

## CE 311: Transportation Engineering Lab-I (0-0-2: 1)

**Course Objectives:** To carry out tests on construction materials for their suitability and economic utilization; To identify and classify the pavement materials into different groups according to their characteristics; To make aware the students about the classification, suitability, strength and stability of pavement materials.

---

### Suggested list of experiments

1. To determine fine aggregate angularity
2. To determine the aggregate impact value
3. To determine the Stripping value of aggregate
4. To determine the Los Angeles abrasion value of aggregate
5. To determine the specific gravity and water absorption for the road aggregates
6. Shape test: a) Flakiness index test and b) Elongation index test
7. To determine the CBR value of subgrade soil
8. To determine the bitumen content of asphalt mixes
9. To determine the specific gravity of bitumen
10. Bituminous Mix Design by Marshall method
11. Penetration value of bituminous binders
12. To determine absolute and kinematic viscosity of bituminous binders
13. To determine softening point of bitumen
14. To determine the ductility and elastic recovery of bituminous binders

### References:

1. Venkatappa, G. R, Ramachandra, K. R, Kaushik, P, Bhavanna, D.V. R, "Highway Material Testings and Quality Control"
2. Khanna, S.K. and Justo, "Highway Engineering", C.E.G., Nemchand Bros
3. MORT& H, "Specifications of Road and Bridge Works",
4. "Geometric Design of Streets and Highways", AASHTO Book
5. Harold, N. A., "Highway Materials, Soil and Concrete", Prentice Hall
7. Arora, S. C. & Arora, S.P., "A text book of Railway Engineering", Dhanpat Rai
8. Mundrey, J.S, "Railway Track Engineering", Tata McGraw Hill

**Expected outcomes:** Upon successful completion of this course, it is expected that students will be able to: Monitor and maintain road pavements; Develop insight for characterization of materials for highways and railways; Develop Job mix for various types of bituminous constructions such as WMM, SDBC, BC, DBM and BM etc.; Develop technical skills for pavement and rail construction; Prepare the testing reports related to highway engineering works; Develop the understanding of various BIS, IRC and ISO standards and to design the highways in conformity with these codes.

---