



Short Course on Geosynthetics In Transportation Geotechnics

Description:

Geosynthetics provide sustainable alternatives for enhanced performance, durability and cost-effectiveness of road pavements, railways and airfields. This short course provides an integrated view of the multiple applications of geosynthetics in these three transportation modes. This includes the mechanisms involved in the different applications, the identification of relevant properties, the available design methodologies, and case histories involving the use of geosynthetics in pavements, railways and airfields. An outline of the main topics to be covered is as follows:

Welcome. Objectives of the Short Course

Geosynthetics: Types and Functions

Structural capacity of pavements, railways and airfields

Overview of GS in pavements, railways and airfields

Mitigation of reflective cracking in structural asphalt overlays

Stabilization of unbound aggregate layers

Stabilization of unbound aggregate layers

Reduction of layer intermixing

Reduction of moisture in structural layers

Stabilization of soft subgrades

Mitigation of shrink/swell distress

Path forward. Closure

This is a full-day (8 hours) short course, organized on behalf of the North American Chapter of the International Geosynthetic Society (IGS-NA). Course attendees will complete the short course with a working knowledge on the characteristics of different geosynthetics and their use to solve specific problems in the structural design of pavements, railways and airfields.

Instructors:



Dr. Jorge G. Zornberg is Professor in Geotechnical Engineering at The University of Texas at Austin. He has over 30 years' experience in practice and research in geotechnical and geosynthetics engineering. As an engineering consultant, he has been involved in the design of civil, transportation, mining and waste containment infrastructure. He has also served as expert witness in numerous litigation cases and forensic investigations. As a researcher, his focus has been on soil reinforcement interaction, geosynthetics, earth retaining structures, roadways, urban and mining waste containment, unsaturated soils, and numerical and physical (centrifuge) modeling of geotechnical systems. From 2010 to 2014, Prof. Zornberg served as president of the International Geosynthetics Society (IGS). He has also served in leadership roles with the ASCE Geo-Institute, currently chairing the Geosynthetics Technical Committee. He has authored over 400 technical publications, edited a number of proceedings and book chapters, and been awarded three patents. Prof. Zornberg has been invited to deliver keynote lectures in numerous events around the world. He has also received many prestigious awards, including the Mercer Lecture, ASCE's Croes Medal, IGS' Award, ASCE's Collingwood Prize, and IGS' Young Member Award, as well as the Presidential Early Career Award for Scientists and Engineers (PECASE) awarded by the President of the US.



Dr. Erol Tutumluer is Abel Bliss Professor of Engineering specializing in Transportation Geotechnics at The University of Illinois at Urbana-Champaign (UIUC). He has been active in geosynthetics engineering research, education, and practice for over 20 years. He has research interests and expertise in characterization of pavement and railroad track geomaterials, i.e., subgrade soils and base/ballast unbound aggregates, soil/aggregate stabilization and geosynthetics. Dr. Tutumluer has served as an investigator on over 100 research projects and graduated 21 PhD and 44 MS students, and authored/co-authored over 350 peer reviewed publications from his research projects. Dr. Tutumluer currently serves as a Council Member and Publication Committee Chair of the International Geosynthetics Society. Dr. Tutumluer is the Editor-in-Chief of the Transportation Geotechnics Elsevier journal and the Chair of the ISSMGE Technical Committee 202 on Transportation Geotechnics. Dr. Tutumluer is an active affiliate of the Transportation Research Board (TRB) and serves as the Chair of TRB's AKG00 Geological and Geotechnical Engineering Section. He served as the Chair of TRB's AFP70 Aggregates Committee in 2011-2016 and he is a member of the AKG80 Geosynthetics Committee. Dr. Tutumluer has received prestigious awards for his research achievements such as the ASCE's James Laurie Prize and Carl L. Monismith Lecture award and the TRB's Fred Burgraff award for Excellence in Transportation Research. Dr. Tutumluer received several paper awards including TRB's Geology and Geotechnical Engineering Section Best Paper Awards in 2009, 2012, 2016, 2019.



Dr. Jie Han, F.ASCE, is the Glenn L. Parker Professor of Geotechnical Engineering in the Civil, Environmental, and Architectural Engineering Department at the University of Kansas. He has gained extensive teaching, research, and industry experiences in geosynthetics, ground improvement, pile foundations, buried structures, and roadways. Prof. Han is the sole author of the book entitled "Principles and Practice of Ground Improvement" and has published more than 400 peer-reviewed journal and conference papers. Prof. Han is a member of Board Governors of the ASCE Geo-Institute, a council member of the International Geosynthetics Society, and the chair of the TRB Transportation Earthworks Committee. He serves as an associate editor for the ASCE Journal of Geotechnical & Geoenvironmental Engineering and the ASCE Journal of Materials in Civil Engineering, and a handling editor for Transportation Research Record. Prof. Han has been invited to give the 3rd Robert M. Koerner Award Lecture in 2021, the State of the Practice Lecture at the 21st Annual George F. Sowers Symposium in Atlanta, Georgia in 2018, and the 18th UK IGS Lecture in London in 2018. He has received numerous awards from the profession including but not limited to two US Transportation Research Board Best Paper Awards in 2008 and 2017, the 2011 Shamsher Prakash Prize for Excellence in Practice of Geotechnical Engineering, the 2014 the International Geosynthetics Society Award, the 2017 ASCE Martin S. Kapp Foundation Engineering Award, and the 2018 ASCE Kansas City Section Engineer of Year Award.