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| Image result for nit meghalaya logo | | | **National Institute of Technology Meghalaya**  An Institute of National Importance | | | | | | | | | | | **CURRICULUM** | | | |
| Programme | | | **Master of Technology** | | | | | Year of Regulation | | | | | | **2018-19** | | | |
| Department | | | **Civil Engineering** | | | | | Semester | | | | | | **I** | | | |
| Course  Code | | Course Name | | Pre requisites | | Credit Structure | | | | | Marks Distribution | | | | | | |
| L | T | | P | C | INT | | MID | | END | | Total |
| **CE505** | | **Site Investigation and Foundation Design** | | **None** | | **3** | **0** | | **0** | **3** | **50** | | **50** | | **100** | | **100** |
| Course  Objectives | | 1. To introduce various aspects of Site Investigation techniques as per codal guidelines 2. To develop an ability and skill to apply the codal provisions for the design of various types of foundations and to deal with difficult soils | | | Course Outcomes | | CO1 | | Able to Select appropriate soil investigation/testing technique/method and get true sub soil parameters used for selection of type of foundation as per codal guidelines. | | | | | | | | |
| CO2 | | Able to measure the in-situ soil properties by conducting field tests and sample the soil as per codal guidelines | | | | | | | | |
| CO3 | | Able to Select and design shallow foundation satisfying bearing capacity and settlement requirements | | | | | | | | |
| CO4 | | Able to design deep foundation satisfying bearing capacity and settlement requirements | | | | | | | | |
| CO5 | | Able to understand the engineering behaviour of expansive soils and selection of suitable foundation type for such soils | | | | | | | | |
| SYLLABUS | | | | | | | | | | | | | | | | | |
| **No.** | **Content** | | | | | | | | | | | **Hours** | | | | **COs** | |
| I | **Site Investigation**  Geophysical methods-Seismic, electrical; Drilling methods; Boring in soils and rocks. | | | | | | | | | | | **06** | | | | **CO1** | |
| II | **In-situ tests**  SPT, DCPT, SCPT, in-situ vane shear test, pressure meter test, plate load test. Sampling techniques and disturbances. | | | | | | | | | | | **06** | | | | **CO2** | |
| III | **Shallow Foundations**  Design considerations, codal provisions. Bearing capacity theories, Layered soils, Choice of shear strength parameters. Bearing capacity from field tests. Total and differential settlements. | | | | | | | | | | | **10** | | | | **CO3** | |
| IV | **Deep foundations**  Types of piles. Construction methods. Axial capacity of single piles. Axial capacity of groups. Settlement of single piles and groups. Uplift capacity (including under-reamed piles). Negative skin friction. Pile load tests. Pile integrity tests. Codal provisions. Caissons. Laterally Loaded Piles: Analysis and Design | | | | | | | | | | | **10** | | | | **CO4** | |
| V | **Special Topics**  Foundations in Difficult soil conditions. | | | | | | | | | | | **04** | | | | **CO5** | |
| **Total Hours** | | | | | | | | | | | | **36** | | | |  | |
| **Essential Readings** | | | | | | | | | | | | | | | | | |
| 1. Bowles. J.E., Foundation Analysis and Design, Tata McGraw-Hill International Edition, 5th Edn, 1997. | | | | | | | | | | | | | | | | | |
| 1. Das B.M., Shallow Foundations: Bearing capacity and settlement, CRC Press, 1999. | | | | | | | | | | | | | | | | | |
| 1. Prakash, S. and Sharma, H.D., Pile Foundations in Engineering Practice, John Wiley & Sons Inc., 1990. | | | | | | | | | | | | | | | | | |
| 1. Murthy, V.N.S. (2011). Advanced foundation engineering., CBS Publishers, 1st Edn. | | | | | | | | | | | | | | | | | |
| **Supplementary Readings** | | | | | | | | | | | | | | | | | |
| 1. Tomlinson, M.J. and Woodward J (2012). Foundation Design and Construction, Taylor and Francis, 5th Edn | | | | | | | | | | | | | | | | | |
| 1. Coduto, D.P., Foundation design: Principles and practices, Pearson publications, second edn, 2013. | | | | | | | | | | | | | | | | | |
| 1. Peck, R.B., Hanson, W.E. and Thornburn, T.H., Foundation Engineering, Wiley Eastern Ltd., 2nd Edn., 1980. | | | | | | | | | | | | | | | | | |
| 1. Teng, W.C., Foundation Design, Prentice-Hall of India (Pvt) Ltd., 1965. | | | | | | | | | | | | | | | | | |
| 1. Kurian, N.P. Design of Foundation Systems - Principles and Practices, Narosa Publishing House, 2nd Edn., 1994. | | | | | | | | | | | | | | | | | |