25OHS14	Sustainable Management	3	0	0	3	45	0	0	45	90	3	40/60	OE
5	25OHS15	Supply Chain Management	3	0	0	3	45	0	0	45	90	3	40/60	OE
6	25OAG11	Bioenergy and Waste Utilization	3	0	0	3	45	0	0	45	90	3	40/60	OE
7	25OAG12	Agribusiness and Entrepreneurship	3	0	0	3	45	0	0	45	90	3	40/60	OE
8	25OAG13	Precision Agriculture and Smart Farming	3	0	0	3	45	0	0	45	90	3	40/60	OE
9	25OAG14	GIS and Remote Sensing Applications	3	0	0	3	45	0	0	45	90	3	40/60	OE
10	25OAG15	Renewable Energy in Agriculture	3	0	0	3	45	0	0	45	90	3	40/60	OE
11	25OAG16	Post-Harvest Engineering	3	0	0	3	45	0	0	45	90	3	40/60	OE
12	25OIT11	UI & UX Design	3	0	0	3	45	0	0	45	90	3	40/60	OE
13	25OIT12	High Performance Computing	3	0	0	3	45	0	0	45	90	3	40/60	OE
14	25OCY11	Information Security	3	0	0	3	45	0	0	45	90	3	40/60	OE
15	25OCY12	Cyber Physical Systems	3	0	0	3	45	0	0	45	90	3	40/60	OE
16	25OCY13	Information Retrieval System	3	0	0	3	45	0	0	45	90	3	40/60	OE
17	25OAI11	Intelligent Healthcare Solutions	3	0	0	3	45	0	0	45	90	3	40/60	OE
18	25OCS12	Cloud Web Services	3	0	0	3	45	0	0	45	90	3	40/60	OE
19	25OCS13	Blockchain Technologies	3	0	0	3	45	0	0	45	90	3	40/60	OE
20	25OCS14	Data Mining	3	0	0	3	45	0	0	45	90	3	40/60	OE
21	25OML12	AI for Precision Agriculture	3	0	0	3	45	0	0	45	90	3	40/60	OE
22	25OBT11	Microbiology	3	0	0	3	45	0	0	45	90	3	40/60	OE
23	25OBT12	Nano Biotechnology	3	0	0	3	45	0	0	45	90	3	40/60	OE
24	25OBT13	Immuno Technology	3	0	0	3	45	0	0	45	90	3	40/60	OE
25	25OBT14	Genomics and Proteomics	3	0	0	3	45	0	0	45	90	3	40/60	OE
26	25OBT15	Basic Industrial Biotechnology	3	0	0	3	45	0	0	45	90	3	40/60	OE
27	25OEC11	Wireless	3	0	0	3	45	0	0	45	90	3	40/60	OE

S. No.	Course Code	Course Title	Hours per week				Hours per sem				Total no. of Hours per semester	Credits	Internal/ External Marks	Course Category
			L	T	P	SL	L	T	P	SL				
		Communication												
28	25OEC12	Internet of Things and Applications	3	0	0	3	45	0	0	45	90	3	40/60	OE
29	25OEC13	Embedded Systems	3	0	0	3	45	0	0	45	90	3	40/60	OE
30	25OEC14	Introduction to Quantum Communication	3	0	0	3	45	0	0	45	90	3	40/60	OE
31	25OEC15	Introduction to Quantum Sensing	3	0	0	3	45	0	0	45	90	3	40/60	OE
32	25OEC16	Engineering Foundations of Quantum Technologies	3	0	0	3	45	0	0	45	90	3	40/60	OE
33	25OEC17	Solid State Physics for Quantum Technologies	3	0	0	3	45	0	0	45	90	3	40/60	OE
34	25OEC18	Quantum Optics	3	0	0	3	45	0	0	45	90	3	40/60	OE

VERTICALS FOR MINOR DEGREE (In addition to all the verticals of other programmes)

VERTICAL I Fintech and Block Chain	VERTICAL II Entrepreneurship	VERTICAL III Public Administration	VERTICAL IV Business Data Analytics	VERTICAL V Environment and Sustainability	VERTICAL VI Quantum Technologies
Finance for Managers	Foundations of Entrepreneurship	Principles of Public Administration	Statistics for Management	Sustainable Infrastructure Development	Foundations of Quantum Computing: Physics, Engineering, and Mathematics Computing
Fundamentals of Investment	Team Building and Leadership Management for Business	Public Finance and Budgeting	Business Analytics and Decision-Making	Sustainable Agriculture and Environmental Management	Survey of Quantum Technologies and Applications
Banking, Financial Services and Insurance	Creativity and Innovation in Entrepreneurship	Public Personnel Administration	Human Resource Analytics	Sustainable Bio Materials	Foundations of Quantum Technologies
Introduction to Blockchain and its Applications	Principles of Marketing Management for Business	Administrative Law and Governance	Marketing and Social Media Web Analytics	Materials for Energy Sustainability	Basic Laboratory Course for Quantum Technologies
Fintech Personal Finance and Payments	Human Resource Management for Entrepreneurs	Indian Administrative System	Operation and Supply Chain Analytics	Waste Management and Circular Economy	Introduction to Quantum Computation
Introduction to Fintech	Financing New Business Ventures	Public Policy Administration	Financial Analytics	Environmental Quality Monitoring and Analysis	Introduction to Quantum Materials
		Comparative Public Administration and Development Studies		Integrated Energy Planning for Sustainable Development	
				Energy Efficiency for Sustainable Development	

VERTICAL I : Fintech and Block Chain

S. No.	Course Code	Course Title	Hours per week				Hours per sem				Total no. of Hours per semester	Credits	Internal/ External Marks	Course Category
			L	T	P	SL	L	T	P	SL				
Theory Courses														
1	25OMI11	Finance for Managers	3	0	0	3	45	0	0	45	90	3	40/60	OE
2	25OMI12	Fundamentals of Investment	3	0	0	3	45	0	0	45	90	3	40/60	OE
3	25OMI13	Banking, Financial Services and Insurance	3	0	0	3	45	0	0	45	90	3	40/60	OE
4	25OMI14	Introduction to Blockchain and its Applications	3	0	0	3	45	0	0	45	90	3	40/60	OE
5	25OMI15	Fintech Personal Finance and Payments	3	0	0	3	45	0	0	45	90	3	40/60	OE
6	25OMI16	Introduction to Fintech	3	0	0	3	45	0	0	45	90	3	40/60	OE

VERTICAL II : Entrepreneurship

S. No.	Course Code	Course Title	Hours per week				Hours per sem				Total no. of Hours per semester	Credits	Internal/ External Marks	Course Category
			L	T	P	SL	L	T	P	SL				
Theory Courses														
1	25OMI21	Foundations of Entrepreneurship	3	0	0	3	45	0	0	45	90	3	40/60	OE
2	25OMI22	Team Building and Leadership Management for Business	3	0	0	3	45	0	0	45	90	3	40/60	OE
3	25OMI23	Creativity and Innovation in Entrepreneurship	3	0	0	3	45	0	0	45	90	3	40/60	OE
4	25OMI24	Principles of Marketing Management for Business	3	0	0	3	45	0	0	45	90	3	40/60	OE
5	25OMI25	Human Resource Management for Entrepreneurs	3	0	0	3	45	0	0	45	90	3	40/60	OE
6	25OMI26	Financing New Business Ventures	3	0	0	3	45	0	0	45	90	3	40/60	OE

VERTICAL III : Public Administration

S. No.	Course Code	Course Title	Hours per week				Hours per sem				Total no. of Hours per semester	Credits	Internal/ External Marks	Course Category
			L	T	P	SL	L	T	P	SL				
Theory Courses														
1	25OMI31	Principles of Public Administration	3	0	0	3	45	0	0	45	90	3	40/60	OE
2	25OMI32	Public Finance and Budgeting	3	0	0	3	45	0	0	45	90	3	40/60	OE

S. No.	Course Code	Course Title	Hours per week				Hours per sem				Total no. of Hours per semester	Credits	Internal/ External Marks	Course Category
			L	T	P	SL	L	T	P	SL				
3	25OMI33	Public Personnel Administration	3	0	0	3	45	0	0	45	90	3	40/60	OE
4	25OMI34	Administrative Law and Governance	3	0	0	3	45	0	0	45	90	3	40/60	OE
5	25OMI35	Indian Administrative System	3	0	0	3	45	0	0	45	90	3	40/60	OE
6	25OMI36	Public Policy Administration	3	0	0	3	45	0	0	45	90	3	40/60	OE
7	25OMI37	Comparative Public Administration and Development Studies	3	0	0	3	45	0	0	45	90	3	40/60	OE

VERTICAL IV : Business Data Analytics

S. No.	Course Code	Course Title	Hours per week				Hours per sem				Total no. of Hours per semester	Credits	Internal/ External Marks	Course Category
			L	T	P	SL	L	T	P	SL				
Theory Courses														
1	25OMI41	Statistics for Management	3	0	0	3	45	0	0	45	90	3	40/60	OE
2	25OMI42	Business Analytics and Decision-Making	3	0	0	3	45	0	0	45	90	3	40/60	OE
3	25OMI43	Human Resource Analytics	3	0	0	3	45	0	0	45	90	3	40/60	OE
4	25OMI44	Marketing and Social Media Web Analytics	3	0	0	3	45	0	0	45	90	3	40/60	OE
5	25OMI45	Operation and Supply Chain Analytics	3	0	0	3	45	0	0	45	90	3	40/60	OE
6	25OMI46	Financial Analytics	3	0	0	3	45	0	0	45	90	3	40/60	OE

VERTICAL V : Environment and Sustainability

S. No.	Course Code	Course Title	Hours per week				Hours per sem				Total no. of Hours per semester	Credits	Internal/ External Marks	Course Category
			L	T	P	SL	L	T	P	SL				
Theory Courses														
1	25OMI51	Sustainable Infrastructure Development	3	0	0	3	45	0	0	45	90	3	40/60	OE
2	25OMI52	Sustainable Agriculture and Environmental Management	3	0	0	3	45	0	0	45	90	3	40/60	OE
3	25OMI53	Sustainable Bio Materials	3	0	0	3	45	0	0	45	90	3	40/60	OE
4	25OMI54	Materials for Energy Sustainability	3	0	0	3	45	0	0	45	90	3	40/60	OE

S. No.	Course Code	Course Title	Hours per week				Hours per sem				Total no. of Hours per semester	Credits	Internal/ External Marks	Course Category
			L	T	P	SL	L	T	P	SL				
5	25OMI55	Waste Management and Circular Economy	3	0	0	3	45	0	0	45	90	3	40/60	OE
6	25OMI56	Environmental Quality Monitoring and Analysis	3	0	0	3	45	0	0	45	90	3	40/60	OE
7	25OMI57	Integrated Energy Planning for Sustainable Development	3	0	0	3	45	0	0	45	90	3	40/60	OE
8	25OMI58	Energy Efficiency for Sustainable Development	3	0	0	3	45	0	0	45	90	3	40/60	OE

VERTICAL VI : Quantum Technologies

S. No.	Course Code	Course Title	Hours per week				Hours per sem				Total no. of Hours per semester	Credits	Internal/ External Marks	Course Category
			L	T	P	SL	L	T	P	SL				
Theory Courses														
1	25OMI61	Foundations of Quantum Computing: Physics, Engineering, and Mathematics Computing	3	0	0	3	45	0	0	45	90	3	40/60	OE
2	25OMI62	Survey of Quantum Technologies and Applications	3	0	0	3	45	0	0	45	90	3	40/60	OE
3	25OMI63	Foundations of Quantum Technologies	3	0	0	3	45	0	0	45	90	3	40/60	OE
Practical Course														
4	25OMI64	Basic Laboratory Course for Quantum Technologies	2	0	2	2	30	0	30	30	90	3	50/50	OE
Theory Courses														
5	25OMI65	Introduction to Quantum Computation	3	0	0	3	45	0	0	45	90	3	40/60	OE
6	25OMI66	Introduction to Quantum Materials	3	0	0	3	45	0	0	45	90	3	40/60	OE

SUMMARY

S.No.	COURSE CATEGORY	CREDITS AS PER SEMESTER								TOTAL CREDITS
		I	II	III	IV	V	VI	VII	VIII	
1	HS	4	7					3		14
2	BS	7	7	4	4					22
3	ES	11	9	3		3		3		29
4	PC		3	13	14	11	14			55
5	PE					3	6	6		15
6	OE				3	6	3			12
7	EEC			2	1	1	2	2	10	18
8	AC	1	1							2
9	MC				✓	✓				
TOTAL CREDITS		23	27	22	22	24	25	14	10	167