



SARALA **B**IRLA **U**NIVERSITY

Established under the Sarala Birla University Act 2017 Govt. of Jharkhand as per Section 2(f) of UGC Act. 1956

CURRICULUM

FOR

Diploma

in

Mechanical Engineering

(Based on UGC & AICTE- CBCS)

Effective from 2021-22

Definition of Credit

1 Hr. Lecture (L) Per Week	1 Credit
1 Hr. Tutorial (T) Per Week	1 Credit
1 Hr. Practical (P) Per Week	0.5 Credit
2 Hr. Practical (P) Per Week	1 Credit

Course Code Definitions

Course Code	Definitions
BSC-D	Basic Science Course
ESC-D	Engineering Science Course
HSMC-D	Humanities and Social Sciences including Management Course
ECCA-D	Extra Co-Curricular Activities Courses
MC-D	Mandatory Course
PCC-ME-D	Professional Core Course
PEC-ME-D	Professional Electives Course
OEC-D	Open Electives Course
ME-DP1	Project Stage-I
ME-DP2	Project Stage-II
ME-DP3	Project Stage-III
ME-DSI-I	Summer Internship-I
ME-DSI-II	Summer Internship-II

Structure of Mechanical Engineering

(Breakup of Credits)

Sl. No.	Category	Breakup of Credits
1	Humanities and Social Sciences including Management courses	14
2	Basic Science courses	18
3	Engineering Science courses including workshop, drawing, basics of electrical/mechanical/computer etc	19
4	Professional core courses	52
5	Professional Elective courses relevant to chosen specialization/branch	14
6	Open subjects – Electives from other technical and /or emerging subjects	5
7	Project work, seminar and internship in industry or elsewhere	16
8	Extra Co-Curricular Activities Courses	2
9	Mandatory Courses [Environmental Sciences, Induction Program, Indian Constitution, Essence of Indian Traditional Knowledge]	2
Total Credits:		142

BASIC SCIENCE COURSES

Sl. No.	Course Code	Course Title	Hours Per Week			Credits	Preferred Semester
			L	T	P		
1	BSC-D101	Physics	3	1	0	4	I
2	BSC-D102	Physics Lab	0	0	2	1	I
5	BSC-D103	Mathematics-I	3	1	0	4	I
3	BSC-D104	Chemistry	3	1	0	4	II
4	BSC-D105	Chemistry Lab	0	0	2	1	II
6	BSC-D106	Mathematics-II	3	1	0	4	II
Total Credits:						18	

Mandatory Courses

Sl. No.	Course Code	Course Title	Hours per week			Credits	Preferred Semester
			L	T	P		
1	MC-D101	Induction Programme	0	0	0	0	I
2	MC-D102	Environmental Science	2	0	0	2	III
3	MC-D103	Values & Ethics	2	0	0	0	III
4	MC-D104	PDP-I	2	0	0	0	I
5	MC-D105	PDP-II	2	0	0	0	II
6	MC-D106	PDP-III	2	0	0	0	III
7	MC-D107	PDP-IV	2	0	0	0	IV
Total Credits:						2	
Note.	PDP: Personality Development Program						
	PT: Physical Training						
	NSS: National Service Scheme						
	NCC: National Cadet Corps						

Extra Co-Curricular Activities Courses							
Sl. No.	Course Code	Course Title	Hours per week			Credits	Preferred Semester
			L	T	P		
1	ECCA-D101	Sports & Yoga-I	0	0	2	1	I
2	ECCA-D102	Sports & Yoga-II	0	0	2	1	II
Total Credits:						2	

ENGINEERING SCIENCE COURSES

Sl. No.	Course Code	Course Title	Hours per week			Credits	Preferred Semester
			L	T	P		
1	ESC-D101	Introduction to IT Systems	3	1	0	4	I
2	ESC-D102	Introduction to IT Systems Lab	0	0	2	1	I
3	ESC-D103	Engineering Workshop Practice	0	0	3	1.5	I
4	ESC-D104	Fundamentals of Electrical & Electronics Engineering	3	1	0	4	II
5	ESC-D105	Fundamentals of Electrical & Electronics Engineering Lab	0	0	2	1	II
6	ESC-D106	Engineering Graphics & Design	0	0	3	1.5	II
7	ESC-D107	Engineering Mechanics	3	1	0	4	II
8	ESC-D108	Computer Hardware Lab	1	0	2	2	II
Total Credits:						19	

Open Elective Course

Branch: Mechanical Engineering(Diploma)

Sl. No.	Course Code	Course Title	Hrs./ Week L: T: P	Credits
1	OEC-EEE-D205	Industrial Instrumentation & Condition Monitoring	3:01:00	4
2	OEC-EEE-D206	Industrial Instrumentation & Condition Monitoring Lab	0:00:02	1
3	OEC-EEE-D207	Industrial Automation & Control	3:01:00	4
4	OEC-EEE-D208	Industrial Automation & Control Lab	0:00:02	1
5	OEC-EEE-D209	Renewable Energy Power Plant	3:01:00	4
6	OEC-EEE-D210	Renewable Energy Power Plant Lab	0:00:02	1
7	OEC-EEE-D304	Renewable Energy	3:01:00	4
8	OEC-EEE-305	Renewable Energy Lab	0:00:02	1
9	OEC-EEE-D306	Product Design	3:01:00	4
10	OEC-EEE-D307	Solar Power Technologies	3:01:00	4
11	OEC-EEE-D308	Solar Power Technologies Lab	0:00:02	1
12	OEC-EEE-D309	Wind Power Technologies	3:01:00	4
13	OEC-EEE-D310	Wind Power Technologies Lab	0:00:02	1
14	OEC-EEE-D311	Biomass and Micro-hydro Power Plants	3:01:00	4
15	OEC-EEE-D312	Biomass and Micro-hydro Power Plants Lab	0:00:02	1
16	OEC-EEE-D313	Electric Vehicles	3:01:00	4
17	OEC-EEE-D314	Electric Vehicles Lab	0:00:02	1
18	OEC-EEE-D317	Renewable Energy Technologies	3:01:00	4
19	OEC-EEE-D318	Internet of Things	3:01:00	4
20	OEC-EEE-D319	Robotics	3:01:00	4
21	OEC-EEE-D320	Mechatronics	3:01:00	4
22	OEC-EEE-D321	Artificial Intelligence	3:01:00	4

Project Work

Branch: Mechanical Engineering (Diploma)

Sl. No.	Course Code	Course Title	Hrs. /Week L: T: P	Credits	Preferred Semester
1	ME-DP1	Project Stage-I (Mini Project)	0:00:04	2	IV
2	ME-DP2	Project Stage-II (Major Project)	0:00:08	4	V
3	ME-DP3	Project Stage-III (Major Project Work & Dissertation)	0:00:12	6	VI
		Total Credit:		12	

Summer Internship

Branch: Mechanical Engineering (Diploma)

Sl. No.	Course Code	Course Title	Hrs. /Week L: T: P	Credits	Preferred Semester
1	ME-DSI-I	Summer Internship-I	0:00:00	2	Summer Internship- (4 weeks) after II
2	ME-DSI-II	Summer Internship-II	0:00:00	2	Summer Internship- (6 weeks) after IV
		Total Credit:		4	

Professional Core Courses

Branch: Mechanical Engineering (Diploma)

Sl. No.	Course Code	Course Title	Hrs. /Week L: T: P	Credits	Preferred Semester
1	PCC-ME-D201	Basic Mechanical Engineering	3:01:00	4	III/IV
3	PCC-ME-D202	Material Science & Engineering	3:01:00	4	III/IV
4	PCC-ME-D203	Material Testing Lab	3:01:00	4	III/IV
5	PCC-ME-D204	Fluid Mechanics & Hydraulic Machinery	3:01:00	4	III/IV
6	PCC-ME-D205	Fluid Mechanics lab	0:00:02	1	III/IV
7	PCC-ME-D206	Thermal Engineering	3:01:00	4	III/IV
8	PCC-ME-D207	Thermal Engineering Lab	0:00:02	1	III/IV
9	PCC-ME-D208	Manufacturing Engineering	3:01:00	4	III/IV
10	PCC-ME-D209	Measurements & Metrology	3:01:00	4	III/IV
11	PCC-ME-D210	Strength of Materials	3:01:00	4	III/IV
12	PCC-ME-D211	Strength of Materials Lab	0:00:02	1	III/IV
13	PCC-ME-D212	Theory of Machines	3:01:00	4	III/IV
14	PCC-ME-D213	Theory of Machines Lab	0:00:02	1	III/IV
15	PCC-ME-D214	Computer Aided Design Lab	1:00:02	2	III/IV
			Total Credits:	42	

Professional Core Courses

Branch: Mechanical Engineering (Diploma)

Sl. No.	Course Code	Course Title	Hrs. /Week L: T: P	Credits	Preferred Semester
1	PCC-ME-D301	Automobile Engineering	3:01:00	4	V/VI
2	PCC-ME-D302	Automobile Engineering Lab	0:00:02	1	V/VI
4	PCC-ME-D303	Design of Machine Element	3:01:00	4	V/VI
6	PCC-ME-D304	Production Technology	3:01:00	4	V/VI
			Total Credits:	13	

HUMANITIES AND SOCIAL SCIENCES INCLUDING MANAGEMENT COURSE

Sl. No.	Course Code	Course Title	Hours per week			Credits	Preferred Semester
			L	T	P		
1	HSMC-D101	Communication Skills in English	2	0	0	2	I
2	HSMC-D102	Communication Skills in English Lab	0	0	2	1	I
3	HSMC-D103	Technical English	3	0	0	3	II
4	HSMC-D104	French Through Communicative Approach-I	2	0	0	2	III
5	HSMC-D105	French Through Communicative Approach-II	2	0	0	2	IV
6	HSMC-D106	Entrepreneurship & Startups	3	1	0	4	VI
Total Credits						14	

Professional Elective Courses

Branch: Mechanical Engineering (Diploma)

Sl. No.	Course Code	Course Title	Hrs./ Week L: T: P	Credits	Preferred Semester
1	PEC-ME-D301	Refrigeration & Air-conditioning	3:01:00	4	V/VI
2	PEC-ME-D302	Refrigeration & Air-conditioning Lab	0:00:02	1	V/VI
3	PEC-ME-D303	Power Plant Engineering	3:01:00	4	V/VI
4	PEC-ME-D304	Heat Transfer	3:01:00	4	V/VI
5	PEC-ME-D305	Heat Transfer Lab	0:00:02	1	V/VI
6	PEC-ME-D306	Energy Conversion & Management	3:01:00	4	V/VI
7	PEC-ME-D307	Production & Costing	3:01:00	4	V/VI
8	PEC-ME-D308	Material Handling System	3:01:00	4	V/VI
9	PEC-ME-D309	Alternate Energy sources & Management	3:01:00	4	V/VI
10	PEC-ME-D310	Tool Engineering	3:01:00	4	V/VI
11	PEC-ME-D311	Mechatronics	3:01:00	4	V/VI
12	PEC-ME-D312	Measurement & Control	3:01:00	4	V/VI
13	PEC-ME-D313	Power Plant Engineering	3:01:00	4	V/VI

COURSE STRUCTURE

SEMESTER I (FIRST YEAR)

Branch: Mechanical Engineering (Diploma)

Sl. No.	Category	Course Code	Course Title	Hours			Credit	Marks		
				L	T	P		IA	ESE	Total
Theory										
1	Basic Science Course	BSC-D101	Physics	3	1	0	4	30	70	100
2	Basic Science Course	BSC-D103	Mathematics-I	3	1	0	4	30	70	100
3	Humanities and Social Sciences including Management Course	HSMC-D101	Communication Skills in English	2	0	0	2	30	70	100
4	Engineering Science Course	ESC-D101	Introduction to IT Systems	3	1	0	4	30	70	100
Total(A)							14	120	280	400
Practical/Drawing/Design										
1	Basic Science Course	BSC-D102	Physics Lab	0	0	2	1	30	20	50
2	Engineering Science Course	ESC-D102	Introduction to IT Systems Lab	0	0	2	1	30	20	50
3	Humanities and Social Sciences including Management Course	HSMC-D102	Communication Skills in English Lab	0	0	2	1	30	20	50
4	Engineering Science Course	ESC-D103	Engineering Workshop Practice	0	0	3	1.5	30	20	50
Total(B)							4.5	120	80	200
Mandatory Courses/Extra Co-Curricular Activities Courses										
1	Mandatory Course	MC-D101	Induction Programme	0	0	0	0	0	0	0
2	Extra Co Curricular Activity Course	ECCA-D101	Sports & Yoga-I	0	0	2	1	30	20	50
3	Mandatory Course	MC-D104	PDP-I	2	0	0	0	0	0	0
4	Mandatory Course	MC-D102	Environmental Science	2	0	0	2	30	70	100
Total(C)							3	60	90	150
Grand Total (A+B+C)							21.5	300	450	750
L-Lecture, T-Tutorial, P-Practical										
IA- Internal Assessment, ESE-End Semester Examination										

COURSE STRUCTURE

SEMESTER II (FIRST YEAR)

Branch: Mechanical Engineering(Diploma)

Sl. No.	Category	Course Code	Course Title	Hours			Credit	Marks		
				L	T	P		IA	ESE	Total
Theory										
1	Basic Science Course	BSC-D104	Chemistry	3	1	0	4	30	70	100
2	Basic Science Course	BSC-D106	Mathematics-II	3	1	0	4	30	70	100
3	Humanities and Social Sciences including Management Course	HSMC-D103	Technical English	3	0	0	3	30	70	100
4	Engineering Science Course	ESC-D107	Engineering Mechanics	3	1	0	4	30	70	100
5	Engineering Science Course	ESC-D104	Fundamentals of Electrical & Electronics Engineering	3	1	0	4	30	70	100
Total(A)							19	150	350	500
Practical/Drawing/Design										
1	Basic Science Course	BSC-D105	Chemistry Lab	0	0	2	1	30	20	50
2	Engineering Science Course	ESC-D108	Computer Hardware Lab	1	0	2	2	30	20	50
3	Engineering Science Course	ESC-D105	Fundamentals of Electrical and Electronics Engineering Lab	0	0	2	1	30	20	50
4	Engineering Science Course	ESC-D106	Engineering Graphics and Design	0	0	3	1.5	30	20	50
Total(B)							5.5	120	80	200
Mandatory Courses/Extra Co-Curricular Activities Courses										
1	Extra Co Curricular Activity Courses	ECCA-D102	Sports & Yoga-II	0	0	2	1	30	20	50
2	Mandatory Courses	MC-D105	PDP-II	2	0	0	0	0	0	0
Total(C)							1	30	20	50
Grand Total (A+B+C)							25.5	300	450	750
L-Lecture, T-Tutorial, P-Practical IA- Internal Assessment, ESE-End Semester Examination										

COURSE STRUCTURE

SEMESTER III (2nd YEAR)

Branch: Mechanical Engineering(Diploma)

Sl. No.	Category	Course Code	Course Title	Hours			Credit	Marks		
				L	T	P		IA	ESE	Total
Theory										
1	Professional Core Course	PCC-ME-D201	Basic Mechanical Engineering	3	1	0	4	30	70	100
2	Professional Core Course	PCC-ME-D202	Material Science & Engineering	3	1	0	4	30	70	100
3	Professional Core Course	PCC-ME-D204	Fluid Mechanics & Hydraulic Machinery	3	1	0	4	30	70	100
4	Professional Core Course	PCC-ME-D206	Thermal Engineering	3	1	0	4	30	70	100
5	Humanities and Social Sciences including Management Course	HSMC-D104	French Through Communicative Approach-I	2	0	0	2	30	70	100
Total(A)							18	150	350	500
Practical/Drawing/Design										
1	Professional Core Course	PCC-ME-D205	Fluid Mechanics lab	0	0	2	1	30	20	50
2	Professional Core Course	PCC-ME-D203	Material Testing Lab	0	0	2	1	30	20	50
3	Professional Core Course	PCC-ME-D207	Thermal Engineering Lab	0	0	2	1	30	20	50
4	Summer Internship	ME-DSI-I	Summer Internship-I	0	0	0	2	75	25	100
Total(B)							5	165	85	250
Mandatory Courses/Extra Co-Curricular Activities Courses										
1	Mandatory Course	MC-D106	PDP-III	2	0	0	0	0	0	0
Total(C)							0	0	0	0
Grand Total (A+B+C)							23	315	435	750
L-Lecture, T-Tutorial, P-Practical IA- Internal Assessment, ESE-End Semester Examination										

COURSE STRUCTURE

SEMESTER IV (2nd YEAR)

Branch: Mechanical Engineering(Diploma)

Sl. No.	Category	Course Code	Course Title	Hours			Credit	Marks		
				L	T	P		IA	ESE	Total
Theory										
1	Professional Core Course	PCC-ME-D209	Measurements & Metrology	3	1	0	4	30	70	100
2	Professional Core Course	PCC-ME-D210	Strength of Materials	3	1	0	4	30	70	100
3	Professional Core Course	PCC-ME-D212	Theory of Machines	3	1	0	4	30	70	100
4	Professional Core Course	PCC-ME-D208	Manufacturing Engineering	3	1	0	4	30	70	100
5	Humanities and Social Sciences including Management Course	HSMC-D105	French Through Communicative Approach-II	2	0	0	2	30	70	100
Total(A)							18	150	350	500
Practical/Drawing/Design										
1	Professional Core Course	PCC-ME-D214	Computer Aided Design Lab	1	0	2	2	30	20	50
2	Professional Core Course	PCC-ME-D211	Strength of Materials Lab	0	0	2	1	30	20	50
3	Professional Core Course	PCC-ME-D213	Theory of Machines Lab	0	0	2	1	30	20	50
4	Project Work	ME-DP-I	Project Stage-I (Mini Project)	0	0	4	2	75	25	100
Total(B)							6	165	85	250
Mandatory Courses/Extra Co-Curricular Activities Courses										
1	Mandatory Course	MC-D103	Values & Ethics	2	0	0	0	0	0	0
2	Mandatory Course	MC-D107	PDP-IV	2	0	0	0	0	0	0
Total(C)							0	0	0	0
Grand Total (A+B+C)							24	315	435	750
L-Lecture, T-Tutorial, P-Practical IA- Internal Assessment, ESE-End Semester Examination										

COURSE STRUCTURE

SEMESTER V (3rd YEAR)

Branch: Mechanical Engineering(Diploma)

Sl. No.	Category	Course Code	Course Title	Hours			Credit	Marks		
				L	T	P		IA	ESE	Total
Theory										
1	Professional Elective Course	PCC-ME-D301	Automobile Engineering	3	1	0	4	30	70	100
2	Professional Core Course	PCC-ME-D303	Design of Machine Element	3	1	0	4	30	70	100
3	Professional Elective Course	PEC-ME-D301	Refrigeration & Air-conditioning	3	1	0	4	30	70	100
4	Open Elective Course	OEC-EEE-D304	Renewable Energy	3	1	0	4	30	70	100
5	Professional Elective Course	PEC-ME-D303	Power Plant Engineering	3	1	0	4	30	70	100

Total(A)							20	150	350	500
Practical/Drawing/Design										
1	Professional Elective Course	PEC-ME-D302	Refrigeration & Air-conditioning Lab	0	0	2	1	30	20	50
2	Professional Core Course	PCC-ME-D302	Automobile Engineering Lab	0	0	2	1	30	20	50
3	Open Elective Course	OEC-EEE-D305	Renewable Energy Lab	0	0	2	1	30	20	50
4	Summer Internship	ME-DSI-II	Summer Internship-II	0	0	0	2	75	25	100
5	Project Work	ME-DP-II	Project Stage-II (Major Project)	0	0	8	4	75	25	100
Total(B)							9	240	110	350
Grand Total (A+B)							29	390	460	850

1	Mandatory Courses	MC-D110	Vedic Mathematics-I	2	0	0	0	0	0	0
2	Mandatory Courses	MC-D107	PDP-V	2	0	0	0	0	0	0
Total(C)							0	0	0	0
Grand Total (A+B+C)							29	390	460	850

L-Lecture, T-Tutorial, P-Practical

IA- Internal Assessment, ESE-End Semester Examination

COURSE STRUCTURE

SEMESTER VI (3rd YEAR)

Branch: Mechanical Engineering (Diploma)

Sl. No.	Category	Course Code	Course Title	Hours			Credit	Marks		
				L	T	P		IA	ESE	Total
Theory										
1	Professional Core Course	PCC-ME-D304	Production Technology	3	1	0	4	30	70	100
2	Professional Elective Course	PEC-ME-D304	Heat Transfer	3	1	0	4	30	70	100
3	Humanities and Social Science course	HSMC-D106	Entrepreneurship & Startups	3	1	0	4	30	70	100
Total(A)							12	90	210	300
Practical/Drawing/Design										
1	Professional Elective Course	PEC-ME-D305	Heat Transfer Lab	0	0	2	1	30	20	50
2	Project Work	ME-DP-III	Project Stage-III (Major Project Work & Dissertation)	0	0	12	6	75	25	400
Total(B)							7	105	45	450
Grand Total (A+B)							19	195	255	750

Mandatory Courses/Extra Co-Curricular Activities Courses										
1	Mandatory Course	MC-D111	Vedic Mathematics-II	2	0	0	0	0	0	0
2	Mandatory Course	MC-D107	PDP-VI	2	0	0	0	0	0	0
Total(C)							0	0	0	0
Grand Total (A+B+C)							19	195	255	450
L-Lecture, T-Tutorial, P-Practical										
IA- Internal Assessment, ESE-End Semester Examination										