Essentials of Offshore Structures

Framed and Gravity Platforms

D.V. Reddy and A.S.J. Swamidas

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Essentials of Offshore Structures

Framed and Gravity Platforms

To the Almighty Creator of Planet Ocean, with its vast resources and mighty challenges.

Preface

This textbook provides comprehensive coverage of the engineering concepts and design of offshore drilling platforms for exploration and production. The book is intended to provide the senior undergraduate or graduate student with a clear and adequate presentation of both the theory and application of the fundamental principles of structural, fluid, and geotechnical mechanics to offshore structures. Since the main focus is on the emphasis on pragmatic engineering applications for offshore structural design, research, and development, the text will also be very useful to those working in the design industry. In contradistinction to other books in the field, this text has numerous example and homework problems.

It is a pleasure to thank all the authors and publishers of the many books and articles, listed in the bibliography but too numerous to list here, who kindly permitted the reproduction of many figures and tables in the chapters. Thanks are due to Ms. Caroline Cynthia, who worked diligently for the processing of the figure and table permission requests and the typing of the manuscript. The publisher has been exceedingly cooperative in helping to meet the submission deadlines.

Finally, we must record our gratitude to our wives, Geetha and Melly, who stoically provided moral support to make this book possible.

Suggested Method of Coverage for a 16-Week Course

Lectures	
Date	**Topic**
Week 1	Chapter 1 and Chapter 2, Reading Assignment, Assignment 1
	Chapter 3: Sections 3.3, 3.4, 3.5, and 3.8
	Chapter 3: Sections 3.3, 3.4, 3.5, and 3.8—continued
Week 2	Chapter 3: Sections 3.3, 3.4, 3.5, and 3.8—continued
	Chapter 3: Sections 3.3, 3.4, 3.5, and 3.8—continued
	Chapter 3: Sections 3.3, 3.4, 3.5, and 3.8—continued
Week 3	Chapter 3: Sections 3.3, 3.4, 3.5, and 3.8—continued
	Chapter 3: Sections 3.3, 3.4, 3.5, and 3.8—continued, Assignment 2
	Chapter 4: Sections 4.2 and 4.5
Week 4	Chapter 4: Sections 4.2 and 4.5—continued
	Chapter 4: Sections 4.2 and 4.5—continued
	Chapter 4: Sections 4.2 and 4.5—continued
Week 5	Chapter 4: Sections 4.2 and 4.5—continued, Assignment 3
	Chapter 5: Sections 5.1 and 5.3
	Chapter 5: Sections 5.1 and 5.3—continued
Week 6	Chapter 5: Sections 5.1 and 5.3—continued
	Chapter 5: Sections 5.1 and 5.3—continued, Assignment 4
	Chapter 6: Sections 6.3.1 to 6.3.5, and 6.3.8
Week 7	Chapter 6: Sections 6.3.1 to 6.3.5, and 6.3.8—continued
	Chapter 6: Sections 6.3.1 to 6.3.5, and 6.3.8—continued
	Chapter 6: Sections 6.3.1 to 6.3.5, and 6.3.8—continued
Week 8	Chapter 6: Sections 6.3.1 to 6.3.5, and 6.3.8—continued
	Chapter 6: Sections 6.3.1 to 6.3.5, and 6.3.8—continued
	Chapter 6: Sections 6.3.1 to 6.3.5, and 6.3.8—continued

Week 9	Chapter 6: Sections 6.3.1 to 6.3.5, and 6.3.8—continued, Assignment 5
	Chapter 7: Sections 7.2 to 7.4
	Chapter 7: Sections 7.2 to 7.4—continued
Week 10	Chapter 7: Sections 7.2 to 7.4—continued
	Chapter 7: Sections 7.2 to 7.4—continued
	Chapter 7: Sections 7.2 to 7.4—continued
Week 11	Chapter 7: Sections 7.2 to 7.4—continued
	Chapter 7: Sections 7.2 to 7.4—continued, Assignment 6
	Chapter 8: Sections 8.2, 8.3.2.2, and 8.4
Week 12	Chapter 8: Sections 8.2, 8.3.2.2, and 8.4—continued
	Chapter 8: Sections 8.2, 8.3.2.2, and 8.4—continued
	Chapter 8: Sections 8.2, 8.3.2.2, and 8.4—continued
Week 13	Chapter 8: Sections 8.2, 8.3.2.2, and 8.4—continued
	Chapter 8: Sections 8.2, 8.3.2.2, and 8.4—continued
	Chapter 8: Sections 8.2, 8.3.2.2, and 8.4—continued, Assignment 7
Week 14	Chapter 9: Sections 9.2, 9.3, and 9.4
	Chapter 9: Sections 9.2, 9.3, and 9.4—continued
	Chapter 9: Sections 9.2, 9.3, and 9.4—continued
Week 15	Chapter 9: Sections 9.2, 9.3, and 9.4—continued
	Chapter 9: Sections 9.2, 9.3, and 9.4—continued
	Chapter 9: Sections 9.2, 9.3, and 9.4—continued, Assignment 8
Week 16	Review
	Review

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A. S. J. Swamidas, PhD (Indian Institute of Technology, Chennai), MSc (Madras University) and BEng (Hons) (Madras University) is an honorary research professor of engineering, Memorial University, St. John's, Newfoundland and Labrador, Canada. He has held professorships at the Indian Institute of Technology, Chennai, India, and at Memorial University, Newfoundland and Labrador (NL), Canada, with a distinguished academic, teaching, and research career. He has taught offshore structures to graduate and undergraduate students for more than 20 years and acted as a consultant to a number of companies. His research interests are in the area of dynamics of offshore and onshore structures with particular focus on computational mechanics and damage detection. He has authored over 210 papers/reports and two conference volumes. He was a registered professional engineer in Newfoundland and Labrador, Canada.

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