GUJARAT TECHNOLOGICAL UNIVERSITY, AHMEDABAD, GUJARAT

COURSE CURRICULUM
COURSE TITLE: BASIC TRAFFIC ENGINEERING
(Code: 3346001)

Diploma Programmes in which this course is offered	Semester in which offered
Transportation Engineering	4th Semester

1. RATIONALE

Knowledge and understanding of the basic concept of Traffic Engineering is highly essential for the engineers designing and executing the road laying projects in order to make road transport system safe and workable. At diploma level, students are expected to perform various traffic surveys, analyse data and interpret the results appropriately in order to apply their knowledge in designing good road transport systems.

2. COMPETENCY

The course content should be taught and curriculum should be implemented with the aim to develop required skills in the students so that they are able to acquire following competency:

- Determine the traffic requirements for road design after conducting the traffic surveys.

3. COURSE OUTCOMES

The theory should be taught and practical should be carried out in such a manner that students are able to acquire required learning out comes in cognitive, psychomotor and affective domain to demonstrate following course outcomes.

i. Explain functions of traffic engineers and road user characteristics
ii. Conduct different types of Traffic Surveys
iii. Explain the reasons of accidents and their preventive measures

4. TEACHING AND EXAMINATION SCHEME.

Teaching Scheme(In Hours)			Total Credits (L+T+P)	Examination Schedule				
				Theory Marks		Practical Marks		Total Marks
L	T	P	C	ESE	PA	ESE	PA	150
2	0	2	4	70	30	20	30	

Legends: L - Lecture; **T -** Tutorial/Teacher Guided Student Activity; **P -** Practical; **C -** Credit; **ESE** - End Semester Examination; **PA** - Progressive Assessment

5. COURSE DETAILS

Unit	Major Learning Outcomes (in cognitive domain)	Topic and Sub-topics
Unit-I **Traffic Engineering Administration, Basic Components and Their Characteristics**	1a. Discuss the functions of Traffic Engineer. 1b. Explain the road user characteristics 1c. Comprehend the Road user's behaviour and vehicular characteristics	1.1 Definition 1.2 Functions of Traffic Engineer 1.3 Organisation Of The Traffic Engineering Department 1.4 Road User Characteristics 1.5 Human Factors Governing Road User Behaviour 1.6 PIEV Time. 1.7 Vehicular Characteristics 1.8 Static Characteristics 1.9 Dynamic Characteristics
Unit-II **Traffic Flow Characteristics, Speed, Journey Time and Delay Survey**	2a. Explain flow Parameters and the Relations between Flow Parameters 2b. Describe various terms of speed, journey time and delay studies 2c. Conduct spot speed measurement	2.1 Definitions 2.2 Basic Flow Parameters 2.3 Relation Between Flow Parameters 2.4 Definitions and Use Of Speed, Journey Time And Delay Studies 2.5 Methods Of Measuring Spot Speed 2.6 Methods Of Measurement Of Running Speed And Journey Speed 2.7 Analysis And Presentation Of Data
Unit-III **Vehicle Volume Counts, Classification and Occupancy**	3a. Comprehend the need for vehicle volume counts, classification and occupancy. 3b. Conduct Traffic Volume Count Survey.	3.1 Need For Vehicle Volume Counts, Classification And Occupancy. 3.2 Methods Available For Traffic Count 3.2.1 Manual Count Method. 3.2.2 Combination Of Manual Count Method And Mechanical Method 3.2.3 Automatic Devices
Unit-IV **Origin And Destination Survey, Parking Survey**	4a. Conduct O-D survey 4b. Explain parking survey	4.1. Need For O.D. Survey. 4.2. O-D Survey Methods 4.3. Analysis And Presentation Of Data 4.4. Need For Parking Survey 4.5. Definitions 4.6. Types Of Parking Surveys

Unit-V **Road Accidents-Causes and Prevention**	5a. Explain the reasons of Accidents and their preventive measures	5.1 Accident reporting and recording 5.2 Causes of accidents 5.3 Purpose of accident study 5.4 Preventive measures for accidents

6. SUGGESTED SPECIFICATION TABLE WITH HOURS & MARKS (THEORY)

Unit No.	Unit Title	Teaching Hours	Distribution of Theory Marks			
			R Level	U Level	A Level	Total Marks
I	Traffic Engineering Administration and Its Functions. Basic Components And Their Characteristics	5	4	9	0	13
II	Traffic flow characteristic, Speed, Journey Time and Delay Survey	8	4	14	5	23
III	Vehicle Volume Counts, Classification and Occupancy	4	2	8	0	10
IV	Origin and Destination Survey Parking Survey	7	4	14	0	18
V	Road accidents-causes and prevention	4	0	6	0	6
Total		**28**	**14**	**51**	**5**	**70**

Legends: R = Remember; U = Understand; A = Apply and above levels (Bloom's revised taxonomy)

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

7. SUGGESTED LIST OF EXERCISES/PRACTICAL/EXPERIMENTS.

The practical/exercises should be properly designed and implemented with an attempt to develop different types of skills **(outcomes in psychomotor and affective domain)** so that students are able to acquire the competencies/programme outcomes. Following is the list of practical exercises for guidance.

Note: Here only outcomes in psychomotor domain are listed as practical/exercises. However, if these practical/exercises are completed appropriately, they would also lead to development of certain outcomes in affective domain which would in turn lead to development of **Course Outcomes** related to affective domain. Thus over all development of **Programme Outcomes (**as given in a common list at the beginning of curriculum document for this programme) would be assured.

Faculty should refer to that common list and should ensure that students also acquire outcomes in affective domain which are required for overall achievement of Programme Outcomes/Course Outcomes.

S. NO.	UNIT NO.	Practical/Exercise (Outcomes in psychomotor domain)	Apprx. Hrs. Required
1	I	Prepare a chart for traffic engineering administration department	2
2	I	Prepare a report of vehicular characteristics for a given situation.	2
3	II	Draw basic flow diagram showing relation between flow parameters	2
4	II	Perform Spot Speed Study: - Stop Watch method Perform Travel Time and Delay study: - License plate method - Interview method - Test car method	 4 6
5	III	Perform Traffic Volume Stud: - Classified volume counts - Intersection volume counts - Cordon volume counts	6
6	IV	Perform Origin & Destination survey - License plate method - Interview methods	4
7	IV	Perform Parking Study: - Space inventory - Parking interviews - Parking Usage study - Cordon counts	2
8	V	Perform Accident Study: - Accident Reporting - Accident Recording	2
Total Hrs			**30**

8. SUGGESTED LIST OF STUDENT ACTIVITIES

i. Undertake visit to nearby road and conduct traffic survey
ii. Collect data related to the road accidents and prepare report

9. SPECIAL INSTRUCTIONAL STRATEGIES (If Any)

i. Show video clips of nearby road with traffic movements and discuss the shortcomings in the road design
ii. Show picture clips of Road accidents and discuss the features of road system design which could have prevented such accidents.

10. SUGGESTED LEARNING RESOURCES

A. List of books

Sr. No	Title of Book	Author	Publication
1.	Traffic planning and design	S.C.Saxena	Dhanpatrai Publications
2.	Traffic Engineering; Theory and Practice	L.J.Pingnataro	L.J.Pingnataro

3.	Highway Capacity Manual	Transportation Research Board	Washington D.C
4.	Traffic system analysis for Engineering and planners	Wohl and Martin,	-
5.	Traffic Engineering and Transportation Planning	Dr. L. R. Kadiyali	Khanna Publishers

B. List of major equipment/instrument

---No equipments or Materials required------

C. List of software/learning websites

i. http://www.tecmagazine.com/
ii. http://en.wikipedia.org/wiki/Traffic_engineering_(transportation)

11. COURSE CURRICULUM DEVELOPMENT COMMITTEE

Faculty members from polytechnics

- **Prof. (Mrs.) S. B. Khara** , LCE, Government Polytechnic for Girls, Ahmedabad
- **Prof. (Mrs.) R. V. Bhatt,** LCE, Government Polytechnic for Girls, Ahmedabad
- **Prof. (Ms.) M. A. Milisia** , LCE, Government Polytechnic for Girls, Ahmedabad

Coordinator and Faculty Member from NITTTR Bhopal

- **Dr. Subrat Roy**, Professor, Department of Civil and Environmental Engineering
- **Dr J. P. Tegar,** Professor and Head**,** Department of Civil and Environmental Engineering