

Pavement Asset Management for roads, airports and ports (3-0-0, Elective).

Objective

The main objective of this course is to provide the student with knowledge, tools, and methods to assess, maintain, rehabilitate, and manage pavement assets for roads, airports, ports and marine terminals. The importance of the course aligned with the increased infrastructure spending in India and around the world and an expectation that spending on management and maintenance of the pavement network will start to rise. Thus, it is developed for students who are (will be) involved in the design, analysis, construction, maintenance and management of transportation constructed facilities.

Upon completion of this course, the students will be able to:

1. Define the main elements of pavement infrastructure asset management framework.
2. Explain the decision-making levels, and list the main benefits of utilizing pavement management systems.
3. Characterize, prioritize, and optimize proper procedures to solve pavement management problems.
4. Predict pavement infrastructure life-cycle-costs.
5. Conduct a basic life cycle inventory of a pavement maintenance or rehabilitation project.
6. Work in teams to solve real-life pavement management problems.

Contents

Topic No.	Details of the topic	Lecture hours
1	Introduction to Pavement Asset Management: Definition, Need, Process	1.5
2	Framework for Pavement Asset Management: Components of framework, network level management and project level management	3.5
3	Database Management and Information needs: Data Quality Levels, Data Characteristics, Data Integration.	2

4	Data Collection: Sampling strategies, Performance Indicators, Pavement condition surveys.	5
5	Pavement performance prediction: concepts, modelling techniques.	4
6	Rehabilitation and Maintenance Alternatives.	2
7	Life cycle cost and benefit analysis: Cost and Benefit Factors, Methods and approach.	4
8	Prioritization and optimisation methodologies.	4
9	Alternate pavement design and procurement strategies.	3
10	Pavement Management Systems: Integration and Implementation.	2
11	Pavement Management Systems and tools for roads and airports.	3
12	Good practices in asset management across sectors: Introduction to IS 55000.	2
	Total	36

Approximate percentage of overlap

CE60132 Pavement Evaluation, Rehabilitation and Maintenance: 10%

Reasons for offering the new subject in spite of the overlap

CE60132 briefly introduces the proposed subject area and both subjects complement each other which explains some overlap in the subject content. Most of the content in the proposed subject is not covered in other transportation engineering subjects.

Please note that CE41022 Pavement Management Systems covers the same content as the proposed subject. However, it was introduced as an elective for B.Tech. But, it is believed that subject is a specialist one and should be offered to M.Tech Transportation Engineering students. As a UG subject can't be offered to PG students as per institute norms, the present subject is proposed with similar content as in CE41022. Therefore, it is expected that the proposed subject to replace CE41022 in the UG curriculum and also be added to M.Tech Transportation Engineering curriculum.

Textbooks

1. Pavement Asset Management. Ralph Haas, W. Ronald Hudson, Lynne Cowe Falls, John Wiley & Sons, Inc., 2015
2. Pavement Management for Airports, Roads and Parking Lots. Mo Y. Shahin, Springer; 2nd ed. 2005.