

**COURSE STRUCTURE AND SYLLABUS
FOR
B.TECH DEGREE
IN
ELECTRICAL ENGINEERING
(MAJOR IN E-VEHICLE)
2025 Batch**



**RAJIV GANDHI INSTITUTE OF PETROLEUM TECHNOLOGY JAIS, AMETHI
(RGPT JAIS, AMETHI)**

Credit Distribution for B. Tech-EV 2025 Batch

Category	Range	Proposed
Humanities and Social Science (HU)	22	17
Science (IS)	70-90	79
Institute Engineering (IE)	40-70	48
Engineering Drawing, Workshop (EP)	18-24	15
Language & Management (LM)	18-24	20
Departmental Core (DC)	145-190	159
Departmental Elective (DE)	30-75	36
Open Elective (OE)	15-20	18
Project/Industrial Visit (DP)	20-50	50
Total Credits	440-490	442

Course Structure

(B. Tech. in Electrical Engineering: Major in E-Vehicle)

2025 Batch Onwards

First Year Odd Semester

Course Code	Course/Subject	L	T	P	Cr
PY111	Classical Physics (IS)	3	1	0	11
CY121	Inorganic & Physical Chemistry (IS)	3	1	0	11
MA111	Real Analysis & Calculus (IS)	3	1	0	11
ECE102	Fundamentals of Electronics Engineering (IE)	3	1	0	11
EEV101	Electrical Engineering Work Practices (EP)	1	0	2	5
ME131	Workshop Practices (EP)	0	0	3	3
ECE102L	Fundamentals of Electronics Engineering Lab (IE)	0	0	2	2
PY111L	Physics Lab (IS)	0	0	2/2	1
CY111L	Chemistry Lab (IS)	0	0	2/2	1
Total Credits					56
LM101	Basic English* (L)	1	2	0	7

*Basic English course to be taken by a student on a recommendation after Diagnostic Test.

First Year Even Semester

Course Code	Course/Subject	L	T	P	Cr
PY121	Modern Physics (IS)	2	1	0	8
MA121	Differential Equations (IS)	3	1	0	11
CS101	Computer Programming (IE)	3	1	0	11
CS101L	Computer Programming Lab (IE)	0	0	2	2
CH161	Engineering Thermodynamics (IE)	3	1	0	11
EEV103	Electrical Circuits -I (IE)	3	1	0	11
ME121	Engineering Visualization (EP)	0	1	3	5
PY121L	Physics Lab (IS)	0	0	2/2	1
Total Credits					60
HU102	Community Internship	1	1	0	5

Summer Term

Course/Subject	L	T	P	Cr
Industrial Training/Summer Project (DP) (2 Weeks)	0	0	14	2

Second Year Odd Semester

Course Code	Course/Subject	L	T	P	Cr
MA211	Linear Algebra and Complex Analysis (IS)	2	1	0	8
ECE213	Electromagnetic Fields Theory (DC)	3	1	0	11
EEV221	Fundamentals of Power Electronics (DC)	3	0	2	11
ECE221	Digital Circuits and Systems (DC)	3	1	0	11
EEV203	Electrical Circuits – II (DC)	3	1	0	11
EEV231	Linear Control Systems (DC)	3	0	2/2	10
	Total Credits				62

Second Year Even Semester

Course Code	Course/Subject	L	T	P	Cr
MA231	Statistical Methods and Data Analysis (IS)	2	1	0	8
MA141	Numerical Methods (IS)	2	1	0	8
ECE232	Analog Circuits and Systems (DC)	3	1	0	11
PC101	Professional Communications (L)	2	1	0	8
EEV211	Electrical Machine – I (DC)	3	1	2/2	12
ECE211	Signals and Systems (DC)	3	1	0	11
EEV201	Circuit Design and Simulation Lab (DC)	0	0	2	2
	Total Credits				60

Summer Term

Course/Subject	L	T	P	Cr
Industrial Training/Summer Project (DP) (4 Weeks)	0	0	11	3

Third Year Odd Semester

Course Code	Course/Subject	L	T	P	Cr
EEV311	Electrical Machine – II (DC)	3	0	2	11
EEV321	Static Power Converters and Applications (DC)	3	0	2	11
EEV341	Power Systems - I (DC)	3	0	0	9
EEV333	Digital Control	3	0	0	9
	Department Elective – 1 (DE)	3	0	0	9
	Total Credits				49

Departmental Elective – 1 (DE – 1)	
EEV352	Architecture of Electric and Hybrid Vehicles
EEV323	Modelling and Control of Power Converters
ECE312	Digital Signal Processing
ECE328	Linear Integrated Circuits Design
EEV331	Sensors and Actuators
ECE311	Communication Engineering - I
ECE326	Embedded Systems and IOT
EEV351	Fundamentals of Electric Vehicles (DC)

Third Year Even Semester

Course Code	Course/Subject	L	T	P	Cr
EEV312	Electric Drives (DC)	3	0	2	11
EEV443	Power Systems – II (DC)	3	0	0	9
ECE323	Instrumentation and Measurements (DC)	3	0	0	9
	Department Elective – 2 (DE)	3	0	0	9
	Department Elective – 3 (DE)	3	0	0	9
	Total Credits				47

Departmental Elective – 2 (DE – 2) and (DE – 3)	
EEV301	Vehicular Communication Systems and Networks
EEV353	Modelling and Simulation of Electric Vehicles

EEV356	Embedded System (ECU) for E-Vehicles
EEV357	Intelligent Transport System
EEV332	Modern Control Systems
ECE319	Video and Image Processing
CH451	Electrochemical Process and Energy Systems
EEV451	EV Batteries and Battery Management System
ME532	Automotive Safety
EEV412	Electrical Machine Design
EEV442	Power Quality
EEV358	Flexible AC Transmission System
EEV324	Control Techniques in Power Electronics
EEV441	Power System Protection and Switchgear
EEV431	Nonlinear Dynamical Systems
ECE341	Biomedical Signal Processing
EEV359	Modelling of Electrical Machines
EEV360	Dynamic Analysis of Electrical Machines
EEV432	Optimal and Adaptive Control
EEV445	Smart Grid Technology

Summer Term

Course/Subject	L	T	P	Cr
Industrial Training/Summer Project (DP) (6 Weeks)	0	0	12	5

Fourth Year Odd Semester

Course Code	Course/Subject	L	T	P	Cr
	Department Elective – 4 (DE)	3	0	0	9
HU331	Organizational Psychology (HU)	2	0	0	6
MT5100	Principle of Economics (M)	2	0	0	6
	Open Elective – 1 (OE)	3	0	0	9
	Employability Skills and Industry Readiness (EP)	0	0	2	2
	Total Credits				32

Departmental Elective – 4 (DE – 4)	
EE541	Electrical Architecture of Electric and Hybrid Vehicles
EEV455	Standards, Testing and Certification of Electric & Hybrid Vehicles
EEV456	Vehicle Safety Systems
EEV457	EV Charging Technology
EE502	Hydrogen and Fuel Cell Technology for Electric and Hybrid Vehicles
EEV445	Smart Grid Technology
EV562	Autonomous Vehicle Technology
EEV451	EV Batteries and Battery Management System
EE522	Plug In Electric Vehicle
EEV444	Modelling and Simulation of Power System
EEV446	Distributed Energy Resources
ME532	Automotive Safety
EE531	Modelling and Control of Power Electronics Converters and Drives
EEV532	IoT in E-Vehicle Applications

Fourth Year Even Semester

Course Code	Course/Subject	L	T	P	Cr
EEV420	B.Tech. Project (Internal/External) (DP)	0	0	40	40
	Open Elective- 2 (OE)	3	0	0	9
MT5405	Foundations of Management (M)	2	0	0	6
HU313	Sociology of Industry & Work Culture (HU)	2	0	0	6
	Total Credits				61