

Course Structure of B.Tech. in Mechanical Engineering Batch: 2025-29



Rajiv Gandhi Institute of Petroleum Technology
(Institution of National Importance) Jais, Amethi-
229304, Uttar Pradesh

Semester-wise Course Structure

(w.e.f. 2025-26)

Program: B.Tech. in Mechanical Engineering

Batch: 2025-29

SEMESTER I (1st Year: Odd Semester)						
Course Code	Course/Subject	Category Code	L	T	P	Credit
PY111	Classical Physics	IS	3	1	0	11
CY121	Inorganic & Physical Chemistry (IS)	IS	3	1	0	11
MA123	Applied Mathematics – I	IS	3	1	0	11
CH161	Engineering Thermodynamics	IE	3	1	0	11
ME131	Workshop	EP	0	0	3	3
PY111L	Physics Lab	IS	0	0	2/2	1
CY111L	Chemistry Lab	IS	0	0	2/2	1
	Total Credits					49
LM101	Basic English*	LM	1	2	0	7

*Basic English course to be taken by student on recommendation after Diagnostic Test

SEMESTER II (1st Year: Even Semester)						
Course Code	Course/Subject	Category Code	L	T	P	Credit
PY121	Modern Physics	IS	2	1	0	8
CY111	Organic & Hydrocarbon Chemistry	IS	3	1	0	11
MA124	Applied Mathematics - II	IS	3	1	0	11
CS101	Computer Programming	IE	3	1	0	11
CH121	Fluid Mechanics	IE	3	1	0	11
ME101	Mechanical Engineering Practices	EP	1	0	2	5
PY121L	Physics Lab	IS	0	0	2/2	1
CY121L	Chemistry Lab	IS	0	0	2/2	1
ME121	Engineering Visualization	EP	0	1	3	5
CS101L	Computer Programming Lab	IE	0	0	2	2
	Total Credits					66
HU102	Community Internship	HU	1	2	0	5

After Semester II					
Course/Subject	Category Code	L	T	P	Credit
Summer Internship/Project (2 weeks)	DP	0	0	14*	2

**2 Credits are equivalent to 14 hours (P) per week if Summer Internship/Project will be completed in 2 weeks only.*

SEMESTER III (2nd Year: Odd Semester)						
Course Code	Course/Subject	Category Code	L	T	P	Credit
ME211	Fluid Machinery	DC	3	0	0	9
ME212	Engineering Mechanics	DC	3	0	0	9
ME213	Applied Thermodynamics	DC	3	0	0	9
ME214	Materials Science	DC	3	0	0	9
MA222	Applied Mathematics - III	IS	3	1	0	11
ECE102	Fundamentals of Electronics Engineering	IE	3	1	0	11
ECE102L	Fundamentals of Electronics Engineering Lab	IE	0	0	2	2
ME215L	Mechanical Engineering Lab- I (ATD & EM)	DC	0	0	2	2
ME216L	Fluid Mechanics and Machinery Lab	DC	0	0	2	2
	Total Credits					64

SEMESTER IV (2nd Year: Even Semester)						
Course Code	Course/Subject	Category Code	L	T	P	Credit
ME221	Theory of Machines	DC	3	0	0	9
ME222	Refrigeration and Air Conditioning	DC	3	0	0	9
ME223	Strength of Materials	DC	3	0	0	9
ME224	Manufacturing Processes – I	DC	3	0	0	9
CH232	Heat and Mass Transfer	IE	3	1	0	11
ME225	Measurement, Metrology, and Control System	DC	3	0	0	9
CH232L	Heat Transfer Lab	IE	0	0	2	2

ME223L	Strength of Material lab	DC	0	0	2	2
ME221L	Theory of Machines Lab	DC	0	0	2	2
	Total Credits					62

After Semester IV

Course/Subject	Category Code	L	T	P	Credit
Summer Internship/Project (4 weeks)	DP	0	0	11*	3

**3 Credits are equivalent to 10.5 hours \approx 11 hours (P) per week if Summer Internship/Project will be completed in 4 weeks only.*

SEMESTER V (3rd Year: Odd Semester)

Course Code	Course/Subject	Category Code	L	T	P	Credit
ME311	Design of Machine Elements	DC	3	1	0	11
ME312	IC Engine & Gas Turbine	DC	3	0	0	9
ME313	Manufacturing Processes – II	DC	3	0	0	9
ME314	Industrial Engineering & Operation Research	DC	3	0	0	9
ME315	Dynamics of Machine	DC	2	0	0	6
	DE1	DE	2	0	0	6
	DE2	DE	2	0	0	6
ME316L	Mechanical Engineering lab -II (RAC & ICE)	DC	0	0	2	2
ME311L	Machine Drawing	DC	0	0	3	3
	Total Credits					61

SEMESTER VI (3rd Year: Even Semester)

Course Code	Course/Subject	Category Code	L	T	P	Credit
ME321	Vibrations and Equipment design	DC	3	0	0	9

ME322	Production Planning and Inventory Control	DC	2	1	0	8
ME323	Finite Element Analysis	DC	3	0	0	9
ME324	Power Plant Engineering	DC	2	0	0	6
ME325	CAD & CAM	DC	2	0	0	6
	DE3	DE	3	0	0	9
	DE4	DE	3	0	0	9
ME325L	CAD & CAM Lab	DC	0	0	2	2
ME326L	Mechanical engineering Lab-III (Production)	DC	0	0	2	2
	Total Credits					60

After Semester VI

Course/Subject	Category Code	L	T	P	Credit
Summer Internship (6 weeks)	DP	0	0	12*	5

**5 Credits are equivalent to 11.67 hours \approx 12 hours (P) per week if Summer Internship/Project will be completed in 6 weeks only.*

SEMESTER VII (4th Year: Odd Semester)

Course Code	Course/Subject	Category Code	L	T	P	Credit
PC111	Professional Communications	LM	2	1	0	8
MT5100	Principles of Economics	LM	2	0	0	6
HU313	Sociology of Industry and Work Culture	HU	2	0	0	6
HU331	Organizational Psychology	HU	2	0	0	6
	Ethics and Corporate Governance	HU	2	0	0	6
	OE1	OE	3	0	0	9
MT5405	Foundations of Management	LM	2	0	0	6
	OE2	OE	3	0	0	9
	Employability Skills and Industry Readiness	EP	0	0	2	2
	Total Credits					58

SEMESTER VIII (4th Year: Even Semester)					
Course/Subject	Category Code	L	T	P	Credit
BTP (Internal/External)	DP	0	0	40	40

Summary of credits in different categories

Code	Category	Min	Max	Offered
HU	Humanities and Social Science	22	22	23
IS	Institute Science	70	90	78
IE	Institute Engineering	40	70	61
EP	Engineering Practices (Engineering Drawing, Workshop, etc.)	18	24	15
LM	Language & Management	18	24	20
DC	Departmental Core	145	190	180
DE	Departmental Elective	30	75	30
OE	Open Elective	15	20	18
DP	Project/ Industrial Visit	20	50	50
	Total	440	490	475

DEPARTMENT ELECTIVES OFFERED				
Stream	Course Code	Thermal Engineering	Course Code	Manufacturing Engineering
DE1 (2-0-0)	ME317	Turbo Machinery	ME319	Additive manufacturing
DE2 (2-0-0)	ME318	Automobile Engineering	ME320	Micro-manufacturing process/Total quality management
DE3 (3-0-0)	ME327	Computational Fluid Dynamics	ME329	Computer Integrated Manufacturing
DE4 (3-0-0)	ME328	Industrial Pollution and Control	ME330	Robotics

Humanities and Social Science (HU)						
Course Code	Course/Subject	Category Code	L	T	P	Credit
HU102	Community Internship	HU	1	2	0	5
HU313	Sociology of Industry and Work Culture	HU	2	0	0	6
HU331	Organizational Psychology	HU	2	0	0	6
	Ethics and Corporate Governance	HU	2	0	0	6
	Total					23

Institute Science (IS)						
Course Code	Course/Subject	Category Code	L	T	P	Credit
PY111	Classical Physics	IS	3	1	0	11
CY111	Organic & Hydrocarbon Chemistry	IS	3	1	0	11
MA123	Applied Mathematics – I	IS	3	1	0	11
PY101L	Physics Lab	IS	0	0	2/2	1
CY101L	Chemistry Lab	IS	0	0	2/2	1
PY121	Modern Physics	IS	2	1	0	8
CY121	Inorganic & Physical Chemistry	IS	3	1	0	11
MA124	Applied Mathematics - II	IS	3	1	0	11
PY121L	Physics Lab	IS	0	0	2/2	1
CY121L	Chemistry Lab	IS	0	0	2/2	1
MA222	Applied Mathematics - III	IS	3	1	0	11
	Total					78

Institute Engineering (IE)						
Course Code	Course/Subject	Category Code	L	T	P	Credit
CH161	Engineering Thermodynamics	IE	3	1	0	11
CS101	Computer Programming	IE	3	1	0	11

CH121	Fluid Mechanics	IE	3	1	0	11
CS101L	Computer Programming Lab	IE	0	0	2	2
ECE102	Fundamentals of Electronics Engineering	IE	3	1	0	11
ECE102L	Fundamentals of Electronics Engineering Lab	IE	0	0	2	2
CH232	Heat and Mass Transfer	IE	3	1	0	11
CH232L	Heat Transfer Lab	IE	0	0	2	2
	Total					61

Engineering Practices (Engineering Drawing, Workshop, etc.) (EP)						
Course Code	Course/Subject	Category Code	L	T	P	Credit
ME131	Workshop	EP	0	0	3	3
ME101	Mechanical Engineering Practices	EP	1	0	2	5
ME121	Engineering Visualization	EP	0	1	3	5
	Employability Skills and Industry Readiness	EP	0	0	2	2
	Total					15

Language & Management (LM)						
Course Code	Course/Subject	Category Code	L	T	P	Credit
MT5405	Foundations of Management	LM	2	0	0	6
PC111	Professional Communications	LM	2	1	0	8
MT5100	Principles of Economics (Elective)	LM	2	0	0	6
	Total					20

Departmental Core (DC)						
Course Code	Course/Subject	Category Code	L	T	P	Credit
ME211	Fluid Machinery	DC	3	0	0	9
ME212	Engineering Mechanics	DC	3	0	0	9

ME213	Applied Thermodynamics	DC	3	0	0	9
ME214	Materials Science	DC	3	0	0	9
ME215L	Mechanical Engineering Lab- I (ATD & EM)	DC	0	0	2	2
ME216L	Fluid Mechanics and Machinery Lab	DC	0	0	2	2
ME221	Theory of Machines	DC	3	0	0	9
ME222	Refrigeration and Air Conditioning	DC	3	0	0	9
ME223	Strength of Material	DC	3	0	0	9
ME224	Manufacturing Processes – I	DC	3	0	0	9
ME225	Measurement, Metrology, and Control System	DC	3	0	0	9
ME223L	Strength of Material lab	DC	0	0	2	2
ME222L	Theory of Machines Lab	DC	0	0	2	2
ME311	Design of Machine Elements	DC	3	1	0	11
ME312	IC Engine & Gas Turbine	DC	3	0	0	9
ME313	Manufacturing Processes – II	DC	3	0	0	9
ME314	Industrial Engineering & Operation Research	DC	3	0	0	9
ME315	Dynamics of Machine	DC	2	0	0	6
ME316L	Mechanical Engineering lab-II (RAC & ICE)	DC	0	0	2	2
ME311L	Machine Drawing	DC	0	0	3	3
ME321	Vibrations and Equipment design	DC	3	0	0	9
ME322	Production Planning and Inventory Control	DC	2	1	0	8
ME323	Finite Element Analysis	DC	3	0	0	9
ME324	Power Plant Engineering	DC	2	0	0	6
ME325	CAD & CAM	DC	2	0	0	6
ME325L	CAD & CAM Lab	DC	0	0	2	2
ME326	Mechanical engineering Lab-III (Production)	DC	0	0	2	2
	Total					180

Departmental Elective (DE)

Course Code	Course/Subject	Category Code	L	T	P	Credit
	DE1	DE	2	0	0	6
	DE2	DE	2	0	0	6
	DE3	DE	3	0	0	9
	DE4	DE	3	0	0	9
	Total					30

Open Elective (OE)						
Course Code	Course/Subject	Category Code	L	T	P	Credit
	OE1	OE	3	0	0	9
	OE2	OE	3	0	0	9
	Total					18

Departmental Project/ Industrial Visit (DP)						
Course Code	Course/Subject	Category Code	L	T	P	Credit
	Summer Internship/Project (2 weeks)	DP	0	0	14	2
	Summer Internship/Project (4 weeks)	DP	0	0	11	3
	Summer Internship (6 weeks)	DP	0	0	12	5
	BTP (Internal/External)	DP	0	0	40	40
	Total					50