SE656: Bridge Structures

Teaching Scheme			Credits	Marks Distribution				Total Marks
				Theory Marks		Practical Marks		
L	T	P	C	ESE	CE	ESE	CE	
3	2	0	5	70	30	30	20	150

Course Content:

Sr. No	Topics	Teaching Hrs.
1	**Introduction:** Classification, investigations and planning, choice of type of bridges.	02
2	**I.R.C. and other international specifications on live loads for road bridges, Various forces acting on bridges, Load distribution theories:** Courbon's Method, Hendry Jaeger Method, Grillage analogy, Pigeaud's curves.	07
3	**Superstructure:** General design considerations, analysis and design of Superstructure: General design considerations, analysis and design of principles of prestressed bridges, continuous bridges, box girder bridges, balanced cantilever bridges. Introduction to design of cable stayed and cable suspended bridges.	15
4	**Substructure:** Various parts of substructures, Various types of substructures, Loads acting on substructures, Design of pier and pier cap, Design of different types of foundation – Open, pile & well foundation, its construction aspects & related issues.	14
5	**New era methodology/technology for design and construction of bridges, Seismic resistant design provisions, load test on bridges:**	04
	Total Hrs.	**42**

Reference Books:

1. E. C. Hambly "*Bridge Deck Behaviour*", CRC Press.
2. C. S. Surana "*Grillage Analogy in Bridge Deck Analysis*", Alpha Science International Ltd.
3. Raina V.K. "*Concrete Bridge Practice*", Tata McGraw Hill Publishing Company, New Delhi.
4. Krishnaraju, N., "*Design of Bridges*" Oxford and IBH Publishing Co., Bombay, Calcutta, New Delhi.
5. Bakht, B. and Jaegar, L.G., "*Bridge Analysis simplified*", McGraw Hill.
6. Ponnuswamy, S., "*Bridge Engineering*", Tata McGraw Hill.
7. Derrick Beckett, "*An introduction to Structural Design of Concrete Bridges*", Surrey University Press, Henley Thomes, Oxford Shire.
8. Taylor, F.W., Thomson, S.E., and Smulski E., "*Reinforced Concrete Bridges"*, John Wiley and Sons, New York.
9. Edwin H.Gaylord Jr., Charles N.Gaylord, James, E.,Stallmeyer "*Design of Steel Structures*" McGrew Hill International Editions.
10. *IRC*: 5, 6, 78, 112-2011.