Integrated Approach on Geological & Geotechnical Aspects of Earthquake Engineering: Review & Revisit

GIAN Lecture Series – 2 Weeks Course
04 - 15 July, 2022

Patron
Prof. Pramod M. Padole
Director, VNIT Nagpur

Chairman
Dr. Yashwant B. Katpatal
Professor and Head,
Civil Engineering Department

Convener
Dr. Anirban Mandal
Associate Professor,
Geotechnical Engineering,
Civil Engineering Department

Course Coordinators
Dr. Srinivasan V.
Assistant Professor, Phone: 0712-280-2254
Geotechnical Engineering,
Civil Engineering Department
Email: srinivasanv@civ.vnit.ac.in

Dr. Shrabony Adhikary
Assistant Professor, Phone: 0712-280-1206
Geotechnical Engineering,
Civil Engineering Department
Email: sadhikary@civ.vnit.ac.in

Support Team (Research Scholars, Civil Engineering Department)
Mr. Aakash Sharma, Mobile: 9098935955
Mr. Rahul Shende, Mobile: 7020738064
Mr. Omkar P. Navagire, Mobile: 7391924249
Mr. Dhananjay Rahangdale, Mobile: 9404026322

Course Fees:
The course fee is been nominally charged (excluding 18% GST) as mentioned below:

<table>
<thead>
<tr>
<th>Category</th>
<th>Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Practicing Engineers from Public &amp; Private Sectors</td>
<td>8000 INR + GST</td>
</tr>
<tr>
<td>Academic (Faculty) &amp; Research (Scientists) Staff</td>
<td>6000 INR + GST</td>
</tr>
<tr>
<td>Postgraduate &amp; Doctoral Students</td>
<td>3000 INR + GST</td>
</tr>
<tr>
<td>Participants from Abroad</td>
<td>200 USD + GST</td>
</tr>
</tbody>
</table>

The above fee includes all instructional materials, computer use for tutorials and assignments, laboratory equipment usage charges, 24 × 7 internet facility, working lunch and refreshments on course session days. It will be very helpful if you can bring your laptop for the course.

Course Content:
The main objective of this course is to discuss the basic fundamentals and recent advancements in earthquake engineering.

Module A: Geological Aspects – The first part of the course covers Geodynamics; Engineering Seismology; Seismic Hazard Analysis; Structural Geology; Rock Engineering; Rock Mechanics; Mechanics of fracturing and faulting in rocks; Field Case studies of Geological formation, identification & Exploration in Central India; Geological maps & Profiling of Folds, Faults, dykes; Problems on Strike, Dip, thickness, and depth of strata. Reconnaissance study & Reminiscence of Jabalpur and adjacent Region.

Module B: Geotechnical Aspects – The second part of the course covers site response analysis; Dynamic soil-structure interaction; Soil constitutive relationships under dynamic and cyclic loading; Dynamic Soil Properties; Laboratory and field evaluation; Computational modeling for dynamic analysis; Seismic analysis of earth and water retaining structures; Seismic analysis of piles and piled embankments; limit state design, performance-based seismic design, and codal provisions; Hands-on tutorial sessions.
How to Apply: Please follow the following Steps for the registration:

Step 1: GIAN Web (Portal) Registration
(Individuals who have already registered to GIAN earlier do not need to repeat)
Go to GIAN website (http://www.gian.itkgp.ac.in/GREGN/index) and create login user ID and Password. Fill up the registration form and do web registration. First time users need to register and pay a one-time fee of INR 500/-.

Please do not confuse GIAN web registration with course registration. The course registration fee is separate. The candidate has to pay course registration fee as per step 3 given below.

Step 2: Course Registration (Through GIAN Portal)
Click on “Course Registration” option given at the top of the registration form. Select the Course titled “Integrated Approach on Geological and Geotechnical Aspects of Earthquake Engineering – Review & Revisit” from the list and click on “Save” option. Confirm your registration by Clicking on “Confirm Course”. Once you enrol for the course, an Enrolment/Application number will be generated, and the course coordinators will be notified.

Last date for GIAN Portal Registration: 10th June 2022

Step 3: Course Fee Payment (Only selected candidates)
Only Selected Candidates will be intimated through e-mail by the Course Coordinators. They have to remit the necessary course fee through Online Payment Gateway of VNIT intimated through the email. The Online Payment Receipt along with the signed hard copy of the filled in application form (https://bit.ly/3H8IX9G) should be scanned and sent to: Dr. Srinivasan srinivasanv@civil.vnit.ac.in

Last date for Course Registration: 24th June 2022

For any queries, you may contact:
Mr. Aakash Sharma aakash0@students.vnit.ac.in

Overview:
Earthquake is one of the major natural hazard which causes detrimental effects on life and infrastructure and in-turn growing economy. Engineers & Scientists are aware of the fact that the dynamic or cyclic behaviour of any solid or fluid is rather a complex phenomenon than static behaviour. Understanding and simulating its nature and mechanism involves deeper insight of physics, mechanics and mathematics. Over many decades, geologists have made noble contribution towards this field of Earthquake Engineering, wherein we have understood the origin & composition of earth’s surface, volatility of the crustal plate movements, major classification of the globe based on seismic activity etc. On the other hand geotechnical researchers made scientific breakthrough like site specific ground characteristic and micro-zonation of the terrain for better understanding of ground acceleration during earthquake; base isolation (to prevent the damage to foundation systems), design of earthquake resistant structures to safeguard from vulnerable damage.

With considerable advancements in both (Geological & Geotechnical) the aspects on earthquake, it is very much necessary and essential to share and understand the know-hows which can culminate into a multi-disciplinary area covering geology, geophysics, geodynamics, and dynamics of soil-fluid-structure interaction.

Who should Attend:
• If you are a student at post-graduate (M.E./M.Tech./M.S./M.Sc) or higher level (Ph.D.) specialized in Geotechnical Engineering, Earthquake Engineering, Applied Geology, Earth Science or any other allied areas.
• If you are a Faculty / Scientist / Research Staff / Technical Personnel from Academic Institutions / Research organizations / National laboratories specialized in above mentioned areas.
• If you are an Executive / Practicing Engineer / Proficient Employee from private (consultancy firm / Design studios etc.) or public (PSUs / PSC etc.) sectors working in relevant areas.
Dr. Sanjay Nimbalkar is a Senior Lecturer in the School of Civil and Environmental Engineering at the University of Technology Sydney (UTS) in Australia. He is actively involved with research activities related to seismic analyses of earth retaining structures, railway embankment stability analyses, ground improvement techniques, tailing dams, constitutive and numerical modelling. He is Charted Professional Engineer: CPEng (Engineers Australia) and an Australian Earthquake Engineering Society member. He has published a number of research papers in peer-reviewed journals and conference proceedings. His doctoral research on the pseudo-dynamic method of analyses for earth retaining structures is considered one of the most significant contributions to the field of geotechnical earthquake engineering. He is the recipient of the Thomas Telford Premium Award from the Institution of Civil Engineer (ICE), UK (2014) and ‘Professor Joseph M Sussman Best Paper Prize’ from Frontiers in Built Environment, Switzerland (2020). He is an EMCR fellow of Australian Academy of Science supported by the Australia-India Strategic Research Fund (AISRF) 2020.

Dr. Yashwant Bhaskar Katpatal is a Professor (HAG) and Head of the Civil Engineering Department at VNIT Nagpur. His areas of interest are Remote Sensing & Geographic Information System, Water Resource Management, and Environmental Impact Assessment. He has published more than 102 research papers in peer-reviewed journals and conference proceedings.

Prof. Deepankar Choudhury is Institute Chair Professor of Civil Engineering Department at Indian Institute of Technology (IIT) Bombay, Mumbai, India, and Adjunct Professor of Academy of Scientific and Innovative Research (AcSIR) of CSIR laboratories (connected to CSICBRI Roorkee) of India. a. Prof. Choudhury also worked as a faculty at IIT Kanpur, new IITs at Gandhinagar and Dharwad, and as a Visiting Fellow/Faculty at NUS Singapore, UoW Australia, UC Berkeley USA, Kagoshima Univ. Japan, TU Darmstadt Germany and Incheon National Univ. South Korea. Prof. Choudhury is the only Geotechnical Engineer of India who is an elected Fellow (FNAsc) of the oldest Science Academy of India, viz. The National Academy of Sciences, India. Internationally he is an Alexander von Humboldt Fellow of Germany, JSPS Fellow of Japan, and TWAS-VS Fellow of The World Academy of Sciences, Italy, in addition to National Fellow of Institution of Engineers India (FIE), Indian Geotechnical Society (FIGS), Indian Society of Earthquake Technology (FISET). Prof. Choudhury’s Video lectures in YouTube through NPTEL, Govt. of India on topics ‘Soil Dynamics’ and ‘Geotechnical Earthquake Engineering’ are highly popular all over the world.

And Underground Excavation Soil Dynamics. He also handled Project “Seismic Behaviour of Underground Structures” funded by DST of Rs 53.7 lacks sanctioned in 2014. He has guided 3 Ph.D. thesis and 8 M.Tech thesis along with enormous peer-reviewed publications in Geotechnical Engineering at VNIT.

Dr. Santanu Misra is an Associate Professor in the Department of Earth Sciences of Indian Institute of Technology, Kanpur (IITK). He is also a DST Swarnajayanti Fellow, and INSA Young Scientist. He led the Experimental Rock Deformation Laboratory at IIT Kanpur. He received his Ph.D. degree from Jadavpur University, India (2007), and Post-doctoral research at ETH Zurich in Switzerland (2009). The research was focused on achieving a better understanding of the micro-process of rock mechanics by high pressure and temperature experimental rock deformation. In 2009, he was offered a lecturer position in the same department at ETH Zurich and worked as a full-time lecturer and researcher for the next four years until 2012. He believes that modern understandings of Structural Geology and Rock Deformation are no more restricted to describing the geometry and disposition of rock architecture but are closely integrated with other subjects like Rheology, Solid Earth Geophysics, Metamorphic Petrology, and advanced mechanics. Most of his courses are designed to integrate all such parameters.

Dr. Shrabony Adhikary is currently working as an Assistant Professor in the Department of Civil Engineering, VNIT Nagpur. Dr. Adhikary has done her M.Tech. and Ph.D. in 2010 and 2015 respectively from the Department of Earthquake Engineering, IIT Roorkee. Her research interest includes Soil amplification and site response analysis; Soil-structure interaction; Machine foundation; Performance-based seismic design; Geotechnical Earthquake Engineering. Dr. Adhikary has been awarded the Early Career Research Award (SERB-DST) of 32 lakhs for the year (2017-2020). Dr. Adhikary has published 15 research papers in reputed international journals and 11 international/national conferences.