Geoenvironmental Design Theory

2 units (selection)

Teacher of course, Hisashi Suzuki · Associate Professor / Geotechnical and Geoenvironmental Engineering, Civil and Environmental Engineering, Intelligent Structures and Mechanics Systems Engineering
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Target〉 The purpose of this course is to present state-of-the-art theories of geomechanics which contribute to the well-balanced development and conservation of the geoenvironment. The course consists of two main parts: stability analyses and deformation theories of earth structures.

Outline〉 In the stability analyses, theories of limit equilibrium methods, limit analysis methods and slip line methods, as well as their applications to stability, bearing capacity and earth pressure problems are addressed. In the deformation theories, the original Cam Clay Model and the latest developments in critical state soil mechanics together with finite element methods are described.

Style〉 Lecture

Keyword〉 ***stability problem, deformation problem***

Fundamental Lecture〉 "**Advanced Soil Structure Earthquake Resistance Design**"(1.0), "**Advanced Soil Mechanics**"(1.0)

Relational Lecture〉 "**Geoenvironment Control Engineering**"(0.5)

Goal〉

1. To understand strength theories of earthen structures
2. To understand deformation theories of geo- materials

Schedule〉

1. Introduction of stability problems
2. Limit equilibrium method (part 1)
3. Limit equilibrium method (part 2)
4. Limit analysis (part 1)
5. Limit analysis (part 2)
6. Slip line method (part 1)
7. Slip line method (part 2)
8. Progressive failure analysis of stability problems
9. Introduction of deformation problems and growth of Cam-clay theory
10. Existence of Critical State Line
11. Existence of Roscoe Surface
12. Existence of Hvorslev Surface
13. Elasto-plastic theory of saturated clay
14. Associate flow rule for yield surface of soil
15. Equation for State Boundary Surface of Cam-clay Model

Evaluation Criteria〉 Assignments count 100%.

Textbook〉 To be introduced in the class.

Reference〉 To be introduced in the class.

Contents〉 http://cms.db.tokushima-u.ac.jp/cgi-bin/toURL?EID=216688

Student〉 Able to be taken by only specified class(es)

Contact〉

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