Structural Analysis II - Video course

1. **Introduction**  
   - Review of basic concepts  
     - Equilibrium Equations  
     - Constitutive Relations/Force-displacement Relations  
     - Compatibility Conditions  

2. **Analysis of Statically Determinate Structures**  
   - SF, BM diagrams  
   - Determination of forces in trusses, frames, arches, and cables  

3. **Principle of virtual work**  
   - (2 lectures)  

4. **Energy Principle**  
   - (2 lectures)  

5. **Maxwell’s and Betti’s laws**  
   - (2 lectures)  

6. **Computation of Displacements**  
   - Moment area method  
   - Conjugate beam method  
   - Virtual work methods  
   - (8 lectures)  

7. **Introduction to statically Indeterminate Structures**  
   - Concept of static and kinematic indeterminacy  
   - Determination of static and kinematic redundancy  
   - (2 lectures)  

8. **Influence Lines (4 lectures)**  
   - Equilibrium methods  
   - Muller Breslau principle  

9. **Force Method - Introduction and Applications**  
   - Axially loaded members  
   - Plane truss  
   - Beams  
   - Frames  
   - (12 lectures)  

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NPTEL Syllabus

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