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currently working as an Assistant Professor at Padmasree 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, ISRMIT, 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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Late G. N. Sapkal College of Engineering, Nashik.



Prof. Sharad R. Pagar has almost 6 years of industrial and more than 3 years of teaching experience. He is currently working as an Assistant Professor at Late G. N. Sapkal College of Engineering, Nashik. He has vast and rich knowledge in the field of Quantity Surveying, Contracts and Tenders, Project Management and Engineering Economics, Construction Management, Basic Civil Engineering, Systems approach in Civil Engineering etc. He is also Life Member of MIE, MIIBE and SMS.

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Dr. Vitthalrao Vikhe Patil
College of Engineering
Ahmednagar

BASIC CIVIL AND ENVIRONMENTAL ENGINEERING

F. E. Sem.- I (101005)

Prof. Manoj P. Wagh
Prof. Pankaj R. Modak
Prof. Anirudh H. Shirke
Prof. Sharad R. Pagar

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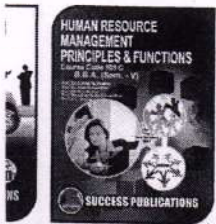
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Preface

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 2015 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.

By Authors

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Marks	Credits
Max marks	
125	5
5	
100	4
125	4
125	4
50	2
50	1
700	25


Syllabus

F. E. (Sem. - I) (101005)

Basic Civil and Environmental Engineering

Unit No.	Topic	No. of Lectures
	Section I	
1.	Introduction to Civil Engineering a) Basic Areas in Civil Engineering Surveying, Construction Engineering, Fluid Mechanics, Transportation Engineering, Irrigation Engineering, Geotechnical and Foundation Engineering, Environmental Engineering, Quantity surveying, Town Planning, Earthquake Engineering, Infrastructure Development. b) Role of Civil Engineer in the construction of buildings, dams, expressways and infrastructure projects for 21st century. Importance of an interdisciplinary approach in engineering.	(6 hours)
2.	Materials and Construction a) Basic Materials for Construction - cement, bricks, stone, natural and artificial sand, Reinforcing steel - Mild, Tor and High Tensile Steel. Concrete types - PCC, RCC Prestressed and Precast. Recycling of materials. b) Substructure - Definition and functions of Foundation, (only concepts of settlement and Bearing capacity of soils.) Types of shallow foundation, Deep foundation (only concept of friction and end bearing pile). c) Superstructure - Types of Loads : DL and LL, wind loads, earthquake considerations. Types of Construction - Load Bearing, Framed, Composite. Fundamental requirements of masonry. d) Introduction to Automation in Construction - Concept, need, examples related to different civil engineering projects.	(6 hours)
3.	Uses of Maps and Field Surveys a) Principles of survey introduction to scale, types of maps and their uses. Modern survey methods using levels, theodolite, EDM, lasers, total station and GPS. Measuring areas from maps using digital planimeter.	(6 hours)

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No. of
Lectures

BASIC CIVIL AND ENVIRONMENTAL ENGINEERING

F.E. (Sem. I) (101005)

INDEX

(6 hours)

Unit	Topic	Page No.
1	Introduction to Civil Engineering	1.1 to 1.26
	1.1 Civil Engineering 1.2 Role of Civil Engineer in its Own Branch 1.3 Role of Civil Engineers in the Construction of Dam	
2	Materials and Construction	2.1 to 2.52
	2.1 Basic Material for Construction 2.2 Substructure 2.3 Superstructure 2.4 Automation in Construction	
3	Uses of Maps and Field Surveys	3.1 to 3.51
	3.1 Surveying and Levelling 3.2 Digital Mapping 3.3 Levelling 3.4 Contour Maps 3.5 Geographical Information System (GIS)	
4	Ecology and Eco System	4.1 to 4.37
	4.1 Ecology and Eco System 4.2 Concept of Environment 4.3 Impact of the Human Behavior 4.4 Resource Conservation Practices 4.5 Engineer's Role in Achieving Sustainable Development	

(6 hours)

(6 hours)



Prof. Manoj P. Wagh

M.E. (Civil), Ph.D. (Pursuing)

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