J.S. University, Shikohabad

Established by UP Govt. Act No. 07 of 2015

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Value Added Course

(Modern Concrete Technology And Practice)

Faculty of CIVIL ENGINEERING

	J.S. University, Shikohabad Faculty of Civil Engineering	Value Added Course
		AY: 2018-19

Modern Concrete Technology And Practice

Learning Objective:

This Course will provide knowledge of modern technology practice in concrete design

Duration: 30 Hours. (Theory and Practical)

Course Outcomes: -

Maximum Exposure has to be given on Practical Oriented

On successful completion of the course students will be able to:

CO1:-Demonstrate test and analysis of cement, aggregate, sand, effect of water cement ratio.

CO2:-Prepare concrete, carry out simple formwork and reinforcement with the application of modern Power Tools.

CO3:-Prepare reinforcement of different R.C.C. members i,e, Foundation, beams, columns, slabs, Retaining Wall, etc.

CO4:-Erect scaffolding and make the intricate formwork at different locations.

CO5:-Prepare a bar bending schedule and demonstrate bar bending and calculate the estimated quantity of materials.

CO6:-Make different types of arches and lintels with chajja. Layout different types of vertical movement according to shape, location, materials by using stair, lift, ramp and escalator.

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Syllabus Outline

1. **Module-1**

   Strength of Concrete:
   Strength- porosity relationship, factors affecting compressive strength, behaviour of concrete under uniaxial, biaxial and triaxial stress states, Split Tensile strength and modulus of rupture -test methods and empirical formulae for their estimation. Mineral and Chemical admixtures in Concrete: types and their uses.

2. **Module-2**

   Concrete Production:
   Vibrator compacted concrete in buildings, pavements and infrastructure projects etc., pumpable concrete, roller compacted concrete and Ready Mixed Concrete- methods, specific features and uses etc. Rheology of Concrete: Flow ability, Segregation, Bleeding and Viscosity etc.

3. **Module-3**

   Elasticity, Creep and Shrinkage of Concrete:
   Elastic behaviour, Method of determination of Elastic modulus, factors affecting modulus of elasticity, early volume change in concrete due to plastic shrinkage, autogeneous shrinkage and drying shrinkage- factors affecting them, typical values and their methods of determination

4. **Module-4**

   Microstructure of Concrete:
   Interfacial transition zone, hydration kinetics, hydrated cement paste (hcp), calcium hydroxide, presence of micro-cracks in concrete mass - their characteristics and significance on performance of concrete Penetrability of Concrete: Permeability, sorptivity and diffusion in concrete- test methods and significance.

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References:-

1) "R.C. C Design(Reinforced Concrete Structures)" by BC Punmia
2) "Design of Reinforced Concrete Structures" by N.Krishna Raju
3) "Reinforced Concrete Design"(Third Edition) by Devdas Menon & S. Pillai

(Name of Faculty)	(Name of Faculty)	(Name of Faculty)
Course Coordinator	Dean Academics	Director/Principle/Dean of Faculty/Department