IEEE EDUCON
Global Engineering Education Conference

EDUCON Clearing House

EDUCON2021 21–23 April, 2021, Radisson Blu Park Royal Palace Hotel, Vienna, Austria

📅 Conference Agenda

Overview and details of the sessions of this conference. Please select a date or location to show only sessions at that day or location. Please select a single session for detailed view (with abstracts and downloads if available).

🖾 Hide Presentations	☰ List View	🖋 Authors

Session Overview

Date: Monday, 27/Apr/2020

9:00am - 10:30am	**W1M-S1: Game-based Learning on the Example of the ERP Simulation Game (ERPsim)** Location: **840 377 590** Scientific Chair: **Helmut Krcmar**, Technical University of Munich Scientific Chair: **Matthias Utesch**, Staatliche Fach- und Berufsoberschule Technik München und Technische Universität München Technical Chair: **José Rodrigues**, INEGI - University of Porto	**W2M-S1: Teaching with MATLAB - Interactive Hands-On Training** Location: **844 435 592** Scientific Chair: **Sebastian Gross**, The MathWorks GmbH Technical Chair: **Gil M. Gonçalves**, Faculdade de Engenharia da Universidade do Porto	**W4M-S1: Engineering Students' Sustainable Development Mindset: Assessment Criteria and Evaluation of the Current Level** Location: **840 382 143** Scientific Chair: **Maria Yu. Chervach**, National Research Tomsk Polytechnic University Scientific Chair: **Yury P. Pokholkov**, Tomsk Polytechnic University Technical Chair: **Catarina Baltazar**, Faculdade de Engenharia da Universidade do Porto	**W6M-S1: How to run a Critical Thinking Day in your Institution by engaging the Engineering Students, Teachers and Professionals?** Location: **843 153 316** Scientific Chair: **Maria M. Nascimento**, Universidade de Trás-os-Montes e Alto Douro Scientific Chair: **Caroline Dominguez**, University of Trás-os-Montes e Alto-Douro Technical Chair: **Frederico Jacob**, Instituto Superior de Engenharia do Porto	**W6A2: Keysight Industry Ready Applied IoT Design and Validation Workshop based on U3800 Series Courseware** Location: **844 318 483** Scientific Chair: **kian ming chin**, Keysight Technologies Technical Chair: **Pedro Plaza Merino**, PLAZA ROBOTICA
10:30am - 11:00am	**Cyber Break**				
11:00am - 12:30pm	**W1M-S2: Game-based Learning on the Example of the ERP Simulation Game (ERPsim)** Location: **840 377 590** Scientific Chair: **Helmut Krcmar**, Technical University of Munich Scientific Chair: **Matthias Utesch**, Staatliche Fach- und Berufsoberschule Technik München und Technische Universität München Technical Chair: **José Rodrigues**, INEGI - University of Porto	**W2M-S2: Teaching with MATLAB - Interactive Hands-On Training** Location: **844 435 592** Scientific Chair: **Sebastian Gross**, The MathWorks GmbH Technical Chair: **Gil M. Gonçalves**, Faculdade de Engenharia da Universidade do Porto	**W4M-S2: Engineering Students' Sustainable Development Mindset: Assessment Criteria and Evaluation of the Current Level** Location: **840 382 143** Scientific Chair: **Maria Yu. Chervach**, National Research Tomsk Polytechnic University Scientific Chair: **Yury P. Pokholkov**, Tomsk Polytechnic University Technical Chair: **Catarina Baltazar**, Faculdade de Engenharia da Universidade do Porto	**W6M-S2: How to run a Critical Thinking Day in your Institution by engaging the Engineering Students, Teachers and Professionals?** Location: **843 153 316** Scientific Chair: **Maria M. Nascimento**, Universidade de Trás-os-Montes e Alto Douro Scientific Chair: **Caroline Dominguez**, University of Trás-os-Montes e Alto-Douro Technical Chair: **Frederico Jacob**, Instituto Superior de Engenharia do Porto	
12:30pm - 2:00pm	**Lunch Break**				
1:50pm - 6:00pm	**Conference Online Support** Location: **844 720 290** **Need Help?** Chat with a Member of the Online Conference Support Committee.				
2:00pm - 3:00pm	**W6A1: Emerging Technologies in Engineering Education: Do we need them; can we make them work?** Location: **842 408 371** Scientific Chair: **Pieter de Vries**, Delft University of Technology Technical Chair: **José Rodrigues**, INEGI - University of Porto				
2:00pm - 3:30pm	**W2A: Design, concept and implementation of smart interactive scripts in scientific basic classes** Location: **842 300 269** Scientific Chair: **Katrin Temmen**, University of Paderborn Scientific Chair: **Peter Kersten**, Hamm-Lippstadt University of Applied Sciences Technical Chair: **Frederico Jacob**, Instituto Superior de Engenharia do Porto	**W3A: Multimodal Narratives – a tool for teaching and research** Location: **843 542 142** Scientific Chair: **Maria Clara Viegas**, ISEP - Polytechnic of Porto - School of Engineering Scientific Chair: **J Bernardino Lopes**, University of Trás-os-Montes e Alto-Douro Technical Chair: **Francisco Cardoso**, University of Coimbra			
2:00pm - 4:00pm	**W1A: Publishing in Engineering Education Journals – IEEE Transactions on Education** Location: **846 748 404** Scientific Chair: **John Mitchell**, University College London Technical Chair: **Guilherme Fonte**, University of Coimbra				

Date: Tuesday, 28/Apr/2020

8:30am - 6:15pm

Conference Online Support
Location: **848 139 269**

Need Help? Chat with a Member of the Online Conference Support Committee.

9:00am - 9:45am

Opening Ceremony
Location: **840 206 232**
Technical Chair: **Alberto Cardoso**, University of Coimbra
- Conference General Chairs - **Gustavo Alves**, **Teresa Restivo**, Alberto Cardoso
- IEEE Region 8 Director - **Magdalena Salazar**
- IEEE Education Society President Elect - **Edmundo Tovar**
- IEEE Division VI Director & Education Society President Emeritus - **Manuel Castro**
- President of ISEP - **Maria João Viamonte**
- Vice-Rector of UC - **Cláudia Cavadas**
- Vice-Rector of UP - **Fátima Vieira**

9:45am - 10:00am

Cyber Break

10:00am - 12:00pm

SS5-A: ALEPFECW'20
Location: **842 541 831**
Scientific Chair: **Diana Urbano**, University of Porto, Portugal
Technical Chair: **José Rodrigues**, INEGI - University of Porto

Session Proponents:
Despo Ktoridou, University of Nicosia, Cyprus
Elli Doukanari, University of Nicosia, Cyprus

Stimulating Research Projects Through Teaching a Course on the Internet of Things
<u>Mounib Khanafer</u>, Mohammed El-Abd
American University of Kuwait, Kuwait

Design of small private online courses (SPOCs) for Innovation and entrepreneurship (I&E) Doctoral-level education
<u>Galena Pisoni</u>[1], Frèdèric Renouard[2], Javier Segovia[3], Alessandro Rossi[4], Bálint Molnár[5], Olli-pekka Mutanten[6]
1: University of Trento and EIT Digital; 2: EIT Digital and University of Rennes 1; 3: Universidad Politecnica de Madrid; 4: University of Trento; 5: Eötvös Loránd University; 6: Aalto University

STEAM-based Active Learning Approach to Selected Topics in Electrical/Computer Engineering
<u>Ashraf A. Zaher</u>, G. Amjad Hussein
American University of Kuwait, Kuwait

Vocational Education and Training Apprenticeship: Using Teaching and Learning Analytics in a Learning Management System for improved Collaboration, Individual Empowerment and Development of Apprentices
<u>Dimitrios Kotsifakos</u>[1], Panagiotis Adamopoulos[1], Paraskevi Kotsifakou[2], Christos Douligeris[1]
1: University of Piraeus, Greece; 2: National and Kapodistrian University of Athens, Department of Mathematics, Greece

Implementation of Integrated Learning Approach in Biomedical Measurement and Instrumentation Course
<u>Agung Wahyu Setiawan</u>
School of Electrical Engineering and Informatics ITB, Indonesia

Multidisciplinary and Multicultural Knowledge Transfer and Sharing in Higher EducationTeamworking
<u>Elli Doukanari</u>, Despo Ktoridou, Epaminondas Epaminonda
University of Nicosia, Cyprus

TS-1C: Attracting, Engaging and Retaining Human Talent to Engineering
Location: **841 134 835**
Scientific Chair: **Teresa Alexandra Nogueira**, Polytechnic of Porto - School of Engineering
Technical Chair: **Frederico Jacob**, Instituto Superior de Engenharia do Porto

A Concept for Addressing Abstract Thinking Competence While Teaching Software Development

TS-1A: Infrastructure and Technologies for Engineering Education
Location: **847 491 804**
Scientific Chair: **António José Mendes**, University of Coimbra
Technical Chair: **Daniel Azevedo**, University of Coimbra

Automated Authentic Assessment Applied to an Undergraduate Course in Network and System Administration
<u>Ismail Hassan</u>
OsloMet – Oslo Metropolitan University, Norway

V-LAB – The Virtual Electric Machines Laboratory
Batool Hasan[1], Yara Al-Quorashy[2], Shahad Al-Mousa[3], Yousef Al-Sahhaf[4], <u>Mohammed El-Abd</u>[5]
1: American University of Kuwait; 2: University of Glasgow; 3: American University of Kuwait; 4: American University of Kuwait; 5: American University of Kuwait

Reconfigurable web-interface remote lab for instrumentation and electronic learning
Jose María Sierra-Fernández[1,2], Olivia Florencias-Oliveros[1,2], Manuel Jesús Espinosa-Gavira[1,2], <u>José Carlos Palomares-Salas</u>[1,2], Agustín Agüera-Pérez[1,2], Juan José González-de-la-Rosa[1,2]
1: Universidad de Cádiz, Spain; 2: PAIDI-TIC-168

Overseas Use of a Remote Laboratory
Andrew Nafalski[1], <u>Marek Milosz</u>[2], Hugh Considine[1], Zorica Nedic[1]
1: University of South Australia, Australia; 2: Lublin University of Technology, Poland

Support to Construct Work Process Knowledge in Blended Work-process-oriented Learning
<u>Yongwu Miao</u>[1,2], Xiaogang Du[2,3]
1: The University of Duisburg-Essen, Germany; 2: Wuhan E-competence Education LMT., China; 3: Wuhan Woostar Electricity LMT, China

Introducing Engineering Undergraduate Students to Network Management Techniques: a Hands-on approach using the Citylab Smart City
<u>Henrique Carvalho de Resende</u>[1], Nina Slamnik-Krijestorac[1], Cristiano Bonato Both[2], Johann Marquez-Barja[1]
1: University of Antwerpen, Belgium; 2: Universidade do Vale do Rio dos Sinos

TS-1D: Engineering Diversity and Inclusiveness
Location: **840 201 549**
Scientific Chair: **Carlos Felgueiras**, Polytechnic of Porto - School of Engineering
Technical Chair: **Luiz Paulo M. Pires**, INESC-University of Porto

Teaching Technical Journalism with an Engineering Foundation
<u>Karl N. Kirschner</u>, Susanne Keil, Katharina Seuser,

TS-1B: Innovation, Methods, Teaching and Learning Experiences in Engineering Education
Location: **840 039 136**
Scientific Chair: **Hélia Guerra**, University of the Azores
Technical Chair: **Francisco Cardoso**, University of Coimbra

Sustainable product design education: engineering students' perceptions and attitudes
<u>Isabel M. João</u>[1,2], João M. Silva[1,3]
1: ISEL - Instituto Superior de Engenharia de Lisboa, Instituto Politécnico de Lisboa; 2: CEG-IST, Instituto Superior Técnico, Universidade de Lisboa; 3: CQE, Instituto Superior Técnico, Universidade de Lisboa

Using Learning Styles to Accommodate for Heterogeneous Groups of Learners in Software Engineering
<u>Nico Waibel</u>, <u>Yvonne Sedelmaier</u>, <u>Dieter Landes</u>
Coburg University of Applied Sciences and Arts, Germany

The Open Design education approach - an integrative teaching and learning concept for management and engineering
<u>Ruud Binnekamp</u>, Rogier Wolfert, Maria Nogal, Omar Kammouh
Delft University of Technology, Netherlands, The

Lack of adoption of education technology on an instant student and lecturer feedback system
<u>David Tatenda Risinamhodzi</u>[1], Reolyn Heymann[2]
1: Walter Sisulu University; 2: University of Johannesburg

Non-Technical skills needed by cybersecurity graduates
<u>Joanne L. Hall</u>, Asha Rao
RMIT University, Australia

Addressing Students' Creativity in Algorithm Design
<u>J. Ángel Velázquez-Iturbide</u>
Universidad Rey Juan Carlos, Spain

Improving the Flipped Classroom Model by the Use of Inductive Learning
<u>Egon Teiniker</u>, Gerhard Seuchter
FH JOANNEUM, Austria

Daniela Zehetmeier[1,2], Axel Böttcher[1], Veronika Thurner[1], Anne Brüggemann-Klein[2]
1: Munich University of Applied Sciences, Germany; 2: Technical University Munich, Germany

A multigenerational approach to Project Management: implications for Engineering Education in a smart world

Teresa Nogueira[1], José Magano[2], Cláudia Silva[3], Cláudia Figueiredo[3], Andreia Vitória[3]
1: IPP - ISEP, Portugal; 2: ISCET, Portugal; 3: Universidade de Aveiro, Portugal

Approaches to Assessing the level of Engineering Students' Sustainable Development Mindset

Yury P. Pokholkov[1,2], Manfred Horvat[3,4], José Carlos Quadrado[5], Maria Yu. Chervach[1,2], Kseniya K. Zaitseva[1,2]
1: National Research Tomsk Polytechnic University, Russian Federation; 2: Association for Engineering Education of Russia; 3: Vienna University of Technology, Austria; 4: Norwegian University of Science and Technology, Norway; 5: Polytechnic Institute of Porto, Portugal

Assessment practices in higher education: a case study

Carla MA Pinto[,3], Jorge Mendonça[,], Lurdes Babo[2], Maria Hermínia Ferreira[1]
1: School of Engineering, Polytechnic of Porto, Portugal; 2: Porto Accounting and Business School Polytechnic of Porto and CEOS.PP; 3: Centre for Mathematics, University of Porto

Becoming Fully Operational: Employability and the Need for Training of Computer Science Graduates

Gunhild Marie Lundberg, Birgit R. Krogstie, John Krogstie
Norwegian University of Science and Technology, Norway

Behaviour Patterns of Learners while Solving Programming Task: an Analysis of Log Files

Heidi Meier, Eno Tõnisson, Marina Lepp, Piret Luik
University of Tartu

Christine Siefer
University of Applied Sciences Bonn-Rhein-Sieg, Germany

The Institute of Coding: A University-Industry Collaboration to Address the UK's Digital Skills Crisis

James H. Davenport[1], Tom Crick[2], Rachid Hourizi[1]
1: University of Bath, UK; 2: Swansea University, UK

Transferring Research on IoT Applications for Smart Buildings into Engineering Education

Myriam Guedey, Anke Pfeiffer, Dieter Uckelmann
University of Applied Sciences Stuttgart, Germany

Two Cs of Signals and Systems that should be taught initially in Discrete Time: Causality & Convolution

Ipek Saraç Heinz
Heilbronn University of Applied Sciences, Germany

Sustaining complex projects by linking in- and off-curriculum elements: The BRSU Racing Engineer Certificate

Dirk Reith[1], Christian Blume[1], Martina Grein[1], Tobias Haedecke[2], Daniel Könemann[1], Michael Malschuetzky[,]
1: Bonn-Rhein-Sieg University of Applied Sciences, Sankt Augustin, Germany; 2: BAHSYS GmbH, Barlog Group, Overath, Germany

SWitCH: A Reskilling Program in Information Technology

Ângelo Martins[1], Emanuel Silva[1], Isabel Azevedo[1,3], Nuno Bettencourt[1,2]
1: Institute of Engineering of Porto – Polytechnic of Porto (ISEP/IPP); 2: Interdisciplinary Studies Research Center (ISRC); 3: Games Interaction and Learning Technologies (GILT)

12:00pm - 1:00pm	**Lunch Break**

| 1:00pm - 2:00pm | **K1: Opening Interview** |

Location: **848 621 371**
Scientific Chair: **Henrique Santos**, University of Minho
Technical Chair: **Alberto Cardoso**, University of Coimbra

"Thinking and Knowing: Assessing What We Cannot See"

with **Consultant (CollegeTeachingCoach.com) (US)**

Susan Zvacek

interviewing

Keith Willey

Leader of the Integrated Engineering Program, Co-director of the Faculty of Engineering Educational Innovation Unit and Professor in Engineering Leadership Education at the University of Sydney, Australia

| 2:00pm - 2:15pm | **Cyber Break** |

| 2:15pm - 3:45pm | **RT1: Gender in Engineering** | **TS-2A: Innovation, Methods, Teaching and Learning Experiences in Engineering Education** | **TS-2B: Active Learning and Active Methodologies** |

RT1: Gender in Engineering
Location: **840 966 224**
Scientific Chair: **Alicia García-Holgado**, University of Salamanca
Scientific Chair: **Carina González**, Universidad de La Laguna
Technical Chair: **Myriam Guedey**, Hochschule für Technik Stuttgart

TS-2A: Innovation, Methods, Teaching and Learning Experiences in Engineering Education
Location: **843 589 747**
Scientific Chair: **António José Mendes**, University of Coimbra
Technical Chair: **Joaquim Leitão**, University of Coimbra

THE PERCEPTION AND THE KNOWLEDGE OF ENGINEERING TEACHERS ABOUT THE STRUCTURATION OF THE PROJECT BASED LEARNING

Octavio Mattasoglio Neto, Renan Ruban Barberini
Instituto Mauá de Tecnologia, Brazil

A Systematic Quantitative and Qualitative Analysis of Participants' Opinions on Peer Assessment in Surveys and Course Forum Discussions of MOOCs

Thomas Staubitz, Christoph Meinel

TS-2B: Active Learning and Active Methodologies
Location: **844 001 315**
Scientific Chair: **Luís Mendes Gomes**, University of Azores
Technical Chair: **Francisco Cardoso**, University of Coimbra

Automated Measurement of Competencies and Generation of Feedback in Object-Oriented Programming Courses

Johannes Krugel[1], Peter W. Hubwieser[1], Michael Goedicke[2], Michael Striewe[2], Mike Talbot[1], Christoph Olbricht[2], Melanie Schypula[2], Simon Zettler[1]
1: Technical University of Munich, School of Education, Germany; 2: University of Duisburg-Essen, paluno – The Ruhr Institute for Software Technology, Germany

Experiments in Active Learning through

Hasso Plattner Institute (HPI), Germany

A Review of Personal Teaching Environments to Support Teaching Activities

Yasser Hosny El Geddawy[1], Fernando A. Mikic Fonte[2], Martín Llamas Nistal[2], Manuel Caeiro Rodríguez[2]

1: Arab Academy for Science, Technology & Maritime Transport; 2: University of Vigo

How Challenge Based Learning enables entrepreneurship.

Xavier Crusat[2], **Mar Martínez[1]**

1: KU Leuven, Belgium; 2: EIT InnoEnergy

TS-2C: Attracting, Engaging and Retaining Human Talent to Engineering

Location: **847 864 580**
Scientific Chair: **Ricardo Costa**, Polytechnic of Porto - School of Engineering
Technical Chair: **Frederico Jacob**, Instituto Superior de Engenharia do Porto

"Yo quiero ser científica" a creative way to inspire girls in science

Aranzazu Jurio, Gurutze Perez, Leyre Catalan, Idoia San Martin, Patricia Aranguren, Alicia Martinez, Marisol Gomez, Silvia Diaz, Edurne Barrenechea

Universidad Publica de Navarra, Spain

Assessing Mozambique's Software Industry to Foster Local Universities-Industry Collaboration

Márcia Juvane, Paul Spiesberger, Karl Pinter, Raoul Vallon, Thomas Grechenig
Vienna University of Technology, Austria

"Should I Add 'Computer Science Education' to My Tinder(TM)-Bio?": An Investigation of Teacher Candidates' Stereotyping

Nils Pancratz, Angelique Daudrich, Ira Diethelm
University of Oldenburg, Germany

Different ways to prepare students and faculty for globalization

Anna Friesel
Technical University of Denmark, Denmark

Engaging students in engineering courses with mathematics and robotics

Amélia Caldeira[1,2,3], Alzira Faria[1,2], **Ramiro Barbosa[1,4]**, Helena Brás[1,2], Isabel Figueiredo[1,2], Alexandra Gavina[1,2]

1: School of Engineering, Polytechnic of Porto; 2: LEMA - Laboratory of Mathematical Engineering; 3: SYSTEC - Research Center for Systems and Technologies; 4: GECAD - Research Group on Intelligent Engineering and Computing for Advanced Innovation and Development

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TS-2D: Project and Problem Base Learning in Engineering Education

Location: **849 293 708**
Scientific Chair: **Teresa Alexandra Nogueira**, Polytechnic of Porto - School of Engineering
Technical Chair: **Tiago Restivo**, University of Porto

Virtual Ecological Laboratory to develop a PV module recycling workshop

Alexey Sokolov[1], Roman Ostromukhov[1], Alla Kovalevskaya[1], Taras Kustov[1], Abdullah Al-Zoubi[2], Manuel Castro[3], María Rocío Rodríguez-Barroso[4], Irina Vezhenkova[1], Rafael Jimenez-Castañeda[4]

1: Saint Petersburg Electrotechnical University "LETI", Russian Federation; 2: Princess Sumaya University for Technology; 3: UNED; 4: University of Cadiz

Technical projects with social commitment for teaching-learning intervention in STEM students

Alpha Pernia-Espinoza[1], Andres Sanz-Garcia[2], F. Javier Martinez-de-Pison-Ascacibar[1], Sergio Peciña-Marqueta[1], Julio Blanco-Fernandez[1]

1: EDMANS Research Group. Department of Mechanical Engineering. University of La Rioja, Spain; 2: Department of Mechanical Engineering. University of Salamanca (Bejar), Spain

Real-time modeling of abnormal physiological signals in a Phantom for Bioengineering Education

Hélder Vieira[1], Nelson Costa[1], Luís Filipe Coelho[1,2], **Joaquim Fernando Alves[1,2]**

1: Instituto Superior de Engenharia do Porto, Portugal; 2: Center for Innovation in Engineering and Industrial Technology

Computer-supported Collaborative Learning in Programming Education: A Systematic Literature Review

Leonardo Soares Silva[1], António José Mendes[2], Anabela de Jesus Gomes[3]

1: IFPE - Federal Institute of Technology, Garanhuns, Brazil; 2: CISUC - Department of Informatics Engineering, University of Coimbra, Coimbra, Portugal; 3: Coimbra Polytechnic - ISEC & Centre for Informatics and Systems – University of Coimbra, Coimbra, Portugal

Analysing Exam Results – Developing a Methodology

Claudia Luppertz, Najat Bounif, Marco Winzker
Bonn-Rhein-Sieg University of Applied Science, Germany

Project Across Courses

Mehul S Raval[1], Ratnik Gandhi[2]

1: Pandit Deendayal Petroleum University, India; 2: Independent Consultant

MuLE - a Multiparadigm Language for Education

Nikita Dümmel, Bernhard Westfechtel, Matthias Ehmann
University of Bayreuth, Germany

Investigating the Timeliness and Quality of Assessment Feedback in a Computing Laboratory using a Custom Application

Neville Tom Palmer
Solent University, United Kingdom

The Effect of Mandatory Assignments on Students Learning Outcome and Performance in Introductory Programming Courses

Vegard Hellem, **Madeleine Lorås**
Norwegian University of Science and Technology, Norway

WP-C: Active Learning and Engaging Students Strategies

Location: **842 328 015**
Scientific Chair: **Diana Urbano**, University of Porto, Portugal
Technical Chair: **José Rodrigues**, INEGI - University of Porto

Work-in-Progress: Encouraging Girls in Science, Engineering and Information Technology

Laurete Zanol Sauer[1], Cristine Elisa Ramos dos Reis[2], Graziele Dall'Acua[3], Isolda Gianni de Lima[1], Odilon Giovannini[1], **Valquiria Villas-Boas[1]**

1: Universidade de Caxias do Sul, Brazil; 2: Escola Estadual de Ensino Médio João Pilati; 3: Escola Estadual de Ensino Fundamental Tancredo Neves

Work-in-Progress: A Systematic Mapping Study of Experiences with Active Learning Strategies and Methods in Brazilian Engineering Education

Gabriela Ribeiro Peixoto Rezende Pinto[1], João Alberto Castelo Branco Oliveira[1], Dianne Magalhães Viana[2], Renato Martins das Neves[3], **Valquiria Villas-Boas[4]**

1: Universidade Estadual de Feira de Santana; 2: Universidade de Brasília; 3: Universidade Federal do Pará; 4: Universidade de Caxias do Sul

Work in Progress: Entrepreneurship as a Path to Develop Women Career in Engineering

Dayene Bochorny Cardoso, Luana Rodrigues Alves da Silva, Ana Luiza Lima de Souza, Musbah Koleilat Câmara, **Aruquia Peixoto**
CEFET/RJ, Brazil

Engineering, Design and Business interdisciplinary knowledge and technical scientific skills applied in Engineering Fundamentals discipline

Claudia Alquezar Facca[1,2], Patricia Antonio de Menezes Freitas[1], Hector Alexandre Chaves Gil[1], Keiti Pereira Vidal de Souza[1], Angelo Eduardo Battistini Marques[1], Ana Mae Tavares Bastos Barbosa[2]

1: Mauá Institute of Technology, Brazil; 2: Anhembi Morumbi University, Brazil

Classification of Experimental Errors Done in VISIR with Simple Alternated Current Circuits

Lucas Nascimento Mendonça[1], Mayara Tszesnioski Maçaneiro[2], Gustavo R. Alves[3], Danubia Soares Pires[1], Javier García-Zubía[4], Jordi Cuadros[5], Unai Hernández-Jayo[4], Vanessa Serrano[5]

1: Federal Institute of Maranhão, Brazil; 2: Federal Institute of Santa Catarina; 3: Polytechnic of Porto; 4: University of Deusto; 5: University Ramón Llull

Analysis of engineering students'

| | | **preparation for active learning considering the study methods**
Fátima Monteiro, Helena Marto, Rita Pereira
ISEC - IPC, Portugal |

| 3:45pm
-
4:15pm | **Cyber Break** | | |

| 4:15pm
-
6:15pm | **SS1: GinEE**
Location: **845 755 834**
Scientific Chair: **Carlos Felgueiras**, Polytechnic of Porto - School of Engineering
Technical Chair: **Myriam Guedey**, Hochschule für Technik Stuttgart

Session Proponents:
Matthias Utesch, Staatliche Fach- und Berufsoberschule Technik München und Technische Universität München
François Bry, Ludwig-Maximilian University of Munich | **SS4: IDEE'20**
Location: **843 645 416**
Scientific Chair: **António José Mendes**, University of Coimbra
Technical Chair: **Joaquim Leitão**, University of Coimbra

Session Proponents:
Aruquia Peixoto, CEFET/RJ
Pedro Plaza Merino, PLAZA ROBOTICA | **SS5-B: ALEPFECW'20**
Location: **844 469 335**
Scientific Chair: **Diana Urbano**, University of Porto, Portugal
Technical Chair: **José Rodrigues**, INEGI - University of Porto

Session Proponents:
Despo Ktoridou, University of Nicosia, Cyprus
Elli Doukanari, University of Nicosia, Cyprus |

Development of a Serious Game to fight Childhood Obesity: "Barty"

Vítor Hugo Carvalho[1], Fátima Gonçalves[2], Demétrio Matos[3], Filomena Soares[4]
1: 2Ai-EST-IPCA, Portugal & Algoritmi Research Centre, Minho University, Portugal; 2: 2Ai-EST-IPCA, Portugal; 3: iD+-ESD-IPCA, Portugal; 4: Algoritmi Research Centre, Minho University, Portugal

Pic2Program - an Educational Android Application Teaching Computational Thinking

Matthias Utesch[1,2], Nilüfer Faizan[2], Robert Heininger[2], Helmut Krcmar[2]
1: Staatliche Fach- und Berufsoberschule Technik München, Germany; 2: Technische Universität München, Germany

Teaching Software Engineering Methods with Agile Games

Annette Baumann
Technische Universität München, Germany

Writing Sci-Fi stories: a pedagogic challenge

Yara C. Almanza-Arjona[1], Beatriz E. García-Rivera[2], Jorge Membrillo-Hernández[1]
1: Tecnologico de Monterrey, Mexico; 2: Instituto de Ciencias Aplicadas y Tecnología, Universidad Nacional Autónoma de México

Agile method and implementation of gamification in a course for engineering students

Gloria Teresita Huamani[1], Luis Angel Rodriguez[1], Carla Venancia Alca[2]
1: UNIVERSIDAD NACIONAL DE INGENIERIA, Peru; 2: La Republica

CodaRoutine: A Serious Game for Introducing Sequential Programming Concepts to Children with Autism

Menna Elshahawy, Khaled Elsayed Aboelnaga, Nada Ahmed Hamed Sharaf
The German University in Cairo, Egypt

Educating for Diversity Management in Engineering

Pia Lappalainen
Aalto University, Finland

Here you have to be mixing: collaborative learning on an engineering program in Ireland as experienced by a group of Middle Eastern young women

Bill Williams[1,2,3], Shannon Chance[3,4]
1: Polytechnic of Setúbal,; 2: CEG-IST, Instituto Superior Técnico, Universidade de Lisboa; 3: TUDublin; 4: UCL

Gender equality in STEM programs: a proposal to analyse the situation of a university about the gender gap

Alicia García-Holgado[1], Juanjo Mena[1], Francisco José García-Peñalvo[1], Jimena Pascual[2], Mervi Heikkinen[3], Sari Harmoinen[3], Lucy García-Ramos[4], Rita Peñabaena-Niebles[5], Lucía Amores[1]
1: GRIAL Research Group, University of Salamanca, Spain; 2: Pontificia Universidad Católica de Valparaíso, Chile; 3: Faculty of Education, University of Oulu, Finland; 4: Department of Systems Engineering, University of the North, Colombia; 5: Department of Industrial Engineering, University of the North, Colombia

Programming LEGO EV3 in Microsoft MakeCode

Patrik Voštinár
Matej Bel University, Banska Bystrica, Slovakia, Slovak Republic

Strategies to introduce gender perspective in Engineering studies: a proposal based on self-diagnosis

Carina S. González-González[1], Alicia García-Holgado[2], Francisco José García-Peñalvo[2]
1: Dept. of Computer Engineering and Systems, University of La Laguna, Spain; 2: GRIAL Research Group, University of Salamanca, Spain

Development of accessibility resources for teaching and learning of Science, Technology, Engineering and Mathematics

Diamantino R S Freitas, Vítor M F A Carvalho
Faculty of Engineering of the University of Porto, Portugal

Learning By Creating Instructional Videos: An Experience Report from a Database Course

Jalal Kawash, Kashfia Sailunaz
University of Calgary, Canada

Serious Games or Challenge-based Learning - A comparative analysis of learning models in the teaching of lean manufacturing

Jonathan Cuevas-Ortuño, Joel C. Huegel
Tecnologico de Monterrey

Two Complementary Active Learning Strategies in Soil Mechanics Courses: Students' Perspectives

Joaquim Macedo[1], Margarida Pinho-Lopes[1], Cristina G. Oliveira[3], Paulo Oliveira[2]
1: Department of Civil Engineering, University of Aveiro; 2: Instituto Superior de Engenharia do Porto, Portugal; 3: University of Aveiro

Active learning in a hands-on Physics lab: a pilot study to fine-tune instruction and student assessment methodology

Kyriacos Yiasemides, Katerina Zachariadou, Maria Rangoussi
University of West Attica, Greece

Moving to Project-Based Learning at the Program Level: an Experience Report

Isabel Sofia Brito, João Paulo Barros, Elsa Rodrigues
Polytechnique Institute of Beja, Portugal

Effective Tools and Models for Engineering Faculty MasteryTeaching Supporting Meaningful Learning

Tiia Rüütmann
Tallinn University of Technology, Estonia

Expanding the level of engineer knowledge for software modeling within corporate education by active and collaborative learning

Jelena Stevanović, Srdjan Atanasijević, Tatjana Atanasijević, Monika Zahar
Comtrade Digital Services, Comtrade Group, Ireland

TS-3B: Active Learning and Active Methodologies
Location: **847 581 614**
Scientific Chair: **Luís Mendes Gomes**, University of Azores
Technical Chair: **Francisco Cardoso**, University of Coimbra

A hybrid flipped-learning model and a new learning-space to improve the performance of students in Structural Mechanics courses

Miguel X. Rodriguez-Paz[1], Jorge A. Gonzalez-Mendivil, J. Asunción Zárate-García, Israel Zamora-Hernandez, Juan Arturo Nolazco-Flores
Tecnologico de Monterrey, Mexico

Potentializing the problem-solving competence in programming courses through a practice-based learning + tutoring strategy

Luis Humberto Gonzalez Guerra, Armandina

TS-3C: Attracting, Engaging and Retaining Human Talent to Engineering
Location: **847 571 012**
Scientific Chair: **Ricardo Costa**, Polytechnic of Porto - School of Engineering
Technical Chair: **Frederico Jacob**, Instituto Superior de Engenharia do Porto

Project Based Learning in Engineering Education in Close Collaboration with Industry

Ricardo Luiz Perez Teixeira[1], Priscilla Chantal Duarte Silva[1], Ricardo Shitsuka[1], Betânia Mafra Kaizer[1], Max Leandro de Araújo Brito[2], Palloma da Costa e Silva[3]
1: Universidade Federal de Itajubá, Brazil; 2: Universidade Federal do Rio Grande do Norte; 3: Instituto de Ciências Sociais da Universidade de Lisboa

Report of a CS1 Course for Computer

TS-3D: Project and Problem Base Learning in Engineering Education
Location: **841 172 839**
Scientific Chair: **Teresa Alexandra Nogueira**, Polytechnic of Porto - School of Engineering
Technical Chair: **Tiago Restivo**, University of Porto

Research-based learning to attract students to Control Engineering

Alejandro Martín Olivares Hernández, Ernesto Castellanos Tapia, Ángel Vega Martínez, Fernando Alberto Urzúa Landa, Virgilio Vasquez Lopez, Luis Enrique Villagómez Guerrero
Tecnologico de Monterrey

Key factors of subjective well-being index in engineering students

Adriana Amozurrutia-Elizalde, Gibrán Sayeg-Sánchez, A. Flores-Amado
Tecnologico de Monterrey, Mexico

Juana Leal Flores
Tec de Monterrey, Mexico

Effects of a Hackathon on the Motivation and Grades of CS1 Students

Rafael I. Bonilla, Roger Granda, Estefania Lozano
Escuela Superior Politécnica del Litoral, ESPOL, Ecuador

An Eye-Tracking Project in Industrial Design Education: A case study for Engaging in the Research Process

Juan-Carlos Rojas[1,3], Juan Carlos Márquez Cañizares[1,3], Juan Luis Higuera-Trujillo[2], Gerardo Muniz[1]
1: Escuela de Arquitectura, Arte y Diseño, Tecnologico de Monterrey, Mexico; 2: Institute for Research and Innovation in Bioengineering (i3B), Universitat Politècnica de València, Valencia, Spain; 3: Writinglab, Teclabs, Vicerrectoria de Investigacion y Transferencia de Tecnologia, Tecnologico de Monterrey, Mexico

Evaluation of Decision-making Quality Using Multi-attribute Decision Matrix and Design Thinking

J. Israel Martínez López[1,2], Carolina Michelle Arriaga González[2]
1: Tecnologico de Monterrey; 2: Centro de Investigacion Numericalc

Challenge-Based Learning (CBL) in Engineering: which evaluation instruments are best suited to evaluate CBL experiences?

Jorge Membrillo-Hernandez, Rebeca García-García
Instituto Tecnologico y de Estudios Superiores de Monterrey, Mexico

Engineering Majors Based on PBL

Suenny Mascarenhas Souza, Roberto Almeida Bittencourt
UEFS - State University of Feira de Santana, Brazil

Collaborative Learning for Innovation Education

Jessica Sandland[1], Andreas Wankerl[1], Alejandra Quintanilla Terminel[1], Azael Jesus Cortes Capetillo[2], Diana Salinas Flores[2]
1: MIT, United States of America; 2: Tecnológico de Monterrey, Mexico

Effect of Multinational Projects on Engineering Students through a Summer Exposure Research Program

Mehul S Raval[1], Tolga Kaya[2]
1: Pandit Deendayal Petroleum University, India; 2: Sacred Heart University, CT, USA

Virtual Reality as a tool for active learning and student engagement: industrial engineering experience

María Ileana Ruiz-Cantisani, Fabiola del Carmen Lima-Sagui, Nancy Aceves-Campos, Ricardo Ipiña-Sifuentes, Elvira G. Rincon-Flores
Tecnológico de Monterrey, Mexico

Flipped classroom in a CS1 course

Ines Friss de Kereki, Alejandro Adorjan
Universidad ORT Uruguay, Uruguay

Understanding Fundamentals of Transistor Amplifiers by Mathematical Interactive Visual Modeling with GeoGebra

Francisco Javier Zamora
Universidad Distrital Francisco Jose de Caldas, Colombia

Building Resilience in Engineering Students: Rube Goldberg Machine Massive Challenge

Vianney Lara-Prieto, Eduardo J. Arrambide-Leal, Jacob de la Cruz-Hinojosa, M. Ileana Ruiz-Cantisani, J. Rogelio Rivas-Pimentel, Jorge Membrillo-Hernández
Tecnológico de Monterrey, Mexico

Embedded cluster platform for a remote parallel programming lab

Ricardo Velásquez, **Sebastián Isaza**, Emanuel Montoya, Luis Germán García, Jonathan Gómez
Universidad de Antioquia, Colombia

Augmented Reality and Matlab® for Visuospatial Competence Development

A. Flores-Amado, C. J. Diliegros-Godines, Juan P. Trevino, Gibran Sayeg-Sanchez, Hugo G. Gonzalez-Hernandez
Tecnologico de Monterrey, Mexico

Date: Wednesday, 29/Apr/2020

8:30am - 6:00pm

Conference Online Support
Location: **845 534 561**

Need Help? Chat with a Member of the Online Conference Support Committee.

9:00am - 11:00am

TS-4A: Engineering Diversity and Inclusiveness
Location: **844 034 210**
Scientific Chair: **António José Mendes**, University of Coimbra
Technical Chair: **Daniel Azevedo**, University of Coimbra

Challenges of Academic Mobility in View of Students Inclusion in Engineering Education
Valery Vodovozov, Zoja Raud
Tallinn University of Technology, Estonia

Role of design and research work of hearing impaired students while mastering natural sciences at technical university in developing their cognitive skills
Olga Oreshkina, Alex Gurow
Bauman Moscow State Technical University, Russian Federation

Analyzing Learning Outcomes for a Massive Online Competition through a Project-Based Learning Engagement
Aditya Panwar, Kavi Arya
Indian Institute of Technology, Bombay (IIT Bombay), India

Towards the development of learner autonomy of Portuguese mechanical engineering students
Marina Duarte
Polythecnic of Porto, Portugal

The Effects of Motivation in Student Academic Success
Amélia Caldeira[1,3,4], Sofia Lopes[2,4,5], Alexandra Costa[1,6], Isabel Figueiredo[1,3]
1: ISEP- School of Engineering, Polytechnic of Porto,; 2: UM - University of Minho; 3: LEMA - Laboratory of Mathematical Engineering; 4: SYSTEC - Research Center for Systems and Technologies; 5: CFIS - Centre of Physics of the University of Minho; 6: CIETI - Center for Innovation in Engineering and Industrial Technology

Continuous Professional Development for Secondary Education Teachers to adopt Next Generation Digital Learning Environment Platforms
Dimitrios Pantazatos[1], Mary Grammatikou[1], Ingrid Barth[2], Stefano Lariccia[3], Vasilis Maglaris[1]
1: National Technical University of Athens, Greece; 2: Tel Aviv University; 3: Sapienza Università di Roma

WP-B1: Engineering Education Diversity
Location: **840 293 391**
Scientific Chair: **Catarina Silva**, University of Coimbra
Technical Chair: **José Rodrigues**, INEGI - University of Porto

Use of XR technologies to bridge

TS-4B: Active Learning and Active Methodologies
Location: **845 745 254**
Scientific Chair: **Hélia Guerra**, University of the Azores
Technical Chair: **Francisco Cardoso**, University of Coimbra

The Future of Things: Simulations and Next Generation Manufacturing
Thomas Eppes[1], Ivana Milanovic[1], Devdas Shetty[2]
1: University of Hartford, United States of America; 2: University of the District of Columbia, United States of America

A living lab for professional skills development in Software Engineering Management at U.Porto
Gil M. Gonçalves[1], Raquel Meneses[2], João Pascoal Faria[1], Raul Moreira Vidal[1]
1: Faculdade de Engenharia da Universidade do Porto, Portugal; 2: Faculdade de Economia da Universidade do Porto, Portugal

Product-based Learning using CES EduPack in Undergraduate Engineering Courses
Conrado Rosales Torres, Hugo G. González-Hernández, Carlos R. Gijón Rivera, David Gutierrez Franco
Tecnologico de Monterrey, Mexico

Strategies for Teaching Industry-Specific English and German Terminology to Engineering Students
Maria Suntsova, Gulnaz Fakhretdinova
Kazan National Research Technological University, Russian Federation

Methodology for training engineers teamwork skills
Rubén Dorado-Vicente, Eloisa Torres-Jiménez, José Ignacio Jiménez-González, Rocío Bolaños-Jiménez, Cándido Gutiérrez-Montes
University of Jaén, Spain

Beyond Creativity: Reflection and Practice of Imagination with Students of Technical Universities
Simona Chiodo[1], Viola Schiaffonati[1], Margherita Arcangeli[2], Ester Bernadó-Mansilla[3]
1: Politecnico di Milano, Italy; 2: Institut Jean Nicod (CNRS-EHESS-ENS), France; 3: Tecnocampus, Spain

Students' integration in Engineering degrees: Mathematics Support Center (CeAMatE)
Maria Emília Bigotte de Almeida, João Ricardo Branco
Coimbra Polytechnic - ISEC, Coimbra Portugal, Portugal

TS-4C: Attracting and Retaining Practices in Engineering Education
Location: **842 260 748**
Scientific Chair: **Ricardo Costa**, Polytechnic of Porto - School of Engineering
Technical Chair: **Frederico Jacob**, Instituto Superior de Engenharia do Porto

Active Learning Behavior of Men and Women in MOOC Discussion Forums
Catrina Tamara John, Christoph Meinel
Hasso Plattner Institute, Germany

C4 model in a Software Engineering subject to ease the comprehension of UML and the software development process
Andrea Vázquez-Ingelmo, Alicia García-Holgado, Francisco José García-Peñalvo
GRIAL Research Group, University of Salamanca, Spain

Study methods in introductory programming courses
Anabela Gomes, Maria José Marcelino, Fernanda Correia, António José Mendes
Coimbra Polytechnic- ISEC & Centre for Informatics and Systems – University of Coimbra, Portugal

Rethinking Quantitative Skills in a Data-Driven Society: A View from the Middle East
Loris Serafino, Sadeq Damrah
Australian College of Kuwait, Kuwait

Bridging the gaps in engineering curriculum through systems engineering approach
Mohammad Sadique Nawab, Adel Alblawi, Abdulaziz Alsayyari
Shaqra University, Saudi Arabia

Calculation of the Hubble Universe Expansion Constant by Analyzing Observational Data: An Exploratory Teaching Proposal based on STEM Epistemology
Apostolos Xenakis[1], Christos Xenakis[1], Sarantos Psycharis[3], Konstantinos Kalovrektis[1]
1: University of Thessaly, Greece; 2: Astronomy and Space Society of Volos, Greece; 3: ASPETE

Closing the Theory-Practice Gap: Psychologically-Based Laboratory Course in Electrical Engineering
Eike Osmers[1], Emily Wilbrand[2], Thorsten A. Brinkmann[2], Simon Müller[1], Andreas R. Diewald[1]
1: LaROS Institute, Trier University of Applied Sciences, Trier, Germany; 2: Department of General Psychology and Methodology, University of Trier, Trier, Germany

TS-4D: Serious Games, Game-Based Learning and Gamification for Engineering Education
Location: **841 255 261**
Scientific Chair: **Pedro Plaza Merino**, PLAZA ROBOTICA
Technical Chair: **Luiz Paulo M. Pires**, INESC-University of Porto

Gamification in STEM programming courses: State of the art
Marisa Isabel Venter
Central University of Technology, South Africa

Game-based learning approach to cybersecurity
Antonio Trapero[1], Llanos Tobarra[1], Rafael Pastor[1], Antonio Robles-Gomez[1], Roberto Hernandez[1], Andres Duque[1], Jesús Cano[2]
1: UNED, Spain; 2: San Pablo CEU University / UNED, Spain

Modern Serious Board Games: modding games to teach and train civil engineering students
Micael da Silva e Sousa
CITTA/Universidade de Coimbra, Portugal

An investigation into the effects of gamification on students' situational interest in a learning environment
Taboka Ngqabutho Ndlovu, Siyabonga Mhlongo
University of Johannesburg, South Africa

Elemem: Interactive Digital Card Game for Chemistry
Paiboon Boonpotjanawetchakit, Kansinee Kaweerat, Sirion Vittayakorn
King Mongkut's Institute of Technology Ladkrabang, Thailand

Visual block programming languages and their use in educational robotics
Pedro Plaza[1], Aruquia Peixoto[2], Elio Sancristobal[1], Manuel Castro[1], Manuel Blazquez[1], Antonio Menacho[1], Felix Garcia-Loro[1], German Carro[1], Javier Muñoz[3], Monica Muñoz[3], Alejandro Muñoz[3], Sara Muñoz[1], Cesar Muñoz[3], Blanca Quintana[1], Africa Lopez-Rey[1]
1: UNED, Spain; 2: COPPE/UFRJ, Brazil; 3: PLAZA ROBOTICA, Spain

Increasing student motivation in computer programming with gamification
José Alberto Quitério Figueiredo[1], Francisco José García-Peñalvo[2]
1: Instituto Politécnico da Guarda, Portugal; 2: University of Salamanca, Spain

the gap between Higher Education and Continuing Education

Jose Ferreira, **Zain Qureshi**
University of South-Eastern Norway, Norway

Work-in-Progress: Learning Culture of Generation Z in Informatics

Marco Klopp
University of applied sciences Aschaffenburg, Germany

Work in Progress: Curriculum review for rocket scientists

Lucy Berthoud, **Sean Lancastle**
University of Bristol, United Kingdom

Work-in-Progress: Towards detection and syntactical analysis in UML class diagrams for software engineering education

Florian Huber, **Georg Hagel**
Univeristy of applied sciences Kempten, Germany

Software Engineering Education: Challenges and Perspectives

Sofia Ouhbi[1], **Nuno Pombo[2]**
1: United Arab Emirates University, UAE;
2: Universidade da Beira Interior, Portugal

Work in Progress: Towards an Academic Secure Sofware Engineering Curriculum for Engineers

Sabrina Jahn, **Jürgen Mottok**
OTH Regensburg, Germany

Emídio Garcia School Pilot description: A Robosteam Erasmus+ Project Activity based on a Challenge based Learning Approach

Caio Rafael Dias Camargo[1], **Laiany Suganuma Brancalião[1]**, **José Alexandre Carvalho Gonçalves[1]**, **José Luís Sousa Magalhães Lima[1]**, **Maria João Carvalho Ramos[2]**, **Luísa Maria Fernandes[2]**, **Manuel Jacinto Cabeça Trovisco[2]**, **Miguel Ángel Conde González[3]**
1: Polytechnic Institute of Bragança Portugal; 2: Emídio Garcia School Portugal; 3: University of León Spain

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Work in Progress: Task-centric Holistic Teaching Approach to Teaching Programming with Java

Elena Mäkiö[2], **Juho Mäkiö[1]**, **Armando Walter Colombo[1]**, **Robert Harrison[2]**, **Bilal Ahmad[2]**, **Freeha Azmat[2]**
1: University of Applied Sciences Emden / Leer, Germany; 2: University of Warwick

10:00am - 11:00am	**RT2: Game-based Learning** Location: **841 647 011** Scientific Chair: **Helmut Krcmar**, Technical University of Munich Scientific Chair: **Nilüfer Deniz Faizan**, Technical University of Munich Technical Chair: **Guilherme Fonte**, University of Coimbra
11:00am - 11:30am	**Cyber Break**
11:30am - 12:30pm	**K2 Keynote: Complex Problem Solving and PBL in Engineering Education** Location: **843 820 470** Scientific Chair: **José Carlos Quadrado**, Instituto Superior de Engenharia do Porto Technical Chair: **Alberto Cardoso**, University of Coimbra **Anette Kolmos** Professor in Engineering Education and PBL, Director for the UNESCO category 2 Centre: Aalborg Centre for Problem Based Learning in Engineering Science and Sustainability
12:30pm - 2:00pm	**Lunch Break**
2:00pm	**M2: IEEE EDUCON 2020 SC Meeting - by invitation only**

-
3:30pm

Location: **848 099 820**
Scientific Chair: **Manuel Castro**, Universidad Nacional de Educación a Distancia
Technical Chair: **Alberto Cardoso**, University of Coimbra

2:00pm
-
4:00pm

SS3-A: IoT-Edu'20

Location: **847 433 596**
Scientific Chair: **Luís Mendes Gomes**, University of Azores
Technical Chair: **José Rodrigues**, INEGI - University of Porto

Session Proponents:
Dario Assante, Università Telematica Internazionale UNINETTUNO, Italy
Manfred Leisenberg, Fachhochschule des Mittelstands, Germany

Internet of Things education for the business sector: three years of experience

<u>Dario Assante</u>[1], Claudio Fornaro[1], Manuel Castro[2], Sergio Martin[2], Manfred Leisenberg[3], Philipp Kronsbein[3]
1: Università Telematica Internazionale UNINETTUNO, Italy; 2: UNED - Spanish University for Distance Education, Spain; 3: Fachhochschule des Mittelstands, Germany

Effective Industry Ready IoT Applied Courseware – Teaching IoT Design AND Validation

<u>Kenneth Kuo Wei Lim</u>, Gim Seng Lau, Steven Joseph Narciso
Keysight Technologies, Malaysia

IoT-education policies on national and international level regarding best practices in German SMEs

<u>Prof. Dr. Hamid Doost Mohammadian</u>[1], Friederike Doost[2], Prof. Dr. Dario Assante[3]
1: University of Applied Sciences (FHM), Germany; 2: Wrexham Glyndwr University, UK; 3: Università Telematica Internazionale UNINETTUNO, Italy

IoT-Education technologies as solutions towards SMEs' educational challenges and I4.0 readiness

<u>Prof. Dr. Hamid Doost Mohammadian</u>
University of Applied Sciences (FHM), Germany

Analysis of management systems for virtual and remote labs

Sergio Martin Gutierrez[1], Aldo Gordillo[2], <u>Elio Sancristobal</u>[1], Juan Quemada[2], Manuel Castro[1]
1: UNED - Spanish University for Distance Education, Spain; 2: Universidad Politécnica de Madrid, Spain

Implementation of Internet of Things in Biomedical Measurement and Instrumentation Course Project

<u>Agung Wahyu Setiawan</u>
School of Electrical Engineering and Informatics ITB, Indonesia

TS-5A: Innovation, Methods, Teaching and Learning Experiences in Engineering Education

Location: **845 780 409**
Scientific Chair: **António José Mendes**, University of Coimbra
Technical Chair: **Joaquim Leitão**, University of Coimbra

Deep learning practice for high school student engagement in STEM careers

<u>Otacilio Antunes Santana</u>[1], Barbara Alves de Sousa[1], Sandra Razana Silva do Monte[1], Mayara Lopes de Freitas Lima[2], Cainã Ferraz e Silva[1]
1: Universidade Federal de Pernambuco (UFPE), Programa de Pós-Graduação em Rede Nacional para Ensino das Ciências Ambientais (PROFCIAMB); 2: Universidade Federal Rural de Pernambuco (UFRPE), Programa de Pós Graduação em Ensino das Ciências (PPGEC)

We Won't Waste You: A research project to introduce waste and social sustainability in design thinking

Daniel Leal[1], Barbara Rangel[2], <u>Adriana Fernandes</u>[3], Jorge Lino[4]
1: MDIP, FEUP, Portugal; 2: CONSTRUCT, FEUP, Portugal; 3: DESIGN studio, FEUP, Portugal; 4: INEGI, FEUP, Portugal

Software Startup formation in an experiential-based course – An Empirical Investigation of Students' Motivations

<u>Orges Cico</u>[1], Anh Nguyen Duc[2], Letizia Jaccheri[1]
1: Norwegian University of Science and Technology (NTNU); 2: University of Southeast Norway

Experiencing the Sheffield Team Software Project: A project-based learning approach to teaching Agile

<u>Olakunle Olayinka</u>, Mike Stannett
University of Sheffield, United Kingdom

Cybersecurity Education and Skills: Exploring Students' Perceptions, Preferences and Performance in a Blended Learning Initiative

<u>Ali Farooq</u>, Antti Hakkala, Seppo Virtanen, Jouni Isoaho
Department of Future Technologies, University of Turku, Finland

Sustainability as a theme of interdisciplinarity between design and engineering courses

<u>Adriana Fernandes</u>[1], Claudia Alquezar Facca[2], Jorge Lino Alves[3,1], Barbara Rangel[4,1], Belmira Neto[6,7,1], Ana Mae Barbosa[2], Rita Leite[5,8]
1: FEUP – Faculty of Engineering University of Porto; 2: School of Sciences, Arch. and Design Anhembi Morumbi University; 3: INEGI – Institute of Science and Innovation in Mechanical and Industrial Engineering; 4: CONSTRUCT; 5: MDIP – Master in Product and Industrial Design; 6: LEPABE - Laboratory for Process Engineering, Environment, Biotechnology and Energy; 7: Dept. of Metallurgical and Materials Engineering; 8: University of porto

Instrumented Synchronous Feedback Workbench, Learning Object for the Electrical Machines

TS-5B: Globalization: Preparing Faculty and Students

Location: **848 242 829**
Scientific Chair: **Hélia Guerra**, University of the Azores
Technical Chair: **Francisco Cardoso**, University of Coimbra

Initiative to Increment the number of Women in STEM Degrees: Women, Science and Technology Chair of the Public University of Navarre

<u>Patricia Aranguren</u>, Idoia San Martín, Leyre Catalán, Alicia Martínez, Aránzazu Jurio, Silvia Diaz, Gurutze Pérez, Marisol Gómez, Edurne Barrenechea
Public University of Navarre, Spain

Modern Mechatronics and Robotics Education Program: Border Cooperation between Estonia and Russia

<u>Anton Rassõlkin</u>[1], Toomas Vaimann[1], Karolina Kudelina[1], Galina L. Demidova[2], Dmitry V. Lukichev[2], Svetlana Yu. Perepelkina[2]
1: Tallinn University of Technology, Estonia; 2: ITMO University, Russia

IoT as an Introduction to Computer Science and Engineering: A Case for NodeMCU in STEM-C Education

<u>Aleš Jaklič</u>
University of Ljubljana, Faculty of Computer and Information Science, Slovenia

Framework of an Active Learning Python Curriculum for First Year Mechanical Engineering Students

<u>Martin Wende</u>, Tim Giese, Serdar Bulut, Reiner Anderl
TU Darmstadt, Germany

Learning Platform for Power Quality Surveillance

<u>José Carlos Palomares-Salas</u>, José María Sierra-Fernández, Agustin Agüera-Perez, Olivia Florencias-Oliveros, Manuel Jesús Espinosa-Gavira, Juan José González-de-la-Rosa
University of Cadiz, Spain

Entrepreneurship Education through Sustainable Value Creation

<u>Kari Voldsund</u>[1], Harald Hasleberg[2], Judit Johnstad Bragelien[1]
1: Western Norway University of Applied Sciences, Norway; 2: University of South-Eastern Norway

Training needs for a PhD programme in Engineering Education

<u>David Lopez</u>[1,2], Ariadna Llorens Garcia[1,2]
1: Universitat Politècnica de Catalunya - BarcelonaTech, Spain; 2: Institut de Ciències de l'Educació

TS-5C: Attracting and Retaining Practices in Engineering Education

Location: **849 096 805**
Scientific Chair: **Ricardo Costa**, Polytechnic of Porto - School of Engineering
Technical Chair: **Frederico Jacob**, Instituto Superior de Engenharia do Porto

Application of learning analytics to study the accuracy of self-reported working patterns in self-regulated learning questionnaires

<u>Lucia Uguina Gadella</u>[1,2], Iria Estevez-Ayres[2], Jesus Arias Fisteus[2], Carlos Delgado Kloos[2]
1: IMDEA Networks, Spain; 2: Universidad Carlos III de Madrid, Spain

Applying Data Analysis to Identify Early Indicators for Potential Risk of Dropout in CS Students

<u>Axel Böttcher</u>, Veronika Thurner, Tanja Häfner
University of Applied Sciences Munich, Germany

Architecture Proposal for Micro-learning Application for Learning and Teaching Programming Courses

Jan Skalka, Martin Drlik, Martin Capay, <u>Juraj Obonya</u>
Constantine the Philosopher University in Nitra, Slovak Republic

Blended Academic International Mobility: tearing down barriers to mobility in a sustainable way

<u>Nuno Escudeiro</u>[1,2], Paula Escudeiro[1,2], Ricardo Almeida[1,2], Ana Barata[1,2], Tatjana Welzer[3], George Papadourakis[4]
1: ISEP, Portugal; 2: GILT; 3: University pf Maribor; 4: Hellenic Mediterranean University

Bringing Students and Companies together by means of Project development

<u>Pedro Fonseca</u>, Susana Sargento, Arnaldo Oliveira
Universidade de Aveiro, Instituto de Telecomunicações, Portugal

Concept Maps and Self-Regulated Learning: an Exploratory Study

<u>Ana Pavani</u>, Guilherme Temporão, Felipe Calliari
Pontifícia Universidade Católica do Rio de Janeiro, BR, Brazil

Detecting Learner Engagement in MOOCs using Automatic Facial Expression Recognition

<u>Abhilash Dubbaka</u>, Anandha Gopalan
Imperial College London, United Kingdom

Laboratory

Sergio Luiz Schubert Severo[1], Tiago Luis Riechel[1], Jéssica Gantes Cordeiro[2], Oscar Schmitt Kremer[1]

1: Instituto Federal Sul-rio-grandense IFSUL, Brazil; 2: Universidade Federal de Santa Catarina

TS-5D: Learning Environments that Foster Innovation and Entrepreneurship
Location: **842 544 077**
Scientific Chair: **Teresa Alexandra Nogueira**, Polytechnic of Porto - School of Engineering
Technical Chair: **Tiago Restivo**, University of Porto

Apollon Project: A Massive Online Open Lab For Citizen Science Driven Environmental Monitoring

Antonella Longo[1,2], Mario A. Bochicchio[1], Marco Zappatore[2]
1: University of Salento, IT, Italy; 2: Hesplora srl

A Reflection on Fully Exploiting Tanenbaum's Approach to Teach Microarchitecture Design

Jalal Kawash
University of Calgary, Canada

Foundation Courses' Soft Skills Evaluation using Fuzzy Cognitive Maps

Asmaa Mourhir, Ilham Kissani
Al Akhawayn University in Ifrane, Morocco

Involvement of students in online master's studies of Engineering and Science: a path to minimize the gender gap in STEM

Samira Hosseini[1], Nisrine Hammout[2]
1: Tecnologico de Monterrey, Mexico; 2: Mohammed VI Polytechnic University

MagnetoShield: Prototype of a Low-Cost Magnetic Levitation Device for Control Education

Gergely Takács, Jakub Mihalík, Erik Mikuláš, Martin Gulan
Faculty of Mechanical Engineering, Slovak University of Technology in Bratislava

Providing Feedback for Students in E-Learning Systems: a Literature Review, based on IEEE Explore Digital Library

Oleg Shvets, Gunnar Piho, Kristina Murtazin
Virumaa College of Tallinn University of Technology, Estonia

Teaching Supramolecular Chemistry with Microfluidic Techniques

Artem Bezrukov, Julia Ziyatdinova
Kazan National Research Technological University, Russian Federation

TS-5E: Competences, Individual Differences and Intervention
Location: **849 016 910**
Scientific Chair: **Carlos Felgueiras**, Polytechnic of Porto - School of Engineering
Technical Chair: **Myriam Guedey**, Hochschule für Technik Stuttgart

Designing a Competency-oriented Prep Course for First-Year CS Students

Sarah Ottinger, Axel Böttcher, Veronika Thurner
Hochschule München, Germany

Video Explanations of Solutions for Improved Student Performance

Maria Javaid
Indiana State University, United States of America

Developing English Language Competence for Global Engineers

Eric Koenig[1], Katherine Guertler[2], Dorota Żarnowska[3], Jolita Horbačauskienė[4]
1: Technische Hochschule Nürnberg Georg Simon Ohm, Germany; 2: OTH Regensburg, Germany; 3: Poznan University of Technology, Poland; 4: Kaunas University of Technology

Development and Evaluation of an Assessment Tool for Self-Reflection

Veronika Thurner[1], Sabine Hammer[1], Sarah Ottinger[1], Maria Waldleitner[2]
1: Hochschule München, Germany; 2: Technische Universität München, Germany

Engaging students, teachers, and professionals with 21st century skills: the 'Critical Thinking Day' proposal as an integrated model for engineering educational activities

Gonçalo Cruz[1,2], Caroline Dominguez[1,2]
1: University of Trás-os-Montes and Alto Douro (UTAD), Vila Real, Portugal; 2: Research Centre on Didactics and Technology in the Education of Trainers (CIDTFF), Aveiro, Portugal

Enhancing the Psychological Dimension of Academic Advising via Implementing CliftonStrengths Themes

Abdelfattah Y. Soliman, Ali M. Al-Bahi
King Abdulaziz University, Saudi Arabia

Engineers' job - related perceptions of empathy in Germany

Christina Ioanna Pappa[1], Sarah Reinhold[1], Daniel Pittich[1], Birgit Vogel-Heuser[1], Johannes Strobel[2]
1: Technical University of Munich, Germany; 2: University of Missouri

WP-B2: Engineering Education Diversity
Location: **843 424 183**
Scientific Chair: **Andre Fidalgo**, Polytechnic of Porto - School of Engineering
Technical Chair: **Guilherme Fonte**, University of Coimbra

Work in Progress: Adapting Engineering Examinations from Paper to Online

Kristinn Andersen, Saemundur E. Thorsteinsson, Helgi Thorbergsson, Karl S. Gudmundsson
University of Iceland, Iceland

Internationalised Master Degree Education in Nanoelectronics in Asian Universities

Slavka Tzanova
Technical University of Sofia, Bulgaria

An Overview of Organizational Approaches for Teacher Professional Development in Europe

Diana Mesquita[1], Tatiana Salimova[2], Elena Soldatova[2], Rui M. Lima[1]
1: University of Minho, Portugal; 2: National Research Mordovia State University, Russian Federation

Work-in-Progress: Tailoring broad-spectrum, technology-centred IEM studies

Teresa Paula Azevedo Perdicoúlis[1], Senhorinha Teixeira[2], Vasco Amorim[3], Anastássios Perdicoúlis[4]
1: UTAD & ISR, University of Coimbra, Portugal; 2: Dept. of Production and Systems, University of Minho & CGIT & Algoritmi, Guimarães, Portugal; 3: Engineering Dept. (ECT)UTAD & INESC-TEC, Vila Real, Portugal; 4: Engineering Dept. (ECT)UTAD, Vila Real, Portugal;CITTA-FEUP, Porto

Gamification in Engineering Education - a Preliminary Literature Review

Marek Milosz, Elzbieta Milosz
Lublin University of Technology, Poland

Work in Progress: Design Education for Additive Manufacturing using RC Race Car Models

Stefan Junk
Offenburg University of Applied Sciences, Germany

A bibliometric analysis of 10 years of EDUCON (2010-2019)

Alexandra R. Costa, Gustavo R. Alves, Ana Moura
Polytechnic of Porto - School of Engineering, Portugal

Work in progress: Multiprotocol System for Learning Industrial Communications

Ignacio Del Villar, Abian B. Socorro, Ignacio R. Matias
Public University of Navarra, Spain

4:00pm - 4:30pm	**Cyber Break**			
4:30pm - 6:00pm	**RT3: RESCEE** Location: **841 626 861** Scientific Chair: **Martín Llamas-Nistal**, University of Vigo	**SS3-B: IoT-Edu'20** Location: **845 272 201** Scientific Chair: **Luís Mendes Gomes**, University of Azores	**TS-6B: Learning Environments that Foster Innovation and Entrepreneurship**	**TS-6C: Project and Problem Base Learning in Engineering Education**

Scientific Chair: **Rob Reilly**, retired
Technical Chair: **Myriam Guedey**, Hochschule für Technik Stuttgart

IEEE Education Society: Chapters and Members

Martín Llamas-Nistal
University of Vigo, Spain

Activities of the Spanish Chapter of the IEEE Education Society

Manuel Caeiro Rodríguez[1], Martín Llamas Nistal[1], Elio San Crisotbal[2], Francisco Mur Pérez[2], José Ángel Sánchez[2], Manuel Castro[2], Pedro Plaza[2], Pedro Muñoz Merino[3], Óscar Martínez Bonastre[4], Francisco Javier Arcega Solsona[5], Javier García Zubía[6]
1: Universidade de Vigo, Spain; 2: UNED, Spain; 3: Universidad Carllos III de Madrid, Spain; 4: Universidad Miguel Hernández, Spain; 5: Universidad de Zaragoza, Spain; 6: Universidad de Deusto, Spain

Recent activities by IEEE Education Society Portugal Chapter

Pedro Fonseca[1], Vítor Grade Tavares[2], João Nuno Matos[1], Manuel Gericota[3]
1: Universidade de Aveiro / Instsituto de Telecomunicações, Portugal; 2: Faculdade de Engenharia, Universidade do Porto, Portugal; 3: School of Engineering -Polytechnic of Porto

Technical Chair: **José Rodrigues**, INEGI - University of Porto

Session Proponents:
Dario Assante, Università Telematica Internazionale UNINETTUNO, Italy
Manfred Leisenberg, Fachhochschule des Mittelstands, Germany

E-learning tools: Engaging Our Students?

Patricia Muñoz-Escalona[1], Filomena Soares[2], Adelaide Marzano[3], Parag Vichare[3], Meg Dunn[3], Irina Lazar[4]
1: Glasgow Caledonian University, United Kingdom; 2: Minho University; 3: University of The West of Scotland; 4: University of Bristol

Advance Learning Assistant System (ALAS) for Engineering Education

Mauricio Adolfo Ramírez Moreno, Mariana Díaz-Padilla, Karla Daniela Valenzuela-Gómez, Adriana Vargas-Martínez, Armando Roman-Flores, Rubén Morales-Menendez, Ricardo Ramírez-Mendoza, Jorge de Jesús Lozoya Santos
Tecnologico de Monterrey, Mexico

The role of IoE-Education in the 5th wave theory readiness & its effect on SME 4.0 HR competencies

Prof. Dr. Hamid Doost Mohammadian, Fatemeh Rezaie
University of Applied Sciences (FHM), Germany

IoT Device Implementation for Evaluation of Electronics and Software Design Skills

Emmanuel Torres-Rios, David Antonio-Torres, Daniel Pérez-Rojas, Jesús Moreno-Moreno, Luis Antonio Carillo-Martínez
tecnologico de monterrey, Mexico

Location: **841 052 341**
Scientific Chair: **Hélia Guerra**, University of the Azores
Technical Chair: **Francisco Cardoso**, University of Coimbra

Using Knowledge Networks to Support the Student's Learning Initiative

Armandina Juana Leal Flores, Luis Humberto Gonzalez Guerra
Tec de Monterrey, Mexico

Validation of instruments to measure social entrepreneurship competence. The OpenSocialLab project

Abel García-González[1], Luis-Miguel Romero-Rodríguez[2], José María Romero Rodríguez[3], María-Soledad Ramírez-Montoya[1]
1: Tecnológico de Monterrey, Mexico; 2: Universidad Rey Juan Carlos, Spain; 3: University of Granada, Spain

ENGAGING ENGINEERING STUDENTS IN CULTURAL DIVERSITY AND UNITY STUDIES

Julia Ziyatdinova[1], Olga Oleynikova[2], Elvira Valeeva[1]
1: KAZAN NATIONAL RESERACH TECHNOLOGICAL UNIVERSITY, Russian Federation; 2: Center for Vocational Education and Training Studies, Russian Federation

Integration of circular economy principles for developing sustainable development competences in higher education: an analysis of bachelor construction management courses

Benjamin Sanchez, Romeo Ballinas Gonzalez, Miguel X. Rodriguez-Paz, Juan Arturo Nolazco-Flores
Tecnologico de Monterrey, Mexico

Entrepreneurial barriers perceptions of Information Technology students

Ioannis Sitaridis, Fotis Kitsios
University of Macedonia, Greece

Performance of college students in a statistics course using mastery learning

Gibrán Sayeg-Sánchez[1], Miguel X. Rodríguez-Paz[1,2]
1: School of Engineering and Science, Tecnologico de Monterrey; 2: Writing Lab, Tecnologico de Monterrey

Location: **844 576 483**
Scientific Chair: **Ricardo Costa**, Polytechnic of Porto - School of Engineering
Technical Chair: **Frederico Jacob**, Instituto Superior de Engenharia do Porto

Fostering metacognitive process using Active Learning in a Mechatronic Engineering Course

Guillermo Sandoval, Héctor Rafael Morano, Rafael Caltenco
Tecnológico de Monterrey CEM, Mexico

Application of PBL in ERP Textbook Design and Technical University Students Learning Effectiveness Study

Ming-Der May[1], Hsiang-Yuan Lin[1], Ying-Tzu Tseng[2], Cheng-Min Sung[3]
1: Lunghwa University of Science and Technology, Taiwan, ROC; 2: Sinhao Consulting Co., Ltd., Taiwan, ROC; 3: Fu Jen Catholic University, Taiwan, ROC

Mechatronic TVET Student Development Using Project Approach for In-depth Learning

Komkrit Chomsuwan[1], Pichet Pinit[2], Anusit Anmanatrakul[2]
1: Department of Electrical Technology Education, King Mongkut's University of Technology Thonburi, Thailand; 2: Department of Mechanical Technology Education, King Mongkut's University of Technology Thonburi, Thailand

Experience with teaching with BBC micro:bit

Patrik Voštinár, Jaroslav Knežník
Matej Bel University, Banska Bystrica, Slovakia, Slovak Republic

Challenge-Based Learning and Traditional Teaching in Automatic Control Engineering Courses: a Comparative Analysis

Hugo G. Gonzalez-Hernandez, Valeria Cantu-Gonzalez, Roberto J. Mora-Salinas, Jorge A. Reyes-Avendano
Tecnologico de Monterrey, Mexico

TS-6D: Serious Games, Game-Based Learning and Gamification for Engineering Education

Location: **847 817 180**
Scientific Chair: **Teresa Alexandra Nogueira**, Polytechnic of Porto - School of Engineering
Technical Chair: **Tiago Restivo**, University of Porto

RECoNE: A Remote Environment for Computer Networks Education

Luis Alejandro Fletscher, Juan Felipe Botero, Natalia Gaviria, Edison Fernando Aza, Jaime Alberto Vergara
Universidad de Antioquia, Colombia

Playful Computer Science for Girl Scout Juniors

Mira Yun[1], Jinsook Park[2], Andrew Jung[2], Charlie Wiseman[1]
1: Wentworth Institute of Technology, United States of America; 2: University of Hartford, United Sates of America

Predicting performance with AI, a new tool for teachers and

WP-D: Innovative Competitions and Laboratories

Location: **846 520 802**
Scientific Chair: **António José Mendes**, University of Coimbra
Technical Chair: **Joaquim Leitão**, University of Coimbra

Integration of physics, mathematics and computer tools using challenge-based learning

Genaro Zavala
Tecnologico de Monterrey, Mexico, Universidad Andres Bello, Chile

Learning from Escape Rooms? A Study Design Concept Measuring the Effect of a Cryptography Educational Escape Room

Stefan Seebauer, Sabrina Jahn, Jürgen Mottok
OTH Regensburg, Germany

Gender Differences in Students' Assessment in a Fluid Mechanics Course

Celina P Leão[1], Teresa Sena-Esteves[2],

students

Elvira G. Rincón-Flores[1,2]**, Eunice López Camacho**[3]**, Juanjo Mena**[2,4,5]**, Omar Olmos López**[1]

1: School of Engineering and Sciences, Tecnologico de Monterrey, Mexico; 2: GRIAL research group, University of Salamanca, Spain; 3: Independent Researcher; 4: Education Department Salamanca University Salamanca Spain; 5: Institute of Psychology and Education, Kazan Federal University, Russia.

Engaging a Calculus course with Telepresence through Gamification

Elvira G. Rincón-Flores[1,2]**, Omar Olmos López**[1]**, Eunice López Camacho**[3]

1: School of Engineering and Sciences, Tecnologico de Monterrey, Mexico; 2: GRIAL research group, University of Salamanca, Spain; 3: Independent Researcher

Engaging professional competencies through gamification

Brenda N Santos - Guevara, Elvira G. Rincón - Flores

Tecnológico de Monterrey, Mexico

Cristina Morais[2]**, Anabela Guedes**[2]**, Isabel B. Pereira**[2]**, Margarida M. Ribeiro**[2]**, Filomena Soares**[3]

1: Dept of Production and Systems, Algoritmi Research Centre, School of Engineering University of Minho, Guimarães, Portugal; 2: Dept of Chemical Engineering, CIETI Research Centre, ISEP, Porto, Portugal; 3: Dept of Industrial Electronics, Algoritmi Research Centre, School of Engineering University of Minho, Guimarães, Portugal

A demo platform to teach and learn the behaviour of a PI controller

Carlos Felgueiras, Kevin Serradeiro, Ricardo Costa, André Fidalgo

ISEP

Enhancing Engineering Education Using Project Based Learning on Industry

Ricardo Luiz Perez Teixeira[1]**, Priscilla Chantal Duarte Silva**[1]**, Ricardo Shitsuka**[1]**, Betânia Mafra Kaizer**[1]**, Max Leandro de Araujo Brito**[2]**, Palloma da Costa e Silva**[3]

1: Universidade Federal de Itajubá, Brazil; 2: Universidade Federal do Rio Grande do Norte, Brazil; 3: Instituto de Ciências Sociais da Universidade de Lisboa, Portugal

Rehab Didactic Toys

Carlos Uriel Arroyo Herrera, René Joaquín Díaz Martínez, Rafalea Villalpando Hernández, Edwin Jared Rodríguez Salas, Eber Didier Rodríguez Salas, Juan Carlos Wong Camacho, Mauro Alejandro González López, Omar Zúñiga Arróniz, Yamilin Araceli Zamora Enriquez, Edgar Adrian Barker Loredo, Roberto Soto von Bertrab, José Luis Macías Hernández

ITESM campus Laguna, Mexico

Design and Construction of Physics Laboratory Equipment and an Authentic Evaluation System as a Pedagogical Tool in the Integral Training of Engineering Students

José M Nieto Jalil, Eduardo Rodriguez-Alvarez, Iván Roberto Kawaminami-Garcia, Saylin Pupo Almaguer

ITESM, México

Date: Thursday, 30/Apr/2020

8:30am - 4:00pm

Conference Online Support
Location: **845 396 686**

Need Help? Chat with a Member of the Online Conference Support Committee.

9:00am - 10:30am

RT4: eMadrid Network
Location: **847 843 762**
Scientific Chair: **Carlos Delgado Kloos**, Universidad Carlos III de Madrid
Technical Chair: **Diana Fonte**, University of Coimbra

Making Educational Technology Invisible
Carlos Delgado Kloos, Carlos Alario-Hoyos, Pedro J. Muñoz-Merino, Mª Blanca Ibáñez, Carmen Fernández-Panadero, Iria Estévez-Ayres
Universidad Carlos III de Madrid, Spain

EntreCom4LL MODEL to sustain the entrepreneurship competence needs
Edmundo Tovar Caro[1], **Bernardo Tabuenca**[1], **Nelson Piedra**[2]
1: Universidad Politécnica de Madrid, Spain; 2: Universidad Técnica Particular de Loja, Ecuador

Computational Thinking Test for Beginners: Design and Content Validation
María Zapata-Cáceres[1], **Estefanía Martín-Barroso**[1], **Marcos Román-González**[2]
1: Universidad Rey Juan Carlos, Spain; 2: UNED, Spain

Can e-book technology be enough to support e-learning?
Martin Takev[1], **Miguel Rodríguez-Artacho**[2], **Elena Somova**[1], **Manuel Castro Gil**[2], **Sergio Martin**[2]
1: University of Plovdiv "Paisii Hilendarski"; 2: Universidad Nacional de Educacion a Distancia UNED

TS-7A: Innovation, Methods, Teaching and Learning Experiences in Engineering Education
Location: **848 575 456**
Scientific Chair: **António José Mendes**, University of Coimbra
Technical Chair: **Daniel Azevedo**, University of Coimbra

Work in Progress: Exploring teamwork and inclusivity amongst engineering students at a South African university
Gabrielle Reeve Nudelman
UCT, South Africa

Why Disciplinary Culture Matters: Lessons Learned from 7 Years of Internationalization in Engineering Education
Laura-Katharina Schiffmann, Natascha Strenger
Ruhr-Universität Bochum, Germany

Stack Overflow – Informal learning and the global expansion of professional development and opportunities in programming?
Markus Nivala, Alena Seredko, Tanya Osborne, Thomas Hillman
University of Gothenburg, Sweden

RoboSTEAM Project Systematic Mapping: Challenge Based Learning and Robotics
Miguel Ángel Conde[1], **Francisco J. Rodríguez-Sedano**[1], **José Gonçalves**[2], **José Lima**[2], **Francisco J. García-Peñalvo**[3], **Camino Fernández-Llamas**[1]
1: University of León, Spain; 2: Instituto Politécnico de Bragança, Portugal; 3: University of Salamanca, Spain

On the Acceptance and Effects of Recapping Self-Test Questions in MOOCs
Max Bothe, Jan Renz, Christoph Meinel
Hasso Plattner Institute, Germany

TS-7B: Active Learning and Active Methodologies
Location: **842 465 894**
Scientific Chair: **Catarina Silva**, University of Coimbra
Technical Chair: **Francisco Cardoso**, University of Coimbra

3D Printing in Education: an European perspective
Dario Assante, Gerardo Maria Cennamo, Luca Placidi
Università Telematica Internazionale UNINETTUNO, Italy

Fostering students' analytical thinking and applied mathematical skills through 3D design and printing
Laura Levin-Bacari, Igor Verner
Technion - Israel Institute of Technology, Israel

Metacognitive awareness and Creative Thinking: the capacity to cope with uncertainty in engineering
Patricia Caratozzolo[1], **Alvaro Alvarez-Delgado**[1], **Samira Hosseini**[1,2]
1: Tecnologico de Monterrey, Mexico; 2: Tecnologico de Monterrey, Writing Lab, TecLabs Vicerrectoria de Investigacion y Transferencia de Tecnologia

The concepts of Linear Algebra present in Industrial Robotics: integrative designs and applications
Renato José de Moura, **Osmar Ogashawara**
Federal University of São Carlos, Brazil

Support prospect of success in mathematics for first-year students in engineering
Norbert Grotz, Susanne Ertel, Martina Müller-Amthor
Kempten University, Germany

TS-7C: Globalization: Preparing Faculty and Students
Location: **845 662 145**
Scientific Chair: **Maria Marques**, Polytechnic of Porto
Technical Chair: **Frederico Jacob**, Instituto Superior de Engenharia do Porto

Perception of the gender gap in computer engineering studies: a comparative study in Peru and Argentina
Alicia García-Holgado[1], Clauda Deco[2], Norka Bedregal Alpaca[3], Cristina Bender[2], Klinge Orlando Villalba Condori[3]
1: GRIAL Research Group, University of Salamanca, Spain; 2: Universidad Nacional de Rosario, Argentina; 3: Universidad Nacional de San Agustín de Arequipa, Peru

Curriculum for Business Information Technology Studies at BSc and MSc Levels – Observations from a Long-term Educational Endeavour
Kristina Murtazin, Gunnar Piho, Oleg Shvets
TALLINN UNIVERSITY OF TECHNOLOGY, Estonia

Questionnaire-based Evaluation of a Block scheduled instruction in computer engineering
Sabine Hammer, Martin Hobelsberger, Sarah Ottinger
University of Applied Science Munich, Germany

Problem-Solution Patterns in the Introductions of Chemical Engineering Research Articles: Pedagogical Insights
Li Lian Khaw
Monash University, Australia

Learning-by-Doing as an Educational Method of Conducting Experiments in Electronic Physics
Tina Nantsou[1], Ghassan Frache[2], Efstratios C. Kapotis[1], Hector E. Nistazakis[1], George S. Tombras[1]
1: National and Kapodistrian University of Athens, Greece; 2: Abu Dhabi Vocational Education & Training Institute, United Arab Emirates

TS-7D: Learning Environments that Foster Innovation and Entrepreneurship
Location: **846 391 118**
Scientific Chair: **Teresa Alexandra Nogueira**, Polytechnic of Porto - School of Engineering
Technical Chair: **Luiz Paulo M. Pires**, INESC-University of Porto

STR-SA: Session-based Thread Recommendation for Online Course Forum with Self-Attention
Ming Zhang, Shixing Liu, Yifan Wang
Peking University, China

Hands-On Power Electronics Course - deep understanding by combination of simulation, calculation and practical measurements
Mathias Herget, Ulf Schwalbe

TS-7E: Competences, Individual Differences and Intervention
Location: **842 590 500**
Scientific Chair: **Pedro Plaza Merino**, PLAZA ROBOTICA
Technical Chair: **Myriam Guedey**, Hochschule für Technik Stuttgart

Insights in Students' Problems during UML Modeling
Rebecca Reuter[1], Theresa Stark[2], Yvonne Sedelmaier[3], Dieter Landes[3], Jürgen Mottok[1], Christian Wolff[2]
1: OTH Regensburg, Germany; 2: Regensburg University, Germany; 3: University of Applied Sciences and Arts, Germany

Interdisciplinary Education - The Case Of Bio Medical Signal Processing
Koby Mike, Shira Nemirovsky-Rotman,

WP-A: Innovative Competitions and Laboratories
Location: **844 929 842**
Scientific Chair: **Diana Urbano**, University of Porto, Portugal
Technical Chair: **José Rodrigues**, INEGI - University of Porto

A new revised definition of contract cheating.
Shah Neyamat Ullah
Central Queensland University, Australia

Introducing Robotics to an English for Academic Purposes Curriculum in Higher Education: The Student Experience
Christina Ververi[1], Theodora Koufou[1], Alexandros Moutzouris[2], Lefkothea-Vasiliki Andreou[3]
1: Department of Chemistry, University of Ioannina, Greece; 2: Department of

Hochschule Fulda University of Applied Sciences, Germany

Predicting students' performance using survey data

Catarina Félix, Sónia Sobral

Universidade Portucalense, Research on Economics, Management and Information Technologies - REMIT, Porto, Portugal, Portugal

Sail Car - An EPS@ISEP 2019 Project

Ana Zhu[1], Christopher Beer[1], Karl Juhandi[1], Marko Orlov[1], Narcisa-Laura Bacau[1], Levente Kádár[1], Abel José Duarte[1,4], Benedita Malheiro[1,2], Jorge Justo[1], Manuel Fernando Silva[1,2], Maria Cristina Ribeiro[1,3], Paulo Duarte Ferreira[1], Pedro Guedes[1]

1: ISEP/P.Porto - Instituto Superior de Engenharia do Porto, Politécnico do Porto, Porto, Portugal; 2: INESC TEC, Porto, Portugal; 3: INEB - Instituto de Engenharia Biomédica, Porto, Portugal; 4: REQUIMTE/LAQV, ISEP, Porto, Portugal

Trauma Narrative for Civil Engineering Students: A Case Study on Hydrometeorological Disaster Victims in Malaysia

Seng Tong Chong[1], Yu Jin Ng[1], Ming Fai Chow[1], Ahmad Zufrie Abd Rahman[2], Kee Shyuan Loh[3], J. Karthikeyan[4]

1: UNIVERSITI TENAGA NASIONAL, MALAYSIA; 2: MALAYSIAN EXAMINATIONS COUNCIL; 3: UNIVERSITI KEBANGSAAN MALAYSIA, MALAYSIA; 4: VELLORE INSTITUTE OF TECHNOLOGY, INDIA

Orit Hazzan

Technion – Israel Institute of Technology, Israel

Biomedical students' motivation with project-based learning: a case study

Sara Seabra Reis[1,2], Maria Fátima Coelho[1,2], Luís Filipe Coelho[1,2]

1: Polytechnic of Porto - School of Engineering, Portugal; 2: CIETI - Center for Innovation in Engineering and Industrial Technology

Mapping the Students' Journey to Develop Student-Centered Tools

Heidi Schuhbauer, Patricia Brockmann, Teymur Mustafayev

Technische Hochschule Nürnberg Georg Simon Ohm, Germany

Mechanisms for Intercultural Competence Development for Engineering Students

Raushan Sirinovna Valeeva[1], Julia Ziyatdinova[1], Olga Oleynikova[2]

1: Kazan National Research Technological University, Russian Federation; 2: Center for Vocational Education and Training Studies, Russian Federation

Informatics and Telecommunications, University of Ioannina, Greece; 3: Department of Biological Applications and Technology, University of Ioannina, Greece

µLAB A remote laboratory to teach and learn the ATMega328p µC

Ricardo Costa[1], Francisco Pérola[2], Carlos Felgueiras[3]

1: IPP/ISEP/CIETI/LABORIS, Portugal; 2: IPP/ISEP/CIETI/LABORIS, Portugal; 3: IPP/ISEP/CIETI/LABORIS, Portugal

Work-in-Progress: Using Lego® Serious Play™ processes to build responsible professionals

Emmaline Louise Lear, Stephen Dann, Priscilla Kan John

Australian National University, Australia

A Preliminary Study on Students Acceptance of Chatbots for Studio-Based Learning

Jeya Amantha Kumar[1], Paula Alexandra Silva[2]

1: Universiti Sains Malaysia, Malaysia; 2: Universidade de Coimbra – Polo II, Portugal

Block Pictogramming - A Block Based Programming Learning Environment through Pictogram Content Creation -

Kazunari Ito

Aoyama Gakuin University, Japan

10:30am - 11:00am   **Cyber Break**

11:00am - 12:30pm

TS-8A: STEM Promotion
Location: 844 465 047
Scientific Chair: **António José Mendes**, University of Coimbra
Technical Chair: **Daniel Azevedo**, University of Coimbra

Teacher education in engineering design through practice in reverse engineering and making

Moshe Greenholts, Igor Verner

Technion - Israel Institute of Technology, Israel

Equalizing Opportunities of First Year Students of Engineering Faculties by Improving Their Knowledge of Mathematics

Adam Bednarz, Anna Bistron, Malgorzata Radon, Beata Strycharz-Szemberg, Malgorzata Zajecka

Cracow University of Technology, Poland

STEM Educator challenges and professional development needs: the educators' views

Natalia Spyropoulou[1,2], Achilles Kameas[1,2]

1: Hellenic Open University, Greece; 2: Computer Technology Institute and Press (CTI), Diophantus, Patras, Greece

Teaching Triangle Rigidity to K-12 Students with Applications to Civil Engineering

Rita de Cássia Pavan Lamas[1], German Lozada-Cruz[1], Aruquia Peixoto[2]

1: UNESP, Brazil; 2: CEFET/RJ, Brazil

Scrum Higher Education – The Scrum Master Supports as Solution-focused Coach

Martina Mueller-Amthor, Georg Hagel,

TS-8B: Attracting, Engaging and Retaining Human Talent to Engineering
Location: 843 209 838
Scientific Chair: **Catarina Silva**, University of Coimbra
Technical Chair: **Francisco Cardoso**, University of Coimbra

Enhancing Multicultural and Global Literacy through Computer Science Gaming

Douglas Lecorchick[1], Scott Nichols[2], Joanna Papadopoulos[3]

1: Berea College; 2: Maryland State Department of Education; 3: Virginia Tech

Third Sector Institutions Associated To Education Areas In Brazil And Their Impact In Curricular References For Modernizing Industrial Engineering Courses: A Case Study.

Roberto Fuentes[1], Milton Vieira Junior[2], Rui Marçal[3], Marlene Amorim[1], Gil Guimaráes[4]

1: DEGEIT & GOVCOPP, Universidade de Aveiro, Portugal; 2: UNIMEP, Brasil; 3: ABEPRO, Brasil; 4: Unicruz, Brasil

Examples of authentic assessments in engineering education

Shah Neyamat Ullah

Central Queensland University, Australia

Identifying Cheating Users in Online Courses

Vicenzo Abichequer Sangalli, Gonzalo Martínez-Muñoz, Estrella Pulido-Cañabate

TS-8C: Project and Problem Base Learning in Engineering Education
Location: 843 087 348
Scientific Chair: **Ricardo Costa**, Polytechnic of Porto - School of Engineering
Technical Chair: **Frederico Jacob**, Instituto Superior de Engenharia do Porto

Problem based learning for teaching new technologies

Andreas Humpe, Lars Brehm

University of Applied Sciences Munich, Germany

Influence of Problem-Based Learning on Student Performance

Matthias Haack, Thomas N. Jambor

Leibniz University of Hannover, Germany

DEVELOPING STUDENTS' INTERCULTURAL COMPETENCE DURING THE PROFESSIONAL ORIENTED COURSE IN ENGLISH AS A FOREIGN LANGUAGE

Ekaterina Tsareva, Elina Murtazina, Gulnaz Fakhretdinova

Kazan National Research Technological University, Russian Federation

INTEGRATING SOFT SKILLS INTO ENGLISH LANGUAGE TEACHING IN ENGINEERING EDUCATION

Gulnaz Fakhretdinova, Liudmila Dulalaeva, Suntsova Maria

Kazan National Research Technological University, Russian Federation

TS-8D: Practical Competences and Smart Education
Location: 842 700 519
Scientific Chair: **Teresa Alexandra Nogueira**, Polytechnic of Porto - School of Engineering
Technical Chair: **Luiz Paulo M. Pires**, INESC-University of Porto

Associative Media Learning Using Smartwatches

Daniel Biedermann, Sebastian Rödling, Jan Schneider, Hendrik Drachsler

DIPF | Leibniz Institute for Research and Information in Education, Germany

Online Drone Education, a Mapping Review

Omar Velasco[1], João Valente[2]

1: Wageningen University & Research, Netherlands, The; 2: Wageningen University & Research, Netherlands, The

STEM 3.0 for Chinese Students with Sea Perch Underwater Robots: An Experimental Summer Camp for Hands-on Thinkers in Shanghai

Ang Li[1], Gurvan Jodin[2], Dixia Fan[3], Huimei Xie[4], Yi Yu[1], Chong Sun[5], Lijia Gu[6], Jieqiong Xu[6], Jiani Zhu[6]

1: MOE Key Laboratory of Hydrodynamics, Department of Naval Architecture, Ocean and Civil Engineering, Shanghai Jiao Tong University, Shanghai, China; 2: SATIE, ENS Rennes, CNRS, Bruz, France; 3: Massachusetts Institute of Technology, United States of America; 4: Department of Naval Architecture, Ocean and Civil

Matthias Gensheimer, Florian Huber
Hochschule Kempten, Germany

Universidad Autónoma de Madrid, Spain

Ways and Benefits of Closing the Gap: Aligning Language and Communication Teaching with the Technical Curriculum

Björn Kjellgren
KTH Royal Institute of Technology, Sweden

Engineering, Shanghai Jiao Tong University, Shanghai, China; 5: State Key Laboratory of Hydraulic Engineering Simulation and Safety, Tianjin University, Tianjin, China; 6: Shanghai Little Green Boat Education Ltd., Shanghai, China

Low-cost Remote Laboratory Concept based on NI myDAQ and NI ELVIS for Electronic Engineering Education

Thomas Klinger, Christian Kreiter, Andreas Pester, Christian Madritsch
Carinthia University of Applied Sciences, Austria

Smart Technology to Improve Cultural and Gender Diversity in Engineering Education

Bastian Waizmann, Heidi Schuhbauer, Patricia Brockmann
Technical University of Applied Sciences Nuernberg Georg Simon Ohm, Germany

TS-8E: Technology Enhanced Learning
Location: **847 892 476**
Scientific Chair: **Pedro Plaza Merino**, PLAZA ROBOTICA
Technical Chair: **Myriam Guedey**, Hochschule für Technik Stuttgart

Which Strategies are Used in the Design of Technical LA Infrastructure?: A Qualitative Interview Study

George-Petru Ciordas-Hertel[1], Jan Schneider[1], Hendrik Drachsler[1,2,3]
1: DIPF | Leibniz Institute for Research and Information in Education, Frankfurt am Main, Germany; 2: Johann Wolfgang Goethe-Universität, Frankfurt am Main, Germany; 3: Open Universiteit of the Netherlands, Heerlen, Netherlands

Technical Setup of an Inverted Virtual Classroom

Roland Willmann[1], Gerald Zebedin[1], Daniela Miksche[2]
1: Carinthia University of Applied Sciences, Austria; 2: Alpen Adria University of Klagenfurt, Austria

Cloud and WebRTC based Laboratory Solution for Practical Work in Computer Science for a Traditional University

Amadou Dahirou Gueye[1], Bounama Gueye[1], Lamine Yade[1], Omar Kasse[1], Claude Lishou[2]
1: Alioune Diop University of Bambey, Senegal; 2: Cheikh Anta Diop University of Dakar, Senegal

DEVELOPING QUALITY ASSURANCE FOR WORK PLACEMENT IN HIGHER EDUCATION

Robert Immerstein, Harald Hasleberg, Gro Eri
University of South-Eastern Norway, Norway

WP-B3: Competences, Individual Differences and Intervention
Location: **840 555 346**
Scientific Chair: **Diana Urbano**, University of Porto, Portugal
Technical Chair: **José Rodrigues**, INEGI - University of Porto

Work in Progress: Fostering Soft-Skills of Engineering Students Within Scrum Projects

Galyna Lutsenko[1], Gregory Lucenko[2]
1: Bohdan Khmelnytsky National University of Cherkasy, Cherkasy, Ukraine; 2: Hlukhiv O. Dovzhenko National Pedagogical University, Hlukhiv, Ukraine

Work in Progress: Competence Building in Engineering Education in Mongolia

Slavka Tzanova
Technical University of Sofia, Bulgaria

Creating an E-learning Environment for Teaching Foreign Languages to Engineering Students

Liliia Zinnatullina[1], **Phillip Sanger**[2]
1: KNRTU, Russian Federation; 2: Purdue University

Work-in-Progress: Internet Marketing Simulation for Project-Based Learning

Martin Zagar, Nikola Draskovic
RIT Croatia, Croatia

Work-in-Progress: Towards a Conceptual Framework for Multi-Campus Course Development

Abdullah Bahmani, Rune Hjelsvold
the Norwegian University of Science and Technology (NTNU) / the Excited center, Norway

| 12:30pm - 2:00pm | **Lunch Break** |

| 2:00pm - 3:30pm | | | | |

TS-9A: Learning Environments that Foster Innovation and Entrepreneurship
Location: **841 881 653**
Scientific Chair: **António José Mendes**, University of Coimbra
Technical Chair: **Joaquim Leitão**, University of Coimbra

Engaging Students in Research: a Comparative Case Study Between Engineering and Business

Delia Perez-Lozano, Rebeca Maria

TS-9B: Knowledge and Competencies in Engineering Education
Location: **843 157 340**
Scientific Chair: **Catarina Silva**, University of Coimbra
Technical Chair: **Francisco Cardoso**, University of Coimbra

Introduction of Data Literacy in the Undergraduate Engineering Curriculum

Tim Giese, Martin Wende, Serdar

TS-9C: Active Learning and Active Methodologies
Location: **845 106 940**
Scientific Chair: **Ricardo Costa**, Polytechnic of Porto - School of Engineering
Technical Chair: **Frederico Jacob**, Instituto Superior de Engenharia do Porto

Semestre i as an Active Methodology to modify the Teaching-Learning Process in Engineering

TS-9D: Project and Problem Base Learning in Engineering Education
Location: **846 700 119**
Scientific Chair: **Teresa Alexandra Nogueira**, Polytechnic of Porto - School of Engineering
Technical Chair: **Tiago Restivo**, University of Porto

Practical Framework for Problem-Based Learning in an Introductory Circuit Analysis Course

Garcia Garcia
Tecnologico de Monterrey, Mexico

Service Learning with Impact: How Engineering Students and People with Disabilities Acquire Future Skills

Aleksandra Konopek[1], Michael Schäfer[2], Laura Keders[3], Florian Paproth[4]
1: University of Fine Arts Essen; 2: Ruhr West University of Applied Sciences; 3: Berufsbildungswerk der Deutschen Versicherungswirtschaft (BWV) e.V.; 4: Ruhr West University of Applied Sciences

Building Methodologies for Teaching Transversal Skills to Future Engineers

Emilia Pecheanu, Adina Cocu, Ioan Susnea, Luminita Dumitriu, Diana Stefanescu, Adrian Istrate
University Dunarea de Jos, Romania

Collaborative virtual community to share class plans for STEAM education

Juarez Bento Silva[1], Simone Bilessimo[1], Isabela Silva[2]
1: Universidade Federal de Santa Catarina - UFSC, Brazil; 2: Serviço Social da Indústria - SESI, Criciuma, SC, Brazil

Teaching Network Covert Channels using a Hands-on Approach

Zouheir Trabelsi
College of Information Technolgy, UAE University, United Arab Emirates

TS-9E: Engineering Diversity and Inclusiveness
Location: **845 256 708**
Scientific Chair: **Pedro Plaza Merino**, PLAZA ROBOTICA
Technical Chair: **Myriam Guedey**, Hochschule für Technik Stuttgart

Design Of Interactive Learning Cyber-Physical Tools for Mechanical Design Engineering Courses

Armando Roman-Flores, Adriana Vargas-Martinez, Enrique Cuan-Urquizo, Jorge Lozoya-Santos, Ruben Morales-Menendez, Ricardo Ramirez-Mendoza, Pedro Daniel Urbina-Coronado
Tecnologico de Monterrey, Mexico

Student-Centered Engineering Education: The Renewable Energy Case

Bashar Hammad[1], Abdallah Al-Zoubi[2], Haneen Hijazi[3], Ahmad Al-Khasawneh[3]
1: German Jordanian University; 2: Princess Sumaya University for Technology, Jordan; 3: Hashemite Univeristy

Using Transmedia Approaches in STEM

Maria Aparecida de Jesus[1], Vania Vieira Estrela[1], Wilma Dora Huacasi Mamani[2], Navid Razmjooy[3], Aruquia Peixoto[4], Pedro Plaza Merino[5]
1: Universidade Federal Fluminense (UFF), Brazil; 2: Universidade Estadual do Norte Fluminense (UENF), Brazil; 3: Tafresh University, Tafresh, Iran; 4: CEFET/RJ, Brazil; 5: PLAZA ROBOTICA

Providing competencies through practical activities for future

Bulut, Reiner Anderl
Technische Universität Darmstadt, Germany

Digitization of a Lecture – An Experience Report

Jens Liebehenschel
Frankfurt University of Applied Sciences, Germany

Global competences through IDEEA Global course

Pedro Antonio Orta Castañon, Pedro Daniel Urbina Coronado, Horacio Ahuett-Garza
Instituto Tecnologico y de Estudios Superiores de Monterrey, Mexico

Use of emerging technologies for the proposal and design of a course on the development of social entrepreneurship competencies

María-Soledad Ramírez-Montoya[1], José-Guadalupe González-Padrón[1], Marlene Muzquiz-Flores[1], Abel García-González[1], José-María Romero-Rodríguez[2], Inmaculada Aznar-Díaz[2]
1: Tecnológico de Monterrey, Mexico; 2: University of Granada, Spain

Positive Effects of Summer Research Program on Diverse Community College Students

Nicole McIntyre[1], Catherine T. Amelink[2], Jeffrey Bokor[1]
1: University of California, Berkeley, United States of America; 2: Virginia Polytechnic Institute and State University, United States of America

WP-B4: Learning Systems Platforms and Architectures
Location: **845 986 714**
Scientific Chair: **Diana Urbano**, University of Porto, Portugal
Technical Chair: **José Rodrigues**, INEGI - University of Porto

Work-in-Progress: Pedestrian bridge application in a Fundamentals of Structural Analysis course inside an Architecture bachelor program

Maria Giulia Ballatore[1], Fabrizio Barpi[2], Anita Tabacco[1]
1: Dept. of Mathematical Sciences "G.L. Lagrange", Politecnico di Torino, Italy; 2: Department of Structural, Geotechnical and Building Engineering, Politecnico di Torino, Italy

Proposal of an educational strategy to bring students in telecommunications and networks back to the fundamentals of the discipline

Ulrich Hermann Sèmèvo Boko, Bessan Melckior Degboe, Samuel Ouya, Gervais Mendy
Laboratory LIRT, Higher Polytechnic School, University Cheikh Anta Diop of Dakar

Work in Progress: A MOOC-based Innovative Instructional Approach for Curriculum Design

Carlos Vaz de Carvalho[1], Rita Butkiene[2], Daina Gudoniene[2], Olga Zubikova[3], Tim Brueggemann[3]
1: Instituto Superior de Engenharia do Porto, Portugal; 2: Kaunas University of Technology, Lithuania; 3: Fachhochschule des Mittelstands, Germany

Fabiola Regis-Hernández[1], Georgina Martínez-Medina[1], Hugo César Borjas-Vázquez[1], José Manuel Olais-Govea[1,2]
1: Escuela de Ingeniería y Ciencias, Tecnologico de Monterrey. San Luis Potosí, 78211, SLP, Mexico; 2: Writing Lab, TecLab, Vicerrectoría de Investigación y Transferencia de Tecnología, Tecnológico de Monterrey. Monterrey 64849, NL, Mexico.

Teaching 3D Printing Technology Hands-on

Joachim Guenther, Lars Brehm, Holger Guenzel, Andreas Humpe
University of Applied Sciences Munich, Germany

Teaching Fluid Mechanics in a Virtual-Reality Based Environment

Konrad E. R. Boettcher, Alexander S. Behr
TU Dortmund, Germany

Study of Wave Motion and Teaching Methods in Engineering Problem Solving Course

Christopher Horne, John C Kelly
NC A&T State University, United States of America

Analysing and Improving mathematical formulation of WEBAVALIA: A self and peer assessment tool

Rosalina Babo[1,3], Ricardo Fitas[2], Jarkko Suhonen[3], Markku Tukiainen[3]
1: Polytechnic of Porto (P.Porto) / ISCAP, Department of Information Systems, Porto, Portugal; 2: Faculty of Engineering of University of Porto, Portugal; 3: University of Eastern Finland, School of Computing, Joensuu Campus, Finland

Sebastian Martin Rivas[1], Salvador Pineda[1], Juan Pérez-Ruiz[1], Natalia Alguacil[2], Antonio Ruiz-Gonzalez[1]
1: Dep. Electrical Engineering. Universidad de Málaga. Malaga (Spain); 2: Dep. Electrical Engineering. Universidad de Castilla-La Mancha. Ciudad Real (Spain)

Perdurable and long-term knowledge retention with project-based learning

Maria Rubi Forte-Celaya, Alejandro Sandoval-Correa, Luis Fernando Reséndez-Maqueda
Tecnológico de Monterrey, Mexico

Development of a Gamified Educational Framework to Teach Mechanical Engineering to High School Students

Serdar Bulut, Martin Wende, Tim Giese, Reiner Anderl
TU Darmstadt, Germany

Supporting Teachers for Innovative Learning in Smart Schools using Internet of Things

Marge Kusmin, Mart Laanpere
Tallinn University, Estonia

Thermographic Data Acquisition System for Livestock Applications: PBL approach

René Joaquin Díaz Martínez, Rafaela Villalpando Hernández, Ramiro Saldaña Acosta, Liliana Lizeth Luévano Rosales, Irene Reynoso Anguiano, Gustavo Arroyo Herrera, Salmen Karrum Sapiens, Juan Francisco Medina Leal
ITESM, Mexico

engineering students

Cassia Isac Gonçalves da Silva[1], Thiago Franco Leal[1], Aruquia Peixoto[2]
1: IFRJ, Brazil; 2: CEFET/RJ, Brazil

Succesful Strategies for the attraction of more women into Engineering in Southern Mexico

Israel Zamora-Hernandez, Miguel X. Rodriguez-Paz, Jorge A. Gonzalez-Mendivil, J. Asunción Zárate-García, Juan Arturo Nolazco-Flores
Tecnologico de Monterrey, Mexico

Work-in-Progress: Soft-skills Development for Higher Education Engineering and Economic Students using HERA Collaborative Serious Games

Manuel Caeiro Rodríguez[1], Carlos Vaz de Carvalho[2], Olivier Heidman[3], Hariklia Tsalapatas[3], Lene Tolstrup[4], Triinu Jesmin[5], Jaanus Terasmaa[5]
1: Universidade de Vigo, Spain; 2: Instituto Superior de Engenharia do Porto, Portugal; 3: University of Thessaly, Greece; 4: Aalborg University, Denmark; 5: Tallin University, Estonia

Work In Progress: Sleuth, a programming environment for testing gamification

Simon Katan, Edward Anstead
Goldsmiths - University of London, United Kingdom

Work-in-Progress: Matrix Analyser and Circuit Design Automator: a Software Tool

Ricardo Martin Fernandez[1], Felix Garcia Loro[2], Elio Sancristobal[2], Clara Perez[2], Manuel Castro[2]
1: UTN, Argentina; 2: UNED, Spain

MOOC Drones for Agriculture: The making-of

João Valente[1], Lammert Kooistra[2]
1: Information Technology Group, Wageningen University & Research, Netherlands, The; 2: Laboratory of Geo-information Science and Remote Sensing, Wageningen University & Research, Netherlands, The

3:30pm - 4:00pm	**Cyber Break**
4:00pm - 5:15pm	**K3: Closing Debate** Location: **843 364 939** Scientific Chair: **Russ Meier**, IEEE Education Society President Technical Chair: **Alberto Cardoso**, University of Coimbra *with* **Maria da Graça Carvalho** *Member of the European Parliament* **Sebastião Feyo de Azevedo** *Rector of Universidade Portucalense Infante D. Henrique* **João Gabriel Silva** *Rector of the University of Coimbra from 2011 to 2019*
5:15pm - 5:30pm	**Cyber Break**
5:30pm - 6:30pm	**Closing Ceremony** Location: **848 814 759** Technical Chair: **Alberto Cardoso**, University of Coimbra - Announcement of EDUCON2021 by **Thomas Klinger**. - EDUCON Meritorious Service Award by IEEE Education Society Vice President on Conferences - **Henrique Santos**. - IEEE EDUCON Papers Awards by **Teresa Restivo**, **Alberto Cardoso**, **Russ Meier**, **Manuel Castro**. - IEEE Education Society President intervention - **Russ Meier**. - IEEE Division VI Director & Education Society President Emeritus intervention - **Manuel Castro**. - EDUCON2020 Wrap-up by Conference General Chairs: **Alberto Cardoso**, **Gustavo Alves** & **Teresa Restivo**.