II Year-II Semester (20CE4107) Transportation Engineering Lab

Int. Marks	Ext. Marks	Total Marks		L	Т	Р	С
15	35	50		-	-	3	1.5

Pre- Requisites: Fundamentals of Surveying& Geotechnical engineering

Course Objectives:

The objectives of this course are:

- To test crushing value, impact resistance, specific gravity and water absorption, percentage attrition, percentage abrasion, flakiness index and elongation index for the given road aggregates.
- To know penetration value, ductility value, softening point, flash and fire point, viscosity and stripping for the given bitumen grade.
- To test the stability for the given bitumen mix
- To carryout surveys for traffic volume, speed and parking.

I. ROAD AGGREGATES:

- 1. Aggregate Crushing value
- 2. Aggregate Impact Test.
- 3. Specific Gravity and Water Absorption.
- 4. Attrition Test
- 5. Abrasion Test.
- 6. Shape tests

II. BITUMINOUS MATERIALS:

- 1. Penetration Test.
- 2. Ductility Test.
- 3. Softening Point Test.
- 4. Flash and fire point tests.
- 5. Stripping Test
- 6. Viscosity Test

III. BITUMINOUS MIX

1. Marshall Stability test.

IV. TRAFFIC SURVEYS:

- 1. Traffic volume study at mid blocks.
- 2. Traffic Volume Studies (Turning Movements) at intersection.
- 3. Spot speed studies.
- 4. Parking study.

V. DESIGN &DRAWING:

- 1. Earthwork calculations for road works.
- 2. Drawing of road cross sections.
- 3. Rotors intersection design.

LISTOFEQUIPMENT:

- 1. Apparatus for aggregate crushing test.
- 2. Aggregate Impact testing machine
- 3. Pycno meters.
- 4. Los angles Abrasion test machine

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- 5. Deval's Attrition test machine
- 6. Length and elongation gauges
- 7. Bitumen penetration test setup.
- 8. Bitumen Ductility test setup.
- 9. Ring and ball apparatus
- 10. Viscometer.
- 11. Marshal Mix design apparatus.
- 12. Endoscope for spot speed measurement.
- 13. Stop Watches

Course Outcomes:

S.No	Course Outcomes							
1	Ability to test aggregates and judge the suitability of materials for the road construction	L4						
2	Ability to test the given bitumen samples and judge their suitability for the road	L4						
	construction							
3	Ability to obtain the optimum bitumen content for the mix design	L4						
4	Ability to determine the traffic volume, speed and parking characteristics.	L4						
5	Ability to calculate earth, draw cross sections and design intersections	L4						

Correlation of COs with POs& PSOs:

со	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	2	2	-	-	•	-	-	-	-	-	-	2	2	-	1
2	2	2	-	-	-	-	-	-	-	-	-	2	2	-	1
3	2	2	-	-	-	-	-	-	-	-	-	2	2	-	1
4	2	2	-	-	•	-	-	-	-	-	-	2	2	-	1
5	2	2	-	-	-	-	-	-	-	-	-	2	2	-	1

Text Books:

1. Highway Material Testing Manual, S. K. Khanna, C. E. G.Justo and A.Veeraraghavan, Neam Chan Brothers New Chand Publications, New Delhi.

Reference Books:

- 1. I R C Codes of Practice
- 2. Asphalt Institute of America Manuals
- 3. Code of Practice of B.I.S.