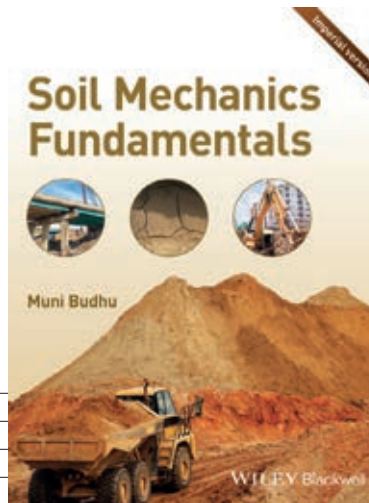


Review



Tom Shire finds the “less is more” approach of this book appealing to students looking for a straightforward and accessible textbook, but suspects UK undergraduates would prefer a book written specifically for a British audience.

Soil Mechanics Fundamentals



Author: Muni Budhu

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Given the highly variable nature of geological materials and their wide range of possible strength and deformation characteristics, a sound understanding of soil mechanics is essential for any engineer wishing to undertake geotechnical design. Muni Budhu has produced a good textbook covering only the most essential aspects of soil testing and behaviour, which would be included in the first two years of a typical UK undergraduate course. The book really does not stray beyond the most important points – but a “less is more” approach is probably a good thing given the relatively limited time devoted to geotechnics in a standard civil engineering degree.

The new book is a pared-down version of Professor Budhu’s other geotechnical books, which in addition to soil behaviour and testing also cover design. The first two chapters cover the classification of soils according to their geological origin, particle size and density. Chapter 3 covers the main stages of a geotechnical site investigation, including *in situ* testing. Chapter 4 covers the flow of water through the ground and Chapter 5 covers the compaction of soil for use as a fill material. In Chapter 6 the distribution of stress in the ground is covered, and it is here that the principle of effective stress is introduced, leading into the study of soil settlement and

strength in Chapters 7 and 8. There are several useful appendices, including tables of typical values and empirical correlations, and a list of the most important equations used throughout the book.

A particular strong point of this book lies in the excellent descriptions of laboratory and field testing used to determine the strength and stiffness of soils, including the interpretation of the resulting data. However, the book covers only tests to the ASTM (American Society for Testing and Materials) and AASHTO (American Association of State Highway and Transportation Officials) standards. Although most of these have direct equivalents in the UK, in some cases alternative tests are used to determine the same parameter, e.g. this book describes the ASTM standard Casagrande apparatus for liquid limit, but not the falling cone method, which is preferred in the UK.

The author has clearly thought about how students will use the book, with terms clearly defined and useful mid-chapter summaries provided to guide students through each topic. Open-ended discussion questions are given at the end of each chapter to trigger critical thought about what soil mechanics means in a physical sense – an essential skill if students are to differentiate between the range of possible behaviours. The problems

at the end of each chapter are well pitched in terms of difficulty and are worked through thoroughly, which should help students when learning.

As its scope is limited to just the essentials of soil mechanics, with almost no design, this book would mainly appeal to undergraduate students who are looking for a straightforward and accessible textbook, in countries which use ASTM standards for geotechnical works. Students and geotechnical engineers in the UK would probably prefer one of the undergraduate level textbooks specifically written for a British audience. In summary, Professor Budhu’s book limits itself to only the most important topics, but does so in an intelligent way which many students will find useful.

Dr Tom Shire

Tom Shire is Senior Teaching Fellow in the Department of Civil and Environmental Engineering, Imperial College London. Previously he spent four years working for Scott Wilson Ltd. (now part of Aecom) as an assistant geotechnical engineer, before completing an MSc in Soil Mechanics followed by a PhD at Imperial College. After submission of his PhD thesis, Dr Shire spent just over one year as a geotechnical engineer at Atkins Ltd.