



**Knowledge Network of
Indian Institute of Technology Gandhinagar
Under TEQIP-II Initiative**

**Summer School on
Soil Mechanics and Foundation Engineering**

Essential topics of soil Mechanics for design consulting and construction of civil engineering infrastructure will be covered in this course of summer school. The course will then get to basic concepts behind design of foundations and earth retaining structures. The objective is to bring in- depth understanding of fundamentals and build confidence in suitably applying these concepts to find solution for real-life construction challenges. The applications will come from the innovative technologies of today, which show the potential of providing much economical solutions. This course will provide better grounding to the students in the fundamentals and discuss the pedagogy with the participating faculty members.

Topics for discussion -

Compressibility and Consolidation characteristics, 1-D compression response, Terzaghi's theory of consolidation; Settlement of foundations; Shear-strength of Soil, Mohr-coulomb failure criteria, direct shear and UC tests; Geotechnical investigations, in situ test – SPT, CPT; Ground improvement applications; Earth-pressure theory, Coulomb and Rankine approaches; Bearing capacity, failure modes, generalized bearing capacity equation, net- and gross bearing capacity, allowable bearing pressure; Design of shallow foundation, bearing capacity, stress distribution in soils, total and differential settlement, Retaining structures, gravity, cantilever, reinforced earth, etc., design and checks for stability; Piles and pile groups.

Tentative schedule for this summer school:

- (a) Morning session: Lectures for 3-4 hours
- (b) Afternoon session: Tutorial session for 2-3 hours

Presenters: (Instructors)

1. Prof. Amit Prashant (IIT Gandhinagar)
 2. Prof. G.V. Rao (IIT Gandhinagar)
 3. Prof. Ajanta Sachan (IIT Gandhinagar)
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