| Course Type | Course Code | Name of Course | L | T | P | Credit |
|---|---|---|---|---|---|---|
| DP | NGPC504 | Geotechnical Modelling Practical | 0 | 0 | 3 | 1.5 |

| Course Objective |
|---|
| The course is designed to understand the concepts of geotechnical modeling through their practical approach. Clear understanding of the data acquisition, processing and interpretation of various geophysical methods such as resistivity, MaSW, GPR will help in clear understanding of near surface structure. |
| **Learning Outcomes** |
| Any student of modern geotechnical modeling would be master of its fundamental knowledge and deepening his understanding with a coherent balance of theory, concepts and applications of the inversion tools. |

| Unit No. | Description of Lectures | Lecture Hrs. | Learning Outcomes |
|---|---|---|---|
| 1. | Field demonstration of seismic refraction data acquisitions. | 4 | Field Setup and data acquisition. |
| 2. | Interpretation of seismic refraction data. | 3 | Interpretation of refraction data. |
| 3. | Field demonstration of resistivity data acquisitions. | 4 | Field Setup and data acquisition for resistivity sounding. |
| 4. | Interpretation of resistivity data. | 3 | Interpretation of resistivity sounding. |
| 5. | Field demonstration of ERT data acquisitions. | 4 | Field Setup and data acquisition using ERT. |
| 6. | Processing and interpretation of ERT data. | 4 | Interpretation of ERT data using 2D inversion. |
| 7. | Uncertainty estimation in the inverted model parameters obtained using resistivity data. | 3 | Uncertainty quantification in the estimated model parameters. |
| 8. | Field demonstration for MASW data acquisition. | 4 | Field Setup and data acquisition. |
| 9 | Interpretation of MASW section and site classification based on Vs(30). | 3 | Site classification using Vs(30) concept. |
| 10. | Field demonstration of GPR data acquisition. | 3 | Field Setup and data acquisition. |

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|---|---|---|---|
| **11** | Processing and interpretation of GPR data. | **4** | Interpretation of GPR data. |
| **12** | Estimation of different engineering properties of soils and rocks. | **3** | Engineering properties of soils. |
| | **Total** | **42** | |

**Text Books**

1. Kramer, S. L., "Geotechnical Earthquake Engineering", Pearson Education.

**Reference Books**

1. Ansal, A., "Recent Advances in Earthquake Geotechnical Engineering and Microzonation", Springer
2. William Lowrie, 2007, Fundamental of Geophysics. Cambridge University Press pp 381.
3. Telford, W. M., Geldart, L. P., Sheriff, R. E. and Keys, D. A., 1990, Applied Geophysics. Cambridge University Press, pp770.