The 2020 Newmark Distinguished Lecture
From Performance-Based Earthquake Engineering to Urban Resilience

Gregory Deierlein
Blume Professor of Engineering
Stanford University

Abstract:
Performance-based earthquake engineering has matured over the past twenty years from a conceptual framework into a formal methodology that enables quantitative assessment of the seismic risks to buildings and infrastructure. Enabled by advanced computational technologies, performance-based methods provide for more transparent design and decision making that take advantage of the latest research to characterize earthquake ground motion hazards, simulate structural behavior, and assess earthquake damage and its consequences. Performance-based approaches are facilitating the design of innovative structures and influencing building code requirements and public policies for earthquake safety. Continued developments to extend performance-based engineering to city-scale simulations provide emerging opportunities to engage urban planners, public officials, and other stakeholders in developing strategies to mitigate risks and facilitate recovery from earthquakes and other natural hazards. Examples include detailed performance assessment of buildings and earthquake scenario studies that inform policy initiatives to promote earthquake resilience in San Francisco and other cities.

Bio:
Greg Deierlein is the Director of the Blume Earthquake Engineering Center at Stanford University and founding member of the Stanford Urban Resilience Initiative. He co-directs the NSF supported SimCenter of the Natural Hazards Engineering Research Infrastructure (NHERI) and is the former Deputy Director of the Pacific Earthquake Engineering Research (PEER) Center. Deierlein specializes in the seismic design and behavior of structures, computational simulation of buildings and civil infrastructure, and performance-based engineering. He is active in the development and application of building code standards and policies to promote seismic resilience. Deierlein’s research and professional accomplishments have been recognized with several awards, and he was elected to the National Academy of Engineering in 2013 and to distinguished member of the American Society of Civil Engineers in 2019.

Monday, April 13th, 2020  4:00 – 5:00 p.m.
1310 Yeh Student Center