GlobalEngineer

IFEES-GEDC QUARTERLY BULLETIN

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Peace Engineering

Global collaborations across disciplines for a sustainable future

IFEES
International Federation of Engineering Education Societies

10 Celebrating Years
GEDC
Global Engineering Dean's Council

IN THIS ISSUE

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CALL FOR ABSTRACTS

WEEF-GEDC 2018 Albuquerque, NM, USA

weef-gedc2018.org

The theme of the 2018 conference is Peace Engineering. Peace engineering envisions and works towards a world where prosperity, sustainability, social equity, entrepreneurship, transparency, community voice and engagement, and a culture of quality thrive. Engineers have the power to play a vital role in delivering creative solutions that can radically transform and improve human and improve the wellbeing of humans and the world around us. As we educate future engineers, we must ensure that they embrace their role as engineers of peace. We must provide them with the skills, understanding, capacity for reflection, sense of social responsibility and ethics, and resources to successfully navigate the socio-political impacts of their projects, engage in transdisciplinary developments, and, frankly, imagine, design, and create a better world for us all.

We hope you accept our invitation to be part of the WEEF-GEDC 2018 event this coming November 2018. We are providing you the opportunity to submit an abstract for consideration in one of the thematic focus areas listed below. We strongly encourage case studies with practical applications and demonstrable results.

SUBMISSIONS PROCESS

The abstract submission process for WEEF-GEDC 2018 is through an online portal. For submission instructions, guidelines and templates, click the button below.

SUBMIT ABSTRACT

DATES

Abstract submission
July 30, 2018

Deadline for lab tour security forms for non-US Citizens*
August 13, 2018

Notification of workshop/ abstract acceptance/rejection
August 15, 2018

Early bird registration closes
August 15, 2018

Accepted authors submit final paper
September 17, 2018

Notification of paper acceptance & revisions
September 24, 2018

Registration deadline for accepted authors
September 24, 2018

Deadline for lab tour secruity forms for US Citizens*
October 1, 2018

* These deadlines are set by the US government & cannot be extended

POTENTIAL THEMES FOR ABSTRACTS

- How do we teach/learn about Peace Engineering?
- Relationships among academia, industry, governments, multilateral organizations, NGOs
- Hands-on Education/Experiential Learning/Inquiry Learning/Problem Based Learning
- Entrepreneurship in the Circular Economy - 4th Industrial Revolution and Enabling Success
- Other Peace Engineering Challenges

MESSAGE FROM THE GEDC CHAIR NATACHA DEPAOLA

As we approach the **WEEF-GEDC 2018** summit to be held in Albuquerque, New Mexico, USA (November 12 to 16, 2018), we reflect on our commitment and contributions to engineering education and leadership in promoting the global sharing of knowledge and best practices in building a global engineering community aimed to better the planet we share.

Engineering is a powerful instrument for the advancement of human kind. As we continue to develop and implement new technologies that drive our future, our global engineering community shares the responsibility for preserving the environment, improving economies, building equity (social, educational and health) and avoiding international conflict.

Peace Engineering, defined as "the application of science and engineering principles to promote and support peace", is the overarching theme of the upcoming WEEF-GEDC 2018 conference to convene this November in Albuquerque, New Mexico, USA. Read more about the framework planned for the conference in the article "**Peace Engineering: An invitation for collaboration across disciplines**", co-authored by our colleague Professor Ramiro Jordan, co-chair and host of WEEF-GEDC 2018, and IFEES President Elect (page 16). In addition, and in preparation for the meeting in Albuquerque, the IFEES-IIDEA webinar series will hold two webinars focusing on "Peace Engineering" on August 24, and October 2018 (register **here** for free).

During the WEEF-GEDC 2018 conference in Albuquerque there will be several GEDC specific sessions that, while subscribed to the overall theme of the conference, will focus the discussion on deans' abilities (empowered by the leadership roles they hold) to make strategic decisions to build academic programs and drive transformational changes in their own institutions and communities. The GEDC specific sessions will discuss issues faced by deans and explore opportunities to increase inter-institutional collaborations. We will share best practices and develop a set of recommendations and actions that participants can follow for implementation when back at their home institutions.

Discussion topics for the GEDC specific sessions in Albuquerque include: the development of Academic Programs in Peace Engineering, best practices in Experiential Learning and Skill Building with impact on Employability, Industry-Academia partnerships, taking traditional programs into the 4th Revolution, introducing Digital Competencies in the engineering curriculum, Inter-institutional Global Research Collaborations, enabling Collaborative Mobility of talent and projects, Ethics in Engineering Practice and Sustainable Engineering Practice preserving the Environment among others. These topics were selected by the GEDC Executive Committee as relevant to the conference main theme and providing a good forum for discussion of ongoing efforts in support of the four main GEDC strategic priorities for 2017-2019. These main GEDC strategic priorities are:

1. Mobility: global exchange of programs, students, and faculty (a platform for collaboration)
2. Inter-institutional Research collaborations (beyond CaFIN)
3. Academia-Industry interactions (building on the success of the 2017 GEDC Industry Forum)
4. Growing our Membership based on value we offer (increase diversity and global reach)

During the GEDC General Assembly in Albuquerque, we will provide a summary report updating the membership on the Council's activities of the past few months.

Consistent with our commitment to promote and recognize good practices in diversity and inclusion around the world, we are delighted to report that this year we celebrate the 6th edition of the global Airbus **GEDC Diversity Award for Engineering Education**. We are thankful to Airbus for a great partnership exemplified with this award, that has created a continuing tradition of great value for the GEDC and the engineering community at large. We are also very thrilled to have the United Nations Educational, Scientific and Cultural Organization (UNESCO) as our 2018 partner for the Diversity Award.

The 2018 global Airbus GEDC Diversity Award for engineering education will be given to the project that demonstrates the best use of technology to enhance diversity in engineering education. The winner of the 2018 global Airbus GEDC Diversity Award will be announced during the WEEF-GEDC Conference, where conference delegates will have the opportunity to hear from the top three finalists describing their work.

The 6th global Airbus GEDC Diversity Award for engineering education is currently receiving applications. The deadline to submit entries is September 7, 2018 (**airbusgedcdiversityaward.com**).

2018 marks the 10th Anniversary of the GEDC. We have kept busy in the past months gathering testimonials from our members, partners, and friends on the value of our organization, locating our founders, creating a new logo, designing the 10th Anniversary Booklet, reflecting on the past and how to best build our future and planning for a social event in Albuquerque that will gather our members in joy and friendship to celebrate GEDC into its next decade.

As part of the GEDC 10th Anniversary, we will hold a special session within WEEF-GEDC honoring the founders (**Paris Declaration 2008**) and featuring past chairs, past/current executive committee members and all attending members to engage in a reflection of the GEDC accomplishments of the first 10 years and set aspirations for the future. This session will provide an opportunity to discuss ongoing activities and strategic priorities for the future. I look forward to your participation in the discussion and engagement to continue to improve the organization, expand our network, and build on value to our members.

I hope that you will be able to join us in Albuquerque to participate in the special session and festivities celebrating the past, present, and future of GEDC into the next decade.

I encourage you to attend the 2018 WEEF-GEDC meeting in Albuquerque, New Mexico, USA (November 12-16), which promises an unprecedented meeting combining several international conferences attracting a very diverse group of delegates under the timely and powerful theme of "Peace Engineering".

EXECUTIVE COMMITTEES

IFEES

Michael Auer
President
2016 - 2018 | Austria

Ramiro Jordan
President-Elect
2017 - 2018 | United States of America

Tania Bueno
First Vice President & Treasurer
2017 - 2019 | Brazil

Javier Cano
Vice President of Student Affairs
2017 - 2019 | Colombia

Uriel Cukierman
Vice President of Capacity Building
2017 - 2019 | Argentina

K. Manivannan
Vice President of Industry/Academia Relations
2016 - 2018 | India

Khairiyah Mohd-Yusof
Vice President of Diversity & Inclusion
2016 - 2018 | Malaysia

Paul Marca
Executive Committee
2017 - 2019 | United States of America

Michael Milligan
Executive Committee
2016 - 2018 | United States of America

Luis Manuel Sánchez Ruiz
Executive Committee
2017 - 2019 | Spain

Christina White
Executive Committee
2016 - 2018 | United States of America

Yao Zheng
Executive Committee
2016 - 2018 | China

Natacha DePaola
Ex-Officio Member (GEDC Chair)
2017 - 2019 | United States of America

GEDC

Natacha DePaola
Chair
2017 - 2019 | United States of America

Peter Kilpatrick
Immediate Past Chair
2017 - 2018 | United States of America

Ahmet Öztas
Secretary & Treasurer
2017 - 2018 | Kurdistan/Iraq

Mushtak Al-Atabi
Executive Committee
2015 - 2018 | Malaysia

Theophilus (Theo) Andrew
Executive Committee
2016 - 2019 | South Africa

Kenneth (Ken) Ball
Executive Committee
2017 - 2020 | United States of America

Margaret (Kathy) Banks
Executive Committee
2015 - 2018 | United States of America

Christian Bolu
Executive Committee
2017 - 2020 | Nigeria

Kee Chaing (KC) Chua
Executive Committee
2016 - 2019 | Singapore

Mark Hoffman
Executive Committee
2016 - 2019 | Australia

Alejandro Jadresic
Executive Committee
2017 - 2020 | Chile

Peter Jimack
Executive Committee
2016 - 2019 | United Kingdom

Sushma Kulkarni
Executive Committee
2017 - 2020 | India

Kunwoo Lee
Executive Committee
2015 - 2018 | South Korea

Jianbin Luo
Executive Committee
2017 - 2020 | China

Guillermo Oliveto
Executive Committee
2016 - 2019 | Argentina

William (Bill) Rosehart
Executive Committee
2017 - 2020 | Canada

Julia Ross
Executive Committee
2016 - 2019 | United States of America

Sirin Tekinay
Executive Committee
2015 - 2018 | Turkey

Rupesh Vasani
Executive Committee
2015 - 2018 | India

Zhenghe Xu
Executive Committee
2016 - 2019 | China

Michael Auer
Ex-Officio Member (IFEES President)
2016-2018 | Austria

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2018 AIRBUS GEDC DIVERSITY AWARD
FOR ENGINEERING EDUCATION

CALL FOR ENTRIES

Shining a light on successful projects that inspire students from all profiles and backgrounds to study and succeed in engineering.

The 2018 award will be given to the project that **demonstrates the best use of technology to enhance diversity in engineering education.**

Enter before **12 midday GMT on Friday, September 7, 2018.**

www.airbusgedcdiversityaward.com

#DiversityAward2018

ABOUT THE AWARD

Developed and funded by Airbus in partnership with the GEDC, the leading international organization for leaders of schools and colleges of engineering education, the award is now in its sixth year. It has showcased good practice from around the world with projects that inspire students to study and succeed in engineering. The 2018 award will be given to the project that demonstrates **the best use of technology to enhance diversity in engineering education.**

HOW TO ENTER

Award entries can be made by individuals or teams working with or in an engineering faculty, or a school or college of engineering. Submit your entry before the deadline: 12 midday GMT on Friday September 7, 2018.

www.airbusgedcdiversityaward.com

AWARD CEREMONY

WEEF-GEDC Conference, Albuquerque, New Mexico, USA

Three inspiring finalist projects will be invited to send a project representative to the WEEF-GEDC Conference in Albuquerque, New Mexico (USA), from November 12-16, 2018 to present their work to the conference delegates and a distinguished jury. Along with the global visibility the award offers, the winning project will receive US $10,000 to support further work in this field, and the two runners up will each receive US $1,500.

If you have any questions or if you need support with your entry, email info@airbusgedcdiversityaward.com.
Find out more about previous finalists and award recipients here:

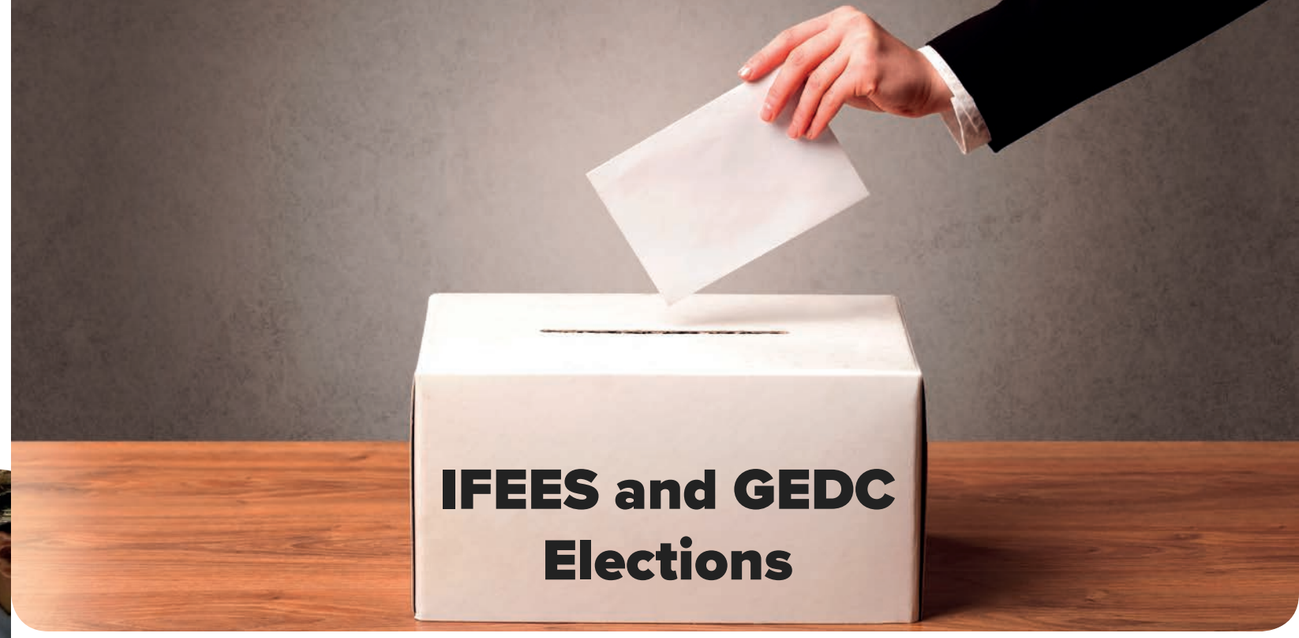
www.company.airbus.com/diversityaward

IFEES-GEDC Reception and Dinner in Salt Lake City

IFEES and the GEDC hosted their annual reception and dinner on Sunday, June 24, 2018, during the ASEE Annual Conference and Exposition in Salt Lake City, Utah (USA).

The event was held at the Hotel Monaco. Opening remarks from IEFES President Michael Auer and IFEES President-Elect and GEDC Chair Natacha DePaola highlighted the necessity of training engineers to foster peace and sustainability. They elaborated on the importance of the IFEES and GEDC communities in facilitating advances in engineering education and research around the globe. Peter Martin of Quanser Consulting and Ye Cheng from MathWorks hosted the reception.

This event, which has been facilitated by IFEES and the GEDC for many years, has given colleagues and friends from the global communities an opportunity to interact together, renew friendships in a warm and welcoming atmosphere.



IFEES Accepting Nominations for Five Spots on Executive Committee

Nominations to serve on one of the five spots of the IFEES Executive Committee (2018-2020) need to be submitted to IFEES Elections Chair **Tania Bueno** and IFEES Secretary General **Hans Jürgen Hoyer** by August 15, 2018. Candidates do not need to be an IFEES representative, however non-representatives must be endorsed in writing by the appropriate IFEES member organizations. A list of IFEES members and representatives is available on the **IFEES website**. Corporate partners are also eligible to serve.

Nominating organizations need to have paid their annual membership dues. Observer members interested in submitting a nomination must reach out to Hans Jürgen Hoyer about transitioning to a paid membership. To submit nominees for the International Federation of Engineering Education Societies Executive Committee:

1. Start a new email to tania.bueno@i3g.org.br and h.hoyer.ifees@gedc.info
2. Write in the subject line: 2018 IFEES Nominations
3. List the individual you would like to nominate for the vacancies
4. Submit a half-page biography, the rationale for candidacy, and photo by September 5, 2018

IFEES representatives will be able to vote electronically in September and early October or in person at the IFEES General Assembly in Albuquerque on November 14, 2018.

GEDC Nominations for Chair-Elect, Secretary/Treasurer and Executive Committee Due Now

GEDC Regular Members who are interested in running for the GEDC Chair-Elect, Secretary/Treasurer, or one of the six spots on the Executive Committee must submit their materials as soon as possible to GEDC Election Chair **Paul Feigin** and GEDC Executive Secretary **Hans Jürgen Hoyer**.

Each nominee at the time of nomination must be a "GEDC Regular Member" who has paid their annual membership dues. The list of GEDC members can be found at the **GEDC website**.

To submit nominees for the Global Engineering Deans Council leadership positions:

1. Start a new email to h.hoyer.ifees@gedc.info, copying vpsp@technion.ac.il
2. Write in the subject line: 2018 GEDC Nominations
3. List the dean(s) you would like to nominate for the vacancies:
   - Chair-Elect; Secretary/Treasurer; Executive Committee
   - Next to each name provide a brief rationale for recommending their candidacy
   - Candidates need to send a half-page biography, the rationale for candidacy, and photo

Ballots will be circulated to GEDC members in early August to vote electronically through mid-September.

IFEES and IIDEA Workshops at Tsinghua University

Between July 13 and 14, IFEES and IIDEA offered its eighth series of capacity building workshops conducted in collaboration with the UNESCO International Center for Engineering Education and the Tsinghua Center for Engineering Education in Beijing, China. The workshops were held over two consecutive days in July and were facilitated by several global experts in engineering education. IFEES President Michael Auer and Qiao Weifeng from Tsinghua University organized the workshops, which addressed challenges of professional engineering education in training master students towards Industry 4.0 and Made in China 2025.

IFEES Duncan Fraser Award

This year, IFEES received 13 nominations from 10 countries. The IFEES Duncan Fraser Global Award for Excellence in Engineering Education recognizes individuals who have made innovative and meritorious contributions with a significant impact on the advancement of engineering education.

Presently, the nominations are being reviewed by the 2018 IFEES Duncan Fraser Award Committee, chaired by Uriel Cukierman. The committee includes Marc Fry, Gudrun Kammasch, Linda Krute, Ariela Sofer, Miguel Angel Sosa and Hans Jürgen Hoyer (non-voting). The 2018 recipient will be honored in Albuquerque, USA, during WEEF-GEDC 2018. The recipient will receive a medal, citation, a one-time monetary prize of US $1,000, round-trip economy class plane ticket, and three nights' lodging to receive the award.

Deadline Extended for IFEES-SPEED Young Scientist Award

STEM students, academics and professionals under 30 are encouraged to submit papers for the IFEES-SPEED Young Scientist Award for Excellence in Engineering Education and Pedagogy.

The application will be in the form of a scientific paper and must include aspects of engineering education and pedagogy. The selection process of applications will be carried out through a double-blind reviewing process with reviewers being specialists in the field of engineering. Applicants must be younger than 30 years old to submit.

The submitted application in the form of a full paper should be original, unpublished and not in consideration for publication elsewhere at the time of submission. The winner will have one week to confirm heir participation in the event; if confirmation is not given, the award will be given to second place. The award ceremony will take place at the annual World Engineering Education Forum (WEEF) in Albuquerque, USA. WEEF is preceded by the SPEED Global Student Forum (GSF).

Authors of the best paper (only one author per paper) will be awarded with a SPEED membership, coverage of 50% of travel expenses (economy class flight) and 75% of the combined GSF-WEEF student registration fee (including accommodation). Work will be included in the WEEF conference proceedings and indexed with other WEEF proceedings. Authors and co-authors will receive e-certificates endorsed by IFEES and SPEED.

Submissions and questions should be sent to: posters@worldspeed.org. The template can be downloaded **here**.

Iran Society of Engineering Education Joins IFEES

Established in 2009, the Iran Society of Engineering Education (ISEE) promotes research in engineering education. ISEE also collaborates with relevant research institutions and executive branches responsible for accreditation of engineering programs. The Society awards prizes and scholarships to research collaborators and provides education research and technical services. It also promotes the publication of scientific papers, reports and books on engineering education.

Ali Ashrafizadeh represents the ISEE in IFEES. Ashrafizadeh is the Vice President of Academic Affairs at K.N. Toosi University of Technology. He is also the Chair of ISEE's International Committee. He received his PhD in Mechanical Engineering from the University of Waterloo (Canada) and completed his undergraduate and graduate degrees in mechanical engineering at Sharif University of Technology and Tarbiat Modares University (Iran).

IRAN SOCIETY OF ENGINEERING EDUCATION

GEDC Industry Forum Report

The first GEDC Industry Forum took place in Fontainebleau, France, in June 2017. It was created and organized by the GEDC and Petrus Communications, and sponsored by Total, National Instruments, and Boeing. The purpose of the Industry Forum was to provide a platform for engineering education and industry leaders to come together to discuss and build viable solutions to develop the engineering experts and leaders for the future and better understand each other's needs.

Multiple challenges were addressed, such as the skills gap in the engineering and IT fields, which are attributable to a confluence of megatrends—such as increased globalization, digitalization and the blending of technical, economic, and societal structures—which have pushed the world into the beginning of the fourth industrial revolution.

The event included input from expert panelists in addition to highly interactive and innovative group work, during which a number of recurring themes emerged. Delegates identified the following as areas that need to change for engineering education to best develop 21st-century engineers:

Making accreditation systems more flexible. A more agile system is needed to keep up with the pace of change.

Teaching students to learn how to. Thus, students can continue to learn beyond their formal education and to keep up with the changing demands of the labor market, society, etc.

Incorporating other disciplines in engineering education. That way, future engineers better understand how their work fits into a highly-interconnected world.

Allowing failure. Failure is an essential part of innovation and creativity. How can universities accommodate failure in their curricula?

Using more problem-based learning. This will help turn students into more active learners and teaching them skills they need for the workplace, providing them with "real-world" problems faced by industry.

Increasing amount and regularity of collaboration between universities and industry. This ensures that both communities are on the same page regarding each other's needs and expectations. The GEDC will be holding a series of Industry Forums in 2018 and 2019, including in Bucharest, Romania.

Click **here** to read the full report, written by Petrus Communications.

In February, dean Ken Ball, GEDC Executive Committee member & host of the IFEES-GEDC Secretariat, welcomed a group of Nigerian delegates to George Mason University.

Former GEDC Chair Peter Kilpatrick Named Provost at Illinois Institute of Technology

GEDC Immediate Past Chair Peter Kilpatrick will become the new Provost and Senior Vice President for Academic Affairs on August 1.

For the past decade, Peter Kilpatrick has served as a leader at the University of Notre Dame, where he was the Dean of the College of Engineering. In 2013, he hosted the GEDC annual conference in Chicago. Prior to joining Notre Dame, he was a member of the faculty at North Carolina State University for 25 years.

Learn more about Peter Kilpatrick's impact on engineering education and his new role in the **Illinois Tech Media Room**.

IUCEE Facilitates MoU Signing Between EPICS & IEEE Purdue

Submitted by Krishna Vedula

For the past four years, IUCEE has partnered with EPICS at Purdue University. The partnership had six institutions in 2016 and has grown to 24 in 2018.

This has led to an MoU signed on April 6, 2018, between EPICS in IEEE, EPICS Purdue, and 13 Indian colleges and universities across 13 provinces.

The objective of the MoU is to facilitate a new and refined learning method throughout colleges and universities in India that will encourage students to gain a deeper understanding and appreciation of meaningful technology solutions that will improve their local communities. Additionally, the partnership will provide expert guidance that will help India enrich its curriculum and advance the way that India teaches its undergraduate engineering students.

TU Dresden Cooperates with Universidad de Santiago de Chile

Published by IGIP

The Technische Universität Dresden and the Universidad de Santiago de Chile are in the midst of a three-year collaborative research project, Strengthening Engineering Education at Chilean universities through Practice Partnerships (STING). The objective is to develop a module for the transfer of knowledge from German and Chilean companies to universities and vice versa. It is primarily aimed at core-skills training for future engineers. The module will be integrated into existing engineering education curricula during the pilot phase at the Universidad de Santiago de Chile, where GEDC Member and GEDC 2019 host, Juan Carlos de la Llera Martin, is Dean of Engineering. The project aims to be incorporated into the implementation of the IGIP Prototype Curriculum in Chile. Read more in IGIP's newsletter **here**.

NYU Abu Dhabi Engineering Celebrates Fifth Commencement

Submitted by NYU Abu Dhabi

New York University Abu Dhabi Engineering (NYUAD) celebrated its Fifth Commencement this past May. Engineering at NYUAD is designed to create technological leaders with a global perspective, a broad education, and the capacity to think creatively. A distinctive element of NYUAD's undergraduate programs is in the integration of design and innovation in every year of the curriculum.

GEDC member Samer Madanat serves as the Dean of Engineering, and NYUAD's past dean, Sunil Kumar, is a Former Dean member. Learn more about NYUAD **here**.

Photo courtesy NYUAD

RIT Establishes Global Engineering Education Resource Centre

Submitted by Sushma Kulkarni

Rajarambapu Institute of Technology (RIT) in Maharashtra, India, has established the Global Engineering Education Resource Centre (GEERC), which will be a catalyst for global engineering education development and continuing education. Operating as a hub, the GEERC will provide a welcoming environment, housing an information and learning center with a variety of services for the engineering education community. Learn more about the GEERC and other RIT initiatives **here**.

GEDC Executive Committee Member Rupseh Vasani (right) was recently named by India's leading newspaper *The Times of India* as the "Times Man of the Year" in the category "Contribution towards the society in the field of technical education." Vasani is the Dean of the College of Engineering at Gujarat Technological University in Ahmedabad, India.

Materials Experts Gather to Combat Climate Change

Submitted by McMaster University

This past March, scientists, academics and experts gathered from around the world in Hamilton, Canada, to discuss how advances in clean energy materials can combat climate change for the Clean Energy Materials Innovation Challenge Workshop. This is the second in a series of meetings that are part of the Mission Innovation global initiative. The goal is to dramatically accelerate global clean energy innovation by driving research and development in key areas, such as sustainable biofuels, smart grids, off-grid access, carbon capture and clean energy materials. GEDC member Ishwar Puri is Dean at McMaster. Learn more **here**.

Let's Join Together and Unite the World!

An invitation from FIRST Global to IFEES, GEDC and Friends

Written by Laura London

FIRST Global is a US-based 501(c)(3) not-for-profit that aims to change the world in ways big and small by igniting a passion for STEM among youth around the globe. The FIRST Global Challenge, its flagship program, invites one team—comprised of approximately five young people (age 15-18) and two mentors—from every nation to participate in an annual, Olympics-style international robotics event (the Challenge) that builds bridges across different backgrounds, languages, religions, and customs. Now in only its second year, the Challenge is bringing together teams representing 186 nations and six continents to compete in the 2018 FIRST Global Challenge in Mexico City, August 15-18. Participating in the Challenge sparks interest in STEM learning and careers on a global scale by introducing students to open-ended team-based problem solving, aided by both virtual and location-based mentors. Beyond developing STEM understanding and skills, young people are gaining experience with international collaboration focused on meeting a common challenge.

Teams use a standard kit of parts to design, build and program a robot to simulate solving one of the world's "grand challenges" of engineering. The 2018 Challenge game – "Energy Impact" – engages alliances of teams from three nations at a time over several days of play to work together to deliver fuel cells to power plants, energize wind turbines, deliver solar cells and complete an electrical power distribution network. The Challenge is marked by relentlessly gracious "co-opertition" to describe the highest levels of professional behavior when teams simultaneously compete and cooperate. The event is both a competition and celebration, with teams working hard and playing hard. Given the many lessons on and off the field, participants learn a great deal, far beyond the field of robotics.

FIRST Global applauds the years of commitment, time, talent, and treasure contributed by members of GEDC, IFEES and their community partners to the cause of improving our world through the power of engineering. We look forward to conversation and working alongside you, bringing the world together in peace and prosperity through engineering, science and technical education and careers. You can learn more about FIRST Global **online**. You can also learn about the teams preparing to meet the 2018 Challenge by **reviewing the heartfelt team profiles** and by reading the inspiring team stories and videos shared in our **weekly e-newsletter**.

We invite members of GEDC and IFEES to consider joining the FIRST Global Higher Education Network, a collection of postsecondary education institutions supporting teams with technical mentorship. Joining this network now allows each university to connect with its national FIRST Global team for the 2018 competition and establishes the basis for partnering during the 2019 competition season.

Of course, the FIRST Global program and its annual Challenge can only be sustained through the gift of active volunteer engagement, and we look forward to including members of the GEDC and IFEES community in our global network of volunteers. Feel free to reach out to FIRST Global volunteer Vince Wilczynski (Vincent.Wilczynski@Yale.edu) with questions or interest. Together, we can unite and improve our world.

Deans Gather in Tokyo for AEDS

The Tokyo Institute of Technology hosted the 8th Asian Engineering Deans' Summit this May. With engineering education at the forefront of artificial intelligence and educational technology, presentations focused on the theme Diversification of Engineering Education Programs - Today and the Future. GEDC Chair Natacha DePaola and GEDC Executive Secretary Hans Jürgen Hoyer represented the GEDC. Several leaders from IFEES and the GEDC were in attendance. More details about the Summit can be found **here**.

TINY HOUSE HUGE IMPACT

American University of Sharjah joins Tiny House movement, and achieves carbon footprint reductions through innovative technologies

American University of Sharjah (AUS) in the UAE, one of the Middle East's top-ranked universities, has created its own Tiny House, joining the global initiative to create comfortable, affordable living spaces that also promotes high sustainability standards.

The project brought together four faculty members and 12 students from the Department of Civil Engineering at AUS to design and build a Tiny House that would serve as a laboratory and platform for future innovation, sustainability and entrepreneurship. The result has exceeded expectations, with the final design of the house 35.5 percent smaller than the smallest possible studio size , occupying just 194 square feet (18 square meters). Significant reductions in water and electricity consumption, and a much-diminished carbon footprint, and are expected once the building is fully operational, proving that environmentally sound living can be realized when homes are designed thoughtfully and creatively.

Facts demonstrating the energy and water efficiency of the AUS Tiny House include:

- Using just 480 Kilowatt-hours (kWh) per month, electricity consumption, compared to that of a studio apartment of the smallest possible size, is reduced by approximately 45 percent in the Tiny House.
- The Tiny House used just 0.1 cubic meters of water per capita each day, a reduction of approximately 50 percent of the amount consumed in the smallest studio apartment.
- Based on the electricity consumption of the Tiny House, its carbon footprint is reduced by approximately 45% of that of a studio of the smallest possible size.

Key features of the Tiny House that have contributed to the relatively small environmental impact include lightweight panel walls (that is, walls with low cement content with high insulation and fire resistance values), sensor faucet and greywater reuse.

As well as being good news for the environment, Tiny Houses such as the one built at AUS are also a positive development for those struggling to purchase a traditionally sized home. The Tiny House movement has gained traction in the United States since it began in the 1990s, as housing affordability has continued to decline relative to wages. House sizes, as well as prices, have increased steadily over recent decades, shunning many in society, such as recent graduates and retirees, from the domestic real estate market. Tiny Houses serve as a realistic prospect for homeownership for these groups, and are becoming increasingly commonplace in America. As urbanization continues at a rapidly accelerating rate in countries around the world, and land for building becomes scarcer and pricier, it is a very real possibility that future generations will see Tiny House as the norm.

"Home ownership is highly valued by most people from around the world," says Dr. Robert J. Houghtalen, Head of the Department of Civil Engineering at AUS. "Even modest homes provide a sense of stability, security, and self-reliance for families, as noted by **Habitat for Humanity**. But home ownership is increasingly elusive. In developed countries, the size and price of homes is problematic, along with a growing concern for the environment and scarcity of resources. In developing countries and conflict zones, poverty is the nemesis. Tiny houses are likely to play a key role in a return to living simply in developed countries and providing affordable housing for the world's poorest citizens."

Big plans lie ahead for the AUS Tiny House, which will continue to reside in its outdoor laboratory location on the AUS campus. The faculty and students working on the project hope to achieve even greater reductions in electricity and water use. By adding solar panels to the house, approximately 9.2 kWh of energy per day could be generated, further reducing reliance on traditional sources of electricity, with the house taking only 6.8 kWh per day from the grid. If this is achieved, the carbon footprint of the house will be approximately 75 percent less than that used by a studio apartment of the smallest possible size.

For AUS students, the Tiny House has afforded a learning experience that could never be achieved within a traditional classroom setting. Dr. Houghtalen explains, "Civil engineering students often produce designs and reports for their senior projects; they rarely build what they design. When our students constructed the Tiny House, they saw how easily design mistakes can be made as contractors try to assemble a structure from building plans. In addition, the students felt a sense of accomplishment by promoting small-space, low-cost, sustainable living as a solution to the world's housing challenges."

GEDC Member Richard Schoephoerster serves as Dean. For more information about American University of Sharjah's College of Engineering, visit **aus.edu/cen**.

The Tiny House project is being conducted with faculty and students in the AUS College of Engineering. They are coming up with new ways of creating comfortable living spaces that are environmentally friendly and cost effective.

Peace Engineering

An invitation for collaboration across disciplines

Ramiro Jordan, University of New Mexico & ISTEC, Inc.
Kamil Agi, SensorComm Technologies, Inc.
Elsie Maio, Humanity, Inc./the SoulBranding Institute
Indira Nair, Carnegie Mellon University
Donna Koechner, GINET, LLC
Derrick Ballard, EmTech Global, LLC

This article identifies key concepts and philosophies of Peace Engineering. As a cross-disciplinary group of entrepreneurs, professors and professionals, we have developed an outline of one possible framework for the implementation of Peace Engineering. After presenting the relevant foundational materials, we frame the conversations and learning experiences planned for the 2018 World Engineering Education Forum and Global Engineering Deans Council (WEEF-GEDC) Conference on Peace Engineering in Albuquerque, New Mexico (USA). We close with a review of topics for continuing dialogue—as a call for conference papers specifically, and for future research and discussions moving forward. The purpose of this paper, in short, is to encourage key contributors in the ecosystem of purposeful enterprise to engage with each other at this conference to shape the requirements and co-create solution directions for a sustainable future.

> The absence of conflict is a necessary but not sufficient condition for peace...There is a great opportunity for engineers, for they have at their disposal the knowledge and practical skills to ameliorate the many forms of material injustices that are the root causes of most violent conflicts.
>
> - Peace Engineering, P. Aarne Vesilind & W. Richard Bowen

What is Peace Engineering?
There is a beginning body of work on the subject of Peace Engineering[1]. Some associate it with the military deterrence of war, others have a broader and perhaps deeper view beyond its prophylactic power.

Here, we define Peace Engineering as the intentional application of systemic-level thinking of science and engineering principles to directly promote and support conditions for peace. Peace Engineering works directly towards a world where prosperity, sustainability, social equity, entrepreneurship, transparency, community voice and engagement and a culture of quality thrive. Engineers have the power to play a vital role in the creative solutions that can radically transform and improve the wellbeing of people and other living systems day to day.

At the core of Peace Engineering is our planet's sustainable future, which is calling leaders to act in concert from a systems mindset. It is a call to develop solutions differently: collaboratively; integrating transdisciplinary expertise and education programs; and simultaneously applying technology solutions while supporting ethics, policy and living systems. And it is a call in the mingled vernacular of civil society, global institutions, and science and technology. Further, beyond addressing today's challenges, we must cultivate together the development of next generation leaders to continue to drive momentum.

Why is Peace Engineering the theme of this global education conference?
It's a truism that technology is driving economic productivity worldwide, even as it is revolutionizing day-to-day human experiences. Arguably, it will continue to be the biggest force for change that humans can control for the foreseeable future. And, engineers drive technology. Their education and mindset is determining right now what tomorrow holds for billions of human beings.

Engineers, with their systems mindsets, skills, creativity and intention will determine humanity's future. So, just as it continues to enable reviously unimagined improvements in quality of life for many peoples of the world and to generate abundant material value, so too does technological innovation enable unprecedented crises—this is the law of unintended consequences.

A crucial variable in determining the impact of innovation, we argue, is intention. And the engineer's intention carries disproportionate weight in that equation—they are the designers and makers after all. So it's not surprising that they are now at the center of attention in a movement to align technology with ethical behaviors, human wellbeing and sustainability.

The goal, however, is not for arbitrary intention to drive the agenda, nor can conventional rules alone constrain innovation. Instead, the aim is for the engineer's own systemic thinking to be at the center of the effort. The law of unintended consequences has created a situation where the whole of society is suffering mightily because of the casual and myopic intentions of a few.

In Humanity Inc, Elsie Maio notes: "The trend that has been building in business and society for 25 years is an impulse for socially purposeful enterprise. That trend has now coalesced enough across sectors worldwide to be actionable. What's needed is intention, skill and will. Engineers are at the center of that skill. Their conscious intention to serve the web of life can be the lynchpin that catalyzes positive collective action at scale."

Engineering education needs to change—it is no longer enough to teach the basics of what the previous generation learned. Too often today,

educators tweak curricula or develop new classes—but based on an old paradigm. We too readily retreat to what is familiar and comfortable even while others innovate for impact. To innovate for impact, progressive school districts in New York, specifically in elementary and middle schools, now focus on "whole child" education[4]. Initiatives driven by the USA's National Science Foundation focuses on bridging the gap between high schools and universities, such as in the introduction of Advanced Placement engineering classes[5]. Finally, Quanser has applied modern learning technology to mechatronics, controls and robotics education to create a whole new approach to experiential education[6]. We believe that this, and other initiatives, are what is required to revamp the education system to contribute to a sustainable future.

How you can contribute to Peace Engineering at this conference

The education system is a cornerstone to the evolution of any discipline, including engineering. And it is a useful platform for discussing the future of engineering. This conference, being the annual worldwide gathering of engineering educators, is the logical forum to expand that discussion.

But unlike these previous gatherings, today's occurs in the midst of multiple crises of which technology is quite visibly at the core, either as a catalyst or as the potential solution tool. It is simply time for engineering and engineers to take a stand on these issues as a conscious instrument of wellbeing for humanity and the planet. And we are encouraged by the rousing alignment of millennials and others behind the idea of socially purposeful innovation.

The crises are system crises. The solutions must be system solutions. The solution-creators will be the members of the ecosystem. So of course, the discourse is a full-ecosystem conversation. That is perhaps another way in which this conference is different. We invite all of you, members of what we've called the Natural Ecosystem, to come with your own requirements, learnings, questions and concerns, so this forum will benefit from the perspective of the system in which engineers operate.

The ecosystem participants are members of the investment community, of industry, of different levels of government, and national representatives of civil society. It addresses the people's needs, as well as their talent for generating rich collective wellbeing. You may be a member of the many specialties in engineering and education, or perahs you are in the business of transforming mindsets and behavioral change. Or more. The richer the inputs, the richer the outcomes.

And even though ecosystem models have their successes, their impact on economic development are uneven. Our facility in managing them is still developing. For instance, the duplication of Silicon Valley, Silicon Alley, Silicon Beach, Silicone Slopes are well known ecosystems that have been established in Northern California, New York, Southern California and Utah, respectively. In addition, concepts like Rainforest Development[7] have also been developed to establish, create and enhance existing ecosystems. However, historically we have found that these concepts have had mixed results.

"Within university communities...we must create an intellectual environment where students can develop an awareness of the impact of emerging technologies, an appreciation of engineering as an integral process of societal change, and an acceptance of responsibility for civilization's progress." - Joseph Bordogna[2]

For the engineer engaged in Peace Engineering, we have identified what we call the Natural Ecosystem™. It represents an ideal state where all the stakeholders are in equilibrium and hold a common focus, or intention. In this case, the center of the Natural Ecosystem is the concept of sustained (or sustainable) growth. The question in this group then becomes: What can we do as an ecosystem to co-create systems that contribute to equitable, sustained growth?

The model of an ecosystem more accurately describes the dynamics of purposeful enterprise today. It implies awareness and engagement with the whole, a mutuality of interest, a complementarity of desired outcomes, and a fluid give-and-take flow of contribution and value.

It will take a new kind of engineer and leader to inhabit this Natural Ecosystem[8], one who is comfortable working in and developing concepts that are not only transdisciplinary, but also cross-disciplinary, and one who starts by envisioning the desired impact on the meta system that is the web of life. They understand the dynamics of business concepts like entrepreneurship and finance, political concepts like policies and regulations, and even understanding capital needs.

In the frame of Peace Engineering—that is, the application of engineering principles, skill and talent directly to humanity's pressing problems—your contributions are therefore, essential.

The unique growth opportunity (and challenges) of this conference

As with prior conferences in this series, this one provides the traditional opportunities to learn, share, publish and network among peers, and more.

First, in our view, this particular joint conference of World Engineering Education Forum and Global Engineering Deans Council (GEDC) to be held in Albuquerque, New Mexico (USA) in November 2018 is well-suited to initiate collaboration and inquiry around the common theme of Peace Engineering. For one, it is the first time these conferences will be held together in the United States of America, a natural stage for global reach and impact in the rebirth of engineering intention.

Second, the locale itself is said to have birthed Big Science into the so-called atomic age. On the brink now of this new era in innovation for social good, science and engineering carry their legacy of brilliant accomplishments and expertise associated with New Mexico to the next level of contribution.

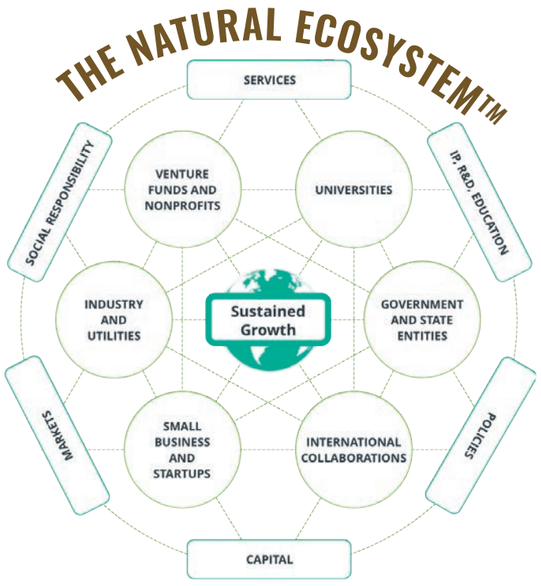
The goal is to bring together key stakeholders to begin the dialogue of how to: define the problems on a systemic level; make the curriculum cogent for the times; develop the right skill sets for the next generation; and to cultivate socially skilled and purposeful next generation leaders.

We are challenging ourselves as organizers, and you as the people and institutions committed to ethical, sustainable growth, to be willing to change, to grow and to learn from each other, no matter our ranking, professional status, area of discipline or personal characteristics. For we are all members of the ecosystem, and the flourishing of the ecosystem requires that everyone be heard and that everyone thrives.

Your papers, workshops and facilitation are important to the wholeness of this conversation - please visit **WEEF-GEDC2018.org** for specific deadlines. Register. Come. Discover. Share what you know and collaborate with your fellow actors in the ecosystem of sustainable growth. This is a conference of doers, catalysts and change-agents. This is your platform.

Why reach out beyond academia and its immediate stakeholder set for this event, such as the research labs? Inclusivity is a de facto requirement for systems effectiveness. If you are looking to affect the sustainable growth of communities or sectors or the world economy, as is sorely needed, then de facto you engage and orchestrate systems dynamics. You engage all the players.

The esteemed Dr. Joseph Bordogna, humanitarian, emeritus COO of The National Science Foundation, Dean of the the School of Engineering at the University of Pennsylvania and former President of the IEEE, foresaw decades ago this evolved role of engineers. They appreciate "the economic, industrial, and international environment in which



engineering is practiced and the ability to provide societal leadership effectively."

The question they then face is: How to effectively engage this system? This question opens the door to five areas to explore at the conference: (1) developing the global engineer, (2) the societal problems/opportunities to focus on, (3) conditions for effective engagement, (4) ecosystem functions and processes and (5) engagement models. We hope you find it rich with nuance and promise.

Acknowledgments

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REBOOTING THE SYSTEM

The UK's newest university is departing with tradition, and building a unique undergraduate engineering program that reflects all of the best practices and thinking on modern engineering education. The first steps are nothing short of inspiring.

Tom Lee, Chief Education Officer, Quanser

It is a common comment among educators that part of the challenge of improving engineering education is to fit learning innovations into the traditions and structures – the orthodoxy – of our institutions and programs. There is no shortage of new technologies and methodologies that show great promise. But how do we squeeze them into a three-hour week? How do we efficiently flip a cohort of 500 students? Which centuries-old axiom of engineering science can we retire to make room for a digital innovation? For many, the uncomfortable truth is, within the framework of the orthodoxy, it will remain a challenge to effect efficient transformation.

Along comes a group of industry leaders in the idyllic region of Hereford, England—region that held a dubious distinction as the only region in England without an accredited university. Furthermore, it was an area where traditional industrial segments such as manufacturing, agriculture, and defence were fully in transformation mode in response to modern disruptive market influences. Regional industry needed a new generation of engineers who could respond proactively and vigorously to the emerging challenges. To these industry leaders, it was clear that a new university, built from the ground up and using a new learning framework, would strike a more modern and efficient balance of foundational concepts with industry and innovation-ready experiences. From these pioneering thoughts, a new university was conceived and incorporated.

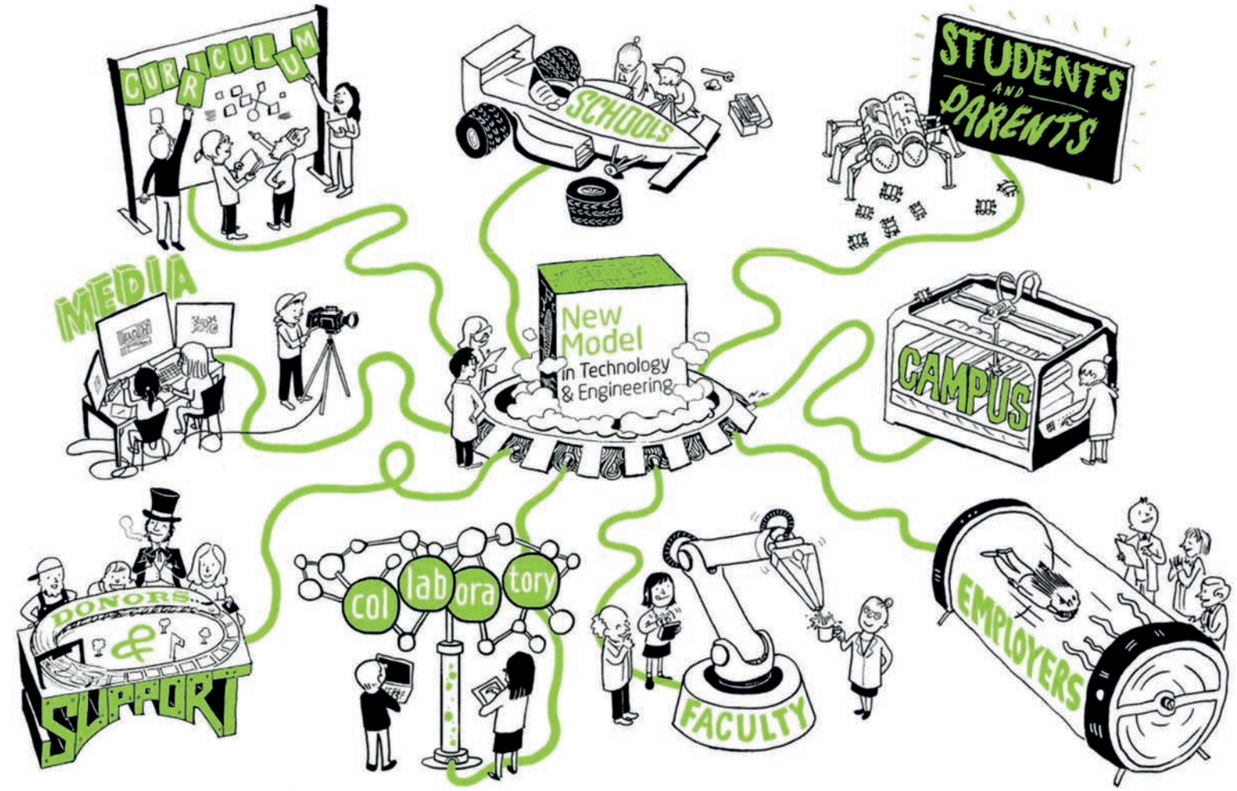


Image source: NMiTE.org.uk

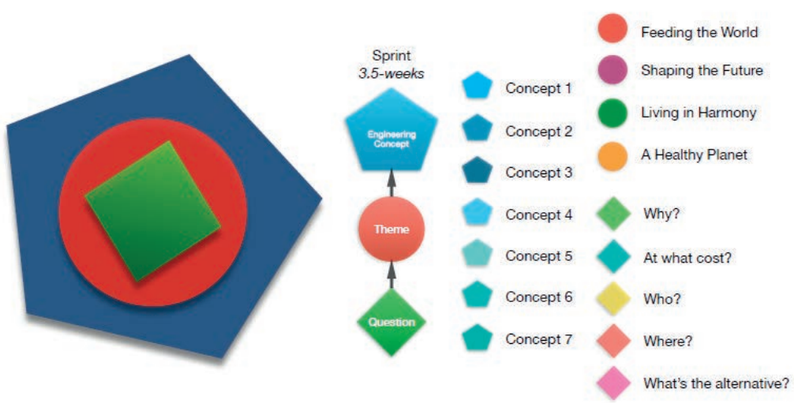
The institution is so new that it does not have an official name yet and goes by the moniker **NMiTE** (New Methods in Technology and Engineering). To understand how profound NMiTE's departure from tradition is, consider what it does not have:

- No courses per se – parallel streams of learning over a semester. All concepts and skills are learned via serial, compact "sprint" modules of either one week or 3.5-week duration. Sprints are framed by essential challenge questions, and core themes that provide a cohesive framework through the entire program (see figure).
- No lectures in the traditional sense – there will be faculty, support staff, and other mentors fully engaged with the students but any teaching is intended to be from the "side" as opposed to the "front." Lecture halls will be transformed to design spaces and studios.
- No traditional disciplines of mechanical, electrical, civil, chemical engineering, etc. The more modern view of interdisciplinary challenges and teams are strongly reflected in the sprint sequence. Students will, however, still have choices of application specializations in the latter part of the program.
- No traditional build-up of concepts – instead of starting from the basics and eventually building up to applications and design, skills and concepts are always cast in the context of challenge questions and real-world applications with skills that are relevant to that application taking priority.
- No summer vacation – other than a couple of days between major sprints, students are engaged throughout the year for three years.
- No traditional administration or tenured faculty structure – governance will be headed by a Chief Executive who will be a dynamic liaison among students, staff, industry, and other community stakeholders.

From an application perspective, there is no shortage of interested regional stakeholders who are willing to offer their challenges, as well as meaningful mentorship and support, to help NMiTE integrate real-world complexity into Sprints. One example is a local farm (more precisely, an agricultural enterprise) that is already at the head of the pack when it comes to applications of modern technology. The management of the enterprise, however, foresees

potential challenges that stem from biological issues such as new pest threats and more restrictive pesticide allowances; potential impact of climate change; and core productivity and automation issues to stay competitive in the global marketplace. Many are looking to emerging technologies embodied by IoT, advanced robotics, machine vision, and more as part of a strengthened agricultural toolbox. Technology aside, this one application context clearly shows the modern interplay among so many technical and scientific concept silos that have historically been treated as isolated courses. In the new model, this interdisciplinary challenge is no longer a vexing complexity in a traditional program but a natural springboard from which one can derive an entire series of motivating sprint project concepts. Core applied sciences, mathematics, computing, engineering design, entrepreneurship and ethics all have natural homes in this new approach.

From a practical perspective, one of the major challenges in efficiently deploying such a new approach is in the technology platforms upon which students will learn, test, build, and design complex systems. Although learning is driven by real-world motivations, the reality is that a three-year undergraduate program is not the real world and the program must develop an entire series of appropriate, academically-sound and application-centric abstractions of engineering problem-solving and design. One of NMiTE's principal partners is the Canadian company Quanser, well known for its advanced platforms for robotics and mechatronics. Part of the company's more recent R&D efforts have focused on the "agility" of education technology platforms – i.e., using the same foundational hardware and software, can institutions rapidly reconfigure the same technology to adapt to very different applications? To this end, NMiTE will test the first series of technology that potentially provides this desired agility but also balances key dimensions that connect to the institution's stated goals.



Conceptual illustration of a Sprint (from NMiTE: Academic Paper V1.5, 2018

The Road Ahead

The current plan has an initial "Design Cohort" – i.e., a group of initial students – who will begin in the 2018-2019 UK academic year. These trailblazers are not a typical cohort of "Guinea pigs." Not surprisingly, the institution is innovative in this aspect as well. The Design Cohort will collaborate with academic staff to design ways to fully articulate the desired student experience. Beyond academic concepts, what other support services and scaffolding will students need to succeed? So the first cohort of students will actually be part of the "build" of the new organization and not just the consumers. In the following academic year of 2019-2020 the first "Pioneer Cohort" will arrive to experience the first iteration of the full program—which, by that time, would have been strengthened and refined with the help of the Design Cohort.

One of the most remarkable aspects of the NMiTE initiative is how much it makes sense to key stakeholders. The rhythms and pace of Sprints is nothing new. Modern tech companies have espoused its ability to help commercial organizations achieve faster innovation, increased quality, and greater motivation and satisfaction among stakeholders. If a key part of the mandate of the modern university is to prepare engineers to confidently participate in such companies, it seems downright sensible that we have students experience such a framework of innovation and achievement from day one.

Featured Dean

MARTHA RUBIANO

Martha Rubiano serves as Dean of the Faculty of Engineering at the Universidad Libre in Colombia and specializes in quality management of products and services. She has an MS in Organization Management from the University of Quebec.

As a female leader of engineering in Columbia, what are some key experiences that you would like to share with the community?

I am the Dean of the Engineering Faculty at Libre University - Bogotá Section, an institution that in a few years will celebrate its first centenary. The university has had experience in engineering since its foundation and despite an interruption in activities, engineering was restored in 1962 with the metallurgical engineering program in the city of Bogotá. The program was relevant to the time, since the country was emerging from rural development and a peasant economy and turning to greater urban development. This was under the direction of the government in power, which was seeking industrialization of the country. Later, programs in industrial, environmental, mechanical and systems engineering opened in the city of Bogotá, with the vision of providing professionals to meet the needs of the country. Libre University, with its philosophical thinking and its operational strategies, links a significant number of its graduates to be part of its organizational structure and working teams. This is how I became involved as the director of the industrial engineering program at Libre University, and from that moment, the top management has promoted my transit through different positions, including Academic Secretary of the Faculty of Engineering, Administrator of the Bosque Popular Headquarters, and Administrative Director of the National Planning Office of the University. Along that path, I have executed a variety of projects involving infrastructure and organizational processes, contributing to achieving the goals that are set by the university.

In 2011, I was invited to participate in the execution of a project from Ecopetrol and was linked as part of the project management team by the Canadian company Lavalin Snc. In my new role, from the first phases of project initiation to the execution phase in the field,I had the opportunity to interact with engineers from different disciplines, exercising the role of integrating engineers and reporting to project management. After four-and-a-half years, and while in the field in the execution of the final phase of the project, I was invited under the direction of Libre University to participate in the hiring proccess for the Dean of the Faculty of Engineering, which is how I became appointed to the position by the Directive Council of the Sectional in charge in January 2016. I consider it important to mention this experience because in spite of my knowledge and previous experience at the university, my work in the Ecopetrol project, provided me with key competencies that have been vital in my role as Dean. On many occasions, deans are professionals who have been part of the academic world, causing a degree of disconnect between the needs of the productive sector, the state, private enterprise, and the academic training of professionals. This has led me to have a working vision that is oriented towards closing the knowledge gap between the professionals who graduate and the needs of the environment.

In October 2017, I was

nominated by the Principal of Libre University as a candidate for the elections of the university representative to the National Professional Council of Engineering (COPNIA). COPNIA issues the professional registration required to practice engineering in Colombia, and judges cases related to the ethical exercise of engineering. Receiving a majority of votes, I was elected by this Council to serve as the Regional Representative for universities for 2018 and 2019.

What is the graduation rate of women engineers at Libre University? Is this on trend with other universities in Colombia?

The graduation rate of female engineers from the Faculty of Engineering between 2011 and 2017 has been 899 women out of a total of 2157 graduates, equivalent to 42%. The industrial and environmental programs register a higher rate of female graduates, at 35%; however, systems and mechanics programs barely reach 6% of the female population. Despite the fact that in Colombia women have managed to find their way and make up a majority in multiple working areas considered engineering, an important record has not been achieved.

A Ministry of Education study of women in higher education illustrates this situation with an alarming figure: the career with the lowest number of enrollments by women is mechanical engineering (9%), followed by electrical (10%), electronics and telecommunications (14%) and systems and telematics (26%). This situation reflects the trend in Colombia, in particular in the disciplines of mechanics and systems, part of what is offered by the Faculty of Engineering at Libre University. Being aware of this situation, this office has been formulating different strategies, among which is the participation in events such as the "IX Professional Orientation Forum, cycle 2018-I" organized by the Women for Colombia Foundation on May 5, 2018. The event provided 1,000 high school girls (from 9th to 11th grade) with an orientation on engineering programs, motivating them to study engineering. This event is projected to be carried out in the facilities of Libre University during the second semester, with the participation of several leading engineers. They will have the mission of delivering speeches that motivate these girls to study engineering. It is important to invite women to participate in science, engineering and technology, considering that the best way to do this is to invite professional engineering women to participate, who will transfer those experiences and recommendations to female students, challenging and increasing their participation in these areas. It is necessary for women leaders in engineering to be motivators so that other women opt for the study of engineering.

Another strategy developed by the Faculty of Engineering is visiting schools and inviting schools to visit the university, which we have called the "Physics Show". Teachers in the subject area perform acts in which they explain in a practical way the principles of physics, with the vision of bringing students to this science so that students can assimilate the subject in a closer and more interactive way. Additionally, we help formulate projects whose foundation involves elements from the STEM for teaching basic sciences of engineering. In this way, we reach a significant number of middle school students.

How does Libre University stand out from other engineering programs around the world? What have been some advances under your leadership?

The most important to highlight is the social relevance under the slogan "a university based on social philosophy", in which the Faculty of Engineering is immersed. Historically, the university has provided opportunities to thousands of low-income Colombians to be trained in different disciplines of engineering, in the programs of: industrial engineering, environmental engineering, mechanical engineering, systems engineering, financial engineering, civil engineering, commercial engineering and engineering in information and communication technologies across the entire national territory in the cities of Bogotá, Barranquilla, Cali, Cúcuta, Cartagena, Pereira and the municipality of Socorro.

Regarding engineering education, we have been leading a process to update the curriculum of programs at the national level, with the aim of developing programs that will students to reach the professional competencies they need to graduate and meet the demands of the environment, both nationally and internationally. For this purpose, a review has been done that takes into account criteria such as number of credits, number of subjects, contents of the syllabi and evaluation methods, among others. Similarly, a training plan for teachers has been developed in parallel with a view to raising the levels of bilingualism and the use of virtual resources for engineering education. The plan also seeks to upgrade teaching methods in engineering.

How would you characterize the current relationships between Libre University and industry?

I believe that because Libre University is highly regarded, the work that is being carried out is credible. This statement is partly based on the developing dynamics of the environmental department through the execution of consulting contracts with participation from Faculty teachers, students and graduates. This has given important visibility to the Faculty of Engineering that now receives different convocations for participation in projects oriented towards environmental care and sustainable development. Also, we have agreements with a significant number of companies to carry out the business practices of students, and the demand for students is high. Sometimes we do not meet the requests of companies to conduct these business practices, as we receive applications from new companies that are interested in linking our students in practice. Likewise, we have alliances with public entities. One I'd like to highlight is the alliance we have with the District Planning Secretariat of the Mayor's Office of Bogotá. We recently participated with them as a pro-bono logistics operator for training a group of more than 7,000 people in Bogotá, other cities in Colombia and some Colombians abroad, along with students from Libre University, on the theme of the "Internet of Things". This was in cooperation with the Junior Achievement Foundation and CISCO.

In your opinion, what are some of the important issues that should be addressed by the global engineering community, particularly engineering deans?

The important issues that the community of engineering deans can address both in Latin America and globally include a long list.

- Eradication of extreme poverty and hunger
- Promotion of gender equality and empowerment of women
- Sustainability of the environment
- Protection of cyberspace
- Development of general and urban infrastructure
- Increasing the use of clean energies in responsible mining
- Management of water resrouces
- Sustainability of productive processes and care for the environment
- Analysis and prevention of risks and catastrophes

All of these, and more, were stated in the conclusions of the first Latin American Engineering Congress held in 2017 in Argentina, organized by CONFEDI. I believe that if joint research projects on several of these challenges for engineering are implemented, we can find solutions to joint problems in the global environment. Achieving this goal can be accelerated by enabling tests in different climatic, social, cultural and technological conditions and applying resources from various sources. In fact, at CONFEDI, a working group of deans in Latin America was organized. Seeking to generate a joint working dynamic, Ths includes a research group exchanging information parts of researching being worked on by different groups, breaking down silos in research across departments and institutions.

UPCOMING EVENTS

ASIA

Grand Challenges Scholars Program Hong Kong-based International Workshop (NAE-GCSP)
August 14-61, 2018 | Hong Kong

Japanese Society for Engineering Education Annual Conference (JSEE)
August 29-31, 2018 | Nagoya, Japan

World Summit on Accreditation (National Board of Accreditation)
September 7-9, 2018 | New Delhi, India

2018 Engineering Education Conference (KSEE)
September 13, 2018 | Jeju, South Korea

International Forum on Engineering Education & Industry Practice (Tsinghua University & Quanser)
September 24-25, 2018 | Beijing, China

Asian Deans' Forum 2018 - Rising Stars Women in Engineering Workshop (HKUST)
October 4-7, 2018 | Hong Kong, China

International Research Symposium in Problem Based Learning (Tsinghua University, Aalborg University & UNESCO)
October 19-21, 2018 | Beijing, China

International Conference on Wireless Networks & Embedded Systems (Chitkara University & IEEE)
November 16-17, 2018 | Punjab, India

6th International Conference on MOOCs, Innovation & Technology in Education (MLR Institute of Technology)
November 29-30, 2018 | Hyderabad, India

IEEE Globecom 2018 (Khalifa University)
December 9-13, 2018 | Abu Dhabi, UAE

fesTalk (MIT Academy of Engineering)
December 13-15, 2018 | Pune, India

International Conference on Transformations in Engineering Education (IUCEE)
January 7-11, 2019 | Rajpura & Maisammaguda, India

WEEF 2019 Chennai
November 11-17, 2019 | Chennai, India

NORTH AMERICA

IDEAL: Institute for the Development of Excellence in Assessment Leadership (ABET)
August 6-9, 2018 | Baltimore, USA

North American Conference on Industrial Engineering & Operations Management (IEOM)
September 27-29, 2018 | Washington DC, USA

International Conference on Interactive Mobile Communication, Technologies & Learning (IAOE & McMaster University)
October 11-12, 2018 | Hamilton, Canada

Fundamentals of Program Assessment Workshop (ABET)
October 13, 2018 | Baltimore, USA

Advanced Program Assessment Workshop (ABET)
October 12, 2018 | Baltimore, USA

WEEF-GEDC 2018 Albuquerque and Global Student Forum
November 12-16, 2018 | Albuquerque, USA

SOUTH AMERICA

International Symposium in Innovation and Technology (IIITEC)
August 6-8, 2018 | Ica, Peru

GEDC-Latin American Annual Meeting
September 10-11, 2018 | Milagro, Ecuador

International Meeting of Engineering Education (ACOFI)
September 18-21, 2018 | Cartagena, Colombia

GEDC 2019 Santiago
October 20-23, 2019 | Santiago, Chile

AUSTRALIA

World Engineers Convention Australia (WFEO)
November 18-24, 2018 | Melbourne, Australia

EUROPE

European Society for Engineering Education Annual Conference (SEFI)
September 18-21, 2018 | Lyngby, Denmark

International Society for Engineering Pedagogy Annual Conference (IGIP)
September 25-28, 2018 | Kos, Greece

GEDC Industry-Academia Event
October 10-12, 2018 | Bucharest, Romania

European Society for Engineering Education Annual Conference (SEFI)
September 16-18, 2019 | Budapest, Hungary

AFRICA

International Conference on Industrial Engineering & Operations Management (IEOM)
October 29 - Nov 1, 2018 | Pretoria, South Africa

IFEES-IIDEA WEBINARS

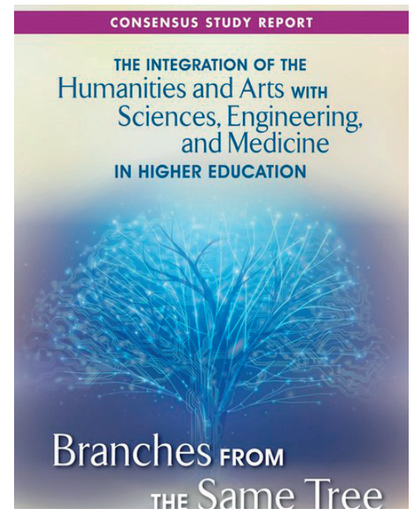
Peace Engineering I
August 24, 2018
12 noon GMT
Register >>

Engineering Ethics
September 4, 2018
12 noon GMT
Register >>

Peace Engineering II
October 2018

Visit IFEES.net/events for the most updated event information

RECOMMENDED MEDIA

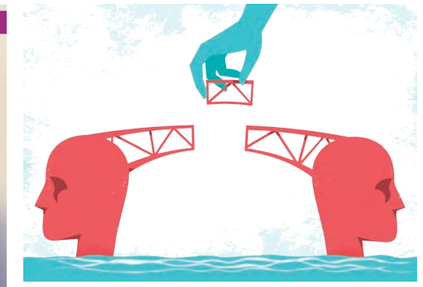


The Integration of Humanities and Arts with Sciences, Engineering, and Medicine in Higher Education: Branches from the Same Tree

US National Academies of Science, Engineering and Medicine

The National Academies of Science, Engineering and Medicine (USA) have published "The Integration of Humanities and Arts with Sciences, Engineering, and Medicine in Higher Education: Branches from the Same Tree." This monumental publication is the culmination of a two-year study highlighting the importance and desirability of integrated education, which includes critical thinking, communication, teamwork, and abilities for lifelong learning. A free PDF download is available, and a hard copy is available for purchase.

Download the report **here**.



Closing the Engineering Skills Gap

Tech-Clarity

This 2017 report from Tech-Clarity and sponsored by Siemens PLM shares new research on the gap between the skills that graduating engineers have and the skills that companies would like to see. The research examines the evolving needs of the engineering department. The results reveal that engineering departments expect to grow so we will need more engineers. On top of that, the required skills will also expand. Complicating the situation is the fact that the most experienced engineers approach retirement age, companies must figure out how to replace that knowledge. This makes the skills of new engineers especially critical. The study identifies these needed skills. It also reveals the types of program that give new graduates the experience hiring managers want to see.

Read the report **here**.

Beyond Management: Taking Charge at Work

Mark Addleson

Traditional management structures, systems, and tools, intended to make the first factories of the industrial age efficient, are now obsolete. Applying them to knowledge-work has exactly the opposite effect, causing all kinds of breakdowns. This book explains why knowledge workers have to manage themselves and tells them how to do it.

Buy the book **here**.

Engineering 2030 and New Skills for Digital Transformation in Chile and Latin America

Marcia Varela

These presentation slides by Marcia Varela (Deputy Director for Technology Transfer Technology Capabilities Division, Chile) explores Chilean and international contexts to transition from an economy based on natural resources to a more knowledge-based economy. The presentation examines engineering programs and sets the stage for a new engineering program by 2030.

Download the presentation **here**.

How Romania Became a Popular Tech Destination

Financial Times

From an outsider's perspective, one may overlook Romania as a growing hub for cutting-edge tech start-ups. Fitbit's acquisition of Romania's Vector Watch his past January provides an example of how the nation of 20 million is bursting with potential for investment. With its legacy of excellence in science and growing investment bolstering an under-developed funding environment, Romania is garnering global attention. In October, the GEDC will tap into this growing sector when it hosts an industry/academia event.

Read more about Romania's rise in tech **here**.

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