



PERFORMANCE-BASED SEISMIC DESIGN OF STRUCTURES

Synopsis :

For decades force-based seismic design approach has been practiced by engineers mainly due to its simplicity and codified approach. Experiences from past earthquakes and current studies have demonstrated that the displacement is a better choice for seismic design than force. These observations led to the conceptualization of a new design method in 1970th referred to as performance-based seismic design (PBSD). The first aim of this workshop is to explain about the limitation of the force-based design method employed in many seismic design codes like EC8 by referring to the performance of structures during past earthquakes. The workshop continues by introducing the chronological development of PBSD. The concept of PBSD method is explained in detail and the proposed methods for performing PBSD such as capacity spectrum, displacement coefficient, and direct-displacement based method are discussed. Finally, some real-world structures design through PBSD are presented and discussed. This workshop is very beneficial and helpful for all engineers and consultant companies that are involved in the seismic design of structures, especially those that their functionality after seismic events is of great importance like hospitals, tall buildings, bridges etc.

About the speaker :

Mohammadreza Vafaei (PhD, P.Eng., M.ASCE, M.EERI, M.IET) is currently an associate professor in the Faculty of Civil Engineering, Universiti Teknologi Malaysia (UTM). Before joining UTM, he has served many consulting companies in Iran and has led the seismic design of many structures like tall buildings, air traffic control towers, airport terminals, water reservoirs, telecommunication towers, and monumental structures. His expertise includes seismic design and retrofitting of structures, vibration control through passive dampers, and structural health monitoring. He has been invited as the keynote speaker for several international conferences and workshops and has published around 80 papers in referred journals and conferences.