

# Analysis and Design of MSE (mechanically stabilized earth) Walls

## Overview

Design methodologies with the important design/construction considerations for mechanically-stabilized earth (MSE) walls will be described in this course. The design, construction and monitoring techniques for these structures have evolved over the last three decades as a result of efforts by various researchers to improve the technology or the materials used. Mechanically Stabilized Earth Wall (MSE wall or MSEW) is a generic term that includes reinforced soil (a term used when multiple layers of inclusions act as reinforcement in soils placed as fill). The effects of design methods, particularly the impact of the new load and resistance factor design (LRFD) method, on MSE walls will also be discussed in the course through the use of realistic examples. Overview of MSE development and the cost, advantages, and disadvantages of using MSE structures will be discussed in this course. Design of routine and complex MSE walls and design of MSE walls for extreme events will be covered in this course. Codal guidelines from various international and national codes will be discussed in this course. An exhaustive practical project will be given to the students to work on during the practical classes.

The content of course provides a comprehensive coverage of those issues by discussing the following specific topics:

1. Earth pressure theory
2. Bearing capacity
3. Reinforced soil concepts
4. MSE walls - design principles and guidelines
5. Geo-wall design, construction and testing

<b>Modules</b>	<b>A: Basic theory and mechanics of reinforced soil</b> <b>B: Practical designs and fabrication of prototypes of MSE walls</b> <b>Course Duration: 29/7/2019-9/8/2019 (11 days including Saturday and excluding Sunday)</b> <b>Number of participants for the course will be limited to sixty.</b>
<b>You Should Attend If...</b>	<ul style="list-style-type: none"> <li>▪ You are a civil engineer working in the industry and interested to know the analysis, design and construction of <b>Mechanically Stabilized Earth Wall</b> (MSE wall or MSEW).</li> <li>▪ You are a student (3rd and 4th year B.Tech students in Civil Engineering, 1st and 2nd year M.Tech students in Civil Engineering, research student in the relevant areas) or faculty from academic institution interested in learning how to do research on <b>Mechanically Stabilized Earth Wall</b>.</li> </ul>
<b>Fees</b>	<p>The participation fees for taking the course is as follows:</p> <p><b>Participants from abroad : US \$500</b></p> <p><b>Industry/ Research Organizations: Rs. 15000/-</b></p> <p><b>Faculty in Academic Institutions: Rs.8000/-</b></p> <p><b>Student in Academic Institutions: Rs.2000/-</b></p> <p><b>Student in Academic Institutions (India) belonging to the reservation category (SC/ST): Rs.1000/-</b></p> <p>The above registration fee includes all instructional materials, computer use for tutorials and assignments, laboratory equipment usage charges, and free internet facility. The participants will be provided with accommodation on payment basis (as per actual). An additional fee of Rs. 4000/- has to be paid for food. Food will include Breakfast, Lunch, Dinner and Coffee/ Tea with snacks during the course. This payment has to be done in addition to the mandatory registration fee. Those who are staying outside the campus can pay Rs.2000 for Lunch and Tea/snacks for all days.</p>

## The Faculty



**Prof. Radu Popescu** is a faculty member in College of Architecture and Environmental Design at California Polytechnic State University, California, USA. He is having experience in foundation design and computational / experimental soil mechanics (foundations of nuclear and fossil power plants, oil and gas pipelines, and embankment dams), site characterization, laboratory and in-situ soil tests, centrifuge modeling, soil-structure interaction, and soil liquefaction. In his research he uses the tools of probabilistic mechanics to address various uncertainties manifested in the geologic environment (e.g. stochastic variability of soil properties, natural hazards). He was a leader and supervisor for several international collaborative projects. He has participated in enhancement and application of advanced finite element programs (ANSYS, ABAQUS, DYNAFLOW). He has also participated in software development in MATLAB, MathCad, Java, C, FORTRAN, Geotechnical software (L-Pile, Geo-Slope, etc) and development of analysis tools for estimating loading hazards and material uncertainties for risk assessment and management. He was also a faculty member in Memorial University of Newfoundland, Canada and Princeton University, USA. He has published over 120 papers in journals and conference proceedings.



**Dr. Pradipta Chakraborty** is an Assistant Professor in Indian Institute of Technology Patna. His research interest includes the soil dynamics and geotechnical earthquake engineering, soil heterogeneity, finite element analysis in geotechnical engineering, ground improvement, probabilistic methods in engineering and geotechnical centrifuge testing. He has received the Indian Service of Engineers award for his performance during M. Tech. He was a recipient of Fellow of the school of graduate studies award in 2009 from Memorial University of Newfoundland for his outstanding achievement and contribution during PhD.

### Boarding & Lodging

Limited accommodation is available in the Institute guest house/ hostels for a very limited number of participants on payment as per actual and with advance request.

## Course Co-ordinator

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### For Registration

Register at GIAN site:  
<http://www.gian.iitkgp.ac.in/GREGN> and sent application with fees to course coordinator.  
Deadline for submitting application: 30<sup>th</sup> June, 2019  
Notification of acceptance: 15<sup>th</sup> July, 2019