

**DEPARTMENT OF CIVIL ENGINEERING**  
**NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI**

COURSE PLAN – PART I			
Name of the programme and specialization	M.Tech. (Transportation Engineering and Management)		
Course Title	Traffic and Pavement Engineering Laboratory		
Course Code	CE609	No. of Credits	2
Course Code of Pre-requisite subject(s)			
Session	July 2023	Section (if, applicable)	
Name of Faculty	Dr. Sunitha V	Department	Civil Engineering
Email	<a href="mailto:sunitha@nitt.edu">sunitha@nitt.edu</a>	Telephone No.	9443302930
Name of Course Coordinator(s) (if, applicable)			
E-mail		Telephone No.	
Course Type	<input checked="" type="checkbox"/> Core course	<input type="checkbox"/> Elective course	
<b>Syllabus (approved in BoS)</b>			
<p>Traffic Surveys: Volume count, Speed study, Parking study, Intersection turning movements, Speed and Delay study, Moving observer survey, Traffic noise measurement, Vehicle emission testing, Road lighting, User perception surveys, Origin Destination (O-D) Surveys, Roadside and Household interviews, Data collection using VBOX</p> <p>Tests on sub grade soil, aggregates, bitumen, modified binders – as per BIS/ASTM</p> <p>Soil stabilization – soil: lime stabilization. Soil: cement stabilization, mechanical stabilization</p> <p>Pavement evaluation, Structural and functional condition evaluation of pavements</p> <p>Mix Design: Granular Sub-base, Bituminous Mixes – DBM, BC, SMA etc.,</p> <p>Cement concrete Mixes - Mix design, NDT tests</p> <p>Mini project report based on field and laboratory studies and data collected</p>			
<b>COURSE OBJECTIVES</b>			
<ul style="list-style-type: none"> <li>• To organize traffic surveys and collect wide variety of traffic data, subjecting them to analysis and interpretation</li> <li>• To conduct various stated preference survey and user perception survey</li> <li>• To conduct various standard tests on soil, aggregate and bitumen in order to determine various basic properties</li> </ul>			



<ul style="list-style-type: none"> <li>To do mix design for GSB, bituminous mixes and concrete</li> <li>To study the structural and functional properties of road in order to develop decisiveness in PMS.</li> </ul>	
<b>COURSE OUTCOMES (CO)</b>	
<b>Course Outcomes</b>	<b>Aligned Programme Outcomes (PO)</b>
Upon completion of this course, the students should be able to:	
1. Conduct the various traffic surveys	1,2, 3, 4, 6, 7, 10
2. Perform roadside and household interviews	1, 3, 4, 7, 8, 9, 11
3. Perform laboratory tests on subgrade soil, aggregates and bitumen	1, 2, 3, 5, 9, 10, 11
4. Carry out mix design for the CC pavement, GSB, Bituminous mixes, etc.	1, 2, 3, 7, 8, 9, 10, 11
5. Can do the performance evaluation of pavement	1, 2,3, 9, 10, 11

<b>COURSE PLAN – PART II</b>	
<b>COURSE OVERVIEW</b>	
<ul style="list-style-type: none"> <li>To provide clear understanding on conducting various types of traffic surveys data collection, analysis, inference and presentation.</li> <li>To experience the various testing procedures of pavement materials as per the IRC standards.</li> </ul>	
<b>COURSE TEACHING AND LEARNING ACTIVITIES</b>	
<b>Main Requirement (All Lab Experiments)</b>	
<ul style="list-style-type: none"> <li>Lab Record</li> <li>Shoes</li> </ul>	
<b>Experiment No.</b>	<b>Topic</b>
1	Traffic volume count at Mid-block
2	Traffic volume count at Intersection
3	Spot speed study at given stretch
4	On street parking survey
5	Off street parking survey
6	Moving observer method
7	Origin-Destination volume studies
8	User Perception survey, Roadside and Household interviews
9	Sieve analysis of soil
10	Liquid limit and plastic limit
11	Standard proctor test
12	Modified proctor test



13	Specific gravity of soil and aggregate
14	Core Cutter
15	Sand replacement test
17	UCC
18	Specific Gravity of Bitumen
19	Viscosity of Bitumen
20	Penetration test of bitumen
21	Ductility test
22	Softening point test
23	Flash and fire point
24	Bitumen extraction
25	Sieve analysis of coarse aggregate
26	Specific gravity of coarse aggregate
27	CBR test
28	LOS Angeles abrasion test
29	Flakiness and Elongation test
30	Aggregate Impact test
31	Aggregate crushing test
32	Water Absorption Test
33	Mix Design for Flexible Pavement
34	Merlin test
35	Roughometer test
36	Geogauge
37	BBD

**COURSE ASSESSMENT METHODS (shall range from 4 to 6)**

S.No.	Mode of Assessment	Week/Date	Duration	% Weightage
1	Assessment 1 ( Pavement Experiments)	Each experiment will be assessed on 10 marks and would be finally totaled to 30 marks		30
2	Assessment 2 (Traffic Survey)	Each traffic studies will be assessed on 10 marks and would be finally totaled to 20 marks		20
3	Assessment 3 (MCQ)	Week 17	1 hour	20
4	Final Assessment (Experiment)	Week 18	-	30

**COURSE EXIT SURVEY (mention the ways in which the feedback about the course shall be assessed)**

The Feedback form will be collected from the students in 2<sup>nd</sup> Week of December.



**COURSE POLICY (preferred mode of correspondence with students, compensation assessment policy to be specified)**

**MODE OF CORRESPONDENCE (email/ phone etc)**

sunitha@nitt.edu, 9443302930

**\*COMPENSATION ASSESSMENT POLICY**

Attending all the assessments including submission of all laboratory records are MANDATORY for every student.

**GRADING:**

- Grading should be as per the Institute norms.
- Passing minimum is maximum of 35% or Class Average/2 and a minimum of 30% should be scored in the final assessment.
- 

**ATTENDANCE POLICY** (A uniform attendance policy as specified below shall be followed)

- **At least 75% attendance in each course is mandatory.**
- **A maximum of 10% shall be allowed under On Duty (OD) category.**
- Students with **less than 65% of attendance** shall be prevented from writing the final assessment and **shall be awarded 'V' grade.**

**ACADEMIC DISHONESTY & PLAGIARISM**

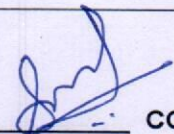
- Possessing a mobile phone, carrying bits of paper, talking to other students, copying from others during an assessment will be treated as punishable dishonesty.
- Zero mark to be awarded for the offenders. For copying from another student, both students get the same penalty of zero mark.
- The departmental disciplinary committee including the course faculty member, PAC chairperson and the HoD, as members shall verify the facts of the malpractice and award the punishment if the student is found guilty. The report shall be submitted to the Academic office.

The above policy against academic dishonesty shall be applicable for all the programmes.

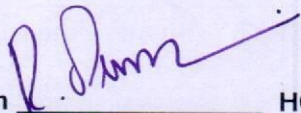
**ADDITIONAL INFORMATION**

**FOR APPROVAL**

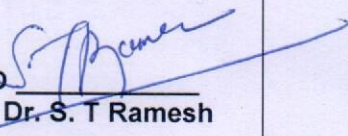
Course Faculty

  
Dr. Sunitha V

CC-Chairperson

  
Dr. R. Senthilkumar

HOD

  
Dr. S. T Ramesh