

1.	Title of the course	Strength of Materials
2.	Course number	CE101L
3.	Structure of credits (L-T-P-C)	2-1-0-3
4.	New course/modification to	Modified with CE201L/STRENGTH OF MATERIALS
5.	To be offered by	Civil and Environmental Engineering
6.	Prerequisite	None
7.	Course Objective(s): To describe the concept of stress, strain and the relationship between stress and strain for elements subjected to various forces.	
8.	Course Content: Stresses and strains: Normal and shear stresses, strains, stress–strain relations, stress/strain transformations, equilibrium and compatibility; Principal stresses and strains, Mohr’s circle; Thermal stresses, stresses or strains due to lack of fit in structural members; Thin walled cylinders: pressure vessel; Analysis of beams: bending moment diagrams, shear force diagrams; Theory of beam bending: bending and shear stresses in beams, bending of composite beams, shear flow, shear center, determination of deflections; Analysis of columns: short and long columns, Euler axial buckling load, effect of boundary conditions, effective length; Torsion: torsion formula, polar moment of inertia, shear stress distribution in solid and hollow round members under torsional loading conditions; Combined stresses; Failure theories.	
9.	Textbook(s): 1. Goodno B J and Gere J M, Mechanics of Materials, 9th Edition, Cengage Learning (2017). 2. Beer F P, Johnston E R and DeWolf J T, Mechanics of Materials, 8th Edition, McGraw-Hill, India (2021).	
10.	Reference(s): 1. Hibbeler R C, Mechanics of Materials, 10th Edition, Pearson (2022). 2. Popov E P, Engineering Mechanics of Solids, Pearson (2015). 3. Gere J M and Timoshenko S P, Mechanics of Materials, 2nd Edition, CBS Publishers (2004)	