2: Pavement Design and Evaluation

Course Objectives:

1. To make students aware of design procedure of different types of pavements.
2. To give knowledge of failures in pavements and their preventive measures.
3. To impart the concepts of evaluation techniques of pavements along with strengthening techniques.

Course Contents:

1. Types of Payments – Rigid, Flexible, Highway-Runway Comparison.
2. Types of Failures.
3. Stresses in Flexible Pavements – Theories, Analysis,
4. Stresses in Rigid Pavements – Theories, Analysis.
5. Design of Flexible Pavements –ESWL, Tyre Pressure, Other Factors, Various Methods for Highway and Runways Design.
6. Design of Rigid Pavements – EWLF, Other Factors Various Methods for Highways and Runways, Design of Joints, Temperature stresses. Pre-stressed Concrete Pavements.
7. Pavement evaluation and strengthening: Failures in flexible and rigid pavements, pavement evaluation, deflection survey, serviceability rating techniques, strengthening techniques, maintenance, overlays, replacements.

Practical work:

List of tests/ practical/ tutorials are given below:

Sr. No.	Test/ Practical/Tutorials
1	Plate Bearing Test.
2	Field CBR Test.
3	Pavement Evaluation by Benkelman Beam Method.
4	Road Unevenness Measurement by Bump-Integrator.
5	Valuation of Pavement Roughness by Roughometer / Profilometer.
6	Design of Flexible Pavements for Highway and Runway.
7	Design of Rigid Pavements For Highway and Runway.
8	Design of Overlays.

References:

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4. IRC– 37, 2001, IRC – 58-1998.
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6. H.N.Atkins, *Highway Construction and Maintenance, Soils, and Concretes*, Reston Publishing Company, Reston VA, 1983.
7. J.P.Watson, *Highway Construction and Maintenance*, Longman Scientific and Technical, New York, 1989.
8. Relevant IRC, BIS, AASHTO and PCA Specifications and Guidelines.
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12. F. L. Mannering, W. P. Kilareski and S. S. Washburn, *Principles of Highway Engineering and Traffic Analysis.* Wiley India Pvt. Ltd., New Delhi.