FACULTY OF **ENGINEERING**

DEGREE COURSE: **CIVIL AND ENVIRONMENTAL ENGINEERING BS**

**SUBJECT**: SOIL MECHANICS AND FOUNDATION ENGINEERING

**LECTURER**: ELISABETTA CATTONI

E-mail: elisabetta.cattoni@uniecampus.it

## OBJECTIVES

1. basics of soil mechanics through the introduction of theoretical concepts and experimental fundamentals of Geotechnical Engineering;
2. geotechnical design methods for retaining structures and shallow/deep foundations

## CONTENTS

Soil identification and classification
Stress and strain analysis
Principle of effective stress, pore pressure
Seepage and flow net
Laboratory testing: experimental investigation of the mechanical properties of soils
Stress history of natural deposits
One-dimensional consolidation
Soil compressibility
Settlements
Shear strength and stiffness soil properties
Earth pressure: active and passive limit states, Rankine's theory and Coulomb limit equilibrium method
Earth retaining structures
Shallow and deep foundations: bearing capacity and design calculation

## LEARNING OUTCOMES

- Knowledge of the fundamentals of soil mechanics and geotechnical engineering topics.

## ASSESSMENT

Written exam: multiple choice and open questions

## RECOMMENDED TEXTBOOKS

- T. W. Lambe, R. V. Whitman (1969). Soil Mechanics. John Wiley & Sons Ed.
- David Muir Wood (1991). Soil Behaviour and Critical State Soil Mechanics. Cambridge University Press.
- J. E. Bowles (2001). Foundation Analysis and Design. Mcgraw-Hill Higher Education.
- W. Powrie (2004). Soil Mechanics: concepts and applications. (Second Edition) CRC Press.