1.	Title of the course	Advanced Concrete Technology
2.	Course number	CE538L
3.	Structure of credits	3-0-0-3
4.	Offered to	PG
5.	New course/modification to	Modification To CE5034/12
6.	To be offered by	Department of Civil and Environmental Engineering
7.	To take effect from	July 2022
8.	Prerequisite	CoT for UG
9.	**Course Objective(s):** To impart an understanding on the characteristics of concrete constituents and their interactions to interpret the microstructure and properties of concrete. To introduce the process of mixture proportioning of high-strength concrete and advanced test procedures to obtain concrete properties.	
10.	**Course Content:** Concrete constituents: introduction on cement production and cement chemistry, special types of hydraulic cement, aggregates characteristics and their significance, chemical and mineral admixtures, concrete mixture proportioning, special types of concrete including pervious concrete, early-age concrete properties, rheology of concrete; Behaviour of concrete: microstructure of concrete, properties of hardened concrete, concrete under various stress states, creep and shrinkage, durability of concrete including corrosion of embedded steel in concrete; Applications: pavements and parking lots, concrete structures, repair of structural and non-structural cracks; Nondestructive methods; Sustainability issues in concreting; Advanced concrete characterisation techniques.	
11.	**Textbook(s):** 1. Mehta P K and Monteiro P J M, *Concrete: Microstructure, Properties and Materials*, 4th Edition, McGraw Hill (2017). 2. Neville A M, *Properties of Concrete*, 5th Edition, Pearson Education India (2012).	
12.	**Reference(s):** 1. Bentur A, Berke N and Diamond S, *Steel Corrosion in Concrete: Fundamentals and Civil Engineering Practice*, 1st Edition, CRC Press (1997). 2. Lea F M, *The Chemistry of Cement and Concrete*, 3rd Edition, Chemical Publishing Co Inc. (1971). 3. Malhotra V M and Mehta P K, *Pozzolanic and Cementitious Materials*, 1st Edition, Gordon and breach Publishers (1996). 4. Newman J and Choo B S, *Advanced Concrete Technology: Test and Quality*, 1st Edition, Butterworth-Heinemann (1997).	