Construction Supervision for Roads & Runways

01CI0610

Objective of the Course:

- To understand fundamentals of pavement structure.
- To learn different types of construction procedures of pavement layers.
- To explore the fundamentals quality check of pavements.
- To understand the basic of safety and healthy environment at construction site of pavement.

Credit Earned: 00

Student's learning outcomes:

After successful completion of the course, it is expected that students will be able to,

1. Understand the necessity of constructing durable and quality pavements and their role in transportation and infrastructure development.
2. Apply knowledge of pavement construction processes and the job roles involved in the Roads & Runways Construction.
3. Analyze the specifications of construction materials for Flexible and Rigid Pavement.
4. Evaluate the standard procedures and safety measures involved in pavement construction.

Teaching and Examination Scheme

Teaching Scheme (Hours)			Credits	Theory Marks			Tutorial/ Practical Marks		Total Marks
Theory	Tutorial	Practical		ESE (E)	IA (M)	CSE (I)	Viva (V)	Term Work (TW)	
00	00	02	00	-	-	-	50	-	50

Detailed Syllabus

Sr. No.	Title of the unit	Number of Hours
1	**Introduction**	**04**
1.1	Necessity to construct durable and quality pavement and function of the same in transportation/ infrastructure development, pavement construction, job roles involved in the "Roads & Runways Construction" occupation	02

1.2	Basic knowledge of Unit of measurement and their conversion, Basic knowledge of arithmetic calculation, Different parts of rigid and flexible pavement	02
2	**Pavement Construction**	**08**
2.1	Sequence of pavement construction activities, Procedure of material handling and storing, Organizational service request procedures of tools, materials, Equipment	04
2.2	Specification and capacity of construction Equipment, Measures and arrangements to control vehicular traffic	04
3	**Specification of Constructions**	**08**
3.1	Specifications of construction materials used in each course of pavement construction, Types of base courses used and method of construction	03
3.2	Specification and location of expansion joint, Different grades of concrete and bitumen used in rigid and flexible pavement	03
3.3	Specifications of drainage pipes and accessories, Standard construction methodology of drainage works	02
4	**Checks for completed road work**	**06**
4.1	Curing process of concrete and different method of curing such as ponding, using gunny bags, application of curing compounds	03
4.2	specification and guidelines of application of materials used for road construction work, such as bitumen, epoxy solutions, admixtures, curing compound, dowel bars etc	03
5	**Safe and Healthy work Environment**	**04**
5.1	Common types of hazards involved in construction sites in rigid and flexible pavement construction work, Types of hazards involved in handling of hot asphalt mix works, Safe working methods as per standard norms and actions to be taken under emergency situations	02
5.2	Standard procedure of handling, storing and stacking material used in pavement construction work, safe disposal of waste depending upon type of waste	02
	Total	**30**

Suggested Theory Distribution

The suggested theory distribution as per Bloom's taxonomy is as per follows. This distribution serves as guidelines for teachers and students to achieve an effective teaching-learning process

Distribution of Theory for course delivery and evaluation					
Remember	Understand	Apply	Analyze	Evaluate	Create
5%	10%	35%	30%	15%	5%

Instructional Method and Pedagogy:

1. At the start of course, the course delivery pattern, prerequisite of the subject will be discussed.
2. Lectures will be taken in class room with the use of multi-media presentations, white board– mix of both.
3. Attendance is compulsory in lectures and laboratory which carries a 5% component of the overall evaluation.
4. Minimum two internal exams will be conducted and average of two will be considered as a part of 15% overall evaluation
5. Assignments based on course content will be given to the students at the end of each unit/topic and will be evaluated at regular interval. It carries a weightage of 5%.
6. Surprise tests/Quizzes will be conducted which carries 5% component of the overall evaluation.

Recommended Study Material

1. Das, A**.** Analysis of Pavement Structures, CRC Press, Taylor and Francis Group, Florida, USA,2015.
2. S.K. Khanna and C.E.G. Gusto, A.Veeraragavan, Highway Engineering by Nem Chand and Bros, Roorkee.
3. Yoder, E.J. and M.W. Witczak, Principles of Pavement Design, Second Edition, John Wiley and Sons, New York, USA, 1975.
4. Pavement Design and Materials, Papagiannakis, A.T., Masad, E.A., Wiley, 2008, First Edition.
5. Croney, D. and P. Croney. The design and performance of road pavements, McGraw-Hill Book Company, London, UK, 1991.
6. IRC: 37-2018, Guidelines for the Design of Flexible Pavements, The Indian Roads Congress, New Delhi, India, 2018.
7. IRC:58-2015, Guidelines for the Design of Plain Jointed Rigid Pavements for Highways, The Indian Roads Congress, New Delhi, India, 2015.
8. MoRT&H specification