**ROAD SAFETY**

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| **Course Code** | **18CV563** | **Credits** | **03** |
| **Course type** | **OE** | **CIE Marks** | **50** |
| **Hours/week: L-T-P** | **3-0-0** | **SEE Marks** | **50** |
| **Total Hours:** | **40** | **SEE Duration** | **03 Hours for 100 Marks** |

**Course Learning Objectives (CLO’s)**

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| **1.** | To acquire knowledge and understanding of the road environment. |
| **2.** | To inculcate decision making and behavioural skills necessary to survive in the road environment. |
| **3.** | To impart knowledge and understanding of the causes and consequences of accidents. |
| **4.** | To understand the roles and responsibilities in ensuring road safety. |

**Pre-requisites:**

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| **1.** | Professional Ethics and Human Values. |

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| **UNIT I** | **08 Hours** |
| **Introduction:** Importance of Transportation Engineering- Jayakar Committee Recommendations & Implementations- Road Alignment & factors Affecting the Road Alignment- Road classification. Importance and Factors Controlling the Design of Geometric Elements- Highway Cross Sectional Elements-Camber, Width of Carriage Way, Shoulder Width, Formation Width, Right of Way, Typical Cross Sections of the Roads -Pavement Surface Characteristics- Types of Pavements.  Introduction to Road Safety: Road traffic accidents scenario in India and in the world. Road Safety and its importance. Traffic Rules and Driving Behaviour. Characteristics of accidents, accidents vs. crashes.  Specifications for Road Humps. | |
| **Self-Learning Topics:** NIL | |
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| **UNIT II** | **08 Hours** |
| **Management of Traffic and Traffic Rules:** Vehicle and Human Characteristics, PIEV Theory, Traffic characteristics, vehicular characteristics, Traffic regulation and control (Traffic signals, Traffic signs and Road Markings), Pedestrian Facilities (zebra crossings, bus stops, use of road by physically disadvantaged persons, elderly persons, women and children)  **Salient features of Motor Vehicles Act, 1988 and 2019 amendment.** (Registration and Licensing Authorities in India: Their powers and duties, Legal requirements to be met for driving various classes of vehicles. classification of traffic offences. Penalties and appeals) | |
| **Self-Learning Topics:** NIL | |
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| **UNIT III** | **08 Hours** |
| **Accidents studies and Analysis**  Importance of accident studies, causes, accident studies and records, Accident investigation, Road and its effect on accidents, parking and its influence on accidents.  Collection of Accident Data, requirement of accident records, Traffic management measures and their influence on accident prevention, cost of road accidents.  **Management of Road Mishaps and Accidents:** First aid to accident victims- First aid techniques, coordination with hospitals and other health centres for emergency treatment of accident victims, role of Insurance companies in providing relief to accident victims, Management of Ambulance Services, Importance of voluntary blood donation in saving accident victims, Rehabilitation of persons affected by accidents. | |
| **Self-Learning Topics:** NIL | |
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| **UNIT IV** | **10 Hours** |
| **Traffic regulations** and **Management of road Safety**  Regulation of Speed, vehicles, regulation concerning driver and traffic  Promotion of Road Safety in India: Coordination between various local and Government Authorities for better management of road safety, compulsory safety training for drivers of all classes of vehicles. widening and improvement of quality of roads in India, role of NGOs, media and voluntary organizations in promoting road safety.  **Management of Road Safety:** Meaning and interpretation of various road signs, management of speed limits and enforcement of safety rules, fundamentals of vehicle maintenance for better safety on the road. Vehicle parking rules, overtaking rules, stringent penalties for repeated violations, participation of the public in ensuring safe driving conditions on the road, prevention of driving under the influence of alcohol, drugs and intoxicants. counselling and its role in accident prevention. | |
| **Self-Learning Topics:** NIL | |
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| **UNIT V** | **06 Hours** |
| **People responsible for accident prevention,** 4 E’s of Accidents Prevention, Celebration of Road Safety week or Workshop  **Road safety audit**  Road Safety Audits and Tools for Safety Management Systems, Road Safety Audit Process, Approach to Safety, Road Safety Improvement Strategies, ITS and Safety | |
| **Self-Learning Topics:** NIL | |

**Reference Books:**

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| **1** | Dr. S. K. Khanna, Dr. C. E. G. Justo and Dr. Veeraragavan, **“Highway Engineering”**, Nem Chand and Bros., Revised tenth edition,2015, Roorkee, India. |
| **2** | Dr. L. R. Kadiyali, **“Traffic Engineering & Transport Planning”**, Khanna Publishers, Seventh edition, 2007, New Delhi, India. |
| **3** | Indian Roads Congress, Highway Safety Code, IRC: SP-44:1996 |
| **4** | Indian Roads Congress, Road Safety Audit Manual, IRC: SP-88-2010 |
| **5** | Highway Safety Manual, 1st Edition, AASHTO |
| **6** | IRC 103-1988 Guidelines for Pedestrian facilities |

**Course Outcomes (COs)**

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|  | | **At the end of the course, students will be able to:** | | | **Bloom’s**  **Level** | |
| 1. | | Describe the importance of transportation and road safety. | | | **L2** | |
| 2. | | Explain the vehicle and human characteristics affecting road accidents. | | | **L2** | |
| 3. | | Outline the salient features of motor vehicle acts and Summarize accident studies and investigations. | | | **L2** | |
| 4. | | Make use of traffic regulations to manage road safety. | | | **L3** | |
| 5. | | Demonstrate the importance of a multidisciplinary approach to planning for traffic safety and rehabilitation. | | | **L2** | |
|  | **Program Outcome (POs)** | | | | | **PO No.** |
| 1. | Engineering Knowledge: Apply the knowledge of mathematics, science, engineering fundamentals and an engineering specialization to the solution of complex engineering problems. | | | | | **1** |
| 2. | The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice. | | | | | **6** |
| 3. | Individual and team work: Function effectively as an individual and as a member or leader in diverse teams, and in multidisciplinary settings. | | | | | **9** |
|  | **Course delivery methods** | |  | **Assessment methods** | | |
| 1. | Lecture and Board | | 1. | Assignments and Open Book Assignments | | |
| 2. | NPTEL/ Edusat | | 2. | Quizzes | | |
| 3. | PowerPoint Presentation | | 3. | Internal Assessment Tests | | |
| 4. | Videos | | 4. | Semester End Examination | | |

**CIE and SEE Pattern:**

**Scheme of Continuous Internal Evaluation (CIE):**

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| --- | --- | --- | --- | --- |
| Components | Addition of two IA tests | Average of two assignments | Quiz/Seminar/Course Project | Total Marks |
| Maximum marks: 50 | 15+15 = 30 | 10 | 10 | 50 |
| Writing two IA tests is compulsory.  Minimum marks required to qualify for SEE: 20 out of 50 marks | | | | |

**Semester End Examination (SEE):**

1. It will be conducted for 3 hours’ duration and 100 marks. It will be reduced to 50 marks for the calculation of SGPA and CGPA.
2. Minimum passing marks required to be scored in SEE: 40 out of 100 marks
3. Question paper will have 10 questions carrying 20 marks each. Students have to answer FIVE full questions selecting at least one full question from each unit.