First Semester 2016-2017

Course Handout (Part II)

Date:02.08.2016

In addition to Part I (General Handout for all courses appended to the Time Table), this portion gives further specific details regarding the course.

Course No. : CE G548 3 1 4

Course Title : Pavement Management Systems

Instructor In-Charge: Dr. Amit Goel

Course Contents:

Components of pavement management systems, pavement maintenance measures; pavement performance evaluation: general concepts, serviceability, pavement distress survey systems, performance evaluation and data collection using different equipment; evaluation of pavement distress modeling and safety; pavement performance prediction: concepts, modeling techniques, structural condition deterioration models, mechanistic and empirical models, HDM-IV models, comparison of different deterioration models, functional and structural condition deterioration models; ranking and optimization methodologies: Recent developments, economic optimization of pavement maintenance and rehabilitation.

Scope and Objective:

To gain sufficient technical knowledge about a pavement network infrastructure, types of distresses and their causes, to understand the Pavement Condition Index (PCI) and its evaluation, to evaluate different types of pavement condition, pavement condition prediction/deterioration models, to understand the importance of having different maintenance strategies, etc. It is a highly sought after skill set, by consultancy companies as well as state PWDs.

Prescribed Course Text Book:

- T1: Haas R., Hudson W.R., Falls L. C., **Pavement Asset Management**, Wiley Scrivener, 2015
- T2: Kumar S., **Pavement evaluation, maintenance & management system**, Universities Press, 2014

Reference material:

- R1: M.Y. Shahin, **Pavement Management for Airports, Roads, and Parking Lots**, 2nd Edition - Springer, 2005
- R2: **Pavement management Guide**, AASHTO, 2012
- R3: Relevant IRC & other codes and documents, HDM-4 Documentation Series, Journal papers/ technical reports

Course Plan (Tentative):

Tentative Lectures	Learning Objectives	Topics to be covered	Reference* Chap./Sec. # (Book)
2	Introduction	Organization, Concept	T1,T2
4	PMS	Components of pavement management systems, Pavement maintenance measures	T1,T2
6	Pavement performance evaluation - 1	General concepts, serviceability, pavement distress survey systems	T1,T2
10	Pavement performance evaluation - 2	performance evaluation and data collection using different equipment; evaluation of pavement distress modeling and safety	T1,T2, R1, R2, R3
8	Pavement performance prediction - 1	concepts, modeling techniques, structural condition deterioration models, mechanistic and empirical models	T1, R1, R2, R3
6	Pavement performance prediction - 2	HDM-IV models, comparison of different deterioration models, functional and structural condition deterioration models	T1, R1, R2, R3
4	Ranking and optimization methodologies	Recent developments, economic optimization of pavement maintenance and rehabilitation	T1,T2, R1, R2, R3

Evaluation Scheme:

EC No.	Evaluation Component	Duration	Weightage	Date, Time & Venue	Nature of Component
1	Mid-semester	90 min	20-25%	<TEST_1>	Open/Closed book examination

2	**Comprehensive**	**3 hours**	**30-35%**	**01/12 AN**	**Open/Closed book examination**
3	**Assignments/ Literature-review/Seminars /Term-paper/ Surprise-Quizzes/Class-notes/ Attendance**		**40-45%**	**To be announced in the class**	**Open book/Take home (except quizzes)**

Chamber Consultation Hour: ***To be announced in the class***

Notices: Nalanda (mostly) or *Civil Engineering Department Notice Board*

Make-up Policy:

1. Make-up **may be** granted in extraordinary circumstances, only on genuine reasons. However, **prior permission is a must**.
2. For medical cases, a certificate from the concerned physician of the Medical Centre must be produced.

Instructor-in-charge