

WEBINAR TALK ON

FROM SURFACE WAVES TO DESIGN PARAMETERS: BRIDGING GEOPHYSICS AND GEOTECHNICAL ENGINEERING WITH SASW



**SPEAKER:
KHAIRUL ANUAR
MOHD NAYAN**



**28 APR 2026
TUESDAY**



3.30PM - 5.30PM

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Registration Fees:

Student Members : Free

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SYNOPSIS

This lecture offers an in-depth look at Spectral Analysis of Surface Waves (SASW), a modern, non-destructive approach to subsurface characterization, and its expanding role in geotechnical investigations, numerical modeling, and engineering design. It focuses on how small-strain stiffness parameters derived from SASW can be effectively converted into practical inputs for both static and dynamic civil engineering applications. Starting with the theory of surface-wave propagation, dispersion, and frequency-wavelength relationships, it moves on to transforming measured surface-wave data into shear wave velocity profiles and covers key aspects of field testing. The discussion then explores frameworks that incorporate SASW results into soil stiffness, modulus reduction and damping curves, and models of modulus, strain, and deformation behavior. Special focus is given to translating small-strain shear modulus into design-ready parameters aligned with traditional geotechnical methods and advanced tools like FEM. The lecture also highlights applications in conventional geotechnics, such as settlement analysis, foundation design, seismic and vibration-sensitive structures. It wraps up with case studies, practical limitations, and future directions, presenting SASW as a bridge between geophysics, geotechnical engineering, and broader civil engineering design that is poised to become an important platform in the near future.

SPEAKER'S PROFILE

Khairul Anuar Mohd Nayan is a retired Senior Lecturer who taught in the Department of Civil and Structural Engineering at Universiti Kebangsaan Malaysia (UKM) from 1996 to 2016. He specialized in geotechnical and pavement engineering, covering subjects like soil mechanics, site investigation, foundation design, and soil dynamics. Before UKM, he worked with the Public Works Department (JKR) of Kedah and the PWD Research Institute of Malaysia (IKRAM) from 1982 to 1996, gaining experience in building and bridge design, repairs, foundation work, and research on engineering geophysics applications. Over the years, he delivered lectures and ran technical workshops for various organizations on geotechnical software, seismic refraction, and the Spectral Analysis of Surface Waves (SASW) method. He has published widely on topics such as cavity detection, pavement evaluation, soil characterization, settlement prediction, and foundation design. His independent research projects, supported by both public and private sectors, have applied the SASW method to foundation design, settlement assessments, and pavement evaluations for airports, highways, and even a Concrete-Faced Rockfill Dam (CFRD) project in South Korea.