IEEE
EDUCON 2024

IEEE Global Engineering Education Conference

Kos, Greece || May 8-11, 2024 || Kos International Convention Centre

IEEE EDUCON 2024
CONFERENCE PROGRAM

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Welcome Message

On behalf of the organizing committee, Welcome to EDUCON 2024!

This year marks the 15th IEEE EDUCON conference which rotates annually between Europe, Africa, and the Middle East. This truly global forum, organized this year by the University of Piraeus, the Aristotle University of Thessaloniki and the University of West Attica, brings together a number of academic leaders, university professors, STEM teachers, government representatives and industry partners under one forum.

This year's program features 3 keynote lectures given by world-renowned experts, 7 special sessions, 2 round tables, 11 workshops, 2 tutorials, a cybersecurity training event and a record 63 full and short and work-in-progress paper sessions. The technical program includes 194 full papers, 132 short papers and 34 works in progress that underwent a double-anonymous review process. Considering a total number of 802 submissions, this resulted in a 54% acceptance rate.

The EDUCON 2024 conference gathers more than 400 participants from 57 countries on 5 continents. We are confident that EDUCON 2024 will prove to be an enriching educational and informative experience to all participants, as we continue to provide high-quality technical content with participation from engineering education leaders from all over the world.

We are very happy and honored this year to host the IEEE Education Society Executive Committee Meeting, the IEEE Education Society Board of Governors Meeting and the Young Professionals Mentoring session.

In addition to the main conference, EDUCON 2024 features a 3-day Exhibition by our platinum sponsor MathWorks and by the IEEE Education Society.

EDUCON 2024 has received sponsorship from Mathworks, Computer Logic, Aegean Airlines and Avance Car rental.

We would like to thank all the committee members, the reviewers, the session chairs, the special session organizers, the workshop and tutorial organizers and above all the authors who trusted their work with Educon.

The conference is held on the beautiful premises of the Kipriotis Village Resort on the island of Kos. Kos is renowned as the birthplace of Hippocrates, the father of western medicine. Kos reflects the outcome of the ideal combination between impressive cultural tradition and outstanding natural beauty. Spring and the Orthodox Easter, celebrated this year on May 5, season provide an ideal opportunity for a unique experience.

Welcome Message (cont.)

On behalf of the organizing committee

Christos Douligeris, Thrasyvoulos Tsiatsos and Edmundo Tovar, General co-chairs

Thomas Klinger, Christos Katsanos and Manuel Castro, Technical Program co-chairs

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Plenary Speakers

Thursday | May 9, 2024 | 11:15 – 12:15

Exploring the Complexities of Generative AI in Engineering Education

Diana Andone, Director of the Digital Education and Distance Education Department, Politehnica University of Timișoara, Romania

Room: Panacea Amphitheatre

Abstract: The transformation brought by Generative AI into engineering education has driven educators to rethink and adjust methods of teaching and evaluation, as well as to acquire new skills and adapt to an evolving digital ecosystem. In the context of engineering, where practical problem-solving and innovation are paramount, what competencies will be crucial for educators to impart, and for students to develop? How can Generative AI enhance the creativity and critical thinking of both students and educators or to be included into engineering curriculum? How open education and science practices are changed by GAI? Several experiments which showcase the integration of the use of GAI into project development and assessment on different subjects from coding, electrical engineering, science communication will be presented from both educators and students' perspectives. Additionally, the talk will critically examine the ethical considerations and security implications of embedding Generative AI tools within the engineering academic framework.

Friday | May 10, 2024 | 10:30 – 11:45

Influence of Metaverse on Cognitive and Affective Development

Chetwyn Chan, Vice President (R&D) of The Education University of Hong Kong

Room: Panacea Amphitheatre

Abstract: Metaverse has shared, persistent, and de-centralized characteristics, making it different from virtual or augmented reality. The social connection in the metaverse enables its users to conduct activities in a different but relatively authentic world. This presentation reviews the possible behaviours and their related brain processes involved when individuals engage in the metaverse. The review covers the cognitive, emotional, and social aspects. Implications on the benefits and issues of applying metaverse in education will be discussed.

Saturday | May 10, 2024 | 10:30 – 11:15

GSA: Facilitating Intra-Subject Study and Inter-Subject Development with Course Knowledge Graphs

Qing Li, Chair Professor and Head of the Department of Computing, the Hong Kong Polytechnic University

Room: Panacea Amphitheatre

Abstract: Knowledge graphs (KGs) have been actively studied for pedagogical purposes. To depict the rich but latent relations among different concepts in the course textbook, increasing efforts have been proposed to construct course KGs for university students. However, the application of course KGs for real study scenarios and career development remains unexplored and nontrivial. First, it is hard to enable personalized viewing and advising. Within the intricate university curricula, instructors aim to assist students in developing a personalized course selection pathway, which cannot be fulfilled by isolated course KGs…

Second, locating concepts that are important to individuals poses challenges to students. Real-world course KGs may contain hundreds of concepts connected by hierarchical relations, e.g., contain subtopic, making it challenging to capture the key points. To tackle these challenges, in this talk, we present GSA, a novel system based on course knowledge graphs, to facilitate both intra-course study and inter-course development for students significantly. More specifically, we establish an interactive web system for both instructors to construct and manipulate course KGs, and students to view and interact. To visualize the centrality of a course KG based on various metrics, concept-level advising is designed; we also propose a tailored algorithm to suggest the learning path based on what concepts students have learned. Finally, course-level advising is instantiated with a course network, which indicates the prerequisite relations among different levels of courses, corresponding to the annually increasing curricular design and forming different major streams. Examples will be given to illustrate the effectiveness of GSA.

Tutorials

Wednesday | May 8, 2024 | 14:30 – 15:45

First Steps Using the Digital Makerspace - a Tool With Multipurpose Use and Potential for Teaching and Others

Instructor(s): Andre Kless, Hochschule Bonn-Rhein-Sieg
Irene Rothe, Hochschule Bonn-Rhein-Sieg
Room: Akeso

Abstract: A multipurpose software tool for building web apps and software-based Open Education Resources, called "Digital Makerspace" (DMS), was developed in the last 8 years at the applied university and is now ready for use. The tool is useful for creating and designing almost all thinkable material and tools for online usage by web users, for example, providing digital learning material and digital interactive exercises. The tool is free for use for everyone and is supposed to be self-explaining. In this tutorial, the DMS is introduced to the participants to get an easy start by doing the first steps with the support of two presenters. **[Read More]**

Wednesday | May 8, 2024 | 14:30 – 15:45

Developing Trustworthy Educational Metaverses Using Open Source Generative AI (GenAI) and Mixed Reality (MR) Technologies

Instructor(s): Ala Al-Fuqaha, Hamad bin Khalifa University, Qatar
Junaid Qadir, Qatar University, Qatar
Muhammad Bilal, Birmingham City University, United Kingdom
Room: Melambus

Abstract: The educational landscape is on the cusp of a transformative leap with the integration of Generative AI (GenAI) and Mixed Reality (MR) technologies. This tutorial, "Developing Trustworthy Educational Metaverses using Open Source GenAI and Mixed Reality (MR) Technologies," aims to explore the fusion of Meta's open-source LLAMA-2 model with MR to offer immersive, personalized educational experiences. We will dissect the opportunities and challenges of employing Open Source GenAI and MR in educational metaverses, emphasizing creating reliable, ethically aligned virtual learning environments. Attendees will gain insights into existing techniques to enhance trustworthiness in these tools and tackle the remaining hurdles.

Workshops

Wednesday | May 8, 2024 | 14:30 – 15:45

Enhancing Learning/Teaching Experience Through Interactive Courseware Materials and Engaging Autograded Exercises Using MATLAB Live Editor and MATLAB Grader

Instructor(s): Andreas Apostolatos, The MathWorks, USA
Alessandro Tarchini, The MathWorks, USA
Room: Aegle A

Abstract: In the realm of STEM education, one of the significant challenges is the development of engaging courseware materials that include relevant exercises for both classroom instruction and homework assignments. Furthermore, a modern approach to STEM education necessitates real-time tracking of student progress to effectively gauge learning outcomes. The primary advantage of this real-time monitoring is the ability to swiftly and efficiently tailor the educational content based on the classroom's weaknesses. **[Read More]**

Wednesday | May 8, 2024 | 14:30 – 15:45

Empowering Paths: Women in Engineering Education Amidst Digital Transformation in Academic Societies and Innovative Ecosystems Through the X.0 Wave/Age Theory

Instructor(s): Hamid Doost Mohammadian, University of Applied Sciences (FHM), Germany
Room: Chiron

Abstract: The evolution of the science ecosystem in modern human life has intricately woven together elements such as teaching, learning, education, and research. This dynamic network encompasses students, professors, administrators, and researchers from both academia and industry. Despite shared overarching goals and numerous collaborative efforts, each country's unique learning systems react differently to global paradigm shifts like those triggered by ICTs, IoTs, the Internet revolution, and, more recently, the disruptive influence of the Covid-19 Pandemic.

In this Workshop, the focus extends beyond conventional discussions of digital transformation in academic societies and innovative ecosystems. This talk delves into the nuanced realm of Women in Engineering Education, acknowledging the crucial role of gender analysis in shaping the future of science and technology. Sharing insights and experiences from diverse educational systems, this presentation aims to guide developed and developing countries in fine-tuning existing strategies or formulating new ones. The discussion becomes particularly pertinent in the context of the future concerns, transitioning from the epidemic-pandemic to the remote world. **[Read More]**

Workshops (cont.)

Wednesday | May 8, 2024 | 14:30 – 15:45

Negotiating Games: Developing Transversal Skills to promote Sustainability Skills With a Wind Turbine Case Study

Instructor(s): Valentina Rossi, Center for Learning Sciences (LEARN), Teaching Support Center (CAPE), Ecole Polytechnique Fédérale de Lausanne (EPFL)
Room: Homer

Abstract: We are increasingly feeling the urgency of climate change and therefore the imperative to integrate sustainability into all areas of our lives. As educators, we need to ensure that engineering students are being trained to make sustainability an integral part of their projects [1]. This 2-phase workshop first engages participants in an activity (designed for engineering students) that develops key sustainability competencies identified by UNESCO [2] including systems thinking, perspective taking and negotiation skills. Participants will reflect as teachers about how to apply the framework used in this experiential workshop to teach transversal skills in their own context. **[Read More]**

Wednesday | May 8, 2024 | 14:30 – 15:45

Physical Computing Tools & Applications for STEM

Instructor(s): Ioannis Dimos, University of Thessaly (UTH), Greece
Athanasios Kakarountas, University of Thessaly (UTH), Greece
Konstantinos Kalovrektis, University of Thessaly (UTH), Greece
Apostolos Xenakis, University of Thessaly (UTH), Greece
Room: Aegle B

Abstract: Part A: A Computational Thinking (CT) - based Repository Platform with STEM Activities to boost Nanotechnology Literacy. Computational Thinking (CT) is a fundamental 21st century skill, along with reading, writing and arithmetic literacy. This idea urge many Countries around the World, to reform their educational system and curricula, to integrate STEM based interdisciplinary activities, to support CT competencies. These activities need to be in line with the necessary skills which Industry 4.0 and beyond require. A State of the Art scientific and engineering field, which will dominate in the years to come, is based on Microelectromechanical systems (MEMS). The area where MEMS are developed (dimensions in the Nano scale) is called Nanotechnology. Nanotechnology, is one of the fastest growing field, related to Industry 4.0 and may introduce skills deficits, as well as opportunities for new teaching practices in several subjects and educational frameworks. Based on the above, we prepared this workshop, which aims to investigate the teachers' attitude towards integration of STEM based activities, focused on Nanotechnology related skills and applications. **[Read More]**

Workshops (cont.)

Wednesday | May 8, 2024 | 14:30 - 15:45

Introduction to the Forthcoming International Handbook of Engineering Ethics Education

Instructor(s): Shannon Chance, School of Architecture, Building & Environment Research, Technological University Dublin Centre for Engineering Education, University College London

Diana Martin, Centre for Engineering Education, University College London

Room: Syndicate 2.1

Abstract: This workshop provides a preview of the "International Handbook of Engineering Ethics Education," slated for release by Routledge in late 2024. As the field of Engineering Ethics Education (EEE) continues to mature and attract a diverse cohort of researchers, the handbook constitutes an invaluable resource for those steeped in the domain as well as newcomers. **[Read More]**

Wednesday | May 8, 2024 |16:30 – 17:45

Inquiry Based Learning for Pre-University Students, Using Hands-On Activities With Emphasis on the Engineering Design Process

Instructor(s): Stamatis Dragoumanos, IEEE Educational Activities Board Pre-University Education Coordination Committee, Chair

Room: Melambus

Abstract: This workshop provides a high-level exposure to these teaching and learning methods through the lens of STEM outreach and our IEEE TryEngineering Lessons. Join us to see practical examples of strategies you can apply to your STEM outreach that would better engage students and help them learn what you are teaching on a deeper level.Based on the Inquiry-based learning method, students go through the Engineering Design Process which requires students to work in teams, understand the problem and its constraints, research, brainstorm, and design a solution. The lesson plan's engineering design challenges are rooted in the constructivist theory. Students engage in deep sense-making of concepts when they explore materials and grapple with developing prototypes and testing these solutions. Additionally, the materials needed in this lesson plan are everyday cheap materials. That makes the lesson plan accessible to underrepresented groups globally. The participants will be invited to play the role of the student in the implementation of this lesson plan in order to understand the effectiveness of the method in the development of essential soft skills, like resilience to failure, communication, working under pressure etc along with the development of technical skills.

Wednesday | May 8, 2024 | 16:30 – 17:45

AI-Enabled Metaverse – the Future of Education

Instructor(s): Sajjad Hussain, James Watt School of Engineering, University of Glasgow, UK
Room: Aegle A

Abstract: The rise of generative Artificial Intelligence (AI) in the form ChatGPT has the potential to completely transform the way education is delivered and consumed. On the other hand, Metaverse, using technologies that provide immersive experiences, is going to revolutionize the way we interact on the Internet. The unification of AI and Metaverse will disrupt many sectors including Education. AI-enabled Metaverse can potentially enhance student experience and learning exceeding the existing educational system capabilities. An immersive virtual space with enhanced collaborative features supported through AI-powered Avatars can produce personalized and tailored learning experiences for learners resulting in improved engagement and learning. **[Read More]**

Wednesday | May 8, 2024 | 16:30 – 17:45

How to Conduct an Educational Experiment

Instructor(s): John Mitchell, University College London, UK
Room: Akeso

Abstract: If you are new to the world of engineering education research (EER) you will probably have seen a variety of different methods in the literature of how to conduct experiments within the class, but may be struggling to identify which method would be most appropriate to study the innovation or phenomenon that you are specifically interested in. This workshop is for those interested in expanding their understanding of engineering education research techniques beyond evaluations of their practice to undertake novel research enquiries of the sort that may be published in journals such as the IEEE Transactions on Education or IEEE Transactions on Learning Technology. We will discuss how to set research questions to ensure a robust study and what approaches may be appropriate to create a rigorous study that can be put forward to publication. It is expected that participants will share research questions that they are looking to address and work in small groups to develop their ideas into research studies.

Round Tables

Thursday | May 9, 2024 | 12:15 - 13:15

Is Generative AI the Panacea in Engineering Education?

Moderator: Carlos Delgado Kloos, Universidad Carlos III de Madrid

Room: Panacea Amphitheatre

Abstract: Generative AI is demonstrating its impact in so many different fields and circumstances. It can be used to create well-written text, creative images and videos, dub videos with lip-sync, design new algorithms and drugs, etc. In education it can help design classes and quizzes, act as a mentor for students, participate in student forums, and much more. Is Generative AI the panacea for all our work in education?

In this panel session, we will discuss with three eminent speakers how AI can help in engineering education. In which way will it help faculty in their teaching role? How can AI help students when learning a subject? Can AI reduce the administrative burden in educational institutions? What can we expect when we combine metaverses with Artificial Intelligence? How can AI help us in cybersecurity? These and other related topics will be discussed in this panel session.

Panelists:

Chetwyn Chan
Vice President (Research and Development) of The Education University of Hong Kong

Qing Li
Chair Professor and Head of the Department of Computing, the Hong Kong Polytechnic University

Nineta Polemi
University of Piraeus, Cybersecurity Research Lab

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Round Tables (cont.)

Saturday | May 11, 2024 | 11:00 - 12:00

Innovative Strategies to Foster Inclusion and Equity in Engineering Education

Moderators: Carina S. González-González, University Institute for Women's Studies (IUEM), University of La Laguna, Spain
Aruquia Peixoto, CEFET/RJ, Brazil
Room: Panacea Amphitheatre

Abstract: The round table titled "Innovative Strategies to Foster Inclusion and Equity in Engineering Education" aims to serve as a dynamic forum for discussing and disseminating effective policies, programs, and practices that have shown promise in attracting, retaining, and supporting women and other underrepresented groups in the field of engineering. Recognizing the critical importance of diversity and inclusion for the advancement of innovation, creativity, and comprehensive problem-solving in engineering, this round table seeks to explore multifaceted approaches to create a more inclusive and equitable educational landscape.

Participants share insights, experiences, and actionable strategies for enhancing diversity and inclusiveness within engineering faculties and curricula. Key topics will encompass the implementation of inclusive admission policies, the impact of mentorship programs, the role of support networks and professional associations, the significance of targeted scholarships and financial aid, and the necessity of curricular and pedagogical reforms to reflect a broader range of perspectives and contributions. This round table aims to conclude with a strong call to action, encouraging stakeholders across the educational spectrum to commit to and engage in efforts to promote a more inclusive and equitable environment in engineering education.
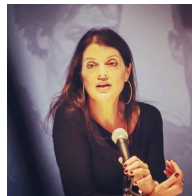
Panelists:

Jezabel Molina Gil
University of La Laguna, Department of Computer Engineering

Diana Andone
Politehnica University of Timisoara, Romania

Stella Douka
Aristotle University of Thessaloniki

Rebecca Strachan
Department of Computer and Information Sciences, Northumbria University, UK

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Wednesday, May 8, 2024

13:30	Registration	Panacea Amphitheatre Lobby

14:30	WS: Enhancing Learning/Teaching Experience Through Interactive Courseware Materials & Engineering Auto-graded Exercises Using MATLAB Live Editor and MATLAB Grader	T: First Steps Using the Digital Markerspace - a Tool With Multipurpose Use & Potential for Teaching & Others	T: Developing Trustworthy Educational Metaverses Using Open Source Generative AI (GenAI) & Mixed Reality (MR) Technologies	WS: Empowering Paths: Women in Engineering Education Amidst Digital Transformation in Academic Societies & Innovative Ecosystems Through the X.0 Wave/Age Theory	WS: Negotiating Games: Developing Transversal Skills to promote Sustainability Skills With a Wind Turbine Case Study	WS: Physical Computing Tools and Applications for STEM	WS: Introduction to the Forthcoming International Handbook of Engineering Ethics Education
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16:00	Exhibits	Coffee Break	Ground Level: Lobby Area

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Thursday, May 9, 2024

| 7:30 | Registration \| Panacea Amphitheatre Lobby |

8:30	YP Mentoring Session	Digital Transformation 1	Engaging Undergraduate Students in Research 1	Game-based Learning and Gamification 1	K-12 STEM Education Initiatives 1	Student-centered Learning Environments 1	Student-centered Learning Environments 10	Generative AI in learning & Educational Settings 4	SS: Generative AI Applications in Engineering Education 1	Multidisciplinary & Transdisciplinary Education 1
	Room: Syndicate 23	Room: Aegle A	Room: Akeso	Room: Melambus	Room: Chiron	Room: Homer	Room: Aegle B	Room: Panacea Amphitheatre	Room: Syndicate 2.1	Room: Syndicate 2.7

| 10:00 | Exhibits \| Coffee Break \| Ground Level: Lobby Area |

| 10:30 | Opening Session \| 15th Anniversary Celebration \| Panacea Amphitheatre |

| 11:15 | Plenary: Diana Andone \| Exploring the Complexities of Generative AI in Engineering Education \| Panacea Amphitheatre |

| 12:15 | Round Table: Is Generative AI the Panacea in Engineering Education \| Panacea Amphitheatre |

| 13:15 | Lunch |

14:15	Digital Transformation 2	Engaging Undergraduate Students in Research 2	Game-based Learning and Gamification 2	K-12 STEM Education Initiatives 2	Student-centered Learning Environments 2	Student-centered Learning Environments 11	Multidisciplinary & Transdisciplinary Education 2	SS: Cybersecurity Professional Education & Training: Advancements & Future Directions 1	VIRTUAL 1
	Room: Aegle A	Room: Akeso	Room: Melambus	Room: Chiron	Room: Homer	Room: Aegle B	Room: Panacea Amphitheatre	Room: Syndicate 2.1	Room: Syndicate 2.7

| 15:45 | Exhibits \| Coffee Break \| Ground Level: Lobby Area |

16:15 – 17:45	WS: Publications of the IEEE Education Society	Engaging Undergraduate Students in Research 3	Game-based Learning and Gamification 3	Multidisciplinary and Transdisciplinary Education 3	Student-centered Learning Environments 3	Student-centered Learning Environments 12	SS: Generative AI Applications in Engineering Education 1	SS: Cybersecurity Professional Education & Training: Advancements & Future Directions 2	VIRTUAL 2
	Room: Aegle A	Room: Akeso	Room: Melambus	Room: Chiron	Room: Homer	Room: Aegle B	Room: Panacea Amphitheatre	Room: Syndicate 2.1	Room: Syndicate 2.7

| 18:00 | Tour of Kos and Welcome Reception |

PROGRAM AT A GLANCE

IEEE EDUCON 2024
IEEE Global Engineering Education Conference
Kos, Greece || May 8-11, 2024 || Kos International Convention Centre

Friday, May 10, 2024

7:30 — Registration | Panacea Amphitheatre Lobby

8:30

Cybersecurity Training Module 1	Digital Transformation 3	Engaging Undergraduate Students in Research 4	SS: Online & Remote Laboratories 1	K-12 STEM Education Initiatives 3	Student-centered Learning Environments 4	Student-centered Learning Environments 13	Generative AI in Learning & Educational Settings 1	SS: Generative AI Applications in Engineering Education 2	Student-centered Learning Environments 22
Room: Syndicate 2.3	Room: Aegle A	Room: Akeso	Room: Melambus	Room: Chiron	Room: Homer	Room: Aegle B	Room: Panacea Amphitheatre	Room: Syndicate 2.1	Room: Syndicate 2.7

10:00 — Exhibits | Coffee Break | Ground Level: Lobby Area

10:30 — Plenary: Chetwyn Chan | Influence of Metaverse on Cognitive and Affective Development | Panacea Amphitheatre

11:25 — MathWorks Presentation | Panacea Amphitheatre MathWorks®

11:45 — Lunch

12:45

Cybersecurity Training Module 3	Digital Transformation 4	WS: An Introduction to Systematic Literature Reviews for Engineering Education Researchers	Online & Remote Laboratories 2	K-12 STEM Education Initiatives 4	Student-centered Learning Environments 5	Student-centered Learning Environments 14	Generative AI in Learning & Educational Settings 2	SS: Reflections on Immersive Learning	STEM Education Initiatives 8
Room: Syndicate 2.3	Room: Aegle A	Room: Akeso	Room: Melambus	Room: Chiron	Room: Homer	Room: Aegle B	Room: Panacea Amphitheatre	Room: Syndicate 2.1	Room: Syndicate 2.7

14:15 — Exhibits / Coffee Break | Level 0 Lobby Area

14:45

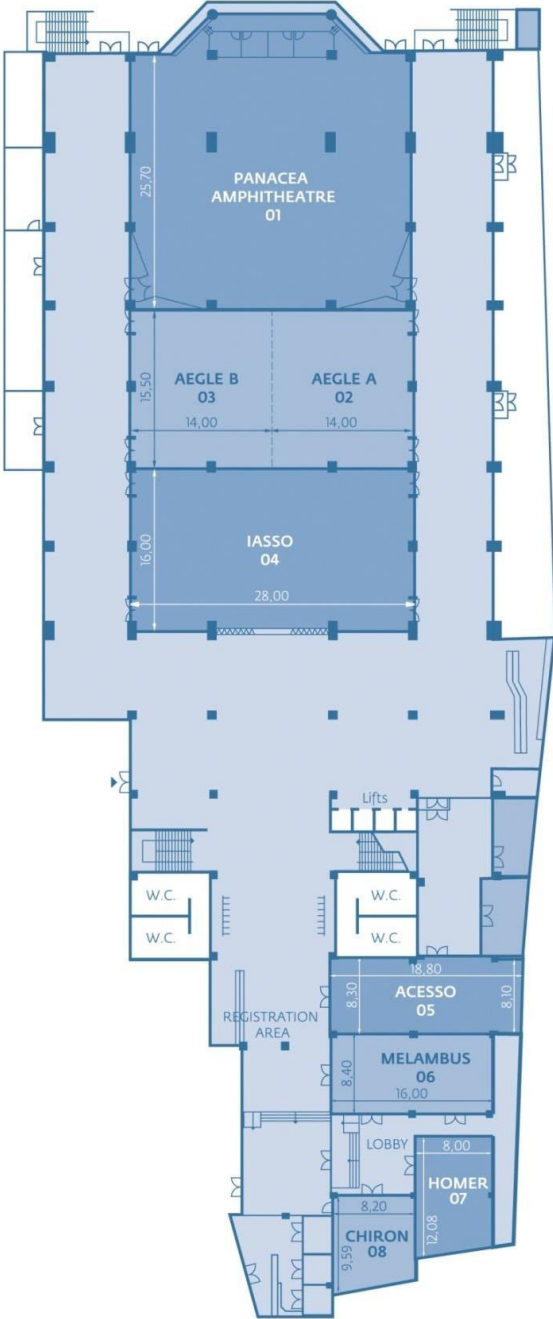| Cybersecurity Training Module 4	Digital Transformation 5	Ethical Challenges 1	Non-traditional Lab concepts 2	K-12 STEM Education Initiatives 5	Student-centered Learning	Student-centered Learning	Generative AI in learning and educational settings 3	Special Session: Pre-University STEM Outreach: Igniting Interest in STEM in School-Aged Children	WS: Applying for International Research Grants and Fellowships
Room: Syndicate 2.3	Room: Aegle A	Room: Akeso	Room: Melambus	Room: Chiron	Room: Homer	Room: Aegle B	Room: Panacea Amphitheatre	Room: Syndicate 2.1	Room: Syndicate 2.7

16:15 — Break

16:25 – 17:55

Cybersecurity Training Module 2	Digital Transformation 6	Ethical Challenges 2	Student-centered Learning	K-12 STEM Education Initiatives 6	Student-centered Learning	Student-centered Learning	Student-centered Learning Environments 21	Special Session: Technology Major Student Engagement: Pedagogical Paradigms 1	Student-centered Learning Environments 23
Room: Syndicate 2.3	Room: Aegle A	Room: Akeso	Room: Melambus	Room: Chiron	Room: Homer	Room: Aegle B	Room: Panacea Amphitheatre	Room: Syndicate 2.1	Room: Syndicate 2.7

20:00 — Gala Dinner | Kipriotis Panorama Pool @ Kipriotis Hotels

PROGRAM AT A GLANCE

Saturday, May 11, 2024

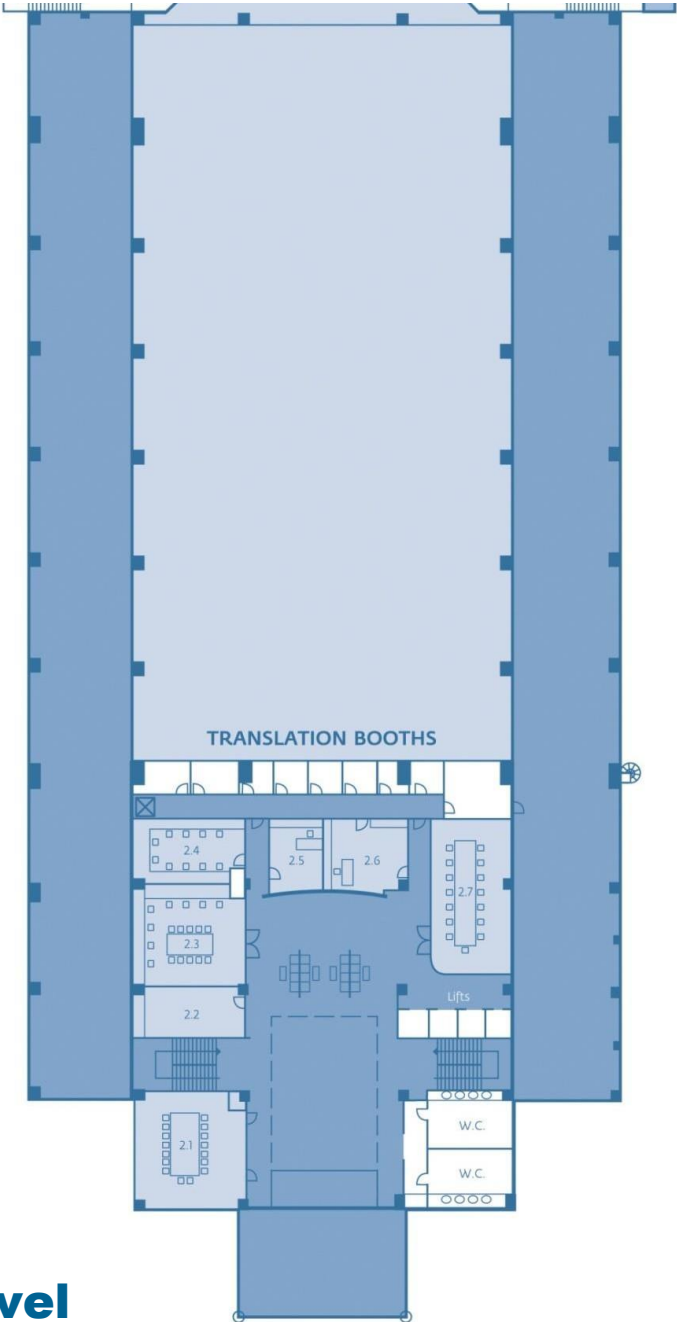| 7:00	Registration Panacea Amphitheatre Lobby							
8:30	Digital Transformation 7	Future-oriented and Personalized Educational Concepts 1	Student-centered Learning Environments 20	K-12 STEM Education Initiatives 7	Student-centered Learning Environments 8	Student-centered Learning Environments 17	Women for Leadership in Engineering Equity, Diversity, and Inclusion 1	Special Session: Technology Major Student Engagement: Pedagogical Paradigms 2
	Room: Aegle A	Room: Akeso	Room: Melambus	Room: Chiron	Room: Homer	Room: Aegle B	Room: Panacea Amphitheatre	Room: Syndicate 2.1
10:00	Exhibits | Coffee Break | Ground Level: Lobby Area							
10:30	Plenary: Qing Li | GSA: Facilitating Intra-Subject Study and Inter-Subject Development with Course Knowledge Graphs | Panacea Amphitheatre							
11:25	Round Table: Innovative Strategies to Foster Inclusion and Equity in Engineering Education | Panacea Amphitheatre							
12:15	Lunch							
12:45	Education in the Industry 5.0 era	Future-oriented and Personalized Educational Concepts 2	Topics in Engineering Education	Non-traditional Lab concepts 1	Student-centered Learning Environments 9, Non-traditional Lab concepts 1	Student-centered Learning Environments 18	Women for Leadership in Engineering Equity, Diversity, and Inclusion 2	Special Session: Embedding Employability Into Engineering Curriculum
	Room: Aegle A	Room: Akeso	Room: Melambus	Room: Chiron	Room: Homer	Room: Aegle B	Room: Panacea Amphitheatre	Room: Syndicate 2.1
14:15	Awards & Closing | Panacea Amphitheatre							

PANACEA
AMPHITHEATRE
01

25,70

AEGLE B
03

AEGLE A
02

14,00

14,00

15,50

IASSO
04

16,00

28,00

Lifts

W.C.

W.C.

W.C.

W.C.

18,80

8,30

ACESSO
05

8,10

MELAMBUS
06

8,40

16,00

REGISTRATION
AREA

LOBBY

8,00

HOMER
07

8,20

12,08

CHIRON
08

9,59

Ground Level

TRANSLATION BOOTHS

2.4
2.5   2.6
2.7
2.3
2.2
Lifts
2.1
W.C.
W.C.

Ground Level

13:30 – 14:30
Registration
Room: Panacea Amphitheatre Lobby

14:30 - 15:45
T01: First Steps Using the Digital Makerspace - a Tool With Multipurpose Use and Potential for Teaching and Others
Irene Rothe (Bonn-Rhine-Sieg University, Germany); André Kless (Hochschule Bonn-Rhein-Sieg, Germany)
Room: Akeso
Session Chair: Irene Rothe (Bonn-Rhine-Sieg University, Germany)

14:30 - 15:45
T02: Developing Trustworthy Educational Metaverses Using Open Source Generative AI (GenAI) and Mixed Reality (MR) Technologies
Junaid Qadir (Qatar University, Qatar); Ala Al-Fuqaha (Hamad Bin Khalifa University, Qatar); Muhammad Bilal (Birmingham City University, United Kingdom (Great Britain))
Room: Melambus
Session Chair: Junaid Qadir (Qatar University, Qatar)

14:30 - 15:45
WS01: Enhancing Learning/Teaching Experience Through Interactive Courseware Materials and Engaging Autograded Exercises Using MATLAB Live Editor and MATLAB Grader
Andreas Apostolatos (Technical University of Munich & The Mathworks Inc., Germany)
Room: Aegle A
Session Chair: Andreas Apostolatos (Technical University of Munich & The Mathworks Inc., Germany)

14:30 - 15:45
WS02: Empowering Paths: Women in Engineering Education Amidst Digital Transformation in Academic Societies and Innovative Ecosystems Through the X.0 Wave/Age Theory
Hamid Doost Mohammadian (University of Applied Sciences (FHM), Germany)
Room: Chiron
Session Chair: Hamid Doost Mohammadian (University of Applied Sciences (FHM), Germany

Technical Program: Wednesday, May 8, 2024

14:30 - 15:45
WS03: Negotiating Games: Developing Students' Sustainability Skills With a Wind Turbine Case Study
Siara R Isaac and Valentina Rossi (Ecole Polytechnique Fédérale de Lausanne, Switzerland)
Room: Homer
Session Chair: Valentina Rossi (Ecole Polytechnique Fédérale de Lausanne, Switzerland)

14:30 - 15:45
WS04: Physical Computing Tools and Applications for STEM
Ioannis Dimos and Apostolos Xenakis (University of Thessaly, Greece); Kostantinos Kalovrektis (Greece); Athanasios Kakarountas (University of Thessaly, Greece); Sarantos Psycharis (ASPETE, Greece)
Room: Aegle B
Session Chair: Ioannis Dimo (University of Thessaly, Greece)

14:30 - 16:00
WS05: Introduction to the Forthcoming International Handbook of Engineering Ethics Education
Shannon Chance (Technological University Dublin, Ireland & University College London, United Kingdom (Great Britain)); Diana Martin (University College London, United Kingdom (Great Britain))
Room: Syndicate 2.1
Session Chair: Shannon Chance (Technological University Dublin, Ireland & University College London, United Kingdom (Great Britain))

16:00 – 16:30
Coffee Break
Room: Ground Level: lobby Area

16:30 - 17:45
WS06: AI-Enabled Metaverse - the Future of Education
Sajjad Hussain (University of Glasgow, United Kingdom (Great Britain)); Marcin Kasica (EON Reality Inc., Poland); Hasan Abbas, Qammer H Abbasi and Muhammad Ali Imran (University of Glasgow, United Kingdom (Great Britain))
Room: Aegle A
Session Chair: Sajjad Hussain (University of Glasgow, United Kingdom (Great Britain))

16:30 - 17:45
WS07: How to Conduct an Educational Experiment
John Mitchell (University College London, UK)
Room: Akeso
Session Chair: John Mitchell (University College London, UK)

16:30 - 17:45

WS08: Inquiry Based Learning for Pre-University Students, Using Hands-On Activities With Emphasis on the Engineering Design Process

Stamatis Dragoumanos (Computer Technology Institute and Press Diophantus, Greece); Dawna Schultz and Lynn Bowlby (IEEE, USA); Lorena Garcia (Universidad Central, Colombia)

Room: Melambus

Session Chair: Stamatis Dragoumanos (Computer Technology Institute and Press Diophantus, Greece)

16:30 - 17:45

WS09: Culturally Relevant Pedagogy in Engineering: Examining How Who We are Informs How We Teach

Homero Murzi and Natali Huggins (Virginia Tech, USA)

Room: Chiron

Session Chair: Homero Murzi and Natali Huggins (Virginia Tech, USA)

16:30 - 17:45

WS10: Visible Light Communications: The Pathway for LiFi

Kostantinos Kalovrektis (Greece); Panagiotis D. Diamantoulakis and George K. Karagiannidis (Aristotle University of Thessaloniki, Greece); Apostolos Xenakis (University of Thessaly, Greece)

Room: Homer

Session Chair: Kostantinos Kalovrektis (Greece)

16:30 - 17:45

WS11: Generative AI for Personalized Teaching in Higher Education

Kostas Karpouzis (Panteion University of Social and Political Sciences, Greece)

Room: Aegle B

Session Chair: Kostas Karpouzis (Panteion University of Social and Political Sciences, Greece)

7:30 – 8:30
Registration
Room: Panacea Amphitheatre Lobby

8:30 - 10:00
A1: Generative AI in learning and educational settings 4
Room: Panacea Amphitheatre
Session Chair: Thomas Klinger (Carinthia University of Applied Sciences, Austria)

8:30
A Strategy for AI-Supplemented Teaching and Learning
Jose Manuel Martins Ferreira (University of South-Eastern Norway)

8:48
Analyzing the Perception of the Tec21 Educational Model: A Localized Study Using Artificial Intelligence Techniques
Rafael Benítez Medina, Saúl Juárez Ordóñez and Samuel Antonio Rosas-Melendez (Tecnologico de Monterrey, Mexico)

9:06
Explainable AI in Learning Analytics: Improving Predictive Models and Advancing Transparency Trust
Qinyi Liu and Mohammad Khalil (University of Bergen, Norway)
9:24 Knowledge Graphs as Context Sources for LLM-Based Explanations of Learning Recommendations
Hasan Abu Rasheed and Christian Weber (University of Siegen, Germany); Madjid Fathi (Universität Siegen, Germany)

9:42
Low-Voltage DC Training Lab for Electric Drives - Optimizing the Balancing Act Between High Student Throughput and Individual Learning Speed
Michael Bragard and Tim Becker (University of Applied Sciences Aachen, Germany)

8:30 - 10:00
DT1: Digital Transformation 1
Room: Aegle A
Session Chair: Martín Llamas-Nistal (Atlanttic - University of Vigo, Spain)

8:30

Assessing the Utilisation of ICT-Based Educational Tools in the Post-COVID-19 Landscape: A Case Study of a South African University [virtual]

Akhule Kilili (Walter Sisulu, South Africa); Godwin Pedzisai Dzvapatsva (University of Suffolk, United Kingdom (Great Britain)); Courage Matobobo (Walter Sisulu University, South Africa); Edmore Chinhamo (University of Greenwich, United Kingdom (Great Britain))

8:48

Revolutionizing Chemistry in the Classroom: A University Educational Experience With the Power of Matlab

Jose M. Nieto-Jalil (ITESM, Mexico & Tecnologico de Monterrey, Mexico); Jorge Lozano-Aponte and Julián Alejandro Yunes Rojas (Tecnologico de Monterrey, Mexico)

9:06

Plagiarism Detection Tool Based on Programming Activity Logs

Heidi Meier, Marina Lepp and Rene Kütt (University of Tartu, Estonia)

9:24

Data-Driven Exploration of Skill Mismatch: Leveraging Textual Analysis for Comprehensive Insights

Ibrahim Rahhal (University Mohammed V & Université Internationale de Rabat, Morocco); Mounir Ghogho (UIR, Morocco); Kenza Benchaaboune (Université Sidi Mohamed Ben Abdellah de Fès, Morocco)

9:42

Analysis of the Lack of Technological Knowledge of High School Students and Its Effects on Engineering Schools, Postgraduate Studies, and as Future Industry 4.0 Professionals

Joan Verdaguer-Codina (Catalan Engineering Association (COEIC), Spain)

8:30 - 10:00
ENV1: Student-centered Learning Environments 1
Room: Homer
Session Chair: Ingrid Krumphals (University College of Teacher Education Styria, Austria)

8:30

Teaching Methods and Students' Motivation in STEM Large Classes: A Survey at BTH

Bruna Gregory Palm (Blekinge Tekniska Högskola, Sweden); Vinicius Ludwig Barbosa (Blekinge Institute of Technology, Sweden)

8:48

Virtual Reality to Enhance User Satisfaction in an Engineering Innovation Project

María Yolanda Burgos-Lopez (Tecnologico de Monterrey, Mexico); Mónica del Carmen Bumas-Azcanio (Tecnológico de Monterrey, Mexico); Ana Mónica Turcios-Esquivel (Tecnologico de Monterrey, Mexico)

9:06

Exploring Expectations and Prior Experience in Student-Centered Software Engineering Education

Neil Anderson and Aidan McGowan (Queen's University Belfast, United Kingdom (Great Britain)); Leo Galway (Queens University Belfast, United Kingdom (Great Britain)); Philip Hanna (Queen's University Belfast, USA); Matthew Collins (Queens University Belfast, United Kingdom (Great Britain))

9:24

Comparison of Challenge-Based and Problem-Based Learning in Engineering Students' Academic Performance

H. Lizette Menchaca-Torre (Tecnologico de Monterrey, Mexico); Elvira Niño-Juárez (Tecnológico de Monterrey, Mexico); Ana Y Vanoye-García (Tecnologico de Monterrey, Mexico); Mónica Delgado-Fabián (Tecnológico de Monterrey, Mexico)

9:42

Comparing Student Results on a Programming Task During a Contest and a Practice Situation With the Help of the ProgCont System

Piroska Biró (University of Debrecen & Sapientia Hungarian University of Transylvania, Romania); Tamás Kádek (University of Debrecen, Hungary)

8:30 - 10:00
ENV10: Student-centered Learning Environments 10
Room: Aegle B
Session Chair: Epaminondas Epaminonda (University of Nicosia, Cyprus)

8:30

Requirement System for the Interface Design of Applications for Children With Neurodevelopmental Disorders

Sonia Morejon Labrada and Elizabeth Martinez Fonseca (Universidad de Oriente, Cuba); Johann M. Marquez-Barja (University of Antwerpen & imec, Belgium)

8:48

A Framework for Integrating AI Into Engineering Education, Empowering Human-Centered Approach for Industry 5.0

Trinidad S Balart and Kristi J. Shryock (Texas A&M University, USA)

9:06

Constraint Learning Approach to Develop a Trustworthy Tool for Predicting Student Academic Performance [virtual]

Mohammad Naiseh (Bournemouth University, United Kingdom (Great Britain)); Avleen Malhi (Aalto University, Finland); Tomiwa Femi-Philips (Bournemouth University, United Kingdom (Great Britain))

9:24

Bridging the Gap: Enhancing STEM Teacher Training Through a Mixed-Method Study of Teacher Confidence, Self-Concept, and Self-Efficacy in Technology Education

Christina Ioanna Pappa, Anna Trikoili and Daniel Pittich (Technical University of Munich, Germany)

9:42

Integrating Personalized Educational Concepts for Enhancing Communication Skills Through the Strengthening of Related Microskills: A Case Study at University of Rome "Sapienza"

Viviana Callea (Sapienza University of Rome, Italy); Mihai Ursache (FLY FISH SRL, Italy); Isabella Chiarotto and Apollonia Matrisciano (Sapienza University of Rome, Italy); Roberta Tempone (FLY FISH SRL, Italy)

8:30 - 10:00
ES1: Engaging Undergraduate Students in Research 1
Room: Akeso
Session Chair: Apostolos Xenakis (University of Thessaly, Greece)

8:30

Fostering a Community of Inquiry for Engaging Undergraduate Students in Research: A Systematic Literature Review [virtual]

Edmore Chinhamo (University of Greenwich, United Kingdom (Great Britain)); Courage Matobobo (Walter Sisulu University, South Africa); Godwin Pedzisai Dzvapatsva (University of Suffolk, United Kingdom (Great Britain))

8:48

Fostering Research Engagement in Engineering Students via an Industrial-Level Control Device

Rodrigo Gutiérrez-Garza (Tecnológico de Monterrey, Mexico); Alejandro Arceo (Tecnologico de Monterrey, Mexico); Juan C. Tudon-Martinez and Jorge de-J Lozoya-Santos (Tecnológico de Monterrey, Mexico); Ruben Morales-Menendez (Tecnologico de Monterrey, Mexico)

9:06

Exploring Computer Engineering Students' Perceptions When Introduced to Low-Code Platforms: A Study Using Inquiry Methods and Eye-Tracking Data

Semira Maria Evangelou, Angelos Fotopoulos, Dimosthenis Minas and Michalis Xenos (University of Patras, Greece)

9:24

Innovative Teaching Tools: A Low-Cost Stereo Vision Approach for Kinematic Validation of 3D Compliant Mechanisms for Future Higher Education Courses

Luis David Fuentes-Juvera (Tecnológico de Monterrey, Mexico); Luis Enrique Cano Arias (ITESM, Mexico); Carlos Vazquez-Hurtado (Tecnologico de Monterrey, Mexico); Gustavo Gabriel Espejo Aliaga (Instute of Technology and Superior Studies of Monterrey, Mexico)

9:42

Conscious Technologies Projects as a Hub for Real Life Challenges in Engineering Education

Milton O Candela-Leal (Tecnológico de Monterrey, Mexico & Boston Children's Hospital, USA); Aime J Aguilar-Herrera (University of Houston, USA); Mauricio A Ramirez-Moreno and Jorge de-J Lozoya-Santos (Tecnológico de Monterrey, Mexico); Luis Carlos Félix-Herrán (Tecnologico de Monterrey, Mexico); Juan C. Tudon-Martinez (Tecnológico de Monterrey, Mexico)

8:30 - 10:00
GBL1: Game-based Learning and Gamification 1
Room: Melambus
Session Chair: Christian Kreiter (Carinthia University of Applied Sciences, Austria)

8:30

Development and Empirical Assessment of an Intervention on the Internet's Structure and Functioning for Third and Fourth Graders

Mareike Nutz (Germany); Katrin Kunz and Katerina Tsarava (University of Tübingen, Germany)

8:48

Enhancing Problem-Solving Skills: The Synergy of Competitive Programming and Gamification Strategy

Luis H Gonzalez Guerra, Gilberto Huesca Juárez, Claudia Pérez-Lezama, Elda G Quiroga, Gabriela A Campos-García and Mónica Larre Bolaños Cacho (Tecnologico de Monterrey, Mexico)

9:06

Evaluation of a Gamified Elearning Course for Agile Methods

Isabel John (THWS - Technical University of Applied Science Würzburg Schweinfurt, Germany); Tobias Fertig (University of Applied Sciences Würzburg-Schweinfurt, Germany)

9:24

Gamification and Experiential Learning in Chemistry: A Strategy for Understanding Oxidation-Reduction Reactions

Rosmarbel Morales-Nava (Tecnológico de Monterrey, Mexico); Jose M. Nieto-Jalil (ITESM, Mexico & Tecnologico de Monterrey, Mexico); Leonardo A. Díaz-Morales (Tec de Monterrey, Mexico)

9:42

An AR Application for Mobile Devices to Support the Educational Process in Greek Secondary Education

Eleni Seralidou, Maria Karousou and Christos Douligeris (University of Piraeus, Greece)

8:30 - 10:00
MULT1: Multidisciplinary and Transdisciplinary Education 1
Room: Syndicate 2.7
Session Chair:

8:30

Cognitive and Emotional States in a Technology-Mediated Drawing Process: An EEG Experiment on Students

Constanza Casamadrid, Mauro Herrera Machuca and Jorge Mario Montesinos (Tecnologico de Monterrey, Mexico); Eric Perez-Segura (Tecnologico Monterrey, Mexico); Nancy Zamora-Flores, Juan Leon-Sarmiento and Valentina Rueda-Castro (Tecnologico de Monterrey, Mexico)

8:48

Evidence of Effectiveness for AJA Strategy to Argumentative Skills Development in Engineering Students

Abel Flores (Instituto Tecnológico y de Estudios Superiores de Monterrey, Mexico); Gibrán Sayeg-Sánchez, Adriana Amozurrutia-Elizalde, Saul Montes de Oca and Claudia Hernandez-Mena (Tecnologico de Monterrey, Mexico); Nicolás Amado-Moranchel (Tecnológico de Monterrey, Mexico); Jorge Ivan Hidalgo and Israel Zamora-Hernandez (Tecnologico de Monterrey, Mexico)

9:06

Enhancing Empathy and Innovation in Engineering Education Through Design Thinking and Design of Experiments

Ana Mónica Turcios-Esquivel and Eréndira Avilés (Tecnologico de Monterrey, Mexico); Felipe Hernández-Rodríguez (Instituto Tecnologico y de Estudios Superiores de Monterrey, Mexico)

9:24

From Theory to Practice: Enhancing Competencies in an Interdisciplinary Collaborative Approach Between Business and Engineering

Jose M. Nieto-Jalil (ITESM, Mexico & Tecnologico de Monterrey, Mexico); Diego Seuret Jimenez (UAEM, Mexico); Yazmin Morales Serrano and María Alejandra Peña Romero (Tecnologico de Monterrey, Mexico); Nicolás Amado-Moranchel (Tecnológico de Monterrey, Mexico); Claudia Hernandez-Mena, Alejandro Sandoval Correa and Iván Gutiérrez Crúz (Tecnologico de Monterrey, Mexico)

9:42

Interdisciplinary Project Work for Engineering Students – a Survey of Former Students' Experience

Kari H. Voldsund, Harald Hasleberg and Svein Thore Hagen (University of South-Eastern Norway, Norway)

8:30 - 10:00
STEM1: K-12 STEM Education Initiatives 1
Room: Chiron
Session Chair: Stamatis Dragoumanos (Computer Technology Institute and Press Diophantus, Greece)

8:30

A Case Study of a Code Club's Inclusion Policy and How It is Implemented Online and in the Classroom

Tina Vrieler (Uppsala University, Sweden)

8:52

Assessment of Transparent Data Representation in Scratch via the SOLO Taxonomy

Anastasios Ladias (Ministry of Education, Greece); Theodoros Karvounidis and Christos Douligeris (University of Piraeus, Greece)

9:15

How Various Educational Features Influence Programming Performance in Primary School Education

Wan-Chong Choi and Chan-Tong Lam (Macao Polytechnic University, Macao); António José Mendes (University of Coimbra & CISUC, Dep. of Informatics Engineering, Portugal)

9:37

Challenges in Digital STEAM Education Delivery: A Case Study From the Teachers' Perspective

Isabella Possaghi (Norwegian University of Science and Technology, Norway); Sofia Papavlasopoulou (NTNU, Norway)

14:15 - 15:45

Special Session: Cybersecurity Professional Education and Training: Advancements and Future Directions 1
Room: Syndicate 2.1
Session Chair: Paresh Rathod (Laurea University of Applied Sciences, Finland & Trustilio BV-Amsterdam-The Netherlands, Finland)

14:15

Assessing the Consistency of Cyber Security Education

Steven Furnell (University of Nottingham, United Kingdom (Great Britain)); Eliana Stavrou (Open University of Cyprus, Cyprus)

14:33

Business Continuity Management of Critical Infrastructures From the Cybersecurity Perspective

Timo Savolainen (Laurea University of Applied Sciences & Aalto University, Finland); Nora McCarthy (University College Cork, Ireland); Karen Neville (University College Cork & Centre for Security and Mobile Research, Ireland); Harri Ruoslahti (Laurea University of Applied Sciences, Finland)

14:51

Enhancing Security Education: A Comprehensive Analysis of Virtualized Learning Approaches in the Study of Hybrid Threats

Ilkka Tikanmäki (Laurea University of Applied Sciences & National Defence University, Finland); Harri Ruoslahti (Laurea University of Applied Sciences, Finland)

15:09

Empowering Professionals: A Generative AI Approach to Personalized Cybersecurity Learning

Christos Kallonas (Open University of Cyprus, Cyprus); Andriani Piki (UCLan Cyprus, Cyprus); Eliana Stavrou (Open University of Cyprus, Cyprus)

15:27
Bridging the Gap: Cyber Defence Skills for the Future
Sofia Strukova and Mariano Albaladejo-González (University of Murcia, Spain); Maya Bozhilova (Bulgarian Defense Institute, Bulgaria); Alejandro Campos Fuentes (Indra, Spain); Simone Lenti (Sapienza Università di Roma, Italy); Gregorio Martinez Perez (University of Murcia, Spain); Daniel Navarro Martínez (Indra, Spain); Pantaleone Nespoli (University of Murcia, Spain); Giuseppe Santucci (Universita' di Roma "La Sapienza", Italy); Marco Antonio Sotelo-Monge (Indra Sistemas S.A., Spain); Nikolai Stoianov (Bulgarian Defense Institute, Bulgaria); Eugenio Viesca Revuelta (Indra, Spain); Jose A. Ruiperez-Valiente (University of Murcia, Spain & Massachusetts Institute of Technology, USA)

8:30 – 10:00
YP Mentoring
Room: Syndicate 2.3

10:00 – 10:30
Coffee Break | Exhibits
Room: Ground Level – Lobby Area

10:30 – 11:15
Opening Session | 15th Anniversary Celebration
Room: Panacea Amphitheatre
Session Chair: Edmundo Tovar (UPM (Spain), Spain)

11:15 – 12:15
Plenary: Exploring the Complexities of Generative AI in Engineering Education
Diana Andone (Politehnica University of Timisoara, Romania)
Room: Panacea Amphitheatre
Session Chair: Edmundo Tovar (UPM (Spain), Spain)

12:15 – 13:15
Round Table: Is Generative AI the Panacea in Engineering Education
Room: Panacea Amphitheatre
Session Chair: Carlos Delgado Kloos (Universidad Carlos III de Madrid)

13:15 – 14:15
Lunch
Room: Makedonia – Hotel Restaurant

14:15 - 15:45
DT2: Digital Transformation 2
Room: Aegle A
Session Chair: Thomas Klinger (Carinthia University of Applied Sciences, Austria)

14:15

Leveraging the European Cybersecurity Skills Framework(ECSF) in EU Innovation Projects: Workforce Development Through Skilling, Upskilling, and Reskilling
Paresh Rathod (Laurea University of Applied Sciences, Finland & Trustilio BV-Amsterdam-The Netherlands, Finland); Nineta Polemi (University of Piraeus, Greece); Martti Lehto (University of Jyväskylä, Finland); Kitty Kitty Kioskli (University of Essex, United Kingdom (Great Britain)); Jan Wessels Wessels (Rabobank, The Netherlands); Ricardo Lugo (Tallinn University of Technology, Estonia)

14:37

From Campus to Boot Camp - Lessons From Extramural Teaching in Cybersecurity
Gunnar Karlsson (KTH Royal Institute of Technology, Sweden)

15:00

Does Industry 5.0 Need an Engineering Education 5.0? Exploring Potentials and Challenges in the Age of Generative AI
Monica Ionita Ciolacu (University of Passau, Germany); Cristina Marghescu and Bodgan Mihailescu (University Politehnica of Bucharest, Romania); Paul Svasta (Politehnica University Bucharest, Romania)

15:22

Physical and Digital Twin With Computational Thinking to Foster STEM Vocations in Primary Education
Xavier Pi Palomés (Computer Science, Multimedia and Telecommunications Department Universitat Oberta de Catalunya (UOC), Spain); Pau Fonseca i Casas (Universitat Politècnia de Catalunya - BarcelonaTech, Spain); Joan Verdaguer-Codina (Catalan Engineering Association (COEIC), Spain); José Luis Rubiés (ISACA Barcelona Chapter, Spain)

14:15 - 15:45
ENV11: Student-centered Learning Environments 11
Room: Aegle B
Session Chair: Ingrid Krumphals (University College of Teacher Education Styria, Austria)

14:15

Problem-Based Learning in Biomedical Engineering: Bridging the Gap in Teaching Basic Medical Sciences
Miriam I Jimenez- Perez, Yocanxóchitl Perfecto-Avalos, Angelica Lizeth Sanchez-Lopez and Mirna Gisel González Mercado (Tecnologico de Monterrey, Mexico)

14:33

Fostering Post-University Success: Exploring Emotional Intelligence in College Graduates Through the Traditional Model vs. Competency-Based Model

Mariana Martínez-Ávila and Rebeca García-García (Tecnologico de Monterrey, Mexico); Sara Guajardo (Tecnologico de Monterrey Mexico, Mexico); Lizett V Bonifaz Delgado and Daniel Guajardo-Flores (Tecnologico de Monterrey, Mexico)

14:51

From Classroom to Community: Building Sustainability Competencies Through Service Learning in the Public Sector

Ana Y Vanoye-García, H. Lizette Menchaca-Torre and Gloria M López-Navarro (Tecnologico de Monterrey, Mexico)

15:09

Digital Bridges Across the Ocean: The TalkTech Project's Journey of Fostering Open Education in Virtual Reality

Mark Frydenberg (Bentley University, USA); Diana Andone (Politehnica University Timisoara, Romania)

15:27

Testing and Debugging Habits of Intermediate Student Programmers

Cruz Izu (The University of Adelaide, Australia); Amali Weerasinghe (University of Adelaide, Australia)

14:15 - 15:45
ENV2: Student-centered Learning Environments 2
Room: Homer
Session Chair: Wolfgang Werth (Carithia University of Applied Sciences, Austria)

14:15

Data-Driven Interventions for Capstone Projects

Usman Naeem, Chao Shu, Ling Ma, Yue Chen, Yixuan Zou, Md Hasanuzzaman Sagor, Habiba Akter and Karen FinesilverSmith (Queen Mary University of London, United Kingdom (Great Britain))

14:33

Validation of Felder-Solomon Index of Learning Styles Questionnaire and Learning Style Preferences for the Mozambique Context

Geraldo Nhadumbuque (Portugal-Coimbra, USA); Anabela Gomes (Polytechnic Institute of Coimbra, ISEC & CISUC, University of Coimbra, Portugal); Maria José Marcelino (University of Coimbra, Portugal)

14:51

Challenges and Possibilities in Motivating Students to Learn Programming in Distance Education: A Systematic Mapping Study

Rosemary P B Almeida (University of Coimbra & CISUC, Portugal); Anabela Gomes (Polytechnic Institute of Coimbra, ISEC & CISUC, University of Coimbra, Portugal); António José Mendes (University of Coimbra & CISUC, Dep. of Informatics Engineering, Portugal)

15:09

Factors Influencing Faculty Use of Active Learning Strategies in Engineering and Computing: A Study in a Peruvian University

José Antonio Pow-Sang-Portillo and Sheyla Blumen (Pontificia Universidad Católica del Perú, Peru)

15:27

Exploration of the Variables That Define the Academic Success of Undergraduate Students in the First Course of Mathematics

María Guadalupe Lomelí Plascencia (ITESM, Mexico); Gilberto Huesca Juárez and Iliana E. López (Tecnologico de Monterrey, Mexico)

14:15 - 15:45
ES2: Engaging Undergraduate Students in Research 2
Room: Akeso
Session Chair: Ruth Cobos (Universidad Autonoma de Madrid, Spain)

14:15

Shaping Plastic Pollution Perspectives of Biotechnology Students in a Competence-Based Learning Course via Systems Thinking

Martín Esteban González-López, Paloma Barajas-Álvarez and Misael Sebastian Gradilla-Hernández (Tecnologico de Monterrey, Mexico)

14:30

Enhancing Undergraduate Research Engagement: A Semester Research Program and Motivation Assessment

Araceli Zavala, Brenda Ivette García-Maya and Rodrigo Mercado Fernandez (Tecnologico de Monterrey, Mexico)

14:45

Integrating ATLAS.ti Usage and Certification as an Educational Innovation to Elevate Engagement, Perception, and Research Competencies in the Creative Studies First-Year Higher Education Track

Jorge Antonio Contreras Domínguez (Tecnológico de Monterrey ITESM, Mexico)

15:00

Development of Mechatronics Projects With Social Impact With Undergraduate Students

Alfredo Salas-Ramírez (Tecnologico de Monterrey, Mexico)

15:15

AI-Based Research Companion (ARC): An Innovative Tool for Fostering Research Activities in Undergraduate Engineering Education

Sai Krishna Vishnumolakala (SRM University AP, India); Sobin C C (SRM University Amaravati, AP, India); N P Subheesh (Indian Institute of Technology Madras, India); Prabhat Kumar (LUT University, Finland); Randhir Kumar (SRM University, India)

15:30

Observation of Sustainability Elements in Student's STEM Design Project

Mas Sahidayana Mohktar (Universiti Malaya, Malaysia); Nur Rasyidah Hasan Basri (Universiti Malaya STEM Centre, Malaysia); Iwana Haidah Hamdan and Norshahzila Idris (UM STEM Centre, Malaysia)

14:15 - 15:45
GBL2: Game-based Learning and Gamification 2
Room: Melambus
Session Chair: Christian Kreiter (Carinthia University of Applied Sciences, Austria)

14:15

Motivation and Educational Effectiveness in Teaching Expert Development Project by an Educational Community

Keiichi Yonemura (National Institute of Technology, Kisarazu College, Japan); Hideyuki Kobayashi (KOSEN, Japan); Shinya Oyama (National Institute of Technology Hakodate College, Japan); Tatsuki Fukuda (National Institute of Technology Kitakyushu College, Japan); Manabu Hirano (National Institute of Technology Toyota College, Japan); Noriaki Hayashi (Trend Micro Incorporated, Japan); Keiichi Shiraishi (National Institute of Technology Kagawa College, Japan); Satoru Yamada (National Institute of Technology Ishikawa College, Japan); Jun Sato (National Institute of Technology Tsuruoka College, Japan); Hisashi Taketani (National Institute of Technology Tsuyama College, Japan); Yoshinobu Matsuno (National Institute of Technology Ariake College, Japan); Tomoharu Kaeriyama (National Institute of Technology Kisarazu College, Japan); Masaki Hashimoto (Institute of Information Security, Japan); Ryotaro Nakata (Hitotsubashi University, Japan); Masao Maruyama (National Institute of Technology Kisarazu College, Japan); Shigenori Akamatsu (National Institute of Technology Kochi College, Japan); Routa Takahashi (National Institute of Technology Tomakomai College, Japan); Kentaro Noguchi and Seiichi Kishimoto (KOSEN, Japan)

Technical Program: Thursday, May 9, 2024

14:30

Enhancing the Educational Displacement in Early Semester Engineering Students Through Innovative Gamification: A Case Study at Tecnológico de Monterrey, Campus León

Jorge Arturo Ruelas-Mejía (Tecnologico de Monterrey, Mexico); Elizabeth Mena-Aviles (Tecnologico de Monterrey & Institute for the Future of Education, Mexico); Alejandro Martínez-Borquez, Rodolfo Mendoza-Gómez and Javier Villanueva-Valle (Tecnologico de Monterrey, Mexico)

14:45

Assessing Teachers' Perspectives on a Multi-Campus Course Design Tool [virtual]

Abdullah Bahmani (The Norwegian University of Science and Technology (NTNU), Norway); Rune Hjelsvold (NTNU, Norway)

15:00

A Novel Framework for AI-Based Dynamic Teaming Up of Students in the Context of Online Collaborative Learning Activities

Irene Kilanioti, Alexandros-Panagiotis Stylos and Symeon Papavassiliou (National Technical University of Athens, Greece)

15:15

Biomolecules Scavenger Hunt: Gamification and 3D Printing as a Biochemistry Learning Strategy

Luis Eduardo Garcia-Amezquita, Angelica Lizeth Sanchez-Lopez, Viridiana Tejada, Francisco J Montes-Montejo and Brenda Ivette García-Maya (Tecnologico de Monterrey, Mexico); Karla Rubio (Tecnológico de Monterrey, Mexico)

15:30

Elevate Your Learning: Unveiling Students' Emotions in a Gamified Matrix Modeling Class

Brenda N. Santos-Guevara (Tecnológico de Monterrey, Mexico); Elvira G. Rincon-Flores (Tecnológico de Monterrey, Mexico & GRIAL and INDIE Research Group, Spain); Nora Marisa León Real-Méndez (Tecnologico de Monterrey, Mexico)

14:15 - 15:45
MULT2: Multidisciplinary and Transdisciplinary Education 2
Room: Panacea Amphitheatre
Session Chair: Carlos Alario-Hoyos (Universidad Carlos III de Madrid, Spain)

14:15

APRIS Robot Challenge: Collaborative Online Interdisciplinary and International Learning for IoT/Robotics Systems
Kenji Hisazumi (Shibaura Institute of Technology, Japan); Takeshi Ohkawa (Kumamoto University, Japan); Masafumi Miwa (The University of Tokushima, Japan); Mikiko Sato (Tokai University, Japan); Takashi Nagai (Institute of Technologists, Japan); Nobuhiro Ohe (Cyber University, Japan); Kittikhun Thongpull, Kiattisak Sengchuai and Nattha Jindapetch (Prince of Songkla University, Thailand); Harumi Watanabe (Tokai University, Japan)

14:30

Integrating Pepper Robot and GPT for Neuromyth Educational Conversation [virtual]
Abdelhadi Hireche (United Arab Emirates University, United Arab Emirates); Abdelkader Nasreddine Belkacem (United Arabs Emirates University, United Arab Emirates)

14:45

Fostering Collaborative Learning: Exploring the Impact of Multidisciplinary Teams in Higher Education
Gloria Perez-Salazar (Tecnologico de Monterrey, Mexico); Juan Pablo Rubio-Perez (University College London, United Kingdom (Great Britain))

15:00

Introduction of a Multicopter Platform for Multi- and Transdisciplinary Education With Emphasis on Embedded and Cyber-Physical Systems
Patrick Schmitt and Roman Beneder (UAS Technikum Wien, Austria)

15:15

The Introduction of Augmented Reality in STREAM Education Impacts Science Students' State Emotions
Eirini Kleidara and Maria Gkouzioni (University of Ioannina, Greece); Chrysoula Tzima (Indepent Author, Greece); Alexandros Moutzouris (Independent Author); Katerina Plakitsi and Lefkothea-Vasiliki Andreou (University of Ioannina, Greece)
15:30 Project-Based Learning on Automotive Engineering: Building an Electrical Vehicle
Carlos Renato Vazquez, Diego Cardenas-Fuentes and Alejandro Guajardo-Cuellar (Tecnologico de Monterrey, Mexico)

14:15 - 15:45
STEM2: K-12 STEM Education Initiatives 2
Room: Chiron
Session Chair: Aggeliki Sgora (Ionian University, Greece)

14:15
Effects of a Vocational STEM Education Project on Career Planning and Gender-Specific Effect Mechanisms
Christina Sotiriadou (University of Stuttgart & None, Germany)

14:33
Assessing ChatGPT's Influence on Critical Thinking Through Sustainability Learning Activitites: The Case of Energy Literacy Activities
Claudia Alarcón López (EPFL & ETHZ, Switzerland); Denis Gillet (EPFL, Switzerland); Pius Krütli (ETH Zürich, Switzerland)

14:51
Semantic Waves: A Strategy for Algorithmic Skills in K-12 Computer Science Education
Frauke Ritter (University of Education Karlsruhe, Germany); Bernhard Standl (Karlsruhe University of Education, Germany)

15:09
Effective Synergies at Technical Universities to Actively Promote STEM at K-12 Schools
Jorge Torres Gomez (TU Berlin, Germany); Nicolai Spicher (University Medical Center Göttingen, Germany); Jan Haase (Nordakademie, Germany)

15:27
Educating Engineer Students Business Model Innovation: Exploring a Proposed Framework to Capture Business Model Dynamics
Hanieh Khodaei (TuDelft & Delft University of Technology, The Netherlands); Victor Scholten (Delft University of Technology, The Netherlands)

14:15 - 15:45
VIRTUAL1: Virtual Presentations 1
Room: Syndicate 2.7
Session Chair:

14:15
Promoting Learning Through Competition — an Exploratory Study on Discipline-Crossing Practical Teaching Mode of Autonomous Driving Speciality
Xiaolin Mou (Shenzhen Technology University, China); Heyan Li (Shenzhen Technology Unviersity, China); Xiaohong Yin (Shenzhen Technology University, China)

14:33

Research-Oriented Online Laboratory Design on 5G-V2X Latency Measurements, Modeling and Optimization in the Campus Environment

Yayu Gao, Aoyu Hu and Yong Xiao (Huazhong University of Science and Technology, China)

14:51

Working in Progress: Reform Scheme of Project-Based Courses for Engaging Undergraduate Students in Research and Development

Chengwei Zhang, Yayu Gao, Jinglan Cao, Baixu Chen, Guohui Zhong, Xiaojun Hei and Yang Cao (Huazhong University of Science and Technology, China)

15:09

Using Diffusion Theory of Innovation to Investigate Perceptions of STEM and Non-STEM Students' Adoption of Chatbot Systems in Higher Education: A Multiple Group Analysis

Musa Adekunle Ayanwale (University of Johannesburg, South Africa)

15:27

Development of STEM Curriculum for Digital Electronics Education in Secondary School

Lorena Jeranoski and Paulo Leitao (Polytechnic Institute of Bragança, Portugal)

16:15 - 17:45
Special Session: Cybersecurity Professional Education and Training: Advancements and Future Directions 2
Room: Syndicate 2.1
Session Chair: Paresh Rathod (Laurea University of Applied Sciences, Finland & Trustilio BV-Amsterdam-The Netherlands, Finland)

16:15

Enhancing Cybersecurity Education for the Healthcare Sector: Fostering Interdisciplinary ManagiDiTH Approach

Jyri Rajamäki (Laurea University of Applied Sciences, Finland); Paresh Rathod (Laurea University of Applied Sciences, Finland & Trustilio BV-Amsterdam-The Netherlands, Finland); Outi Ahonen (Laurea University of Applied Sciences, Finland); Carlos Serrão (Instituto Universitário de Lisboa (ISCTE-IUL), Portugal); João C Ferreira (ISCTE, Portugal)

16:33

Importance of Programming in Cybersecurity: Preliminary Findings From a Pilot Study Tailoring a Python Course for Targeted Educational Needs

Katja M Henttonen (Laurea University of Applied Sciences, Finland); Paresh Rathod (Laurea University of Applied Sciences, Finland & Trustilio BV-Amsterdam-The Netherlands, Finland)

16:51
Reinforcing Cybersecurity Awareness Through Simulated Phishing Attacks: Findings From an HEI Case Study
Aurelia Ciupe (Technical University of Cluj-Napoca, Romania)

17:09
Educational Project for Remote Access to Industrial Networks [virtual]
Miguel Díaz-Cacho (University of Vigo, Spain); Pablo Falcón (Universidad de Vigo, Spain); Jorge Marcos-Acevedo (University of Vigo EEI, Spain); Alejandro Pereira (University of Vigo, Spain)

17:27
Evaluating the Effectiveness of Online Cybersecurity Program in Higher Education
Maher Salem (King's College London, United Kingdom (Great Britain)); Khalid Samara (Oryx Universal College, Qatar); Jeffery Christian Alan Bray (Kings College London, United Kingdom (Great Britain)); Mahmoud Mahmoud Hussein (Tales Cybersecurity, United Arab Emirates)

15:45 – 16:15
Coffee Break | Exhibits
Room: Ground Level – Lobby Area

16:15 - 17:45
ENV12: Student-centered Learning Environments 12
Room: Aegle B
Session Chair: Ingrid Krumphals (University College of Teacher Education Styria, Austria)

16:15
Automated Student Detection for Safety Assurance Within Challenge-Based Learning
Leonardo D Garcia, Juan D Marin and Juan P Padilla (Tecnológico de Monterrey, Mexico); Carlos Vazquez-Hurtado (Tecnologico de Monterrey, Mexico)

16:33
As Secure as Dangerous Can Be: Considerations for Secure Auto-Graders in the Context of MOOCs
Sebastian Serth (Hasso Plattner Institute, University of Potsdam, Germany); Daniel Köhler and Christoph Meinel (Hasso-Plattner-Institute, Germany)

16:51
A Collaborative and Competition-Based Learning Approach for Enhanced Student Engagement and Performance; Pre, During, and Post Covid Perspectives [virtual]
Md Hasanuzzaman Sagor (Queen Mary University of London, United Kingdom (Great Britain))

17:09

Evaluating the Impact of a Transdisciplinary Circular Economy Course on University Students: Enhancing Proficiency, Awareness, and Positive Sentiments in Sustainable Practices

Luis Virgen Navarro, Ernesto Reyes Villegas and María Magdalena González Pérez (Tecnologico de Monterrey, Mexico); Karina Guadalupe Coronado Apodaca and Alfredo Figarola Figarola (Tecnológico de Monterrey Campus Guadalajara, Mexico); Cody Eduardo Evans Trejo (Tecnologico de Monterrey, Mexico)

17:27

Accessibility Academy: Interactive Learning of the WCAG 2.1 Web Accessibility Guidelines

Themistoklis Chatziemmanouil and Christos Katsanos (Aristotle University of Thessaloniki, Greece)

16:15 - 17:45
ENV3: Student-centered Learning Environments 3
Room: Homer
Session Chair: Wolfgang Werth (Carithia University of Applied Sciences, Austria)

16:15

Using Card Sorting to Redesign the Information Architecture of a University E-Learning Platform

Sione Paea (University of the South Pacific, Fiji); Christos Katsanos (Aristotle University of Thessaloniki, Greece); Bibhya Nand Sharma (The University of the South Pacific, Fiji); Gabiriele Bulivou (University of the South Pacific, Fiji)

16:33

An Automotive Design Challenge-Based Learning Activity for Undergraduate Engineering Students: An ICE Vehicle Conversion Into EV

Carlos José Anastas Ruy Sánchez and Sergio Paul Verboonen Partida (Tecnologico de Monterrey, Mexico); Jorge de-J Lozoya-Santos (Tecnológico de Monterrey, Mexico); Luis Carlos Félix-Herrán (Tecnologico de Monterrey, Mexico); Juan C. Tudon-Martinez (Tecnológico de Monterrey, Mexico); Jonathan Rivas (Questum, Mexico); Mauricio A Ramirez-Moreno (Tecnológico de Monterrey, Mexico); Alejandro Arceo (Tecnologico de Monterrey, Mexico)

16:51

Learning Analytics Tools to Analyze Progress and Results With Moodle LMS Data

Cristina Alonso-Fernandez, José L. Jorro-Aragoneses and Carlos M. Alaíz (Universidad Autónoma de Madrid, Spain); Pilar Rodriguez (Universidad Autonoma de Madrid, Spain)

17:09
Practicing Abstraction Skills Through Diagrammatic Reasoning Over CAFÉ 2.0
Géraldine Brieven and Lev Malcev (University of Liege, Belgium); Benoit Donnet (Université de Liège (ULiège), Belgium)

17:27
An Exploratory Analysis of the Relationship Between E-Learning Technologies and the Development of Critical Thinking Skills
Matshepo Caroline Lebese and Siyabonga Mhlongo (University of Johannesburg, South Africa)

16:15 - 17:45
ES3: Engaging Undergraduate Students in Research 3
Room: Akeso
Session Chair: Thomas Klinger (Carinthia University of Applied Sciences, Austria)

16:15
Fostering Student-Led Education Research
Patricia M. Davies (Prince Mohammad Bin Fahd University, Saudi Arabia)

16:30
Service-Based Learning as an Innovative Approach to Involve Undergraduate Bioengineering Students in Community-Based Research Projects
Angelica Lizeth Sanchez-Lopez, Miriam I Jimenez- Perez, Yocanxóchitl Perfecto-Avalos, Viridiana Tejada, Juan Esparza Sanchez and Edgar Rene Lopez Mena (Tecnologico de Monterrey, Mexico)

16:45
Case Study of a New Student Engineering Education Research Group
Erin A F Brady and Rebecca K Selwyn (University of Bristol, United Kingdom (Great Britain))

17:00
Engineering Education With a Research-Based Learning Approach: Nature-Inspired Product Design
Yara C. Almanza-Arjona and María del Pilar García-Chitiva (Tecnologico de Monterrey, Mexico)

17:15
Research-Based Learning in Engineering: An Electrical Course Case Study
Jorge Ivan Hidalgo, Jorge Alvarez and Irandi Gutiérrez-Carmona, Sr. (Tecnologico de Monterrey, Mexico); Zahira Gabriela Cruz Netro (Tecnológico de Monterrey, Mexico); Juan Gabino Diaz Martinez, Sr. (Tecnologico de Monterrey, Mexico)

17:30
Competitive and Funded Undergraduate Research: A Case Study [virtual]
Assim Sagahyroon and Fadi Aloul (American University of Sharjah, United Arab Emirates)

16:15 - 17:45
GBL3: Game-based Learning and Gamification 3
Room: Melambus
Session Chair: Christian Kreiter (Carinthia University of Applied Sciences, Austria)

16:15
To Innovate or Not to Innovate: Analysis of the Students' Strategic Decision-Making in a Simulated Environment
Saltanat Akhmadi and Mariza Tsakalerou (Nazarbayev University, Kazakhstan)

16:30
Imbuing Contemporary Engineering Education With Sustainability and Corporate Social Responsibility Perspectives: PRISMA-Based Literature Review [virtual]
Anil Yasin Ar (Tecnologico de Monterrey, Mexico); Yaprak Dalat Ward and James G Ward (Fort Hays State University, USA)

16:45
Choosing the Dimension of a Serious Game: The HALT Case Study
Lampros Karavidas and Vasilis Lilis (Aristotle University of Thessaloniki, Greece); Thrasyvoulos Tsiatsos (University of Thessaloniki, Greece); Stella Douka (Aristotle University of Thessaloniki, Greece)

17:00
Engaging Engineering Education Through Multi-Sensory Virtual Decision-Making Centers: A Gamified Approach
Jose Daniel Azofeifa, Valentina Rueda-Castro, Luis Jose Gonzalez-Gomez, Guillermo M. Chans and Patricia Caratozzolo (Tecnologico de Monterrey, Mexico); Julieta Noguez (Tecnologico de Monterrey & Escuela de Ingeniería y Ciencias, Mexico)

17:15
Java-Based Virtual Laboratory for Educational Purposes in Basic Electrical Engineering
Marvin Sandner, Phil Meier, Thorsten Uelzen and Shouqiang Yang (Ostfalia University of Applied Sciences, Germany)

17:30

Work-In-Progress: An Authoring Platform for a Virtual Reality Simulation for Dementia Caregivers Skills Training

Cole Craven and Bill Kapralos (Ontario Tech University, Canada); Michael SD Smith (National Research Council Canada, Canada); Mary Chiu (Ontario Shores Centre for Mental Health Sciences, Canada); Amer Burhan (Ontario Shores Centre of Mental Health Sciences, Canada & University or Toronto, Canada); Adam Dubrowski (Ontario Tech University, Canada)

16:15 - 17:45
MULT3: Multidisciplinary and Transdisciplinary Education 3
Room: Chiron
Session Chair: Theodoros Karvounidis (University of Piraeus, Greece)

16:15

Multi-Challenge-Based Learning in Engineering: A New Model in Experiential Education
Miguel de J. Ramírez-Cadena, Juana I Méndez-Garduño, Israel U Cayetano-Jiménez and Jorge Membrillo-Hernández (Tecnologico de Monterrey, Mexico)

16:30

Designing Evaluation Criteria for Disciplinary Competencies: A Case Study of Computer Science
Luis H Gonzalez Guerra and Pedro Perez-Murueta (Tecnologico de Monterrey, Mexico)

16:45

Science and Technology Lectures to Develop Critical Thinking: A Case Study in Higher Education
David Antonio Buentello-Montoya, Luis Manuel Rico-Gutiérrez, Brenda Ivette García-Maya and Luis Eduardo Garcia-Amezquita (Tecnologico de Monterrey, Mexico)

17:00

Education for Industry 5.0 and ESD: Co-Creation of Engineering Design Challenges With Industry
Tamer Panagiotis Doss, Goudarz Poursharif, Hilary Price and Lyndon Buck (Aston University, United Kingdom (Great Britain))

17:15

Concepts of Engineering Education Innovation and Design Thinking: Implementing the CDIO-Approach Themes
Haider Al-juboori and Gina Noonan (South East Technological University, Ireland)

17:30

Industry Insights on Future Convergence Education: A Survey of Key Competencies and Educational Directions

Sung-Youn Choi (Dongguk University, Korea (South))

16:15 - 17:45
VIRTUAL2: Virtual Presentations 2
Room: Syndicate 2.7
Session Chair: Thrasyvoulos Tsiatsos (University of Thessaloniki, Greece)

16:15

Mastering Basic Sorting Algorithms Through Computational Thinking Activities for Everyone

Piyanuch Silapachote, Ananta Srisuphab, Apirak Hoonlor and Thanwadee Sunetnanta (Mahidol University, Thailand)

16:33

Leveraging Prerequisites Engineering Students for Monitoring and Predicting Using Machine Learning

Adel Khalid Alblawi and Mohamed Ebrahim, ME (Shaqra University, Saudi Arabia); Demah Alqahtani (Shaqra, Saudi Arabia)

16:51

The Need for Practical Relevance: Electrical vs. Mechanical Engineering Students

Khaled M. Ali and Salem Haggag (American University in Dubai, United Arab Emirates); Alaa K Ashmawy (Deraya University, Egypt)

17:09

Computing Students' Perceptions Towards ePortfolios for Recognition of Acquired Competencies: A Holistic Approach

Hege Annette Olstad, Xiaomeng Su and Birgit Rognebakke Krogstie (Norwegian University of Science and Technology, Norway)

17:27

A Holistic Conceptual Framework to Assess the Impact of Augmented Reality on the Learners' Emotion and Cognitive Learning

Christian Camilleri, Lawrence Farrugia and Sarah Pule (University of Malta, Malta); Carlos Efrén Mora (Universidad de La Laguna, Spain)

16:15 - 17:45
WS12: Publications of the IEEE Education Society
John Mitchell (University College London, United Kingdom (Great Britain))
Room: Aegle A
Session Chair: John Mitchell (University College London, United Kingdom (Great Britain))

8:30 - 10:00
Special Session: Generative AI Applications in Engineering Education 1
Room: Panacea Amphitheatre
Session Chair: Carlos Delgado Kloos (Universidad Carlos III de Madrid, Spain)

8:30
IoT and Generative AI Technologies to Support Urban Environmental Learning
Bernardo Tabuenca (Universidad Politécnica de Madrid, Spain); Sergio Martin (Spanish University for Distance Education - UNED, Spain); Wolfgang Greller (Pädagogische Hochschule Wien, Austria); Alexander Tillmann (Johann Wolfgang Goethe Universitat Frankfurt Am Main, Germany); Manuel Uche (Universidad Politécnica de Madrid, Spain); Manuel Castro (Spanish University for Distance Education - UNED, Spain); Edmundo Tovar (Universidad Politécnica de Madrid & Facultad de Informática, Spain); Miguel Rodriguez-Artacho (UNED University, Spain)

9:00
Experiences and Proposals of Use of Generative AI in Advanced Software Courses
Daniel Palacios-Alonso, Jaime Urquiza-Fuentes, J. Ángel Velázquez-Iturbide and Julio Guillén-García (Universidad Rey Juan Carlos, Spain)

9:30
A Generative AI-Based Personalized Guidance Tool for Enhancing the Feedback to MOOC Learners
Álvaro Becerra (Universidad Autónoma de Madrid, Spain); Zeynab (Artemis) Mohseni (Linnaeus University, Sweden); Ruth Cobos (Universidad Autonoma de Madrid, Spain); Javier Sanz Vicente (Universidad Autónoma de Madrid, Spain)

18:00 – 21:00
Welcome Reception
Hippocrates' Plane Tree (Platanos Square)

7:30 – 8:30
Registration
Room: Panacea Amphitheatre Lobby

8:30 - 10:00
Special Session: Online and Remote Laboratories 1
Room: Melambus
Session Chair: Thomas Klinger (Carinthia University of Applied Sciences, Austria), Christian Kreiter (Carinthia University of Applied Sciences, Austria)

8:30
Dynamically Configurable Remote Laboratory for Electrical Engineering Education
Marvin Sandner, Thorsten Uelzen, Shouqiang Yang and Phil Meier (Ostfalia University of Applied Sciences, Germany)

8:52
Design and Development of a Multi-Purpose Collaborative Remote Laboratory Platform
Sven Jacobs, Timo Hardebusch, Esther Franke, Henning Peters, Rashed Al Amin, Veit Wiese and Steffen Jaschke (University of Siegen, Germany)

9:15
An Online CAD Workshop for First-Year Industrial Engineering Students
Igor Verner (Technion - Israel Institute of Technology, Israel); Laura Levin (Shamoon College of Engineering, Israel); Alex Polishuk and Sergei Gamer (Technion Israel Institute of Technology, Israel)

8:30 - 10:00
Special Session: Generative AI Applications in Engineering Education 2
Room: Syndicate 2.1
Session Chair: Carlos Delgado Kloos (Universidad Carlos III de Madrid, Spain)

8:30
How Can Generative AI Support Education?
Carlos Delgado Kloos, Carlos Alario-Hoyos, Iria Estevez-Ayres, Patricia Callejo, MIguel A. Hombrados Herrera, Pedro J. Muñoz -Merino and Pedro Manuel Moreno-Marcos (Universidad Carlos III de Madrid, Spain); Mario Muñoz (Carlos III of Madrid University, Spain); María-Blanca Ibáñez (Universidad Carlos III de Madrid, Spain)

8:48
AI as Yet Another Tool in Undergraduate Student Projects: Preliminary Results
Iván Pérez-Colado, Manuel Freire-Morán and Antonio Calvo-Morata (Universidad Complutense de Madrid, Spain); Víctor M. Pérez-Colado (Nord University, Norway); Baltasar Fernández-Manjón (Universidad Complutense de Madrid, Spain)

9:06

Generative AI Guidelines By/For Engineering Undergraduates

Claudia Camacho Zuñiga (Tecnologico de Monterrey, Mexico & Institute for the Future of Education, Mexico); Marco A. Rodea-Sanchez and Omar Olmos (Tecnologico de Monterrey, Mexico); Genaro Zavala (Tecnologico de Monterrey & Universidad Andres Bello, Mexico)

9:24

Leveraging Large Language Models (LLMs) for Enhancing Outcomes and Engagement in Online Courses

Oxana Lundström, Neda Maleki and Fredrik Ahlgren (Linnaeus University, Sweden)

9:42

An AI-Driven Approach for Enhancing Engagement and Conceptual Understanding in Physics Education

Diana Domenichini (University of Pisa, Italy); Antonio Bucchiarone (Fondazione Bruno Kessler, Italy); Filippo Chiarello (University of Pisa, Italy); Gianluca Schiavo (Fondazione Bruno Kessler, Italy); Gualtiero Fantoni (University of Pisa, Italy)

8:30 - 10:00
A2: Student-centered Learning Environments 22
Room: Syndicate 2.7
Session Chair: Apostolos Xenakis (University of Thessaly, Greece)

8:30

An Approach for Conducting Educational Research on Two Multidisciplinary Areas of Information Systems; Enterprise Resource Planning and Big Data

Bibi Zarine Cadersaib (University of Mauritius & Reduit, Mauritius); Hatem Ben Sta (University of Tunis at El Manar, Tunisia); Baby Gobin (University of Mauritius, Mauritius)

8:48

The Influence of Unconventional Laboratory Concepts on the Professional Advancement of Bioengineering Students via Community Engagement

Diego Eloyr Navarro López, Paulina A. Ramos Espinosa, Julio César López Velázquez, Angelica Lizeth Sanchez-Lopez, Edgar Rene Lopez Mena and Iván Andrés Luzardo Ocampo (Tecnologico de Monterrey, Mexico)

9:06

The Inverted Rotary Pendulum: Facilitating Practical Teaching in Advanced Control Engineering

René Rütters (FH Aachen - University of Applied Sciences, Germany); Michael Bragard (University of Applied Sciences Aachen, Germany); Sarah Dolls (FH Aachen - University of Applied Sciences, Germany)

9:24

Visualizing, Enhancing and Predicting Students' Success Through ECTS Monitoring
Pia Kramer (Universitiy of Applied Sciences Aachen, Germany); Michael Bragard (University of Applied Sciences Aachen, Germany); Thomas Ritz (FH Aachen, Germany); Ute Ferfer and Tim Schiffers (FH Aachen University, Germany)

9:42

Work in Progress: Student Retention Methodology in Order to Reduce Early Dropout in Online Postgraduate Studies
Brenda Ruiz-López (Universidad Internacional de La Rioja, UNIR, Spain); Luis de-la-Fuente and Pablo Moreno-Ger (Universidad Internacional de La Rioja, Spain)

8:30 - 10:00
DT3: Digital Transformation 3
Room: Aegle A
Session Chair: Andreas Pester (BUE, Egypt)

8:30

Students' Perceptions on the Use of Artificial Intelligence Tools in Engineering Education for the Digital Transformation
Miguel X. Rodríguez-Paz, Jorge A. Gonzalez-Mendivil, Israel Zamora-Hernandez and Gibrán Sayeg-Sánchez (Tecnologico de Monterrey, Mexico)

8:45

The AI Companion in Education: Analyzing the Pedagogical Potential of ChatGPT in Computer Science and Engineering
Zhangying He and Thomas Nguyen (California State University Long Beach, USA); Tahereh Miari, MBA (Claremont Graduate University, USA); Mehrdad Aliasgari (California State University, Long Beach, USA); Setareh Rafatirad (University of California Davis, USA); Hossein Sayadi (California State University Long Beach, USA)

9:00

Different Forms of Learning and Their Relationship With Learning Outcomes Based on an "Object-Oriented Programming" Course as an Example
Marina Lepp and Carolin Kirotar (University of Tartu, Estonia)

9:15

Good Practices in ITSM Learning: A Business Simulation-Game-Based Approach for Engineering Students
Dora Luz Gonzalez-Bañales (Instituto Tecnológico de Durango Tecnológico Nacional de Mexico, Mexico); Teresa Lucio Nieto (Tecnológico de Monterrey, Mexico)

9:30
Mixed Reality Affordances for Skill Development
Nadia Catenazzi (SUPSI, Switzerland); Lorenzo Sommaruga (University of Applied Sciences and Arts of Southern Switzerland (SUPSI), Switzerland); Chiara Locatelli (University of Applied Sciences and Arts of Souther Switzerland - SUPSI, Switzerland)

9:45
Opening Horizons for European Universities Alliances in Open Education
Diana Andone (Politehnica University Timisoara, Romania); Radu A. Vasiu, Vlad Mihaescu and Silviu Vert (Politehnica University of Timisoara, Romania); Andrei Ternauciuc and Muguraș Mocofan (Politehnica University Timișoara, Romania)

8:30 - 10:00
ENV13: Student-centered Learning Environments 13
Room: Aegle B
Session Chair: Tina Vrieler (Uppsala University, Sweden)

8:30
Competencies Development in YOLO-CNN and Stereo Camera Vision to Enhance Bin Picking in Simulated Environments
Donaldo Francisco Vega Lagunas, Andrés Robles Gil Candas and María Fernanda Reyes Macip (Instituto Tecnológico y de Estudios Superiores de Monterrey, Mexico); Carlos Vazquez-Hurtado (Tecnologico de Monterrey, Mexico); Héctor Andrés González López (Instituto Tecnológico y de Estudios Superiores de Monterey, Mexico)

8:48
Augmenting Virtual Labs With Artificial Intelligence for Hybrid Learning
Ritwik Murali (Amrita School of Computing, Coimbatore, Amrita Vishwa Vidyapeetham, India); Nitin Ravi and Amruthiyu Surendran (Amrita Vishwa Vidyapeetham, India)

9:06
Causality Exploration in Modeling Engineering Student Satisfaction
Noor Kahtan Abid, Liam Pond and Svetlana N. Yanushkevich (University of Calgary, Canada)

9:24
Inclusive Coding Perspectives: Youth Insights From Trento
Francesca Fiore and Alberto Montresor (University of Trento, Italy)

9:42
Assessing the Impact of Diverse Active Learning Strategies in Gender-Segregated STEM Classrooms
Joy Tannous (United Arab Emirates University, United Arab Emirates)

Technical Program: Friday, May 10, 2024

8:30 - 10:00
ENV4: Student-centered Learning Environments 4
Room: Homer
Session Chair: Martín Llamas-Nistal (Atlanttic - University of Vigo, Spain)

8:30
Smart Factories: A Cutting-Edge Course for Engineering Education
António Henrique Almeida (INESC TEC - Instituto de Engenharia de Sistemas e Computadores, Tecnologia e Ciência & Faculdade de Engenharia da Universidade do Porto, Portugal); Américo Azevedo (Faculdade de Engenharia da Universidade do Porto, Portugal)

8:48
Ontology-Driven Approach for Competency-Oriented and Student-Centered Engineering Education
Nicolas Evain (Université de Pau et Des Pays de l'Adour, E2S UPPA, LIUPPA, Anglet, France); Ernesto Exposito (UPPA, France); Mamadou Gueye (Université de Pau et des Pays de l'Adour, France); Philippe Arnould (Univ Pau & Pays Adour, France)

9:06
Bringing Mathematical Modeling and Engineering Students Closer Together by Seamlessly Linking Theories, Methods, and Applications
Dirk Reith (Bonn-Rhein-Sieg University of Applied Sciences, Germany); Philipp Spelten (University Siegen & Bonn-Rhein-Sieg University of Applied Sciences, Germany); Florian Roßbach and Victor Lueddemann (Bonn-Rhein-Sieg University of Applied Sciences, Germany); Frank Dieball (University of Applied Sciences Bonn-Rhein-Sieg, Germany); Gerd Steinebach (Bonn-Rhein-Sieg University of Applied Sciences, Germany)

9:24
Evaluating the Efficacy of Productivity Tools in Engineering Education
Christopher Morales-Gonzalez, Matthew Harper, Pranathi Rayavaram, Manoj Yeddanapudi, Sashank Narain and Xinwen Fu (University of Massachusetts Lowell, USA)

9:42
Tailoring Education With GenAI: A New Horizon in Lesson Planning
Kostas Karpouzis (Panteion University of Social and Political Sciences, Greece); Dimitris Pantazatos (National Technical University of Athens, Greece); Joanna Taouki (100Mentors eLearning Providers, Greece); Kalliopi Meli (University of Patras, Greece)

8:30 - 10:00
ES4: Engaging Undergraduate Students in Research 4
Room: Akeso
Session Chair: Christos Katsanos (Aristotle University of Thessaloniki, Greece)

8:30

Engaging Undergraduate Students in Research Through Active Learning

Vianney Lara-Prieto (Tecnologico de Monterrey, Mexico); Maria Ileana Ruiz-Cantisani (Tecnológico de Monterrey, Mexico); Rebeca García-García and Jorge Membrillo-Hernández (Tecnologico de Monterrey, Mexico)

8:48

Engaging Undergraduate Students in Signal Processing Research: Vision, Strategy, and A Success Story

Muhammad Tahir Akhtar (Nazarbayev University, Kazakhstan)

9:06

Promoting Engagement in Computing Research for Non-CS Majors

Jocellyn Luna, Katherine Chiluiza and Jose Cordova-Garcia (ESPOL, Ecuador)

9:24

Cloud-Based Digital Twin for Cognitive Robotics

Arthur Niedźwiecki, Yanxiang Zhan, Jörn Syrbe, Sascha Jongebloed, Michaela Kümpel and Michael Beetz (University of Bremen, Germany)

9:42

Towards the Use of Language Models in Scientific Paper Recommender Systems

Koldo Descalzo and Iratxe Pinedo (University of the Basque Country, Spain); Mikel Larrañaga (University of the Basque Country, UPV/EHU, Spain); Ana Arruarte (University of the Basque Country UPV/EHU, Spain)

8:30 - 10:00
GAI1: Generative AI in learning and educational settings 1
Room: Panacea Amphitheatre
Session Chair:

8:30

Automatic Grading of Short Answers Using Large Language Models in Software Engineering Courses

Ta Duong (Singapore Management University, Singapore)

8:48

Leveraging Prompt Engineering on ChatGPT for Enhanced Learning in CEC330: Digital System Design in Aerospace

Alessia Tripaldelli, George Pozek and Brian Butka (Embry-Riddle Aeronautical University, USA)

9:06

Software Development and Education: Transitioning Towards AI Enhanced Teaching [virtual]

John Israilidis (The University of Sheffield, United Kingdom (Great Britain)); Wen-yuan Chen (The University of Shefield, United Kingdom (Great Britain)); Mariza Tsakalerou (Nazarbayev University, Kazakhstan)

9:24

ChatGPT in Higher Education: Perceptions of Computer Science-Related Students

Sabine Hammer, Sarah Ottinger, Benedikt Zönnchen, Michel Hohendanner, Martin Hobelsberger and Veronika Thurner (Hochschule München University of Applied Sciences, Germany)

9:42

On the Impact of ChatGPT on Teaching and Studying Software Engineering

Benedikt Zönnchen and Veronika Thurner (Hochschule München University of Applied Sciences, Germany); Axel Böttcher (Munich University of Applied Sciences, Germany)

8:30 - 10:00
STEM3: K-12 STEM Education Initiatives 3
Room: Chiron
Session Chair: Stamatis Dragoumanos (Computer Technology Institute and Press Diophantus, Greece)

8:30

Fostering Basic Electronics Teaching Competencies: Impact of the School Teachers' Electronics Practicals Upskilling Program (STEP-UP)

N P Subheesh (Indian Institute of Technology Madras, India); Adithya Rajeev (Adi Shankara Institute of Engineering & Technology, India); Abhinav R (Indian Institute of Technology Palakkad, India); Harigovind M (TATA Consultancy Services, India); Sobin C C (SRM University Amaravati, AP, India); Prabhat Kumar (LUT University, Finland); Randhir Kumar (SRM University, India)

8:52

A Child Version of the EmoSocio Open-Access Emotional Intelligence Model

Èlia López Cassà and Dorys Sabando Rojas (University of Barcelona, Spain); Eleni Fotopoulou (Institute of Communication and Computer Systems / National Technical University of Athens, Greece); Anastasios Zafeiropoulos (Institute of Communication and Computer Systems/National Technical University of Athens, Greece); Jordi Méndez Ulrich, Salvador Oriola Requena, Núria Pérez-Escoda and Mercedes Reguant Álvarez (University of Barcelona, Spain); Symeon Papavassiliou (National Technical University of Athens, Greece)

9:15

A Review of Empirical Studies on Gamification in K-12 Environmental Education: Is This Chocolate-Covered Broccoli?

Feiran Zhang (Norwegian University of Science and Technology, Norway); Sofia Papavlasopoulou (NTNU, Norway); Julie Holte Motland (Norwegian University of Science and Technology, Norway); Michail Giannakos (NTNU, Norway)

9:37

Exploring the Interplay of Computational Thinking and Mathematics in Early Childhood Education: A Systematic Review

Ying Zhang (The University of Hong Kong, China); Gary K. W. Wong (The University of Hong Kong, Hong Kong)

8:30 – 10:00
Cybersecurity Training Module 1
Room: Syndicate 2.3
Session Chair: Paresh Paroth (Laurea University, Finland)

10:00 – 10: 30
Coffee Break | Exhibits
Room: Ground Level – Lobby Area

10:30 – 11:25
Plenary: Influence of Metaverse on Cognitive and Affective Development
Chetwyn Chan (University of Hong Kong, China)
Room: Panacea Amphitheatre
Session Chair: Christos Katsanos (University of Piraeus, Greece)

11:25 – 11:45
MathWorks Presentation
Room: Panacea Amphitheatre

11:45 – 12:45
Lunch
Room: Makedonia – Hotel Restaurant

12:45 - 14:15
Special Session: Online and Remote Laboratories 2
Room: Melambus
Session Chair: Thomas Klinger (Carinthia University of Applied Sciences, Austria), Christian Kreiter (Carinthia University of Applied Sciences, Austria)

12:45
The Development of a Learning Arrangement in a Human Eye Remote Laboratory
Ingrid Krumphals (University College of Teacher Education Styria, Austria); Thomas Benedikt Steinmetz (University College of Teacher Education Styria & Carinthia University of Applied Sciences, Austria); Christian Kreiter (Carinthia University of Applied Sciences, Austria); Judith Klinger (Established Ophthalmologist, Austria); Thomas Klinger (Carinthia University of Applied Sciences, Austria)

13:00
A Low-Cost ADALM2000 Hybrid Learning Platform for the Analog Integrated Circuits Curricula
Alexandru Mihai Antonescu (National University of Science and Technology Politehnica of Bucharest, Romania); Florin Silviu Dumitru (National University of Science and Technology Politehnica Bucharest, Romania); Marius Enachescu (UNSTPB, Romania)

13:15
Breaking Barriers: Smartphone Sensors, Mobile Technology in Online Teaching of Differential Equations
Adrián Isrrael Tec Chim Tec Chim (Tecnologico de Monterrey, Mexico); Jose M. Nieto-Jalil (ITESM, Mexico & Tecnologico de Monterrey, Mexico); Diego Seuret Jimenez (UAEM, Mexico); Iván Gutiérrez Crúz and Juan Manuel Martínez Huerta (Tecnologico de Monterrey, Mexico)

13:30
Educational Robotics at Schools Online With Augmented Reality
Dimitris Karampatzakis (International Hellenic University, Greece); Mikhail Fominykh (Norwegian University of Science and Technology, Norway); Nardie Fanchamps and Olga Firssova (Open University Netherlands, The Netherlands); Petros Amanatidis (International Hellenic University, Greece); Giel van Lankveld (Open University Netherlands, The Netherlands); Thomas Lagkas (International Hellenic University, Kavala Campus & South-East European Research Centre, Greece); Avgoustos Tsinakos (International Hellenic University, Greece); Roland Klemke (Open University of the Netherlands, The Netherlands)

13:45

Combining Discrete-Event Simulation With the Metaverse to Motivate Students in Higher Education

Jonathan Cuevas-Ortuño and Araceli Zavala (Tecnologico de Monterrey, Mexico)

14:00

Introduction of a Remote Lab for Indoor Object Position Control Based on Computer Vision Sensors and AI-Enabled Embedded Systems

Roman Beneder and Patrick Schmitt (UAS Technikum Wien, Austria)

12:45 - 14:15
Special Session: Reflections on Immersive Learning
Room: Syndicate 2.1
Session Chair: Andreas Pester (BUE, Egypt)

12:45

Gamification- and Virtual Reality-Based Learning Environment for UML Class Diagram Modeling

Enes Yigitbas and Maximilian Schmidt (Paderborn University, Germany); Antonio Bucchiarone and Simone Bassanelli (Fondazione Bruno Kessler, Italy); Gregor Engels (University of Paderborn, Germany)

13:03

Development of Intelligent Workout Environment for VR Devices [virtual]

Minas Aslanyan (Institute for Informatics and Automation Problems of NAS RA, Armenia)

13:21

Conversational Agents, Virtual Worlds, and Beyond A Review of Large Language Models Enabling Immersive Learning

Andreas Pester and Ahmed Tammaa (BUE, Egypt); Christian Guetl (Graz University of Technology & Curtin University, Austria); Alexander Steinmaurer (Graz University of Technology, Austria); Samir Abou El-Seoud (The British University in Egypt (BUE), Egypt)

13:39

Mapping Virtual Reality's Role in Cultivating Transversal Skills in Higher Education: A Bibliometric Analysis

Jiaqi Zhang (University College Dublin, Ireland)

13:57

VirtLAB-UI: An Open Platform Independent Software and Firmware Solution for Remote and Take-Home Labs

Massimo Ruo Roch and Maurizio Martina (Politecnico di Torino, Italy)

12:45 - 14:15
A3: STEM Education Initiatives 8
Room: Syndicate 2.7
Session Chair: Aggeliki Sgora (Ionian University, Greece)

12:45

Analysis of Perspectives and Experiences of Women in STEM Fields in a Mentoring Program

Sonia Perez-Suarez (Tecnologico de Monterrey, Mexico); Erika García-Silva (University of Salamanca, Spain); Ana Carolina Zavala-Parrales and Adriana Vargas Martínez (Tecnologico de Monterrey, Mexico); Alicia García-Holgado (Universidad de Salamanca, Spain); Angeles Dominguez (Tecnologico de Monterrey, Mexico & Universidad Andres Bello, Chile)

13:03

Enhancing Soft Skills in Applied STEM Fields Through Games

Maria Giulia Ballatore and Anita Tabacco (Politecnico di Torino, Italy)

13:21

Evaluating the Application of Large Language Models to Generate Feedback in Programming Education

Sven Jacobs and Steffen Jaschke (University of Siegen, Germany)

13:39

Investigating Factors Contributing to Student Dropout in a STEM MOOC

Tina P. Nantsou, Hector Nistazakis and George S Tombras (National and Kapodistrian University of Athens, Greece)

13:57

Teaching Advanced Topics in Numerical Engineering Using Project-Based Learning

Andreas Apostolatos (Technical University of Munich & The Mathworks Inc., Germany); Sebastian Gross (The MathWorks Inc., Germany)

12:45 - 14:15
DT4: Digital Transformation 4
Room: Aegle A
Session Chair: Charalambos Christou (University of Nicosia, Nicosia, Cyprus)

12:45

Transforming Education in the Digital Age: Exploring the Dimensions of Education 4.0

Gerasimos Vonitsanos (University of Patras, Greece); Ioanna Moustaka and Spyridon Doukakis (Ionian University, Greece); Phivos Mylonas (University of West Attica & National Technical University of Athens, Greece)

13:03

Ariadne's Thread for Unravelling Learning Paths: Identifying Learning Styles via Hidden Markov Models

Flemming Bugert (University of Applied Sciences Regensburg, Germany); Susanne Staufer (Technical University of Applied Sciences Regensburg (OTH), Germany); Dominik Bittner, Vamsi Krishna Nadimpalli, Timur Ezer, Lisa Grabinger and Florian Hauser (University of Applied Sciences Regensburg, Germany); Jürgen Mottok (Ostbayerische Technische Hochschule Regensburg, Germany)

13:21

Enhancing Research on Engineering Education: Empowering Research Skills Through Generative Artificial Intelligence for Systematic Literature Reviews

Pablo Castillo, Carmen Fernandez-Panadero, Carlos Alario-Hoyos and Carlos Delgado Kloos (Universidad Carlos III de Madrid, Spain)

13:39

Towards Assessing the Credibility of Chatbot Responses for Technical Assessments in Higher Education

Ritwik Murali (Amrita School of Computing, Amrita Vishwa Vidyapeetham - Coimbatore); Dhanya M Dhanalakshmy (Amrita School of Computing, Coimbatore, Amrita Vishwa Vidyapeetham, India); Veeramanohar Avudaiappan (Amrita School of Engineering - Coimbatore, India); Gayathri Sivakumar (Amrita School of Computing - Coimbatore, India)

13:57

Using ChatGPT in Software Development Education

Neil Anderson and Aidan McGowan (Queen's University Belfast, United Kingdom (Great Britain)); Philip Hanna (Queen's University Belfast, USA); David Cutting (Queens University Belfast Belfast, United Kingdom (Great Britain)); Leo Galway and Matthew Collins (Queens University Belfast, United Kingdom (Great Britain))

12:45 - 14:15
ENV14: Student-centered Learning Environments 14
Room: Aegle B
Session Chair: Lampros Karavidas (Aristotle University of Thessaloniki, Greece)

12:45

Integration of Computational Techniques in the Teaching of Physics of Electronic Devices: A Practical and Applied Perspective

Hugo L. Aya Baquero (Universidad Distrital Francisco José de Caldas, Colombia); Francisco J Zamora (Universidad Distrital Francisco Jose de Caldas, Colombia)

13:00

Diagnostic Evaluation of Basic Mathematical Knowledge Carried Out on Freshman-Year Engineering Students

Cesar E Garcia-Ortiz and Manuela Ortíz Díaz (Tecnologico de Monterrey, Mexico); Elvira G. Rincon-Flores (Tecnológico de Monterrey, Mexico & GRIAL and INDIE Research Group, Spain); Alfonso Serrano Heredia (Tecnologico de Monterrey, Mexico)

13:15

Benefits of Student Engagement on an Engineering Fair for Their Professional Development

Elvira Niño-Juárez (Tecnológico de Monterrey, Mexico); Alicia Minerva Ortiz, Sr. (Instituto Tecnológico y de Estudios Superiores de Monterrey, Mexico); Vianney Lara-Prieto and H. Lizette Menchaca-Torre (Tecnologico de Monterrey, Mexico)

13:30

Utilizing Geo-AI and AR for Teaching Interdisciplinary Courses in Earth Science

Muhammad Nawaz (National University of Singapore, Singapore); Farha Sattar (Charles Darwin University, Australia)

13:45

Engineering Students' Experience of Strip and Assemble Project - a Novel Approach to Project-Based Learning

Cristina Angel, Sam Gqibani, Nwobodo-Anyadiegwu Eveth Nkeiruka and Vatiswa Mbola (University of Johannesburg, South Africa)

14:00

Improving Student Motivation in Higher Education Through Nearpod

Claudia Hernandez-Mena (Tecnologico de Monterrey, Mexico); Nicolás Amado-Moranchel (Tecnológico de Monterrey, Mexico); Jorge Alvarez (Tecnologico de Monterrey, Mexico); Mariana Olivares (Instituto Tecnologico y de Estudios Superiores de Monterrey, Mexico); Paulinna Faccinetto-Beltrán (Tecnologico de Monterrey, Mexico)

12:45 - 14:15
ENV5: Student-centered Learning Environments 5
Room: Homer
Session Chair: Tina Vrieler (Uppsala University, Sweden)

12:45

Linking Technology and Data Literacy With a Low-Cost Experiment Approach for K-12 Education

Marcus Brändle, Jonas Benedikt Arnold and Max Kirchmaier (University of Stuttgart, Germany)

13:03

Integrating International Research-Innovation Projects and Working Life Partners Into Cybersecurity Degree Programme

Jyri Rajamäki (Laurea University of Applied Sciences, Finland); Paresh Rathod (Laurea University of Applied Sciences, Finland & Trustilio BV-Amsterdam-The Netherlands, Finland); Pasi Kämppi (Laurea University of Applied Sciences, Finland); Rauno Pirinen (Finland)

13:21

Development of Academic Projects With Robotics for Social Support: Initiatives of Mexican Engineering Students

Edgar Lopez-Caudana (Tecnologico de Monterrey & Institute of the Future of Education, Mexico); Ariadna Sosa, Joan Dominguez and Victoria Rodriguez (Tecnologico de Monterrey, Mexico); Carina Soledad González González (Universidad de La Laguna, Spain); Carlos Enrique George-Reyes (Tecnologico de Monterrey & Institute for the Future of Education, Mexico)

13:39

A Study on Teaching Cyber-Physical Systems With a Customized Branded Mobile Robot for Industry 4.0

Consuelo Rodriguez-Padilla (& Tecnologico de Monterrey, Mexico); Mario Guillermo Martinez Guerrero (Manchester Robotics, United Kingdom (Great Britain)); Alexandru Stancu (University of Manchester, United Kingdom (Great Britain)); Karla Yokoyani Chavero Valencia, Bernando Flores Reyes and Jeremy Bruce Taylor Valdez (ITESM, Mexico); Carlos Vazquez-Hurtado (Tecnologico de Monterrey, Mexico)

13:57

Competence-Enhancing Knowledge Transfer of Basic Research Content: Project-Based Learning in Engineering Studies

Frank Dieball, Stefanie Meilinger, Florian Bahl and Philipp Kruppe (University of Applied Sciences Bonn-Rhein-Sieg, Germany)

12:45 - 14:15
GAI2: Generative AI in learning and educational settings 2
Room: Panacea Amphitheatre
Session Chair: Habib M. Kammoun (University of Sfax & REGIM-Lab., Tunisia)

12:45

Unveiling the Impact of Large Language Models on Student Learning: A Comprehensive Case Study

Katerina Zdravkova (Ss. Cyril and Methodius University in Skopje, Macedonia, the former Yugoslav Republic of); Fisnik Dalipi and Fredrik Ahlgren (Linnaeus University, Sweden); Bojan Ilijoski (Sts Cyril and Methodius University, Macedonia, the former Yugoslav Republic of); Tobias Ohlsson (Linnaeus University, Sweden)

13:00

Beyond the Hype: Perceptions and Realities of Using Large Language Models in Computer Science Education at an R1 University

Jason L Weber and Barbara Martinez Neda (University of California, Irvine, USA); Kitana Carbajal Juarez, Jennifer Wong-Ma, Sergio Gago-Masague and Hadar Ziv (University of California Irvine, USA)

13:15

On the Privacy and Security for e-Education Metaverse

Sofia Sakka (University of Ioannina, Greece); Vasiliki Liagkou (University of Ioannina & Computer Technology Institute and Press Diophantus, Greece); Chrysostomos Stylios (University of Ioannina & Industrial Systems Institute, Athena RC, Greece); Afonso Ferreira (Centre National de La Recherche Scientifique, France)

13:30

Enrich Humanoids With Large Language Models (LLM)

Angelos Antikatzidis, Michail Feidakis, Konstantina Marathaki and Lazaros Toumanidis (University of West Attica, Greece); Charalampos Z Patrikakis (University of West Attica & COmputer Networks & SErvices Research Team (CONSERT), Greece)

13:45

Use of Generative Artificial Intelligence in Educational Environments: An Initial Student Perspective of the Risks and Advantages

Laura Eugenia Romero Robles (Tecnológico de Monterrey, Mexico); Jackeline Iturbe Ek (Tecnologico de Monterrey, Mexico)

14:00

Unveiling Generative AI in Higher Education: Insights From Engineering Students and Professors

Nicia Guillén-Yparrea and Felipe Hernández-Rodríguez (Instituto Tecnologico y de Estudios Superiores de Monterrey, Mexico)

12:45 - 14:15
STEM4: K-12 STEM Education Initiatives 4
Room: Chiron
Session Chair: Mariza Tsakalerou (Nazarbayev University, Kazakhstan)

12:45

Where is the Interdisciplinary? Insights of Interdisciplinary STEM Students'

Tobias Bahr (University of Stuttgart, Germany)

13:03

Introducing Cryptographic and Sorting Algorithms to Primary School Students and Its Effect in the Classroom

Athanasios Karakostas (University of the Aegean, Greece); Akrivi Vlachou (University of Aegean, Greece)

13:21

Information Encoding in Computer Science Education Using the Cup Song

Heike Buttke and Johannes Krugel (Leibniz University Hannover, Germany)

13:39

Development of a Hands-On Learning Tool for Junior High School Science: Exploring the ``Nature of Sound'' With a Thumb-Sized Microcomputer

Kota Toyoshima, Mizue Kayama and Nobuyuki Tachi (Shinshu University, Japan); Takashi Nagai (Institute of Technologists, Japan); Takehiko Asuke (Ina City Board of Education, Japan)

13:57

Neuroplasticity-Based Literacy Rescue: A Multisensory and Tangible Learning Methodology for Children at Risk

Laura Q Jurgina, Lui Gill Aquini, Marilton S Aguiar and Leomar Soares da Rosa, Jr. (Universidade Federal de Pelotas, Brazil); João Pedro Barbosa Lopes (Universidade Federal de Pelotas - UFPel, Brazil); Tiago Duarte Mackedanz (Universidade Federal de Pelotas, Brazil); Angela Ines Klein (Federal University of Pelotas, Brazil); Tiago Thompsen Primo and Rafael Soares (Universidade Federal de Pelotas, Brazil)

12:45 - 14:15

WS13: An Introduction to Systematic Literature Reviews for Engineering Education Researchers

Ines Direito (UCL and University of Aveiro, United Kingdom (Great Britain)); Shannon Chance (Technological University Dublin, Ireland & University College London, United Kingdom (Great Britain))

Room: Akeso

Session Chair: Shannon Chance (Technological University Dublin, Ireland & University College London, United Kingdom (Great Britain))

12:45 – 14:15

Cybersecurity Training Module 3

Room: Syndicate 2.3

Session Chair: Paresh Paroth (Laurea University, Finland)

14:15 – 14:45

Coffee Break | Exhibits

Room: Ground Level – Lobby Area

Technical Program: Friday, May 10, 2024

14:45 - 16:15
Special Session: Pre-University STEM Outreach: Igniting Interest in STEM in School-Aged Children
Room: Syndicate 2.1
Session Chair: Stamatis Dragoumanos (Computer Technology Institute and Press Diophantus, Greece)

14:45
Leveraging Digital Tools for Immersive Gamified Learning in the Heart of History: Exploring Multidisciplinary Education in the Old City of Rhodes
Ioannis Sarlis (University of Piraeus & 7th Public Middle School of Rhodes, Greece); Stavroula Antonopoulou (Aristotle University of Thessaloniki, Greece); Maria Antoniou (7th Middle School of Rhodes, Greece); Dimitrios Kotsifakos and Christos Douligeris (University of Piraeus, Greece)

15:00
Igniting Student Interest in STEM, Especially Girls, With IEEE REACH, a Novel OER Program for Pre-University Educators
Kelly McKenna (IEEE History Center, USA); Michael Geselowitz (IEEE & Stevens Institute of Technology, USA)

15:15
Jr.DroneTech Outreach Program for School-Aged Children in Malaysia
Umawathy Techanamurthy (Universiti Kebangsaan Malaysia (UKM) & UKM, Malaysia); Muhaimin Osman (The National Academy for drone Sports Excellence AKSAdrON, Malaysia); Muhammad Aiman Ahmad Zambri (Universiti Kebangsaan Malaysia, Malaysia)

15:30
From Outreach to Enrollment: Exploring the Influence of STEM Outreach Activities on Student Career Choices and Perceptions
Tomislav Jagušt (University of Zagreb, Croatia); Ana Sović (University of Zagreb, Faculty of Electrical Engineering and Computing, Croatia); Dario Bojanjac (University of Zagreb, Croatia)

15:45
Equitable STEM Education for Underserved Communities: Implementing Effective Learning Methodologies [virtual]
Mousiki Kar (Heritage Institute of Technology, India)

16:00
Sparking Interest in K-12 Students Using Small-Scale Electromechanical Experiments
Theresa Odun-Ayo and Nathaniel Van Devender (Missouri State University, USA)

14:45 - 16:15
DT5: Digital Transformation 5
Room: Aegle A
Session Chair: J. Ángel Velázquez-Iturbide (Universidad Rey Juan Carlos, Spain)

14:45

Teachers' Intention to Integrate Computational Thinking Skills in Higher Education: A Survey Study in the Netherlands

Xiaoling Zhang, Fenia Aivaloglou and Marcus Specht (Delft University of Technology, The Netherlands)

15:03

Towards the Harmonisation of Cybersecurity Education and Training in the European Union Through Innovation Projects

Rauno Pirinen (Finland); Paresh Rathod (Laurea University of Applied Sciences, Finland & Trustilio BV-Amsterdam-The Netherlands, Finland); Emilia Gugliandolo (Engineering Ingegneria Informatica, Italy); Kevin Fleming (Inlecom Commercial Pathways, Ireland); Nineta Polemi (University of Piraeus, Greece)

15:21

Open and Low Cost Techniques to Foster Engineering Education: The Smart Egg Classifier Example

Dimitrios Loukatos (Agricultural University of Athens & NCSR Demokritos, Greece); Konstantinos Limnidis and Emmanouil P Androulakis (Agricultural University of Athens, Greece); Dimitrios E Kiriakos (University of West Attica & DIEK Aigaleo, Greece); Maria Kondoyanni and Konstantinos G Arvanitis (Agricultural University of Athens, Greece)

15:39

Innovative STEM Practices Fostering the Digital Transformation of Agriculture: The STEM4Agri Paradigm

Dimitrios Loukatos (Agricultural University of Athens & NCSR Demokritos, Greece); Maria Kondoyanni (Agricultural University of Athens, Greece); Dimitrios E Kiriakos (University of West Attica & DIEK Aigaleo, Greece); Ioannis-Vasileios Kyrtopoulos (Agricultural University of Athens, Greece); Yannis Psaromiligkos (DigiT DSS Lab, Greece); Konstantinos G Arvanitis (Agricultural University of Athens, Greece)

15:57

How to Better Teach Computer Networks to Freshman Engineers Post-Pandemic, A Case-Study

Romaric Duvignau (Chalmers University of Technology, Sweden)

14:45 - 16:15
ENV15: Student-centered Learning Environments 15
Room: Aegle B
Session Chair:

14:45

Assessing TEC21 Educational Model's Impact on Transversal Competencies Among Undergraduates in Internship Programs
Guillermo M. Chans and Santa Tejeda (Tecnologico de Monterrey, Mexico); Maritza Peña-Becerril (Tecnológico de Monterrey, Mexico); Claudia Camacho Zuñiga (Tecnologico de Monterrey, Mexico & Institute for the Future of Education, Mexico)

15:00

Enhancing Civil Engineering Education: A Comprehensive Analysis of Student Perspectives on Technology-Integrated Learning
Samiran Das (University of Glasgow, Singapore); Li Hong Idris Lim (National University of Singapore, Singapore)

15:15

The Impact of Educational Partners in the Development of Technical and Soft Skills in Undergraduate Students
Rebeca García-García and Jorge Membrillo-Hernández (Tecnologico de Monterrey, Mexico); Maria Ileana Ruiz-Cantisani (Tecnológico de Monterrey, Mexico); Sara Guajardo (Tecnologico de Monterrey Mexico, Mexico); Vianney Lara-Prieto (Tecnologico de Monterrey, Mexico)

15:30

A Tiered Learning Framework for Self-Guided Engineering Design Education
Eliathamby Ambikairajah (University of New South Wales, Australia); Tharmarajah Thiruvaran (University of Jaffna, Sri Lanka); Vidhyasaharan Sethu (University of New South Wales, Australia); Deepak Mishra (University of New South Wales (UNSW) Sydney, Australia); Sirojan Tharmakulasingam (University of New South Wales, Australia)

15:45

Perceptions of the First Generation of Graduate Engineers in Sustainable Development, Mexico City Campus, on the Tec21 Educational Model
Juan Manuel Reyna-González, Sr. (Instituto Tecnologico y de Estudios Superiores de Monterrey, Mexico)

16:00

Comparative Analysis of the Use of Extended Reality Resources Between Universities to Generate Engagement in Engineering Students

Maria Ileana Ruiz-Cantisani (Tecnológico de Monterrey, Mexico); Fabiola Lima-Sagui (Tecnologico de Monterrey, Mexico); Juanita Bernal-Alvarado (Universidad de Los Andes, Mexico)

14:45 - 16:15
ENV6: Student-centered Learning Environments 6
Room: Homer
Session Chair: Panos Gotsiopoulos (University of Piraeus, Greece)

14:45

Finding the Needles in the Haystack: Identifying Essential Concepts and Tools for Inclusion in a Cross-Listed Introductory Semester Course in Cloud Computing

Maria Striki (Rutgers State University of New Jersey, USA); Sasan Haghani (Rutgers University, USA)

15:03

Interactive E-Learning Environment for Cognitive Robotics

Jörn Syrbe, Till Rümenapp, Petra Wenzl, Michaela Kümpel, Michael Beetz and Arthur Niedźwiecki (University of Bremen, Germany)

15:21

Systematic Mapping of Text-Based Formative Assessment Tools in Online Assignments

Aurelia Ciupe (Technical University of Cluj-Napoca, Romania); Giga Khositashvili (Ilia State University, Georgia); Bogdan Orza (Technical University of Cluj-Napoca, Romania)

15:39

The Postgraduate Student Perspective on Academic Misconduct in the Era of Essay Mills and Generative AI: A Case Study From Northeast England

Rebecca Strachan, Cynthia Oguna and Ugochukwu Oruche (Northumbria University, United Kingdom (Great Britain))

15:57

When Doing Challenge-Based Learning, You Need Critical Morality to Contribute to Societal Challenges

Gunter Bombaerts (Eindhoven University of Technology, Belgium); Irene Magara (Mbarara University of Science and Technology, Uganda); Jorge Membrillo-Hernández (Tecnologico de Monterrey, Mexico); Karolina Doulougeri (Eindhoven University of Technology, The Netherlands)

14:45 - 16:15
ETH1: Ethical Challenges 1
Room: Akeso
Session Chair: Hatem Ben Sta (University of Tunis at El Manar, Tunisia)

14:45

Using Active Learning and Critical Thinking to Identify and Apply Ethical Values in Engineering Education

Paloma Diaz, Teresa Onorati and Ignacio Aedo (Universidad Carlos III de Madrid, Spain)

15:07

Investigating the Role of Socioeconomic Factors on CS1 Performance

Barbara Martinez Neda (University of California, Irvine, USA); Flor Morales, Kitana Carbajal Juarez, Jennifer Wong-Ma and Sergio Gago-Masague (University of California Irvine, USA)

15:30

Engineering Virtue: A Behavioral Approach to Ethical Challenges in Engineering Education

Roberto Gómez Tobías (Tecnológico de Monterrey, Mexico); Jorge Alvarez (Tecnologico de Monterrey, Mexico)

15:52

Challenge-Based Learning in Engineering: On the Choosing an Appropriate Challenge to Develop Competencies

Jorge Membrillo-Hernández and Rebeca García-García (Tecnologico de Monterrey, Mexico); Maria Ileana Ruiz-Cantisani (Tecnológico de Monterrey, Mexico); Vianney Lara-Prieto (Tecnologico de Monterrey, Mexico); Araceli Martínez-Ortiz (University of Texas at San Antonio, USA)

14:45 - 16:15
GAI3: Generative AI in learning and educational settings 3
Room: Panacea Amphitheatre
Session Chair: Afonso Ferreira (Centre National de La Recherche Scientifique, France)

14:45

Solving Computer Science 2 Tasks: Students' Reflections on the Use of ChatGPT

Inés Friss de Kereki and Ismael Garrido (Universidad ORT Uruguay, Uruguay)

15:00

ChatGPT in the Classroom: A Shift in Engineering Design Education

Eliathamby Ambikairajah and Sirojan Tharmakulasingam (University of New South Wales, Australia); Tharmarajah Thiruvaran (University of Jaffna, Sri Lanka); Vidhyasaharan Sethu (University of New South Wales, Australia)

15:15

Work in Progress: Empowering Engineering Education With ChatGPT: A Dive Into the Potential and Challenges of Using AI for Tutoring

Trinidad S Balart and Kristi J. Shryock (Texas A&M University, USA)

15:30

The Evolving Role of Generative AI in Text Linguistic Literacies: Exploring the Potential of Cognition-Aware Assistance (WiP)

Anne Frenzke-Shim (Karlsruhe University of Education, Germany); Alexander Maedche (University of Mannheim, USA); Dorothee Kohl-Dietrich, Ulf Kerber and Bernhard Standl (Karlsruhe University of Education, Germany); Moritz Langner (Karlsruhe Institute of Technology, Germany)

15:45

Expanding the 'A' in STEAM: Integrating Poetry and AI for Educational Evolution

Theodora K. Kouvara, Christoforos Karachristos and Theofanis G. Orphanoudakis (Hellenic Open University, Greece)

16:00

Empowering K-12 STEM Teachers to Be AI-Ready: The Insights From a Bibliometrics Study

Ming Ma, Muhammad Ali and Gary K. W. Wong (The University of Hong Kong, Hong Kong)

14:45 - 16:15
LAB2: Non-traditional Lab concepts 2
Room: Melambus
Session Chair: Gudrun Socher (Hochschule München University of Applied Sciences, Germany)

14:45

Beyond the Classroom: Practical Application of Sensory Evaluation in Product Development and Market Strategies

Blanca Isabel M Guevara (ITESM Campus Querétaro, Mexico); Juan José C Navarro (Instituto Tecnologico y de Estudios Superiores de Monterrey, Mexico)

15:00

Specialized Capacitor Meter for a Portable, Low Cost Electronics Education Laboratory [virtual]

Subhi Qutob and Ming F Teng (American University of Sharjah, United Arab Emirates); Aji P Wibawa (Universitas Negeri Malang, Indonesia)

15:15

Photogrammetry as a Method of Educational Innovation. Civil Engineering Student Case Study

Romeo Ballinas-Gonzalez and Rodrigo Urcid (Tecnologico de Monterrey, Mexico); Juan P Medrano (Instituto Tecnológico y de Estudios Superiores de Monterrey, Mexico)

15:30

Hardware Oriented Microprocessor Simulator

Panayotis Papazoglou (National and Kapodistrian University of Athens, Greece)

15:45

A Challenge Based Educational Model on Structural Health Monitoring for Engineering Programs

Saul E. Crespo-Sanchez and Miguel X. Rodríguez-Paz (Tecnologico de Monterrey, Mexico); Milan Sokol (Slovak University of Technology, Slovakia); Luis Horacio Hernandez-Carrasco (Tecnologico de Monterrey, Mexico)

16:00

Implementing the Lean Launchpad Methodology in Higher Education: Challenges, Insights, and the Role of Mentorship

Daniel Guajardo-Flores (Tecnologico de Monterrey, Mexico); David Guemes-Castorena, Azael Capetillo, Jose Alfredo Galvan-Galvan, Abraham Tijerina-Priego, Lilia Gomez-Flores and Gloria Alicia Chapa-Guillén (Tecnológico de Monterrey, Mexico)

14:45 - 16:15
STEM5: K-12 STEM Education Initiatives 5
Room: Chiron
Session Chair: Massimo Ruo Roch (Politecnico di Torino, Italy)

14:45

Elevating Electrical Engineering Education: Integrating Student-Generated Homework Solution Videos in Flipped Classrooms

Fadi R. Shahroury (Princess Sumaya University for Technology, Jordan); Elio Sancristobal (Spanish University for Distance Education - UNED, Spain); Abdallah Yusuf Al-Zoubi (Princess Sumaya University for Technology, Jordan); Manuel Castro (Spanish University for Distance Education - UNED, Spain)

15:03

Sketching the Future: Unveiling Young Learners' Views on Scientists Through Art and Media in Greece

Elena Elliniadou (Harokopio University of Athens, Greece); Mariza Tsakalerou (Nazarbayev University, Kazakhstan)

15:21
Promoting the Digital Transformation of STEM Education With the Mechanical Neural Network, a Physical Model for Future-Oriented and Student-Centered AI Education
Axel Schaffland (Osnabrück University, Germany); Celina Müller and Julius Schöning (Osnabrück University of Applied Sciences, Germany)

15:39
Research and Development of an Creative Instrument to Allure Students Towards Engineering
Paulo Sousa Silva (Polytechnic of Porto - School of Engineering (ISEP), Portugal)

15:57
Science Attitudes Challenged by a STEM Project
Elena Elliniadou and Chryssa Sofianopoulou (Harokopio University of Athens, Greece); Mariza Tsakalerou (Nazarbayev University, Kazakhstan)

14:45 - 16:15
WS14: Applying for International Research Grants and Fellowships / last position, 20th in our list, BUT the topic could be a priority
Shannon Chance (Technological University Dublin, Ireland & University College London, United Kingdom (Great Britain)); Ines Direito (UCL and University of Aveiro, United Kingdom (Great Britain))
Room: Syndicate 2.7
Session Chair: Shannon Chance (Technological University Dublin, Ireland & University College London, United Kingdom (Great Britain))

14:45 – 16:15
Cybersecurity Training Module 4
Room: Syndicate 2.3
Session Chair: Dimitrios Koutras (University of Piraeus, Greece)

16:15 – 16:25
Break
Room: n/a

16:25 - 17:55
Special Session: Technology Major Student Engagement: Pedagogical Paradigms 1
Room: Syndicate 2.1
Session Chair: Epaminondas Epaminonda (University of Nicosia, Cyprus), Despo Ktoridou (University of Nicosia, Cyprus)

16:25

Teaching and Recognition of Skills in the DigitalEra Through OER-Based Personalized and Gamified Learning: The ENCORE Project
Antonio Bucchiarone (Fondazione Bruno Kessler, Italy); Filippo Chiarello (University of Pisa, Italy); Juliana Elisa Raffaghelli (University of Padua, Italy); Vito Giordano (University of Pisa, Italy); Andrea Vazquez-Ingelmo (University of Salamanca, Spain); Gianluca Schiavo (Fondazione Bruno Kessler, Italy); Alessandra Antonaci (European Association of Distance Teaching Universities, The Netherlands); Valentina Grion (University of Padua, Italy); Alessandro Guadagni (ValueDO, Italy)

16:43

Leveraging Students' Engagement Through the Incorporation of Serious Games
Ioanna Tsakarelou, Dimitrios Kotsifakos and Christos Douligeris (University of Piraeus, Greece)

17:01

Towards a Metaverse Learning Environment Acceptance Model: A Study of Students' Opinions in Cyprus Using Perceived Ease of Use and Usefulness Questionnare Items
Despo Ktoridou (University of Nicosia, Cyprus)

17:19

Examining Critical Factors Influencing Academic Performance of Freshman Engineering Students at Private Universities in Egypt
Wassim Alexan (Department of Education Studies, American University in Cairo, Egypt); Ibrahim M Karkouti (The American University in Cairo, Egypt)

17:37

Development of Lean Thinking Through the Use of a Card Game
Gibrán Sayeg-Sánchez, Pilar Rodríguez-Dobarganes, Miguel X. Rodríguez-Paz and Gonzalo Curiel-Olivares (Tecnologico de Monterrey, Mexico)

16:25 - 17:55
A4: Student-centered Learning Environments 23
Room: Syndicate 2.7
Session Chair: Eleni Seralidou (University of Piraeus, Greece)

16:25

Proposing and Testing an Open - Source and Low - Cost Drone Under the Engineering Design Process for Higher Education: The Mechatronics Course Use Case

Avraam Chatzopoulos (University of West Attica, Greece); Apostolos Xenakis (University of Thessaly, Greece); Michail Papoutsidakis (University of West Attica, Greece); Kostantinos Kalovrektis (Greece); Michail Kalogiannakis (University of Thessaly, Greece); Sarantos Psycharis (ASPETE, Greece)

16:43

Towards Comprehensive Assessment of Code Quality at CS1 Level: Tools, Rubrics and Refactoring Rules

Cruz Izu (The University of Adelaide, Australia); Claudio Mirolo (University of Udine, Italy)

17:01

Enhancing Fog/Edge Computing Education Using Extended Network Simulator Omnet++ (xFogSim)

Tariq Qayyum (United Arab Emirates University, United Arab Emirates); Zouheir Trabelsi (UAE University, United Arab Emirates); Ban Alomar (United Arab Emirates University, United Arab Emirates); Medha Mohan Ambali Parambil (UAE University, United Arab Emirates)

17:19

Teaching DNS Spoofing Attack Using a Hands-On Cybersecurity Approach Based on Virtual Kali Linux Platform

Zouheir Trabelsi and Medha Mohan Ambali Parambil (UAE University, United Arab Emirates); Tariq Qayyum and Ban Alomar (United Arab Emirates University, United Arab Emirates)

17:37

AI and Network Security Curricula: Minding the Gap

Ban Alomar (United Arab Emirates University, United Arab Emirates); Zouheir Trabelsi (UAE University, United Arab Emirates); Tariq Qayyum (United Arab Emirates University, United Arab Emirates); Medha Mohan Ambali Parambil (UAE University, United Arab Emirates)

16:25 - 17:55
DT6: Digital Transformation 6
Room: Aegle A
Session Chair: Dimitrios Kotsifakos (University of Piraeus, Greece)

16:25

AI-Driven Educational Transformation in Secondary Schools: Leveraging Data Insights for Inclusive Learning Environments

Dalila Durães (Algoritmi Centre, University of Minho, Portugal); Rita Bezerra (Algorithm Centre - University of Minho- Braga Portugal, Portugal); Paulo Novais (University of Minho, Portugal)

16:43

Evaluating Pedagogical Incentives in Undergraduate Computing: A Mixed Methods Approach Using Learning Analytics

Laura J Johnston (University College London, United Kingdom (Great Britain)); Takoua Jendoubi (UCL, United Kingdom (Great Britain))

17:01

Security Requirements for Proctoring in Higher Education

Robbie Luijben (Open University of the Netherlands, The Netherlands); Fabian Van den Broek (Open University of the Netherlands & Radboud University, The Netherlands); Greg Alpár (Open University of the Netherlands, The Netherlands)

17:19

Metastudents in the Metaverse: Navigating the Shift to Web 3 Education and the Emergence of NFT Credentials

Daniel Camacho-Leal, Azael Capetillo and David Guemes-Castorena (Tecnológico de Monterrey, Mexico)

17:37

Human-Centered Observation of Learning Processes in Industry Using Augmented Reality

Steffen Jaschke (University of Siegen, Germany); Tamara Riehle (University of Rostock, Germany); Sven Jacobs (University of Siegen, Germany); Mareike Menzel (TU Dortmund, Germany)

16:25 - 17:55
ENV16: Student-centered Learning Environments 16
Room: Aegle B
Session Chair: Baltasar Fernández-Manjón (Universidad Complutense de Madrid, Spain)

16:25

Revisiting Tech Debates Using Science Fiction: Methodological Implications and First Impressions

Jessica Lucchetta and Tommaso Carraro (University of Trento, Italy); Milena Stoycheva (Junior Achievement Bulgaria, Bulgaria); Lorenzo Angeli (University of Trento, Italy)

16:40

Enhancing Students' Performance in Computer Science Through Tailored Instruction Based on Their Programming Background

Baharak Ahmaderaghi (Queen's University Belfast, United Kingdom (Great Britain)); Esha Barlaskar and Olga Pishchukhina (Queens University Belfast, United Kingdom (Great Britain)); David Cutting (Queens University Belfast Belfast, United Kingdom (Great Britain)); Darryl Stewart (Queen's University Belfast, United Kingdom (Great Britain))

16:55

Student Involvement in Development of Learning Tools - Collaboration Models and Challenges

Jens Liebehenschel (Frankfurt University of Applied Sciences, Germany)

17:10

Innovative Capstone Project Approaches in a Software Development Master's Program

Neil Anderson and Aidan McGowan (Queen's University Belfast, United Kingdom (Great Britain)); Leo Galway (Queens University Belfast, United Kingdom (Great Britain)); Philip Hanna (Queen's University Belfast, USA)

17:25

Optimizing Asynchronous Collaboration in Virtual Classrooms

Cheng Yi Pei and Akshay Narayan (National University of Singapore, Singapore)

17:40

Empowering University Students With A Guided Personalised Learning Model

Yue Chen, Kok Keong Chai, Ling Ma and Chao Liu (Queen Mary University of London, United Kingdom (Great Britain)); Tiankui Zhang (Beijing University of Posts and Telecommunications, China)

16:25 - 17:55
ENV19: Student-centered Learning Environments 19
Room: Melambus
Session Chair: Bee-Yen Toh (Queen's University Belfast, United Kingdom (Great Britain))

16:25

Enhancing Integrated STEM Education Through Underwater Robotics Competitions: A Project-Based Learning Approach Incorporating Engineering Design Processes and Bloom's Taxonomy

Tak Sang Yim and Chun Yin Leung (The Hong Kong University of Science and Technology, Hong Kong); Kam-Tim Woo (Hong Kong University of Science and Technology, Hong Kong)

16:40

Integrating Entrepreneurial Learning in Engineering Design Courses: Assessment of Entrepreneurial Self-Efficacy

Julia Crudele, Jeffrey Stransky and Prateek Shekhar (New Jersey Institute of Technology, USA)

16:55

Bridging the Micro and Macro: Enhancing MEMS Education Through Cross-Disciplinary Analogies

Bee-Yen Toh (Queen's University Belfast, United Kingdom (Great Britain)); Neil Buchanan (Queens University Belfast, United Kingdom (Great Britain))

17:10

Promoting Inclusive Education Through Virtual Underwater Robotics Experience: Enhancing STEM Learning and Collaboration With Real-World Applications

Tak Sang Yim (The Hong Kong University of Science and Technology, Hong Kong); Kam-Tim Woo (Hong Kong University of Science and Technology, Hong Kong); Lai Ting Chin (The Hong Kong University of Science and Technology, Hong Kong)

17:25

Work-In-Progress: Input Support for the Formulation of Learning Outcomes in STEM

Marco Klopp (University of Applied Sciences Aschaffenburg, Germany); Jim Haug (University of Applied Sciences Kempten, Germany); Antonia Dörringer (University of Applied Sciences Aschaffenburg, Germany)

17:40

A Model of Multiple Approaches to Learners' Success in MOOCs: A Scoping Literature Review

Piret Luik (University of Tartu, Estonia); Marili Rõõm (The University of Tartu & Institute of Computer Science, Estonia); Marina Lepp (University of Tartu, Estonia)

16:25 - 17:55
ENV21: Student-centered Learning Environments 21
Room: Panacea Amphitheatre
Session Chair: Wolfgang Werth (Carithia University of Applied Sciences, Austria)

16:25

Work in Progress: Setting Up a Control Lab Experiment for an Exciting Learning Experience in Control Engineering

Wolfgang Werth (Carithia University of Applied Sciences, Austria); Martin Brunner (CUAS, Austria)

16:40

CODEWIZARDY, Online Application Supporting Instructors and Students to Learn Programming in a Gamified Way

Maria Triantafyllidou (International University of Greece, Greece); Lefteris Moussiades (International Hellenic University, Greece); Hippokratis Apostolidis (International University of Greece, Greece)

16:55

Teaching Informatics in Lower-Secondary Schools: Views of Informatics Teachers

Riin Saadjärv and Piret Luik (University of Tartu, Estonia); Veronika Lehesaar (Miina Härma Gymnasium, Estonia)

17:10

Block-Based Programming Learning Tool for ML and AI Education (Work in Progress)

Yousuf Amanuel, Joshua Garlisch and Johannes Krugel (Leibniz University Hannover, Germany)

17:25

Reverse Engineering Pedagogy to Promote Confidence and Motivation in Programming Among Honors College Students

Da Yang Tan and Yoke Leng Loo (National University of Singapore, Singapore)

17:40

Work in Progress: Collaborative Learning in Embedded Systems and Analog Electronics Laboratory Courses, a Novel Interdisciplinary Engineering Student-Centered Tutoring Approach

Francisco J Zamora (Universidad Distrital Francisco Jose de Caldas, Colombia); Hugo L. Aya Baquero (Universidad Distrital Francisco José de Caldas, Colombia)

16:25 - 17:55
ENV7: Student-centered Learning Environments 7
Room: Homer
Session Chair: Massimo Ruo Roch (Politecnico di Torino, Italy)

16:25
Creating a Positive Environment for Finding Questions and Asking Questions in Class
Axel Böttcher (Munich University of Applied Sciences, Germany); Veronika Thurner (Hochschule München University of Applied Sciences, Germany); Johannes Walter (HM University of Applied Sciences Munich, Germany)

16:43
Personalized Self-Assessment Tool Using a Telegram Bot: A Case Study on Data Structures and Algorithms
Fernando López Ostenero, Juan Martínez Romo, Laura Plaza and Lourdes Araujo (Universidad Nacional de Educación a Distancia, Spain)

17:01
Combining Data- and Knowledge-Driven AI With Didactics for Individualized Learning Recommendations
Dieter Landes, Yvonne Sedelmaier, Felix Böck, Alexander Lehmann, Melanie Fraas and Sebastian Janusch (Coburg University of Applied Sciences and Arts, Germany)

17:19
Flipped Classroom for Linear Algebra at Undergraduate Level
Manoj Thulasidas (Singapore Management Univerity, Singapore)

17:37
The Grader: A Grading Assistant for Lab Tests and a Teaching Tool
Manoj Thulasidas (Singapore Management Univerity, Singapore); David Lo (Singapore Management University, Singapore)

16:25 - 17:55
ETH2: Ethical Challenges 2
Room: Akeso
Session Chair: Ioannis Sarlis (University of Piraeus & 7th Public Middle School of Rhodes, Greece)

16:25
UBI Journey: A Mobile Game to Promote Student Socialization and Engagement
João Braga Santos (University of Beira Interior, Portugal & LABCOM Communication & Arts, Portugal); Bruno Silva (University of Beira Interior & Instituto de Telecomunicações, Portugal); Helena M. B. Alves and Ernesto Vilar Felgueiras (University of Beira Interior, Portugal)

16:43

Exploring Engineering Students' Perception of Sustainability and Ethics in Their Curriculum Across Disciplines

Siara R Isaac (Ecole Polytechnique Fédérale de Lausanne, Switzerland); Joelyn de Lima (Ecole Polytechique Fédérale de Lausanne, Switzerland); Yousef Jalali (EPFL, Switzerland); Valentina Rossi and Roland Tormey (Ecole Polytechnique Fédérale de Lausanne, Switzerland); Jessica Dehler Zufferey (EPFL, Switzerland)

17:01

Work in Progress-The Role of Self-Assessment in Fostering Ethical Practices in Engineering Education

Mohammed Abu Basim N and Nitin Bhatia (Indian Institute of Technology Jodhpur, India)

17:19

ChatGPT Has Eaten My Assignment: A Student-Centric Experiment on Supervising Writing Processes in the AI Era

Romaric Duvignau (Chalmers University of Technology, Sweden)

17:37

Work in Progress: Systems Thinking as a Foundation for Sustainability Awareness and Ethical Use of Technologies

Andrea Gerosa (University of Padova, Italy)

16:25 - 17:55
STEM6: K-12 STEM Education Initiatives 6
Room: Chiron
Session Chair: Dimitrios Kallergis (University of West Attica, Greece)

16:25
Optics Education via Experiments for Blind Students
Rucha Joshi, Shashikant Pawar, Ashutosh Raina and Divya Monga (Plaksha University, India)

16:43
Active Blended Learning as a Tool Focused on Industry 5.0 at EuroTeQ Engineering University
Valery Vodovozov, Zoja Raud and Eduard Petlenkov (Tallinn University of Technology, Estonia)

17:01
Building an Inclusive STEM Future: Engineering Students Empower Over 1200 Students by Designing Innovative Workshops Fostering Women's Participation in Engineering
David Garcia-Suarez, Iyali M Curiel-Enriquez, Jorge E Turner-Escalante and Dafne H Ocampo-Bahena (Tecnologico de Monterrey, Mexico)

17:19

Draw, Find, and Describe AI for Me: Investigating Learners' Conceptions of Artificial Intelligence

Gia Minh Vo (University of Hildesheim, Germany); Moritz Kreinsen (University of Hamburg, Germany); Rina Ferdinand (University of Oldenburg, Germany); Nils Pancratz (University of Hildesheim, Germany)

17:37

Beautiful Patterns Edition 2023: A Glimmer of Hope in Areas of Social Disaster Through Engineering and Reducing the Gender Gap in the Professional Field

Juan-Manuel Campos (Tecnológico de Monterrey, Mexico); Tzinnia G. Soto-Bernal and Angelica M Aguilar-Cerrillo (Tecnologico de Monterrey, Mexico)

16:25 – 17:55
Cybersecurity Training Module 2
Room: Syndicate 2.3
Session Chair: Dimitrios Koutras (University of Piraeus, Greece)

20:00 – 22:00
Gala Dinner
Kipriotis Panorama Pool @ Kipriotis Hotels

7:30 – 8:30
Registration
Room: Panacea Amphitheatre Lobby

8:30 - 10:00
Special Session: Technology Major Student Engagement: Pedagogical Paradigms 2
Room: Syndicate 2.1
Session Chair: Despo Ktoridou (University of Nicosia, Cyprus), Maria Michailidis (University of Nicosia, Cyprus)

8:30
Intellectual Property Management Course: Broader Capabilities and Knowledge for Technology Major Students
Charalambos Christou (University of Nicosia, Nicosia, Cyprus)

8:48
Students' Social Media and Content Development Practices: Evidence From a University in Cyprus
Epaminondas Epaminonda (University of Nicosia, Cyprus)

9:06
Effective and Efficient Distance Learning Experience: The Role of Leanring Resources, Interaction, Communication and Collaboration
Nikleia Eteokleous (Frederick University Associate Professor, Cyprus)

9:24
First Results of Students Attending a STEM Program in the Context of Digitisation
Tobias Bahr and Marcus Brändle (University of Stuttgart, Germany)

9:42
Towards Developing a Concept Inventory to Assess Conceptual Reconstruction in Computer Science Teacher Education Programs
Rina Ferdinand (University of Oldenburg, Germany); Gia Minh Vo (University of Hildesheim, Germany); Christos Chytas (Utrecht University, The Netherlands); Ira Diethelm (University of Oldenburg, Germany); Nils Pancratz (University of Hildesheim, Germany)

8:30 - 10:00
DT7: Digital Transformation 7
Room: Aegle A
Session Chair: Baltasar Fernández-Manjón (Universidad Complutense de Madrid, Spain)

8:30

Leveraging the Power of Digital Immersive Technologies to Improve Engineering Education and Learning
Haider Al-juboori and Gina Noonan (South East Technological University, Ireland)

8:48

Shaping the Future: A Cross-Disciplinary Journey in Design and Technology Integration
Gudrun Socher and Tina Weisser (Hochschule München University of Applied Sciences, Germany)

9:06 I

nnovating Engineering Education With Blended Learning and Remote Laboratories
Seng Kee Chee, Siok Li Julia Hoong and Lee Yeng Seng (Keysight Technologies, Malaysia)

9:24

Developing and Piloting an Approach to Evaluate Educational Innovation at Course Level
Erna Engelbrecht (Delft University of Technology & 4TU Centre for Engineering Education, The Netherlands); Remon M Rooij and Marcus Specht (Delft University of Technology, The Netherlands); Johannes Strobel (University of Texas at El Paso, USA)

9:42

Games for Coding to Attract New Students to STEM
Antonio Calvo-Morata (Universidad Complutense de Madrid, Spain); Niklas Humble (Mid Sweden University, Sweden); Peter Mozelius (Mid Sweden University, Spain); Rasmus Pechuel (Ingenious Knowledge, Spain); Baltasar Fernández-Manjón (Universidad Complutense de Madrid, Spain)

8:30 - 10:00
ENV17: Student-centered Learning Environments 17
Room: Aegle B
Session Chair: Lampros Karavidas (Aristotle University of Thessaloniki, Greece)

8:30

Case Studies in Control Engineering Educational Programs in Ukrainian Technical Universities
Viktoriya Voropayeva (Donetsk National Technical University, Ukraine); Leonid Zamikhovskyi and Anna Voropaieva (Ivano-Frankivsk National Technical University of Oil and Gas, Ukraine); Maryna Kabanets (Donetsk National Technical University, Ukraine)

8:48

Fostering Environmental Consciousness: Insights From Engineering Education and Sustainability Initiatives

Elena Olvera (Tecnologico de Monterrey, Mexico); Juan Olivares (Tecnológico de Monterrey, Mexico)

9:06

From Classroom to Sky: The Drones4STEM Initiative in Secondary Education

Theodoros G Karachalios, Christoforos Karachristos, Theodora K. Kouvara and Anastasios Fanariotis (Hellenic Open University, Greece); Vassilis Fotopoulos (Hellenic Open University & Digital Systems & Media Computing Laboratory, Greece); Theofanis G. Orphanoudakis (Hellenic Open University, Greece)

9:24

Factors Influencing Success and Failure in a PBL-Based Robotics Competition

Kaushik Srivatsan (Sai University, India); Suprabha Jadhav (IIT Bombay, India)

9:42

Algorithmic Decision Making in Education: Challenges and Opportunities

Nikolaos Levantis and Aggeliki Sgora (Ionian University, Greece)

8:30 - 10:00
ENV20: Student-centered Learning Environments 20
Room: Melambus
Session Chair:

8:30

Effects of Class Modality Switches in Teaching Introductory Programming to Humanities Students

Simona Vasilache (University of Tsukuba, Japan)

8:48

Retrieving Engineering Students' Prior Knowledge Through Adaptive Learning Platform

Elvira G. Rincon-Flores (Tecnológico de Monterrey, Mexico & GRIAL and INDIE Research Group, Spain); Leticia Castaño Sanchez, Laura Angélica Castillo Lara and Laura Patricia Aldape Valdes (Tecnológico de Monterrey, Mexico); Nohemí Rivera Vázquez (Tecnologico de Monterrey, Mexico)

9:06

Reflecting on Simplification of the Creation and Maintenance of Automated Assessments for Programming Tasks

Eerik Muuli, Marina Lepp, Tauno Palts, Kaspar Papli and Reimo Palm (University of Tartu, Estonia)

9:24

Fostering an Open Community for Sharing and Generating Open Educational Resources

Antonio Bucchiarone (Fondazione Bruno Kessler, Italy); Andrea Vazquez-Ingelmo (University of Salamanca, Spain); Gianluca Schiavo (Fondazione Bruno Kessler, Italy); Alicia García-Holgado (Universidad de Salamanca, Spain)

9:42

Effects of Perceived Technology Acceptance on Intention to Use Makerspaces and Digital Technologies

Christina Sotiriadou (University of Stuttgart & None, Germany); Marcus Brändle and Bernd Zinn (University of Stuttgart, Germany)

8:30 - 10:00
ENV8: Student-centered Learning Environments 8
Room: Homer
Session Chair: Dimitrios Kotsifakos (University of Piraeus, Greece)

8:30

Programming Learning Panorama in Higher Education in Mozambique - Challenges and Perspectives

Geraldo Nhadumbuque (Portugal-Coimbra, USA); Anabela Gomes (Polytechnic Institute of Coimbra, ISEC & CISUC, University of Coimbra, Portugal); Maria José Marcelino (University of Coimbra, Portugal)

8:48

mySkills - A Curriculum Integrated Employability Framework

Usman Naeem (Queen Mary University of London, United Kingdom (Great Britain)); Lisa Bosman (Purdue University, USA); Claire Revell (Queen Mary University of London, United Kingdom (Great Britain)); Alia Alhirsi (Forage, Australia)

9:06

Towards the Automatic Detection of Critical Thinking Through EEG and Facial Emotion Recognition

Hugo G. Gonzalez-Hernandez and Dafne V. Peña-Cortés (Tecnologico de Monterrey, Mexico); Abel Flores (Instituto Tecnológico y de Estudios Superiores de Monterrey, Mexico); Alberto Oliart, Miguel A. Martinez-Ayala and Roberto J. Mora-Salinas (Tecnologico de Monterrey, Mexico)

9:24

Leveraging GenAI for an Intelligent Tutoring System for R: A Quantitative Evaluation of Large Language Models

Lukas Frank and Fabian Herth (Aalen University of Applied Sciences, Germany); Paul Stuwe (Aalen University, Germany); Marco Klaiber, Felix Gerschner and Andreas Theissler (Aalen University of Applied Sciences, Germany)

9:42

Developing Critical Thinking Practices Interwoven With Generative AI Usage in an Introductory Programming Course

Arne Styve (Norwegian University of Science and Technology, Norway); Outi Tuulia Virkki (Haaga-Helia University of Applied Sciences, Finland); Usman Naeem (Queen Mary University of London, United Kingdom (Great Britain))

8:30 - 10:00
FUT1: Future-oriented and Personalized Educational Concepts 1
Room: Akeso
Session Chair: Maria Eftychia Angelaki (University of Piraeus, Greece)

8:30

T-CHAT Educational Approach to Teaching Critical Thinking Based on Use Cases in Software Engineering

Elena Mäkiö (Leibniz University of Applied Sciences, Germany); Juho Mäkiö (University of Emden Leer, Germany)

8:52

A Didactic Framework for Microgrids Knowledge Transfer – the Case of East Africa

Paul Bogere (Paderborn University, Germany); Katrin Temmen (University Paderborn, Germany)

9:15

Extracting Metadata From Learning Videos for Ontology-Based Recommender Systems Using Whisper & GPT

Alexander Lehmann and Dieter Landes (Coburg University of Applied Sciences and Arts, Germany)

9:37

Comparing Learning Outcomes Among Undergraduate Students

Ricardo Swain-Oropeza (Tecnologico de Monterrey, Mexico); Jose Alfredo Galvan-Galvan and Laura Eugenia Romero Robles (Tecnológico de Monterrey, Mexico); Maria de Lourdes Macario-Abularach (Tecnologico de Monterrey, Mexico)

8:30 - 10:00
STEM7: K-12 STEM Education Initiatives 7
Room: Chiron
Session Chair: Eleni Seralidou (University of Piraeus, Greece)

8:30

Neural Networks for Assessing Reading Disabilities in School-Aged Children

Maria Tsolia, Nikolaos Zygouris, NZ and Kostas Kolomvatsos (University of Thessaly, Greece)

8:45

Piloting of a Computer Science Content Knowledge Test for 10th Grade Students

Tobias Bahr (University of Stuttgart, Germany)

9:00

STEM Learning Through Drones: A Pedagogical Approach for Critical Thinking and Problem Solving

Farha Sattar (Charles Darwin University, Australia); Muhammad Nawaz (National University of Singapore, Singapore)

9:15

From Challenges to Papers: A Comprehensive Analysis of CURE Implementation

Pedro Jacinto Páramo-Kañetas, Sr. (Instituto Tecnológico de Estudios Superiores de Monterrey, Mexico); Ivonne Yznaga Blanco (Instituto Tecnológico y de Estudios Superiores de Monterrey, Mexico); Felipe Hernández-Rodríguez (Instituto Tecnologico y de Estudios Superiores de Monterrey, Mexico)

9:30

Empowering the Next Generation: Code Explorers Closing the Gender Gap in STEM

Elizabeth Mena-Aviles (Tecnologico de Monterrey & Institute for the Future of Education, Mexico); Nancy Pacheco (Coder Bloom, USA); Giovanna Romero-Contreras (Tecnologico de Monterrey, Mexico); Claudia Camacho Zuñiga (Tecnologico de Monterrey, Mexico & Institute for the Future of Education, Mexico)

9:45

An Analysis of Gender Differences of Interdisciplinary STEM Students' Interest, Motivation, Self-Concept and Vocational Orientations

Tobias Bahr (University of Stuttgart, Germany)

8:30 - 10:00
WOM1: Women for Leadership in Engineering Equity, Diversity, and Inclusion 1
Room: Panacea Amphitheatre
Session Chair: Edmundo Tovar (Universidad Politécnica de Madrid & Facultad de Informática, Spain)

8:30

Instructional Strategies for Hearing-Impaired Students Who are Subjects of Inclusive Programs of Engineering Education

Olga Oreshkina and Yulia Safonova (Bauman Moscow State Technical University, Russia)

8:48

Gender Disparities in a Databases Course: Performance of Different Activities

Piret Luik (University of Tartu, Estonia)

9:06

Factors Influencing Women's Underrepresentation in Engineering: A Literature Review at EDUCON

Viviana Callea (University Sapienza of Rome & FLY FISH SRL, Italy); Evangelos Dagklis (University of Macedonia, Greece); Tina P. Nantsou (National and Kapodistrian University of Athens, Greece); Ximena Otegui (Universidad de la República, Uruguay); Edmundo Tovar (Universidad Politécnica de Madrid & Facultad de Informática, Spain); Genny Villa (Université de Montréal, Canada)

9:24

WOMEN@INF Cracking the Code: Tackling Worldwide Gender Gaps in STEM

Sonia Díaz-Santos, Andrea Elvira Cotino-Arbelo, Jezabel M. Molina-Gil and Carina Soledad González González (University of La Laguna, Spain)

9:42

Paving the Path: Empowering Women in STEM From University to Industry

Syderita Vaka, Ramona Trestian, Can Baskent, Homeira Shayesteh and Alison Megeney (Middlesex University, United Kingdom (Great Britain))

10:00 – 10:30
Coffee Break | Exhibits
Room: Ground Level – Lobby Area

13:00 – 11:25
Plenary: GSA: Facilitating Intra-Subject Study and Inter-Subject Development with Course Knowledge Graphs
Qing Li (Hong Kong Polytechnic University, China)
Room: Panacea Amphitheatre
Session Chair: Andreas Pester (The British University in Egypt, Egypt)

11:25 – 11:45
Roundtable: Innovative Strategies to Foster Inclusion and Equity in Engineering Education | Panacea Amphitheatre
Room: Panacea Amphitheatre
Session Chair: Carina S. González-González (University Institute for Women's Studies (IUEM), University of La Laguna, Spain); Aruquia Peixoto (CEFET/RJ, Brazil)

11:45 – 12:45
Lunch
Room: Makedonia – Hotel Restaurant

12:45 - 14:15
Special Session: Embedding Employability Into Engineering Curriculum
Room: Syndicate 2.1
Session Chair:

12:45
Greek ICT School Teachers' Perceptions Towards Embedding Sustainability and Green Informatics Into the ICT Curricula
Maria Eftychia Angelaki and Theodoros Karvounidis (University of Piraeus, Greece); Evangelia Kolega (National Technical University of Athens, Greece); Christos Douligeris (University of Piraeus, Greece)

13:00
Employability Skills in Engineering: Towards a Broader Redefinition of Professional Identities
Vito Veneziano (University of Hertfordshire, United Kingdom (Great Britain)); Imran Mahmud (Bangladesh)

13:15
Waterloo Experience Accelerate (WEA): A Work-Integrated Learning Innovation
Shabnam Ivkovic, Norah McRae and Christine Moresoli (University of Waterloo, Canada)

13:30
Co-Op Education With a Sustainability Lens: A Case Study From University of Waterloo
Shabnam Ivkovic, Christine Moresoli and Norah McRae (University of Waterloo, Canada)

13:45
Bridging the Gap: Embedding Transversal Skills in Engineering Doctoral Education
Ines Direito (University of Aveiro, Portugal & University College London, United Kingdom (Great Britain)); Ana Freitas (University of Porto, Portugal)

14:00

Future Horizons in Learning Environment: Transcending Boundaries for Empowered Graduates Through Multi-Disciplinary Education

Aisha Abuelmaatti (Queen Mary University of London, United Kingdom (Great Britain)); Leon Vinokur (Queen Manry University of London, United Kingdom (Great Britain))

12:45 - 14:15
EDU5.0: Education in the Industry 5.0 era
Room: Aegle A
Session Chair: Hatem Ben Sta (University of Tunis at El Manar, Tunisia)

12:45

Unlocking the Future of INFOCOMM Workforce: A Visual KSA Matrix Taxonomy Approach to Education and Occupational Profiles

Jose Daniel Azofeifa, Valentina Rueda-Castro and Luis Jose Gonzalez-Gomez (Institute for the Future of Education, Tecnologico de Monterrey, Mexico); Sonia Gómez Puente (Eindhoven School of Education, Eindhoven University of Technology, The Netherlands); Julieta Noguez (Tecnologico de Monterrey & Escuela de Ingeniería y Ciencias, Mexico); Patricia Caratozzolo (Institute for the Future of Education, Tecnologico de Monterrey, Mexico)

13:07

Developing a Comprehensive Approach to Teaching Smart Factory Operations

Fazeel Khan and Kumar Singh (Miami University, USA)

13:30

Lab Exercise on Application- and Frequency-Dependent Current Measurement

Thomas Doebbert, Christoph Cammin and Gerd J. Scholl (Helmut-Schmidt-University, Germany)

13:52

Educational Robotics: A Comparison Between the Thymio and NAO Robot

Hafsa Omer AL Ansari (UTAS & University of Huddersfield, Oman)

12:45 - 14:15
ENV18: Student-centered Learning Environments 18
Room: Aegle B
Session Chair: Christos Katsanos (Aristotle University of Thessaloniki, Greece)

12:45

Transformation of an Extracurricular Project to a Student-Driven Academic Institution - Success Criteria and Benefits for Students and Faculty
Jan Behrendt (Bonn-Rhein-Sieg University of Applied Sciences & BRS Motorsport, Germany); Alexander Busch (Bonn-Rhein-Sieg University of Applied Sciences, Germany); Dennis Günther, Alexander Rundau and Daniel Röthgen (Bonn-Rhein-Sieg University of Applied Sciences & BRS Motorsport, Germany); Martina Grein (Bonn-Rhine-Sieg University, Germany); Dirk Reith (Bonn-Rhein-Sieg University of Applied Sciences, Germany)

13:03

Using Lego Serious Play as an Educational Innovation for Modeling Solutions in Higher Education With a Gender and Human Rights Focus on Social Change
Jorge Antonio Contreras Domínguez (Tecnológico de Monterrey ITESM, Mexico); Olga L Palacios Pérez (Tec de Monterrey, Mexico)

13:21

The Case of ePhos Project
Georgina Skraparli, Nikolaos Politopoulos, Lampros Karavidas, Nikos Pleros and Amalia N. Miliou (Aristotle University of Thessaloniki, Greece); Thrasyvoulos Tsiatsos (University of Thessaloniki, Greece)

13:39

Development of an Assistive Periodic Table as a Learning Resource for Students With Visual Impairments
Cibele Chist Sinoti and Daner Silva Martins (Brazil); Marilton S Aguiar and Tiago Thompsen Primo (Universidade Federal de Pelotas, Brazil)

13:57

"Let's Be Pirates": An Educational Treasure-Hunting Location-Based Game for Exploring Points of Historical Interest
Stefanos Balaskas, Maria Koutroumani and Maria Rigou (University of Patras, Greece)

12:45 - 14:15
ENV9/LAB1: Student-centered Learning Environments 9, Non-traditional Lab concepts 1
Room: Homer
Session Chair: Maria Michailidis (University of Nicosia, Cyprus)

12:45

Neuronal Electrical Activity During Communication, Mathematical, and Geometric Skills in Newly Enrolled University Students
David Ibarra (ITESM & Hariacoustics, Mexico); Luz María Alonso Valerdi and Alma R. Cuevas Romero (Tecnologico de Monterrey, Mexico); Alma S. Torres Torres (University Groningen, The Netherlands)

13:03

Automating Formative Assessment for STEM Courses in Hybrid Learning Environments
Hong Paul Liu (Embry-Riddle Aeronautical University, USA); Naomi Malone (University of Central Florida & ACTIVE Labs, USA); Clement G Yedjou (Florida Agricultural and Mechanical University, USA); Michael J. Spector (University of North Texas, USA)

13:21

Metaverse-Based Classroom: The Good and the Bad
Mousa Al-kfairy, Maryam Abdulla Jasem Ahmed Alzaabi, Banan Sno, Hamda Tariq Mohamed Hasan Almarzooqi and Wadha Abdalla Mohamed Allay Alnaqbi (Zayed University, United Arab Emirates)

13:39

The Influence of an Industry Partner on the Development of Manufacturing-Processes Competencies in Generation Z Engineering Students
Andrea Escobar-Bazaldua, Pilar Rodríguez-Dobarganes and Monica Flores-Martínez (Tecnologico de Monterrey, Mexico)

13:57

Differentiated Teaching for Students With Diverse Academic Backgrounds: Constructing a Flipped Classroom With Multi-Learning Paths [virtual]
Fang-Ling Lin (Lunghwa University of Science and Technology, Taiwan)

Technical Program: Saturday, May 11, 2024

12:45 - 14:15
FUT2: Future-oriented and Personalized Educational Concepts 2
Room: Akeso
Session Chair: Epaminondas Epaminonda (University of Nicosia, Cyprus)

12:45

Bridging the Skills Gap of Workers in the Offshore Renewable Energies Industry by Creating a Set of Guidelines to Promote Innovative Training
María López-Morado (University of A Coruña, Spain); Lucía Santiago Caamaño and Vicente Diaz-Casas (University of a Coruña, Spain)

13:03

Curriculum Complexity Evaluation Based on Course Cruciality
Bisni Fahad Mon (UAE University, United Arab Emirates); Asma Wasfi (United Arab Emirates University, United Arab Emirates); Mohammad Hayajneh and Najah A. Abu Ali (UAEU, United Arab Emirates); Ahmad Slim (University of New Mexico, USA)

13:21

Future Skills Forecasting: Ensuring Quality Learning for Every Segment of the Workforce
Patricia Caratozzolo (Tecnologico de Monterrey, Mexico); Uriel Cukierman (Universidad Tecnologica Nacional, Argentina); Bente Nørgaard (Aalborg University, Denmark); Katriina Schrey-Niemenmaa (HR Plus, Finland); Jose Daniel Azofeifa and Valentina Rueda-Castro (Tecnologico de Monterrey, Mexico)

13:39

Enhancing Soft Skills in Network Management Education: A Study on the Impact of GenAI-Based Virtual Assistants
Dimitris Pantazatos, Mary Grammatikou and Vasilis Maglaris (National Technical University of Athens, Greece)

13:57

Design Education in Additive Manufacturing Using Unmanned Aerial Vehicle
Stefan Junk (Offenburg University, Germany)

12:45 - 14:15
NOT: Topics in Engineering Education
Room: Melambus
Session Chair: Dimitrios Kallergis (University of West Attica, Greece)

12:45

Importance of System Engineering Competences and Knowledge in Large Scale Research Infrastructure Projects
Yuri Demchenko (University of Amsterdam, The Netherlands)

13:03

Crafting Immersive Educational Spaces: The Influence of VR Environment Design on Computer Technology Proficiency [virtual]

Jorge A. Gonzalez-Mendivil, Miguel X. Rodríguez-Paz, Israel Zamora-Hernandez and Eduardo Caballero-Montes (Tecnologico de Monterrey, Mexico)

13:21

CanSats-Based Learning: Nanosatellite Competition and STEAM Learning in Tamaulipas, Mexico

Juan Gabino Diaz Martinez, Sr. and Irandi Gutiérrez-Carmona, Sr. (Instituto Tecnológico y de Estudios Superiores de Monterrey, Mexico); Jorge Alvarez and Jorge Ivan Hidalgo (Tecnologico de Monterrey, Mexico)

13:39

A Comprehensive Workshop on Industrial Engineering: A Case Study of an Innovative Experience

Felipe Hernández-Rodríguez and Edber Galindo-Cota (Instituto Tecnologico y de Estudios Superiores de Monterrey, Mexico)

13:57

Master Program Curriculum in Electric Power Systems, Global South Vs North

Jimmy Ehnberg (Chalmers University of Technology, Sweden); Jean Marie Vianney Bikorimana (Ghent University, Belgium); Stefan Lundberg (Chalmers University of Technology, Sweden); James Ntaganda (University of Rwanda, Rwanda)

12:45 - 14:15

WOM2: Women for Leadership in Engineering Equity, Diversity, and Inclusion 2
Room: Panacea Amphitheatre
Session Chair: Thrasyvoulos Tsiatsos (University of Thessaloniki, Greece)

12:45

Women's Leadership in Engineering Concentrating on Bias and Patriarchal Practice Impact on Diversity and Inclusivity in the Workplace

Vatiswa Mbola, Sam Gqibani, Cristina Angel, Nwobodo-Anyadiegwu Eveth Nkeiruka and Silase Manti (University of Johannesburg, South Africa)

13:07

An Initial Assessment on the Advancement of Female Faculty in STEM

Theresa Odun-Ayo, Melanie Carden-Jessen, Jorge Rebaza and Tamera Jahnke (Missouri State University, USA)

13:30

The Equality Maturity Model: An Actionable Tool to Advance in Gender Balance in Leadership and Participation Roles

Paloma Diaz (Universidad Carlos III de Madrid, Spain); Paula Alexandra Silva (University of Coimbra Portugal, Portugal); Katja Tuma (Vrije Universiteit Amsterdam, The Netherlands)

13:52

Lecture-Free Instruction: Does Gender Matter?

Shamma Alwheibi (Khalifa University, United Arab Emirates); Abdulhadi Shoufan (Khalifa University of Science and Technology, United Arab Emirates)

14:15 – 15:00
Awards & Closing Ceremony
Room: Panacea Amphitheatre
Session Chair: Christos Douligeris (University of Piraeus, Greece); Thomas Klinger (Carinthia University of Applied Sciences (CUAS), Austria)