



मौलाना आज़ाद राष्ट्रीय प्रौद्योगिकी संस्थान, भोपाल-462003
MAULANA AZAD NATIONAL INSTITUTE OF TECHNOLOGY BHOPAL – 462003
B.Tech. Scheme of Study (Branch: Energy and Electric Vehicles Engineering)
Session 2025-26 Onwards

I Semester

| Section A,B,C,D & E | | | | | | Section F, G, H, I & J | | | | | | |
|---------------------|---------------------------------------------|------------------|---|---|---------|----------------------------|---------------------------------------------------------------|------------------|---|---|---------|----|
| Code | Course Name | Periods per week | | | Credits | Code | Course Name | Periods per week | | | Credits | |
| | | L | T | P | | | | L | T | P | | |
| MC1101 | Mathematics 1 | 3 | 1 | - | 4 | MC1101 | Mathematics 1 | 3 | 1 | - | 4 | |
| PY1102 | Physics | 3 | - | - | 3 | CY1107 | Engineering Chemistry | 3 | - | - | 3 | |
| CE1103 | Engineering Mechanics | 2 | 1 | - | 3 | EE1108 | Basic Electrical & Electronics Engineering | 2 | 1 | - | 3 | |
| ME1104 | Engineering Graphics | 1 | - | - | 1 | ME1109 | Manufacturing Science | 1 | - | - | 1 | |
| CS1105 | Computer Programming & Problem Solving | 2 | - | - | 2 | CY1110 | Environmental Science | 2 | - | - | 2 | |
| HS1106 | Communication Skill | 1 | - | - | 1 | BS1111 | Biology for Engineers | 2 | - | - | 2 | |
| CE1121 | Engineering Mechanics Laboratory | - | - | 2 | 1 | HS1112 | Indian knowledge Systems and Cognitive Well being | - | 2 | - | 2 | |
| PY1122 | Physics Laboratory | - | - | 2 | 1 | EE1125 | Basic Electrical & Electronics Engineering Laboratory | - | - | 2 | 1 | |
| ME1123 | Engineering Graphics Laboratory | - | - | 2 | 1 | CY1126 | Engineering Chemistry Laboratory | - | - | 2 | 1 | |
| CS1124 | Computer Programming Laboratory | - | - | 2 | 1 | ME1127 | Manufacturing Science Laboratory | - | - | 2 | 1 | |
| HS1128 | Language Laboratory | - | - | 2 | 1 | SA1143 or SA1144 or SA1145 | NSS or Yoga or Universal Human Values and Professional Ethics | - | - | 2 | 1 | |
| SA1141 or SA1142 | Life Skill Management or Physical Education | - | - | 2 | 1 | | | 1 | 3 | 4 | 8 | 21 |
| | | 1 | 2 | 1 | 20 | | | 1 | 1 | - | 2 | |
| NC115* | National Cadet Corps I | 1 | 1 | - | 2 | NC115* | National Cadet Corps I | 1 | 1 | - | 2 | |

*Not to be counted in SGPA/ CGPA calculations

Handwritten signatures and names: Anshu, Rishabh, and others.

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II Semester

Section A,B,C,D & E

Section F, G, H, I & J

| Code | Course Name | Periods per week | | | Credits | Code | Course Name | Periods per week | | | Credits |
|----------------------------|---------------------------------------------------------------|------------------|----------|----------|-----------|--------|----------------------------------------|------------------|----------|-----------|-----------|
| | | L | T | P | | | | L | T | P | |
| MC1201 | Mathematics II | 3 | 1 | - | 4 | MC1201 | Mathematics II | 3 | 1 | - | 4 |
| CY1207 | Engineering Chemistry | 3 | - | - | 3 | PY1202 | Physics | 3 | - | - | 3 |
| EE1208 | Basic Electrical & Electronics Engineering | 2 | 1 | - | 3 | CE1203 | Engineering Mechanics | 2 | 1 | - | 3 |
| ME1209 | Manufacturing Science | 1 | - | - | 1 | ME1204 | Engineering Graphics | 1 | - | - | 1 |
| CY1210 | Environmental Science | 2 | - | - | 2 | CS1205 | Computer Programming & Problem Solving | 2 | - | - | 1 |
| BS1211 | Biology for Engineers | 2 | - | - | 2 | HS1206 | Communication Skill | 1 | - | - | 1 |
| HS1212 | Indian knowledge Systems and Cognitive Well being | - | 2 | - | 2 | CE1221 | Engineering Mechanics Laboratory | - | - | 2 | 1 |
| EE1225 | Basic Electrical & Electronics Engineering Laboratory | - | - | 2 | 1 | PY1222 | Physics Laboratory | - | - | 2 | 1 |
| CY1226 | Engineering Chemistry Laboratory | - | - | 2 | 1 | ME1223 | Engineering Graphics Laboratory | - | - | 2 | 1 |
| ME1227 | Manufacturing Science Laboratory | - | - | 2 | 1 | CS1224 | Computer Programming Laboratory | - | - | 2 | 1 |
| SA1243 or SA1244 or SA1245 | NSS or Yoga or Universal Human Values and Professional Ethics | - | - | 2 | 1 | HS1228 | Language Laboratory | - | - | 2 | 1 |
| | | 13 | 4 | 8 | 21 | | | 12 | 2 | 12 | 20 |
| NC125* | National Cadet Corps I | 1 | 1 | - | 2 | NC125* | National Cadet Corps I | 1 | 1 | - | 2 |

*Not to be counted in SGPA/ CGPA calculations

First Year

| Total Credits | Lecture | Tutorial | Practical | Hours |
|---------------|---------|----------|-----------|-------|
| 41 | 25 | 6 | 20 | 41 |

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B. Tech. III Semester

| Course Number | Subject | Scheme of Studies Periods per week | | | Credits |
|------------------------------------------------|-------------------------------------|---------------------------------------|---|---|---------|
| | | L | T | P | |
| MCMT2001 | Applied Numerical Methods | 3 | 1 | - | 4 |
| HS2001 | Fundamental of Entrepreneurship | 3 | - | - | 3 |
| ENEV2101 | Electrical Machines | 3 | - | - | 3 |
| ENEV2102 | Alternate Energy Sources | 3 | - | - | 3 |
| ENEV2103 | Engineering Measurements and Safety | 3 | - | - | 3 |
| ME2104 | Mechanism of Machines | 3 | - | - | 3 |
| ENEV2106 | Measurement and Safety Lab | - | - | 2 | 1 |
| ENEV2107 | Electrical Machines Lab | - | - | 2 | 1 |
| ENEV2108 | Alternate Energy Lab-I | - | - | 2 | 1 |
| ENEV2109 | Professional Practices | - | 2 | - | 2 |
| Total Hours = 27 | | 18 | 3 | 6 | 24 |
| Total Credits (Cumulative) | | | | | 65 |
| Additional Subject: National Cadet Corps (NCC) | | | | | |
| NC 2151 | National Cadet Corps III | 1 | 5 | 1 | 7 |
| Total Credits (Cumulative) | | | | | 11 |
| ENEV2102 | Alternate Energy Sources | 3 | - | - | 3 |

B. Tech. IV Semester

| Course Number | Subject | Scheme of Studies Periods per week | | | Credits |
|------------------------------------------------|---------------------------------------|---------------------------------------|---|---|---------|
| | | L | T | P | |
| CS2001 | Data Structure and Algorithm | 2 | 1 | - | 3 |
| ENEV2201 | Automobile Engineering | 3 | - | - | 3 |
| EE 2203 | Electronic Devices and Circuits | 3 | - | - | 3 |
| CE 2210 | Fluid Mechanics | 3 | - | - | 3 |
| ENEV2204 | Battery Design and Management Systems | 3 | 1 | - | 4 |
| ENEV2205 | Engineering Thermodynamics | 3 | - | - | 3 |
| CE2211 | Fluid Mechanics Lab | - | - | 2 | 1 |
| ENEV2206 | Battery Design & Simulation Lab | - | - | 2 | 1 |
| ENEV2207 | Battery Management System Lab | - | - | 2 | 1 |
| Total Hours = 25 | | 17 | 2 | 6 | 22 |
| Total Credits (Cumulative) | | | | | 87 |
| Additional Subject: National Cadet Corps (NCC) | | | | | |
| NC2251 | National Cadet Corps IV | 2 | - | 1 | 3 |
| Total Credits (Cumulative) | | | | | 14 |
| ENEV2204 | Battery Design and Management Systems | 3 | 1 | - | 4 |

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B. Tech. V Semester

| Course Number | Subject | Scheme of Studies Periods per week | | | Credits |
|-------------------------------------------------------|--------------------------------------|------------------------------------|----------|----------|------------|
| | | L | T | P | |
| ENEV3101 | Engineering Operation Management | 3 | - | - | 3 |
| EE3102 | Power Electronics | 3 | - | - | 3 |
| EE3103 | Linear Control Systems | 3 | - | - | 3 |
| EEEEV3104 | EV Charger Development and Testing | 3 | 1 | - | 4 |
| ENEV3105 | Heat Transfer | 3 | - | - | 3 |
| ENEV3151-59 | Departmental Elective-1(A) | 3 | - | - | 3 |
| EEEEV3106 | Power Controller Lab | - | - | 2 | 1 |
| ENEV3107 | Heat Transfer Lab | - | - | 2 | 1 |
| EEEEV3108 | EV Charger Development & Testing Lab | - | - | 2 | 1 |
| ENEV3109 | Internship/Industrial Training | - | - | 2 | 1 |
| Total Hours = 27 | | 18 | 1 | 8 | 23 |
| Total Credits (Cumulative) | | | | | 110 |
| Additional Subject: National Cadet Corps (NCC) | | | | | |
| NC3151 | National Cadet Corps V | 1 | 5 | 1 | 7 |
| Total Credits (Cumulative) | | | | | 21 |
| *Optional | [NPTEL/SWAYAM Courses only] | 3 | - | - | 3 |
| EEEEV3104 | EV Charger Development and Testing | 3 | 1 | - | 4 |

B. Tech. VI Semester

| Course Number | Subject | Scheme of Studies Periods per week | | | Credits |
|-------------------------------------------------------|------------------------------------|------------------------------------|----------|----------|------------|
| | | L | T | P | |
| MCEV3201 | Advanced Numerical Method | 3 | 1 | - | 4 |
| EEEEV3202 | Motor Design and Drive Development | 3 | 1 | - | 4 |
| ENEV3203 | Solar Energy | 3 | - | - | 3 |
| ENEV3204 | Energy Audit and Conservation | 3 | - | - | 3 |
| ENEV3251 - 3259 | Department Elective-2 (A) | 3 | - | - | 3 |
| EEEEV3205 | Motor Design and Simulation Lab | - | - | 2 | 1 |
| EEEEV3206 | Electric Vehicle Test Lab-I | - | - | 2 | 1 |
| ENEV3207 | Alternate Energy Lab-II | - | - | 2 | 1 |
| ENEV3208 | Project Based Lab | - | - | 2 | 1 |
| Total Hours = 25 | | 15 | 2 | 8 | 21 |
| Total Credits (Cumulative) | | | | | 131 |
| Additional Subject: National Cadet Corps (NCC) | | | | | |
| NC3251 | National Cadet Corps VI | 2 | - | 1 | 3 |
| Total Credits (Cumulative) | | | | | 24 |
| EEEEV3202 | Motor Design and Drive Development | 3 | 1 | - | 4 |

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B. Tech. VII Semester

| Course Number | Subject | Scheme of Studies Periods per week | | | Credits |
|----------------------------|---------------------------------------------------|------------------------------------|---|---|---------|
| | | L | T | P | |
| HS4101 | Engineering Economics & IPR | 3 | - | - | 3 |
| ENEV4102 | Electric Vehicle Modeling, Simulation and Testing | 3 | 1 | - | 4 |
| ENEV4151-4159 | Department Elective-3(A) | 3 | - | - | 3 |
| ENEV4161-4169 | Department Elective-4(A) | 3 | - | - | 3 |
| ENEV4181-4199 | Open Elective-1(C) | 3 | - | - | 3 |
| ENEV4103 | EV Simulation Lab | - | - | 2 | 1 |
| ENEV4104 | Electric Vehicle Test Lab-II | - | - | 2 | 1 |
| ENEV4105 | Project-1 | - | - | 2 | 1 |
| Total Hours = 23 | | 15 | 1 | 6 | 19 |
| Total Credits (Cumulative) | | | | | 150 |
| ENEV4102 | Electric Vehicle Modeling, Simulation and Testing | 3 | 1 | - | 4 |

B. Tech. VIII Semester

| Course Number | Subject | Scheme of Studies Periods per week | | | Credits |
|--------------------|----------------------------------------------------|------------------------------------|---|----|---------|
| | | L | T | P | |
| ENEV4251-4259 | Department Elective-5(A) (NPTEL/SWAYAM Courses) | 3 | - | - | 3 |
| ENEV4261-4269 | Department Elective-6(A) (NPTEL/SWAYAM Courses) | 3 | - | - | 3 |
| ENEV4201 | Project-2 | - | - | 16 | 8 |
| ENEV4202 | General Proficiency | - | - | - | 1 |
| Total Hours = 22 | | 6 | - | 16 | 15 |
| Cumulative Credits | | | | | 165 |

It May be earned by startup activity.

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| | Departmental Elective-1 (A) |
|----------|------------------------------------------------------|
| ENEV3151 | Green Hydrogen Technology, Systems, and Applications |
| ENEV3152 | Refrigeration and Air Conditioning |
| ENEV3153 | Wind Energy Systems |
| MMEV3154 | Energy Efficient Materials |

| | Department Elective-2 (A) |
|----------|--------------------------------------|
| ENEV3251 | Electric Power Systems |
| ENEV3252 | Microprocessors and Embedded Systems |
| ENEV3253 | Energy from Waste |
| ENEV3254 | Energy Storage Technologies |

| | Department Elective-3 (A) |
|----------|----------------------------------|
| ENEV4151 | Alternative Fuels |
| ENEV4152 | Decentralized Energy Systems |
| ENEV4153 | Utilization of Electrical Energy |
| ENEV4154 | Green Buildings |

| | Department Elective-4 (A) |
|----------|---------------------------|
| ENEV4161 | Mini Micro Hydro Systems |
| ENEV4162 | Energy and Environment |
| ENEV4163 | Integrated Energy Systems |
| ENEV4164 | Energy and EV Policy |

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| | Department Elective-5(A) [NPTEL/SWAYAM Courses only] |
|----------|-----------------------------------------------------------------|
| ENEV4251 | Nuclear Science & Engineering |
| ENEV4252 | Biomass Conversion and Biorefinery |
| ENEV4253 | Fundamentals of carbon capture, utilization and storage |
| ENEV4254 | Hydrogen Energy: Production, Storage, Transportation and Safety |
| ENEV4255 | Smart Grid: Basics to Advanced Technologies |

| | Department Elective-6(A) [NPTEL/SWAYAM Courses only] |
|----------|----------------------------------------------------------------------|
| ENEV4261 | Power plant system Engineering |
| ENEV4262 | Air pollution and control |
| ENEV4263 | Advanced Measurement Techniques in Fluid Mechanics and Heat Transfer |
| ENEV4264 | Artificial Intelligence: knowledge Representation and Reasoning |

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Table 1: Different category of course in B. Tech. Scheme of study Branch Energy and Electric Vehicles Engineering

| S. No. | Category | I& II Sem | III Sem | IV Sem | V Sem | VI Sem | VII Sem | VIII Sem | Credit Breakup | Credit (%) |
|--------|--------------------------------------------------------------------------------------------------------|-----------|---------|--------|-------|--------|---------|----------|----------------|------------|
| 1 | Humanities and Social Sciences including Management courses | 5 | 3 | | | | 3 | | 11 | 6.67 |
| 2 | Basic Science courses | 14 | 4 | | | 4 | | | 22 | 13.33 |
| 3 | Engineering Science courses including workshop, drawing, basics of electrical/mechanical/computer etc. | 14 | 3 | 9 | 10 | 4 | | | 40 | 24.24 |
| 4 | Professional core courses | 9 | 10 | | 6 | 6 | 4 | | 35 | 21.21 |
| 5 | Departmental Electives Courses relevant to chosen specialization / branch | | | | 3 | 3 | 6 | 6 | 18 | 10.9 |
| 6 | Open subjects – Electives from other technical and /or emerging subjects | | | | | | 3 | | 3 | 1.81 |
| 7 | Project work, seminar and internship in industry or elsewhere | | | | 1 | 1 | 1 | 8 | 11 | 6.67 |
| 8 | Laboratory Courses | 8 | 5 | 3 | 3 | 3 | 2 | 1 | 25 | 15.15 |
| | | 41 | 24 | 22 | 23 | 21 | 19 | 15 | 165 | |
| NCC | | 0 | 7 | 3 | 7 | 3 | 0 | 0 | | |

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• CL Should be replaced by respective Branch code

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