**LESSON PLAN.**
**Academic Session :- 2021(W)**
**Subject :-GEOTECHNICAL ENGG. , TH-2**

**Total Period :- 60 per Sem**
**Theory :- 4P/week**

**Teacher :- DEBASHIS BEHERA**

**SEMESTER:-3RD (SEC B)**

| MONTH | DATE | DAYS | SYLLABUS TO BE COVERED | NOS. OF PERIODS AVAILABLE |
|---|---|---|---|---|
| | | | **1. INTRODUCTION (1P)** | |
| OCTOBER | 10/4/2021 | Monday | 1.1- Soil and Soil Engineering.<br>1.2- Scope of Soil Mechanics. | 1 |
| | | | **2. PRELIMINARY DEFINITIONS AND RELATIONSHIP. (6P)** | |
| | 10/6/2021 | Wednesday | 2.1- Soil as a three Phase system. | 1 |
| | 10/7/2021 | Thursday | 2.2- Weight volume relationships: Water Content, | 1 |
| NOVEMBER | 10/8/2021 | Friday | Density, Specific gravity, Voids ratio, Porosity, | 1 |
| | 10/27/2021 | Wednesday | Percentage of air voids, air content, degree of saturation, density Index,<br>Bulk/Saturated/dry/submerged density. | 1 |
| | 10/28/2021 | Thursday | Numerical problems | 1 |
| | 10/29/2021 | Friday | Numerical problems | 1 |
| | | | **3 .STUDY OF INDEX PROPERTIES. (4P)** | |
| | 11/1/2021 | Monday | 3.1- Water Content | 1 |
| | 11/3/2021 | Wednesday | 3.2- Specific Gravity | 1 |
| | 11/5/2021 | Friday | 3.3- Particle size distribution, Sieve analysis, | 1 |
| | 11/8/2021 | Monday | 3.4 – Consistency of Soils, Atterberg's Limits, Plasticity Index, Consistency Index, Liquidity Index | 1 |
| | | | **4 CLASSIFICATION OF SOIL. (6P)** | |
| | 11/10/2021 | Wednesday | 4.1- General. | 1 |
| | 11/11/2021 | Thursday | 4.2- Particle size Distribution. | 1 |
| | 11/12/2021 | Friday | -Textural Classification. | 1 |
| | 11/15/2021 | Monday | -HRB Classification. | 1 |
| | 11/17/2021 | Wednesday | -Unified Soil Classifications. | 1 |
| | 11/18/2021 | Thursday | - I.S. Classification. | 1 |
| | | | **5. PERMEABILITY AND SEEPAGE (7P)** | |
| | 11/22/2021 | Monday | 5.1- Concept of Permeability, Darcy's Law, Co-efficient of Permeability, | 1 |
| | 11/24/2021 | Wednesday | 5.2- Factors affecting Permeability. | 1 |
| | 11/25/2021 | Thursday | 5.3- Constant head permeability and | 1 |
| | 11/26/2021 | Friday | Numerical problems | 1 |
| | 11/29/2021 | Monday | 5.3 Falling head permeability Test. | 1 |
| | 12/1/2021 | Wednesday | Numerical problems | 1 |
| | 12/2/2021 | Thursday | 5.4- Seepage pressure, Phenomenon of quick sand | 1 |
| | | | **6.COMPACTION AND CONSOLIDATION. (8P)** | |

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| | **12/3/2021** | **Friday** | 6.1- Compaction, Light and heavy compaction Test, | 1 |
| | **12/6/2021** | **Monday** | 6.1 Optimum Moisture Content of Soil, Maximum dry density, Zero air void line | 1 |
| | **12/8/2021** | **Wednesday** | 6.2- Factors affecting Compaction. | 1 |
| | **12/9/2021** | **Thursday** | 6.3- Field compaction methods and their suitability. | 1 |
| | **12/10/2021** | **Friday** | Numerical problems | 1 |
| | **12/13/2021** | **Monday** | 6.4- Consolidation, distinction between compaction and consolidation. | 1 |
| | **12/15/2021** | **Wednesday** | Numerical problems | 1 |
| | **12/16/2021** | **Thursday** | 6.5- Terzaghi's model analogy of compression/ springs showing the process of consolidation – field implications | 1 |
| **DECEMBER** | **7 SHEAR STRENGTH.(6P)** | | | |
| | **12/17/2021** | **Friday** | 7.1- Concept of shear strength, Mohr- Coulomb failure theory, | 1 |
| | **12/20/2021** | **Monday** | 7.1 Cohesion, Angle of internal friction, strength envelope for different type of soil, | 1 |
| | **12/22/2021** | **Wednesday** | 7.2- Measurement of shear strength;- Direct shear test, | 1 |
| | **12/23/2021** | **Thursday** | 7.2- Measurement of shear strength; triaxial shear test, | 1 |
| | **12/24/2021** | **Friday** | 7.2- Measurement of shear strength; unconfined compression test | 1 |
| | **12/27/2021** | **Monday** | 7.2- Measurement of shear strength; vane-shear test | 1 |
| | **8 EARTH PRESSURE ON RETAINING STRUCTURES.(8P)** | | | |
| | **12/29/2021** | **Wednesday** | 8.1- Active earth pressure, Passive earth pressure, | 1 |
| | **12/30/2021** | **Thursday** | Earth pressure at rest. | 1 |
| | **12/31/2021** | **Friday** | Numerical Problems | 1 |
| | **1/3/2022** | **Monday** | 8.2- Use of Rankine's formula for the following cases (cohesion-less soil only) | 1 |
| | **1/5/2022** | **Wednesday** | Numerical Problems | 1 |
| | **1/6/2022** | **Thursday** | (i) Backfill with no surcharge | 1 |
| | **1/7/2022** | **Friday** | Numerical Problems, , (ii) backfill with uniform surcharge | 1 |
| | **15 MORE CLASSES REQUIRED** | | | |
| | | | Numerical Problems | 1 |
| | **9.FOUNDATION ENGINEERING.(14P)** | | | |
| **JANUARY** | | | 9.1- Functions of foundations, | 1 |
| | | | Shallow and deep foundation, | 1 |
| | | | Different type of shallow and deep foundations with sketches. | 1 |
| | | | Types of failure (General shear, Local shear & punching shear) | 1 |

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| | | 9.2- Bearing capacity of soil, | 1 |
| | | 9.2- Bearing capacity of soil, bearing capacity of soils using Terzaghi's formulae & IS Code formulae for strip, | 1 |
| | | Numerical problems | 1 |
| | | 9.2- Bearing capacity of soil, bearing capacity of soils using Terzaghi's formulae & IS Code | 1 |
| | | Numerical problems | 1 |
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| | | Numerical problems | 1 |