

Boundary Value Problems for Engineers : with MATLAB Solutions

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Abstrak

This book is designed to supplement standard texts and teaching material in the areas of differential equations in engineering such as in Electrical, Mechanical and Biomedical engineering. Emphasis is placed on the Boundary Value Problems that are often met in these fields. This keeps the spectrum of the book rather focussed. The book has basically emerged from the need in the authors lectures on “Advanced Numerical Methods in Biomedical Engineering” at Yeditepe University and it is aimed to assist the students in solving general and application specific problems in Science and Engineering at upper-undergraduate and graduate level. Majority of the problems given in this book are self-contained and have varying levels of difficulty to encourage the student. Problems that deal with MATLAB simulations are particularly intended to guide the student to understand the nature and demystify theoretical aspects of these problems.

Relevant references are included at the end of each chapter.

Here one will also find large number of software that supplements this book in the form of MATLAB script (.m files). The name of the files used for the solution of a problem are indicated at the end of each corresponding problem statement.

There are also some exercises left to students as homework assignments in the book. An outstanding feature of the book is the large number and variety of the solved problems that are included in it. Some of these problems can be found relatively simple, while others are more challenging and used for research projects. All solutions to the problems and script files included in the book have been tested using recent MATLAB software.

The features and the content of this book will be most useful to the students studying in Engineering fields, at different levels of their education (upper undergraduate-graduate).