ADVANCED CONCRETE TECHNOLOGY
(Professional Elective-1)

Course Code: 19CE2151	**L**	**P**	**C**
	3	**0**	**3**

Prerequisites: Concrete Technology

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

Learning outcomes:

1.Discuss the concepts involved in rheology of concrete (L1)

2.Discuss the ingredients of concrete, Additives and Admixtures (L2)

3.Discuss the rheology of concrete(L3)

UNIT – II **(10 Lectures)**

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

Learning outcomes:

1.Design of concrete mix as per IS method (L1)

2.Discuss the properties of concrete (L2)

3.Discuss the durability of Concrete (L3)

UNIT –III **(10 Lectures)**

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

Learning outcomes:

1.Summarise the concepts of normal concrete (L1)

2.Summarise the concepts of special concrete (L2)

3.Discuss the underwater concreting (L3)

UNIT – IV **(10 Lectures)**

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

Geopolymer concrete.

Learning outcomes:

1.Describe the concepts involved in manufacturing of fiber reinforced concrete (L1)

2. Describe the applications of special concrete (L2)

3. Discuss the applications of Geopolymer Concrete(L3)

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.

Learning outcomes:

1.Develop the concepts involved in manufacturing process of self compacting concrete (L1)

2.Summarise about high strength and high performance concrete (L2)

3.Discuss about blended concrete(L3)

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.