

96學年度第2學期

課程名稱：土壤力學

學分數：3

課程編號：

負責教師：祝錫智 E736

課程目標：土壤力學為土木工程系最基本的課程之一，本課程主要介紹整體土壤的基本力學行為，並介紹一些不良土壤對工程的影響。

上課內容除了以講義置於『教學支援平台』外另需參考『教科書』

課程內容概要：

- 1.土壤力學介紹
- 2.土壤的組成及分類
- 3.地下水流
- 4.有效應力觀念
- 5.土壤內之應力
- 6.黏性土壤之壓密
- 7.土壤的剪力強度

成績計算方法：

除有期中考及期末考外、平時測驗約二至三周一次

教科書：

Essentials of Soil Mechanics and Foundations: Basic Geotechnics: 7th edition

作者：David McCarthy 出版社：Pearson/Prentice Hall

參考書：

1. Das, B. M. (2002), Principles of Geotechnical Engineering, 5th edition, Prindle, Weber and Schmidt.
2. Holtz, R. D. and Kovacs, W. D. (1981), An Introduction to Geotechnical Engineering, Prentice-Hall, Englewood Cliffs, New Jersey. (有中譯本)
3. Lambe, T. W. and Whitman, R. V. (1962), Soil Mechanics, John Wiley and Sons, New York. (有中譯本)
4. McCarthy, D. F. (1998), Essentials of Soil Mechanics and Foundations Basic Geotechnics, 5th edition, Prentice Hall, Upper Saddle River, New Jersey.
5. Liu, C. and Evett, J. B. (2004), Soils and Foundations, 6th edition, Prentice Hall, New Jersey.

網路上的教科書：

<http://geo.verruijt.net/software/SoilMechBook.ZIP> (解壓後為 pdf 格式)

網路上的試驗手冊：

Laboratory Soils Testing -----EM 1110-2-1906

<http://www.usace.army.mil/inet/usace-docs/eng-manuals/em1110-2-1906/entire.pdf>

工具書：

1. 大地工程名詞統一譯名(土木水利工程學會)
2. 最新大地工程辭典(游啟亨)
3. 地工名詞英漢對照(鄭文龍)
4. 地質學名詞(國立編譯館)

備註：每次上課及考試均需帶製圖工具及計算機



Essentials of Soil Mechanics and Foundations

Basic Geotechnics

Seventh Edition

David F. McCarthy

96學年度第2學期

教科書：**Essentials of Soil Mechanics and Foundations: Basic Geotechnics: 7th edition**

作者：David McCarthy
出版社：Pearson/Prentice Hall
版本：7
語言：English

ISBN：0-13-114560-6

內容介紹：

For courses in Soil Mechanics and Foundations. Essentials of Soil Mechanics and Foundations: Basic Geotechnics, Seventh Edition, provides a clear, detailed presentation of soil mechanics: the background and basics, the engineering properties and behavior of soil deposits, and the application of soil mechanics theories. Appropriate for soil mechanics courses in engineering, architectural and construction-related programs, this new edition features a separate chapter on earthquakes, a more logical organization, and new material relating to pile foundations design and construction and soil permeability. It's rich applications, well-illustrated examples, end-of-chapter problems and detailed explanations make it an excellent reference for students, practicing engineers, architects, geologists, environmental specialists and more.

目錄：

PART I: BACKGROUND AND BASICS

1. The Soil and Rock of Planet Earth: Geologic Overview
2. Soil Types and Soil Structure
3. Soil Composition: Terminology and Definitions
4. Index Properties and Classification Tests, and Soil Classification Systems
5. Site Investigations: Purpose and Methods, Information and Procedures Available

PART II: ENGINEERING PROPERTIES AND BEHAVIOR OF SOIL DEPOSITS

6. Movement of Water Through Soil: Basic Hydrogeology, Subsurface Flow, Permeability, Capillarity
7. Movement of Water Through Soil: Practical Effects: Seepage, Drainage, Frost Heave, Contamination
8. Combined Stresses in Soil Masses: Stress at a Point and Mohr's Circle
9. Subsurface Stresses
10. Settlement: Soil Compression, Volume Distortion, Consolidation
11. Shear Strength Theory
12. Earthquakes and the Affects

PART III: APPLICATION OF SOIL MECHANICS THEORIES

13. Foundations: Introductory Concepts
14. Foundations: Design Considerations and Methods
15. Site Improvement: Earth Moving, Compaction, and Stabilization
16. Stability of Unsupported Slopes
17. Lateral Pressures and Retaining Structures

APPENDIX A: Application of LaPlace Equation to Flow Nets

APPENDIX B: Laboratory Procedure to Determine Coefficient of Consolidation

APPENDIX C: Mathematical Development of the Bishop Equation for Slope Stability

Bibliography

Answers to Selected Problems

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教科書：Essentials of Soil Mechanics and Foundations: Basic Geotechnics: 7th edition

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Approximately 40 years of experience in the field of civil engineering consisting of an intermix of (i) geotechnical engineering consulting experience that includes early training with geotechnical firms, all related to private and public projects (field subsurface investigations and evaluations, foundations design, field construction, site improvement) involving building construction, highway and airfield construction, dams, earth retaining structures, environmental projects, and (ii) the teaching of college coursework in civil engineering programs (geotechnical engineering, soil and constructions materials testing, engineering mechanics, structural design).