Syllabus Ph.D. Entrance Examination, August-2025

Civil engineering specializations for Ph.D.:

1. **Structural Engineering**
2. **Transportation Engineering**
3. **Geotechnical Engineering**
4. **Water resources Engineering**
5. **Environmental Engineering**
6. **Construction Project Management**

Syllabus for the exam:

Structural Engineering: Geopolymer concrete, Structural Engineering of Heritage Structures and Civil Structural Health Monitoring with sensors, Advanced Structural Cementitious Composites, Earthquake proof civil structures, Seismic Risk Assessment, Engineering Seismology, Engineered Bamboo, monitoring corrosion of Infrastructure, Sustainable materials, Engineered Nano cementitious composites, Ultra high performance concrete composites, Structural distress and strengthening systems, Precast elements with 3D concrete printing and Performance based design of Precast structural elements.

Transportation Engineering: Travel Behavior and Choice Modelling, Mobility as a Service (MaaS), Shared Mobility, Sustainable Urban Transportation Systems, Road Safety Audit. Intelligent Transportation Systems, Driver Behavior, Road Safety Education, Road Traffic Noise. Transportation and Environment- transportation systems modelling, GIS applications and optimization in transportation infrastructure modelling and development, high-speed rail infrastructure planning, and metaheuristics in alignment development and facility location. Driver Behavior, Safety Implications of Electric Vehicles, Road Safety Education, Pedestrian Safety, Intelligent Transportation Systems, Road Traffic Noise.

Geotechnical Engineering: Geosynthetics, Sustainable/recycled/secondary pavement materials, stabilization of materials, pavement geotechnics, and NDT Testing.

Water resources Engineering: Watershed management, hydrological modelling, and GIS application in catchment area/drainage basin.

Environmental Engineering: Indoor environmental quality, Water quality monitoring, Micropollutants, Photocatalysis, Nanomaterials synthesis for air and water pollution mitigation, Microalgal biofuels.

Construction Project Management: Project management, Stakeholder management, Risk management in mega construction projects, Sustainability in construction projects, Lean Construction, and Circular economy.