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| <b>Name of Faculty: Rashid Mustafa</b>                        |   |
| <b>Discipline: Civil Engineering(5<sup>th</sup> Semester)</b> |   |
| <b>Subject: Mechanics of Solid-II(011513)</b>                 |   |
| <b>Course Credit : 03</b>                                     |   |
| <b>Course Objective</b>                                       | Provide students with knowledge of 2D/3D stress and strain tensor and problem related to it, Pure bending of beam, Torsion of noncircular section, concept of Plastic analysis and stability of equilibrium.  |
| <b>Subject Synopsis/ Indicative Syllabus</b>                  | <p><b>Introduction:</b><br/>Elastic theory, simple 2D/3D problems and their solutions.</p> <p><b>Pure Bending</b> of beams with unsymmetrical section, Shear centre, Torsion of noncircular members.</p> <p><b>Curved Beams :</b> Beams on elastic foundation</p> <p><b>Plastic Theory:</b> Plastic hinges and shape factor, uniqueness, upper bound and lower bound theorem, Failure theories.</p> <p><b>Energy Method:</b> Introduction to viscoelasticity and viscoplasticity, numerical methods</p> <p><b>Stability of Equilibrium:</b> Columns, Euler's theorem, Eccentric loading, end conditions and effective length, practical design formulae.</p> <p><b>Coupled Axial Force:</b> Bending moment problems, coupled torsion and bending moment problems.</p> |
| <b>Gate Syllabus of Soil Mechanics</b>                        | Bending moment and shear force in statically determinate beams; Simple stress and strain relationships; Theories of failures; Simple bending theory, flexural and shear stresses, shear centre; Uniform torsion, buckling of column, combined and direct bending stresses.  |
| <b>Reading List and References</b>                            | <p><b>Recommended Text</b><br/>Advanced mechanics of material by A.P. Boresi and O.M Sidebottom, Fifth edition, Willey Singapore</p> <p><b>References</b><br/>Mechanics of solid, Singh by A.K PHI, New Delhi.<br/>Strength of material Vol.2 by Timoshenko, CBS Publishers, Delhi.<br/>Theory and Solved Problems in Advanced Strength of Materials by Dr. Sadhu Singh, Khanna Publishers.</p>   |