

Enhancing Smart Clean and Green Learning Spaces in & around Campuses for Sustainable Net Zero Future

Be Clean, Be Green and Make it a Routine – Deepak Waikar (deepak.waikar@iucee.org).

Synopsis: The National Education Policy (NEP) 2020 emphasizes the infusion of multidisciplinary programmes to prepare engineering graduates for the 21st century. Programmes that include clean and green technologies to provide innovative solutions fulfill that vision. The AICTE has instituted an award for the Clean, Green, and Smart Campuses. In resonance with NEP-2020 and AICTE initiatives and directives, the IUCEE Foundation with experts from Renewtech, India, EduEnergy, Singapore, ABET USA, Indian Biogas Association, and PRINCE-India have designed an application-oriented programme.

The proposed Capability Development Programme is envisaged to be a catalyst in transforming campuses of Colleges and Institutions as role models of clean, green, and smart learning spaces.

Programme Objectives:

At the end of this Programme the participants should have:

- **Ascertained** key attributes of Model Clean, Green, and Smart Campus.
- **Identified** the key measurable parameters & **Familiarised** with main components & devices.
- **Prepared** a concept design.
- **Drafted** action plan.
- **Learned to leverage** on internal and external resources.
- **Infused** Sustainability and Net Zero concepts in teaching and learning.

Programme Outline:

- An integrated approach for:
 - Energy Efficiency & Management
 - New & Renewable Energy

- Water Efficiency & Management
- Waste Recycling & Management
- Sample Case Studies on
 - World Class Bio-gas power plant
 - Concentrated Solar Energy Plant
 - Water purification & desalination plant
- Conceptualisation of Research Projects and commensurate student projects.
- Leveraging on Community Based Projects for implementation.
- Taking stock of low hanging fruits in Social Entrepreneurship
- Draft feasibility report
- Prepare concept design and action plan
- Integrate Sustainability in Engineering Education

Who can benefit from the programme?

- Faculty Members, Research Scholars, PhD & MTech students, and those interested in infusing, developing, and enhancing Clean, Green, and Smart Learning Spaces in and around campus, and promoting Social Entrepreneurship.

Mode of Delivery:

Virtual / Online and Canvas LMS

Duration:

7 Sessions (One hour per week):

Starting Date 3rd July (Wednesday) 2024, Time: 7.30 pm to 8.30 pm (IST).

Proposed Participation Fee:

Rs. 500 plus GST (Taxes) per participant (for IUCEE Consortium Member Colleges).

Rs. 1500 plus GST (Taxes) per participant (for Non- IUCEE Consortium Member Colleges).

Proposed Schedule:

Session	Topic	Facilitator(s)
S1	Opening, Briefing, Introduction, Objectives of I-FDP, Familiarisation with Canvas LMS, Assignments	Prof. Krishna Vedula, Er. Deepak Gadhia & Dr. Deepak Waikar
S2	Smart Clean & Green Learning Spaces	Dr. Deepak Waikar & Er. Deepak Gadhia
S3	Case Studies in Energy Auditing and Solar Thermal Applications	Dr. Ajay Chandak
S4	Case Studies in Waste Management & BioGas	Er. Gaurav Kedia
S5	Project Funding Schemes & Sample Feasibility Report	Dr. Ajay Chandak and Er. Gaurav Kedia
S6	Integrating Sustainability in Engineering Education	Dr. Michael Milligan
S7	Concluding session & Valedictory	Moderated by Dr. Deepak Waikar, Prof. Krishna Vedula & Er. Deepak Gadhia

Notes:

- Final Programme schedule may vary depending on availability of experts, public holidays, and unforeseen effect of pandemic.
- Participants are expected to carry out research for their assignments and presentations on regular basis as per the guidelines.

Program Advisers & Mentors:



Prof. Krishna Vedula, Executive Director, IUCEE Foundation



Er. Deepak Gadhia, Chairman, MSA RenewTech, India



Dr. Michael Milligan, CEO, ABET, USA

Resource Persons:

Er. Deepak Gadhia (Chairman of Sunrise CSP, India which is subsidiary of Sunrise CSP Australia) has been a serial entrepreneur including formation of social enterprises. After



his return from Germany to India in 1988 he started his company "Gadhia Solar Energy Systems Pvt. Ltd". India and with technology transfers from German Inventors he successfully commercialized

Solar Concentrator technology to India. With the help of HTT GmbH, a leading German Thermal Engineering Company he was instrumental in developing and installing the world's first Solar Steam Cooking System. His company has installed 100's of Such systems including the largest in the World, that cooks around 50,000 meals with Solar energy at Shirdi Saibaba Temple. In 2011, after selling shares of his company "Gadhia Solar" he invested in Excellent Renewable, a start-up Biogas company. The company developed one of the first projects in India where 120 households of a village are provided with piped biogas. He was also Chairman of a Joint Venture between Gehrlicher Solar AG of Germany along with GreenForce to offer MW Scale Solar Power Plant based on Photo-voltaic system. After selling his company, Gadhia Solar, he has shifted to Muni Seva Ashram a NGO active in the field of Social Care, Health-care, Education and Sustainability and offers his services as a Trustee (Board Member) and looks after Renewable Energy, Sustainability, Education and Skill Development at the Ashram. He completed B.Sc from Mumbai University and Post-Graduation Course in Industrial Manufacturing and Management, Mumbai. He also acquired degree in Process and Environmental Engineering from TFH Berlin, Germany. He worked in various Germany Companies like Wacker Chemie GmbH, DEG Engineering Germany and Denmark for few years. He participated "International Management Training" (IMT)

course in Germany of Kuebel Stifting in Germany in 1984. He also completed Post Graduation in “Energy Conservation & Management” course conducted by MIT, USA and T U Berlin in Berlin. After returning to India, he participated in courses conducted by USAID and IREDA (Indian Renewable Energy Development Agency), New Delhi & “Entrepreneurship Development Program” at the Indian Institute of Technology, New Delhi, India. Mr. Gadhia is on various Government and NGO Committee’s and was mentor to start-ups under Global Cleantech Innovation Program funded by UNIDO through MSME. He was Board Member of SCI, Sacramento and is recipient of many Awards. He travels extensively to give talk and hold workshops on various topics of social Entrepreneurship, Solar Technologies, Biogas, Smart Cities and Sustainability.

Dr. Michael K.J. Milligan is the CEO of ABET, a global quality assurance organization focused



on college and university programs in the disciplines of applied science, natural science, computing, engineering, and engineering technology. Prior to joining ABET in 2009, Milligan was a systems director at the Aerospace Corporation, leading a team at the NASA Goddard Space Flight Center developing the next generation environmental satellites for NOAA. Milligan served over 24 years as a career U.S. Air Force officer working in operations, engineering education, international research & development, technology acquisition.

Milligan earned his Ph.D. from the University of Texas at Austin, his M.S.E. from the University of Massachusetts at Lowell, and his B.S. from Michigan State University — all in electrical engineering. He also earned an M.B.A. in Business Administration from Western New England College, is a registered Professional Engineer (PE) in Colorado and

Maryland, and a Certified Association Executive (CAE). He is also a certified Master Naturalist for the state of Maryland.

Dr. Deepak L. Waikar (Ex-Managing Partner, EduEnergy, Singapore)) 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, and

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 Power Engineers' Award** 2003. Dr. Waikar has been a member of the International Advisory Committee for Conferences, Seminars & Symposiums. He has delivered invited presentations on power, energy, education, management & leadership related topics at the international conferences, seminars, and forums. Dr. Waikar is a Senior Member of IEEE USA, a Life Member of the Institution of Engineers, India, and a Member of Advisory Committee for IUCEE with **Ph.D.** from the National University of **Singapore**, **M.S.** from the University of Saskatchewan, **Canada**, **M.Tech.** from the Banaras Hindu University, **India** & PD Advanced Certificate in University Teaching from the University of Newcastle, **Australia**. He obtained PG-DBM from the **Nagpur** University & B.E. from the **Government Engineering College** in **India**, respectively. 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, and Sustainable Development.

<https://www.linkedin.com/in/dr-deepak-waikar-640a6521/>



Dr. Ajay Chandak, with over 30 years of rich academic experience and expertise extends encompassing research, consultancy, training, and mentorship within the realm of renewable energy and sustainability. Holdings a Ph.D. in Solar/Mechanical Engineering and an M.Tech from Indian Institute of Technology, Bombay (IITB), he also possess professional qualifications as Certified Energy Auditor and Chartered Mechanical Engineer. He served as a consultant to the United Nations HQ in New York and the Ministry of New & Renewable Energy (UNDP-GEF project) for one year each. He has also served as Director on the board of the "International Solar Energy Society" in Freiburg, Germany, and as a governing council member for SESI (Solar Energy Society of India). He is recognized as a Global Adviser for Solar Cookers International, USA, and was the proud winner of the National Grand Challenge for solar cooker design by DST, Government of India in October 2019. A recipient of the Gold Prize at WINTEX 2018 in Indonesia, Dr. Chandak has garnered accolades such as the first award in the individual category at ENCON for four consecutive years and the 'Certificate of Excellence in 2016' from the Government of Maharashtra. His contribution to innovations and developments in renewable energy has been acknowledged by prestigious organizations like the Institute of Engineers, Solar Cookers International, ICNEER, IITB Alumni Association, and the Government of India. Dr. Chandak initiated over 25 patents and the commercialization of various designs, including solar cookers, solar concentrators, biogas plants, biomass stoves, and float valves. With a global footprint, he has presented papers and projects at over 40 conferences in Germany, USA, Spain, Oman, Nepal, Portugal, Netherlands, and India. His prestigious clients for R & D work include "Oxford University U.K.", "Sun Buckets Inc USA", "CTARA IIT Bombay", ATE group, Elektromag group etc.

A specialist in training and mentoring entrepreneurs in renewable energy, Dr. Chandak founded PRINCE (Promoters, Researchers, and Innovators in New & Clean Energy). He started a company 'Chandak Innovations LLP,' where he supports both his innovations and those of others, providing a platform for researchers to transform ideas into products.

Mr. Gaurav Kumar Kedia is Hosting Chairman post at Indian Biogas Association from November 2011. He holds Managing Director



post at Arka BRENStech Pvt. Ltd. from December 2012. He is a guest faculty at Indian Institute of Management – Ahmedabad from January 2013. He is also member of the jury panel of MCIIE, IIT-BHU for the start-ups Since July 2017. He was Director at Excellent Renewable Pvt. Ltd., India from Apr 2009 – Oct 2011. He was acting CEO of en-Tech Solutions Pvt. Ltd., Delhi, India from Oct 2008 – Mar 2009. He worked as an Advanced Process Control Technologist at Shell Oil GmbH, Cologne, Germany from Jan 2006 – Sep 2008 along with promoting green energy. He also worked as a scientific co-worker at "Institute of Thermodynamics and Thermal Process Engineering", University of Stuttgart, Stuttgart from Jun 2003 – Dec 2005. He is a recipient of Global Green Award (Berlin, 2014) and Dr Shirin Gadhia Sustainability Award (Vadodara, 2015). He has presented research papers at the international conferences. He completed Master of Science (awarded in 2005), WASTE, Air Quality Control, Solid Waste and Wastewater Process Engineering, University of Stuttgart, Stuttgart, Germany and Bachelor of Technology (awarded in 2003), Chemical Engineering, Indian Institute of Technology - Banaras Hindu University (IIT-BHU), India.

Note:

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