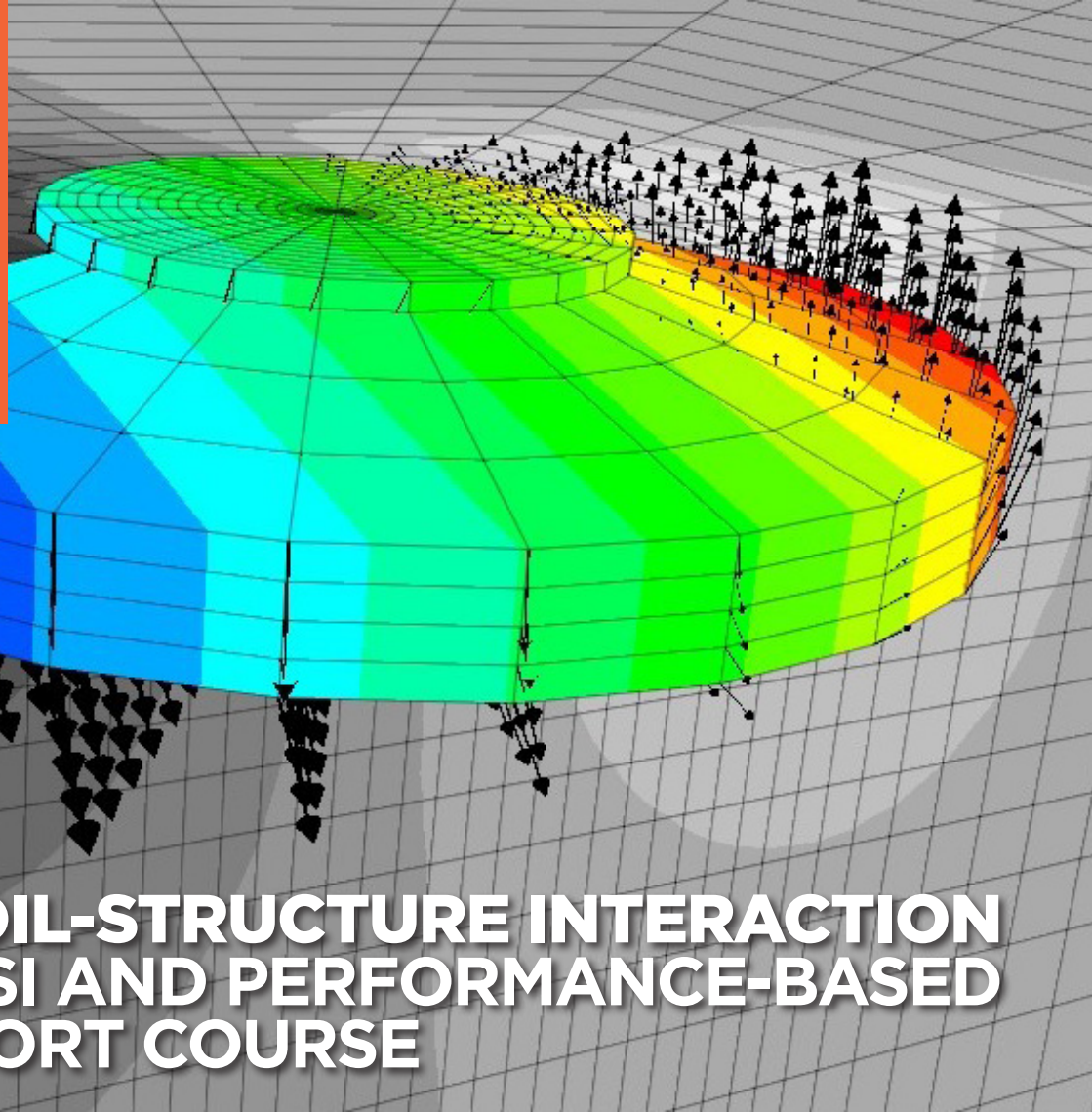




NEW ZEALAND  
GEOTECHNICAL  
SOCIETY INC  
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SESOC

SEMINAR SERIES  
2023



# SEISMIC SOIL-STRUCTURE INTERACTION PART 2A: SSI AND PERFORMANCE-BASED DESIGN SHORT COURSE

## SUMMARY

NZGS, with support from SESOC, is excited to share the news that Professor George Gazetas from the National Technical University of Athens will be giving earthquake engineering courses in New Zealand in November 2023.

This course will cover fundamental aspects of geotechnical earthquake engineering with an emphasis on foundation performance. It will highlight methods of analysis and post-seismic observations in the field.

## AIM OF THE COURSE

The primary objective of these courses is to provide a comprehensive overview of fundamental concepts and solutions within the field of geotechnical earthquake engineering. The course will also spotlight recent advancements that have emerged from experiments and observations. Notably, the course will focus on essential aspects of geotechnical earthquake engineering, placing special emphasis on foundation performance.

To underline the importance of collaboration between structural and geotechnical engineers in this context, it's crucial to emphasize how a strong partnership between these two disciplines is the

linchpin of earthquake-resistant building design. Structural engineers rely heavily on geotechnical data and insights to design foundations and structural systems that can withstand seismic forces. Geotechnical engineers, on the other hand, need a deep understanding of the expected building loads and structural requirements to assess the site's soil conditions accurately.

Throughout these courses, participants will gain insights into various methods of analysis and post-seismic field observations. These experiences will equip them with the skills needed to collaborate effectively across disciplines.

## THE COURSE WILL BE OF INTEREST TO:

- Geotechnical engineers involved in the design of foundations
- Structural engineers designing low, mid and high rise buildings
- Graduate civil engineering students (geotechnical and structural)
- University researchers
- Officials dealing with enforcing application of codes.

## WHERE AND WHEN

### AUCKLAND

**20th November 2023**  
University of Auckland,  
20 Symonds St,  
Level 4, Rooms: 405-430

### WELLINGTON

**24th November 2023**  
Engineering New Zealand  
Te Ao Rangahau,  
Level 6/40 Taranaki Street,  
Wellington 6011

### CHRISTCHURCH

**27th November 2023**  
University of Canterbury,  
School of Engineering,  
69 Creyke Road, Room E14,  
Christchurch

### QUEENSTOWN

**30th November 2023**  
ENGEQ Ltd,  
24 Rees Street,  
Queenstown 9300

# SHORT COURSE: EARTHQUAKE GEOTECHNICS AND SEISMIC SOIL-FOUNDATION-STRUCTURE INTERACTION

## COURSE OUTLINE

- 1 Introduction to geotechnical earthquake engineering
- 2 NZ perspective (presented by local engineers)
- 3 Recent trends in Soil-Structure Interaction
- 4 Design and assessment of embedded structures
- 5 Seismic loading on piles: analysis and observations
- 6 Conclusions

## COURSE PROGRAMME Note: The timing and sequence may be changed on the day of the course

9 am	Introduction to geotechnical earthquake engineering, including an overview of fundamental topics: wave propagation and soil amplification in 1D and 2D situations, soil liquefaction, soil-structure interaction, and its effects on foundations. Includes examples and case histories from major earthquakes.
10.30 am	<i>Morning tea</i>
11 am	NZ perspective (presented by local engineers) 1. Where performance-based design fits into the NZ legislative framework. 2. NZ guidance on SSI and performance-based design, including references to the Building Code, Module 4, Bridge Manual, SESOC interim guidance, and how the information presented by Prof. Gazetas relates to these documents and New Zealand practice.
11.30 am	Recent trends in Soil-Structure Interaction: the Rocking Foundation concept for resilient design against exceptionally strong shaking. Implementation in centrifuge and full-scale experiments, potential real-life applications.
12.15 pm	<i>Lunch</i>
1.15 pm	Design and assessment of embedded structures particular pipes/tunnels/deep basements
2 pm	Seismic loading on piles covering kinematic and inertial loading, and pile group effects in linear and nonlinear soil. Post-seismic observations and influence on the seismic Eurocode.
4 pm	Conclusions
4.30 pm	Finish



### PRESENTER

George Gazetas has served as Professor of Geotechnical Engineering at the National Technical University of Athens (Greece) for more than 30 years, following an academic career in USA. His interests have focused on Soil Dynamics, Earthquake Geotechnical Engineering, and Soil-Foundation Interaction.

Much of his research

was inspired by observations after destructive earthquakes. An active writer and teacher, he has been a geotechnical consultant and has participated in seismic code drafting committees. Recipient of several international awards, he has delivered prestigious lectures, including the “Coulomb”, “Ishihara”, “Kenneth Lee”, and “Michele Maugeri” Lectures, and received the “Excellence in University Teaching in Greece Award”. He was honored by BGA as the 59th Rankine Lecturer, 2019, in London, and as a GeoLegend by ASCE's Geo Institute in 2022.



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## REGISTRATION

### REGISTRATION FEES

\$350 +GST for NZGS, NZSEE, SESOC and NZSOLD members (priority registration over non-members)

\$700 +GST for non-NZGS, NZSEE, SESOC and NZSOLD members.

Registration fees include attendance of the course and course material (digital course notes) and full catering for the day (morning and afternoon teas, lunch tea and coffee). Fees will not be refunded if a participant is unable to attend, although a nominated substitute person may attend. If the course is canceled fees will be refunded in full.

### COURSE NUMBERS

Number of attendees is limited. Registrations will be accepted on a first come – first served basis.

### REGISTER ONLINE

Click on the link to register <https://www.nzgs.org/events/>

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