

BASIC CIVIL & ENVIRONMENTAL ENGINEERING

F. E. (Sem.- I)

Prof. Manoj P. Wagh

Prof. Chittranjan Birabar Nayak

As Per
New
Syllabus



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This Reference Book of 'Basic Civil & Environmental Engineering' is useful for Savitribai Phule Pune University and other Universities of Maharashtra as well as competitive exams.

Basic Civil & Environmental Engineering

F. E. (Sem. - I)

Prof. Chittranjan Birabar Nayak

Vidya Pratishthan's Collage of Engineering (VPCOE), Baramati, Pune.


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Preface

It is a matter of great pleasure for us to present this book to our esteemed readers. This book has been designed as standard text on Basic Civil & Environmental Engineering for F. E. (Sem. - I).

This book comprehensively covers the entire syllabus of F. E. Course of University of Pune effective from June 2012 onwards. It has been written to meet the requirements of students of F. E. Some of the special features of the book are as follows :

1. Full coverage of the revised syllabus of F. E.
2. Chapter outline at the beginning of each chapter to give a bird's eye view of the topics covered in the chapter.
3. Pointwise explanation of each topic in the chapter.
4. Topics are logically arranged in numbered paragraphs exactly according to the modified syllabus.
5. Proposed questions at the end of each chapter.
6. Extensive use of diagrams, tables and various forms to give visual view of key concepts and techniques.
7. Conversational, lucid and simple language.

Every effort has been made to provide the readers with most up-to-date and authentic material on the subject.

We are very grateful to our publisher Mrs. and Mr. Rajesh Patne who have rendered all possible assistance in bringing out this book. We wish to acknowledge our deep gratitude to staff who have assisted and helped us in preparing this book. We will consider our efforts amply rewarded in case the book proves useful to the students and teachers of the subject.

Suggestions of readers are welcome and shall be acknowledged with gratitude.

With best wishes.

Prof. Chittranjan Birabar Nayak

Prof. Manoj P. Wagh



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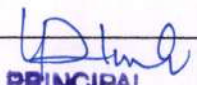
Unit	Topic Name	Page No.
1.	Introduction to Civil Engineering 1.1 Basic area in Civil Engineering 1.2 Project Management 1.3 Role of civil engineer 1.4 Civil Engineering Infrastructure Projects 1.5 Importance Of An Interdisciplinary Approach	1.1 to 1.14
2.	Materials and Construction 2.1 Basic Material for Construction 2.2 Reinforcing Steel Mild 2.3 Concrete Types 2.4 Recycling of Materials 2.5 Foundation 2.6 Shallow Foundation 2.7 Deep foundation 2.8 Loads 2.9 Types of Construction 2.10 Automation in Construction	2.1 to 2.48
3.	Uses of maps and field 3.1 Scale: 3.2 Maps: 3.3 Principles of survey: 3.4 Modern Survey Methods: 3.5 Digital Mapping: 3.6 Digital Planimeter for Measuring Areas From Maps: 3.7 Levelling: 3.8 Preparation of Contour Maps: 3.9 Geographical Information System (GIS)	3.1 to 3.27

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Unit No.	Topic	No. of Lectures
	b) simple and differential levelling for setting out various benchmarks, determining the elevations of different points and preparation of contour maps. Introduction to GIS Software and its application areas.	
	Section II	
4.	Ecology and Eco System (6 hours) a) Concept of Environment - biotic and abiotic factors. Impact of the human behaviour and the technological advancements on the environment. Need for conserving natural resources and preserving the environment. Engineer's role in achieving sustainable development. Environmental Impact Assessment (only concept). b) Introduction to solid waste management, electronic wastes and its disposal.	
5.	Planning for the Built Environment a) Concept of an integrated built environment-natural and manmade. Principles of planning, viz. Aspect, Prospect, Roominess, Grouping, Privacy, Circulation, Sanitation, Orientation, Economy. b) Use of various eco-friendly materials in construction. Concept of green buildings. c) Role of by-laws in regulating the environment, Concept of built up area, carpet area, plinth area. Plot area, FSI.	(6 hours)
6.	Energy and Environmental Pollution a) Types of energy:- conventional and non-conventional. Need for harnessing alternative energies to meet the increased demand. Methods of harnessing energies. b) Sources, causes, effects and remedial measures associated with 1. Air Pollution 2. Water pollution 3. Noise Pollution 4. Land Pollution	(6 hours)

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Prof. Manoj P. Wagh has almost 13 years of Teaching Experience. He is currently working as a Assistant Professor at Padmashree Dr. Vitthalrao Vikhe Patil College of Engineering Ahmednagar. He has attended many Seminars, Workshops and Conferences. He also showed his vigorous contribution in Paper Presentation at International Level and National Level and many of the get published too. He is also Life Member of ISTE, ISRMTT, AMIE. He also holds variety of other crucial positions like External Senior Supervisor, Co-ordinator for state level paper and poster presentation, member of Flying Squad and many more.



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Prof. Chittranjan Birabar Nayak has an excellent academic background. He has almost 6 years of Teaching Experience. He is currently working as a Asst. Professor in Civil Engineering Department at Vidya Pratishthan's College of Engineering (VPCOE), Baramati, Pune. He has rich and vast knowledge in the field of Basic Civil and Environmental Engineering, Structural Engineering etc. He has attended many Seminars, Conferences and Workshops. He also showed his massive contribution in Paper Presentation at International Level and National Level and many of them get published too.


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