# GUJARAT TECHNOLOGICAL UNIVERSITY

**Program Name: BE-Minor/Hons.**

**Level : UG**

**Branch: Electric Vehicles**

**Course / Subject Code : BE07IAA011**

**Course / Subject Name : Working on various Electric and Hybrid Vehicles**

| | |
|---|---|
| **w. e. f. Academic Year:** | **A.Y. 2024-25** |
| **Semester:** | **7th** |
| **Category of the Course:** | **Core Course** |

| | |
|---|---|
| Prerequisite: | Introduction to Electric & Hybrid Vehicles. |
| Rationale: | The course content outlined has been designed to equip learners with the knowledge, skills, and practical experience necessary to work safely and effectively in an automotive repair and maintenance setting. The course covers a range of topics, from safe working practices to troubleshooting procedures, ensuring that learners are equipped with a broad set of skills and knowledge to succeed in the industry. |

**Course Outcome:**

| Sr. No. | CO Statement | Topics Mapped | % weightage |
|---|---|---|---|
| CO-1 | Understand the systems and sub-systems of a two-wheeler electric vehicle. | 1 | 5% |
| CO-2 | Perform the dismantling and assembly of a two-wheeler electric vehicle. | 1 | 10% |
| CO-3 | Understand the systems and sub-systems of a three-wheeler electric vehicle. | 2 | 5% |
| CO-4 | Perform the dismantling and assembly of a three-wheeler electric vehicle. | 2 | 15% |
| CO-5 | Understand the systems and sub-systems of a four-wheeler electric vehicle. | 3 | 5% |
| CO-6 | Perform various sorts of practicals on a four-wheeler electric vehicle. | 3 | 15% |
| CO-7 | Understand the systems and sub-systems of a four-wheeler hybrid vehicle. | 3 | 5% |
| CO-8 | Perform various sorts of practicals on a four-wheeler hybrid vehicle. | 3 | 20% |
| CO-9 | Understand the working of an On-Board Diagnostic Tool and usage of the same to identify the faults in an electric and hybrid vehicle. | 4 | 10% |
| CO-10 | Troubleshoot various problems occurring in an electric and hybrid vehicle by identifying the fault codes using diagnostic tool. | 4 | 10% |

**Revised Bloom's Taxonomy (RBT)*

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**Teaching and Examination Scheme:**

| Teaching Scheme (in Hours) | | | Total Credits L+T+ (PR/2) | Assessment Pattern and Marks | | | | Total Marks |
|---|---|---|---|---|---|---|---|---|
| | | | | Theory | | Tutorial / Practical | | |
| L | T | PR | C | ESE (E) | PA / CA (M) | PA/CA (I) | ESE (V) | |
| 2 | 0 | 6 | 5 | 100 | 0 | 0 | 0 | 100 |

**Course Content:**

| Unit No. | Content | No. of Hours | % of Weightage |
|---|---|---|---|
| | | | |
| 1 | **Working on a Two-Wheeler Electric Vehicle** Design of two-wheeler EV, brief on systems, subsystems, hands-on exposure in dismantling and assembling two-wheeler EVs. | 25 | 21 |
| 2 | **Working on a Three-Wheeler Electric Vehicle** Design of three-wheeler EV, brief on systems, subsystems, hands-on exposure in dismantling and assembling three-wheeler EV. | 35 | 29 |
| 3 | **Working on a Four-Wheeler Electric and Hybrid Vehicle** Design of four-wheeler EV and HV, brief on systems, subsystems, hands-on exposure to four-wheeler EV and HV. | 35 | 29 |
| 4 | **Diagnostics & Troubleshooting of an Electric Vehicle** Use the On-Board Diagnostic (OBD) Tool to identify faults in an electric and hybrid vehicle. Troubleshoot the faults occurring in an electric and hybrid vehicle. | 25 | 21 |
| | Total | 120 | 100 |

**Suggested Specification table (Theory):**

| Distribution of Theory Marks (%) | | | | | |
|---|---|---|---|---|---|
| **R Level** | **U Level** | **A Level** | **N Level** | **E Level** | **C Level** |
| **10** | **20** | **10** | **20** | **20** | **20** |

**Legends**: R: Remembrance; U: Understanding; A: Application, N: Analyze E: Evaluate and C: Create and above Levels (Revised Bloom's Taxonomy)

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