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Societal Changes**  
Francisco Nunes Correia

## PRESIDENT'S NOTE

CERIS's goal is to develop cutting-edge research in all fields concerning Civil Engineering and related areas such as Architecture and Environmental Engineering. Involving more than 200 PhD researchers and around 300 PhD students, CERIS is proud of its inclusive culture, where widely different education backgrounds function synergistically to link scientific areas with common borders and broaden their frontiers.

2017 has been a very exciting year at CERIS. Its participation in Society has been developed through national and international research projects, the leadership of competitively-funded Doctoral Programs, advanced private and institutional consultancy, the participation in a wide range of normative bodies, and an unprecedented presence in the authorship, review and editing of distinguished international publications. Several prizes and distinctions have been awarded to CERIS members, who have also authored books on a wide range of subjects. Society outreach has been intense in the organization and participation of scientific and technical events. There was even time to merge education and diversion at CERIS Open Day.

This newsletter tries to portray this rainbow of activities (all in a year's work) and show who we really are, a large synergy of scientists and educators with different interests and common ambitions.

2018 is a year filled with great expectations for CERIS and I cannot wait for the forthcoming newsletters.

Jorge de Brito

The content and opinions expressed within the Newsletter are those of the researchers involved and are not necessarily shared by the Coordinators of CERIS

## EDITORIAL TEAM

Rafaela Cardoso

Clara Pereira

Inês Teotónio

Ana Tomé

## HIGHLIGHTS

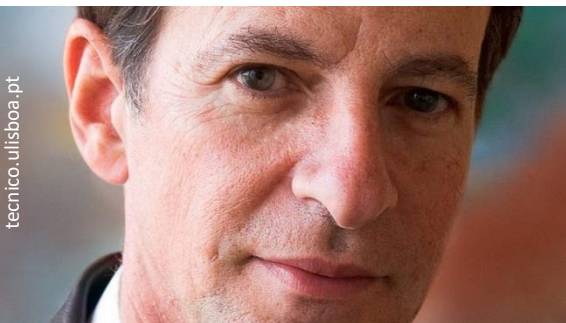
### 1

**Professor Fernando Branco** is the **President** of the **International Association for Bridge and Structural Engineering (IABSE)**, for the period **2016-2019**. Fernando Branco has been the Chair of the Portuguese Group of IABSE, a delegate of the Permanent Committee, and has participated first as member then as Chair in Working Commission 8 and the Technical Committee of IABSE. He has been a member of the Executive and Administrative Committees and the IABSE Strategy Group. Fernando Branco's main objectives as President are to develop the leading path of IABSE, to reach more people, to increase the network of its members and, essentially, to bring to the association young engineers.



### 2

**Professor José Saldanha Matos** was elected **President of the European Water Association (EWA)**. He started his functions as President on May 2017. Professor Saldanha Matos joined EWA in 2005 as a member of the Council. In 2010 he joined the Management Committee and he was EWA's Vice-President since 2015. EWA is an independent non-governmental and non-profit making organization dealing with the management and improvement of the water environment.



### 3

A 2.9 M€ EU-backed project to foster the adoption of micro-hydropower energy recovery technology in built water networks in the Atlantic Area. To be developed with the cooperation of several institutions, the **project Reducing the Energy Dependency of Atlantic Area Water Networks (REDAWN)** has the participation of DECivil/CERIS (coordinated by Prof. Helena M. Ramos), Instituto Superior Técnico, University of Lisbon.

[www.redawn.eu](http://www.redawn.eu)



## R&D STARTED/ONGOING PROJECTS

> **AERIALCrackView** - Crack monitoring in concrete bridges through multi-spectral image processing acquired by unmanned aerial vehicles

**CERIS Principal Investigator:** Eduardo Júlio

**Budget:** 116.000,00 € (global)

**ID:** PTDC/ECM-EST/6830/2014

**Funding Entity:** FCT - I&D

**Partners:** UC

**Duration:** 24 Months (started 2016)

> **FIRECOMPOSITE** - Fire Behaviour of Reinforced Concrete Structures Incorporating FRP Composites

**CERIS Principal Investigator:** João Ramôa Correia

**Budget:** 200.000,00 € (global)

**ID:** PTDC/ECM-EST/1882/2014

**Funding Entity:** FCT - I&D

**Partners:** ISISE/UM

**Duration:** 36 Months (started 2016)

> **PSSS- Public space's service value as an urban system. As integrated assessment methodology**

**CERIS Principal Investigator:** Pedro Brandão

**Budget:** 157.551,00 € (global)

**ID:** PTDC/ECM-URB/2162/2014

**Funding Entity:** FCT - I&D

**Partners:** University of Barcelona – CRPOLIS, University of Porto, Universidade Nova de Lisboa

**Duration:** 30 Months (started 2015)

## PUBLIC SPACE'S SERVICE SYSTEM

An integrated assessment methodology

> **CuCa\_RE–Cure and Care\_the rehabilitation**

**CERIS Principal Investigator:** Ana Tostões

**Budget:** 199.000,00 € (global)

**ID:** PTDC/ATP-AQI/2577/2014

**Funding Entity:** FCT - I&D

**Partners:** CES; FLUL

**Duration:** 36 Months (started 2017)

> **ATLAS of School Architecture in Portugal - Education, Heritage and Challenges**

**CERIS Principal Investigator:** Alexandra Alegre

**Budget:** Global: 197.000,00 € (global)

**ID:** PTDC/ATP-AQI/3273/2014

**Funding Entity:** FCT - I&D

**Duration:** 36 Months (started 2016)

## R&D STARTED/ONGOING PROJECTS

### > FRP-QUAKE - Seismic Behaviour and Ductility of Structures Built with Glass Fibre Reinforced Polymers

**CERIS Principal Investigator:** João Ramôa Correia  
**Budget:** 184.000,00 € (global)  
**ID:** PTDC/ECM-EST/6465/2014  
**Funding Entity:** FCT - I&D  
**Duration:** 36 Months (started 2016)

### > SPC Depot – Smart Parking Container Depot

**CERIS Principal Investigator:** Rosário Macário  
**Budget:** 135.760,91 € (global)  
**ID:** 5077  
**Funding Entity:** PT2020  
**Principal Contractor:** MAEIL  
**Partners:** Sociedade Portuguesa de Contentores  
**Duration:** 36 Months (started 2016)



### > KNOWRISK – Know your City Reduce Seismic Risk Structural Elements

**CERIS Principal Investigator:** Mário Lopes  
**Budget:** 513.297,00 € (global)  
**ID:** 2015/718655/PREV 28  
**Funding Entity:** European Commission – ESCHO LA  
**Partners:** LNEC, INGV, EERC  
**Duration:** 24 Months (started 2016)

### > STEEP STREAMS - WaterWorks2014 Cofunded Call. Research and Innovation for Developing Technological Solutions and Services for Water Systems

**CERIS Principal Investigator:** A. Heleno Cardoso  
**Budget:** Global: 669.244,00 € (global)  
**ID:** WATERJPI/0006/2014  
**Funding Entity:** FCT - I&D  
**Partners:** University of Trento; Uppsala University  
**Duration:** 24 Months (started 2016)

### > EASYFLOOR - Development of Composite Sandwich Panels for Rehabilitation of Building Floors

**CERIS Principal Investigator:** João Ramôa Correia  
**Budget:** 20.9374,74 € (global)  
**ID:** LIS-01-0247-FEDER-003480  
**Funding Entity:** ANI - P2020  
**Principal Contractor:** ALTO Perfis Pultrudidos, Lda  
**Partners:** Universidade do Minho  
**Duration:** 36 Months (started 01-04-2016)



## R&D STARTED/ONGOING PROJECTS

### > RAISE - Durability of adhesively bonded composite systems used for structural rehabilitation in Civil Engineering

**CERIS Principal Investigator:** João Ramôa Correia

**Budget:** 185.784,00€ (global)

**ID:** PTDC/ECM-EST/2701/2014

**Funding Entity:** FCT - I&D

**Partners:** LNEC

**Duration:** 36 Months (started 2016)

### > Smart City Sense

**CERIS Principal Investigator:** Rosário Macário

**Budget:** 165.069,00 € (global)

**ID:** 5071

**Funding Entity:** PT2020

**Principal Contractor:** Thales

**Partners:** Faculdade de Motricidade Humana da Universidade de Lisboa

**Duration:** 30 Months (started 2016)

### > BRT - Center of Excellence- Transition

**CERIS Principal Investigator:** Rosário Macário

**Budget:** 2.500.000,00 € (global)

**ID:** 3592

**Funding Entity:** Volvo REF

**Principal Contractor:** Universidade Católica do Chile

**Partners:** World Resource Institute, MIT, Universidade do Sidney

**Duration:** 96 Months (started 2010)

### > Development of alkali binders for geotechnical applications made exclusively from industrial waste

**CERIS Principal Investigator:** Inácio Almeida

**Budget:** 144.887,00 € (global)

**ID:** PTDC/ECM-GEO/0637/2014

**Funding Entity:** FCT - I&D

**Principal Contractor:** UTAD

**Partners:** UAVEIRO

**Duration:** From 01/02/2017 to 31/01/2020

### > FITHYDRO - Fishfriendly Innovative Technologies for Hydropower

**CERIS Principal Investigator:** António Pinheiro

**Budget:** 7.171.551,25 € (global)

**ID:** 727830

**Funding Entity:** EU - H2020

**Principal Contractor:** Technical University of Munich

**Partners:** <https://www.fithydro.eu/consortium/>

**Duration:** 48 Months (started 01-11-2016)

### > SUCCESS - Sustainability of shallow geothermal systems. Applied studies to southern Europe climates.

**CERIS Principal Investigator:** Rafaela Cardoso

**Budget:** 197.533,00 € (global)

**ID:** PTDC/ATP-AQI/2577/2014

**Funding Entity:** FCT - I&D

**Partners:** LNEC, Aveiro University

**Duration:** 36 Months (started 2016)

## R&D STARTED/ONGOING PROJECTS

> **HOLLOSSTAB** – Overall-slenderness based direct design for strength and stability of innovative hollow sections

**CERIS Principal Investigator:** Dinar Camotim

**Budget:** 944.210,00 € (global)

**ID:** RFCS-2015-709892

**Funding Entity:** European Commission, Directorate-General for Research & Innovation, Industrial Technologies, Coal and steel

**Principal Contractor:** University of the Bundeswehr Munich (Germany)

**Partners** Imperial College of Science Technology and Medicine (UK), Instituto Superior Técnico (Portugal), Convention Européenne de la Construction Métallique (Belgium), Centre Technique Industriel de la Construction Métallique (France), Université Laval (Canada) and Conducciones Y Derivados S.L.U. (Spain)

**Duration:** 36 Months (started 01-07-2016)



> **REDAWN** - Reducing the Energy Dependency of Atlantic Area Water Networks

**CERIS Principal Investigator:** Helena Ramos

**Budget:** 2,9 M€ (global)

**ID:** 5200; EAPA\_198/2016 from INTERREG ATLANTIC AREA PROGRAMME 2014-2020 4

**Funding Entity:** EU - H2020

**Principal Contractor:** Action Renewables

**Partners:** TrinityCollege Dublin, Universidade de Nápoles Federico II, a Hidropower Ltd, FAEN, Feragua, WATEF Network, SMPGA e Universidade de Cordoba e parceiros associados portugueses como a Empresa de Electricidade da Madeira (EEM), a Electricidade dos Açores (EDA) e a Parceria Portuguesa para a Água (PPA)

**Duration:** 36 Months (started 2017)



> **SLPforBMS** - Service Life Prediction for a risk-based Building Management System

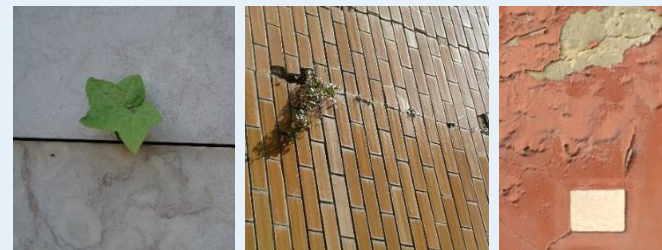
**CERIS Principal Investigator:** Jorge de Brito

**Budget:** 169.000,00 € (global)

**ID:** PTDC/ECM-COM/5772/2014

**Funding Entity:** FCT - I&D

**Duration:** 36 Months (started 2016)



## COMPLETED PHD THESES

### > Developing pool-type fishways based on experimental studies and numerical modelling

**Author:** Ana Isabel da Rocha e Sá Lopes Quaresma

**Supervisors:** António Pinheiro (CERIS, IST)

Maria Teresa Marques Ferreira (CEF, ISA)

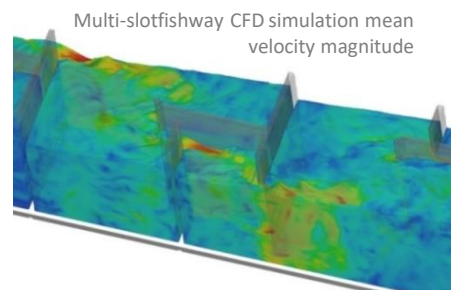
**Date:** July 2017

**Summary:** The construction of anthropogenic barriers in streams, such as dams and weirs, highly impact the river systems, constituting a barrier to fish movements, thus interrupting or strongly reducing the longitudinal connectivity. One of the solutions to overcome this negative impact is the construction of fishways. The high number of barriers, the low number of fishways and the inadequacy of some of the existing ones for coarser fish species advice the development of suitable fishways for the target fish species. In this thesis, experimental and numerical studies were undertaken to improve the knowledge on

pool-type fishways and to develop new configurations and design criteria to ensure the effectiveness of this type of devices for cyprinid species.



**CV:** Degree in Civil Engineering at FEUP. Worked in a consulting company in hydraulics studies and concluded the MSc in Environmental Engineering at FEUP, with the topic of Energy dissipation downstream of dams established in alluvial beds.



### > Numerical modelling of thermomechanical behaviour of GFRP pultruded profiles submitted to fire

**Author:** Cristina López Sánchez

**Supervisors:** Carlos Tiago (CERIS, IST); João Ramôa Correia (CERIS, IST)

**Date:** January 2017

### > Nonstationarity and uncertainty of extreme hydrological events

**Author:** Artur Tiago Carvalho de Freitas Silva

**Supervisors:** Maria Manuela Portela (CERIS, IST); Mauro da Cunha Naghettini (UFMG)

**Date:** January 2017



## COMPLETED PHD THESES

### > Predicting the behaviour of rockfill embankments

**Author:** João Miguel Gomes Pires Manso

**Supervisors:** João Mateus da Silva (LNEC), Laura Caldeira (LNEC), Rafaela Cardoso (CERIS, IST)

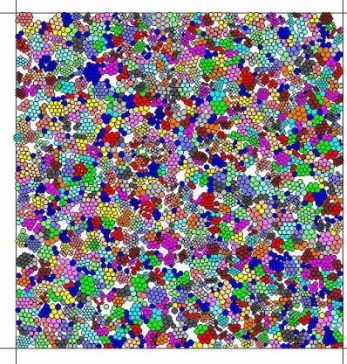
**Date:** December 2017

**Summary:** Despite the vast research on the behaviour of rockfill embankments, doubts still exist about the understanding of the physical and mechanical phenomena that occur at the particulate level. This research studies these phenomena, mainly focusing in the role that suction plays in the material behaviour. The performed experimental tests showed that the influence of suction decreased with particle size and its effect occurs mainly at the surface. They also showed that as suction decreased, the compressibility of rockfill increased. A series of numerical models were also developed. A new methodology, based in a clump logic, is proposed to build discrete element samples.

Several aspects of the rockfill mechanical

behaviour were studied, such as, the particle breakage for different stress-suction paths.

**CV:** Masters in Civil Engineering (IST, 2011), Pos-graduation in Advanced Geotechnics (UNL, IST, LNEC, 2007/08), Fellowship holder in the Geotechnical Department in LNEC since 2007. Fellowship holder in the Structural Mechanics and Structures Section in DECivil (IST, 2006).



### > Assessing the Relation Between Mode Choice, User Satisfaction, and Quality for Public Transport Systems

**Author:** Dimitrios Papaioannou

**Supervisors:** Luís Miguel Garrido Martinez (CERIS, IST); Luís Picado Santos (CERIS, IST)

**Date:** February 2017



### > Critical Analysis of Dynamic Loading Tests with Increasing Energy on High Load Bearing Capacity Piles *(in Portuguese)*

**Author:** Sérgio Cançado Paraíso

**Supervisors:** Jaime Alberto dos Santos (CERIS, IST); Sussumu Niyama (IPT)

**Date:** February 2017





## COMPLETED PHD THESES

### > Prediction of the hydro-mechanical behavior of jet-grouting columns

**Author:** Daniel da Costa Ribeiro

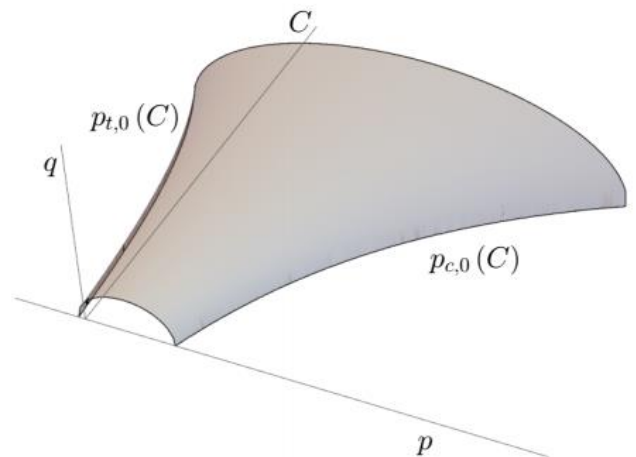
**Supervisors:** Rafaela Cardoso (CERIS, IST) and João Ribas Maranhã (LNEC)

**Date:** October 2017

**Summary:** Jet Grouting is well known for its versatility, but it faces difficulties regarding the definition of jet injection (construction process) and the intricacies of the behavior of soil – cement mixtures (treated material). This thesis aims to contribute for the development of better designing tools. The existing methodologies for the prediction of the diameter of jet columns were studied, and the capacities of particle methods to reproduce jet injection were analyzed. The experimental behavior of sand-cement mixtures was investigated, providing especial emphasis to the bonding effects and to their axisymmetric undrained response. A phenomenological model for sand-cement mixtures was developed, which features destructuring and the subloading surface concept.

Relationships were found between the model inputs and the cement dosages investigated.

**CV:** Daniel Ribeiro graduated from the Integrated Master Degree in Civil Engineering at IST in 2011. In 2016, Daniel was distinguished by the Portuguese Geotechnical Society with the award *Prémio Jovens Geotécnicos em Língua Inglesa*.

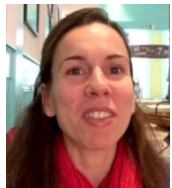


### > Reliability Assessment of the Direct Displacement Based Design Methodology

**Author:** Beatriz da Conceição Penhasco Massena Teles Claudino

**Supervisors:** Rita Bento (CERIS, IST); Hervé Degée (ULg); Paulo Candeias (LNEC)

**Date:** March 2017



### > Campus as a City, City as a Campus. A morphological approach to university precincts in urban context

**Author:** Maria Luísa Cannas da Silva Kuhn Videira

**Supervisors:** Teresa Heitor (CERIS, IST); Pablo Campos Calvo-Sotelo (CEU)

**Date:** March 2017



## COMPLETED PHD THESES

### > Resilience Enhancement in Knowledge-based Urban Environments: strategies for an integrated approach to Universities

**Author:** Duarte Marques Nunes

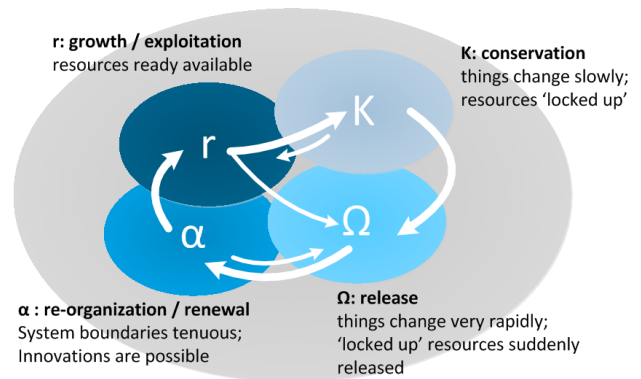
**Supervisors:** Ana Tomé (CERIS, IST); Manuel Duarte Pinheiro (CERIS-IST)

**Date:** July 2017

**Summary:** Urban Development, Management, and Planning tools have been unable to produce holistic instruments to address the evolving sustainability challenges of knowledge-based urban systems. This research advanced the idea that Urban Resilience could contribute to addressing 'change' while promoting a stronger, urban sustainability. This investigation aimed to advance a holistic model for the sustainability of Universities, as the 'locus' of contemporary Knowledge Societies, through the development of a new resilience enhancement framework. The application of the framework to the Instituto Superior Técnico Knowledge Pole demonstrated the ability to analyse the resilience and sustainability performance levels of a detailed

urban development model and to propose enhancement measures for future urban regeneration strategies, which would promote more integrative development processes.

**CV:** Duarte Marques Nunes has an Integrated M.Sc. degree (2009) and a Ph.D. degree (2017) in Architecture from Instituto Superior Técnico.



### > Applicability of different numerical approaches to defining boundary conditions and density-driven flow in groundwater flow and transport models – from regional scale management to submarine groundwater discharge

**Author:** Rui Twohig Hugman

**Supervisors:** José Paulo Patricio Gerales Monteiro (CERIS, UAlg)

**Date:** March 2017

### > Simulation of the behaviour of quasi-fragile materials using discrete flaws (in Portuguese)

**Author:** Carlos Octávio Simões Mendes Fernandes

**Supervisors:** Eduardo Júlio (CERIS, IST); Jorge Alfaiate (CERIS, IST); Daniel Dias da Costa (FCTUC)

**Date:** May 2017



## COMPLETED PHD THESES

### > Fluid Structure Interaction in Pressurized Systems

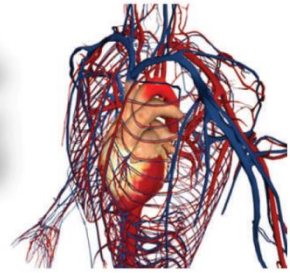
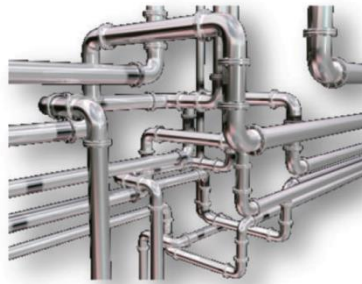
**Author:** Mariana Simão

**Supervisors:** Helena Ramos (CERIS, IST); Jesus Mora Rodriguez (UGTO)

**Date:** March 2017

**Summary:** The research work is approached through experimental and *in vivo* data analyses followed by numerical modelling and theoretical fundaments. Hydrodynamic studies in pipe systems and hemodynamic analyses of complex biological systems through the analogy between pressurized systems and blood vessels in the human body using the same coupling procedures is pointed out. The methodology is preceded by a modelling process comprising two main parts: **I - Pipe systems** and **II – Blood vessels**. The research concludes with the summary of main findings and recommendations for future research by answering several questions regarding each issue.

**CV:** Civil engineer with 10 years of experience in hydraulic, hydropower, and research. Fields of expertise: numerical modelling, under pressure systems, hydropower, pipeline engineering, urban water and drainage networks, hydraulic transients, Computational Fluid Dynamic (CFD), hemodynamic modelling and biological complex systems.



### > Urban morphology and its impact on public health

**Author:** Zélia da Conceição Costa Coelho Santos

**Supervisors:** Miguel Amado (CERIS, IST); Luzia Augusta Pires Gonçalves (UNL)

**Date:** May 2017

### > Irrigation networks towards sustainability and efficiency

**Author:** Modesto Pérez-Sánchez

**Supervisors:** Helena M. Ramos (CERIS, IST); Petra Amparo Lopez-Jimenez (UPV)

**Date:** June 2017

### > Performance Based Seismic Design and Assessment of Irregular Steel Structures

**Author:** Rita Cláudia Jorge Peres

**Supervisors:** Rita Bento (CERIS, IST); José Miguel de Freitas Castro (FEUP)

**Date:** June 2017

## COMPLETED PHD THESES

### > Consolidation and decontamination of clayey soils using electrokinetic treatment

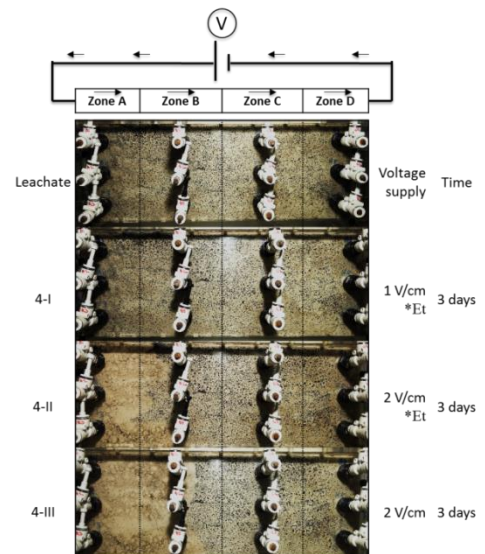
**Author:** Vikas Laxman Gingine

**Supervisors:** Rafaela Cardoso (CERIS, IST)

**Date:** February 2017

**Summary:** Electrokinetic treatment (EKT) promotes water movement in soils under electrical gradients and can be used in clays for various engineering applications where other techniques find it difficult. The present work aims at advances in understanding the behaviour of kaolin and bentonite clays under EKT during consolidation and decontamination. Clayey soils exhibit electro-hydraulic-mechanical coupled behaviour because electrical potential mobilizes water adsorbed by the clay minerals. This was studied for kaolin and bentonite. EKT tests were performed in a specially designed perspex box. Samples of compacted kaolin prepared with different fluids were investigated. Real time monitoring of EKT treatment was performed analysing pore fluid and soil electrical conductivity. A good degree of decontamination was achieved for kaolin contaminated with leachate from a landfill near Lisbon.

**CV:** Vikas Gingine was born in India in 1989 and got his MSc degree in 2013 at the National Institute of Technology, Warangal. Presently he is Assistant Professor at the Department of Civil Engineering, KLS Gogte Institute of Technology, Belagavi, India.



### > Dynamic Characterization of the Soil in Urban Areas Under Confined Conditions

**Author:** Fátima Maria Pereira Gouveia

**Supervisors:** Isabel Maria Figueiredo Lopes (CERIS, IST); Rui Pedro Carrilho Gomes (CERIS, IST)

**Date:** July 2017



### > Femoroacetabular impingement: a contribution to the knowledge of the physiopathology and analysis of the results of the surgery

**Author:** Paulo Renato Amaral Rego

**Supervisors:** Jacinto de Melo Monteiro (FMUL); Fernando Simões (CERIS, IST)

**Date:** July 2017



## COMPLETED PHD THESES

**> Embodying Paradise: silent cities and sacred groves on the margins of Europe. Roman Catholic cemeteries in Lithuania and Portugal**

**Author:** Eglė Bazaraitė

**Supervisors:** Teresa Heitor (CERIS, IST); Maria Manuel Lobo Pinto de Oliveira (UM)

**Date:** September 2017



**> Application of an expert system based on fuzzy logic for the estimation of the functional service life of a set of homogenous buildings**

**Author:** Andrés José Prieto Ibáñez

**Supervisors:** Ana Filipa Ferreira da Silva Cigarro Matos (CERIS); Juan Manual Macías Bernal (US); Francisco Javier Alejandro Sánchez (US)

**Date:** October 2017

**> Social-Ecological Resilience of Local Communities to Climate Change: Guidelines for Brazilian Context**

**Author:** Kátia Virgínia Canellas

**Supervisors:** Maria do Rosário Partidário (CERIS, IST)

**Date:** October 2017



**> City Clogging – Instrumental Concept for City Planning (*in Portuguese*)**

**Author:** Carina Alexandra Capela Pais

**Supervisors:** Jorge Afonso de Carvalho (UA); Maria Beatriz Condessa (CERIS, IST)

**Date:** November 2017



**> Local government strategic management**

**Author:** Paulo Alexandre Fernandes Varela Simões Caldas

**Supervisors:** Rui Cunha Marques (CERIS, IST); Brian Dollery (UNE)

**Date:** November 2017

**> Experimental Characterization of the Failure by Overtopping of Embankment Dams**

**Author:** Sílvia Rute Caleiro Amaral

**Supervisors:** Rui Miguel Lage Ferreira (CERIS, IST); Maria Teresa Fontelas dos Santos Viseu Sarrico Santos (LNEC)

**Date:** November 2017



## COMPLETED PHD THESES

### > Uncertainty Analysis in Travel Demand Modelling

**Author:** Olga Petrik

**Supervisors:** Filipe Manuel Mercier Vilaça e Moura (CERIS, IST); João António de Abreu e Silva (CERIS, IST)

**Date:** November 2017



### > Geophysical Techniques Applied to Shallow Aquifer Characterization

**Author:** Maria Catarina Custódio da Paz

**Supervisors:** Luís Filipe Tavares Ribeiro (CERIS, IST); Francisco Javier Alcalá Garcia (IGME)

**Date:** December 2017



### > Contributions for modelling strategies and operational management of large water resource recovery facilities with combined sewer systems inflows

**Author:** Pedro Ricardo Neto Póvoa

**Supervisors:** José Manuel de Saldanha Gonçalves Matos (CERIS, IST); Adrian Michael Oehmen (FCT-UNL)

**Date:** December 2017



### > Cementitious composites reinforced with multi-walled carbon nanotubes

**Author:** Hawreen Hasan Ahmed

**Supervisors:** José Alexandre de Brito Aleixo Bogas (CERIS, IST); Fernando Branco (CERIS, IST); Nuno Silvestre (IST)

**Date:** December 2017



### > Strategic Planning for Investing at Water Supply Services in Portugal (*in Portuguese*)

**Author:** Rita Oliveira Mota Amaral

**Supervisors:** José Manuel de Saldanha Gonçalves Matos (CERIS, IST); Maria Helena Veríssimo Colaço Alegre (LNEC)

**Date:** December 2017



## COMPLETED PHD THESES

### > Understanding accessibility in cultural landscape sites - The case of Parques de Sintra - Monte da Lua, SA

**Author:** Carolina Mónica Gonçalves Martins

**Supervisors:** Teresa Frederica Tojal de Valsassina Heitor (CERIS, IST); António Ressano Garcia Lamas (CERIS, IST); Nuno Miguel Rodrigues Marques Oliveira (Parques Sintra - Monte da Lua, SA)

**Date:** December 2017



### > Pumps as turbines to replace pressure reducing valves

**Author:** Gustavo Meirelles Lima

**Supervisors:** Helena M. Ramos (CERIS, IST); Edevar Luvizotto Junior (UNICAMP)

**Date:** December 2017

### > Sustainable Development of Cement-Based Materials: Application to Recycled Aggregates Concrete

**Author:** Rawaz Mohammed Saleem Kurda

**Supervisors:** José Dinis Silvestre (CERIS, IST); Jorge de Brito (CERIS, IST)

**Date:** December 2017



### > On the strength and DSM Design of End-Bolted Cold-Formed Steel Columns Buckling in Distortional Modes

**Author:** Warlley Soares Santos

**Supervisors:** Dinar Camotim (CERIS, IST); Alexandre Landesmann (FAU/UFRJ)

**Date:** December 2017

### > High Performance Concrete made with Recycled Aggregates from Pre-cast Industry *(in Portuguese)*

**Author:** Diogo André Gomes Pedro

**Supervisors:** Jorge de Brito (CERIS, IST); Luís Manuel da Rocha Evangelista (ISEL)

**Date:** December 2017



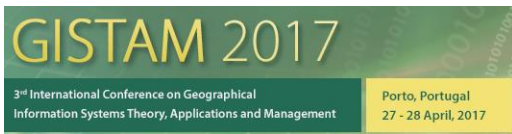
## AWARDS/DISTINCTIONS

**1** Researcher **Mário Garrido** received an honourable mention for **Best National PhD Thesis in Applied and Computational Mechanics in 2016 (awarded in 2017)** with his thesis “Composite sandwich panel floor for building rehabilitation”.



Associação Portuguesa de Mecânica Teórica, Aplicada e Computacional

**2** The Jury of the 3<sup>rd</sup> International Conference on Geographical Information Systems Theory, Applications and Management (GISTAM 2017) awarded Caroline Câmara Benevides, architect, with the **Best PhD Project Award** for her project entitled *The Use of 3D GIS Models to Develop a New Model of Urban Management. The Fortaleza - Brasil Case Study*.

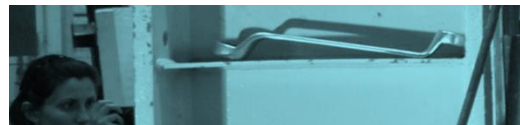


**3** Professor **Dídia Covas** was distinguished with the “**SPORL Otolology” Award** (in May 2017) for her communication in the 64<sup>th</sup> Congress of the Portuguese Society of Otorhinolaryngology and Head and Neck Surgery. The communication was entitled “Water entry in the Tympanostomy tube: study using multiphasic computational fluid dynamics” by the authors Subtil, J.; Martins, N. M. C.; Nunes, T.; Macor, C.; Covas, D. I. C..



**4** Researcher **José Gonilha** was awarded (in 2017) **The Young Engineer Innovation Award 2016** for his work “*São Silvestre Bridge: the first concrete-GFRP mixed bridge in Portugal*”. The award was attributed by Ordem dos Engenheiros - South Region, and it aims at contributing for the disclosure of innovative work, with practical applicability, in the various fields of engineering.





## AWARDS/DISTINCTIONS



5

Professor Emeritus António Betâmio de Almeida was distinguished by the Board of the Portuguese Association of Risk, Prevention and Safety (RISCOS) with the 2016 award “**Dedicação à RISCOS**” (awarded in 2017) in the Science component.

6

Professor Carlos Oliveira Cruz was distinguished with the **Best Paper Award** by the Florence School of Regulation for his paper (co-authored by Prof. Joaquim Miranda Sarmento, ISEG) entitled “Reforming traditional PPP models to cope with the challenges of smart cities”.



7

Professor José Oliveira Pedro and Professor António Reis were distinguished with the **John Henry Garrood King Medal (awarded in 2017)** for their paper “Composite cable-stayed bridges: state of the art”, Vol. 169, Issue BE1, March 2016 pp. 13-38 considered Best paper published in Bridge Engineering.



8

Professors Teresa Heitor, Francisco Teixeira Bastos and Daniela Arnault were distinguished by IST for their **good internationalization practice** organizing *International Exchange (Architecture) Workshops*.



9

The Jury of the Scientific Area - Civil Engineering - of the University of Lisbon awarded the **Scientific Award University of Lisbon/ Santander Universidades 2017** and two **Honorable Mentions** to Professors João Pedro Ramôa Ribeiro Correia, Dinar Reis Zamith Camotim and Rui Domingos Ribeiro da Cunha Marques.



## AWARDS/DISTINCTIONS

# 10

**Professor Cunha Marques** was distinguished by his academic and scientific background and contributions to the areas of regulation and evaluation of the performance of infrastructure services, with a **merit award** attributed by **IWA - The International Water Association**. Besides the merit award, the researcher and Professor Rui Cunha Marques was invited to deliver an inaugural lecture at the Tribunal de Contas da União do Brasil.



# 11

**Professor Rodrigo Gonçalves** won **2017 SSRC MAJR Medal**. The **McGuire Award for Junior Researchers (MAJR Medal)** has been established in honor of the late Professor William "Bill" McGuire, a long-term member of SSRC, who emphasized that state-of-the-art research is instrumental to improve the quality of stability design. The award recognizes the research activity of the candidate in a period not exceeding nine years after obtaining his/her Ph.D. degree. Professor Gonçalves will receive the award and deliver a presentation on his recent research activity at the 2018 SSRC Annual Stability Conference in Baltimore, Maryland.



# 12

**Professor Rafaela Cardoso** was distinguished by her scientific revision activities. **Publons Peer Review Award 2017** honouring the *Sentinels of Science and Research*, for being in the top 1% of reviewers of *University of Lisbon*.



# 13

**Professor Filipe Moura** was awarded a **Fullbright Grant** to develop research at the Portland State University (Oregon, USA – [www.pdx.edu](http://www.pdx.edu)) on the topic of *Sustainable Urban Mobility*, more particularly, how to evaluate the walkability of urban built environment.

## PAST EVENTS

### > Passive House Introduction Session

**Venue:** Civil Engineering Museum, IST

**Date:** February 2017



**Summary:** On February 22, 2017, was held at the Museum of Civil Pavilion at the Técnico (IS%), realized in the seminar for the introduction of the standard passive house, organized by Homegrid and LiderA with the support of the IST DECivil, which had the participation of more than 100 people. The session had the presentations of Prof. Ana Tomé and Prof. Manuel Duarte Pinheiro on passive performance and sustainability in construction; passive house principles by Eng. João Marcelino and Eng. João Gavião; and the approaches of passive and bioclimatic solar architecture by the specialists Arqt. Francisco Moita and Arqt. Fausto Simões.

### > ATHENS – Advanced Technology Higher Education Network

**Venue:** IST, DECivil, Lisbon

**Date:** 11<sup>th</sup> - 17<sup>th</sup> March and 11<sup>th</sup> – 18<sup>th</sup> November 2017

**Summary:** Two Athens sessions were held under the scope of the Atlas of School Architecture in Portugal – Education, Heritage and Challenges (ASAP\_EHC - PTDC/A TP-AQI/3273/2014) research project. Athens Programme is a short duration course (1 week) aiming at carrying out intensive specialization courses to a group of international students. “From School Memories To A School Architecture Manifesto Unfolding Lisbon’s School Architecture Paradigm” counted with 20 students from major European technological institutions (12 different nationalities).



Each course aimed at engaging students from different fields (Architecture, Urban Planning, Engineering, Science, Sociology, History, Economics) with designers, scholars, and experts, in deepening the discussion about school building architecture. Each session was committed to developing a broad basis of debate on the pedagogical, social, cultural, environmental, and design issues regarding secondary school buildings, and their impact on the learning experiences and student school life.





## PAST EVENTS

### > ASAP – Atlas of School Architecture in Portugal – Education, Heritage and Challenges



**Venue:** Centro de Informação Urbana de Lisboa (CIUL)

**Date:** May 2017

**Summary:** The ASAP (ASAP\_EHC - PTDC/A TP-AQI/3273/2014) research project held the first seminar of school architecture. The seminar aimed at promoting the discussion/debate about the design of school building crossing the disciplines of architecture and education. In this respect, the seminar was attended by invited speakers from the educational department of the Municipality of Lisbon and from different architectural offices that were responsible for the renovations of recent schools in this city. The presentation of different projects allowed to grasp different approaches and perspectives in this thematic. Prof. Francisco Teixeira Bastos [IST] and Prof. Teresa Heitor [IST] chaired the debate.

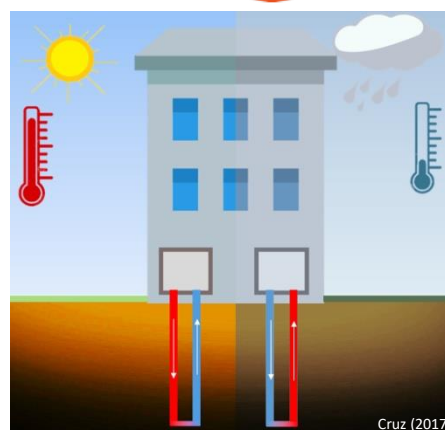
### > Workshop Shallow Geothermal Systems: Applications and perspectives

**Venue:** Aveiro University

**Date:** 8<sup>th</sup> May 2017

**Summary:** The first workshop of FCT Project Success had the participation of more than 50 delegates from University, Research Centres and Companies. It had the participation of recognised national and international invited speakers ([http://success.inec.pt/index\\_en.php](http://success.inec.pt/index_en.php)). The workshop was focused on the study of shallow geothermal systems, covering various areas of science and technology: employing shallow geothermal energy for buildings and infrastructure heating and cooling; factors to consider when evaluating and designing sustainable and efficient shallow geothermal solutions; identification of key aspects: operational climate, soil thermal properties and system efficiency.

**SUCCESS**  
Sustentabilidade de sistemas  
geotérmicos superficiais  
Estudos aplicados a climas  
do sul de Europa





## PAST EVENTS

### > The 11th International Space Syntax Symposium (SSS11)



**Venue:** Fundação Calouste Gulbenkian

**Date:** 3<sup>rd</sup> – 7<sup>th</sup> July 2017

**Website:** <http://www.11ssslisbon.pt>

**Summary:** Instituto Superior Técnico hosted the 11th International Space Syntax Symposium (SSS11) from 03-07 July 2017. After over twenty years of symposia, this was another exciting and engaging event.

SSS11 is the opportunity to discover about the latest developments on space syntax, to discuss with people from all over the world, to share your own work and to learn from others. The aim of the symposium is to provide a forum of knowledge sharing, where space syntax scholars, practitioners or students, and researchers from other related fields, may find the opportunities for discussion and mutual understanding, in the pursuit of common research goals.



### > AESOP Annual Congress 2017

**Venue:** IST, DECivil, Lisbon

**Date:** 11<sup>th</sup> – 14<sup>th</sup> July 2017

**Website:** <http://aesop2017.pt/>

**Summary:** Every year AESOP holds its Annual Congress. The attendance of the 2017 edition hosted by IST in Lisbon exceeded all expectations, bringing together 955 participants from 53 countries of all continents. Such a high number of participants and presentations, required the Local Organization Committee lead by José Antunes Ferreira to organize 24 parallel sessions, with a total of 165 individual sessions. 22 roundtable sessions were organized, as well as 14 thematic group meetings and 4 editorial board meetings: The Journal Planning Theory, Town Planning Review, European Planning Studies and Journal Planning Theory and Practice. 20 mobile workshops took participants throughout urban settings of the greater Lisbon area.



## PAST EVENTS

### > PROHITECH 2017

**Venue:** IST, DECivil, Lisbon

**Date:** 12<sup>th</sup> - 15<sup>th</sup> July 2017

**Website:** <http://www.prohitech2017.com/>



**Summary:** Técnico hosted PROHITECH'17, one of the most interesting and important international conferences on the protection of historical constructions. Structural engineering and earthquakes, the several intervention strategies, materials and technology, as well as architecture and urban planning, were some of the topics addressed at PROHITECH2017 – International Conference on Protection of Historical Constructions – where researchers, engineers, architects and other national and international experts shared their experiences.

### > Ventura Terra, Architect – The Useful and the Beautiful (Exhibition)

**Venue:** West Tower of Praça do Comércio, Lisbon

**Date:** 14<sup>th</sup> July – 21<sup>st</sup> October 2017

**Website:**

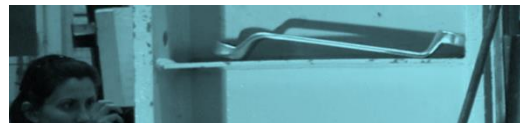
<https://tecnico.ulisboa.pt/pt/eventos/tecnico-na-exposicao-ventura-terra-arquiteto-do-util-e-do-bello/>

**Summary:** For the event, ISTAR laboratory developed tridimensional representations, of the project dated from 1915, authored by Architect Ventura Terra for the new facilities of the Instituto Superior Técnico. The 3D models – developed at several scales - revealed the Architect's vision for the Técnico campus never built.



The models were based on the digitization of the zinc engravings, belonging to the Civil Engineering Museum estate, with the support of NARQ.

This initiative fall within the scope of a Partnership Agreement established between Instituto Superior Técnico and the Lisbon City Municipality.



## PAST EVENTS

### > 1<sup>st</sup> Seminar and Exhibition on Digital Documentation and Representation of Cultural Heritage

**Venue:** IST, DECivil, Civil Engineering Museum

**Date:** 23<sup>rd</sup> June – 29<sup>th</sup> September 2017

**Website:**

<http://museudec.tecnico.ulisboa.pt/event/1a-jornadas-de-documentacao-e-representacao-digital-de-bens-culturais/>



**Summary:** The exhibition - organized by the Civil Museum and ISTAR laboratory, and in partnership with the EGEAC / Lisbon Museum - Teatro Romano - aimed to disseminate the diversity of approaches and potential of digital technologies in the preservation of Heritage Objects. In its scope, the edition of the digital models and its production by 3D printing, FFF (Fused Filament Fabrication), and laser cutting were developed. It was possible to illustrate the application of these digital technologies to different case studies, both in their nature and in scale.

### > CERIS Open Day

**Summary:** The CERIS Open Day brought together about 79 PhD students and PhD researchers at CERIS. The event aimed at promoting the interaction between young researchers at CERIS. The event included team building activities, oral presentations, keynotes, a training session on writing tips for scientific papers and a roundtable on job opportunities after PhD. The event's highlight was the session "after dinner" where participants made a 3-minute pitch thus leading to a relaxed and fun atmosphere. According to the executive board of CERIS the next editions will have the same success as this first one: "the goal for the next editions will be to motivate students to participate in such events". The participants feedback at the end of the event was, in general, very positive.



**Venue:** Inatel Oeiras

**Date:** 27<sup>th</sup> – 28<sup>th</sup> October, 2017

**Website:**

<https://tecnico.ulisboa.pt/pt/noticias/campus-e-comunidade/primeira-edicao-do-ceris-open-day/>



## PAST EVENTS

### > Technical visit to largest Portuguese Waste Water Treatment System / Civil in Motion

**Venue:** Alcântara Waste Water Treatment System, Lisbon

**Date:** 30<sup>th</sup> October 2017



**Summary:** Integrated in the “Civil in motion” initiative, a technical visit was made to the largest Portuguese Waste Water Treatment System (WWTS) that serves more than 750,000 equivalent Lisbon inhabitants.

The visit to Alcântara WWTS began with an explanation of drainage subsystem and its urban area; the evolution of the treatment system and solutions; the rational of the existing treatment processed capacity (6 m<sup>3</sup>/s) and the operation modes of WWTS (in dry and wet weather). Then, the different areas were visited namely the green roof and its different ecosystems, pre-treatment, primary treatment, biological treatment, disinfection and the management system.

### > Lecture on the Construction of Mafra’s Royal Building

**Venue:** Civil Engineering Museum, IST

**Date:** 13<sup>th</sup> December 2017

**Website:** [www.spech.pt](http://www.spech.pt)

**Summary:** The Director of Museu Nacional de Arte Antiga, Professor António Filipe Pimentel from Coimbra University, gave a lecture on how Mafra’s Convent was built. The lecture included the political, religious and social conditions, the building’s location, stakeholders and the history of the construction process. The event was organized by SPECH and CERIS, namely by Prof. António Sousa Gago and Prof. Teresa Heitor.





## PAST EVENTS

### > Technical visit to NOVA SBE / Civil in Motion

**Venue:** NOVA SBE – Carcavelos Campus

**Date:** 04/11/2018

**Website:** <https://www.facebook.com/Civil-em-Marcha-346563649103522/>

**Summary:** Ceris and DECivil organized an open visit to the construction site of NOVA SBE to highlight the relevance of Civil Engineering projects to society.



## UPCOMING EVENTS

### > 2º Portuguese Congress of 'Building Information Modelling'

**Venue:** IST, Lisbon

**Date:** 17<sup>th</sup> – 18<sup>th</sup> May 2018

**Website:** [www.ptbim.org](http://www.ptbim.org)

**Summary:** The growing importance of the digital representation of the built environment, which has been made feasible by Building Information Modelling methodologies, is introducing important changes in design, construction and lifecycle management.

The main objective of the PTBIM Congress is to promote a technical-scientific discussion forum in Portugal, with active participation of the practicing and academic communities in areas related to the Industry of Architecture, Engineering and Construction, focusing the challenges of BIM implementation within the Industry and to strengthen the networks of professionals that are currently incorporating BIM practices within their activities.



### > BE 2018

**Venue:** LNEC, Lisbon

**Date:** 7<sup>th</sup> – 9<sup>th</sup> November 2018

**Website:** <http://www.be2018.pt/>



**Summary:** BE 2018 aims at providing a privileged forum for dissemination of the most recent and innovative achievements in the field of structural concrete in the areas of construction and rehabilitation, materials and products, standardization, design and scientific research, taking into account the current national and international priorities, in terms of performance, durability, sustainability, and resilience of pre-stressed and reinforced concrete structures. It also aims at being a space for discussion on the future of concrete structures in Portugal, Europe, and worldwide, mobilizing for this purpose the companies of the sector, owners, design offices, universities, polytechnics, laboratories, and scientific research and technological development units.

## MASTER COURSES

### > Petroleum Engineering

Vacancies: 30

Application dates: 19<sup>th</sup> - 22<sup>nd</sup> September 2017

<https://fenix.tecnico.ulisboa.pt/cursos/mep/>

### > Advanced Mineral Resources Development

Application dates:

30<sup>th</sup> September 2017 - 21<sup>st</sup> January 2018

<https://fenix.tecnico.ulisboa.pt/cursos/megm>

### > Mining and Geological Engineering

Vacancies: 15

Application dates: to be announced soon

<https://fenix.tecnico.ulisboa.pt/cursos/megm>

## INTEGRATED MASTER COURSES

### Application dates

#### (National Admission for Higher Education):

> 1<sup>st</sup> call: 19<sup>th</sup> July - 8<sup>th</sup> August 2017

> 2<sup>nd</sup> call: 11<sup>th</sup> - 22<sup>th</sup> September 2017

> 3<sup>rd</sup> call: 5<sup>th</sup> - 9<sup>th</sup> October 2017

### > Civil Engineering

Vacancies: 145

<https://fenix.tecnico.ulisboa.pt/cursos/mec>

### > Environmental Engineering

Vacancies: 35

<https://fenix.tecnico.ulisboa.pt/cursos/meambi>

### > Architecture

Vacancies: 50

<https://fenix.tecnico.ulisboa.pt/cursos/ma>

## PHD COURSES

### Application dates:

> 1<sup>st</sup> call: 4<sup>th</sup> December - 5<sup>th</sup> January 2018

> 2<sup>nd</sup> call: 2<sup>nd</sup> - 27<sup>th</sup> July 2018

### > Civil Engineering

<https://fenix.tecnico.ulisboa.pt/cursos/dec>

### > Territorial Engineering

<https://fenix.tecnico.ulisboa.pt/cursos/det>

### > River Restoration and Management

<https://fenix.tecnico.ulisboa.pt/cursos/deargf>

### > Environment Engineering

<https://fenix.tecnico.ulisboa.pt/cursos/deamb>

### > Climate Changes and Sustainable Development Policy

<https://fenix.tecnico.ulisboa.pt/cursos/deaacpds>

### > Petroleum Engineering

<https://fenix.tecnico.ulisboa.pt/cursos/depet>

### > Earth-Resources

<https://fenix.tecnico.ulisboa.pt/cursos/dgeo>

### > Transport Systems

<https://fenix.tecnico.ulisboa.pt/cursos/st>

### > Architecture

<https://fenix.tecnico.ulisboa.pt/cursos/darq>



## PHD PROGRAMMES

### > InfraRisk (Analysis and Mitigation of Risks in Infrastructures)

Website: <http://infrarisk.tecnico.ulisboa.pt/>  
Last call: 21<sup>st</sup> February - 24<sup>th</sup> March 2017

### > FLUVIO (River Restoration and Management)

Website: <http://rrm.tecnico.ulisboa.pt/>  
Application dates:  
15<sup>th</sup> December - 2<sup>nd</sup> February 2018

### > EcoCoRe (Eco-Construction and Rehabilitation)

Website: <http://ecr.tecnico.ulisboa.pt/>  
Last call: 13<sup>th</sup> February - 26<sup>th</sup> March 2017

### > MIT Portugal (Transportation Systems)

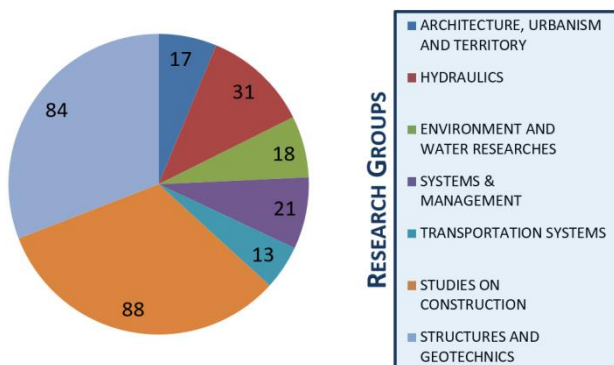
<https://www.mitportugal.org/education/apply>  
Application dates:  
18<sup>th</sup> December - 3<sup>rd</sup> January 2018

### > H2Doc (Environmental Hydraulics and Hidrology)

Website: <http://envhidro.tecnico.ulisboa.pt/>  
Application dates:  
27<sup>th</sup> December 2017 - 22<sup>nd</sup> January 2018

## STATISTICS

Papers in Web of Knowledge / Scopus journals in 2017



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