

PhD position in geotechnical engineering at University of Salerno

A fully funded 3-year PhD position in geotechnical engineering at the University of Salerno (Italy) is available within the doctoral course “Risk and sustainability in civil, environmental and construction engineering”. The PhD will start in November 2015.

The geotechnical engineering research group (<http://www.laram.unisa.it/laram/contacts>) seeks a highly motivated candidate for a PhD project in **one of the following topics**:

Topic 1. Full-integration of remote sensing (DInSAR) data in geotechnical modelling of soft soils (contact persons: Prof. Dario Peduto dpeduto@unisa.it, Prof. Settimio Ferlisi, Prof. Leonardo Cascini)

The project will address modelling and forecasting of settlements associated to both natural or anthropogenic subsidence phenomena occurring in highly compressible soils by calibrating geotechnical soil parameters via displacement measurements derived from Synthetic Aperture Radar Differential Interferometry (DInSAR) data. Test sites will be selected in Italy or in The Netherlands.

Topic 2. “Observational modelling” of geotechnical engineering problems: risk analysis at different scales for slow-moving landslides interacting with transportation lines (contact persons: Prof. Dario Peduto dpeduto@unisa.it, Prof. Michele Calvello, Prof. Leonardo Cascini)

The term “observational modelling” is herein used to indicate methods and procedures that use inverse analysis techniques to update the numerical model of a problem using monitoring data. The project will apply an observational modelling approach to quantitatively estimate hazard and risk related to slow-moving landslides interacting with railways and roads. To this aim, displacement measurements coming from Synthetic Aperture Radar Differential Interferometry data analysis will be used as observations. The test area will be chosen within the Campania region.

Topic 3. Effective design of regional early warning systems for rainfall-induced rapid mass movements and flash floods (contact persons: Prof. Michele Calvello mcalvello@unisa.it, Prof. Settimio Ferlisi)

The aim of the project is to develop a methodology to effectively design and manage regional early warning systems (ReEWSs) for rainfall-induced fast moving landslides (i.e. debris flows; hyperconcentrated flows) and flash floods. The project will address and investigate the individual contribution and the relationships among the main factors affecting the performance of ReEWSs, looking at both the technical and social aspects needed to effectively reduce the risk to in the warning areas. The test area for the analyses will be the Monti Lattari mountain range in the Campania region.

Topic 4. Characterization of unsaturated soils by laboratory testing and inverse analysis (contact persons: Prof. Sabatino Cuomo scuomo@unisa.it, Prof. Michele Calvello)

The aim of the project is to develop a methodology which effectively uses inverse analysis techniques to determine, from laboratory experimental data, the main hydraulic and geotechnical properties of unsaturated soils. The project will combine experimental work in the laboratory and

numerical modelling. The laboratory tests will be carried out on undisturbed and reconstituted samples of pyroclastic soils using state-of-the-art equipment available for soil testing in unsaturated conditions.

Topic 5. Remote sensing data exploitation for cultural heritage sites exposed to slow-moving landslides or subsidence risk (contact persons: Prof. Dario Peduto dpeduto@unisa.it, Prof. Settimio Ferlisi, Prof. Leonardo Cascini)

The aim of the project is to develop original procedure for the analysis of hazard and vulnerability of historic buildings exposed to slow-moving landslides or subsidence phenomena via remote sensing data. The research will combine an expert use and interpretation of remote sensing data such as DInSAR, UAV for building displacement monitoring and an in-depth knowledge of the kinematic features of the phenomena at hand. Vulnerability analyses will be also carried out following an integrated approach based on the remote sensing – derived information and damageability criteria.

Candidates must have a MSc or equivalent and be fluent in English. Research experience with any of the above mentioned topics is welcome. Speaking Italian is welcome but not required.

HOW TO APPLY?

STEP 1

(deadline: 21 August, 2015)

Send by e-mail, to the contact person of the chosen research topic:

- a motivation letter,
- CV (2 pages max),
- any published scientific paper,
- if relevant, a copy of the Master thesis (pdf file, internet link).

Selected candidates will be asked to prepare and submit a brief research proposal (needed in step 2) to the contact persons of the chosen research topic.

STEP 2

(deadline: 10 September, 2015)

Submit application to the Doctoral School. Information and application details available at:

<http://web.unisa.it/en/teaching/phd-programmes>

<http://web.unisa.it/uploads/rescue/277/368/Call-for-New-Series-of-PhD-Courses---XXXI-Cycle.pdf>

<http://web.unisa.it/uploads/rescue/151/382/Risk-and-sustainability-in-civil-engineering,-environmental-and-construction.pdf>

STEP 3

(29 September, 2015)

Interview with doctoral course evaluation committee (in person or via Skype)

Further enquiries about the position can be addressed to the contact person of the chosen research topic (<http://www.laram.unisa.it/laram/contacts>).