

Preface to Second Edition

The book titled *Dynamic Analysis and Design of Offshore Structures: Second Edition* is updated with recent advancements in the field of research in deep-water offshore platforms. The author felt the necessity to update the contents by including experimental and numerical investigations carried out on new-generation offshore platforms. This edition includes many solved examples and exercise for self-learning, in addition to computer codes for various applications in dynamic analyses. Basic intention is to make it a widely accepted textbook for the senior under graduate and postgraduate students of civil, structural, applied mechanics, mechanical, aerospace, naval arch, and ocean engineering program. This new edition will also have valuable contents with respect to new and recent research carried out by the author in structural dynamics. Each chapter is updated with a section of frequently asked Q&A in the form of exercise, which is likely to enhance understanding of this complex subject, through easy and self-explanatory text.

To encourage easy learning and a better tool for classroom teaching, this edition is also supported with slide presentation to conduct the course in a complete classroom mode. This edition is also an outcome of a few short courses conducted by the author in the recent past, which were well attended by practicing engineers, both from India and abroad. New sections in almost all chapters are included with authentic research findings, which are verified by wide publications in various journals in the recent past.

My sincere thanks are due to my research scholars, colleagues, and my students who have given their valuable input and feedback to develop the contents of this book. In particular, I wish to express my thanks to Ms. Indira, Mr. Lognath, Mr. Kiran, and Ms. Nagavinothini for their editorial assistance and graphic art support extended during the preparation of manuscript of the book.

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Offshore structures are unique in the field of engineering, as they pose many challenges in the development and conceptualization of the design. As innovative platform geometries are envisaged to alleviate the encountered environmental loads efficiently, detailed understanding of their analysis and basic design becomes inevitable. Structural dynamics, being an important domain of offshore engineering, require an intensive teaching and guidance to illustrate the fundamental concepts as applied to ocean structures in particular. With the vast experience of teaching this subject and guiding research, a humble attempt is made to present the basics in a closed form, which will be useful for the graduate students and researchers. The chapters in the book are organized such that the reader gets an overall idea of various types of offshore plants, basic engineering requirements, fundamentals of structural dynamics and their applications to preliminary design. Numerical examples and application problems are chosen to illustrate the use of experimental, numerical, and analytical studies in the design and development of new structural form for deep-water oil exploration. This book is a repetitive effort in the direction of capacity building of practicing and consulting offshore structural engineers who need to understand the basic concepts of dynamic analysis of offshore structures through a simple and straightforward approach.

Video lectures of the courses available at the following websites: (i) <http://nptel.ac.in/courses/114106035>; (ii) <http://nptel.ac.in/courses/114106036>; and (iii) <http://nptel.ac.in/courses/114106037>, which also substitute the classroom mode of understanding of the contents of this book.

My sincere thanks are due to my professors, colleagues, and my students who have given their valuable input and feedback to develop the contents of this book. In particular, I wish to express my thanks to Ms. Ezhil, Ms. Indira, and Ms. Madhavi for their editorial assistance and graphic art support extended during the preparation of manuscript of the book.

I also owe a lot of thanks to all the authors and publishers who have earlier attempted to publish books on structural dynamics and allied topics, based on which I developed my concepts on the said subject.

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