

OE 5545: MARINE GEOTECHNICAL ENGINEERING

Course content:

Classification of marine sediments and soils; basic soil properties, correlation between engineering parameters, geotechnical investigation, bore techniques; Soil testing methods in laboratory and fields; very soft and recent deposits in river mouth; characteristics of thixotropic soils; Advanced testing methods for soft marine clays; sensitivity of soils; time-dependent behaviour of marine sediments. Upper and lower bound soil characteristics; Soil stabilization; fills and reclamations; soil treatments and ground improvement methods; stone columns and band drains; coastal protections and reclamation dykes; Bearing capacity, sliding stability, over-turning stability, short-term and long-term settlements, factor of safety; Bucket foundation; Suction anchors; Gravity foundation; Earth retaining structures; Diaphragm walls; stability of breakwater on soft soils; RC bored piles; Driven piles, drilled and grouted steel piles; Axial and lateral capacity, point bearing and skin friction, factor of safety, lateral load on piles, p-y, t-z and q-z curves, linear spring methods; bearing capacity in soils, weathered rock, and intact rock. Pile group effect, scour around piles, seabed subsidence and design of piles against seabed movement, negative skin friction, cyclic degradation. Pile driving and monitoring; pile testing and correlations; Pile remedial measures.

Text books:

Reference books:

1. **Chakrabarti, SK. 2005.** Handbook of Offshore Engineering, Elsevier, ISBN: 978-008-05-2381-1
2. Tomlinson, MJ. 1994. Pile Design and Construction practice, 4th Ed., E&FN Spon, London, UK, ISBN: 0-203-47457-0.
3. Joseph E. Bowles. 1988. Foundation analysis and design, 5th Ed., McGraw-Hill, Singapore, ISBN: 0-07-118844-4
4. Ben C. Gerwick Jr. 2007. Construction of Marine and Offshore Structures, CRC Press, USA, ISBN: 978-042-91-2502-7

Prerequisite: