OE5230: FOUNDATION OF OFFSHORE STRUCTURES

Course Content:

Basic Soil Mechanics: Basic soil properties, correlation between engineering parameters, geotechnical investigation, bore log.Pile foundation: Jacket main piles, skirt piles, driven piles, drilled and grouted piles, steel and concrete piles, axial capacity, point bearing and skin friction, factor of safety, lateral load on piles, p-y, t-z and q-z curves, pile group effect, scour around piles, seabed subsidence and design of piles against seabed movement, negative skin friction, cyclic degradation, main pile to jacket connections, skirt pile to jacket connections, API RP 2A provisions.Pile Installation: Minimum pile wall thickness, pile handling stresses, static and dynamic stresses, pile stickup, stresses during stickup, wave and current loads, hammer selection, pile driving stresses, wave equation analysis, pile driving fatigue, API RP 2A guidelines.Pile Testing: Working load test, ultimate load test, pile monitoring during driving, pile integrity testing, high strain dynamic testing, rebound method.Special Foundations: Mud-mats : bearing capacity, sliding stability, overturning stability, short term and long term settlements, factor of safety; Bucket foundation; Suction anchors; Gravity foundation.Design exercises on axial capacity of piles, lateral capacity and load deflection of laterally load piles estimation of mudmat bearing capacity; group effect etc.

Text Books:

1. Pile Design and Construction by **M. J. Tomlinson, E & FN Spon,** 1994.

Reference Books:

1. Handbook of Offshore Engineering by **S.K. Chakrabarti**, Elseviers, 2005.
2. Foundation analysis and design by **J. E. Bowles**, McGraw-Hill, 19884.
3. Construction of Marine and Offshore Structures by **Ben C. Gerwick**, CRC Press, 1999.

Prerequisite: