JGI JAIN DEEMED-TO-BE UNIVERSITY | FACULTY OF ENGINEERING AND TECHNOLOGY

SCHOOL OF CIVIL AND ENVIRONMENTAL ENGINEERING

Syllabus for JET (PG Program) 2020

- **Mechanics**

  Bending moment and shear force in statically determinate beams. Simple stress and strain relationship: Stress and strain in two dimensions, principal stresses, stress transformation, Mohr's circle. Simple bending theory, flexural and shear stresses, unsymmetrical bending, shear center. Thin walled pressure vessels, uniform torsion, buckling of column, combined and direct bending stresses.

- **Structural Analysis**

  Analysis of statically determinate trusses, arches, beams, frames, displacements in statically determinate structures and analysis of statically indeterminate structures by force/ energy methods, analysis by displacement methods (slope deflection and moment distribution methods), influence lines for determinate and indeterminate structures.

- **Concrete Structures**

  Concrete Technology- properties of concrete, basics of mix design.

- **Steel Structures**

  Analysis and design of tension and compression members, beams and beam columns, column bases. Connections- simple and eccentric, beam–column connections, girders and trusses. Plastic analysis of beams and frames

- **Soil Mechanics**

  Origin of soils, soil classification, three-phase system, fundamental definitions, relationship and interrelationships, permeability &seepage, effective stress principle, consolidation, compaction, shear strength.

- **Foundation Engineering**

  Sub-surface investigations- scope, drilling bore holes, sampling, penetration tests, and plate load test. Earth pressure theories, effect of water table, layered soils. Stability of slopes-infinite slopes, Foundation types-foundation design requirements. Shallow foundations-bearing capacity, effect of shape, water table and other factors, s tress distribution, settlement analysis in sands & clays. Deep foundations–pile types, dynamic & static formulae, load capacity of piles in sands & clays

- **Air Pollution**

  Types of pollutants, their sources and impacts, air pollution meteorology, air pollution control, air quality standards and limits.