ADVANCED CONCRETE TECHNOLOGY

(Professional Elective-I)

Course Code: 19CE2151

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Course Outcomes:

At the end of the course, the student will be able to:

CO1: Discuss the concrete ingredients and it's influence at gaining the strength.

CO2: Design of concrete mix and grade as per Standard IS design codes.

CO3: Summarise the concepts of conventional concrete and its differences with other concretes like no fines, light weight etc.

CO4: Describe the application and use of fibers in reinforced concrete.

CO5: Design and develop self compacting and high performance concrete.

UNIT I **(10-**Lectures)

Properties of cement, Fine aggregate and coarse aggregates, Additives and Admixtures in Concrete, Rheology of Concrete. Creep and shrinkage,grading curves

LO1: Discuss the concepts involved in rheology of concrete

LO2: Discuss the ingredients of concrete, Additives and Admixtures.

UNIT – II **(10-**Lectures)

Manufacturing and methods of concreting, Properties of fresh and hardened concrete, mix design by I.S. method,Non destructivetesting,Durability of concrete

LO1: Design of concrete mix as per IS method

LO2: List out the properties of concrete

UNIT –III **(10-**Lectures)

Design and manufacture of normal concrete, Light weight concrete – Cellular concrete – No fines concrete – Aerated & foamed concrete.underwater concreting

LO1: Summarise the concepts of normal concrete
LO2: Summarisethe concepts of special concrete

UNIT – IV **(10-Lectures)**

Design and manufacture of fiber reinforced concrete – Polymer concrete – Fly ash concrete, self curing concrete, ready mix concrete. Geopolymer concrete

LO1: Describe the concepts involved in manufacturing of fiber reinforced concrete

LO2: Describe the applications of special concrete

UNIT – V **(10-Lectures)**

Design and manufacture of Self compacting concrete – High performance concrete – ultra high strength concrete – High density concrete,Blended concrete ,Ready mix concrete

LO1: Develop the concepts involved in manufacturing process of self compacting concrete
LO2: Summariseabout high strength and high performance concrete.

Text Books

1. Neville, A.M., ‑Properties of Concrete‖, 3rd Edition, Longman Scientific and General, 1992.
2. Shetty, M.S., *"Concrete Technology",* 3rd Edition, S.Chand Publications, 2008
3. Shanta Kumar A.R., *"Concrete Technology",* 2nd Edition, Oxford University Press, New Delhi, 2000.

References

1. Neville, A.M. and Brookes ,J.J., *"Concrete Technology",* 2nd Edition, Pearson Education, 2010.
2. Krishna Raju.N, ‑Design of Concrete Mixes‖, 2nd Edition, CBS Publishers and Distributors, 2009.
3. Gambhir, M.L., *"Concrete Technology",* 2nd Edition, Tata McGraw Hill Publishers, New Delhi, 2009.