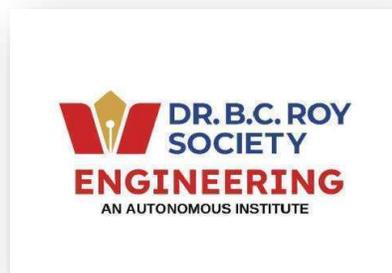


**COURSE STRUCTURE**  
*for*  
**B.TECH. DEGREE**  
*in*  
**MECHANICAL ENGINEERING**

*(Applicable from the academic session 2024-2025)*



Approved by BOS(ME) dt 18.5.2025  
& Academic Council, Agenda 02.04  
dt 23.4.2025

*Chaffraj*



**Dr. B. C. Roy Engineering College**

*An Autonomous Institution*

*Approved by: All India Council for Technical Education (AICTE)*

*Affiliated to: Maulana Abul Kalam Azad University of Technology, West Bengal  
(Formerly Known as -WBUT)*

**Jemua Road, Durgapur, West Bengal, India,713206**

**Semester Wise Break Up of Credit (New Autonomous Structure)**

Sem1	Sem2	Sem3	Sem4	Sem5	Sem6	Sem7	Sem8	Total
20	22	23	24	24	20	18	12	163

S. No.	Category	Breakup of Credits (Actual) As per Proposed Autonomous Structure
1.	Humanities and Social Sciences including Management courses	10
2.	Basic Science Courses	17
3.	Engineering Science courses including workshop, drawing, basics of electrical/ mechanical/ computer etc.	27
4.	Professional core course	66
5.	Professional Elective specialization/branch courses relevant to chosen	6
6.	Indian Knowledge System	Non-Credit
7.	Multidisciplinary Open Electives Courses	14
8.	Project work, seminar and internship in industry or appropriate work place/ academic and research institutions in India/abroad	23
9.	Mandatory Non Credit Courses – Audit Course	Non-credit
<b>Total Credits</b>		<b>163</b>

## COURSE CURRICULA

Programme Code: 007

Programme: B.Tech in Mechanical Engineering

Year (Semester): 1st Year (1st Semester)

Sl. No.	Course Category	Course Code	Course Name	L	T	P	Type	Credit
1	BS	BS-101	Physics	3	0	0	T	3
2	BS	BS-103	Mathematics-I	3	0	0	T	3
3	ES	BS-105	Basic Electrical Engineering	3	0	0	T	3
4	HU	BS-104	English Language and Technical Communication	3	0	0	T	3
5	ES	BS-106	Engineering Mechanics	3	0	0	T	3
6	BS	BS-111	Physics Lab	0	0	2	P	1
7	HU	BS-113	Language Lab	0	0	2	P	1
8	ES	BS-114	Basic Electrical Engineering Lab	0	0	2	P	1
9	ES	BS-115	Workshop Practices	0	0	4	P	2
10	Extra Curr.	BS-121	NSS Activity	0	0	0	0	0

**TOTAL CREDITS**

**20**

Year (Semester): 1st Year (2nd Semester)

Sl. No.	Course Category	Course Code	Course Name	L	T	P	Type	Credit
1	BS	BS-109	Mathematics-II	3	0	0	T	3
2	BS	BS-102	Chemistry	3	0	0	T	3
3	ES	BS-107	Basic Electronics Engineering	3	0	0	T	3
4	ES	BS-108	Introduction to Computer Hardware and Software	3	0	0	T	3
5	ES	BS-110	Programming for Problem Solving	3	0	0	T	3
6	BS	BS-112	Chemistry Lab	0	0	2	P	1
7	ES	BS-116	Basic Electronics Engineering Lab	0	0	2	P	1
8	ES	BS-118	Engineering Graphics	0	0	4	P	2
9	ES	BS-117	Introduction to Computer Hardware and Software Lab	0	0	2	P	1
10	ES	BS-119	Programming for Problem Solving Lab	0	0	4	P	2
11	MC	BS-120	Environmental Science	0	0	0	0	0

**TOTAL CREDITS**

**22**

**Total Credits in 1<sup>st</sup> Year : 42**

**Programme Code: 007**

**Programme: B.Tech in Mechanical Engineering**

**Year (Semester): 2nd Year (3rd Semester)**

Sl. No.	Category	Course Category	Course Code	Course Name	L	T	P	Type	Credit
1	Minor	BS	ME-201	Advanced Engineering Mathematics	3	0	0	T	3
2	Minor	ES	ME-202	Engineering Materials	3	0	0	T	3
3	Major	PC	ME-203	Strength of Materials	2	1	0	T	3
4	Major	PC	ME-204	Engineering Thermodynamics	2	1	0	T	3
5	Major	PC	ME-205	Manufacturing Process	3	0	0	T	3
6	Major	PC	ME-206	Machine Drawing Lab	0	0	4	P	2
7	Major	PC	ME-207	Manufacturing Practice Lab	0	0	4	P	2
8	Major	PC	ME-208	Strength of Materials & Material Testing Lab	0	0	4	P	2
9	Minor	OE	ME-209	Data Structure and Algorithms	0	1	2	P	2

**TOTAL CREDITS**

**23**

**Year (Semester): 2nd Year (4th Semester)**

Sl. No.	Category	Course Category	Course Code	Course Name	L	T	P	Type	Credit
1	Major	PC	ME-210	Mechanisms	2	1	0	T	3
2	Major	PC	ME-211	Applied Thermodynamics	2	1	0	T	3
3	Major	PC	ME-212	Machining Principles & Machine Tools	2	1	0	T	3
4	Minor	PC	ME-213	Metrology & Instrumentation	3	0	0	T	3
5	Major	PC	ME-214	Design of Machine Elements	3	0	0	T	3
6	Value added	MC	ME-215	Essence of Indian Knowledge	1	0	0	T	0
7	Major	PC	ME-216	Machine Tools Lab	0	0	4	P	2
8	Minor	PC	ME-217	Metrology & Instrumentation Lab	0	0	2	P	1
9	Minor	HU	ME-218	Corporate Communication & Soft Skills	0	0	2	P	1
10	Minor	OE	ME-219	Python in Mechanical Engineering	0	2	2	P	3
11	Minor	PW	ME-220	Project-I (Minor)	0	0	4	S	2

**TOTAL CREDITS**

**24**

**Total Credits in 2<sup>nd</sup> Year : 47**

**Programme Code: 007**

**Programme: B.Tech in Mechanical Engineering**

**Year (Semester): 3rd Year (5th Semester)**

Sl. No.	Category	Course Category	Course Code	Course Name	L	T	P	Type	Credit
1	Major	PC	ME-301	Machine Design	2	1	0	T	3
2	Major	PC	ME-302	IC Engine & Gas Turbines	3	0	0	T	3
3	Major	PC	ME-303	Dynamics of Machines	2	1	0	T	3
4	Major	PC	ME-304	Fluid Mechanics & Fluid Machines	3	0	0	T	3
5	Minor	HU	ME-305	Operations Research	2	0	0	T	2
6	Major	PC	ME-306	Design Practice Lab	0	0	4	P	2
7	Major	PC	ME-307	Dynamics of Machines Lab	0	0	2	P	1
8	Major	PC	ME-308	Fluid Mechanics & Fluid Machines Lab	0	0	4	P	2
9	Minor	OE	ME-309	AI and Data Science in Mechanical Engineering Lab.	0	2	2	P	3
10	Minor	PW	ME-310	Project-II (Minor)	0	0	4	S	2

**TOTAL CREDITS**

**24**

**Year (Semester): 3rd Year (6th Semester)**

Sl. No.	Category	Course Category	Course Code	Course Name	L	T	P	Type	Credit
1	Major	PC	ME-311	Heat Transfer	2	1	0	T	3
2	Major	PC	ME-312	Power Plant Engineering	3	0	0	T	3
3	Minor	PC	ME-313	Mechatronics	3	0	0	T	3
4	Major	PC	ME-314	Advanced Manufacturing Technology	3	0	0	T	3
5	Minor	HU	ME-315	Production Management	3	0	0	T	3
6	Major	PC	ME-316	Thermal Engineering Lab	0	0	4	P	2
7	Minor	PC	ME-317	Mechatronics Lab	0	0	2	P	1
8	Minor	PW	ME-318	Project -III (Minor)	0	0	4	S	2

**TOTAL CREDITS**

**20**

**Total Credits in 3<sup>rd</sup> Year : 44**

Programme Code: 007

Programme: B.Tech in Mechanical Engineering

Year (Semester): 4th Year (7th Semester)

Sl. No.	Category	Course Category	Course Code	Course Name	L	T	P	Type	Credit	
1	Minor	PE	ME-401	Finite Element Analysis	3	0	0	T	3	Professional Elective-1 & 2
2	Minor	PE	ME-402	CAE	3	0	0	T	3	
3	Minor	PE	ME-403	Renewable Energy Engineering	3	0	0	T	3	
4	Minor	PE	ME-404	Computational Fluid Dynamics	3	0	0	T	3	
5	Minor	PE	ME-405	Additive Manufacturing	3	0	0	T	3	
6	Minor	PE	ME-406	Automobile Engineering	3	0	0	T	3	
7	Minor	PE	ME-407	Robotics	3	0	0	T	3	
8	Minor	PE	ME-408	Advanced welding technology	3	0	0	T	3	
9	Minor	PE	ME-409	Selection and Testing of Materials	3	0	0	T	3	
10	Minor	OE	ME-410	Total Quality Management	3	0	0	T	3	Open Elective-1 & 2
11	Minor	OE	ME-411	Industrial Pollution and Control	3	0	0	T	3	
12	Minor	OE	ME-412	Energy Conservation and Management	3	0	0	T	3	
13	Minor	OE	ME-413	Waste to Energy- An Overview	3	0	0	T	3	
14	Minor	OE	ME-414	Automation & Control	3	0	0	T	3	
15	Minor	OE	ME-415	Water Resource Engineering	3	0	0	T	3	
16	Minor	OE	ME-416	Machine Learning	3	0	0	T	3	
17	Minor	OE	ME-417	Biology for Engineers	3	0	0	T	3	
18	Minor	OE	ME-418	Industrial Safety	3	0	0	T	3	
19	Minor	OE	ME-419	Corrosion Engineering	3	0	0	T	3	
20	Major	PC	ME-420	Advanced Manufacturing Lab	0	0	2	P	1	
21	Major	PW	ME-421	Industrial Training and Seminar	0	0	4	S	2	
22	Major	PW	ME-422	Project-IV (Minor)	0	0	6	S	3	
<b>TOTAL CREDITS</b>									<b>18</b>	

Year (Semester): 4th Year (8th Semester)

Sl. No.	Category	Course Category	Course Code	Course Name	L	T	P	Type	Credit
1	Major	PW	ME-423	Project-V (Major)	0	0	24	S	12
<b>TOTAL CREDITS</b>									<b>12</b>

**Total Credits in 4<sup>th</sup> Year : 30**

**TOTAL CREDITS (FOUR YEARS): 163**