

Course Code	Course Title	L	T	P	C
17CE025	ADVANCED STEEL AND CONCRETE COMPOSITE STRUCTURES	3	0	0	3

Course Objectives:

1. To develop an understanding of the behaviour, analysis and design of Steel concrete composite elements and structures.
2. To familiarize with the design and analysis procedure of steel and concrete composite elements.

Course Outcomes:

At the end of the course student will be able to

1. Analyze steel concrete composite structures.
2. Design composite structures and its connections.
3. Conduct case studies related to steel concrete composite constructions of buildings.

Activities:

1. Analysis and design of Composite structures using Software Packages
2. Cast the model using composite materials
3. Presentation

Skills:

1. Ability to analyse the composite structures by using software.
2. Ability to create the composite structure model

UNIT-I: Introduction:

Introduction to steel - concrete composite construction - theory of composite structures-
Introduction to steel - concrete - steel sandwich construction

UNIT –II: Design of Composite Members:

Behavior of composite beams, columns, design of composite beams, steel, concrete composite columns - design of composite trusses.

UNIT-III: Design of Connections:

Types of connections, Design of connections in the composite structures - shear connection, Design of connections in composite trusses

UNIT-IV: Composite Box Girder Bridges:

Introduction - behaviour of box girder bridges - design concepts

UNIT-V: General Case Studies:

General case studies on steel - concrete composite construction in buildings - seismic behaviour of Composite structures

TEXT BOOKS:

1. Johnson.R.P, “Composite structures of steel and concrete”, Blackwell Scientific Publications (Third Edition), UK, 2013.

REFERENCES:

1. Owens.G.W and Knowels.P, “Steel Designers manual”, (Fifth edition), Steel Concrete Institute (UK), Oxford Blackwell Scientific Publications, 1992.
2. Proceedings of workshop on “Steel Concrete Composite Structures”, conducted at Anna University,2007.
3. IRC 24:2010 Standard Specifications and code of practice for Road Bridges. Section V- Steel Road Bridges.