

Course Structure

CHOICE BASED CREDIT SYSTEM

MLR20

MECHANICAL ENGINEERING

Bachelor of Technology (B.Tech.)

B. Tech. - Regular Four Year Degree Programme
(For batches admitted from the academic year 2020 - 2021)

&

B. Tech. - Lateral Entry Scheme
(For batches admitted from the academic year 2021 - 2022)



MLR Institute of Technology

(Autonomous)

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Annexure-I**Department of Mechanical Engineering - MLR 20**

I B.Tech.- I-Semester									
Course Code	Course Title	Course Area	Hours per Week			Credits	Scheme of Examination Maximum Marks		
			L	T	P		Internal (CIE)	External (SEE)	Total
A5BS01	Calculus and Applications	BSC	3	1	0	4	30	70	100
A5BS09	Engineering Physics	BSC	3	1	0	4	30	70	100
A5ME01	Engineering Mechanics	ESC	3	1	0	4	30	70	100
A5ME02	Engineering Graphics	ESC	1	0	4	3	30	70	100
A5ME03	Engineering Workshop and Manufacturing Practices	ESC	1	0	3	2.5	30	70	100
A5BS10	Engineering Physics Lab	BSC	0	0	3	1.5	30	70	100
Total			11	03	10	19	180	420	600
Mandatory Course (Non-Credit)									
A5MC01	Seminar-I	MC	0	0	2	0	30	70	100

I B.Tech.- II-Semester									
Course Code	Course Title	Course Area	Hours per Week			Credits	Scheme of Examination Maximum Marks		
			L	T	P		Internal (CIE)	External (SEE)	Total
A5BS03	Integral Calculus and Numerical Techniques	BSC	3	1	0	4	30	70	100
A5BS13	Engineering Chemistry	BSC	4	0	0	4	30	70	100
A5HS01	English	HSMC	2	0	0	2	30	70	100
A5CS01	Programming for Problem Solving	ESC	3	0	0	3	30	70	100
A5CS02	Programming for Problem Solving Lab	ESC	0	0	3	1.5	30	70	100
A5HS02	English Language and Communication skills Lab	HSMC	0	0	2	1	30	70	100
A5BS14	Engineering Chemistry Lab	BSC	0	0	3	1.5	30	70	100
Total			12	01	08	17	210	490	700
Mandatory Course (Non-Credit)									
A5MC02	Seminar-II	MC	0	0	2	0	30	70	100

II B.Tech.- I-Semester									
Course Code	Course Title	Course Area	Hours per Week			Credits	Scheme of Examination Maximum Marks		
			L	T	P		Internal (CIE)	External (SEE)	Total
A5BS06	Vector Calculus and Probability Statistics	BSC	3	1	0	4	30	70	100
A5ME06	Strength of Materials	PCC	3	1	0	4	30	70	100
A5ME07	Material Science and Metallurgy	PCC	3	0	0	3	30	70	100
A5ME09	Thermodynamics	PCC	3	0	0	3	30	70	100
A5ME10	Manufacturing Processes	PCC	3	0	0	3	30	70	100
A5ME11	Manufacturing Processes Lab	PCC	0	0	2	1	30	70	100
A5ME12	Machine Drawing and Computer Graphics Lab	PCC	1	0	4	3	30	70	100
A5ME08	Strength of Materials and Metallurgy Lab	PCC	0	0	2	1	30	70	100
Total			16	02	08	22	240	560	800
Mandatory Course (Non-Credit)									
A5MC03	Environmental Studies	MC	2	0	0	0	30	70	100

II B.Tech.- II-Semester									
Course Code	Course Title	Course Area	Hours per Week			Credits	Scheme of Examination Maximum Marks		
			L	T	P		Internal (CIE)	External (SEE)	Total
A5EE70	Basic Electrical and Electronics Engineering	ESC	3	1	0	4	30	70	100
A5ME13	Theory of Machines - I	PCC	3	1	0	4	30	70	100
A5ME14	Applied Thermodynamics-I	PCC	3	0	0	3	30	70	100
A5ME15	Fluid Mechanics and Hydraulic Machines	PCC	3	1	0	4	30	70	100
A5ME17	Design of Machine Members -I	PCC	3	0	0	3	30	70	100
A5ME16	Fluid Mechanics and Hydraulic Machines Lab	PCC	0	0	2	1	30	70	100
A5EE71	Basic Electrical and Electronics Engineering Lab	ESC	0	0	2	1	30	70	100
A5ME40	Python Lab	ESC	1	0	2	2	30	70	100
Total			16	03	06	22	240	560	800
Mandatory Course (Non-Credit)									
A5HS03	Gender Sensitization	HSMC	1	0	0	0	30	70	100

III B.Tech.- I-Semester									
Course Code	Course Title	Course Area	Hours per Week			Credits	Scheme of Examination Maximum Marks		
			L	T	P		Internal (CIE)	External (SEE)	Total
A5ME19	Metrology and Machine Tools	PCC	3	0	0	3	30	70	100
A5ME21	Applied Thermodynamics -II	PCC	3	0	0	3	30	70	100
A5ME23	Theory of Machines - II	PCC	3	1	0	4	30	70	100
A5ME24	Design of Machine Members -II	PCC	3	0	0	3	30	70	100
	OPEN ELECTIVE -I	OEC	3	0	0	3	30	70	100
A5ME20	Metrology and Machine Tools Lab	PCC	0	0	2	1	30	70	100
A5ME22	Thermal Engineering Lab	PCC	0	0	2	1	30	70	100
A5HS04	Advanced English Communication Skills Lab	HSMC	0	0	2	1	30	70	100
A5ME25	Mini Project	PWC	0	0	4	2	30	70	100
Total			15	01	10	21	270	630	900
Mandatory Course (Non-Credit)									
A5HS08	Human Values and Professional Ethics	MC	2	0	0	0	30	70	100

III B.Tech.- II-Semester									
Course Code	Course Title	Course Area	Hours per Week			Credits	Scheme of Examination Maximum Marks		
			L	T	P		Internal (CIE)	External (SEE)	Total
A5ME26	CAD/CAM	PCC	3	0	0	3	30	70	100
A5ME28	Heat Transfer	PCC	3	0	0	3	30	70	100
A5ME30	Automation in Manufacturing	PCC	3	0	0	3	30	70	100
	OPEN ELECTIVE-II	OEC	3	0	0	3	30	70	100
	PROFESSIONAL ELECTIVE - I	PEC	3	0	0	3	30	70	100
	PROFESSIONALELECTIVE - II	PEC	3	0	0	3	30	70	100
A5ME27	CAD/CAM Lab	PCC	0	0	2	1	30	70	100
A5ME29	Heat Transfer Lab	PCC	0	0	2	1	30	70	100
A5ME31	Independent Study	PWC	0	0	0	1	0	100	100
Total			18	00	06	21	240	660	900
Mandatory Course (Non-Credit)									
A5HS12	Constitution of India	MC	2	0	0	0	30	70	100

IV B.Tech.- I-Semester									
Course Code	Course Title	Course Area	Hours per Week			Credits	Scheme of Examination Maximum Marks		
			L	T	P		Internal (CIE)	External (SEE)	Total
A5ME32	Finite Element Method	PCC	3	0	0	3	30	70	100
A5ME34	Instrumentation and Control Systems	PCC	3	0	0	3	30	70	100
	OPEN ELECTIVE-E-III	OEC	3	0	0	3	30	70	100
	PROFESSIONAL ELECTIVE - III	PEC	3	0	0	3	30	70	100
	PROFESSIONAL ELECTIVE - IV	PEC	3	0	0	3	30	70	100
A5ME33	Computer Aided Engineering and Production Drawing Practice Lab	PCC	0	0	2	1	30	70	100
A5ME35	Instrumentation and Control Systems Lab	PCC	0	0	2	1	30	70	100
A5ME36	Major Project Phase 1	PWC	0	0	8	4	100	0	100
Total			15	00	12	21	310	490	800
IV B.Tech.- II-Semester									
Course Code	Course Title	Course Area	Hours per Week			Credits	Scheme of Examination Maximum Marks		
			L	T	P		Internal (CIE)	External (SEE)	Total
	OPEN ELECTIVE-E-IV	OEC	3	0	0	3	30	70	100
	PROFESSIONAL ELECTIVE – V	PEC	3	0	0	3	30	70	100
	PROFESSIONAL ELECTIVE – VI	PEC	3	0	0	3	30	70	100
A5ME37	Major Project Phase 2	PWC	0	0	16	8	50	150	200
Total			09	00	16	17	140	360	500

PROFESSIONAL ELECTIVE COURSES			
PE-I		PE-II	
A5ME41	Machine Tool Design	A5ME45	Additive Manufacturing
A5ME42	Industrial Robotics	A5ME46	Fracture Mechanics
A5ME43	Mechatronics	A5ME47	Industry 4.0
A5ME44	Industrial Safety Engineering	A5ME48	Product Life Cycle Management
PE-III		PE-IV	
A5ME49	Unconventional Machining Processes	A5ME53	Flexible Manufacturing Systems
A5ME50	Composite Materials	A5ME54	Computational Fluid Dynamics
A5ME51	Refrigeration and Air Conditioning	A5ME55	Automobile Engineering
A5ME52	Industrial Management	A5ME56	Optimisation Techniques
PE-V		PE-VI	
A5ME57	Production Planning and Control	A5ME61	Design for Manufacturing
A5ME58	Machine Dynamics & Vibrations	A5ME62	Tribology
A5ME59	Power Plant Engineering	A5ME63	Nanotechnology
A5ME60	Total Quality Management	A5ME64	Operations Research

OPEN ELECTIVE COURSES
OPEN ELECTIVE COURSE-I

S. No.	Course Code	Course Name	Offering Department
1.	A5AE62	Fundamentals of Avionics	Aeronautical Engineering
2.	A5CS26	Introduction to Data Analytics	Computer Science and Engineering
3.	A5CS30	Core Java Programming	
4.	A5EC54	Microprocessors and Interfacing	Electronics & Communication Engineering
5.	A5EC55	Principles of Communications	
6.	A5EE52	Electrical Wiring and Safety Measures	Electrical & Electronics Engineering
7.	A5EE53	Electrical Materials	
8.	A5IT20	Fundamentals of Data Structures	Information Technology
9.	A5ME72	Fundamentals of Engineering Materials	Mechanical Engineering
10.	A5HS06	Business Economics and Financial Analysis	HS
11.	A5HS07	Basics of Entrepreneurship	

OPEN ELECTIVE COURSE-II

S. No.	Course Code	Course Name	Offering Department
1.	A5AE65	Non-Destructive Testing Methods	Aeronautical Engineering
2.	A5CS31	Fundamentals of DBMS	Computer Science and Engineering
3.	A5CS32	Introduction to Machine Learning	
4.	A5CS07	Introduction to Design and Analysis of Algorithms	
5.	A5EC58	Microcontrollers and Applications	Electronics & Communication Engineering
6.	A5EC61	Fundamentals of Image processing	
7.	A5EE56	Analysis of Linear Systems	Electrical & Electronics Engineering
8.	A5EE57	Neural Networks and Fuzzy Logic	
9.	A5IT29	Basics of Python Programming	Information Technology
10.	A5IT11	Human Computer Interaction	
11.	A5IT31	Software Testing Fundamentals	
12.	A5ME73	Fundamentals of Mechatronics	Mechanical Engineering
13.	A5HS09	Advanced Entrepreneurship	HS

OPEN ELECTIVE COURSE-III

S. No.	Course Code	Course Name	Offering Department
1.	A5AE67	Unmanned Aerial Vehicles	Aeronautical Engineering
2.	A5CS33	Introduction to Cloud Computing	Computer Science and Engineering
3.	A5CS34	Computer Organization and Operating Systems	
4.	A5CS29	Software Project Management	
5.	A5EC62	Introduction to Sensors and Actuators	Electronics & Communication Engineering
6.	A5EC63	Introduction to Computer Vision	
7.	A5EE60	Solar Energy and Applications	Electrical & Electronics Engineering
8.	A5IT34	Introduction to AI	Information Technology
9.	A5ME75	Basics of Robotics	Mechanical Engineering
10.	A5ME76	Fundamentals of Operation Research	
11.	A5HS10	Indian Ethos & Business Ethics	HS

OPEN ELECTIVE-IV			
S. No.	Course Code	Course Name	Offering Department
1.	A5AE68	Fundamentals of Wind Power Technology	Aeronautical Engineering
2.	A5HS15	Management Science	HS
3.	A5HS16	Intellectual Property Rights	
4.	A5CS20	Distributed Databases	Computer Science and Engineering
5.	A5CS35	Fundamentals of Software Testing	
6.	A5EC64	Introduction to Mobile Communications	Electronics & Communication Engineering
7.	A5EC65	Basics of Embedded System Design	
8.	A5EE61	Instrumentation and Control	Electrical & Electronics Engineering
9.	A5EE63	Energy Storage Systems	
10.	A5IT35	Introduction to Mobile Application Development	Information Technology
11.	A5IT36	Big Data	
12.	A5ME78	Renewable Energy Sources	Mechanical Engineering