COURSE STRUCTURE

for

B.TECH. DEGREE

in

ELECTRICAL ENGINEERING

(*Applicable from the Academic Session 2024-25*)

Dr. B. C. Roy Engineering College, Durgapur

(*An Autonomous Institute*)

Approved by: All India Council for Technical Education

Affiliated to : Maulana Abul Kalam Azad University of Technology, West Bengal

(Formerly Known as: WBUT)

Jemua Road, Durgapur, West Bengal, India, 713206

The first-year syllabus is unanimously accepted and approved in the first BOS meeting held in the Department of a) Physics, b) Chemistry, c) English, d) Electrical Engineering, e) Mechanical Engineering.

The BOS of Electrical Engineering in its third meeting (held on 20th of May, 2025) has unanimously accepted and approved the four-year course curriculum for B. Tech (EE).

Dr. Shibendu Mahata
Chairman, BOS(EE)

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Programme Code: 016
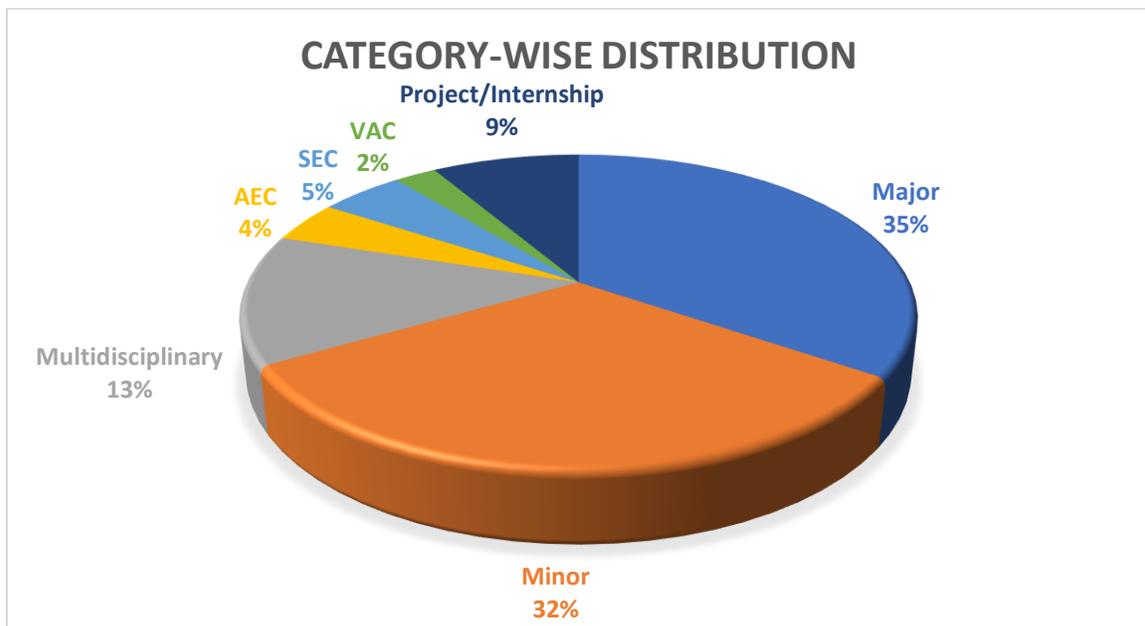
Programme   : B.Tech in Electrical Engineering

Semester-wise Breakup:

Category	1st Sem	2nd Sem	3rd Sem	4th Sem	5th Sem	6th Sem	7th Sem	8th Sem	Total Credit (Category Wise)
Major	4	0	7	8	16	15	7	0	57
Minor	0	14	9	15	8	8	0	0	54
Multidisciplinary	9	6	3	0	0	0	4	0	22
AEC	4	0	0	0	0	1	2	0	7
SEC	3	3	0	0	0	1	1	0	8
VAC	0	0	3	1	0	0	0	0	4
Project/Internship	0	0	0	0	0	0	3	11	14
Total Credit (Semester Wise)	**20**	**23**	**22**	**24**	**24**	**25**	**17**	**11**	**166**

AEC: Ability Enhancement Courses

SEC: Skill Enhancement Courses

VAC: Value Added Courses

CATEGORY-WISE DISTRIBUTION

- Project/Internship 9%
- VAC 2%
- SEC 5%
- AEC 4%
- Multidisciplinary 13%
- Major 35%
- Minor 32%

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Programme : B.Tech in Electrical Engineering

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

Sl. No.	Broad Category	Course Category	Course Type	Course Code	Course Name	Contact Hours/Week				Credits
						L	T	P	Total	
A. Theory										
1	SC	Multidisciplinary	BS	M-101	Mathematics-I	3	0	0	3	3
2	SC	Multidisciplinary	BS	PH-101	Physics	3	0	0	3	3
3	ENGG	Major	ES	EE-101	Basic Electrical Engineering	3	0	0	3	3
4	SC	Multidisciplinary	ES	ME-101	Engineering Mechanics	3	0	0	3	3
5	HUM	Ability Enhancement Courses	HM	ENG-101	English Language and Technical Communication	3	0	0	3	3
TOTAL Theory						15	0	0	15	**15**
B. Practical/Sessional										
1	SC	Skill Enhancement Courses	BS	PH-191	Physics Laboratory	0	0	2	2	1
2	ENGG	Major	ES	EE-191	Basic Electrical Engineering Laboratory	0	0	2	2	1
3	HUM	Ability Enhancement Courses	HM	ENG-191	Language Laboratory	0	0	2	2	1
4	ENGG	Skill Enhancement Courses	ES	ME-192	Workshop Practices	0	0	4	4	2
5	EC	Value Added Courses	-	-	National Service Scheme (NSS)	0	0	0	0	0
TOTAL Practical/Sessional						0	0	10	10	**5**
Total of Semester						15	0	10	25	**20**

Programme Code: 016

Programme : B.Tech in Electrical Engineering

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

Sl. No.	Broad Category	Course Category	Course Type	Course Code	Course Name	Contact Hours/Week				Credits
						L	T	P	Total	
A. Theory										
1	SC	Multidisciplinary	BS	M-202	Mathematics-II	3	0	0	3	3
2	SC	Multidisciplinary	BS	CH-201	Chemistry	3	0	0	3	3
3	ENGG	Minor	ES	EC-201	Basic Electronics Engineering	3	0	0	3	3
4	ENGG	Minor	ES	CS-201	Introduction to Computer Hardware and Software	3	0	0	3	3
5	ENGG	Minor	ES	CS-202	Programming for Problem Solving	3	0	0	3	3
TOTAL Theory						15	0	0	15	**15**
B. Practical/Sessional										
1	SC	Value Added Courses	BS	ENV-281	Environmental Science	1	0	0	1	0
2	SC	Skill Enhancement Courses	BS	CH-291	Chemistry Laboratory	0	0	2	2	1
3	ENGG	Minor	ES	EC-291	Basic Electronics Engineering Laboratory	0	0	2	2	1
4	ENGG	Skill Enhancement Courses	ES	ME-291	Engineering Graphics	0	0	4	4	2
5	ENGG	Minor	ES	CS-291	Introduction to Computer Hardware and Software Laboratory	0	0	4	4	2
6	ENGG	Minor	ES	CS-292	Programming for Problem Solving Laboratory	0	0	4	4	2
TOTAL Practical/Sessional						1	0	16	17	8
Total of Semester						16	0	16	30	**23**

Programme Code: 016

Programme : B.Tech in Electrical Engineering

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

Sl. No.	Broad Category	Course Category	Course Type	Course Code	Course Name	Contact Hours/Week				Credits
						L	T	P	Total	
A. Theory										
1	ENGG	Major	PC	EE-301	Network Theory	3	0	0	3	3
2	ENGG	Major	PC	EE-302	Electromagnetic Field Theory	3	0	0	3	3
3	ENGG	Minor	PC	EE-303	Digital Electronics	3	0	0	3	3
4	ENGG	Minor	PC	EE-304	Data Structures & Algorithm	3	0	0	3	3
5	SC	Multidisciplinary	BS	EE-305	Advanced Engineering Mathematics	3	0	0	3	3
6	HUM	Value Added Courses	HM	EE-306	Values and Ethics in Profession	2	0	0	2	2
7	ENGG	Value Added Courses	ES	EE-307	Biology for Engineers	2	0	0	2	1
TOTAL Theory						19	0	0	19	**18**
B. Practical/Sessional										
1	ENGG	Major	PC	EE-391	Network Laboratory	0	0	2	2	1
2	ENGG	Minor	PC	EE-392	Digital Electronics Laboratory	0	0	2	2	1
3	ENGG	Minor	PC	EE-393	Data Structures & Algorithm Laboratory	0	0	2	2	1
4	ENGG	Minor	PC	EE-394	Python Programming Laboratory	0	0	2	2	1
TOTAL Practical/Sessional						0	0	8	8	**4**
Total of Semester						19	0	8	27	**22**

Programme Code: 016

Programme : B.Tech in Electrical Engineering

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

Sl. No.	Broad Category	Course Category	Course Type	Course Code	Course Name	Contact Hours/Week				Credits
						L	T	P	Total	
A					**A. Theory**					
1	ENGG	Major	PC	EE-401	Electrical Machines-I	3	0	0	3	3
2	ENGG	Major	PC	EE-402	Electrical and Electronic Measurements	3	0	0	3	3
3	ENGG	Minor	PC	EE-403	Analog Electronics	3	0	0	3	3
4	ENGG	Minor	PC	EE-404	Microprocessor and Microcontroller	3	0	0	3	3
5	ENGG	Minor	PC	EE-405	Power Plant Engineering	3	0	0	3	3
6	ENGG	Minor	PC	EE-406	Object Oriented Programming	3	0	0	3	3
7	HUM	Value Added Courses	HM	EE-407	Indian Constitution	2	0	0	2	1
				TOTAL Theory		20	0	0	20	**19**
					B. Practical/Sessional					
1	ENGG	Major	PC	EE-491	Electrical Machines-I Laboratory	0	0	2	2	1
2	ENGG	Major	PC	EE-492	Electrical and Electronic Measurements Laboratory	0	0	2	2	1
3	ENGG	Minor	PC	EE-493	Analog Electronics Laboratory	0	0	2	2	1
4	ENGG	Minor	PC	EE-494	Microprocessor and Microcontroller Laboratory	0	0	2	2	1
5	ENGG	Minor	PC	EE-495	Object Oriented Programming using Java Laboratory	0	0	2	2	1
			TOTAL Practical/Sessional			0	0	10	10	**5**
			Total of Semester			20	0	10	30	**24**

Programme Code: 016

Programme   : B.Tech in Electrical Engineering

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

Sl. No.	Broad Category	Course Category	Course Type	Course Code	Course Name	Contact Hours/Week				Credits
						L	T	P	Total	
					A. Theory					
1	ENGG	Major	PC	EE-501	Electrical Machines-II	3	0	0	3	3
2	ENGG	Major	PC	EE-502	Power System-I	3	0	0	3	3
3	ENGG	Major	PC	EE-503	Control System	3	0	0	3	3
4	ENGG	Major	PC	EE-504	Power Electronics	3	0	0	3	3
5	ENGG	Minor	PC	EE-505	Embedded Systems	3	0	0	3	3
6	ENGG	Minor	PC	EE-506	Artificial Intelligence & Machine Learning	3	0	0	3	3
				TOTAL Theory		18	0	0	18	**18**
					B. Practical/Sessional					
1	ENGG	Major	PC	EE-591	Electrical Machines-II Laboratory	0	0	2	2	1
2	ENGG	Major	PC	EE-592	Power System-I Laboratory	0	0	2	2	1
3	ENGG	Major	PC	EE-593	Control System Laboratory	0	0	2	2	1
4	ENGG	Major	PC	EE-594	Power Electronics Laboratory	0	0	2	2	1
5	ENGG	Minor	PC	EE-595	Embedded Systems Laboratory	0	0	2	2	1
6	ENGG	Minor	PC	EE-596	Artificial Intelligence & Machine Learning using Python Laboratory	0	0	2	2	1
			TOTAL Practical/Sessional			0	0	12	12	**6**
			Total of Semester			18	0	12	30	**24**

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Programme : B.Tech in Electrical Engineering

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

Sl. No.	Broad Category	Course Category	Course Type	Course Code	Course Name	Contact Hours/Week				Credits
						L	T	P	Total	
A. Theory										
1	ENGG	Major	PC	EE-601	Power System-II	3	0	0	3	3
2	ENGG	Major	PC	EE-602	Electric Drives	3	0	0	3	3
3	ENGG	Major	PC	EE-603	Non-linear Control and Industrial Automation	3	0	0	3	3
4	ENGG	Minor	PC	EE-604	VLSI and Microelectronics	3	0	0	3	3
5	ENGG	Minor	PC	EE-605	Digital Signal Processing	3	0	0	3	3
6	HUM	Ability Enhancement Courses	HM	EE-606	Design, Technology and Innovation	2	0	0	2	1
7	ENGG	Major	PE	EE-607	Power Quality & FACTS	3	0	0	3	3
				EE-608	Utilization of Electric Power					
				EE-609	Non-Conventional Energy					
				EE-610	Power Generation Economics					
TOTAL Theory						20	0	0	20	**19**
B. Practical/Sessional										
1	ENGG	Major	PC	EE-691	Power System-II Laboratory	0	0	2	2	1
2	ENGG	Major	PC	EE-692	Electric Drives Laboratory	0	0	2	2	1
3	ENGG	Major	PC	EE-693	Nonlinear Control and Industrial Automation Laboratory	0	0	2	2	1
4	ENGG	Minor	PC	EE-694	VLSI and Microelectronics Laboratory	0	0	2	2	1
5	ENGG	Minor	PC	EE-695	Digital Signal Processing Laboratory	0	0	2	2	1
6	ENGG	Skill Enhancement Courses	PC	EE-696	Modeling, Design and Simulation Laboratory	0	0	2	2	1
TOTAL Practical/Sessional						0	0	12	12	**6**
TOTAL of Semester						20	0	12	32	**25**

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Programme : B.Tech in Electrical Engineering

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

Sl. No.	Broad Category	Course Category	Course Type	Course Code	Course Name	Contact Hours/Week				Credits
						L	T	P	Total	
A. Theory										
1	ENGG	Major	PC	EE-701	Electric and Hybrid Vehicles	3	0	0	3	3
2	HUM	Ability Enhancement Courses	HM	EE-702	Principles of Management	2	0	0	2	2
3	ENGG	Major	PE	EE-703	High Voltage Engineering	3	0	0	3	3
				EE-704	Energy Management, Auditing & Safety					
				EE-705	Smart Grid Technology					
				EE-706	HVDC Transmission					
4	ENGG	Multidisciplinary	OE	EE-713	Optimization Techniques	2	0	0	2	2
				EE-714	Digital Image Processing					
				EE-715	Database Management Systems					
				EE-716	Big Data Analytics					
5	ENGG	Multidisciplinary	OE	EE-723	Internet of Things	2	0	0	2	2
				EE-724	Block Chain Technology					
				EE-725	Cloud Computing					
				EE-726	Digital Twin Technology					
TOTAL Theory						12	0	0	12	**12**
B. Practical/Sessional										
1	PROJ	Internship*	PC	EE-781	Seminar on Vocational Training/Internship - I	0	0	0	0	1
2	PROJ	Project	PC	EE-782	Major Project - I	0	0	4	4	2
3	ENGG	Major	PC	EE-791	Electric and Hybrid Vehicles Laboratory	0	0	2	2	1

4	ENGG	Skill Enhancement Courses	PC	EE-792	Android App Development Laboratory	0	0	2	2	1
TOTAL Practical/Sessional						0	0	8	8	**5**
TOTAL of Semester						12	0	8	20	**17**

* Students have to complete Internship/Vocational Training to earn Credit point subjected to appearance in the Seminar and submission of Certificate(s).

Programme Code: 016

Programme   : B.Tech in Electrical Engineering

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

Sl. No.	Broad Category	Course Category	Course Type	Course Code	Course Name	Contact Hours/Week				Credits
						L	T	P	Total	
A. Practical/Sessional										
1	PROJ	Internship*	PC	EE-881	Seminar on Vocational Training/Internship - II	0	0	0	0	1
2	PROJ	Project	PC	EE-882	Major Project - II	0	0	16	16	8
3	ENGG	Major	PC	EE-883	Grand Viva	0	0	0	0	2
TOTAL of Semester						0	0	16	16	11

* Students have to complete Internship/Vocational Training to earn Credit point subjected to appearance in the Seminar and submission of Certificate(s)