IEOM Global Engineering Education Conference

November 15 - 16, 2020
Atlanta, Georgia, USA

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Industrial Engineering and Operations Management Society International
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Preface

IEOM Society has been conducting international conferences with primary focus on industrial and systems engineering as well as operations management and related subject over the past decades. The IEOM conferences have been attended by over 15,000 from over 65 counties. In each of these conferences there has always been a separate track on GEE. However, this virtual conference will be IEOM's first attempt in offering a conference dedicated solely to GEE.

This dedicated GEE conference is the result of continuous growth of the interest amongst the researchers, educators, and planners. Number of submissions in 2017 UK conference was 10, in 2018 Paris conference was 21, in 2019 Bangkok conference was 57, and in 2020 Detroit conference it was 44. This clear growth coupled with the COVID-19 unprecedented challenge guided us to organize this dedicated GEE conference.

COVID-19 pandemic has challenged the effective instruction of technical subjects (both lecture and laboratory) like Engineering. It drew interest to investigate and compare effectiveness of various online/virtual delivery modes. Concerns of Teaching/learning tools, hardware/software, and methodologies used in online/virtual environment, and their suitability in delivering online/virtual classes. Measuring and comparing the effectiveness of online/virtual vs face to face classes using different methods and techniques.

This special GEE conference attracted submissions around the world. Experts carefully considered the papers submitted. Each paper was reviewed at least by two peer reviewers. Based on these reviews conference chairs accepted and organized detail programs.

Finally, IEOM Society is grateful to its international GEE committee members and reviewers around the world for their enormous effort in selecting great papers in this area.

Conference Chairs

Dr. Abu S M Masud, P.E.

Dr. Hamid R Parsaei, P.E.

Conference Chairs

Dr. Abu Masud, P.E.
Emeritus Professor
Department of Industrial and Manufacturing Engineering
Wichita State University, Kansas, USA

Dr. Hamid Parsaei, PE
Professor
Department of Industrial and Systems Engineering
Texas A&M University (College Station)

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IEOM Global Engineering Education Conference

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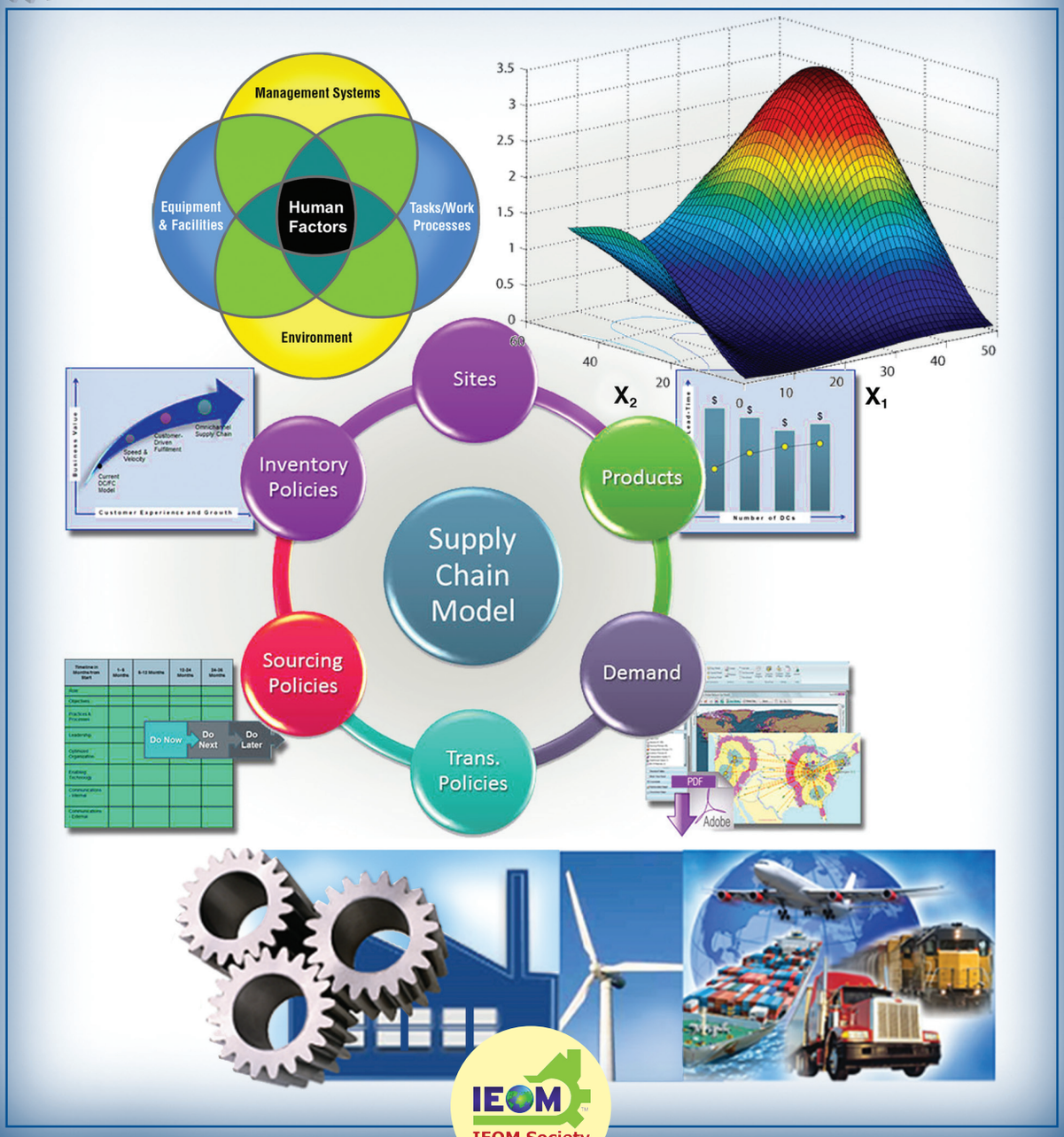


Overall Program: IEOM-GEEC

DAY 1: Sunday, 15 November 2020

TRACK - A

8:00-8:55 am, Sunday **Keynote Speech**
How to Teach for Future Talents
By Professor Tae-Eog Lee, Department of Industrial & Systems Engineering, Korea Advance Institute of Science and Technology (KAIST), South Korea

9:00-9:20 am, Sunday
A Mobile Robot Programmable Remote Laboratory for Engineering Education
By Rafael Franco-Vera, Computer Science Department, Texas Southern University, Texas, USA;
Xuemin Chen, Department of Engineering Technology, Texas Southern University, Texas, USA:
Wei Wayne Li, Computer Science Department, Texas Southern University, Texas, USA; and,
Hamid R. Parsaei, Industrial & Systems Engineering, Texas A&M University, Texas, USA

9:25-9:45 am, Sunday
A Conceptual Model for Analysis the Role of Knowledge Management in Organizational Performance in the Quality Assurance of the Higher Education
By Kharisma Haddist and Naniek Utami Handayani, Department of Industrial Engineering, Diponegoro University, Semarang, 50275, Indonesia

9:50-10:10 am, Sunday
Challenges in Teaching Industrial Engineering Courses in Online Mode During Covid Times
By RRK Sharma, Department of Industrial and management Engineering, IIT Kanpur, India

DAY 1: Sunday, 15 November 2020

TRACK – B

10:20-10:40 am, Sunday
Industrial Attachment, Internship and Training for Undergraduate Engineering Students: Current Scenario and Industry 4.0 Incorporation
By A.R.M. Harunur Rashid, Department of Mechanical and Production Engineering, Islamic University of Technology (IUT), Board Bazar, Gazipur, Dhaka, Bangladesh

10:45-11:05 am, Sunday
Educating Next Generation of Engineers
By Albertus Retnanto, Professor, Petroleum Engineering, Texas A&M University at Qatar, Doha, Qatar;
Hamid R. Parsaei, Professor, Department of Industrial and Systems Engineering, Texas A&M University, College Station, TX, USA; and
Boback Parsaei, Integrated Technology Systems, Inc., Houston, Texas, USA

11:10-11:30 am, Sunday
Opportunities for Flipping the Classroom in Order to Develop Higher Order Thinking Skills (HOTs)
By Arunachalam Ramanathan, Mechanical and Industrial Engineering Department, Sultan Qaboos University, Muscat, Oman

11:35-11:55 am, Sunday
Authentic Assessment for Engaging Under Performing Students in a Synchronous Online Teaching Mode
By Ilham Kissani, Assistant Professor of Engineering & Management Science, School of Science & Engineering, Al Akhawayn University, Ifrane, Morocco

12:00-12:20 pm
Experience with the Transition to Online Education during the COVID-19 Pandemic in the Czech Republic
By Jiri Tupa, Department of Technologies and Measurement, University of West Bohemia in Pilsen, University 8, Czech Republic

DAY 2: Monday, 16 November 2020

TRACK – C

8:00-8:55 am, Monday **Keynote Speech**
Leveraging Industry to Prepare Students – A Reflection
By Gil Morris, Program Manager, Strategic University Relations, Siemens Digital Industries Software, Oxford, Michigan

9:00-9:20 am, Monday
Systems Framework for Global Engineering Education Curriculum
By Adedeji Badiru, Dean of the Graduate School of Engineering and Management, Air Force Institute of Technology, Wright-Patterson AFB, Ohio, USA

9:25-9:45 am, Monday
An Online STEM Summer Education Program: Helping Students Develop Interest in STEM
By Celestine Aguwa, Egbe-Etu Etu, Joshua Emakhu, Lezlie Bueno, and Dr. Leslie Monplaisir, Department of Industrial & Systems Engineering, Wayne State University, Detroit, MI 48202, USA

9:50-10:10 am, Monday
Online Education: Training Future Talent Remotely
By Sara Amani, Department of Multi-disciplinary Engineering, Texas A&M University, College Station, Texas 77843, and **Hamid R. Parsaei,** Department of industry and Systems, Engineering, Texas A&M University, College Station, Texas 77843

DAY 2: Monday, 16 November 2020

TRACK – D

10:20-10:40 am, Monday
Innovation and Entrepreneurship Pattern for Undergraduate Education
By Jihong Yan, Professor in Industrial Engineering, Deputy Dean of School of Mechatronics Engineering and Head of intelligent Manufacturing Scientific Research Team, Harbin Institute of Technology, Harbin, China

10:45-11:05 am, Monday
Transnational Engineering Education during the COVID-19 Pandemic Disruption
By Ammar Aamer, Operations & Supply Chain Management Consultant, Ontario, Canada and Former Professor and Dean of Faculty of Engineering and Technology, Sampoerna University, Jakarta, Indonesia

11:10-11:30 am, Monday
Introducing Active Learning Strategies into Online Classes for Japanese Engineering Students
By Rumi Tobita, Center for Liberal Arts and Sciences of Engineering Department, Ashikaga University, Tochigi, Japan

11:35-11:55 am, Monday
The Challenges for Teaching in Virtual Environment: Learning Tools for Engineering Education in the Quality Field
By Luz María Valdez de la Rosa, Engineering Department, School of Engineering and Technologies, Universidad de Monterrey, Nuevo León, México

12:00-12:20 pm, Monday
Critical Success Factors for Sustainable Online Engineering Education in Bangladesh
By Ferdous Sarwar, Department of Industrial and Production Engineering, Bangladesh University of Engineering and Technology, Dhaka 1000, Bangladesh, and **S.M. Ahmed,** Department of Industrial and Production Engineering, Jashore University of Science and Technology, Jashore 7408, Bangladesh

NOTE:

1. All indicated times are US Eastern Time. Please adjust times to your local times.
2. All speakers, except Keynote speakers, will have 15 minutes for presentation, followed by 5 minutes for Q&A.
3. Keynote speakers will have 45 minutes for talk, followed by 10 minutes for Q&A.
4. All speakers must be ready with their presentation slides. They will have 5 minutes for set-up during the 5 minutes of gap before their talk.

DAY 1: Sunday, 15 November 2020

TRACK - A

8:00-8:55 am Keynote Speech

How to Teach for Future Talents
By Professor Tae-Eog Lee, Department of Industrial & Systems Engineering, Korea Advance Institute of Science and Technology KAIST, South Korea
Abstract
Future industry and society require new talents for creativity, problem definition and solving, critical thinking, synthesis and design, teamwork, communication, and so on. However, our standardized mass education system and one-way lecturing cannot meet such requirements. Although there have been numerous innovative pedagogies for fostering such futuristic talents, our classrooms and education have not changed significantly yet. Therefore, we need a simple and effective strategy for implementing various innovative pedagogies and transforming teaching and learning methods. We propose to simply eliminate lecturing from classrooms and maximize interaction and student participation by teamwork-based learning or any other innovative pedagogies in classes. Lectures can be delivered by e-learning. We introduce Education 4.0 Program and class examples at KAIST to implement such idea. KAIST has transformed almost 9% of classes and got positive feedback. We also introduce our experience of massive online learning due to COVID-19 and the future directions.

9:00-9:20 am
A Mobile Robot Programmable Remote Laboratory for Engineering Education
By Rafael Franco-Vera, Computer Science Department, Texas Southern University, Texas, USA; **Xuemin Chen,** Department of Engineering Technology, Texas Southern University, Texas, USA: **Wei Wayne Li,** Computer Science Department, Texas Southern University, Texas, USA; and, **Hamid R. Parsaei,** Industrial & Systems Engineering, Texas A&M University, Texas, USA
Abstract
During this pandemic, remote laboratories are pivotal for the educational and the research community. COVID-19 has made it impossible for students to gather and perform experiments at closed proximity in a physical traditional laboratory setting, causing a massive gap in students' learning experience. That is why, now more than ever, it is crucial to understand the importance of remote laboratories. Over the years, new innovative remote laboratory

platforms have been developed to provide a more interactive online learning environment. Hence, new opportunities to develop and implement new forms of experiments into a remote lab are being created, such as robotics-related experiments. A rising form of implementation of such an experiment into remote and virtual labs is mobile robot experiments. This increase of mobile robot experiments into online labs correlates, with the growth of mobile robots being used across the nation by many, such as military, hospitals, office buildings, including major companies such as Amazon and Wal-Mart. With the popularity growth of mobile robots used by leading companies, it is vital for engineering students to have a complete hands-on experience when learning about mobile robots, primarily through this pandemic. With the rapid growth of both, the use of mobile robots and improvements in remote/virtual labs, it is no surprise that more online laboratory platforms are being reconfigured or developed to support mobile robot experiments. However, in most current implementations of remote laboratories for mobile robots, the tool and control method they provide are extremely limited to basic control rules, such as simple inputs of modifiable parameters based on pre-programmed controlled algorithms which require minimal interaction. This limitation creates a gap in the learning experience of the students, especially during a pandemic, because online learning is all students rely on. This paper proposes the development of a new remotely programmable laboratory for mobile robots where students can design, implement, and execute their own control algorithms for real mobile robots through the web browser without the need for other software plugins. The students will have access to a real code editor, real equipment to control in real-time, not a simulation, and show real-time video transmission during execution. Three modules will be created for a specific part of the programming process. AJAX will be the technology used by these modules, which transfers data between the web application and web server, making it possible to execute the code. This application is designed to provide students with interactive tools and a contextual learning scene, making this research of significant relevance to online engineering education by providing students with direct programming experience on a remote laboratory web application. Remote laboratories are necessary during COVID-19, but they will pave the way for remote education in the future. It gives students and researchers the ability to conduct experimental research using a real laboratory from anywhere in the world without having to expose themselves and their families to COVID-19. Remote labs are not only fundamental for educational purposes during this global crisis, but for the future to come.
Acknowledgements: This work was supported in part by RENEW which is a technology partner to POWDER. RENEW/POWDER is part of the National Science Foundation's PAWR program and is funded in part by NSF award CNS-1827940 and the PAWR Industry Consortium.

9:25-9:45 am

A Conceptual Model for Analysis the Role of Knowledge Management in Organizational Performance in the Quality Assurance of the Higher Education

By Kharisma Haddist and Naniek Utami Handayani, Department of Industrial Engineering, Diponegoro University, Semarang, 50275, Indonesia

Abstract

Higher education institutions (HEI) must improve their quality to excel in today's competitive competition. To ensure that HEI provides superior quality, of course, requires the existence of

quality assurance structures and mechanisms that measure and assess the organizations' performance to achieve high quality education. One way to improve quality assurance performance is the implementation of knowledge management (KM). KM implementation can help quality assurance team improve their capabilities through uses of individual knowledge resources of each quality assurance personnel to build better organizational collective knowledge to solve problems in the future. This paper deals with setting parallels between knowledge management and organizational performance in HEI's quality assurance team. Therefore, we reviewed the literature, formulating method, analyzing results from the literature, and finally proposing a conceptual model. This conceptual model analyzes knowledge management processes alongside its enablers and its output, namely creative organizational learning, that will affect quality assurance performance in HEI for the better. This conceptual model is expected to open opportunities for further research HEIs who want to study the implementation of KM on quality assurance.

9:50-10:10 am

Challenges in Teaching Industrial Engineering Courses in Online Mode During Covid Times

By RRK Sharma, Department of Industrial and management Engineering, IIT Kanpur, India

Abstract

I cluster first the courses that are taught in first year to M TECH students in the Industrial and Management Engineering department at IIT Kanpur, according to qualitative and quantitative domains, and address problems and issues encountered one by one.

(a): Operations Research and Probability & Statistics. These courses are theoretical in nature and require extensive solving of numerical examples. Here one can share the screen and derive central limit theorem or strong duality theorem: no problems. One can easily solve a numerical on the screen. As they are solving it in class, in pre Covid times, the instructor goes near each student to give him tailor made attention to point out where he is struggling or where he has gone wrong and how it can be corrected. And during this by keeping the tone of his voice low, it is ensured that other students do not know that he has made a simple error and avoid his humiliation. Other thing is student looks at the solution of his neighbor and learns from him also. I feel this issue needs to be addressed and software tools need to be developed to implement such a functionality.

(b): Computer Programming. Here I suppose that it is possible to look at computer program of each student during compilation and run time and tell him how the compilation error can be corrected or tell a student why his program has gone into an infinite loop.

(c): Accounting and Finance. It is a structured course. Each accounting entry can be broken down into debit and credit and various accounting policies and principles can be easily discussed.

(d): Operations Management, Inventory Management, Scheduling, Aggregate Planning etc. These are structured courses, and the related problems are discussed already under (a).

(e): Human Resources Management, Marketing, Strategic Management and the like. In these soft sciences based courses, one follows a mix of instruction methods (1): Lecture and question and answers: I see no problem in online delivery here (2): Case Method: Conducting group discussion online in a class of 80 students is a challenge. In pre Covid times, a student talks to

his neighbor to get a doubt clarified: I do not know if this can be implemented by currently available software tools for online teaching. (3): There is a glaring issue of copyright violation. If cases must be purchased from HBS at USD 8 per case per student, then for 20 cases (in a course) the cost is USD 160 per student per course. For 4 courses cost shoots up to additional USD 650 per semester. If case discussions are run on publicly available information, then it is an unbounded problem given that one has only 70 min in a class and very easily focus is lost. (4): Doing in class exercises: In pre Covid times one could give a case to 3 groups of 4 students each (in the event of students coming to class without reading a case). They discuss it among themselves in groups of 4 and present to the class in turns, thereby bringing out many issues that forms the basis of further class discussions. I do hope a software will be available in near future for teaching cases in this manner. (5) Similar problem as in (4) will arise when students collectively (or in groups) attempt to do TERM PAPER ASSIGNMENTS.
(f): Books that are very expensive or rare (and have gone out of print) cannot be given to students as it would lead to copyright violation. One needs to digitize knowledge (accelerate this process) in library so that students can access it via VPN from remote places.
(g): According to an old Sanskrit saying, (1) student learns 25% from self-study, (2) 25% from his colleagues (3) 25% from instructor and (4) 25% from the ambience of the institute. In Covid times (2) and (4) will take a hit. However, student will learn on his own the maximum and we will have many 'Eklavya' students who will learn without a teacher. With so much knowledge available in open access journals and internet resources, education (and research) to some extent will become more cost effective.
(h): In teaching traditional industrial engineering courses such as ergonomics, one needs to create virtual labs. This is a yet another challenge.
(i): In organization behavior, there is a popular form of organization called VIRTUAL TEAMS (VTs). It is well known that it is required to give training to participants so that one can control the phenomenon of 'shouting' that frequently results in such situations. As we gain more experience in online teaching, one must devise guidelines for operating in online mode and train participants (both students and instructors) for continuous improvement in the knowledge transfer in online mode.
(j): Guiding PhD and MS theses online and maintain good quality standard is a yet another burning issue. The problem is compounded when research is lab based & I suppose virtual lab is not going to help here.

TRACK – B

10:20-10:40 am

Industrial Attachment, Internship and Training for Undergraduate Engineering Students: Current Scenario and Industry 4.0 Incorporation

By A.R.M. Harunur Rashid, Department of Mechanical and Production Engineering,
Islamic University of Technology (IUT), Board Bazar, Gazipur 1704, Dhaka, Bangladesh.

Abstract
Most of the undergraduate engineering programs around the world require familiarization component of real-life engineering works. It has different names and modes like industrial

attachment, industrial training, internship etc. Besides, duration of such modules varies as well from a few days to a full semester or a full year. Now fourth industrial revolution has been happening and all modes of our life will be affected due to it. Therefore, the engineering students should graduate with the real-life experience of the application if industry 4.0 in the professional fields. In this regard, modification of current industrial attachment modules is necessary. In this paper, current scenario of the industrial attachment modules from different continents are briefly described and suggestions to make it relevant to the impact of Industry 4.0 are presented.

10:45-11:05 am

Educating Next Generation of Engineers

By Albertus Retnanto, Professor, Petroleum Engineering, Texas A&M University at Qatar Doha, Qatar; **Hamid R. Parsaei,** Professor, Department of Industrial and Systems Engineering, Texas A&M University, College Station, TX, USA; and **Boback Parsaei,** Integrated Technology Systems, Inc., Houston, Texas, USA

Abstract

Many engineering schools have been customizing their undergraduate curriculum based on the input they receive from their constituencies, including faculty, members of the advisory board, potential employers, and many others with a vested interest in the program. Within the minimum credit hours required by accreditation entities to satisfy graduation requirements, institutions have full freedom to design and implement a curriculum that would be more appealing to their constituencies. Ability to communicate effectively, understand the ethical issues in practicing engineering, work in teams where their membership represents diversity in gender, and cultural ethnicity, among many others, have been the most demanding issues in redesigning the engineering curriculum. Many international branch campuses of the United States institutions have successfully incorporated the above listed requirements into their curriculum. Many engineering degree programs in the US have focused on these issues and developed courses that address the above mentioned required directly. The admission standards at most of the international campuses of the US institutions are identical or comparable with their home campuses and are based on the respectable scores earned in the standards test such as the ACT or SAT. However, building and strengthening their English communications, understanding their ethical responsibilities, and the ability to fully function is a team with a group with diverse backgrounds are often paramount.

11:10-11:30 am

Opportunities for Flipping the Classroom in Order to Develop Higher Order Thinking Skills (HOTs)

By Arunachalam Ramanathan, Mechanical and Industrial Engineering Department, Sultan Qaboos University, Muscat, Oman

Abstract

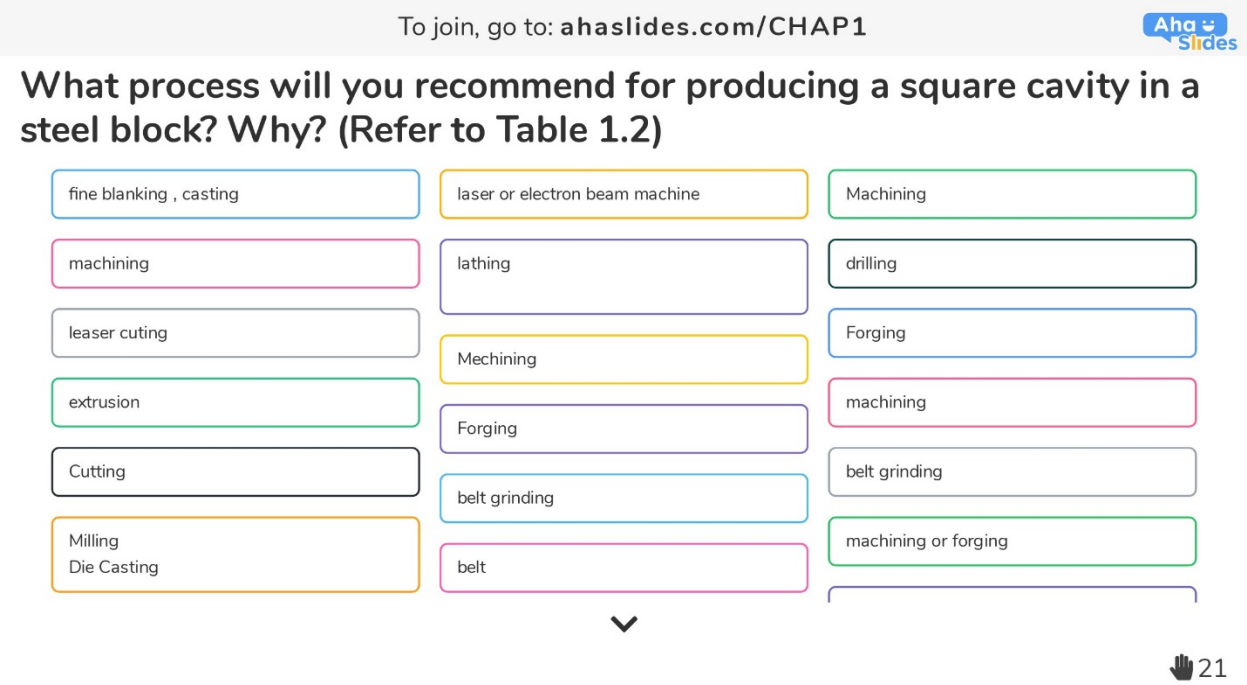
Flipping the classroom has been a dream for most instructors in higher education institutes since it involved students in reading or being familiar with a topic before the scheduled class. Students are usually reluctant to read the material prior to the lectures, so implementing a

flipped class is challenging. However, the COVID-19 pandemic situation has forced institutions to switch over to remote teaching, and this has opened the opportunity for flipping the classroom. In this extended abstract, a case study of flipping the classroom for the 'Manufacturing Processes' course is shared to benefit the instructors' teaching courses related to both manufacturing and materials. The author hopes that sharing experiences in the teaching-learning process will help the teaching fraternity in general and, specifically, the global engineering education community.

The current COVID 19 pandemic situation has paralyzed our routine activities, including teaching and learning in schools and higher education institutions. However, educational institutions have quickly adopted the online teaching mode, and slowly both faculty and students are getting used to it. At Sultan Qaboos University (SQU), halfway through the spring 2020 semester, the lockdown was announced, and emergency remote teaching was adopted for the second half of the semester. Since the pandemic situation is continuing, unfortunately, the Fall 2020 semester was planned as a remote teaching one. The College of Engineering has developed guidelines for both faculty and students in making the remote teaching effective. As part of the guideline, both synchronous and asynchronous modes of teaching and assessments are being implemented. This extended abstract shares the author's experience in implementing remote teaching in an effective way of teaching the MEIE4262 Manufacturing processes course, a prefinal course for both Mechanical and Industrial Engineering programs.

The manufacturing processes course is 3-credit, and the contact duration is 1 hour and 50 minutes twice a week. The major topics covered in the course are casting, metal forming, welding, and metrology, including testing and quality assurance. The course learning objectives, assessments, and activities were planned based on the Taxonomy of Significant Learning. The course content is mostly theoretical and less numerical, and this makes the delivery difficult primarily through any mode, either synchronous or asynchronous. Keeping the students engaged is the greatest challenge. The COVID 19 situation has facilitated to embrace the flipped classroom quickly. The contact duration of 1 hour and 50 minutes is split into two sessions for the first half reserved for the asynchronous mode. The students hear two pre-recorded lectures usually 20-25 minutes on a topic. This could also be done by asking students to read the material, but this is not so effective. The second half is dedicated to the synchronous mode. Typically, when students are prompted to ask questions, very few respond even when face to face, and in the online mode, the response is even lower. Instead of encouraging them to ask questions, interactive presentation software 'Ahaslides' was used which has many types of questions but multiple-choice, open-ended, and word cloud is used most of the time in this course. The questions were designed to develop higher order thinking skills (HOTs), especially analyze and evaluate. The lower levels (remember, understand, and apply) of Bloom's Taxonomy are easier to achieve by the students on their own. The difficulty arises in the HOTs, and usually, this is where instructors need to facilitate. Pure lecturing is generally considered passive, focusing on the lower levels and if the students develop HOTs through the assignments and projects usually done outside the classroom. The interactive presentation forces most students to participate and made learning exciting and fun. The questions also helped the

students practice answering questions targeting the HOTs, enabling them to develop HOTs. In the assessments such as quizzes and exams, the questions are usually at the higher levels, and so the practice during the class helps the students to perform better and is not a surprise to them. A typical slide from the introduction chapter of the course is shown below for reference.



11:35-11:55 am

Authentic Assessment for Engaging Under Performing Students in a Synchronous Online Teaching Mode

By Ilham Kissani, Assistant Professor of Engineering & Management Science, School of Science & Engineering, Al Akhawayn University, Ifrane, Morocco

Abstract

A key concern in online teaching mode is how to make learners learn in a way that is more authentic to them and genuinely assess them in an environment when feedback from facial expressions, interaction, and human contact is absent. To this end, assessment tools are more increasingly developed to help keep tracking students' progress before reaching the formal assessment phase (formative or summative ones) and thus can help prevent having some undesirable outcomes and irreversible consequences.

This paper aims at presenting a useful assessment technique of student performance in online teaching, with providing detailed description and results interpretation. The proposed method was tested and proven to be of great added value, very useful for all instructors regardless of their discipline and could be also a significant assessment tool. Moreover, a proposed set of indicators combined with k-means method is presented to predict at risk students in synchronous teaching environment.

12:00-12:20 pm

Experience with the Transition to Online Education during the COVID-19 Pandemic in the Czech Republic

By Jiri Tupa, Department of Technologies and Measurement, University of West Bohemia in Pilsen, University 8, Czech Republic

Abstract

As a result of the global pandemic of COVID-19, countries worldwide have taken various measures to restriction presence teaching at universities and schools of all levels of education. In the Czech Republic, universities were closed, and the transition to online teaching took place. The schools and universities of the Czech Republic had to adapt very quickly to the new situation, which consisted of the rapid implementation of tools for online teaching. The paper aims to present the experience gained during this transition, the advantages or disadvantages of online teaching on the example of changes at the Faculty of the Electrical Engineering University of West Bohemia in Pilsen in the Czech Republic.

DAY 2: Monday, 16 November 2020

TRACK – C

8:00-8:55 am Keynote Speech

Leveraging Industry to Prepare Students – A Reflection

By Gil Morris, Program Manager, Strategic University Relations, Siemens Digital Industries Software, Oxford, Michigan

Abstract

Digitalization is changing everything in our world. The products that are manufactured today are much more sophisticated than 35 years ago when I entered the workforce as a mechanical engineer in the automotive sector. Today, industry is demanding new employees who can be productive their first day on the job. Current employees need to continually evolve their skills to meet the challenges imposed by Industry 4.0. In addition, the population is aging and retiring, taking with it the knowledge and experience that industry needs to innovate and thrive, and in many cases, survive.

As one of the world's top ten software companies and leading technology manufacturers, Siemens is committed to advancing education and workforce development. Siemens wants to help universities develop talent to fill the growing skill gap, as well as share our experience with real use cases that embrace digitalization and the digital twin.

Four years ago, I decided to change my role in industry to enter the academic world. I felt it was a good way to wrap up my career, by bringing some of my experience to the next generation of engineers who are entering the workforce. As part of Siemens Digital Industry Software, I have had the privilege of working with several universities to implement change. Now with my

retirement only a few short months away, this presentation is an opportunity to share some insight and an example of how industrial software can be leveraged in engineering curriculum in a meaningful way.

The example I will share is an approach that was developed to fully utilize the power of simulation technology, as part of an ecosystem, to greatly enhance the engineering education process. Core courses were identified, and digital tools were systematically integrated across the curriculum to expose students to simulation techniques from the freshmen through the senior year. Students utilize the software in design courses to conduct projects, with higher level simulation techniques taught in senior or dual level courses that many undergraduate students take. Students are also introduced to manufacturing processes, including additive, through case studies of real-world parts to help them understand process planning as well as the specific steps and process parameters required for making a complex part.

Through this method, both theoretical knowledge and the simulation techniques students learn are systematically reinforced throughout the curriculum. By graduation, the students become highly capable engineers equipped with strong fundamental knowledge and proficient in simulation technologies.

9:00-9:20 am

Systems Framework for Global Engineering Education Curriculum

By Adedeji Badiru, Dean of the Graduate School of Engineering and Management, Air Force Institute of Technology, Wright-Patterson AFB, Ohio, USA

Abstract

It is a systems world these days due to increased worldwide connectivity that is facilitated by fast travel modes and Internet connectivity. As a result, global engineering education requires a new look. In as much as the curriculum is the weapon of accomplishing engineering education, the methodology of this talk centers on a systems framework for global engineering curriculum. Global engineering curriculum of nowadays must take advantage of the emerging transition to digital engineering, artificial intelligence techniques, and remote learning. We cannot afford for engineering education to be static or become stagnant. Existing and new curricula must be upgraded to be adaptive, resilient, and responsive to developments around the world, at a fast pace. The emergence of COVID-19 in 2020 makes it even more imperative that we act fast and responsibly. This invited distinguished presentation focuses on using a systems framework to achieve the ideals of a world-centric engineering curriculum. The specific framework that will be discussed is the DEJI Systems Model®, a trademarked tool for achieving a structured design, evaluation, justification, and integration of the elements of engineering curriculum. Any curriculum that is not designed to align with local needs cannot be fully integrated into the socio-economic needs of the local population in any region of the world. This talk will offer specific actionable and results-based strategies for contemporary global engineering education.

9:25-9:45 am

An Online STEM Summer Education Program: Helping Students Develop Interest in STEM

By Celestine Aguwa, Egbe-Etu Etu, Joshua Emakhu, Lezlie Bueno, and Dr. Leslie Monplaisir, Department of Industrial & Systems Engineering, Wayne State University, Detroit, MI 48202, USA

Abstract

The top challenge of managing a competitive workforce in today's environment is finding people with the right skills. Part of the problem is the gap between the skills new graduates have and what the industry needs. We need to improve how students are prepared during or after school to close the skills gap. The after-school summer education outreach program was initialized in 2017 with a primary focus on teaching data analysis, statistics, and mathematics to students, thereby equipping them with the needed STEM skills to be college and career-ready. The program is offered yearly in the summer, and students enrolled in the program are from middle and high school in southeast Michigan. The program's goal is to expose and engage students (with particular emphasis on minority and female groups) to the process of mathematical/statistical inquiry, from learning how to develop a testable research question through data analysis, interpretation, and presentation of findings. The program utilizes a project-based learning curriculum to teach students. Teamwork amongst students is highly encouraged as well as parents' participation. The program demonstrated both the feasibility of the curriculum and its promotion of positive student experiences within the context of data analysis and the use of technology. For example, the exit survey analysis reveals that students rated their experience as rewarding, and the vast majority (81.2%) felt that the program helped increase their interest and motivation in STEM, especially with the project activities. Also, parents, in their feedback, acknowledge the increased interest in STEM from their children.

9:50-10:10 am

Online Education: Training Future Talent Remotely

By Sara Amani, Department of Multi-disciplinary Engineering, Texas A&M University, College Station, Texas 77843, and **Hamid R. Parsaei,** Department of industry and Systems, Engineering, Texas A&M University, College Station, Texas 77843

Abstract

With the rise of COVID-19, distance education has become the norm and adopted by most educational institution systems globally. Although it is new to many, it has actually been around formally for a very long time, as early as 1883 when the University of Chicago offered correspondence courses through the postal service [1]. The definition of distance education has been updated and adjusted over the years, however a commonly accepted definition of the term is "institution-based, formal education where the learning group is separated, and where interactive telecommunications systems are used to connect learners, resources, and instructors" [2]. Britannica describes distance learning as having four characteristics [3]:

1. Distance education is conducted through academic institutions and are accredited through the same means as traditional systems.
2. Students and teachers are separated geographically and may even be in different time zones.

3. Students and teachers interact through various modes of communication via. Technology.
4. Distance education creates a learning community between the students, instructors, and educational materials.

TRACK – D

10:20-10:40 am

Innovation and Entrepreneurship Pattern for Undergraduate Education

By Jihong Yan, Professor in Industrial Engineering, Deputy Dean of School of Mechatronics Engineering and Head of intelligent Manufacturing Scientific Research Team, Harbin Institute of Technology, Harbin, China

Abstract

Undergraduate education is a crucial part of the higher education, bearing the essential mission of widen students' views and cultivating topnotch innovative talents. This talk will present a four-phase pattern of innovation and entrepreneurship education for undergraduates at HIT: 1) Mechanical structure design and simulation competition for freshmen to facilitate them to be proficient with tools; 2) Annal project including bionic robots, undergraduate robot contests and innovation and entrepreneurship training programs for sophomores to stimulate their consciousness of creativeness; 3) Professor directed research projects for juniors to gain valuable insight, knowledge, and skill; 4) International robotics contests and funding to support the innovation and mature ideas of entrepreneurship of senior students. This prototype has been implemented for years, and its effectiveness has been proved by the top awards won in competitions and many excellent start-up companies. In addition, a big picture of Harbin Institute of Technology (HIT), which is one of the top universities in Engineering in China will be introduced in this talk.

10:45-11:05 am

Transnational Engineering Education during the COVID-19 Pandemic Disruption

By Ammar Aamer, Operations & Supply Chain Management Consultant, Ontario, Canada and Former Professor and Dean of Faculty of Engineering and Technology, Sampoerna University, Jakarta, Indonesia

Abstract

Transnational education is defined as education provided in a country other than the country where the awarding institution is located. The demand for transnational education has grown exponentially in different geographical locations such as Asia and the Middle East. This is mostly due to the advancement of today's technology and the quest for better quality higher education. With this growth and potential opportunities, a host of operational and academic challenges have risen. Some examples of academic issues include the shift from traditional to online or flipped classroom models. Some of the operational problems include the articulation of courses and records management between institutions. To that extent, the current COVID-19 pandemic has exacerbated these issues with positive and negative effects on transactional

engineering education. We explored one of the transactional engineering models in Asia, before and during the COVID-19 pandemic, from both students and faculty perspectives.

11:10-11:30 am

Introducing Active Learning Strategies into Online Classes for Japanese Engineering Students

By Rumi Tobita, Center for Liberal Arts and Sciences of Engineering Department, Ashikaga University, Tochigi, Japan

Abstract

This study introduces an effective online course design introducing project-based learning (PBL) as an active learning strategy (ALS) for Japanese engineering students to meet English for Specific Purposes (ESP) curriculum goals: to develop global engineers. Concerning the globalization, development of English communication skills was crucial for EFL teaching in Japan; accordingly, ALS has been introduced to ESP course. ALS is a method of learning and there are various terms: student-centered learning, collaborative learning, and participatory learning that students are actively engaged in building understanding of facts, ideas, and skills through the completion of instructor-directed tasks and activities. Thus, ALS has been conducted at technical colleges using an instructional tool which is a task-based business themed material introducing a communicative approach to language learning. Especially, in this course, students imagine that they are new interns at a fictional company where they work together in small teams to perform a series of carefully linked tasks and projects, and also the task of this course includes challenging stages of a product-development cycle, such as debating, poster presentation and making video commercial cycle. Therefore, it could be said that the course is ideal for not only building English communicative fluency and confidence, but also getting expertise such as SWOT analysis.

11:35-11:55 am

The Challenges for Teaching in Virtual Environment: Learning Tools for Engineering Education in the Quality Field

By Luz María Valdez de la Rosa, Engineering Department, School of Engineering and Technologies, Universidad de Monterrey, Nuevo León, México

Abstract

The engineering education has natural challenges to get the learning outcomes stablished by the curriculum in a classroom ambiance. The interactions between students and teachers, that used to take place in physical spaces, can be drawn differently to the connections happening in a virtual environment. Due to Covid19, the teachers are struggling to define the best way to ensure that students learn in online classes, by using new virtual spaces and tools. In this lecture, we will discuss the various teaching tools that can be used in a virtual environment, by exposing pedagogical methods and instruments for online classes. To illustrate this, we will be exposing an application in the quality field for undergraduate students in industrial engineering and engineering management. In addition, there will be an examination on teaching and learning in a virtual ambiance and how to succeed.

12:00-12:20pm

Critical Success Factors for Sustainable Online Engineering Education in Bangladesh

By Ferdous Sarwar, Department of Industrial and Production Engineering, Bangladesh University of Engineering and Technology, Dhaka 1000, Bangladesh, and **S.M. Ahmed,** Department of Industrial and Production Engineering, Jashore University of Science and Technology, Jashore 7408, Bangladesh

Abstract

The largest disruption of education system in the history has been created due to the global pandemic COVID-19. According to WHO, nearly 1.6 billion learners in more than 190 countries are being affected by the lockdown of educational institutes during this COVID-19 pandemic. In Bangladesh, all the educational institutes have remained closed since 17 March 2020. More than 36 million learners including the engineering students are now facing the discontinuation of their regular academic curriculum and losing the learning opportunities. This interruption in the engineering education will have a significant negative impact on the country's economy since it will interrupt the supply of engineers for the country soon. The only alternative way is the online learning system for the continuation of the engineering education during this COVID-19 pandemic. Many educational institutes have tried to start the online education in Bangladesh. However, many of them have failed to establish the effective and sustainable online learning system since this is a very new phenomenon to the academicians of Bangladesh. Therefore, this study aims to explore the critical success factors for delivering the sustainable online education to the engineering students during COVID-19 pandemic. Reviewing the previous literature from various renowned databases, 10 success factors for efficient and sustainable online engineering education were selected initially. A detailed questionnaire was prepared based on these factors and sent to 30 experts through email. These experts were selected using purposive sampling method and all of them have more than 12 years of experiences on the method and practice of teaching. After collecting all the responses from the experts, Pareto analysis has been performed to identify the most significant critical success factors for sustainable online engineering education. The findings show that the selection of appropriate technology, customization of course structure, support from the institution, selection of appropriate evaluation system and support from the students are the most 5 significant critical success factors for sustainable online engineering education in Bangladesh. Although many established technologies are now available for online education, selection of appropriate technology according to the course context is very crucial to make the online education system sustainable. Effective online engineering education largely depends on the course structure and contents. Hence, customization of course structure is required to ensure effective online engineering education. Moreover, support from the institution as well as from the students is required to make the online education system sustainable. It is also required to select the appropriate evaluation system for the students to make the online learning more interactive. The findings of the study can help the academicians and the authorities to formulate effective strategies to establish effective and sustainable online education system in Bangladesh.

BIOGRAPHIES (in no particular order)

Tae-Eog Lee, joined Department of Industrial & Systems Engineering, KAIST in 1991 after his Ph.D. study at Ohio State University. He was Dean of KAIST Academy (Educational Transformation), Director of Center of Excellence in Learning and Teaching, and Dean of Library and Information Systems at KAIST. He has made efforts to transform conventional lecture-based learning & teaching into interactive and student-participative ones and disseminated the strategies and experiences through 140 keynotes or invited talks. The efforts were reported in Forbes, Nature, etc. He won 'Grand Prize for LINKGENEIS Best Teacher' for those contributions at KAIST in 2019. He is Chairman at Division of Policy Studies in The Korean Academy of Science and Technology (KAST). He was President of Korean Institute of Industrial Engineers (KIIE). His academic works on scheduling and control theory and application of discrete event dynamic systems and automated cluster tools for semiconductor manufacturing appear in IEEE Transactions on Automation Science and Engineering, and on Semiconductor Manufacturing, etc. He won "Award for The Month's Scientist and Engineer" from Korea Research Foundation and Ministry of Science, ICT, and Future Planning in December 2015. He was an associate editor of IEEE Transactions on Automation Science and Engineering (2004~2008).

Gil Morris graduated with a BSME from Purdue University. Upon graduation, he worked for General Motors, starting his career at the CPC Powertrain Manufacturing site in Pontiac Michigan. His first assignment was to develop a test stand to measure engine noise in the factory. After 4 years in manufacturing, he moved into product engineering, focusing on powertrain noise and vibration development. During this time, he received his MSE degree in 1996 from Purdue University with a focus on mechanical sciences. In 1998, Gil changed his career path to join a small software company, LMS International, as a sales engineer. As a senior account manager, he was responsible for managing the Asian Automotive OEM's based in the US, including Honda, Toyota, Nissan, and Hyundai, with a focus on selling highly technical solutions and services for NVH, ride & handling, durability, and system development. Gil remained in sales after LMS was acquired by Siemens in 2014. In 2016, he left corporate sales to finish his career in academia. Over the past 4 years, he has been a program manager with the strategic university program. In this current role, he works with academic partners of Siemens to promote curriculum change and workforce development to address the needs of industry.

Jihong Yan is a Professor (since 2005) in Industrial Engineering at Harbin Institute of Technology (HIT), she is also the deputy dean of School of Mechatronics Engineering and head of intelligent manufacturing scientific research team at HIT. She received her PhD from Harbin Institute of Technology. Then she joined Tsinghua University, the University of Wisconsin, and Pennsylvania State University as a postdoctoral researcher. Dr. Yan is the director of National High-end Equipment Manufacturing Virtual and Simulation Experiment Teaching Center, head of Research Oriented Teaching Innovation Team for High-end Equipment Manufacturing of the Ministry of Industry and Information Technology of China, vice chairman of Production System Special Committee of Chinese Mechanical Engineering Society, and chairman of Industrial Engineering Professional Committee of the Mechanical Engineering Society of Heilongjiang Province. Her main area of research is industrial big data, sustainable manufacturing, intelligent logistics and advanced maintenance of machinery. As a PI, Dr. Yan has worked on and accomplished 15 projects in intelligent manufacturing and sustainability related areas, funded by the NSF of China(NSFC), NSF-NSFC joint-project funding, National key R&D plan project funding, National High-tech project funding, National "863" project funding, EU EPSRC project funding, High-tech funding from industries, and so on. She has authored and co-authored over 100 research papers and published 3 books, two papers were ranked ESI high cited articles. Currently there are 17 professors and engineers

with her research team, the team dedicates to theoretical research and system implementation in the fields of intelligent operation optimization theory and methods of manufacturing systems, manufacturing IoT technologies and devices, and equipment health monitoring, etc.

Jiri Tupa received his MSc and PhD in Electrical Engineering from Faculty of Electrical Engineering, University of West Bohemia in Pilsen in Czech Republic. He is a Vice-dean of faculty and Senior Lecturer at Department of Technologies and Measurement. Dr. Tupa is member of executive management at Regional Innovation Centre for Electrical Engineering of the Faculty of Electrical Engineering at the University of West Bohemia in Pilsen. He is also PhD supervisor, reviewer of journal and conference publications and co-organizer of conferences. His research interests include Business Process Management, Quality Management, Risk and Performance Management in Electrical Engineering Industry, Industrial Engineering, Electronics Manufacturing and Diagnostics, Financial and Project Management, Copyrights and patents law, information law and transfer of IPR. Jiri Tupa is responsible for several international research and development projects with industrial and University partners. The project RiMaCon - Risk Management Software System for SMEs in the Construction Industry is one of the important international projects. This project has received funding from the European Union's Seventh Framework Program for research; technological development and demonstration (2013-2017). The RiMaCon project's main goal is to implement a collaborative effort to promote the sharing of knowledge and competencies in a long-term strategic research partnership around the development, testing and validation of a cost-effective and user-friendly risk management system for SMEs in the construction sector.

Ilham Kissani is an assistant professor in the field of engineering management for the School of Science and Engineering at Al Akhawayn University in Ifrane, Morocco. She has served as the main advisor and lead instructor for the undergraduate and MS programs in Engineering and Management Systems since 2010. She has helped create very close ties with the AUI School of Business Administration, which allows both schools to leverage our resources and deliver a greater diversity of courses to students, such as supply chain management and operations management. Her background is diverse and includes industrial experience as well as academic. Her degrees are from INSEA, Morocco (Engineer) and Université Laval, Canada (Master and Ph.D). She has worked with Royal Dutch Shell as a project manager and with Modellium Québec, where she consulted in logistics and supply chain issues. Additionally, Dr. Kissani contributes to research in supply chain management, planning, and operations research. She is a member of ASEM, IEEE, IEOM, IIE, and INFORMS.

RRK Sharma is BE (mechanical engineering) from VNIT Nagpur India and Ph.D. in management from I.I.M., Ahmedabad, INDIA. He has nearly 3 years of experience in automotive companies in India (Tata Motors and TVS-Suzuki). Now he has 32 years of teaching and research experience at the Department of Industrial and Management Engineering, I.I.T., Kanpur, 208016 INDIA. To date he has written 1101 papers (peer reviewed (362) /under review (14) / working papers 725 (not referred)). He has developed over 10 software products. Till date he has guided 62 M TECH and 21 Ph D theses at IIT Kanpur. He has been Sanjay Mittal Chair Professor at IIT KANPUR (15.09.2015 to 14.09.2018); and is currently HAG scale professor at IIT Kanpur. In 2015, he received "Membership Award" given by IABE USA (International Academy of Business and Economics). In 2016 he received "Distinguished Educator Award" from IEOM (Industrial Engineering and Operations Management) Society, USA. In 2019 and 2020 he was invited by Ministry of Human Resources Department, India to participate in NIRF rankings survey for management

schools in India. In 2019, he was invited to participate in QS ranking exercise for ranking management schools in South Asia.

Celestine Aguwa is currently at Wayne State University as an Associate Professor Research involved with research and teaching graduate courses in Industrial and Systems Engineering. His background includes engineering education, lean and value methodology in product development and advanced manufacturing, and customer voice analysis. He is currently working on several funded research projects in data analytics. He has a cross-functional industrial experience at Ford Motor Company and extensive professional experience as an Architect. Dr. Aguwa has a Ph.D. and MSIE in Industrial and Manufacturing Engineering from the University of Pittsburgh and Massachusetts, Amherst, respectively. He also has a B.Arch. Degree in Architecture from the University of Nigeria. Dr. Aguwa has several awards, including a patent, and has written several published papers. He is a member of the Institute of Industrial & Systems Engineering (IISE), SAVE International, and Institute of Operation Research and Management Sciences (INFORMS).

Egbe-Etu Etu is a Ph.D. candidate in the Department of Industrial & Systems Engineering at WSU. His current research focuses on healthcare operations management with particular emphasis on improving the emergency department's performance during a surge event. He is an active member of Industrial Engineering and Operations Management (IEOM), IISE, and SAVE International.

Joshua Emakhu is a Ph.D. candidate in the Department of Industrial & Systems Engineering at WSU. His current research focuses on healthcare quality improvement with emphasis on improving treatment decisions in patients with clinical concerns of Acute Coronary Syndrome. He is an active member of IEOM, IISE, and SAVE International.

Lezlie Bueno is an Industrial & Systems Engineering graduate from Wayne State University. She holds a master's and bachelor's degree in industrial engineering. Her research interest lies in engineering education and healthcare resource allocation.

Leslie Monplaisir is a Professor in the Department of Industrial and Systems Engineering at Wayne State University. He is the Lead Researcher and Director of the Product Development and Systems Engineering Consortium (PDSEC) at WSU. His research interests include Lean Product Development, Design for lean Systems and Services and Design reuse, New Product Technology Decision modeling, Product Architecture Optimization, and Healthcare Technology System Design. He has authored over 100 publications in these areas with funded research from NSF, Veterans Administration, and Ford Motor Company. Dr. Monplaisir joined the College of Engineering at WSU in the Department of Industrial and Manufacturing Engineering in 1996 from Florida A & M University, where he was a visiting assistant professor. He earned his Ph.D. in Engineering Management from the Missouri University of Science and Technology (MUST), a Master's in Computer Integrated Manufacturing from the University of Birmingham in Great Britain.

Rafael Franco-Vera has received the BS degree in computer science from Texas Southern University (TSU). He started the MS degree in computer science from TSU Houston, Texas, in January 2019. Currently, he is a research assistant in the Department of Computer Science, Texas Southern University. His research interests include remote laboratory, remote controls, cognitive learning, and programming, robotics. He has 1 published conference papers.

Xuemin Chen has received his BS, MS, and PhD degrees in electrical engineering from the Nanjing University of Science and Technology (NJUST), China. He started his academic career at NUJST in 1991. He was a postdoc fellow and then a research assistant professor in the Electrical and Computer Engineering Department at the University of Houston. He joined Texas Southern University (TSU) in 2006. Currently, he is an associate professor in the Engineering Department at TSU. Upon joining the TSU, he actively engaged in the conception and implementation of next-generation remote laboratory. He initiated the Virtual and Remote Laboratory (VR-Lab) and served as founding director of VR-Lab at TSU in 2008. With the support of NSF HBCU-UP, the CCLI and IEECI programs, and a Qatar NPRP Cycle 4 award, he has established a state of the art VRLab at TSU. His research interests include virtual and remote laboratory development and wireless sensor networks. He is a senior member of the IEEE and member of the IEEE Systems,Man, andCybernetics Society.

Wei Wayne Li has received his BS, MS, and PhD from Shaanxi Normal University, University of Hebei Technology, hinese Academy of Sciences, China. He started his teaching career as an associate professor at the Department of Operations Research and Cybernetics, the Chinese Academy of Sciences, Beijing, China, in 1995. Continuing as an assistant professor (tenure track) at Department of Electrical and Computer Engineering, College of Engineering, the University of Louisiana at Lafayette (ULL), LA, USA in 1999-2002. Associate Professor (tenure track first and then early tenure awarded in 2006) and the Founding Director of Wireless and Mobile Network Laboratory at the Department of Electrical Engineering and Computer Science, the University of Toledo (UT), USA (2002-2007). As a Professor with tenure at the Department of Computer Science, TSU, Houston, TX, USA (2008-present).

Hamid R. Parsaei has received B.S. from National University of Iran and the University of Texas at Arlington, M.S. in Industrial Engineering from Western Michigan University, and Ph.D. in Industrial Engineering. Research interest design and Analysis of Manufacturing Systems, Additive Manufacturing, and Economic Decision Making. Currently, a professor at Texas A&M University, Industrial & Systems Engineering and Interim Director, College of Engineering Accreditation and Assessment.

Arunachalam Ramanathan is an Associate Professor in the Mechanical and Industrial Engineering Department at the Sultan Qaboos University, Muscat, Oman. He earned B.E. in Mechanical Engineering from Annamalai University, Chidambaram, India, Master of Engineering (by research) in Manufacturing Engineering from the National University of Singapore, and Ph.D. in Manufacturing Engineering also from the National University of Singapore. Dr Arun has published journal and conference papers. He has contributed about 89 research papers in peer-reviewed journals and conferences. He has also completed seven research projects as principal investigator and one as Co-PI. His research areas include production and characterization of nanostructured materials, development of metal matrix composite, product design, and manufacturing processes: machining and casting. He also works on engineering education and has conducted a few webinars related to developing higher order thinking skills in engineering students. Dr. Arun is also a member of the American Society for Engineering Education (ASEE) since 2015.

Jiri Tupa received his MSc and PhD in Electrical Engineering from Faculty of Electrical Engineering, University of West Bohemia in Pilsen in Czech Republic. He is a Vice-dean of faculty and Senior Lecturer at Department of Technologies and Measurement. Dr. Tupa is member of executive management at Regional Innovation Centre for Electrical Engineering of the Faculty of Electrical Engineering at the University of West Bohemia in Pilsen. He is also PhD supervisor, reviewer of journal and conference

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Ferdous Sarwar is acting as an associate professor in the Department of Industrial and Production Engineering at Bangladesh University of Engineering and Technology (BUET). His research interests include: Advanced Manufacturing and Materials Engineering, Operations Management, Operations Research and Decision Analysis.

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Rumi Tobita is a professor of Center for Liberal Arts and Sciences of Engineering Department, Ashikaga University. Ms. Tobita holds a Bachelor of Liberal Arts degree in Language Education, a Master of Education degree in Audio-Visual Education, and certification of Doctoral Candidate in Audio-Visual Education from International Christian University, Tokyo, Japan. Her research topics are Computer Assisted Language Learning (CALL), Educational Technology, Curriculum Development, English Program Development, English for Specific Purposes, Extracurricular activity and International Exchange Program Development, and Brain Science. She has taught several fields of courses such as Educational Technology, Cognitive Science, Social Information, Brain Science besides English courses for engineering students for more than 15 years. She is a committee member of IEOM student chapter in Ashikaga University, The Japan Association for Language Education and Technology (LET) and local organizing committee of WorldCALL 2008 and FLEAT VII.

Ammar Aamer is a Professor and Operations & Supply Chain Management Consultant. He recently served as the Dean of the Faculty of Engineering and Technology at Sampoerna University in Jakarta, Indonesia, before moving to Canada. He is currently a Designated Campus Colleague at the University of Arizona and an Adjunct Professor at Sampoerna University. He received his B.S., M.S., and Ph.D. in Industrial Engineering from the University of Tennessee, USA. Dr. Aamer is an experienced professional with more than 22 years of experience. He provided consulting services to more than 30 international organizations in Lean Manufacturing, Supply Chain Management, Six Sigma, Process and Quality Improvement, and Simulation Modeling. Prior to his academic and administrative roles, he worked as a Senior Industrial Engineer at Gap Inc. Global Supply Chain and Product Operations. His current research is in the area of Digital Supply Chain.

Kharisma Haddist is an undergraduate student from the Department of Industrial Engineering, Diponegoro University, Semarang, Indonesia.

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Albertus Retnanto is a Professor of Petroleum Engineering at Texas A&M University at Qatar and has been in the Petroleum Engineering program since 2009. He received his Ph.D. degree in Petroleum Engineering from Texas A&M University. He teaches undergraduate courses in well testing, petroleum production systems, production engineering, petroleum technical presentation, natural gas engineering, and integrated asset development and makes significant curriculum enhancements to several courses. He held a Principal position with Schlumberger and has more than 18 years of experience worldwide in both technical and management positions in well testing, field development, and production enhancement.

Boback Parsaei is a Senior Consultant with Integrated Technology Systems, Inc. He holds undergraduate and master's degrees in Civil Engineering from Texas Tech University and Texas A&M University, respectively. He has delivered short courses in Project Management, Team Building, and Leadership to a variety of companies. He is currently pursuing a Ph.D. degree in Civil Engineering at Texas A&M University.

Deji Badiru is the Dean and senior academic officer for the Graduate School of Engineering and Management at the Air Force Institute of Technology (AFIT). Dr. Badiru was previously Professor and Head of Systems Engineering and Management at AFIT, Professor and Department Head of Industrial & Information Engineering at the University of Tennessee in Knoxville, and Professor of Industrial Engineering and Dean of University College at the University of Oklahoma, Norman. He is a registered professional engineer (PE), a certified Project Management Professional (PMP), a Fellow of the Institute of Industrial Engineers, and a Fellow of the Nigerian Academy of Engineering. He holds BS in Industrial Engineering, MS in Mathematics, and MS in Industrial Engineering from Tennessee Technological University, and Ph.D. in Industrial Engineering from the University of Central Florida. His areas of interest include mathematical modeling, systems efficiency analysis, and high-tech product development. He is the author of over 30 books, 35 book chapters, 75 journal articles, 115 conference proceedings and presentations. He also has published 30 magazine articles and 20 editorials and periodicals. He is a member of several professional associations and scholastic honor societies. Deji Badiru has won several awards for his teaching, research, and professional accomplishments. He is the recipient of the 2009 Dayton Affiliate Society Council Award for Outstanding Scientists and Engineers in the Education category with a commendation from the 128th Senate of Ohio. He also won 2010 IIE Joint Publishers Book-of-the-Year Award from the Institute of Industrial Engineers. He also won 2010 ASEE John Imhoff Award for his global contributions to Industrial Engineering Education, the 2011 Federal Employee of the

Year Award in the Managerial Category from the International Public Management Association, Wright Patterson Air Force Base, the 2012 Distinguished Engineering Alum Award from the University of Central Florida, and the 2012 Medallion Award from the Institute of Industrial Engineers for his global contributions in the advancement of the profession. In February 2013, he was selected as a finalist for the Jefferson Science Fellows (JSF) program by the US National Academy of Sciences and the US Department of State. Dr. Deji was the leader of the AFIT team that won the 2013 Air Force Organizational Excellence Award for Air University C3 (Cost Conscious Culture). His most recent award is the 2015 National Public Service Award at the overall US Air Force level.

Deji Badiru has served as a consultant to several organizations around the world including Russia, Mexico, Taiwan, Nigeria, Ghana, and Canada. He has conducted customized training workshops for numerous organizations including Sony, AT&T, Seagate Technology, U.S. Air Force, Oklahoma Gas & Electric, Oklahoma Asphalt Pavement Association, Hitachi, Nigeria National Petroleum Corporation, and ExxonMobil. He holds a leadership certificate from the University Tennessee Leadership Institute. He has served as a Technical Project Reviewer, curriculum reviewer, and proposal reviewer for several organizations including The Third-World Network of Scientific Organizations, Italy, National Science Foundation, National Research Council, and the American Council on Education. He is on the editorial and review boards of several technical journals and book publishers. He is also a program evaluator for ABET, the international engineering and technology accreditation body. In 2011, Prof. Badiru led a research team to develop analytical models for Systems Engineering Research Efficiency (SEER) for the Air Force acquisitions integration office at the Pentagon. He has led a multi-year composite manufacturing collaborative research between the Air Force Institute of Technology and Wyle Aerospace Group. He is the founder of the Association of Military Industrial Engineers (AMIE).

Sara Amani is currently a Ph.D. student in the Multidisciplinary Engineering Department at Texas A&M University. She has received her undergraduate degree in Chemical Engineering from Texas A&M University at Qatar. She is a member of the Society of Women Engineers (SWE), American Institute of Chemical Engineers (AIChE) and Omega Chi Epsilon (Chemical Engineering Honor Society).

Luz María Valdez de la Rosa is a professor of Engineering Department at School of Engineering and Technologies at University of Monterrey (UDEM). She has been in the academic field for more than 15 years, as a Director of Engineering Management and Industrial Engineering Bachelor Academic Programs and as a teacher at UDEM, in the state of Nuevo Leon, Mexico. She earned a B.S. in Industrial Engineering and Systems and master's in quality management at University of Monterrey, Mexico, and Ph. D. in Administration Sciences from the Autonomous University of the State of Nuevo Leon, Mexico. She has 18 years of experience in the Quality field and 13 years as a higher education teacher. She has participated as consultant for the manufacturing and services in the quality field and participated as ASQ and IISE member.

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7. Jessore University of Science and Technology (JUST)
8. Khulna University
9. Khulna University of Engineering and Technology (KUET)
10. Military Institute of Science and Technology (MIST)
11. Bangladesh Institute of Management (BIM)

Botswana
12. University of Botswana

Brazil
13. Federal University of Sao Carlos (UFSCar)
14. Federal University of Santa Catarina (UFSC)
15. Univeristy of Sao Paulo (USP) – Sao Carlos
16. Federal Institute of Sao Paulo (IFSP) – Sorocaba
17. Faculdade de Engenharia de Sorocaba (FACENS)

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21. University of New Brunswick at Fredericton
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24. Fundación Univ. Tecn. Comfenalco, Cartagena, Bolívar
25. University of Rosario, Bogota
26. University of Quindio
27. Universidad de San Buenaventura, Cali, Valle

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29. University of West Bohemia, Pilsen

Ecuador
30. Technical University of Ambato

Egypt
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Finland
32. University of Vaasa

France
33. IESEG School of Management
34. Lorraine University, Metz

Greece
35. Accra Technical University

Ghana
36. Technological Education Institute (TEI), Thessaly, Larissa

India
37. College of Engineering and Technology, Bhubaneswar, Odisha, India
38. College of Engineering Guindy (Anna University), Chennai
39. Guru Nanak Dev Engineering College, Ludhiana, Punjab
40. Pandit Dendayal Petroleum Univ., Ahmedabad, Gujrat
41. P.D.A. College of Engineering, Gulbarga, Karnataka, India
42. Vellore Institute of Technology
43. Vidya Jyothi Institute of Technology, Hyderabad

Indonesia
44. Bina Nusantara University (Binus), Indonesia
45. Institut Teknologi Bandung
46. Institut Teknologi Sepuluh Nopember (ITS)
47. Sampoerna University, Jakarta
48. Shipbuilding Institute of Polytechnic Surabaya
49. Universitas Diponegoro (Undip)
50. University of Indonesia
51. Universitas Sebelas Maret (UNS), Surakarta
52. Tarumanagara University

Iran
53. MehrAstan University, Guilan
54. University of Eyvanekey

Iraq
55. Babylon University

Israel
56. Sapir Academic College

Italy
57. University of Salento

Japan
58. Ashikaga University

Kenya
59. Kenyatta University, Nairobi

Libya
60. Libyan Academy

Malaysia
61. Universiti Malaysia Sabah (UMS)
62. Universiti Putra Malaysia (UPM)
63. Universiti Teknologi Malaysia (UTM)
64. Universiti Tun Hussein Onn Malaysia (UTHM)
65. Universiti Utara Malaysia (UUM)

Morocco
66. Akhawayn University
67. Ecole Mohammadia d'Ingénieurs (EMI)

Namibia
68. National Univ. of Sci. and Tech. in Windhoek, Namibia

Nepal
69. Kathmandu University
70. Tribhuvan University

Nigeria
71. Covenant University
72. University of Ibadan

Oman
73. Sultan Qaboos University

Pakistan
74. Dawood University of Engineering and Technology, Karachi
75. Government College University Faisalabad
76. Mehran University of Engineering and Technology, Jamshoro, Sindh
77. Riphah International University, Lahore Campus
78. University of Engineering and Technology, Lahore

Papua New Guinea
79. Papua New Guinea University of Technology

Paraguay
80. National University

Peru
81. National University of San Antonio Abad, Cusco, Peru

Philippines
82. Bulacan State University, Malolos City, Bulacan
83. LPU Laguna
84. Mapua University

Qatar
85. Qatar University

Saudi Arabia
86. Alfaisal University
87. Effat University
88. King Abdulaziz University (KAU)
89. King Abdulaziz University, Rabigh
90. King Fahd University of Petroleum and Minerals (KFUPM)
91. King Saud University (KSU)
92. Umm Al-Qura University (UQU)
93. Princes Nourah University (PNU)
94. Prince Sattam Bin Abdulaziz University (PSAU)
95. Prince Sultan University (PSU)
96. Taibah University
97. University of Tabuk
98. Taibah University
99.

South Africa
100. Durban University of Technology (DUT)
101. Tshwane University of Technology (TUT)
102. University of Johannesburg (UJ)
103. University of South Africa (UNISA)
104. Vaal University of Technology (VUT)

Sri Lanka
105. University of Kelaniya
106. University of Peradeniya

Sudan
107. Sudan University of Science and Technology, Khartoum

Thailand
108. Chulalongkorn University, Bangkok
109. Chiang Mai University

UAE
110. University of Science & Technology of Fujairah (USTF)

UK
111. University of Derby
112. University of the West of England (UWE), Bristol

USA
113. Central Connecticut State University
114. Eastern Michigan University
115. Lawrence Technological University, Michigan, USA

Venezuela
116. Catholic University Andrés Bello (UCAB), Caracas

Zambia
117. University of Zambia
118. Copperbelt University
119. Evelyn Hone College

Zimbabwe
120. University of Zimbabwe, Harare
121. National University of Science and Technology

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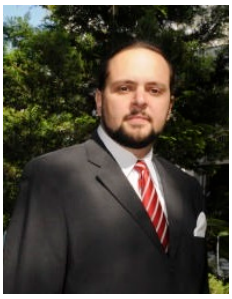

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San Pedro Garza Garcia, NL
Mexico

Upcoming Events

IEOM Society

2nd African International Conference on
Industrial Engineering and Operations Management
December 8-10, 2020, Harare, Zimbabwe
Venue: University of Zimbabwe
Hybrid Mode: Virtual + On-Ground


University of Zimbabwe

http://ieomsociety.org/harare2020/

IEOM Society

Third IMEOM 2020 Dhaka
2020 IEOM Dhaka Conference

Third International Conference on Industrial and Mechanical Engineering and Operations Management (IMEOM)
December 26-27, 2020, Dhaka, Bangladesh, Venue: Krishibid Institution Bangladesh, Farmgate
http://ieomsociety.org/ieom/imeom2020/

11th IEOM International Conference

Hilton Hotel, Orchard Road, Singapore
March 9-11, 2021

Conference Website: www.ieomsociety.org/singapore2021/

IEOM Society

2nd South American Conference on
Industrial Engineering & Operations Management
São Paulo, Brazil, April 6 – 8, 2021
Venue: Maksoud Plaza Hotel, São Paulo


www.ieomsociety.org/brazil2020/

IEOM Society

4th EU International Conference on
Industrial Engineering & Operations Management
Rome, Italy, August 3 - 5, 2021
Venue: Sapienza – University of Rome



Conference Website: www.ieomsociety.org/rome2020/

IEOM Society

6th North American Conference on
Industrial Engineering & Operations Management
Monterrey, Mexico, November 3-5, 2021
Venue: CINTERMEX-Monterrey Convention Center


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www.ieomsociety.org/monterrey2020/

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