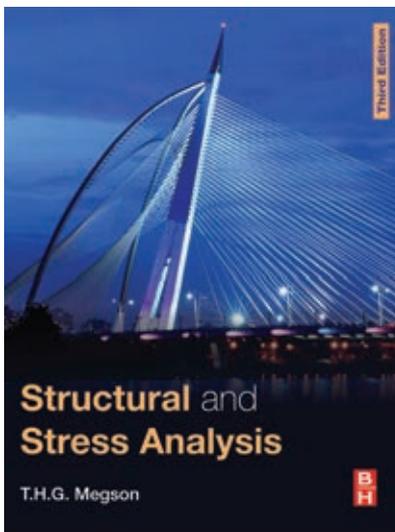


Review



The comprehensive book would make a useful companion for students of structural engineering, believes **Ian May**, seeing them though from undergraduate courses to postgraduate study or their first career steps as structural engineers.

Structural and Stress Analysis (3rd ed.)



Author: T. H. G. Megson

Publisher: Butterworth-Heinemann

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This is the third, enlarged edition of this book and the author explains in the preface that the changes from the previous editions are the inclusion of more examples, more problems to be solved by the reader, and an expansion of the relatively short section on fatigue and crack propagation. Solutions to the problems are given on an associated website.

The book covers the majority of the structures and stress analysis material likely to be taught on an undergraduate civil or structural engineering degree. Because it assumes no prior knowledge of structural mechanics, it could be a book to be used from the first year to the final year of an undergraduate course. In addition, it has topics that are more likely to be covered at postgraduate level and so would be a useful resource for postgraduate students – both for the new topics at this level and for use in the revision of topics covered at undergraduate level. Students using this book are almost certain to delve into it after graduating, when they start their careers as civil or structural engineers.

Both structural analysis and stress analysis are covered in the book and

because, since the first edition appeared, there has been a move in many universities offering civil and structural engineering courses to teach these forms of analysis as a single topic, this is an ideal book for such courses.

The strength of the book lies in the clear way in which the author, in each section within a chapter, presents the assumptions and limitations of the theory, and the derivation of the associated equations, followed by a number of examples of practical situations which use the theory. Finally, at the end of the chapters, where it is relevant, there are a number of problems for the reader to solve. Some of the material covered might seem irrelevant now that much of the structural and stress carried out in practice will be based on the use of computer software; however, in order that the engineer can be satisfied that the results from such software are correct, an understanding of the necessary theory is required. The author's objective is that the book should assist a student in achieving this understanding and I believe that this objective has been attained.

This is a physically large book, so

it would probably not be sensible to include additional topics without pruning others. However, one omission, which is of increasing importance in structural engineering, is coverage of structural dynamics.

Some attempts are made to cover the modelling of real structures for analysis by hand or computer, so that the reader is aware of the difficulties associated with this activity. But in order to equip students for practice, the material in the book would need to be supplemented by material on computer modelling and the verification and validation of such models, which is available in books aimed more specifically at these topics. The material in the book will certainly provide the necessary background before coming to terms with modelling of structures and the use of software.

There are a number of books which cover either structural or stress analysis or both, but this is certainly a book I would recommend strongly to those teaching on or taking a civil or structural engineering course. It would also be a purchase that would prove useful for engineers involved in structural analysis or design.

Ian M. May CEng, FIStructE, FICE

Ian May was, until his retirement in 2011, Professor of Civil Engineering at Heriot-Watt University, Edinburgh. He has an interest in the teaching of structures and particularly in the intelligent use of computer software for structural analysis, and is the author and joint author of a number of papers on these topics. He also carried out research into a number of areas within the structural engineering field, publishing over 100 technical papers.