

Book review

STRUCTURAL AND STRESS ANALYSIS: THEORIES, TUTORIALS AND EXAMPLES

Jianqiao Ye. Taylor & Francis, 2008, ISBN 13: 978-0-415-36879-7, £34.99, 218 pages.

In the preface the author states that 'this book is not intended to be an additional text book of structural and stress analysis' but intends to summarise 'major concepts and important points that should be fully understood before students claim that they have successfully completed the subject'. This is a worthy aim and this reviewer thinks it has been partially achieved but at the expense of rigour.

The book has eleven chapters which cover most of the topics likely to be met in an undergraduate civil engineering degree programme. Each chapter tends to follow a similar format: a section on definitions and theory, a key points review, examples, conceptual questions and problems. In some chapters the key points review is followed by a section entitled 'Recommended procedure of solution'.

Chapter 5 'Bending stresses in beams' is a typical chapter within the book. As with the entire book it is extremely well illustrated and set out. In the section on definitions and theory the intention is that terms in common usage and the assumptions should be carefully defined. However, this is not always the case. For example there is a sketch of the elastic distribution of stresses on the first page of the chapter but it is another page before the assumption that this is an elastic analysis is given; in the definition of terms for the engineers' elastic bending theory, 'I' is incorrectly defined as second moment of inertia as opposed to second moment of area,

although the correct term is used in the section titled 'Conceptual questions', and the elastic section modulus becomes the elastic modulus of section. While it may seem pedantic to pick on what might appear to be relatively minor points, it is statements such as these that can cause confusion and misunderstanding for both students and graduates in the early stages of their career. This section also summarises the important formulae – in this case for elastic bending theory and shear stress distribution for symmetric sections. A number of useful examples follow. The conceptual questions require discursive answers which should test the students' understanding of the topic. This is an interesting and useful innovation but the questions do need posing carefully in order that the assumptions made are clear. This is followed by a mini test which has both discursive and numerical questions – a few more numerical problems might have been usefully given. As with the section definitions and theory there is often a lack of rigour in the statements made by the author throughout the chapter.

As mentioned above, other chapters follow a similar format. Unfortunately they also contain similar examples of the type of 'woolly' statement described above.

While admiring the objectives of the book, which does contain some interesting and useful aids to help students understand the subject, the reviewer is of the opinion that the text needs careful editing, particularly the technical content, in order to 'tighten it up' before he would be willing to recommend it to either students or practising engineers.

IAN M. MAY