



Dipartimento di Scienze e Tecnologie

ANNO ACCADEMICO 2017/2018

**CORSO di STUDIO in Scienze Geologiche
INSEGNAMENTO in Laboratorio di Geologia Tecnica**

**DOCENTE
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1. WELCOME AND COURSE PRESENTATION
2. INDEX PROPERTIES OF THE SOILS
 - 2.1 Representative Physical model and volumetric indexes
 - 2.2 Volumetric parameters
 - 2.3 Granulometric distribution and correlated parameters
 - 2.4 Granulometric distribution of cohesionless soils
 - 2.5 Granulometric distribution of cohesion soils
 - 2.6 Interpretation of the granular size distribution curves
3. CLAYEY SOIL FEATURING
 - 3.1 Geological formation and mineralogy
 - 3.2 Role of the water
 - 3.3 Water content and Atterberg limits
 - 3.4 Index plasticity property
4. MECHANISM BEHAVIOUR OF SOILS
 - 4.1 Stress distribution and typology
 - 4.2 Principles of Stress and Strain
 - 4.3 Mohr-Coulomb model
 - 4.5 Mohr-Coulomb circles and stress distribution
 - 4.6 Stress-strain linear relation
 - 4.7 Lithostatic stress
 - 4.8 Efficacy stress principle
 - 4.9 Rankine state of plastic equilibrium
 - 4.10 Passive and Active load
 - 4.11 Tensional running and drained undrained failures
5. HYDRAULIC BEHAVIOUR OF SOILS
 - 5.1 Hydrostatic condition and Darcy Law
 - 5.2 Permeability test: constant and variable loads
 - 5.3 Permeability in layered medias.
 - 5.4 Stationary water flow: Laplace theory
 - 5.5 Water flow direction and its role on efficacy tensions.
6. CONSOLIDATION THEORY
 - 6.1 On Consolidation Phenomenon
 - 6.2 Settlements
 - 6.3 Terzaghi's principle
 - 6.4 Degree of consolidation
 - 6.6 Time dependent and drainage models
7. LABORATORY TESTS
 - 7.1 Consolidation equipment and edometer tests
 - 7.2 Consolidation curves and primary consolidation and secondary compression
 - 7.3 Compression curves and edometer module
 - 7.4 Over-consolidation degree
 - 7.5 Casagrande Shear Box and direct shearing
 - 7.6 Shear straight in granular soils
 - 7.7 Shear straight in cohesive soils
 - 7.8 Triaxial equipment
 - 7.9 Consolidation and failure in triaxial cell
 - 7.10 CID triaxial test
 - 7.11 CIU triaxial test
 - 7.12 UU triaxial test