

Workshop 1:
Jan 5 at 10 am

Introduction to Engineering Education Research

Dr. Sohum Sohoni (Milwaukee School of Engineering) and Dr. Prathiba Nagabhushan (Australian Catholic University)



Dr. Sohum Sohoni is a Professor of Computer Science at the Milwaukee School of Engineering. Prior to his role at MSOE, he served as faculty at Arizona State University and Oklahoma State University. He received his PhD in Computer Engineering from the University of Cincinnati in 2004, and his BE in Electrical Engineering from the Govt. College of Engineering Pune (COEP) in 1998. His research is in Computer Engineer and Engineering Education. He has published over 40 peer-reviewed papers and has received several best paper awards. He has received many teaching awards including the Regents Distinguished Teaching Award in 2010 at Oklahoma State University. He is a member of ACM and ASEE (American Society for Engineering Education), and a Senior Member of IEEE. He serves as the Co-Editor-in-Chief of the Journal of Engineering Education Transformations.



Dr. Prathiba Nagabhushan is an educational psychologist who has a PhD from the Australian National University, Canberra, Master of English from Madras University and Master of Education from Bangalore University. She is currently teaching Psychology to senior secondary students and Methods of Teaching English and Humanities to Master of Teaching students at the Australian Catholic University, Canberra. With over 25 years of teaching experience at different levels of educational system in India, Mexico and Australia, she has also taught in a variety of educational settings, with diverse students and across a wide range of cultural contexts. A Gold-Medallist from Madras and Bangalore Universities, Prathiba has won the National Award for 'Innovations in Teaching' from the NCERT, New Delhi and recently received an International Award for the Best Research Paper at the International Conference on Cognitive & Behavioural Psychology, Singapore.

Summary of Workshop: Our vision for the workshop is to provide a clear picture of the state of engineering education in India (more specifically within the IUCEE ecosystem), present case studies that will walk the participants through a typical paper that is representative of engineering education research (EER), more specifically targeted towards the Scholarship of Teaching and Learning, and provide participants with enough information to gauge whether they would like to pursue this area of research. We will also provide information regarding IUCEE's 12-month long course on engineering education and IUCEE's EER cluster. The target audience for this workshop is engineering educators who are not currently deeply engaged in EER, but are interested in exploring SOTL and EER.

Workshop 2:
Jan 5 at 10 am

Doing Engineering by Teaching STEM in nearby schools

Mr. Aditya Bhatnagar (MindCrafters)



Mr. Aditya Bhatnagar, an IIT engineer with over 30 years of industrial experience ; mostly in the electronics mfg all of it in India. Worked in component mfg as well as electronic assembly plants as also Optical fibre cable mfg units. Worked with Japanese/French/US/Chinese and English companies in various fields from Medical to instrumentation to TV to Power distribution to controls. Worked in various areas like Prodn/QA/ISO/Sourcing/Purchase/Engg/General management/Marketing

Keen interest in Education ! Working with schools in the Chandigarh area in STEM for grades 3 to 10. Have been at this for the past 3 years and find it very exciting

Summary of Workshop: Mindcrafters has been working with school children in the area of STEM education and has an experience of working with grades 3 to 10. This workshop is aimed at creating interest in Engineering institutions to run STEM programs in nearby schools. The objective is an effective outreach and the students learning through teaching. The activity by students can qualify as an AICTE Activity Points program under improving education. The workshop will start with a presentation on STEM, current thinking in education for the sciences and math and the role of engineering problem solving in school education. This would be for 15 minutes followed by a discussion of 10 minutes. The workshop will then get the participants to do STEM activities: 1 each is planned in Science, Engineering and Math. This will be done in groups. All the material will be supplied by Mindcrafters. These activities would be for 1 hour 15 minutes and we will ask the participants to list things they learned which could be relevant to engineering education. The last 15 minutes will be a demo of some of the things that can be done and how engineering students can build platforms to help teachers. Possibilities in Mechanical, electrical, civil and electronics will be discussed

Workshop 3: **Jan 5 at 10 am**

Interdisciplinary Engineering

Mr. Anil Pandit (General Electric- Retired)



Mr. Anil Pandit has over 49 years of experience in development of Products, Systems & Services, and Engineers through coaching and mentoring. After graduation in Electrical Engineering from IIT Bombay in 1971 he opted, and all through continued to work towards development of Electrical Products for Global Markets. He has worked in Small, Medium and Large scale National and Multinational Companies, of which over the last 20 years has been at the Product Development Centers of GE Industrial Solutions. Development of several novel products has earned him over 10 Global Patents. His passion to learn has helped him to gain breadth of technical experience and depth in evolving technologies to propitiate its benefits to society at large. He is a Chartered Engineer and Member of the Institution of Engineers, India. He teaches at engineering academic institutions, technical seminars and workshops, and delivers credit courses as an Industry Expert. He is a certified 'Industry Teaching Fellow' and active with 'Global Industry Advisory Forum, by IUCEE. Associated with Toastmasters he has mentored JFWTC plus other clubs' members and is certified Advanced Communicator Gold.

Summary of Workshop: Every engineering work is essentially interdisciplinary, so will be this workshop. It is not about offering a course, programme, or certification in multiple

disciplines being run in parallel. We will focus on how to integrate multiple disciplines in any and every engineering lecture and course. The workshop will cover examples from industry on how innovative and robust products evolve as a result of inputs and collaboration of multiple engineering domains. Going beyond developing such products, it also helped to develop multifaceted engineers with comprehension and capability to access and tap all required inputs in their ongoing work. The workshop will also cover how to dive into engineering from basics of sciences and its derivatives, use of mathematics and ergonomics, and deriving interest and benefits thereof. We will also cover how such integration of disciplines help to remember, analyse, and create excellence in one's own discipline.

Workshop 4:
Jan 5 at 10 am

Creative (New) Ways of Assessing Students' Learning — NEP 2020 Related

Dr. Umakant Kulkarni (SDM College of Engineering) and Mr. Dilip Chemburkar (General Electric-Retired)



Dr. Umakant Kulkarni: Professor Department of Computer Science and Engineering Shri Dharmasthala Manjunatheshwara College of Engineering and Technology.

Area of expertise include: Distributed System, Software Engineering, Object Oriented System Design, Design Patterns, Data Base Systems, Compiler Design, C++ & Java



Mr. Dilip Chemburkar is a retired business executive. He retired from General Electric Financial Assurance. During his career at GE, Dilip had several assignments in manufacturing and financial service -- Director of Quality, Plant Manager, Vice President of Mexican Operations, Six Sigma Master Black Belt, Director of Risk, Director of Operations etc. to name a few. Dilip was granted a United.States Patent (6,301,773) for having invented an improved Method of Manufacturing a Motor Core. Dilip has a B. Tech (Honours) degree in

Metallurgical Engineering from IIT Bombay (1970) and a M.S. degree in Materials Engineering from Mississippi State University (1974). Dilip currently resides in Florida, USA, where he tutors high school and college students in mathematics subjects like algebra, geometry, calculus, trigonometry and statistics.

Summary of Workshop: *The vision of higher education as per NEP-2020 emphasis on the development of cognitive skills and learning outcomes as one of its major challenges and issues in realizing experiential learning flavor of new education policy. Outcome Based Education (OBE), being the corner stone of NEP-2020, not fully understood and implemented in majority of the Institution including few accredited Institution also. This workshop is one opportunity for all Institution to fill such gaps and be ready with NEP-2020 requirements and ease NBA and NAAC accreditation processes.*

Objectives and Outcomes: This workshop enables participants to:

- 1. Understand NEP- 2020 policies and procedures.*
- 2. Know the OBE philosophy and its importance in accreditation.*
- 3. Know critical thinking required in Higher Education.*
- 4. Write Course Outcomes (COs) and map it to Program Outcomes (POs).*
- 5. Know how COs influence the budget and infrastructure requirements of the Institution.*
- 6. Design learning activities and assessment tools to comply with levels defined in Cos to POs mapping.*

Workshop 5:

Jan 5 at 10 am

Rejigging Your Curriculum to Integrate Sustainability Education

Dr. Subramaniam D. Rajan (Arizona State University)



Dr. Subramaniam D. Rajan is a Professor of civil, aerospace and mechanical engineering at Arizona State University having joined the university as an Assistant Professor in 1983. He had held several administrative positions including Graduate Program Chair and Director of the Computational and Experimental Laboratory in the School of Sustainable Engineering and the Built Environment. He has over thirty years of experience in fundamental research in computational and experimental mechanics involving basic tools such as finite element analysis, advanced experimental techniques, high-performance software development, materials development and processing, and design optimization. He has worked as a PI and co-PI in sponsored research from government agencies such as the National Science Foundation, NASA, Federal Aviation Administration and the US Army. He has mentored over 50 doctoral dissertation and master's thesis students, and published over 200 journal and conference papers. On the engineering education arena, Dr. Rajan has served as the chair of the curriculum committee of the Schools of Engineering, chair of the civil engineering curriculum committee, and led the efforts at the Schools of Engineering at ASU to successfully transition and maintain ABET accreditation. He has participated as the lead person from the Department of Civil & Environmental Engineering in several research projects dealing with teaching innovations. The most significant one was "The Foundation Coalition" that was funded in 1993 as the fifth coalition in the National Science Foundation's Engineering Education Coalitions Program

Summary of Workshop: *While the term sustainability in engineering has been in use for more than three decades, engineering institutions have been lax in understanding how to incorporate sustainability as an integral part of engineering lexicon. This workshop will look at the important issues from the ground up – the challenges facing engineering institutions including accreditation and curriculum reform, the myths surrounding sustainability, engineering education and climate change, and what can and should really be done to make undergraduate engineering education play a crucial role in solving the enormous problems faced by society brought about by unsustainable practices. Contrary to popular belief, there is an important role for all engineering disciplines (aerospace, biomedical, chemical, civil, computer science and engineering, electrical, electronics, industrial, materials, mechanical, etc.) to play in solving societal problems. Case studies involving current curriculum in typical universities will be examined and how to rejig them to make the courses sustainability aware will be discussed. Participants will engage in hands-on exercise to understand sustainability and how to establish meaningful links between their courses and sustainable engineering.*

Workshop 6:
Jan 5 at 1:30 pm

Sculpting Educational Experiences With an Eye to Impact Grand Challenges
Dr. Rucha Joshi and Ms. Srishti Malpath (Plaksha University)



Prof Rucha Joshi is Faculty, Plaksha University; Prior to joining Plaksha, Dr. Joshi, Ph.D. was an Assistant Professor in the Department of Biomedical Engineering at the University of California, Davis, focusing on engineering education research and instructional innovation in biomedical engineering. Before joining UC Davis in 2018, she was a postdoctoral fellow in the Weldon School of Biomedical Engineering, Purdue University, working on multiple educational projects in enhancing teaching, learning, outreach, and diversity of engineers. Her current research focuses on approaching challenges in teaching engineering through the lens of design thinking.



Ms. Srishti Malpath is Manager Academic Affairs and Student Life at Plaksha University. She is passionate about consumer insights, innovation and strategy. An avid problem solver with an eye for detail & creative ideas, questioning the basic principle causes. Always up for the next challenge in life, giving chances to work that I believe in. Driven by the cause, focussing on growth and learning. A positive thinker who's looking for opportunities to grow in the area of Brand and People Management

Summary of Workshop: Today's grand challenges require the younger generation to be equipped with a growth mindset along with skills imparted in the traditional curriculum. Identifying real world challenges from societies around them and custom designing solutions is need of the hour - one such opportunity is The Grand Challenge Scholars Program that we are materializing at Plaksha University. Plaksha has recently become a member of the National Academy of Engineering (NAE)'s GCSP school consortium whose goal is to prepare tomorrow's engineering leaders to solve the grand challenges. Students are shaped multidimensionally through this program by working towards achieving five competencies: Talent (research or creative project experience), Multidisciplinary, Viable; Business/ Entrepreneurship, Multicultural, and Social Consciousness (through service learning) through curricular, co-curricular and extra-curricular avenues. As part of this session at ICTIEE 2023, we plan to provide guidance on launching your own GCSP, sharing Plaksha's journey to implement GCSP, and discuss best practices / your ideas for a successful recruitment strategy, assessment method, support structure, and other elements to carve out and execute a successful GCSP student experience.

Workshop 7:
Jan 5 at 1:30 pm

Smart, Clean, and Green Learning Spaces using Project-Based Internship
Er. Deepak Gadhia (Sunrise CSP India) and Dr. Deepak Waikar (EduEnergy, Singapore)



Er. Deepak Gadhia is now Mentoring start-up and supporting Entrepreneurs in Clean-Tech Sector and has dedicated his Life to society through the NGO Muni Seva Ashram where he is a Trustee. (www.greenashram.org). He travels around country and world to share the knowledge and core-competencies he has acquired over 35 + years experience in Solar and Sustainability Sector. He is a Social Entrepreneur.



Dr. Deepak L. Waikar (Chief Training Adviser for Tacstra Solutions Pte Ltd, Singapore, Vice Chair of IEEE Education Society Singapore Chapter, Managing Partner, EduEnergy, Singapore and Member of Global Industry & Academic Advisory Committee of Indo-US Collaborations on Engineering Education (IUCEE)) has been involved in teaching, research & management for almost three decades. He has authored/co-authored book chapters, research articles and policy papers on power, energy, management & education related topics.

He has served on various committees in professional bodies such as Chairman of the Institute of Electrical & Electronic Engineers (IEEE) Power & Energy Society (PES) Chapter, Singapore. He is a recipient of IEEE-PES Outstanding. Dr. Waikar is a Senior Member of IEEE USA and a Life Member of the Institution of Engineers, India with Ph.D. from National University of Singapore, M.S. from University of Saskatchewan, Canada, M.Tech. from Banaras Hindu University, India & PG Advanced Certificate in University Teaching from the University of Newcastle, Australia. His interests include Sustainable Energy Leadership Development, Re- thinking Teaching, Learning & Academic Leadership, Re- inventing & Transforming Education, Innovative Project Design & Management, Restructuring & Redesigning of Curriculum, Sustainable Development.

Summary of Workshop: Several barriers such as lack of availability of knowhow about the technologies, limited expertise, time & budgetary constraints continue to impact adversely in providing optimal smart, clean, and green learning spaces in and around engineering colleges. A template and roadmap on how to bridge that gap through systematic value-added collaborative programmes and by synergising knowledge, experience and expertise of academia and industries will be provided in this specially designed workshop. Key challenges, tangible and intangible benefits will be highlighted. Pragmatic implementation strategies using Project-based Internship (PBI) will also be discussed with relevant case studies. Our vision for the workshop is to provide a clear picture of the state of engineering education in India (more specifically within the IUCEE ecosystem), present case studies that will walk the participants through a typical paper that is representative of engineering education research (EER), more specifically targeted towards the Scholarship of Teaching and Learning, and provide participants with enough information to gauge whether they would like to pursue this area of research. We will also provide information regarding IUCEE's 12-month long course on engineering education and IUCEE's EER cluster. The target audience for this workshop is engineering educators who are not currently deeply engaged in EER, but are interested in exploring SOTL and EER.

Workshop 8:

Jan 5 at 1:30 pm

A Game on Education for Sustainable Development

Dr P Sarasu and Dr Koteeswara Rao Anne (Kalasalingam Academy of Research and Education)



Dr. P Sarasu: Director International Relations and Industry Relations
Director International Relations and Industry Relations Kalasalingam Academy of Research and Higher Education



Dr Koteswara Rao Anne: Director Academics at Kalasalingam Academy of research and education and Professor in the Department of Computer Science and Engineering. Before worked as Director academic at Vel Tech, Chennai, and dean academic at VR siddhartha engineering college, Vijayawada. Worked as research assistant associate at University of Hanover, Germany, University of Klagenfurt, Austria. Played significant role in National Board of Accreditation (NBA) in becoming member of Washington Accord signatory by developing accreditation criteria, representing at International Engineering Alliance Meetings, disseminating the Outcomes based education and accreditation to institutions across India. Served the NBA as member of the Academic advisory committee. Actively involved in CDIO community and Problem based learning communities.

Summary of Workshop: The authors propose a game that can be used to clarify faculty members' values, attitudes, and preferences related to SDG competencies recommended by UNESCO, The game is intended to establish a guided, yet informal and amusing, framework for considering and discussing what staff members find important in their task and role as university teachers. During the gaming process, the participants get a chance to externalize their tacit knowledge through individual reflections and team-based discussions. This can be useful not only for individual clarification, but also for teams of teachers to develop common idea about the competencies required for SDG .. During this workshop, you will try out the game and engage in discussions of possible use scenarios and further development. In the workshop, we will introduce the intentions and ideas behind the game, and invite the participants to play the game. The participants will be guided through the first, individual step of selecting the cards they agree with the most, and place them in order of priority. In groups of 3-4 persons, the participants will present the outcome of their individual selections and together organize the selected statements in themes reflecting various aspects of teaching and competencies of SDG recommended by UNESCO. Then they will cooperate on selecting the cards they find most important. The groups will also be asked to reflect on the process and its outcome. At the end of the workshop, we will allocate time for discussions and hope to get feedback for the further development of the game.

Workshop 9:

Jan 5 at 1:30 pm

Facilitating Course Completion by Optimizing Class Instruction Time

Dr. Veena Kumar (University of Maryland Global Campus) and Dr. Amit Lathigara, (RK University)



Prof. Veena Kumar is currently faculty at the University of Maryland Global Campus and the Executive Director of the IUCEE international Educator Certification Program. Her areas of specialization are Education Technology, Communication & Faculty Training. Veena has over 30 years' experience of teaching, research and faculty development in France, India and USA. Before moving to USA, she was Professor and Head, Education Technology at IIT, Delhi (1988- 2003), where she was actively involved in the design and development of video courses (now made available as NPTL courses), and faculty training programs. Veena has extensive experience in the e-learning space, and worked as Chief Learning Officer with Microland Limited, Bangalore, India/USA (sabbatical assignment – 2000-2001). Veena has been associated with IUCEE since 2008, and has designed the IUCEE International Engineering Educator Certification Program (IIEECP). The program is recognized by IGIP (Society for Engineering Education), Austria for joint certification for their 'Diploma in Engineering Pedagogy'.



Dr. Amit Lathigara is a Professor of Computer Engineering and Dean Faculty of Technology at School of Engineering, RK University. Prior to his current role, he also served as a faculty at Atmiya Institute of Technology and Science, Rajkot and Marwadi University, Rajkot. He received his PhD in Computer Engineering from RK University, Rajkot, his Master of Engineering in Computer Science and Engineering from Anna University, Coimbatore, and his Bachelor of Engineering in Computer Engineering from Saurashtra University, Rajkot. He is also holding a title of "IGIP International Engineering Educator -Ing.Paed.IGIP" His research is in Mobile Adhoc Networks and Deep Learning. He has published over 20 peer-reviewed papers. He taught subjects related to computer programming at bachelor level and Mobile Adhoc Networks and Cryptography & Network Security at master level. He is holding professional membership from ISTE and IEEE.

Summary of Workshop: Two major constraints registered by engineering faculty are i) lack of student engagement, and ii) insufficient class instruction time. Most faculty members report that they are unable to complete their courses in time and need to take several additional classes after college or on the weekends. In this hands-on, workshop, experts will demonstrate innovative strategies for addressing both these constraints and making course delivery more interactive and time efficient.

Workshop 10:
Jan 5 at 1:30 pm

Mapping IUCEE Activities to NAAC Accreditation Criteria

Dr. Shikha Maheshwari (Manipal University Jaipur) and Mr. Dilip Chemburkar (General Electric – Retired)



Dr. Shikha Maheshwari: Associate Professor & Programme Coordinator (MCA), Directorate of Online Education, Manipal University, Jaipur (Rajasthan) has immense working experience in academics and research with a vision to improve the quality and global relevance of education. She has guided many faculty members of various Higher Education Institutes in NAAC, NBA accreditations and 'Outcome-Based Education'. She has earned many accolades at the national as well as international level for imparting quality engineering

education to the millennials in her demonstrated history of dedicated 15+ years of the academic career.



Mr. Dilip Chemburkar is a retired business executive. He retired from General Electric Financial Assurance. During his career at GE, Dilip had several assignments in manufacturing and financial service -- Director of Quality, Plant Manager, Vice President of Mexican Operations, Six Sigma Master Black Belt, Director of Risk, Director of Operations etc. to name a few. Dilip was granted a United States Patent (6,301,773) for having invented an improved Method of Manufacturing a Motor Core. Dilip has a B. Tech (Honours) degree in

Metallurgical Engineering from IIT Bombay (1970) and a M.S. degree in Materials Engineering from Mississippi State University (1974). Dilip currently resides in Florida, USA, where he tutors high school and college students in mathematics subjects like algebra, geometry, calculus, trigonometry and statistics.

Summary of Workshop: The vision of Indo Universal Collaboration for Engineering Education (IUCEE) is to improve the quality and global relevance of engineering education in India. This workshop will identify the NAAC metrics in which the institutes conducting various activities of IUCEE for students as well as faculty members can provide the data for obtaining good grades for the institute. A two-hour workshop will be conducted where the data related to these activities can be discussed for fulfilling the criteria requirements.

Workshop 11: **Jan 5 at 4 pm**

Utilizing Government Programs to Promote Student Entrepreneurship

Dr. Ranji Vaidyanathan (Oklahoma State University) and Mr. Vasant Marathe (Entrepreneur)



Dr. Ranji Vaidyanathan is Varnadow chaired professor of materials science and engineering in the school of materials science and engineering at Oklahoma State University, with several years of entrepreneurial and product development in the composites and additive manufacturing areas. He is focused on assisting student entrepreneurship and venture creation. Previously, he was at Advanced Ceramics Research (ACR) in Tucson, AZ, where he managed over 50 small business innovative research (SBIR/STTR)

projects.. At Oklahoma State University, he works with several Oklahoma small businesses and student start-ups. Currently, he is working with his 8th student start-up company, assisting them with technical as well as strategic issues in taking their products to the market. Ranji has a B. Tech. in Metallurgical Engineering from the Indian Institute of Technology, Varanasi, MS in Mechanical Engineering from North Carolina A&T State University and a Ph. D in Materials Science and Engineering from North Carolina State University.



Mr. Vasant Marathe has industry experience of 28 years from Swifts Pvt. Ltd., a family managed business engaged in manufacturing and supplying offset printing machinery. He has wide exposure in various areas including production, design, marketing and overall business management. He has a Bachelor's degree from Mumbai and Master's degree from Virginia Tech, Blacksburg, USA, both in Mechanical engineering. After taking early retirement from business, he is currently pursuing doctoral study in field of

Intrapreneurship development amongst Small and Medium Sector enterprises. Vasant also teaches

the topics of Entrepreneurship development, Intrapreneurship and Start-ups for various engineering and management schools as a visiting faculty.

Summary of Workshop: The colleges in the IUCEE Entrepreneurship Cluster are looking at supporting student entrepreneurs beyond the initial support that they are providing with DST funding. Many student teams are very successful in the initial stages but do not have the funding beyond the initial funding. The colleges are looking for ways to support the student teams in the future and make them self-reliant beyond the initial DST funding. The possible participants are: Hyderabad Institute of Technology and Management, Kalasalingam Academy for Research and Education, Rajarambapu Institute of Technology, Marwadi University, Wadhvani Foundation, students entrepreneurs who have received seed funding from the colleges. This discussion could lead to the students expressing their ideas about what they need and colleges/Wadhvani foundation understanding how they can help the students better.

Workshop 12: **Jan 5 at 4 pm**

Do's and Don'ts of Teaching

Dr. Mohan Rao (Tennessee Tech University)



Dr. Mohan Rao is currently a professor and department chair of Mechanical Engineering at Tennessee Tech, Cookeville, TN. Previously, he was a professor of Mechanical Engineering at Michigan Tech. He is a Fellow of two major professional societies in the field—ASME and SAE. He has conducted both basic and applied research in different areas of acoustics and vibration ranging from analytical modeling of damping of materials, joints, and composite structures to experimental work involving small power tools to large scale machines (e.g. excavators, diesel engines). He has over 100 publications in technical journals and conference proceedings. Also, he has advised over 50 graduate students. Dr. Rao has received the US Fulbright award, National Science Foundation Research Initiation Award and was honored by the NASA Marshall Space Flight Center for his work on the damping of the Hubble Space Telescope truss system. In addition, he was recognized as a United Nations Development Program expert in Noise & Vibration Control. He serves as an Associate Editor for the International Journal of Vehicle Noise and Vibration. He is very passionate about Engineering Education. He has conducted several workshops and writing sessions to promote teaching, learning, and course and curriculum improvement. These workshops include topics on outcome- based engineering education, creativity, Bloom's taxonomy and incorporation and assessment of lifelong learning and other professional skills in engineering courses.

Summary of Workshop: This workshop will provide participants with a solid foundation in effective teaching techniques for student engagement in the classroom. Each new generation of students we teach requires adjustment of teaching and learning strategies. Today's engineering students have access to information and at their fingertips through their smartphones and many of the traditional methods that emphasize theory and rote learning are no longer relevant and it is time to reevaluate our teaching methods. It is vital to understand and take advantage of our students' relationship with technology and adapt our teaching techniques to instill lifelong learning strategies to prepare them for success in their

profession. Whether you are currently a new engineering instructor or a seasoned professor interested in learning effective teaching methods, this workshop will attempt to offer you some great tips (Do's and Don'ts) that you can use in your classroom. The workshop will review learning objectives, lesson organization, communication expectations, and assessment of student learning—all in the context of widespread use of technology in teaching and learning. The focus of the workshop is on developing well organized class materials, presentations, and a clear and logical way to increase the motivation and active participation of all students. Examples of how the creative problem-solving process is used in many classes will also be presented. Each participant will be asked to complete a Thinking Styles Inventory.

Workshop 13:
Jan 5 at 4 pm

Design Thinking as a Strategy for Innovation in Renewable Business

Mr. Gaurav Kedia (Indian Biogas Association)



Gaurav Kedia, Chairman, Indian Biogas Association Gaurav Kedia is the Chairman of Indian Biogas Association and Managing Director at TechMachinery Labs. A guest faculty at IIM-Ahmedabad, Gaurav is currently advocating use of renewable energy, especially biogas and solar power. He holds a post-graduate degree from University of Stuttgart.

***Summary of Workshop:** Renewable business models supported by innovation are a growing field, however there are currently few tools available to help businesses as they develop strategies for sustainable business modelling. By combining "design thinking" with "sustainable business model innovation" to enhance the imaginative process of creating value propositions, the workshop seeks to close this gap. The design thinking workshop will demonstrate how to define and resolve issues quickly and effectively. The goal of the workshop is to break down barriers, have fun, and take responsibility of making this vision a reality. Groups will be able to develop a shared understanding of the issue and use each participant's expertise to generate ideas and outline solutions. It's an interactive session that is based on design thinking methodology!*

Workshop 14:
Jan 5 at 4 pm

Engineering Mathematics Concepts using Python

Dr. B. Kanmani (BMS College of Engineering)

The workshop is focused on providing an experiential learning to few concepts of Engineering Mathematics. Every concept is supported with suitable Python Code, using the Open Source Platform from Google Colaboratory. No prior knowledge of Python is required, however, experience in any programming

language will be beneficial. The syntax of the language will be introduced through suitable examples of Engineering Mathematics. In addition, emphasis shall be on the Text cell that accepts Latex commands, and hence becomes convenient to display the mathematical expression. At the end of the workshop, all participants will be able to develop, and execute Python code blocks for a given equation, and observe the effect of various parameters. The workshop, also emphasizes on pedagogy for Engineering courses; and hence can be adopted in any Course. This course is not a replacement to any of the courses in the curriculum, but supplements the existing courses with an experience to appreciate the concepts as the focus is on experiential learning.



B Kanmani, Professor, Department of Electronics and Telecommunication Engineering, is with BMS College of Engineering, Bengaluru, since 1995. She has served as Head of Department for fifteen years; and Dean-Academics for three years. She obtained her Bachelors in Electronics and Communication Engineering from Nagarajuna University in 1987, M.Tech. in Digital communication from Indian Institute of Technology, Kanpur in 1990, and PhD from the Indian Institute of Science Bangalore (IISc) in the year 2006. She received the Outstanding Engineering Educator Award from IUCEE during 2016. She has published a Book on '**Effective Implementation of OBE leading to Accreditation**', through the ISTE, WPLP, AICTE project. She has uploaded few lectures on 'Digital Signal Processing' and 'Outcomes Based Education', on her You Tube Channel-Kanmani's Lectures. Her prior employment as a teaching faculty was with Thadomal Shahani College of Engineering (Mumbai) and K L College of Engineering (Guntur). She is Senior Member IEEE, Fellow IETE and Life Member ISTE.

Workshop 15: **Jan 5 at 4 pm**

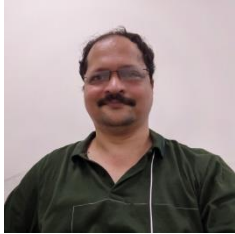
Implementation of aspects of NEP-2020 through Closed-Loop Education System: Model KJSCE

Dr. Rachana Desai and Dr. Suren Patwardhan (KJ Somaiya College of Engineering)



Dr. Rachana Desai is an Assistant Professor of Mathematics in Department of Science and Humanities, K. J. Somaiya College of Engineering (KJSCE), Mumbai. She is the chairperson of Board of studies, Mathematics, Somaiya Vidyavihar University (SVU), Mumbai. She is also a member of academic council and member of board of examination, SVU. Her dual research interests focus on Mathematics and Engineering Education Research. Dr. Rachana has earned Ph.D. degree in Mathematics from Sardar Vallabhbhai National Institute of Technology (SVNIT), Surat. During her academics, she has received numerous awards in both curricular & co-curricular activities. Her excellence in research is recognised by several notable awards in the field of mathematics. With over 14+ years of teaching experience and added qualification of B.Ed., she serves SVU as Chairperson-Board of Studies (Mathematics), the coordinator- Teaching Learning Centre, KJSCE etc. She is recognized for

innovative teaching techniques and out of the box ideas for active learning in mathematics. She also serves Journal of Engineering Education and Transformations (JEET) as a reviewer. She has delivered number of talks as resource person and session chair in national & international conferences & training programs.



Dr. Suren Patwardhan is Head of Department, Science and Humanities. He has inclination to research with special interests in semiconductor device physics and solar photovoltaics. Towards this, he has worked at IIT Bombay on metal oxide thin films and their applications in Si heterojunction solar cells under "National Centre for Photovoltaic Research and Education", a project funded by Government of India. He has presented my work in several international conferences and published in leading research journals. In addition, he is also interested in education technology, trying to inculcate new teaching/learning methods for fresh students.

Summary of Workshop: KJSCE, Mumbai had a smooth transformation from being an affiliated college under the Mumbai University to an autonomous institute and now a constituent college of the Somaiya Vidyavihar University (SVU), the first private University of its kind in the city of Mumbai. Over the years, the management of Somaiya Vidyavihar, the Principal and other administrative authorities of KJSCE have adopted a closed-loop system that consists of a systematic approach of survey-execution-assessment-feedback and revision. This is being used in all of its educational activities, may it be curriculum designing or modes of assessment and also in other policies such as placements, internships, creating project-based learning environment and even keeping human values and ethics. This closed-loop approach has helped in taking KJSCE to higher standards of education. In this workshop, the presenters wish to demonstrate a glimpse of this closed-loop system. Since it would be difficult to cover all of the sectors, the authors would be covering the implementation of closed-loop system model of KJSCE with an emphasis on First Year Engineering offered under new SVU-2020 scheme. In addition, as the National Education Policy (NEP-2020) draft is made available by the Central Government, the presenters would like to show a connection between guidelines suggested in NEP-2020 and implementation of some of its key features that are already in action at KJSCE.

Workshop 16:
Jan 7 at 2 pm

A Holistic Approach to Supporting Student Success

Dr. Stephanie Farrell (Rowan University) and Dr. Veena Kumar (University of Maryland Global Campus)



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Prof. Veena Kumar is currently faculty at the University of Maryland Global Campus and the Executive Director of the IUCEE international Educator Certification Program. Her areas of specialization are Education Technology, Communication & Faculty Training. Veena has over 30 years' experience of teaching, research and faculty development in France, India and USA. Before moving to USA, she was Professor and Head, Education Technology at IIT, Delhi (1988- 2003), where she was actively involved in the design and development of video courses (now made available as NPTL courses), and faculty training programs. Veena has extensive experience in the e-learning space, and worked as Chief Learning Officer with Microland Limited, Bangalore, India/USA (sabbatical assignment – 2000-2001). Veena has been associated with IUCEE since 2008, and has designed the IUCEE International Engineering Educator Certification Program (IIEECP). The program is recognized by IGIP (Society for Engineering Education), Austria for joint certification for their 'Diploma in Engineering Pedagogy'.

***Summary of Workshop:** Students enter engineering programs with a wide range of backgrounds and prior experiences which shape their learning needs. Research shows that integration of social, emotional, and academic growth is needed for students to thrive and succeed in college and in their professional and personal lives. In this workshop we will develop a holistic approach to supporting student success. Focusing our discussions on the locus of individual control, we will explore practical ways in which faculty can support academic success, healthy learner identity, and overall student wellbeing by creating a positive learning environment in their engineering classes.*