

01TR0202: ROAD SAEFTY AUDIT
Objective of the Course:

Objectives of introducing this subject at first year level in Masters of civil engineering are:

1. To be aware of importance of road safety aspects and environmental impacts for commissioning the highway project.
2. To know about Road Safety Audit and EIA requirements/guidelines of World Bank and India for Highway projects.
3. To give the idea for mitigation measures for improving traffic safety and environment.

Credit Earned: 4

Students learning outcomes:

After successful completion of the course it is expected that student will be able to..

1. Identify the type of accidents and crash models.
2. Analyse the type of accidents as per IRC SP 88 2010.
3. Understand various traffic calming devices used for reducing accident rates.

Teaching and Examination Scheme

Teaching Scheme (Hours)			Credits	Theory Marks			Tutorial/ Practical Marks		Total Marks
Theory	Tutorial	Practical		ESE (E)	CSE (M)	Internal (I)	Viva (V)	Term Work (TW)	
3	2	0	4	50	20	30	25	25	150

Detailed Syllabus

Sr No.	Title of the unit	Number of hours
1	Introduction	12
	Road traffic accidents scenario in India, Characteristics of accidents,	4
	accidents vs. crash, land use and road environment for safety,	4
	Multidisciplinary approach to planning for traffic safety and injury control;	2
	pedestrian safety, road safety improvement strategies	2
2	Road Safety Audit and Analysis	12
	Vulnerable road users: crashes related to pedestrian and bicyclists, their safety, provision for disabled;	4
	identifying and prioritizing hazardous locations, condition and collision diagrams;	4
	Steps in treatment of crash locations, diagnosing crash problem and solutions, accident report form, storing of data, using and interpreting crash data,	4
3	Engineering Measures	8
	Speed humps, speed bumps, speed tables, speed cushions	4
	Community awareness and education	4
4	Energy related aspects of different transport technologies	10
	Traffic calming measures, road transport related air pollution	2
	Sources of air pollution, effects of weather condition, vehicular emission parameters, pollution standard, measurement and analysis of vehicular emission	3
	Urban and non urban traffic noise sources, noise pollution, technology vision-2020	5

Suggested lists of experiments

1. Collection of road accident data.
2. Accident analysis of collected data.
3. Collection of data regarding black spots on major highways including geometric details.
4. Analysis of black spots data and suggest mitigation measures.
5. Collection of air quality data (emission level) and noise level data on problematic spots of highway.
6. Analysis of collected data and suggest improvement measure

Suggested Theory Distribution

Civil Engineering (Transportation)

The suggested theory distribution as per Bloom's taxonomy is as per follows. This distribution serves as guidelines for teachers and students to achieve effective teaching-learning process

Distribution of Theory for course delivery and evaluation					
Remember	Understand	Apply	Analyze	Evaluate	Create
10%	15%	10%	35%	20%	10%

Instructional Method and Pedagogy:

1. Use of Learning Management system like canvas
2. Demonstration through ppt and videos and lectures
3. Brainstorming and group discussion sessions
4. Collaborative learning

Recommended Study Material:**Reference Book:**

1. Evans S.K., Traffic Engineering Handbook, Institute of Traffic Engineers, USA
2. Wohl M., Martin B.V., Traffic system analysis of Engineers & Planners, McGraw Hill, New York.
3. Babkov V.F., Road conditions & Traffic Safety, MIR Publishers, Moscow, 1975
4. Kadiyali L.R., Traffic Engineering & Transport Planning, Khanna Publishers, 2003
5. Little A.D., The state of art of Traffic Safety, Paraeger Publishers, New York, 1970
6. Relevant IRC codes,
7. Indian Roads Congress, Highway Safety Code, IRC: SP-44:1996
8. Indian Roads Congress, Road Safety Audit Manual, IRC:SP-88-2010
9. Limpert, Rudolf. Motor Vehicle Accident Reconstruction and Cause Analysis, 5th Edition, Lexas Publishing, Charlottesville, VA.
11. American Association of State Highway and Transportation Officials (AASHTO),
12. Highway Safety Manual, 1st Edition, AASHTO

Web Resources**Road Safety Audit NPTEL course:**

https://nptel.ac.in/courses/105101008/582_Accident/point20/point.html
