



SARALA
BIRLA
UNIVERSITY

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 2020-21

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
MC-D	Mandatory Course
PCC-ME-D	Professional Core Course
PEC-ME-D	Professional Elective Course
OEC-D	Open Elective 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	13
2	Basic Science courses	19
3	Engineering Science courses including workshop, drawing, basics of electrical/mechanical/computer etc	14
4	Professional core courses	44
5	Professional Elective courses relevant to chosen specialization/branch	14
6	Open subjects – Electives from other technical and /or emerging subjects	11
7	Project work	8
8	Summer Internship	5
9	Extra Co-Curricular Activities Courses	2
10	Mandatory Courses	2
Total Credits:		132

HUMANITIES & SOCIAL SCIENCES INCLUDING MANAGEMENT COURSE

Sl. No.	Course Code	Course Title	Hrs. /Week L: T: P	Credits	Preferred Semester
1	HSMC-D101	Communication Skills in English	2:00:00	2	I
2	HSMC-D102	Communication Skills in English Lab	0:00:02	1	I
3	HSMC-D103	Technical English	2:00:00	2	II
4	HSMC-D104	French Through Communicative Approach-I	2:00:00	2	III
5	HSMC-D105	French Through Communicative Approach-II	2:00:00	2	IV
6	HSMC-D106	Entrepreneurship & Startups	3:01:00	4	VI
Total Credits:				13	

BASIC SCIENCE COURSES

Sl. No.	Course Code	Course Title	Hours Per Week			Credits	Preferred Semester
			L	T	P		
1	BSC-D101	Applied Physics-I	2	1	0	3	I
2	BSC-D102	Applied Physics Lab-I	0	0	2	1	I
3	BSC-D103	Applied Physics-II	2	1	0	3	II
4	BSC-D104	Applied Physics Lab-II	0	0	2	1	II
5	BSC-D105	Applied Chemistry	2	1	0	3	II
6	BSC-D106	Applied Chemistry Lab	0	0	2	1	II
7	BSC-D107	Mathematics-I	2	1	0	3	I
8	BSC-D108	Mathematics-II	3	1	0	4	II
Total Credits:						19	

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	2	1	0	3	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	2	1	0	3	II
5	ESC-D105	Fundamentals of Electrical & Electronics Engineering Lab	0	0	2	1	II
6	ESC-D106	Engineering Graphics	0	0	3	1.5	II
7	ESC-D107	Engineering Mechanics	2	1	0	3	II
Total Credits:						14	

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	I
3	MC-D103	Values & Ethics	2	0	0	0	IV
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
8	MC-D108	PDP-V	2	0	0	0	V
9	MC-D109	PDP-VI	2	0	0	0	VI
Total Credits:						2	

Note. PDP: Personality Development Program
PT: Physical Training
NSS: National Service Scheme
NCC: National Cadet Corps

Extra Co-Curricular Activities

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	

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
2	PCC-ME-D202	Material Science & Engineering	3:00:00	3	III/IV
3	PCC-ME-D203	Fluid Mechanics & Hydraulic Machinery	2:01:00	3	III/IV
4	PCC-ME-D204	Fluid Mechanics Lab	0:00:02	1	III/IV
5	PCC-ME-D205	Manufacturing Engineering	3:00:00	3	III/IV
6	PCC-ME-D206	Manufacturing Engineering Lab	0:00:02	1	III/IV
7	PCC-ME-D207	Thermal Engineering-I	3:00:00	3	III/IV
8	PCC-ME-D208	Thermal Engineering Lab	0:00:02	1	III/IV
9	PCC-ME-D209	Measurements & Metrology	2:01:00	3	III/IV
10	PCC-ME-D210	Measurements & Metrology Lab	0:00:02	1	III/IV
11	PCC-ME-D211	Strength of Materials	2:01:00	3	III/IV
12	PCC-ME-D212	Strength of Materials Lab	0:00:02	1	III/IV
13	PCC-ME-D213	Theory of Machines	2:01:00	3	III/IV
14	PCC-ME-D214	Theory of Machine Lab	0:00:02	1	III/IV
15	PCC-ME-D215	Thermal Engineering-II	2:01:00	3	III/IV
16	PCC-ME-D216	Industrial Production Technology	3:00:00	3	III/IV
Total Credits:				37	

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	3:00:00	3	V/VI
2	PCC-ME-D302	Automobile Engineering Lab	0:00:02	1	V/VI
3	PCC-ME-D303	Design of Machine Elements	2:01:00	3	V/VI
Total Credits:				7	

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	3:00:00	3	V/VI
2	PEC-ME-D302	Refrigeration & Air-conditioning Lab	0:00:02	1	V/VI
3	PEC-ME-D303	Material Handling System	3:00:00	3	V/VI
4	PEC-ME-D304	Heat Transfer	3:00:00	3	V/VI
5	PEC-ME-D305	Heat Transfer Lab	0:00:02	1	V/VI
6	PEC-ME-D306	Tool Engineering	3:00:00	3	V/VI
7	PEC-ME-D307	Mechatronics	3:00:00	3	V/VI
8	PEC-ME-D308	Measurement & Control	3:00:00	3	V/VI
9	PEC-ME-D309	Energy Conversion & Management	3:00:00	3	V/VI
10	PEC-ME-D310	Production & Costing	3:00:00	3	V/VI
11	PEC-ME-D311	Alternate Energy sources & Management	3:00:00	3	V/VI
12	PEC-ME-D312	CAD-CAM & Automation	3:00:00	3	V/VI
13	PEC-ME-D313	Power Plant Engineering	3:00:00	3	V/VI

Open Elective Courses

Branch: Mechanical Engineering(Diploma)

Sl. No.	Course Code	Course Title	Hrs./ Week L: T: P	Credits
1	OEC-ECE-D301	Industrial Automation	3:00:00	3
2	OEC-ECE-D302	Industrial Automation Lab	0:00:02	1
3	OEC-EEE-D307	Solar Power Technologies	3:00:00	3
4	OEC-EEE-D308	Solar Power Technologies Lab	0:00:02	1
5	OEC-EEE-D317	Renewable Energy Technologies	3:00:00	3

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)	0:00:04	2	V
3	ME-DP3	Project Stage-III (Major Project Work & Dissertation)	0:00:08	4	VI
Total Credit:				8	

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	3	Summer Internship- (6 weeks) after IV
Total Credit:				5	

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	Applied Physics-I	2	1	0	3	30	70	100
2	Basic Science Course	BSC-D107	Mathematics-I	2	1	0	3	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	2	1	0	3	30	70	100
Total(A)							11	120	280	400
Practical/Drawing/Design										
1	Basic Science Course	BSC-D102	Applied Physics Lab-I	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)							18.5	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-D105	Applied Chemistry	2	1	0	3	30	70	100
2	Basic Science Course	BSC-D108	Mathematics-II	3	1	0	4	30	70	100
3	Humanities and Social Sciences including Management Course	HSMC-D103	Technical English	2	0	0	2	30	70	100
4	Basic Science Course	BSC-D103	Applied Physics-II	2	1	0	3	30	70	100
5	Engineering Science Course	ESC-D107	Engineering Mechanics	2	1	0	3	30	70	100
6	Engineering Science Course	ESC-D104	Fundamentals of Electrical & Electronics Engineering	2	1	0	3	30	70	100
Total(A)							18	180	420	600
Practical/Drawing/Design										
1	Basic Science Course	BSC-D106	Applied Chemistry Lab	0	0	2	1	30	20	50
2	Basic Science Course	BSC-D104	Applied Physics Lab-II	0	0	2	1	30	20	50
3	Engineering Science Course	ESC-D105	Fundamentals of Electrical & Electronics Engineering Lab	0	0	2	1	30	20	50
4	Engineering Science Course	ESC-D106	Engineering Graphics	0	0	3	1.5	30	20	50
Total(B)							4.5	120	80	200
Mandatory Courses/Extra Co-Curricular Activities Courses										
1	Extra Co-Curricular Activity Course	ECCA-D102	Sports & Yoga-II	0	0	2	1	30	20	50
2	Mandatory Course	MC-D105	PDP-II	2	0	0	0	0	0	0
Total(C)							1	30	20	50
Grand Total (A+B+C)							23.5	330	520	850
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	0	0	3	30	70	100
3	Professional Core Course	PCC-ME-D203	Fluid Mechanics & Hydraulic Machinery	2	1	0	3	30	70	100
4	Professional Core Course	PCC-ME-D205	Manufacturing Engineering	3	0	0	3	30	70	100
5	Professional Core Course	PCC-ME-D207	Thermal Engineering-I	3	0	0	3	30	70	100
6	Humanities and Social Sciences including Management Course	HSMC-D104	French Through Communicative Approach-I	2	0	0	2	30	70	100
Total(A)							18	180	420	600
Practical/Drawing/Design										
1	Professional Core Course	PCC-ME-D204	Fluid Mechanic Lab	0	0	2	1	30	20	50
2	Professional Core Course	PCC-ME-D206	Manufacturing Engineering Lab	0	0	2	1	30	20	50
3	Professional Core Course	PCC-ME-D208	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	345	505	850
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	2	1	0	3	30	70	100
2	Professional Core Course	PCC-ME-D211	Strength of Materials	2	1	0	3	30	70	100
3	Professional Core Course	PCC-ME-D213	Theory of Machines	2	1	0	3	30	70	100
4	Professional Core Course	PCC-ME-D215	Thermal Engineering-II	2	1	0	3	30	70	100
5	Professional Core Course	PCC-ME-D216	Industrial Production Technology	3	0	0	3	30	70	100
6	Humanities and Social Sciences including Management Course	HSMC-D105	French Through Communicative Approach-II	2	0	0	2	30	70	100
Total(A)							17	180	420	600
Practical/Drawing/Design										
1	Professional Core Course	PCC-ME-D210	Measurements & Metrology Lab	0	0	2	1	30	20	50
2	Professional Core Course	PCC-ME-D212	Strength of Materials Lab	0	0	2	1	30	20	50
3	Professional Core Course	PCC-ME-D214	Theory of Machines Lab	0	0	2	1	30	20	50
4	Project Work	ME-DP1	Project Stage-I (Mini Project)	0	0	4	2	75	25	100
Total(B)							5	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)							22	345	505	850
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	0	0	3	30	70	100
2	Professional Core Course	PCC-ME-D303	Design of Machine Elements	2	1	0	3	30	70	100
3	Professional Elective Course	PEC-ME-D301	Refrigeration & Air-Conditioning	3	0	0	3	30	70	100
4	Professional Elective Course	PEC-ME-D303	Material Handling System	3	0	0	3	30	70	100
5	Professional Elective Course	PEC-ME-D313	Power Plant Engineering	3	0	0	3	30	70	100
6	Open Elective Course	OEC-EEE-D307	Solar Power Technologies	3	0	0	3	30	70	100
Total(A)							18	180	420	600
Practical/Drawing/Design										
1	Professional Elective Course	PEC-ME-D302	Refrigeration & Air-Conditioning Lab	0	0	2	1	30	20	50
2	Open Elective Course	OEC-EEE-D308	Solar Power Technologies Lab	0	0	2	1	30	20	50
3	Professional Core Course	PCC-ME-D302	Automobile Engineering Lab	0	0	2	1	30	20	50
4	Summer Internship	ME-DSI-II	Summer Internship-II	0	0	0	3	75	25	100
5	Project Work	ME-DP2	Project Stage-II (Major Project)	0	0	4	2	75	25	100
Total(B)							8	240	110	350
Grand Total (A+B)							26	420	530	950
L-Lecture, T-Tutorial, P-Practical										
IA- Internal Assessment, ESE-End Semester Examination										

Mandatory Courses/Extra Co-Curricular Activities Courses										
1	Mandatory Course	MC-D108	PDP-V	2	0	0	0	0	0	0
Total(C)							0	0	0	0
Grand Total (A+B+C)							26	420	530	950
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	Open Elective Course	OEC-EEE-D317	Renewable Energy Technologies	3	0	0	3	30	70	100
2	Professional Elective Course	PEC-ME-D304	Heat Transfer	3	0	0	3	30	70	100
3	Humanities and Social Sciences including Management Course	HSMC-D106	Entrepreneurship & Startups	3	1	0	4	30	70	100
4	Open Elective Course	OEC-ECE-D301	Industrial Automation	3	0	0	3	30	70	100
Total(A)							13	120	280	400
Practical/Drawing/Design										
1	Professional Elective Course	PEC-ME-D305	Heat Transfer Lab	0	0	2	1	30	20	50
2	Open Elective Course	OEC-ECE-D302	Industrial Automation Lab	0	0	2	1	30	20	50
3	Project Work	ME-DP3	Project Stage-III (Major Project Work & Dissertation)	0	0	8	4	75	25	100
Total(B)							6	135	65	200
Grand Total (A+B)							19	255	345	600
L-Lecture, T-Tutorial, P-Practical										
IA- Internal Assessment, ESE-End Semester Examination										

Mandatory Courses/Extra Co-Curricular Activities Courses										
1	Mandatory Course	MC-D109	PDP-VI	2	0	0	0	0	0	0
Total(C)							0	0	0	0
Grand Total (A+B+C)							19	255	345	600
L-Lecture, T-Tutorial, P-Practical										
IA- Internal Assessment, ESE-End Semester Examination										