Course Type	Course Code	Name of Course	L	T	P	Credit
DP	NCEC532	Pavement Design Laboratory	0	0	3	1.5

Course Objective
The course aims to provide comprehensive knowledge of pavement design principles for various types of pavements, along with hands-on experience in using relevant design software.
Learning Outcomes
Upon successful completion of this course, the students should be able to: ● Understand pavement design principles for flexible and rigid pavements.

Unit No.	Topics to be Covered	Contact Hours	Learning Outcome
1	Introduction of course and basic principles of design	3	Understand the fundamentals of pavement design, its importance, and key principles.
2	Design of different types of flexible pavements using IIT Pave software	9	Learn to use IIT Pave software for flexible pavement design based on IRC guidelines.
3	Introduction of Kenpave software and design of pavement using Kenpave	3	Gain proficiency in Kenpave software for pavement design.
4	Introduction of PerRoad software and design of perpetual pavement using PerRoad	3	Understand the concept of perpetual pavements and their long-term performance. Use PerRoad software to design pavements with fatigue-resistant layers.
5	Design of conventional pavement and difference assessment using IIT Pave, Kenpave and PerRoad method	3	Compare pavement designs from different software tools and assess variations.
6	Design of overlay using Falling Weight Deflectometer and Benkelman Beam	3	Learn overlay design principles based on pavement deflection

Unit No.	Topics to be Covered	Contact Hours	Learning Outcome
	Deflection method		measurements.
6	Rigid pavement design with dowel bar and tie bar design	9	Understand IRC guidelines for the design of rigid pavements and design dowel bars and tie bars for jointed concrete pavements
7	Field visit	3	Observe real-world pavement construction, materials, and maintenance practices.
8	Project	6	To utilize the knowledge gained from the conducted experiments to undertake a project in pavement analysis and design.
	Total Contact Hours	**42**	

Text Books:

1. Y.H. Huang Pavement Analysis and Design, 2nd Edition, 2004, Pearson Prentice Hall, USA.
2. N. Delatte Concrete Pavement Design, Construction, and Performance, Taylor and Francis.

Reference Books:

1. IRC: 37-2012 Tentative Guidelines for the Design of Flexible Pavements, Indian Road Congress, Delhi.
2. IRC: 58-2011 Tentative Guidelines for the Design of Rigid Pavements, Indian Road Congress, Delhi.
3. IRC: 81-1997 Guidelines for Strengthening of Flexible Road Pavements Using Benkelman Beam Deflection Technique, Indian Road Congress, Delhi.
4. IRC: SP: 76-2008 Tentative Guidelines for Conventional, Thin, and Ultra-Thin White-topping, Indian Road Congress, Delhi.
5. MORT&H- Specifications for Roads and Bridges, 5th Revision, 2013