

1.	Title of the course	Structural Fire Engineering and Design
2.	Course number	CE542L
3.	Structure of credits (L-T-P-C)	3-0-0-3
4.	New course/modification to	New
5.	To be offered by	Civil and Environmental Engineering
6.	Proposed by	Pancheti Jashnav
7.	Prerequisite	CoT
8.	Course Objective(s): To provide the basic concepts of structural fire safety. To outline the behaviour of different construction materials at elevated temperatures and design of fire-resistant structures.	
9.	Course Content: Introduction: importance of structural fire safety, major fire accidents and lessons learnt; Fire dynamics: basic concepts of fire development and spread; Heat transfer mechanisms: conduction, convection and radiation; Behaviour of materials and structural elements in fire: thermal and mechanical properties of construction materials (steel and concrete) at elevated temperatures, behaviour of structural elements (beams, columns and slabs) in fire; Design of structures for fire: fire protection methods, experimental evaluation of fire resistance, design of steel, concrete and composite structures for fire; Numerical methods to evaluate fire spread, heat transfer and fire resistance; Building codes and regulations.	
10.	Textbook(s): 1. Kodur V and Naser M, Structural Fire Engineering, McGraw Hill (2020). 2. Buchanan A H and Abu A K, Structural Design for Fire Safety, 2nd Edition, Wiley (2016).	
11.	Reference(s): 1. Hurley M, SFPE Handbook of Fire Protection Engineering, 5th Edition, Springer (2016). 2. Franssen J M, Real P V, Fire Design of Steel Structures, 2nd Edition, Wiley (2016).	