Tackling tremours

A recent workshop on earthquake resistant practices offered nascent professionals hands-on exposure to the nitty-gritty of the science. Promila Roychoudhury reports

A workshop on Earthquake Resistant Practices for Undergraduate Students of Architecture was conducted at the Indian Institute of Technology in Kanpur recently. This was a part of the National Information Centre of Earthquake Engineering's initiative to teach budding architects through a practical programme on earthquake resistant architectural design.

"The motto is to provide architecture students hands-on exposure with a view to incorporating earthquake resistant practices right from the stage of conceptual design to help them internalise this particular aspect in their designs," said Professor Keya Mitra, assistant professor of the department of architecture, Bengal Engineering and Science University, Shibpur

Out of a total of 100 applications, 57 aspirants from 19 colleges scattered across India and Nepal were selected to attend the workshop.

"We looked to foster a clear understanding of structural systems that would be effective in withstanding earthquake loads. Earthquake loading is very different from gravity loads that students intuitively understand. The workshop aims at sensitising them to how structures behave when subject to lateral loads. It also aims at equipping them with the necessary concepts of earthquake resistant design from the conceptual stage onwards," said Mitra.

Students were imparted lessons on earthquake resistant design by working on an architectural design through technical lectures followed by design studios.

The first day of the workshop kicked off with a quiz. During the six-day workshop, students were given an architectural design assignment to design an apartment complex consisting of amenities and utilities for residents. The brief was to incorporate earthquake resistant features at the conceptual design stage along with the usual design considerations like activities, climate and image. Students were exposed to Resist software to test the adequacy of their design from a seismic performance perspective. Resist is a computer programme that enables designers to determine the numbers and sizes of earthquakes and wind load resisting elements in a building. It helps students to overcome the powerlessness they experience while grappling with the question of how a structure is required to resist lateral loads.

"A huge benefit of the software is that it enables students to quickly explore many different structural solutions before arriving at the one that best integrates with their overall design," added Mitra.

The design assignment helps students internalise earthquake safety issues and apply these in their design solutions.

Along with Mitra Dr Mahua Mukherjee of the department of architecture and planning, IIT Roorkee, Dr Vasudha Gokhale, Dr BN College of Architecture for Women, Pune, Professor Bhavna Vimawala of the department of architecture, SCET, Surat and Professor Nehal Desai of the same department comprised the faculty and resource persons for the workshop.

The jury board evaluated the final designs on the last day through presentations. After the initial scrutiny, eight best designs were short-listed, which were again reviewed by the jury. Hemant Kumar Chaurasia of the Lucknow College of Architecture and Sarang Sanjay Patwardhan of the BKPS College of Architecture in Pune, bagged the first prize.

"The first prize-winning design made a clear distinction between the earthquake resisting frames and the gravity columns in the design and used the structural system in a way that did not compromise any of the other architectural considerations. The design reflected a sound understanding of and effective employment of earthquake resistant concepts. Sizes of the structural members were arrived at correctly and the design solution was mature, creative and rational," said Mitra.