

NOVEMBER 22, 2024

RISK AND

RELIABILITY

UNDERSTANDING UNCERTAINTY IN GEOTECHNICAL ENGINEERING



The Manitoba Section of the Canadian Geotechnical Society is pleased to host. Dr. Reza Jamshidi Chenari to discuss Risk and Reliability: Understanding Uncertainty in Geotechnical Engineering.

This course aims to provide comprehensive training on the concept of uncertainty and its implications in geotechnical engineering. Participants will gain insights into different sources of uncertainty and their effects on the probability of failure and reliability index. The course will culminate in an exploration of the Load and Resistance Factor Design (LRFD) concept and its application in civil and geotechnical engineering. This one-day course will equip participants with a comprehensive understanding of uncertainty in geotechnical engineering, its implications on reliability, and the application of LRFD principles in design using valuable tools and techniques to effectively manage risk and enhance the safety and performance of geotechnical structures.

**RELIABILITY BASED
DESIGN**

**LOAD AND
RESISTANCE FACTOR
DESIGN**

**NUMERICAL MODEL
DEVELOPMENT**

**ARTIFICIAL
INTELLIGENCE**

**PRESENTED FRIDAY
NOVEMBER 22, 2024**

Time: 9:00 AM to 5:00 PM

Location: Caboto Center,
1055 Wilkes Ave

RSVP: 12:00, Friday
November 15, 2024

Please be aware that due to the venue's capacity limitations, availability may not be guaranteed for registrations after the capacity has been reached

<https://www.cgsmanitoba.ca/short-courses/upcoming/>



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AGENDA

Breakfast, Snacks and Lunch Provided

Breakfast

Introduction to Uncertainty in Geotechnical Engineering

- Understanding the concept of uncertainty
- Sources of uncertainty in geotechnical engineering (e.g., material properties, loading conditions, design parameters)
- Quantification of uncertainty through probabilistic methods
- Importance of considering uncertainty in engineering design and decision-making

SNACK BREAK

Implications of Uncertainty on Reliability

- Assessing the probability of failure in geotechnical structures
- Reliability index and its significance in risk assessment
- Influence of uncertainty on reliability analysis
- Case studies illustrating the impact of uncertainty on geotechnical projects

LUNCH

Load and Resistance Factor Design (LRFD) Philosophy

- Introduction to LRFD concept in civil and geotechnical engineering
- Principles underlying LRFD approach
- Calculation of load and resistance factors
- Role of LRFD in enhancing design safety and efficiency of considering uncertainty in engineering design and decision-making

SNACK BREAK

Sensitivity Analysis and Model Bias in LRFD

- Understanding sensitivity analysis in LRFD
 - Identifying critical parameters affecting design decisions
 - Managing model bias in LRFD
 - Strategies for mitigating the effects of bias on design outcomes
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RISK AND RELIABILITY UNDERSTANDING UNCERTAINTY IN GEOTECHNICAL ENGINEERING

PRESENTER



Dr. Reza Jamshidi Chenari, Ph.D.

Dr. Reza Jamshidi Chenari is senior geotechnical engineer at TREK Geotechnical Inc. Reza has worked in the geotechnical engineering field for 23 years. Reza has worked in both the private and public sectors. He has worked as a consulting engineer, university professor, and research fellow out of offices in Middle East and Canada. Prior to joining TREK, Reza was a geotechnical engineering research fellow at the GeoEngineering Center at Queen's-RMCC in Canada and worked closely with Professor Richard Bathurst. His areas of expertise lay in applied

geomechanics, with a focus on the role of uncertainty and risk, Reliability-Based Design (RBD), Load and Resistance Factors Design (LRFD), model development in geotechnical engineering, numerical methods for stability analysis in geotechnics (including finite element, finite difference, and distinct element methods), Artificial Intelligence (AI), as well as evaluation and modeling of soil improvement techniques such as soil reinforcement using geosynthetics and metallic materials.

REGISTRATION

Membership	Price	Registration and Payment Link ^{1,2}
CGS Member	\$200	Buy Now
Non-Member	\$250	Buy Now
Student	\$100	Buy Now

¹This will redirect you to pay via debit, credit, or PayPal

²Receipts are automatically sent to your email address.

For event information, please visit:

<https://www.cgsmanitoba.ca/short-courses/upcoming/>

Colton Wooster, EIT
CGS Manitoba Liaison

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- This event qualifies for 7 Professional Development Hour. The event is classified as 'Informal Activity' under EGM's CPD Program.
- Please note that if you are unable to attend, someone else can be sent in your place.
- Breakfast, Snacks and Lunch provided courtesy of Sorrentos
- If you wish to be added to the mailing list, please send an email to cgs.manitoba@gmail.com.