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| Image result for nit meghalaya logo | | | | **National Institute of Technology Meghalaya**  An Institute of National Importance | | | | | | | | | | | | | | | | | | | | | | | **CURRICULUM** | | | | | | |
| Programme | | | | **Bachelor of Technology** | | | | | | | | | | | | | Year of Regulation | | | | | | | | | | **2019-20** | | | | | | |
| Department | | | | **Civil Engineering** | | | | | | | | | | | | | Semester | | | | | | | | | | **III** | | | | | | |
| Course  Code | | Course Name | | | | | | | | **Pre requisite** | | | | Credit Structure | | | | | | | | Marks Distribution | | | | | | | | | | | |
| L | | T | | | P | C | | INT | | | MID | | | END | | | | Total | |
| **CE 203** | | **Surveying** | | | | | | | | **Nil** | | | | **3** | | **1** | | | **0** | **4** | | **50** | | | **50** | | | **100** | | | | **200** | |
| Course  Objectives | | To develop the student’s knowledge to understand the basic skills of surveying work including distance and angle measurement | | | | | | | | | | Course Outcomes | | | | CO1 | | | Able to understood the basic skills of surveying and levelling work | | | | | | | | | | | | | | |
| To provide knowledge on types of survey methodology and equipment suitable for a particular engineering projects. | | | | | | | | | | CO2 | | | Able to finalise and select a particular type of survey and equipment suitable for a particular engineering. | | | | | | | | | | | | | | |
| To introduce different type of surveying equipment | | | | | | | | | | CO3 | | | Able to use different type of surveying equipment like Compass, Theodolite, levels etc., for direction measurement, angle measurement, differential levelling and contouring | | | | | | | | | | | | | | |
| To provide knowledge on how to prepare a surveying map using collected surveying data. | | | | | | | | | | CO4 | | | Able to prepare a surveying map using collected surveying data from total station | | | | | | | | | | | | | | |
| To get introduced to modern advanced surveying techniques involved such as remote sensing, Total station, GPS etc. | | | | | | | | | | CO5 | | | Abe to understand the basic concept of remote sensing & GIS | | | | | | | | | | | | | | |
|  | | | | | | | | | | CO6 | | |  | | | | | | | | | | | | | | |
| No. | COs | | Mapping with Program Outcomes (POs) | | | | | | | | | | | | | | | | | | | | | | | Mapping with PSOs | | | | | | | |
| PO1 | | PO2 | PO3 | PO4 | PO5 | PO6 | | PO7 | | PO8 | | PO9 | | | PO10 | | | PO11 | | PO12 | | | PSO1 | | | PSO2 | | | | PSO3 |
| 1 | CO1 | | **3** | | **3** | **0** | **0** | **0** | **0** | | **0** | | **0** | | **0** | | | **0** | | | **0** | | **0** | | | **3** | | | **3** | | | | **0** |
| 2 | CO2 | | **3** | | **3** | **0** | **0** | **0** | **0** | | **0** | | **0** | | **0** | | | **0** | | | **0** | | **0** | | | **3** | | | **3** | | | | **0** |
| 3 | CO3 | | **3** | | **3** | **0** | **0** | **3** | **0** | | **0** | | **0** | | **0** | | | **0** | | | **0** | | **0** | | | **3** | | | **3** | | | | **0** |
| 4 | CO4 | | **3** | | **3** | **0** | **0** | **0** | **0** | | **0** | | **0** | | **0** | | | **0** | | | **0** | | **0** | | | **3** | | | **3** | | | | **0** |
| 5 | CO5 | | **3** | | **3** | **0** | **0** | **3** | **0** | | **3** | | **0** | | **0** | | | **0** | | | **0** | | **0** | | | **3** | | | **3** | | | | **0** |
| 6 | CO6 | | **3** | | **3** | **0** | **0** | **0** | **0** | | **0** | | **0** | | **0** | | | **0** | | | **0** | | **0** | | | **0** | | | **0** | | | | **0** |
| SYLLABUS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | Content | | | | | | | | | | | | | | | | | | | | | | | Hours | | | | | | | COs | | |
| I | **Basics of surveying**  Introduction to surveying-concept of plane and geodetic surveys, principles of surveying, errors in measurements, surveying instruments, types of maps, scale and uses, plotting accuracy coordinate systems. | | | | | | | | | | | | | | | | | | | | | | | 04 | | | | | | | CO1 | | |
| II | **Linear measurements**  Direct and indirect methods, chain and tape measurements-corrections. | | | | | | | | | | | | | | | | | | | | | | | 03 | | | | | | | CO1, CO2 | | |
| III | **Measurement of directions**  Bearings and angles, compass surveying-magnetic bearings, declination, local attraction errors and adjustments; Theodolite- different types, uses, methods of observation and booking of data. | | | | | | | | | | | | | | | | | | | | | | | 05 | | | | | | | CO2, CO3 | | |
| IV | **Plane table surveying**  Equipment’s, principles, operation, methods, errors, advantages and disadvantages. | | | | | | | | | | | | | | | | | | | | | | | 06 | | | | | | | CO1, CO2 | | |
| V | **Levelling and contours**  Methods of height determination, profile levelling and cross sectioning, contours - their characteristics, uses and methods of contouring. | | | | | | | | | | | | | | | | | | | | | | | 06 | | | | | | | CO1, CO2, CO3 | | |
| VI | **Curve survey**  Setting out of simple circular, compound, reverse, transition and vertical curves | | | | | | | | | | | | | | | | | | | | | | | 04 | | | | | | | CO3, CO4 | | |
| VII | **Traversing and Triangulation Surveying**  Compass and theodolite traverses; Triangulation systems, intervisibility, Signals, satellite stations, computations and adjustments. | | | | | | | | | | | | | | | | | | | | | | | 05 | | | | | | | CO3, CO4 | | |
| VIII | **Photogrammetry**  Aerial Photographs, basic terms & definitions, scales, relief displacements, flight planning, stereoscopy, characteristics of photographic images, fundamentals of aerial photo-interpretation. | | | | | | | | | | | | | | | | | | | | | | | 06 | | | | | | | CO1, CO3 | | |
| IX | **Modern surveying equipment**  Introduction to total station. | | | | | | | | | | | | | | | | | | | | | | | 03 | | | | | | | CO4 | | |
| X | **Global positioning system (GPS)**  Introduction, GPS principles, satellite navigation system, GPS, space segment, control segment, user segment, and GPS satellite signals, receivers, static, kinematic and differential GPS. | | | | | | | | | | | | | | | | | | | | | | | 03 | | | | | | | CO5 | | |
| XI | **Remote sensing:**  Principles, EME, sensors and platforms of remote sensing, its application and scope. | | | | | | | | | | | | | | | | | | | | | | | 03 | | | | | | | CO5 | | |
| Total Hours | | | | | | | | | | | | | | | | | | | | | | | | **48** | | | | | |  | | | |
| **Essential Readings** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1. B.C. Punmia, “Surveying Vol.I and II, Standard Publishers”, Second edition, 1994. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1. S.K. Duggal, “Surveying Vol. I and II, Tata McGraw Hill”, Fourth edition, 2004. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1. W. Schofield and M. Breach, “Engineering Surveying”, 6th edition, CRC Press, 2007. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Supplementary Readings** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1. N.N. Basak , “Surveying & Levelling, McGraw Hill, second edition, 2014 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1. K.R. Arora, “Surveying Vol. I and II” Standard Book House, 1996 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1. G. Satheesh, “The Global Positioning System and Surveying using GPS”, Tata McGraw, 2005. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |