European Society for Engineering Education
Europäische Gesellschaft für Ingenieur-Ausbildung
Société Européenne pour la Formation des Ingénieurs

SEFI ANNUAL REPORT 2022-2023

Towards a new future in Engineering Education

Brussels, September 2023

EUROPEAN SOCIETY FOR ENGINEERING EDUCATION

Since 1973, SEFI is the largest network of higher engineering education institutions (HEIs) and engineering stakeholders in Europe.

SEFI contributes to the development and improvement of Higher Engineering Education (HEE) in Europe, promotes information about HEE and improves communication between teachers, researchers and students, reinforces the university-business cooperation and encourages the European dimension in higher engineering education. SEFI is an international Forum composed of HEIs, academic staff and teachers, students, related associations and companies in 41 countries.

Our activities: Annual Conferences, Ad hoc seminars/workshops organised by our working groups, councils and ad hoc committees, organisation of the European Conventions for Engineering Deans, Scientific publications (including the European Journal of Engineering Education), European cooperation projects, position papers, cooperation with other major European associations and international bodies such as the European Commission, the UNESCO, the Council of Europe or the OECD. SEFI also participated in the creation of several organisations such as ENAEE, IFEES, EuroPace, IACEE and IIDEA.

Annual Report 2022-2023

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MESSAGE OF THE PRESIDENT

Dear SEFI community,

SEFI celebrates its 50th anniversary this year. That's a long time, but the other hand, high-level engineering education has been provided since the 19th century. In any case, SEFI founders recognised the need, and I imagine there was a lot of enthusiasm at the time for bringing engineering education into a European context.

So how does this 50-year-old SEFI work?

Administratively, SEFI is governed by a Board of Directors, whose members including the presidents are elected by the General Assembly, which has been held in conjunction with the annual conference. The Executive Committee takes care of some issues closer to day-to-day business and prepares decisions. The operational responsibility is on the permanent secretariat, currently consisting of Executive Director Klara Ferdova alone. A Secretary General will be recruited during this autumn or at the beginning of the next year latest.

SEFI's most visible activity is the annual conference, the first of which took place 50 years ago. Its theme was "Non-technical Training of Engineers", so even then it was seen that SEFI's scope of activity included more than strictly engineering matters. During the Covid period, we twice had a distance conference, and we have also discussed a hybrid model, but the arrangements for that would be very extensive. A partial hybrid model, where invited or plenary presentations would be available over the network, could be a viable option. Another basic form of operation has been working groups, later renamed special interest groups, SIGs. The first such groups were the Mathematics and Physics SIGs, which are still active and also organise their mini-conferences. There are now 12 SIGs, and SEFI has aimed to make their work and creation more flexible. At present, most of the SIGs are quite active, and the activity seems to be increasing.

The third activity has been the Deans' Convention, an annual meeting for the Deans. It should be noted, however, that regardless of the formal title, a "Dean" is interpreted as the person who is or has been administratively responsible for the organisation of teaching.
The recent emergence of new activities SEFI@Work Inspiration Events, SEFI Thematic Events, and SEFI Podcasts, all provide a more convenient way to engage in the SEFI context, even between traditional conferences.

All in all, I think SEFI is more active than ever before. This is only possible because so many people have taken responsibility, and proposed new activities. These activities are transformed into impact when SEFI members participate in them and apply the ideas in their work.

I wish everyone an active and fruitful participation in SEFI. I look forward to meeting you in Dublin where we have the theme "Engineering Education for Sustainability".

Prof. Hannu-Matti Järvinen
SEFI President 2021-2023

SEFI ANNUAL CONFERENCE
BARCELONA 2022

TOWARDS A NEW FUTURE IN ENGINEERING EDUCATION

New scenarios that European alliances of tech universities open up

19-22 September 2022 – UPC Barcelona, Spain

SEFI ANNUAL CONFERENCE
19-22 September 2022
BARCELONA

The 50th annual conference of the European Society for Engineering Education (SEFI) held in Barcelona was an inspiring and enriching event that brought together educators, professionals, and industry representatives from 50 countries. Organized by the Institute of Education Sciences (ICE) of the Polytechnic University of Catalonia – BarcelonaTech (UPC), the conference offered valuable insights into the future of engineering education.

Throughout the event, participants engaged in thoughtful discussions on various relevant topics, including entrepreneurship, ethics, sustainability, and innovative teaching methodologies. The conference provided a platform for sharing ideas and best practices, encouraging attendees to explore new approaches to engineering education.

Esteemed keynote speakers, such as Alicia García Holgado from the University of Salamanca and Arnold Pears from the KTH Royal Institute of Technology in Sweden, contributed valuable perspectives on gender inclusivity in engineering studies and the future of engineering education in a post-pandemic world.

The conference also emphasized the importance of collaboration and interconnectedness within the European university alliances, showcasing the potential for universities to come together, fostering innovation and a sense of community within the engineering education landscape.

The parallel sessions offered valuable insights and practical takeaways, covering topics like student motivation, updated curricula, and real-world applications of engineering knowledge. The diverse array of discussions further highlighted the conference's significance in empowering the next generation of engineers to tackle societal challenges effectively.

Beyond its academic significance, the conference provided a vibrant space for networking and building meaningful connections among participants. As the conference concluded, the participants departed with a sense of purpose, fresh perspectives and novel ideas to shape the future of engineering education, as well as renewed determination to create a positive impact in the world.

SEFI would like to acknowledge the remarkable efforts of the conference chair, Ariadna Llorens, and her dedicated staff from the Institute of Education Sciences for their tireless work and commitment, which made the conference a resounding success.

BEST PAPERS

- Best Student Paper Award:
  Forbrig, Christian; Rullmann, Edward and Rappsilber, Juri:
  "From student to expert in a week"

- Best Research Paper Award:
  Doulouger, Karolina; D.Vermunt, Jan; Bombaerts, Gunter and Bots, Michael:
  "Analysing student-teacher interactions in a challenge-based learning course"

- Best Concept Paper Award:
  Knowles, Nicola; Andrews, Jane; Knowles, Graeme and Clark, Robin:
  "The Positive Start Project: A Proactive Approach to Promoting Positive Mental Health in the Newer Engineering Academic Community"

- Susanne Ihsen Award for Best Paper on Diversity and Inclusiveness:
  Marinelli, Melissa Jane; Male, Sally Amanda and Lord, Linley Anne:
  "Early career patterns, experiences, and influences: reflections from women engineers in senior roles"

SEFI LEONARDO DA VINCI MEDAL

In recognition of his pioneering work in education and significant international impact, Professor Faraón Llorens was honored with the prestigious SEFI Leonardo da Vinci Medal. This distinguished award was bestowed upon him during the SEFI 2022 Annual Conference in Barcelona.

Professor Faraón Llorens is a distinguished expert in engineering education, particularly in Spanish-speaking regions. He holds the position of full professor of Computer Science and Artificial Intelligence at the University of Alicante (UA) and is also the Santander-UA Chair of Digital Transformation. With a diverse educational background, including a PhD in Computer Science from the University of Alicante, he has held several important roles in academia, such as director of the UA Polytechnic School and UA vice-rector for Educational Innovation and Technology.

As a researcher in the Smart Learning: Intelligent Technologies for Learning, Professor Llorens focuses on artificial intelligence, video game development and gamification, digital technologies applied to education, IT governance, and the digital transformation of universities. His expertise and effective communication skills have made him a well-known and respected university teacher, particularly in Spanish-speaking countries.

Professor Faraón Llorens

SEFI FRANCESCO MAFFIOLI AWARD

SEFI Francesco Maffioli Award recognises exceptional teaching and learning innovations in higher education and was awarded to Una Beagon and her team from TU Dublin Faculty of Civil Engineering and Built Environment for their Creative Design Studio Framework.

This year, the SEFI Francesco Maffioli Award of Excellence for Developing Learning and Teaching in Engineering Education was awarded to Dr Joost Vennekens from KU Leuven, an Associate Professor in the Faculty of Engineering Technology in recognition of an extraordinary societal impact of this project.

Dr Vennekens' work includes Service Learning as a pedagogical means of improving the creativity and empathy of students in the Bachelor in Engineering Technology: Electronics-ICT programme. He started this work a few years before the pandemic and kept it up through the times when we were all working online/remotely. As a result of his excellent work, the leading European conference on Computer Science Education published it and presented it at the European Conference on Service Learning in Higher Education. The project was also featured as an example in an EU report on Service Learning and on a number of Service Learning platforms across Europe.

Dr Joost Vennekens – KU Leuven

SEFI FELLOWS 2022

Mike Murphy

This year, SEFI awarded the Fellowship to Mike Murphy, who had a successful industrial career in the United States and Ireland before becoming the Executive Dean for Engineering & Built Environment at TU Dublin and chair of the European Engineering Deans Council, Vice-president, and President of SEFI. During his presidency, Mike emphasized the development of SEFI's Working Groups (SIGs) as a vibrant platform for member collaboration. He prioritized ensuring the continuity of SEFI's activities and providing support where needed. As a cherry on the cake, he will host the next SEFI conference at his home university, TU Dublin!

Şirin Tekinay

Professor Şirin Tekinay was awarded the SEFI Fellowship Award in 2022 for her outstanding service to engineering education. With a PhD in Electrical and Computer Engineering, she is a distinguished professor specializing in communications. She has held significant leadership roles in Turkey and the UAE and made substantial contributions to SEFI's activities, including fostering relations with the Global Engineering Deans Council. Her research interests span diverse areas, from promoting diversity in engineering to technology-based learning platforms and engineering for peace. Professor Şirin Tekinay's commitment and hard work have been instrumental in advancing engineering education, making her a deserving recipient of the SEFI Fellowship Award.

Jonte Bernhard

Professor Jonte Bernhard is a highly distinguished scholar in engineering education research and was awarded the SEFI Fellowship Award in 2022. He played a key role in establishing SEFI's Special Interest Group for Engineering Education Research and the Nordic Network for Engineering Education Research. Jonte's notable publications include collaborations with Maura Borrego and Caroline Baillie. He also served as Deputy Editor in the European Journal of Engineering Education. Beyond his academic qualities, Jonte is known for supporting and promoting younger researchers, making a significant impact on the community. His contributions are appreciated by engineering education researchers, who are grateful for his guidance and encouragement.

GENERAL ASSEMBLY 2022

SEFI General Assembly, held on 22 September in Barcelona, elected the New Vicepresident, SEFI Board of Directors members and Treasurer.

Re-elected Vice-President

Balazs Vince Nagy, the Vice-Rector of Budapest University of Technology and Economics was elected SEFI Vice President for the period of 2022-2024.

New Board of Directors members

The board of directors got five new members, all elected for the period from 2022 to 2025. **Sonia Gomez Puente**, Strategic Advisor Innovations in Teaching & Learning Eindhoven University of Technology, The Netherlands; **Johanna Naukkarinen**, Post-doctoral researcher LUT University, Finland; **Wojciech Sitek**, Vice-dean for Infrastructure and Organisation Silesian University of Technology, Poland.

New Treasurer

New treasurer elected for a three-year mandate is **Klára Kövesi** from ENSTA Bretagne. Klara replaced **Pieter De Vries** in this position.

Re-elected Board members

Greet Langie (KU Leuven) and **Antoine Lanthony** (ISAE Supmeca Paris) were re-elected for a second term.

The complete list of board of directors and working group chairs is now updated here.

SEFI PODCAST "EUROPEAN ENGINEERING EDUCATORS"

The European Engineering Educators podcast was launched during the SEFI 2022 conference in Barcelona, hosted by **Natalie Wint and Neil Cooke**. The podcast aims to improve engineering education and its image by featuring interviews with esteemed guests who share their knowledge and expertise. It originated from Jenifer Griffiths' idea during an Engineering Skills SIG meeting, aiming to provide a convenient way for listeners to connect with the SEFI community away from their computers.

Each episode involves meticulous planning, scripting, recording, and audio-editing, resulting in a 30-40 minute show that offers maximum benefit to the audience. Additionally, comprehensive articles are released with each episode, providing further resources for listeners to follow up on the discussions. The show has covered various contemporary topics in engineering education, including ethics, professional identity, work-based learning, statistical thinking, teamwork, communication, and empathy.

The podcast has been downloaded in over 30 countries and has grown into a substantial knowledge source for prospective, new, and existing members of the SEFI community. To commemorate SEFI's 50th celebrations, the 3rd season was launched at the SEFI 2023 conference in Dublin, featuring a special episode with former SEFI president Professor emeritus Mike Murphy, who shared his vast experience in engineering institutional transformation at TU-Dublin.

The SEFI podcast can be accessed on major platforms like Apple, Spotify, and YouTube, with all episodes and show notes available on the SEFI website. The podcast continues to welcome new guests, encouraging contributions from experts to further enrich engineering education.

SEFI ETHICS SPRING SCHOOL

The SEFI Ethics Spring School 2023 brought together 20 participants from across Europe and the US for three days of interactive workshops, presentations, and thematic sessions. The event was a fantastic opportunity for students to connect and share knowledge.

Thank you from the bottom of our hearts to Madeline Polmear for organizing such an amazing educational experience by providing a unique opportunity for students to connect and share knowledge and to all the participants who made this event possible and contributed to its success!

Whether you're a lifelong learner or a passionate academic, SEFI Spring School is the perfect way to broaden your horizons and make new friends.

MATHEMATICS IN ENGINEERING EDUCATION SEMINAR

The main group activities were focused on organization issues around 21st SEFI Mathematics Interest Group Seminar (https://events.tuni.fi/sefimsig2023/). This seminar was organized by the Tampere University of Applied Sciences (TAMK) together with the MSIG steering committee and was held between 11 and 14 of June 2023.

Several talks and papers were submitted related to the following topics: Mathematical competencies in practice and didactical research, How to assess competencies, The goal of teaching, and Active learning strategies.

In June 2025 MSIG seminar will be hosted by Ostfalia University of Applied Sciences in Germany.

SEFI @ WORK WEBINARS

In the past academic year, SEFI started organising regular webinars to fit in your academics' workday schedule.

These online events bring together peers from around the globe and enable thematic discussions about engineering education, while being accessible to all.

So far, we have organised 9 webinars, mostly related to Ethics in Engineering Education.

This upcoming autumn semester, we will offer more webinarsrelating the gender and diversity in engineering education, engineering skills and the regular ethics.

You can register for any of our upcomins SEFI@Work events through SEFI booking platform.

You may see some of the past webinars on the SEFI YouTube Channel.

SEFI DEANS CONVENTION 2023

Leadership for Digitalization in Higher Engineering Education

4TU. CENTRE FOR ENGINEERING EDUCATION

The European Convention for Engineering Deans (ECED) – University Leadership Dialogue (ULD) is an annual networking event organized by the European Society for Engineering Education (SEFI). It serves as a platform for higher engineering education leaders to address various issues, foster innovation and governance, share experiences, and promote professionalism in the rapidly evolving landscape of engineering education.

The 14th European Convention for Engineering Deans, held at Twente University, brought together over 70 participants to engage in stimulating discussions about the future of engineering education. The two-day program focused on adapting to new kinds of students, the changing digital environment, and the role of artificial intelligence (AI) in engineering education. Participants delved deep into the topic through an industry expert panel comprising representatives from Airbus, Dassault Systèmes, Elsevier, MathWorks, and McGraw Hill, brilliantly moderated by SEFI Vice President **Balázs Vince Nagy**.

The convention began with a visionary presentation by **Aldert Kamp,** setting the stage for insightful discussions on the digitalization of engineering education. A panel discussion on driving change and digitalization challenges featured **John Mitchell, Kim Schildkamp, and Esther Ventura-Medina**, who shared their experiences as champions of engineering education innovation at their respective institutions. Throughout the day, engaging presentations by various speakers explored leadership for digital innovation in engineering education.

The convention showcased the importance of collaboration, sharing best practices, and inspiring advancements in engineering education. Such events, like the ECED-ULD convention, play a vital role in promoting excellence and continuous improvement in engineering education across Europe all thanks to the tireless organisation of

SEFI PUBLICATIONS 2022-2023

EUROPEAN JOURNAL OF ENGINEERING EDUCATION

Submissions

During the academic year 2022/23, the number of manuscripts submitted to the European Journal of Engineering Education was the second highest ever. Assuming publication of 70 manuscripts per year, the acceptance rate was about 22%.

Academic year	17/18	18/19	19/20	20/21	21/22	22/23
Submitted manuscripts - regular	212	228	274	285	291	287
Submitted manuscripts - to special issues	56	2	35	43	0	30
Total submitted manuscripts	**268**	**230**	**309**	**328**	**291**	**317**

Submissions to the European Journal of Engineering Education (excluding submissions of revised manuscripts).

Special issues

The special issue "Sustainability in Engineering Education – Integration and Transformation Approaches" is guest edited by Anders Rosén, Ulrika Lundqvist, Ikateko Mathebula and Arjen Wals. Thirty extended abstracts were submitted, and a selection was invited to submit full manuscripts. A new call for "Emotions in Engineering Education – Widening perspectives in a rapidly growing field of research" with Inês Direito and Johanna Lönngren leading a team of guest editors, is open until late 2023.

Journal Impact Factor

As part of the Emerging Sources Citation Index (ESCI), European Journal of Engineering Education received a Journal Impact Factor (JIF). For 2022, the JIF was 2,3.

The Journal Impact Factor (JIF) is calculated as the number of citations during 2022 to papers published in 2020 and 2021 (which was 337), divided by the total number of papers published in the same years (which was 146). Citations are only counted if they are from sources that themselves have a JIF.

News in the editorial team

New Associate Editors

Maartje van den Bogaard, The University of Texas at El Paso, USA (after stepping down as Deputy Editor)
Jeffrey Buckley, Technological University of the Shannon, IE
Xiangyun Du, Aalborg University, DK
Greet Langie, KU Leuven, BE
Diana Martin, TU Eindhoven,NL
Roland Tormey, EPFL, CH

Editorial board

As part of the turnover in the Editorial Board, we extend heartfelt thanks to three members for their support and efforts in the past:
Robin Clark, Warwick University, UK
Claudio da Rocha Brito, COPEC, BR
Marinela Garcia, Universidad Politecnica de Madrid, ES

Four new members have been appointed:
Ines Direito, UCL, UK
Cynthia Finelli, University of Michigan, USA
Esther Ventura-Medina, TU Eindhoven, NL
Karin Wolff, Stellenbosch University,ZA

Acknowledgements
On behalf of the journal, we sincerely thank the reviewers, who so generously contribute their expertise to help our decision-making and support the improvement of manuscripts. We thank the authors whose high calibre work is what makes the journal. We also gratefully acknowledge invaluable support from SEFI and Taylor & Francis.

SEFI Deans Convention 2024

▪save the date▪

12-14 June 2024

Annual meeting bringing together Deans from all over Europe to discuss in depth common topics, share experiences, identify solutions for problems and build up a network with peers from different European countries.
This year, the ECED is organised by the Faculty of Engineering at the University of Sheffield and the European Society for Engineering Education (SEFI).

University of Sheffield

SEFI SPECIAL INTEREST GROUPS

GENDER AND DIVERSITY

Since SEFI 2022 the SIG has changed its name from Gender and Diversity to SEFI SIG Diversity, Equity and Inclusion, this reflecting the many aspects of identity and personal background that can result in the experience of exclusion, stereotyping, and microaggressions.

Three SEFI@Work events were held 1.) The experience of neurodiverse engineering students: support for success, 2.) Reflexivity and Positionality statements and 3.) Be ready to make it awkward.

The SIG will be involved in several events at SEFI 2023 including “Birds of a (Different) Feather”, the SIG workshop entitled “Diverse Perspectives on Diversity, Equity, and Inclusion in Engineering Education” and a workshop entitled “Promoting awareness of, and sharing good practices on, supporting engineering students with disabilities”.

Ongoing research projects include: “Analysis of institutional practices – DEI practices in the recruitment of engineering academics across Europe”; and “Good practices in DEI/benchmarking”. We are currently collecting data to understand the needs, challenges and priorities of SEFI members with respect to DEI within their contexts. The findings will be discussed at the SEFI 2023 SIG meeting and will inform what the SIG intends to focus on under its new co-chairs Dr. Fiona Truscott and Dr. Natalie Wint.

Chair
Natalie Wint
Fiona Truscott
University College London

ETHICS

The Engineering Ethics SIG has had an active year in 2022-23. Main activities for the year included:
The Routledge Handbook of Engineering Ethics Education is led by Tom Børsen and Shannon Chance, who are joined by SIG members Gunter Bombaerts, Diana Martin, Thomas Lennerfors and Roland Tormey. The handbook will be published in 2024 and comprises 36 chapters authored by >100 engineering ethics education researchers and teachers. The Handbook is expected to be a valuable resource for the global engineering education community.

The SIG organised a 3-day spring school Spring School. Organisers Madeline Polmear, Helena Kovacs and Diana Martin, together with 24 participants from 11 countries from Europe and North America met at VU Brussels, Belgium to discuss the theme “Engineering ethics education: Navigating uncertainty”. The theme allowed for interesting new insights, for instance on AI or emotions, as well as comparative perspectives on the cultural representativeness of engineering ethics education research and how ethics is perceived in the post-Soviet countries.

The Online Editorial Series coordinated by Gunter Bombaerts and Diana Martin saw the publication on the SEFI website of 23 editorials on 3 thematic areas, purporting to experiential engineering ethics education, change in engineering education and spotlighting PhD researchers in engineering education.

Co-Chairs
Helena Kovács
Ecole Polytechnique Fédérale de Lausanne
Diana Martin
Technische Universiteit Eindhoven

ENGINEERING EDUCATION RESEARCH

The SEFI SIG on Engineering Education Research is focused on providing relevant help to improve the quality of the European Engineering Education Research. In the past year, the group organized both in-person and online events.

The 6th Doctoral Symposium in Engineering Education Research, held on 18 September 2022 in Barcelona, provided an interdisciplinary platform for PhD candidates to present and discuss theirdissertation work in order to receive the guidance of senior scholars and top researchers in the field. The symposium facilitated etworking opportunities, and contributed to the SEFI EER community by fostering collaborative research among participants.

The SEFI@work sessions on research methods in engineering education offered valuable insights into high-impact publications with strong methodological foundations. Notably, Claudia Schäfle and Christian Kautz presented their research on “Student reasoning in hydrodynamics”, revealing diverse approaches used by engineering students when exploring pressure and flow velocity.

Furthermore, Karolina Doulougeri, winner of the Best Research paper in SEFI 2022, shared her work on “Analyzing Student-Teacher interactions in Challenge-Based Learning”, highlighting the use of thematic analysis to study student self-regulation as well as teacher regulation. Both of these sessions belong amongst the most attended ones, as the topic of Engineering Education Research transversally covers multiple areas of interest throughout the SEFI community.

Chair
Tinne de Laet
KU Leuven

SUSTAINABILITY

In spring 2023, Aida Guerra took over as the SEFI SIG Sustainability Chair from Jordi Segalàs. Aida’s goal is to build upon the SIG’s efforts at Aalborg University in Denmark. Recent achievements include a productive community engagement meeting where SEFI members, along with representatives from other SIGs, expressed interest in actively participating in the sustainability group. New participants have also joined the group, showing eagerness to contribute. Plans are in motion for a dedicated SIG workshop at the SEFI annual conference in Dublin 2023, focusing on sustainability challenges. Under Aida Guerra’s leadership, the SEFI SIG Sustainability aims to significantly impact the sustainable future of engineering education by fostering collaboration and targeted initiatives within the SEFI community, thus contributing to a more sustainable world.

Chair
Aida Guerra
Univeristy of Aalborg

CAPACITY BUILDING

The Capacity Building SIG continues to grow and had doubled in size to 13 active members in the past year. The group’s main activity this year has been to work towards a journal paper inspired by preliminary collaborative activities that started with a SEFI 2022 conference paper. The research investigates the organisation of capacity building activities for engineering educators in universities. Ethics approvals are underway for the work.

The SIG held a SEFI@Work webinar on Supporting PhD students in Engineering Education with Maria Berge from Umeå University speaking on her research on the use of humour in supervisory relationships.

The SIG also contributed to the SEFI European Engineering Educators podcast with Madeline Polmear speaking about leadership and the role of capacity building in developing educators’ confidence and competence.

Chair
Jenny Griffiths
UCL London

CONTINUING ENGINEERING EDUCATION & LIFELONG LEARNING

The CEE/LLL SIG focus is on advancing frameworks, policies and practices around Continuing Engineering Education and Lifelong Learning in STEM. It has active members from Denmark, Finland, Germany, Hungary, Mexico, Scotland, Sweden, Switzerland, and The Netherlands, who have interests in international and national policy, as well as those interested in what institutions are doing practically to enhance CEE and LLL within engineering.

The CEE/LLL SIG saw a change in one of the Co-Chairs, with Bente Nørgaard stepping down after seven years, and Chris Smith joining Anikó Kálmán as Co-Chair. The SIG would like to express its gratitude to Bente for her years leading the SIG.

The SIG was active this year with a series of monthly, online meetings allowing for knowledge sharing around differing Continuing Engineering Education practices in different institutions, following on from a workshop and SIG meeting at the SEFI 2022 Annual Conference. This work has led to a clear stream of research being identified and started. The initial work will be presented as a conference paper for SEFI 2023 Conference comparing institutional approaches and this will work be expanded in the coming year.

Chair
Chris Smith
Glasgow University

OPEN AND ONLINE EDUCATION

The SEFI special interest group (SIG) on Open & Online Education is focused on the utilization of open and online educational resources and tools to remove barriers to learning in engineering education. It seeks to serve the various facets of the SEFI community by: Helping practitioners to adopt and develop their open and online education skills and capabilities by leveraging the collective know-how of the community. Facilitating educational researchers in evidence-based research on open and online education to ensure greater impact for our community.

Providing support to industry in adopting open and online education practices as a vehicle for greater industry-academia collaboration in life-long learning.

In the coming year, the SIG will be seeking new leadership to invest the time and effort needed to make the SIG grow and flourish.

Chair
Calvin Rans
TU Delft

MATHEMATICS

The main group activities were focused on organization issues around 21st SEFI Mathematics Interest Group Seminar (full report on p. 14).

The MSIG steering committee held its annual meeting on December 2nd and 3rd, 2022 in a hybrid format at the Czech Technical University in Prague. The meeting, organized by Marie Demlova and chaired by Deolinda Rasteiro, focused on planning the upcoming MSIG seminar in Tampere. A comprehensive work-plan was devised, and responsibilities were allocated among committee members, ensuring seamless coordination with the local organizers. All relevant information about the seminar and other group activities was shared on the SEFI official webpage, with continuous updates on the MSIG working group webpage by Professor Burkhard Alpers, available at http://sefi.htw-aalen.de/. It was announced that the MSIG webpage will soon be incorporated into the SEFI main page for enhanced accessibility. Looking forward, the next annual meeting will take place at the CTU in Prague from December 1st to 2nd, 2023, where the committee will plan and schedule activities for the following year, including online working discussions, webinars, and other collaborative endeavors.

Chair
Prof. Deolinda Dias Rasteiro
ISEC Coimbra

ENGINEERING SKILLS

This year the Engineering Skills SIG focussed on creating a set of case studies for teaching engineering skills to capture best practice across Europe, as well as organising the SEFI@work webinar ""The social dimension of engineering education: outcomes, skills, and resistance", running a conference workshop "Tackling skills challenges: future relevance, stakeholder differences, and teaching hurdles", and producing the SEFI podcast "European Engineering Educators". The group has grown to 30 members.

Chair
Neil Cooke
Birmingham University

CURRICULUM DEVELOMPENT

Over the past year, the Curriculum Development Special Interest Group (SIG) of SEFI has been actively engaged in advancing curriculum design and innovation in engineering education. The SIG has given a platform to educators and curriculum developers to exchange best practices and insights. Through collaborative efforts, the SIG has addressed emerging challenges and opportunities in engineering education, focusing on interdisciplinary approaches, sustainability, and industry-relevant skills.

Chair
Gareth Thomson
Aston University

PHYSICS

The SEFI special interest group of physics assembles physicists who teach physics to engineering students. These physics teachers encounter similar challenges in physics teaching, irrespective of the country and educational level. Developments in the field of physics education research and different solutions to and experiences from a variety of educational challenges (both on lecturing as well as on lab work) are shared among the group members.

The group consist of lecturers from different European countries. The main action of the SIG of physics is to organize the Physics Teaching in Engineering Education (PTEE) conference every two or three years. The latest conference was held in Tampere, Finland from May 11th – May 13th 2022 and was hosted by Tampere University of Applied Sciences. The next PTEE-conference will be organized by Technische Hochschule Rosenheim in Bavaria, Germany on May 15th-17th 2024 and will focus on facilitating student learning in a changing world. More info can be found at: www.sefiphysics.be and www.ptee2024.de

Chair
Arjan Lock
The Hague University of Applied Sciences

ATTRACTIVENESS OF ENGINEERING EDUCATION

The SEFI board of directors has acknowledged the importance of Attractiveness of engineering (education), as a primary topic of interest to all engineering education institutions. Efforts have been put into the revival of the SIG Attractiveness, with the selection of a new chair person, Hanne Deprez, from KU Leuven. The restarted SIG aims to serve as a dynamic platform, providing space for students, educators, researchers, and industry professionals to share ideas, strategies, and best practices.

The attractiveness of engineering education encompasses a multifaceted approach that seeks to make engineering education more appealing, accessible, and effective for both students and educators alike. At the annual conference in Dublin, the SIG meeting will serve as the SIG relaunch.

Chair
Hanne Deprez
KU Leuven

SEFI AS A PARTNER IN *2022-2023*

ENHANCING ENGINEERING EDUCATION THROUGH COLLABORATIONS AND PARTNERSHIPS

In its mission to foster excellence in engineering education across Europe, the European Society for Engineering Education has continued to engage in fruitful partnerships and alliances with various organizations. These collaborations aim to exchange knowledge, promote best practices, and collectively strengthen the field of engineering education.

SEFI recognizes the significance of empowering and engaging students in the engineering community. One such collaboration is with Board of European Students of Technology (BEST). SEFI has been actively supporting BEST events by providing expert speakers who share their insights and expertise with the student community. Furthermore, SEFI has strengthened its collaboration with European Students of Industrial Engineering and Management (ESTIEM) through a memorandum of understanding signed at the SEFI 2022 Annual Conference in Barcelona. This agreement aims to foster cooperation and mutual support, facilitating the exchange of ideas and practices between SEFI and ESTIEM.

Furthermore, in the past academic year, SEFI entered in contact with EYE - European Young Engineers, an organisation which gathers young professionals in, in order to explore potential areas of cooperation in the ucoming years.

SEFI's commitment to cooperation extends beyond student organizations. The organization activelyengages with similar bodies that share its vision for advancing engineering education. One such collaboration is with the European Network for Accreditation of Engineering Education (ENAEE). Both SEFI and ENAEE have reciprocally become associate members, fostering a closer partnership to ensure high-quality engineering education throughout Europe. Moreover, SEFI's former president, Yolande Berbers, assuming the role of Vice President at ENAEE, highlights the mutual respect and recognition of expertise between the two organizations.

SEFI also remains actively involved in the umbrella community created by the International Federation of Engineering Education Societies (IFEES), which brings together global engineering education stakeholders. SEFI Vicepresident Luis Sanchez has been re-elected into the Executive Committee of this organisation. Through this partnership, SEFI leverages its platforms to promote IFEES activities, fostering international cooperation and the exchange of innovative ideas in engineering education on global level.

SEFI's dedication to promoting excellence in engineering education is further exemplified by its support as an associate partner in various ERASMUS+ European Universities Initiatives and other alliances. Notable examples include EUROTEQ, ENHANCE, EELISA (European Engineering Learning Innovation and Science Alliance), and In-4-STEM (Innovations in STEM Education). By participating in these initiatives, SEFI actively contributes to shaping the future of engineering education in Europe, ensuring it remains progressive and aligned with contemporary needs.

SEFI's commitment to cooperation and collaboration with various organizations and alliances reflects its commitment to elevating engineering education and nurturing the next generation of engineers across Europe as well as to stay in touch with our overseas partners and continuously work on our common goals.

REIMAGINING ENGINEERING EDUCATION IN THE POST-PANDEMIC WORLD

Academic Development

As an Academic Development team, we work on education-related projects via collaborations with academics globally and through internal developments, bringing-in expertise across Ansys to contribute to education resources, webinars, events, and research projects. We were in a strong position to continue supporting digital transition in education during the lockdown.

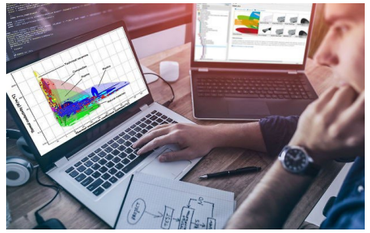
We entered the world of digital dominance quicker than we thought, and that continued. We have not returned to fully in-person work; hybrid work has increased; 74% of U.S (United States). Companies are using or plan to implement a permanent hybrid work model1. Similarly, 28% of courses are being taught in a hybrid way, compared with 4.1% in 2018-19 before the pandemic2. At the same time Industry 5.0 is slowly ushering into our work and life where man and machine work together, Artificial Intelligence and Machine Learning have changed the processes of research, learning, and assessments; and the learners need to rapidly realize the Digital Engineering vision where every location, thing, person, and process has a Digital Twin.

The real questions for us are: how do we help augment yet stabilize this rapid change and how do we prepare future engineers? To take it further, how do we reimagine engineering education that is technology driven, technology augmented, yet accessible without forcing any socioeconomic divide and has sustainability in its core?

Learning in a digital and hybrid world is a reality, and it should be available and accessible to everyone, and we have embraced that concept and made it possible for engineering students worldwide. Purposefully, many of our academic products, which the students can download for free along with free courses and learning tracks on Ansys Innovation Space democratize the physics-based engineering simulation and simulation-driven engineering design, which are available to every student in the world with an access to internet.

At the same time, we have not forgotten the educators who are striving to excel in their teaching, so that they can help prepare tomorrow's engineers, today? Ansys Education Resources is a repository of teaching resources with case studies, lecture presentations, quizzes, and micro-projects to help educators teach well. They contain a large set of sustainability-focused resources, including active-learning templates and case studies, based on Mike Ashby's textbooks and methodologies.

To help teachers fund such efforts, we have grants for innovative curriculum development or enhancement of the existing, using Ansys products –



Ansys Granta EduPack is used in teaching undergraduate level materials, design and engineering courses.

Ansys Funded Curriculum | Teach with Ansys. An individual course will receive up to $5,000, and for a series of courses within a university department(s), additional funds will be considered up to $25,000. Although any proposal focused on undergraduate courses will be considered, for this round, academics delivering electronics/electrical engineering or sustainability-related courses are encouraged to apply. The next deadline for proposals' submission is September 29th.

International and North American Materials Education Symposia are organized to support the community of educators, providing a platform to share best practices, challenges in education and make connections.

In April, 90 attendees of materials education symposium gathered in Cambridge (UK) for the 12th time. This was the first time since the COVID-19 pandemic. With three workshops, 23 talks and 33 posters, this event firmly brought back the same sense of community that started over a decade ago, started by the education team at Granta Design (before Ansys acquisition) and Prof Mike Ashby. We invite you to join us in its North American counterpart at the Cal Poly San Luis Obispo on August 7th-9th. For more information please, visit the webpage Materials Education Symposia. As some our participants have expressed it: "I found IMES to be an incredibly inspiring event, filled with thought-provoking presentations and discussions" and "It was the first time for me, and I really loved the atmosphere and the environment, both in the presentation sessions and in the breaks."

Our hopes and dreams are that through our products and resources we will be able to help our educators build the reimagined curriculum for the new generation engineering students, equipped with skills to tackle global challenges.

Tatiana Vakhitova and Soma Chakrabarti

Attendees of the International Materials Education Symposium, Cambridge 2023.

When we are not meeting in person, we stay in touch with you through our webinars Ansys Events | Simulation Webinars, Conferences & Seminars and blogs Ansys Blog | Simulation Engineering Articles

SEFI MEMBERSHIP
2022-2023

SEFI institutional members 2023

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