



CIVIL ENGINEERING

Foundation Design

Type of Course	: New
Course Snapshot	: Core / UG
	: Applies to all
Pre-requisites	: Not required
Course Duration	: 30 hours /12 weeks

COURSE OUTLINE:

The course prepares the student to be able to make effective learning of design of foundation, soil exploration and in-situ tests.

INSTRUCTOR:

Prof. N.R. Patra
Department of Civil Engineering
IIT Kanpur



ABOUT INSTRUCTOR:

Prof. Nihar Ranjan Patra is currently Professor in the Department of Civil Engineering, IIT Kanpur. After completion of PhD from IIT Kharagpur in 2001, he served as faculty member at Africa/South Africa and IIT Kanpur. His primary research focus is on Pile Foundation, Soil-Structure Interaction, Soil Liquefaction and Soil Arching. He has published several research papers in various international journals and conferences. He has guided 7 Ph.D. students and 40 M.Tech students for their thesis work and taught different courses in UG and PG level. He has completed a number of sponsored research projects funded by different government organization such as Dept. of Science and Technology (DST), India; Research Design and Standards Organisation (RDSO), Indian Railway, India; Board of Research in Nuclear Sciences (BRNS); Council of Scientific and Industrial research(CSIR) etc.

COURSE LAYOUT:

Site investigations, methods of drilling, sampling, in situ test - SPT, CPT, plate load and dynamic tests, groundwater level

Bearing capacity, general, local and punching shear failures, corrections for size, shape, depth, water table, compressibility, etc., ultimate and allowable stresses, methods based on in situ tests

Settlements of foundations, stress in soils (Boussinesq, Westergaard)

Design of foundation, Types of foundations - shallow/deep, isolated, combined, mat, etc., contact pressure distributions

Earth Pressure theories, Coulomb and Rankine approaches, $c-\phi$ soils, smooth and rough walls, inclined backfill

Deep foundations: pile and well foundations.