Booklet

DCE

DOCTORAL CONGRESS IN ENGINEERING

11-12 JUNE 2015 · FEUP · PORTO · PORTUGAL

U.PORTO
FEUP FACULDADE DE ENGENHARIA
UNIVERSIDADE DO PORTO

About us

Welcome to the 1st Doctoral Congress in Engineering
The role of PhDs in society: Contributions and Integration

The Faculdade de Engenharia da Universidade do Porto (FEUP) is proud to organize the first Doctoral Congress in Engineering in Portugal. The Congress is a showcase of FEUPs vibrant, engaged and internationalized doctoral programmes. Most importantly, the Congress makes the point that Doctoral Programmes (in Engineering) and their early stage researchers (ESRs) are an essential ingredient to tackle many of the challenges faced by our society. Why is this so?

The activities undertaken by FEUP's Doctoral Programmes ESRs reach from pure R&D (building the foundations of future innovation) to innovation of immediate relevance to companies' profits or the efficiency of public sector. Although the R&D and innovation based economy accounts for a small share of the GDP it is has a very important share in growth. Doctoral Programmes activities promote growth – a necessary condition for sustaining our western democratic tradition and social contract. Furthermore, in the current Portuguese demographic situation, Doctoral Programmes play a key role in building highly skilled human capital with life-long learning capacity; overcoming via quality the demographic deficit.

Yet Doctoral Programmes face themselves many challenges. Firstly, although the diversity of existing Doctoral Programmes is a natural outcome of the rich engineering landscape, the path of consolidation is still to be followed. Critical mass is mandatory for effective impact and international visibility. Secondly, quality control and good practices spreading is a must. Bringing together several Doctoral Programmes in a single Congress makes the power of example happen; learning from others towards a better programme organization. Thirdly, society still sees ESRs as "students" and the process leading to the doctoral degree as "study" and not as a professional activity that must be fully appreciated as critical for the future of our society. An effort must be made towards presenting Doctor degree holders as professionals with experience on-the-job. This can only be achieved by emphasising intersectoral joint thesis projects.

Finally, I thank all that made the congress happen and especially the ESRs in the organising committee. One of the goals was to capacitate you in the transversal skills needed to build this Congress (financial, organisational and interpersonal). I know it was hard, but experience comes with a price! I also thank the ESRs involved in the communications refereeing and those presenting their work, also gaining experience in key skills for the future. You have brought up the best of FEUP's community character. Thank you!

Paulo Garcia
Chair of the Organising Committee

Improve yourself by doing research at INESC TEC while pursuing your master's and doctoral studies or your dream of becoming a young entrepreneur, joining a team to create your own company!

We have numerous projects and activities in the areas of Engineering, and we host qualified human resources to work in areas such as:

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- Pedro Miguel Félix Brogueira | IST
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Symposium on Mechanical Engineering

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Programme

		June 11th, Thursday	June 12th, Friday
8:00	9:00	Registration	Registration
9:00	9:30	**Welcome Session**	**Plenary Session II**
9:30	10:30	**Plenary Session I**	
10:30	11:00	Coffee Break	Coffee Break + **Poster Exhibition**
11:00	13:00	**Symposia in:** / Biomedical Engineering / Electrical and Computers Eng / Industrial Eng. and Management / Eng Physics / Mechanical Eng	**Symposia in:** / Biomedical Engineering / Chemical and Biological Eng / Civil Eng / Electrical and Computers Eng / Eng Physics / Mechanical Eng / Occupational Safety and Health / Eng and Public Policy
13:00	14:30	Lunch	Lunch
14:30	16:30	**Symposia in:** / Biomedical Engineering / Electrical and Computers Eng / Industrial Eng. and Management / Eng Physics / Mechanical Eng / Sustainable Energy Systems	**Symposia in:** / Chemical and Biological Eng / Civil Eng / Electrical and Computers Eng / Eng Physics / Mechanical Eng / Occupational Safety and Health
16:30	17:00	Coffee Break + **Poster Exhibition**	Coffee Break + **Poster Exhibition**
17:00	17:30	**Alumni Session**	**Parallel Workshops** WP2; WP3, WP4;WP5; WP6; WP7
17:30	18:30		
18:30	20:00	**Parallel Workshops** WP1, WP2	
			Closing Session, Conference Dinner & Awards

WELCOME SESSION

Date: Thursday, 11th of June 2015 | 9h-9h30
Location: Main Auditorium

DCE2015 will be opened with the prestigious presence (from left to right) of Sebastião Feyo de Azevedo (Rector of the University of Porto), João Falcão e Cunha (Dean of the Faculty of Engineering of the University of Porto) and António Ferreira (FEUP's Vice-Chairman of the Scientific Board and President of DCE2015 Scientific Committee) as Session Chair.

PLENARY SESSIONS

Date: Thursday, 11th of June 2015 | 9h30-10h30
Location: Main Auditorium
Moderator: António Ferreira (FEUP's Vice-Chairman of the Scientific Board)

Carlos Matias Ramos | Bastonário da Ordem dos Engenheiros
Keynote topic: *"The 'Ordem dos Engenheiros' Perspective on Doctorates in Engineering"*

Born in Pinhel, Carlos Matias Ramos has a degree in Civil Engineering from FEUP (1969). He is, since 1979, a Specialist in the National Laboratory of Civil Engineering (LNEC) and, since 1989, Research Coordinator. He was President of LNEC between 2005 and 2010 and Vice President in the previous two terms. At LNEC he conducted nearly 100 (national and abroad) studies and projects on hydraulics. He participated, as Consultant, in 90 studies and projects. He is author or co-author of 89 articles, five technical memories and three technical books. He lectured in master and post-graduation courses and gave about fifty conferences and lectures, of technical and professional nature. Member of the Academy of Engineering; member of Hydraulic Committee of ICOLD, 2010; member of the School Board of IST; Chairman of the Environmental Council of Portucel Group Soporcel; Chairman of the Board of the Civil Engineering Associations of Portuguese and Castilian Speaking Countries; President (Bastonário) of the Ordem dos Engenheiros, since 2010. Personality of the Year in Engineering (2008) by the newspaper 'Construir'.

Melita Kovačević | Chair of the Steering Committee at the European University Association - Council of Doctoral Education
Keynote topic: *"Quality assurance and employability in doctoral programmes"*

Melita Kovačević is the former Vice-Rector for Research and Technology at the University of Zagreb since 2006 and Full professor at the Department of Speech and Language Pathology of the University of Zagreb. She is Head of the Laboratory for Psycholinguistic Research and Director of the Interdisciplinary Doctoral Program "Language and Cognitive Neuroscience". She held research and visiting positions at different European and American universities and has been a member of various national and international societies.

She joined the EUA-CDE | European University Association - Council of Doctoral Education, Steering Committee in 2009 and presently is an acting Chair. Melita Kovačević was a member of different national and European bodies related to higher education. Within the UNICA | Network of Universities, from the Capitals of Europe, she is particular active in the area of doctoral education and research.

Date: Friday 12th of June 2015 | 9h30-10h30
Location: Main Auditorium
Moderator: Paulo Garcia (LEA-FEUP Coordinator and President of DCE2015 Organizing Committee)

Luis H. Ferreira | European Patent Attorney
Keynote topic: *"The Value of Patents for Engineers"*

Luís has a degree in Electrical and Computers Engineering by FEUP (1995) having taken the IS branch. He has worked in IT/IS, media and in intellectual property, especially patents. He is a partner at patents.pt.

He has assisted clients, extensively, in developing strategy and prosecution for patent and IP management, namely advanced and defensive patent filings, with comprehensive patent prosecution experience in European, PCT and Portuguese patent applications, also by providing opinions and analysis on patentability, freedom to operate, and infringement matters. He has experience as a judicial patent expert, whether appointed by the court or by the parties of the case.

He has interned with the Examining Division of the EPO and is a tutor with CEIPI - Centre for International Intellectual Property Studies, namely in the Training in European Patent Law with the University of Strasbourg, and with EPI - Institute of Professional Representatives before the European Patent Office.

Luís is an European Patent Attorney, a Portuguese Patent and Trademark Attorney, and an European Trademark and Design Attorney.

José Carlos Caldeira | President of the Board of Directors of the National Innovation Agency
Keynote topic: *"Linking Business and Academia: the key role of PhD's and related challenges and opportunities"*

José Carlos Caldeira has a degree and a MSc in Electrical and Computer Engineering at the Faculty of Engineering University of Porto (FEUP). He was director of INESC Porto, one of the main ICT research and technology transfer institutes in Portugal and executive director of PRODUTECH, a cluster of more than 70 organizations targeting the development of production technologies for the manufacturing industry.

He is still a Board member of ISPIM | International Society for Professional Innovation Management; a member of the MANUFUTURE | High Level Group and Chairman of its National and Regional Technology Platforms Group; and a Board member of EFFRA | European Factories of the Future Research Association (as observer) and national deputy of the NMP+B Programme Committee of HORIZON 2020. He is also, since 2014, the President of the Board of Directors of the National Innovation Agency.

PARALLEL SYMPOSIA

Symposium on Biomedical Engineering

Chair: Fernando Jorge Monteiro
Location: B019
Time for presentation: 10min + discussion

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- Jorge Silva, Lígia Tavares, Eduardo Pereira and Hélder P. Oliveira. Automatic Analysis of Cellular Structures on Drosophila's Compound Eye #61

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- Inês Lopes, Miguel Velhote Correia and Susana Soares. Swim Bench Function Optimization #94

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- Carla F. Santos, Fernanda Gentil, Jorge Belinha, Marco Parente and Renato Natal Jorge. Biomechanical study of the vestibular maneuvers based on accelerometer data #66
- Hélder Moreira, Ivo Silva and João Cunha. Live Neurotransmitter Vesicle Movement Dynamics in Living Neurons #97
- António Guerra, Hélder P. Oliveira and João P. Monteiro. Evaluation of upper limbs movements after surgery in breast cancer patients #101
- Joana Arantes Silva, Rui Miranda Guedes, Miguel Marta, Nuno Viriato and Mário A.P. Vaz. Methods Used in Clamping Soft Tissues Specimen: Review and New Approach #102

Symposium on Chemical and Biological Engineering

Chair: Alexandra Pinto
Location: B024
Time for presentation: 30min for keynotes; 12 min (10+2) for presenting authors

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Keynote lecture: Adriano Ribeiro

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- Ana Meireles, Idalina Machado, Filipe Mergulhão, Luís Melo and Manuel Simões. Efficacy of neutral electrolyzed oxidizing water to control planktonic and sessile Escherichia coli #57
- Inês Gomes, Joana Malheiro, Filipe Mergulhão and Manuel Simões. Efficacy of current and natural-based biocides on the disinfection of silicone and stainless steel surfaces #65
- Ana Luísa Gonçalves, Ana C. Abreu, José C.M. Pires and Manuel Simões. Kinetic growth modelling of single and mixed cultures of Synechocystis salina and Pseudokirchneriella subcapitata: evidence of allelopathic competition #73
- Joana Malheiro, Inês B. Gomes, Anabela Borges, Jean-Yves Maillard, Fernanda Borges and Manuel Simões. The effects of selected phytochemical compounds on the control of planktonic and sessile bacteria #82
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Symposium on Civil Engineering

Chair: Raimundo Delgado
Location: B018
Time for presentation: 15min

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Moderator: Raimundo Delgado

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- Ferradosa, T. F. Taveira Pinto, F. A start for risk analysis application to scour dynamical protection systems for offshore foundations optimization #235
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Moderator: Rui Faria

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- Malveiro, J.; Sousa, C.; Calçada, R. Fatigue assessment of reinforced concrete slabs in railway viaducts #142
- Meixedo, A.; Calçada, R.; Ribeiro, D. Damage detection on railway bridges based on dynamic performance indicators of the train-bridge system #154
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- Lígia Pereira and Carlos Rodrigues. Freeway geometric design comparison between Mexico and Portugal: design standards #103
- Lígia Pereira and Carlos Rodrigues. Freeway geometric design comparison between Mexico and Portugal: case studies multicriteria analysis #104
- Miguel Araújo, Luís Macedo and José Miguel Castro. Calibration of deterioration hysteretic models using optimization algorithms for performance-based analysis #150
- Sousa, L. ; Silva, V. ; Marques, M. ; Crowley, H. Including Multiple Ground Motion Intensity Measures in the Derivation of Fragility Functions for Earthquake Loss Estimation #151

Symposium on Electrical and Computer Engineering

Chair: Aurélio Campilho
Location: B030
Time for presentation: 45min for keynotes; 20 min for presenting authors

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- Pedro Santos, Jose C. Alves and João Canas Ferreira. A Custom Computing Machine for Cellular Genetic Algorithms #120
- João Monteiro and Jaime Cardoso. A framework for face recognition in occlusion scenarios #14
- Kelwin Fernandes, Jaime Cardoso and Jessica Fernandes. Temporal Segmentation and Quality Assessment of Digital Colposcopies #12
- Ana F. Sequeira, Pedro M. Ferreira, Ana Rebelo and Jaime S. Cardoso. A Method for Fingerprint Segmentation based on Fuzzy C-Means #87
- Bruno Bispo and Diamantino Freitas. Acoustic Feedback Cancellation in Public Address Systems and Recent Methods based on Cepstral Analysis #127
- Luis Costa, Luis Almeida and Alisson Brito. An environment for designing multi-robot systems with federated co-simulation #36

Session II (Thursday, 11th of June, 14:30h-16:30h) | Moderated by José Machado da Silva, Pedro Santos
Invited speaker: Carlos Azeredo-Leme "The Internet of Things - Latest Trends and Future Perspectives"
- Zahid Iqbal and Luis Almeida. Hierarchical Server Design for Networks #30
- Rui Fernandes and M. T. Andrade. Multimedia content classification metrics for content adaptation #111
- Eduardo Marques, Lucian Ciobanu and Jaime Cardoso. Social Descriptor for Individual Profiling and Group Behaviour Analysis #118

Session III (Friday, 12th of June, 11h-13h) | Moderated by João Tomé Saraiva, Rui Filipe Pinto
- Phillipe Gomes, João Saraiva, Bruno Dias and Ivo Junior. Comparative Analysis of Constructive Heuristic Algorithms for Transmission Expansion Planning #110
- Pedro Melo and Rui Araújo. An initial study on SRM losses characterization for electric vehicle applications #114
- Carlos Pereira, António Pinto and Ana Aguiar. Improvement of battery efficiency of smartphones as M2M GWs by using buffers #126
- João Moutinho, Diamantino Freitas and Rui Esteves Araújo. Indoor localization using barely perceptible audio signals   #99
- Chen Wang, Ricardo Morla and Hyong Kim. QoE Driven Server Selection for VoD in the Cloud   #4

Session IV (Friday, 12th of June, 14:30h-16:30h) | Moderated by Manuel Ricardo, Carlos Pereira
Invited speaker: Luís M. Correia "A Perspective on Virtual Radio Access Networks"
- José Oliveira, Rui Campos and Manuel Ricardo. Novel Ad-hoc Networking Approach for Efficient and Reliable inter-UAV Communications   #62
- Filipe Teixeira, Pedro Freitas, Luís Pessoa, Rui Campos and Manuel Ricardo. Simulation and Experimental Evaluation of IEEE 802.11 Underwater Networks   #86
- Sérgio Conceição, Rui Campos and Manuel Ricardo. A Network Simulator for Wireless Underground Sensor Networks #84

Poster communications:
- João Silva, Leonel Carvalho and Vladimiro Miranda. Assets Management in Power Systems #124
- Nuno Abreu and Aníbal Matos. Online planning of automatic minehunting operations #113

- Bruno Laranjo Dos Santos and Rui Esteves Araújo. Fault Detection and Isolation Method for Multi-Motor Electric Vehicle #77
- António Lopes and Rui Araujo. Revision study of the ground vehicle model for non-linear control application #56
- César Carpinteiro, Xuanle Ren, José Machado Silva and Ronald D. Blanton   A statistical learning in chip-based test and diagnostics methodology #98
- José Abreu and Marcelo Caetano. Musical Orchestration Using Biological Principals #228
- Eduardo Nuno Almeida, José Oliveira, Rui Campos and Manuel Ricardo. Topology Control of Flying Backhaul Networks #83
- Francisco P. Torres, Xuanle Ren, Vítor Grade Tavares and R. D. Shawn Blanton. Learning System for IC Security #90
- Bernardo Cardoso, Vítor Grade Tavares and Xin Li. Algorithm and Hardware Design for Image Restoration and Classification   #70
- João Martins, Vítor Grade Tavares and Xin Li. Compressive sensing for image compression and recovery #72
- Helder Fontes, Rui Campos and Manuel Ricardo. A New Methodology for Performance Evaluation of Network Protocols #89
- Oluyomi Aboderin, Luís Pessoa, Mário Pereira and Henrique Salgado. Theoretical Analysis of a Rectangular Shaped Planar Monopole Antenna   #60
- Muhammad Ajmal Azad and Ricardo Morla. COSDS: Identifying Spammers through Service Provider Collaboration #67
- Tiago Esteves, Ângela Carvalho, Fernando Jorge Monteiro and Pedro Quelhas. Detection and removal of periodic background patterns for improving of cell tracking analysis #78
- Alexandre Clément, Rui Rodrigues and Rui Penha. Tools and Template development for Live Networked Musical Performance System #85
- Daniel C. Ramos, Luis Almeida and Ubirajara Moreno. Cooperative control strategy based on consensus with MANET protocols and topology control #23
- Pedro Saleiro, Rui Penha and Ana Rebelo. Optimization methods for validation of syntactic and semantic rules in musical scores #27
- Tiago Cardoso, Helder Fontes and Manuel Ricardo. Improving ns-3 Emulation Performance for Fast Prototyping   #59
- Pedro Kretschmann, Matthew E. P. Davies and Rui Penha. A real-time interactive music remixing app #46
- José Pedro Santos, Filipe Borges Teixeira and Manuel Pereira Ricardo. Evaluation of IEEE 802.11a/g/p Transceiver for SDR #45

Symposium on Engineering and Public Policy

Chair: José Silva Matos
Location: B021
Time for presentation: 15 min. (+ 10 min. discussion)

Session I (Friday, 12th of June, 11h-13h) | Moderated by: José Silva Matos
Introduction: José Silva Matos

- Alexandre Ligo and Jon Peha. Vehicular DSRC Networks for Mobile Internet Offload: Benefits and Costs #227
- Manuel Valentim Loureiro, João Claro and Paul Fischbeck. Cross-border cost allocation of interconnections in market coupled regions: An application to the Iberian market #137
- Kristen Schell, João Claro and Paul Fischbeck. Geographic Attribution of an Electricity System Renewable Energy Target: Local Economic, Social and Environmental Tradeoffs #68
- Ana Rita Costa Tedim, Ana Barros and Catarina Maia. The product – market – supply chain linkage: challenges of start-ups during scale-up phase #273

Symposium on Industrial Engineering and Management

Chair: José Fernando Oliveira
Location: B028
Time for presentation: 20 min. (+ 10 min. discussion)

Session I (Thursday, 11th of June, 11h-13h) | Moderated by Fábio Moreira

- José Coelho Rodrigues, João Claro and Ana Cristina Barros. Managing misalignments in the implementation of a health screening program #63
- Abílio Pereira Pacheco and João Claro. Challenging Myths of Forest Fire Management — flexible planning for the values at risk, a spatially-explicit intra-annual optimization, considering prevention, suppression, and escape costs #52
- Maria Pires, Pedro Amorim, Joaquim Pratas and Jorge Liz. Effective design of backroom storage facilities in retail food stores #117
- Joana Hora, Teresa G. Dias and Ana Camanho. Optimization of Bus Schedules to Improve Robustness #43

Session II (Thursday, 11th of June, 14:30h-16:30h) | Moderated by José Coelho Rodrigues

- Ashkan Akhavan and António Carvalho Brito. IT contributions in Business Process Re-engineering #50
- Eric Costa, António Lucas Soares and Jorge Pinho de Sousa. Decision-making in internationalization processes: The role of information, knowledge and collaboration #54
- Dario Messina, Ana Cristina Barros and António Lucas Soares. Informations model for supply networks #132
- Abílio Pereira Pacheco, Richard de Neufville, João Claro and Hèctor Fornés. Flexible design of a network of extended attack fire-fighting depots considering uncertainty in fire location and intensity #91

Symposium on Engineering Physics

Chairs: Paulo Garcia & Carla Carmelo Rosa
Location: B022
Time for presentation: 15min for presenters; 30min for invited speaker

Session I (Thursday, 11th of June, 11h-13h) | Moderated by Carla Carmelo Rosa
Invited speaker: José Salcedo

- Highly ordered hexagonal arrays of TiO2 nanotubes, Arlette Apolinário #246
- Wavelength Modulation Spectroscopy for Ammonia Sensing, Duarte Viveiros #247
- Novel Techniques for Gaseous Radiation Detectors, André Cortez #268
- Tuning the Magnetocaloric effect on Gd-Si-Ge thin films by annealing, Ana Lúcia Pires #245
- Magnetocaloric effect and refrigerant capacitance in perovskite RCrO3 (R=Y, Yb, Er, Sm), Gonçalo Oliveira #240

Session II (Thursday, 11th of June, 14:30h-16:30h) | Moderated by Rui Marques

- Characterization of nanostructures of Ga2O3 using Perturbed Angular Correlations, Marcelo Barbosa #250
- Compact medical gamma camera, João Marcos #272
- Resistive switching in BaTiO3 thin films, José Silva #244
- Simulation of a DC-discharge ionic wind generator in low pressure nitrogen, Victor Granados #144
- Experimental analysis of PLA, PLA/GNP and PLA/CNT-COOH biodegradable polymer-matrix nanocomposites thin films during hydrolytic degradation, Viviana Correia Pinto #260
- Generation and characterization of few-cycle GW-level phase-stable optical waveforms using dispersion-scan, Francisco Silva #249

Session III (Friday, 12th of June, 11h-13h) | Moderated by Paulo Garcia

- Physical properties of ferrites and ferrite composites prepared by different methods, Sílvia Soreto #47
- Electrical polarization of Hydroxyapatite-based ceramics, Pedro Prezas #125
- Optical sensors for magnetic field measurement, Ivo Nascimento #241
- 15 K Liquid Hydrogen Energy Storage Unit for Space Applications, Patrícia Sousa #271
- Dual-imaging ophthalmic system using optical coherence tomography and scanning laser ophthalmoscopy, Manuel Marques #232
- Self-Diffraction Dispersion-Scan (SD d-scan): a new ultrashort pulse characterization scheme, Miguel Canhota #255

Session IV (Friday, 12th of June, 14:30h-16:30h) | Moderated by Luis Cadillon

- Production and characterization of R5(Si,Ge)4 magnetocaloric and magnetostrictive thin films, João Belo #242
- Analysis of temperature homogeneity of the CLOUD chamber at CERN, António Dias #266
- Development of a micro PET system with improved spatial resolution through depth-of-interaction measurement, Pedro Correia #79
- Resistive switching in MgO thin films deposited by magnetron sputtering, Luís Guerra #248
- Electronic properties of transtion metal dechalcogenides - a new class of 2D materials, João Braz #275
- Magnetic control of ferroelectric phase in Tb(Mn,Fe)O3, Daniel Passos #253
- Caterpillar-like microstructured fiber sensor for acetone evaporation, André Gomes #262

Poster communications:

- Best configurations for image reconstruction, Nuno Gomes #31
- CLOUD^CLOUD : acquisition, visualisation and processing of CLOUD data, António Dias et al. #267
- Coated optical fibres for sensing at INESC TEC, Luis Coelho, Jose Almeida et al. #251

- Compression mechanisms under high pressure perovskites-like structures, Rui Vilarinho et al. #252
- Correcting cross-coupling and aliasing effects in the estimation of atmospheric turbulence parameters from Shack-Hartmann wavefront sensor data, Paulo Andrade et al. #264
- Effect of ion substitution on RF and microwave dielectric properties of $BiNbO_4$ ceramics prepared by the sol-gel method, Susana Devesa et al. #37
- Estimating visibility amplitudes with the PRIMA fringe trackers, Nuno Gomes et al. #32
- Experimental ion mobility measurements in $Ar-CO_2$ and $Ne-CO_2$ mixtures, Pedro Encarnação et al. #269
- Ferroelectric imprint on codoped $BiFeO_3$ film, Teresa Carvalho et al. #145
- Fiber Optical Tweezers for cell manipulation, Ana Rita Ribeiro et al. #238
- GRAVITY instrument to study Galactic Center, Narsireddy Anugu et al. #19
- Growth of Palladium nanowires and dendrites through Pulsed Electrodeposition in Nanoporous Alumina Templates, Pedro Rodrigues et al. software and characterization results 254
- Near infrared multiple beams analyzing system software and characterization results, Narsireddy Anugu et al. software and characterization results #18
- On a small satellite to integrate multiple capabilities for ocean monitoring, André Guerra et al. #239
- Study of the TiO_2 nanotubes growth with the anodization charge curves, Paula Quitério et al. #256
- Using microwave radiation to process materials: drying and sintering ceramics, Tiago Santos et al. #39

Symposium on Mechanical Engineering

Chairs: César Sá and Abel Santos
Location: B025
Time for presentation: 40 min. for keynote speakers; 20 min. for presenting authors

Session I (Thursday, 11th of June, 11h-13h) | Moderated by: Filipe Chaves
- Marcelo Costa, Guilherme Viana, Lucas Filipe Martins Da Silva and Raul Campilho. Humidity effects on the fatigue behaviour of adhesively bonded aluminium DCB joints #11
- Ana Barbosa. Microparticles of cork as reinforcement material in brittle structural #25
- Guilherme Viana, Marcelo Costa, Lucas Da Silva and Mariana Banea. Degradation of the fracture toughness of epoxy adhesives as a function of environmental temperature and moisture #55
- João Amorim and José Dias Rodrigues. Vibroacoustic of Plates with Damping Patches using the Rayleigh-Ritz Method and General Boundary Conditions #96
- Cristiano José Pereira Coutinho, António José Caetano Baptista and José Fernando Dias Rodrigues. A generalized procedure for scaling laws of plates based on the governing equations #40

Session II (Thursday, 11th of June, 14:30h-16:30h) | Moderated by: Marco Parente
- Mohamed Lotfi, Hélder Salvador and António Ferreira. GA-Based Optimization of Radial-Basis Functions Shape Parameter #15
- Behzad Vasheghani Farahani, Francisco Pires and Jorge Belinha. A Rate-Independent Isotropic Damage Model is Formulated within a Radial Point Interpolation Meshless Method #5
- José M. V. Berardo, Jorge A. O. P. Belinha and Francisco M. A. Pires. Rate-Independent Isotropic Damage Model Using Radial Point Interpolation Method for Concrete #26
- Rui Teixeira, João Ferreira, Tiago Morais and Nuno Correia. New Spar Grp Buoy Concept to Measure Offshore Wind   #16
- João Soares and Armando Oliveira Study of different solutions for Solar/Biomass hybrid generation systems #38
- Mohamed Lotfi, Miguel Marques, J. M. L. M. Palma and C. Veiga Rodrigues. Numerical and wind-tunnel study of flow distortion caused by lattice structures of meteorological masts   #93

Session III (Friday, 12th of June, 11h-13h) | Moderated by: Pedro Moreira
- Hugo Campos and Abel Santos. Sheet Metal Characterization Using a Developed System for Bulge Test #35
- Rui Amaral and Abel D Santos. Flow stress curve determination of dual-phase steels using Hydraulic Bulge test #41
- Bruno Ferreira, Rui Amaral, Sara Miranda, Abel D Santos and J Bessa Pacheco. Analysis of Press Brake Bending processes using Finite Element Modelling   #44
- Pedram Farahnak, Erfan Azinpour, Abel Dias Dos Santos and José Manuel de Almeida César de Sá. Application of damage models to predict the metal formability in the high strength sheets #236
- João Figueiredo, Nuno Correia, Inês Ruivo and Jorge Lino Alves. A Multidisciplinary Commitment for the Fuzzy Front-End: Cross-Functional Approach to Innovation #22

Session IV (Friday, 12th of June, 14:30h-16:30h) | Moderated by: Ramiro Martins
Invited speaker: Pedro Camanho
- Pedro Marques, Ramiro Martins, Jorge Seabra. Efficiency of a gearbox lubricated with wind turbine gear oils #10
- Anvar Makhkamov, Dipak Wagre, António Baptista, Abel Santos and Luis Malhero. Friction Determination and Tribology testing in sheet metal forming   #135
- David Gonçalves. Thermal Aging and rheology of polymer greases #107
- Carlos Fernandes, Ramiro Martins and Jorge Seabra. Improving gearbox efficiency through optimized gear tooth geometry and oil formulation   #141

Symposium on Occupational Safety and Health

Chairs: Olivia Pinho & João Baptista
Location: B031
Time for presentation: 17min; 3 discussion

Session I (Friday, 12th of June, 11h-13h) | Moderated by: João Baptista
Invited speaker: António Barbedo de Magalhães "Desafios do DEMSSOI"
- Emília Quelhas Costa, João Santos Baptista and José Torres Costa. Thermal Environment and Mental Fatigue #153
- Susel Rosário, João Fonseca, Albert Nienhaus and José Torres da Costa.   Standardized assessment of psychosocial factors and their influence in the development of musculoskeletal disorders medically confirmed in workers: a systematic review #33
- Andreia Rocha, Tomi Zlatar, Rui Felizes and João Baptista. Prevalence on musculoskeletal disorders among Physical Therapists – A Systematic Review #119
- Susana Patrícia Bastos Sousa, Maria Cristina Santos Ribeiro and João Santos Baptista. Risk Assessment of Polymer Mortars Modified with Nano Al2O3 and Phosphinates #138
- Tomi Zlatar, Maria De Lurdes Proença de Amorim Dinis and João Santos Baptista. Occupational Safety and Health Evaluation of Illuminance Quality Conditions at FEUP's Library #9

Session II (Friday, 12th of June, 14:30h-16:30h) | Moderated by: Eduardo de Oliveira Fernandes
Speaker: Olívia Pinho
- Ana Sofia Silva
Invited speakers:
- Joana Madureira | Health , Indoor Air and Built Environment
- Alcides Pereira | Implications of the new Community Directive on exposure to ionizing radiation risks
- André Moreira | Risks of exposure to radon
- Ana Sofia Silva. Radon survey in Portuguese thermal spas #49
- Delfina Antunes

Poster communications:
- Francisco Milton Araújo Junior, Marta Santos and Mario Vaz. Systematic review: the impact of the relationship between psychosocial factors and musculoskeletal disorders at work environment # 7
- André Luís Cabral and Olívia M. C Pinho. Ergonomic workplace analysis in food and nutrition unit # 8
- Marc Bascompta, Pura Alfonso, Lluís Sanmiquel, Haoran Zhang and Hernán Anticoi. Alternative method for measuring mercury contamination in mining industry # 80
- Luisa Matos and J. Santos Baptista. Relationship between Whole-Body Vibration, Noise and Production Process, in Open Pit Mining # 258
- Ângela Fernandes, Ana Vitória, Augusto Ferreira, Rubim Santos, Nuno Rocha and João Tavares. Balance in single-and dual-task in Parkinson's disease # 263

Symposium on Sustainable Energy Systems

Chair: Clito Afonso
Location: B033
Time for presentation: 5min to Chair; 30 min to Keynote speaker; 20 min (5 min discussion) to authors

Session I (Thursday, 11ᵗʰ of June, 14:30h-16:30h) | Moderated by: Clito Afonso
Speakers: Clito Afonso; Eduardo Oliveira Fernandes
Oral communications:

- Nathan Lee and Vítor M.S. Leal. Identification of national energy planning objectives specific to the context of developing countries #133
- Miguel Heleno, Manuel Matos and João Peças Lopes. Automatic Learning of Electric Water Heater Thermal Parameters #257
- Ricardo Ferreira, Manuel Matos and J. Peças Lopes. Power Distribution Reinforcement Planning with Distributed Storage Devices and Controllable Loads #259

Poster communications:

- Mariana Pereira. A method for the thermal assessment of architectural spaces based on critical inputs #13
- Nathan Lee and Vítor M.S. Leal. Indoor temperatures in residential buildings of Northen Portugal   #71

POSTER SESSIONS

Date:
- Thursday, 11th of June 2015 | and 16:30 – 17:00
- Friday, 12th June 2015 | 10:30h-11h00 and 16:30 – 17:00

Location: corridor B, next to the Symposia rooms (check the map at the end of this document)

Poster should be placed at least 30min before the sessions.
Poster *placards* will be placed along corridor B, next to Symposia rooms.
Reception will help you with tape and pushpins.
The authors should be present during the poster sessions to explain and discuss it with other participants.
Check back the Symposia planning in this Booklet for more information regarding posters and also your Symposia webpage within DCE2015 site.

ALUMNI SESSIONS

These sessions will join PhD alumni with the aim of exchanging experiences, needs and expectations. Alumni will share the importance of having a PhD within a company and what skills are more valuable within the industry. The goal of these sessions is to have PhD students benefit from the experience of PhD alumni, from several Engineering fields, on the topics of employment and the needs of companies. The focus of these sessions will be on: How important are doctorates to companies? What is PhD's added value to a company and in what way are they different? What skills do companies seek when hiring a PhD? What skills should PhD programmes develop in order to make PhD's more attractive to industry? How to take advantage of the doctorates' technical knowledge?

Date: Thursday, 11th of June 2015 | 17h00-18h30 | B019
Speakers (by order of presentation)
1. César Águia | TMG Automotive
2. Eduardo Soares | Durit
3. Célio Albuquerque | Synopsys
4. Filipe Magalhães | HBM FiberSensing
5. António Almeida | SONAE
6. Susana Silva | Amorim Cork Composites, Amorim/Amorim&Irmão

Check back the webpage 'Alumni Session' in DCE2015 website, for Alumni curricular notes

WORKSHOPS

Date: Thursday, 11th of June 2015 | 18:00h-20:00h
Theme: *WP 1 - Engenharia e Ortopedia*
Coordination: João Paulo Vilas Boas, FADEUP e LABIOMEP (Chair, moderador); Miguel Marta | Hospital de São João, FMUP; Rui Miranda Guedes | DEMEC/FEUP e LABIOMEP
Location: B028

O desenvolvimento de dispositivos médicos, a otimização de técnicas cirúrgicas e procedimentos médicos, assim como a evolução dos materiais e instrumentação associados à prática clínica provém do resultado de uma estreita colaboração entre profissionais das áreas da Engenharia Biomédica, Engenharia Mecânica e de Materiais e da Medicina.
É uma relação que tem vindo a ser fomentada por várias instituições de investigação, nomeadamente pelo Laboratório de Biomecânica do Porto, um dos intervenientes do workshop que apresentará casos de estudos e trabalhos desenvolvidos na área de Ortopedia.
De forma semelhante, mas por via da perspetiva clínica, a Faculdade de Medicina da Universidade do Porto pretende neste workshop, referenciar a aplicação dos dispositivos médicos em Ortopedia e alguns casos clínicos que beneficiaram com a evolução dos mesmos, assim como as vantagens e necessidades da colaboração com a Engenharia.
+info em: www.fe.up.pt/dce

Date: Thursday, 11th of June 2015 | 18:30h-20:20h
Theme: *WP 2 - Reabilitação urbana: oportunidades, medidas e metas*
Coordination: João Silva | CONSTRU-CASAIS; Álvaro Santos | Porto Vivo/SRU; João Miranda Guedes | FEUP/NCREP; Cilísia Ornelas, Isabel Vázquez | FEUP; António Arêde, FEUP/LESE)
Location: I-105

O workshop irá abordar temas como: oportunidades, medidas e metas para a reabilitação urbana; enquadramento legislativo para a reabilitação urbana; a investigação no contexto da reabilitação de edifícios.

Date: Friday, 12th of June 2015 | 18:30h-20:20h
Theme: *WP 2 - Reabilitação de edifícios: obras, desafios e perspetivas*
Coordination: Pablo Rebelo | PABLO PITA; Esmeralda Paupério | IC-FEP; Bruno Quelhas | NCREP/FEUP; Miguel Pires | GRUPO CASAIS
Location: B022

O workshop irá abordar temas como: a perspetiva do arquiteto nas obras de reabilitação: Desafios e casos práticos; a perspetiva do Instituto da Construção nas obras de reabilitação: Desafios e casos práticos; a perspetiva do projetista nas obras de reabilitação: Desafios e casos práticos; a perspetiva do empreiteiro nas obras de reabilitação.

Date: Friday, 12th of June 2015 | 17:30h-19:00h
Theme: *WP3 - Workshop INESC TEC para doutorandos: transformar o conhecimento em valor económico*
Lecturers: João Peças Lopes (INESC TEC); António Carrapatoso (EFACEC); Pedro Amorim (INESC TEC); Rui Campos (INESC TEC);
Location: INESC

Neste workshop podes conhecer melhor o INESC TEC, pela voz de um dos diretores, João Peças Lopes, ouvir o testemunho de António Carrapatoso, diretor na EFACEC, que há mais de 20 anos inclui I&D made in INESC TEC nas tecnologias que comercializa, e os testemunhos de Rui Campos e Pedro Amorim, dois antigos alunos de Doutoramento que investigam agora no INESC TEC, liderando projetos europeus e assegurando contratos com empresas de renome nacional como a SONAE e a EFACEC. O workshop finaliza com a visita ao Laboratório de Redes Elétricas Inteligentes e Veículos Elétricos, o primeiro nesta área em Portugal.
+info em: www.fe.up.pt/dce

Date: Friday, 12th of June 2015 | 17:30h-19:00h
Theme: *WP4 - Patenting Software & Avoiding Patent Pitfalls*
Coordination: Luís Ferreira - European Patent Attorney
Location: B024

How can I find patents relevant to my technical area? Patentability of software; EU vs US; relationship with copyright and open source; legal exclusions from patentability; medical devices; do's and don't do's in patenting.

Date: Friday, 12th of June 2015 | 18:45h-20:15h
Theme: *WP5 - Smartgrids e gestão do sistema elétrico nacional*
Coordination: António Machado e Moura, DEEEC/ FEUP, LAT/FEUP (Chair, moderador)
José Pedro Queirós (EDP Distribuição); Miguel Moreira da Silva (REN); Anabela Ribeiro (Messara,Grupo SIGMA); Manuel Matos| DEEEC/FEUP e INESC TEC; Helena Soares (ENC Energy)
Location: I105

Este pretende ser um workshop de incentivo à discussão do tema das smart girds, começando por uma breve apresentação dos intervenientes, seguida de uma palestra cerca das smart grids e por fim um fórum de discussão pouco formal que convida ao debate entre o painel de convidados e os participantes no workshop acerca das smart grids, a sua evolução, importância, impacto e otimização da rede elétrica nacional.
+info em: www.fe.up.pt/dce

Date: Friday, 12th of June 2015 | 18:00h-19:00h
Theme: *WP6 - Drug Product Development*
Coordination: Bruno Santos - Hovione
Location: B018

The aim of this workshop is to give an overview of drug product development approaches, particularly for the inhalation route. Formulations, technologies, and analytical techniques commonly used during a product/process development will be discussed.
Most of the pharmaceutical drugs are formulations composed of APIs (Active Pharmaceutical Ingredients) and excipients, which are non-active supplementary material that will enable the API administration and enhance its efficiency. The main goal of the Drug Product Development department is to optimize such formulations, taking into account the parameters that will affect the final performance of the drug product: API/excipients physical properties, route of administration, dosage.
+info: www.fe.up.pt/dce

Date: Friday, 12th of June 2015 | 18h-20h
Theme: *WP7 - Como sobreviver no mundo académico*
Coordination: Jennifer Cunha; Julia Högemann (Universidade do Minho, Grupo Universitário de Investigação em Autorregulação)
Location: B024

Tens dificuldades em gerir o teu tempo? Sentes que perdeste o norte do teu curso e estás a "pânicar"? Não sabes por onde começar? Dás por ti a adiar as tuas tarefas sucessivamente sem motivo aparente? Sentes dificuldades em te organizar? Parece que nada corre bem? Sentes-te desmotivado? As estratégias de autorregulação da aprendizagem poderão ajudar-te!
Workshop baseado no Projeto "Cartas do Gervásio ao seu Umbigo: Comprometer-se com o estudar na Universidade" (Rosário, 2006).

Support, contributions & collaborations

DCE'2015 was promoted by the Faculdade de Engenharia da Universidade do Porto

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- Golden supporters
    - Hovione, INESC TEC, Universidade do Porto
- Silver supporters
    - Durit, Paralab, Synopsys
- Bronze supporters
    - Casais, INEGI

DCE'2015 would also like to thank the following contributions:
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- Ana Ferreira – *DCE logos and banner*
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- PrioEnergy – *materials for the Conference-kit*
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