

Enhancing Clean, Green, and Smart Learning Spaces in & around the Campus

Be Clean, Be Green and Make it a Routine – Deepak Gadhia & Deepak Waikar

Synopsis: The National Education Policy (NEP) 2020 emphasizes on the multidisciplinary programmes to prepare the engineering graduates for the 21st century. The clean and green technologies provide innovative solutions to 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, Texas Tech University, USA, Indian Biogas Association, and PRINCE-India have designed an application-oriented programme, specially, for the faculty members, Researchers, and PhD Scholars.

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 specially designed Learning and Capability Development 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.
- **Devised** action plan for incorporating the concept design.
- **Learned to leverage** on internal and external resources.

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
- Presentations by Participants
- Coaching and mentorship

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: 10 Sessions (One and half hours per week):

Starting Date 27th October (Wednesday) 2021, Time: 7 pm to 8.30 pm (IST).

Proposed Participation Fee:

Rs. 3,500 plus GST (Taxes) per participant (for IUCEE Consortium Member Colleges).

Rs. 5,500 plus GST (Taxes) per participant (for Non- IUCEE Consortium Member Colleges).

Proposed Schedule:

Week	Topic	Facilitator(s)
1	Briefing, Introduction, Objectives of I-FDP, Familiarisation with Canvas LMS, Assignments	Prof. Krishna Vedula, Er. Deepak Gadhia & Dr. Deepak Waikar
2	Clean, Green, and Smart Learning Spaces	Dr. Deepak Waikar & Er. Deepak Gadhia
3	Case Studies in Energy Auditing and Solar Thermal Applications	Dr. Ajay Chandak
4	Clean & Green Energy	Dr. Deepak Waikar
5	Solar Concentrators & Solar PV	Er. Deepak Gadhia & Associate
6	Case Studies in Waste Management & BioGas	Gaurav Kedia
7	Water Resources and Sanitation Management	Prof. Venki Udameri
8	Project Funding Schemes & Sample Feasibility Report	Dr. Ajay Chandak and Er. Gaurav Kedia
9	Concept Design and Plan Presentations by Participants	Moderated by Dr. Deepak Waikar with comments from Experts
10	Concept Design and Plan Presentations by Participants	

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.

Programme Designers/Facilitators:

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 Stiftuing 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. Deepak L. Waikar (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. (e-mail: deepak.waikar@iucee.org).

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

Dr. Venki Uddameri is a professor in the department of civil, environmental and



construction engineering at Texas Tech University where he also serves as the Director of the Texas Tech University Water Resources Center a university-wide center focused on sustainable water resources problems. He is also an Honorary Professor of the Faculty of Civil and Environmental Engineering at Jimma Institute of Technology, Ethiopia. He was elected as the Fellow of American Water Resources Association in the year 2020. He is currently the editor-in-chief of the Journal of American Water Resources Association (JAWRA) – a pre-eminent journal on multidisciplinary water resources research published by Wiley Interscience. He has been elected as the Fellow of the American Water Resources Association in the year 2020. Prior to Joining Texas Tech in 2012, Dr. Uddameri was a professor at Texas A&M University-Kingsville, for 11 years where he also headed the National Science Foundation (NSF) funded Center for Excellence in Science and Technology - Research on Environmental Sustainability in Semi-Arid Coastal Areas (CREST-RESSACA). His primary research interests are in the broad area of water resources with an emphasis on developing and applying mathematical modeling techniques to pressing water

resources problems. His current focus is on the use of stochastic risk assessment methods to assess risks to water systems under climate change and the use of Big Data and Physics-Inspired Machine Learning Methods for sustainable water resources engineering. He has authored over 100 peer-reviewed publications. He also has authored two textbooks and is in the process of writing another on water resources planning and management. Dr. Uddameri's research has conducted research in excess of \$18.0 Million and has received funding from a wide range of federal, state, local and international agencies such as the National Science Foundation (NSF), US Department of Agriculture (USDA), US Department of Defense (DoD), National Oceanic and Atmospheric Administration (NASA). In the year 2016 He was an invited panelist to discuss National Water Policy Organized by Office of Science, Technology and Policy (OSTP) of the President Obama's white house. He has made several invited presentations worldwide and recent organized a specialty conference on improving water infrastructure through adaptive resilience. Dr. Uddameri's has taught a broad range of courses at both undergraduate and graduate levels in the areas of fluid mechanics, engineering hydrology, surface water and groundwater hydrology, groundwater contaminant transport, Probabilistic Methods for Civil Engineers and Machine Learning for Civil Engineering. He leads the systems thinking initiative within the civil engineering department and has developed new graduate certification curriculum titled – Data and Informatics for Civil Engineers (DICE). Dr. Uddameri has active collaborations in many parts of the world including – Brazil, China, India, Oman and Ethiopia. In 2018 he was selected by the Government of India - Ministry of Human

Resources to present two short-courses on groundwater modeling and water resources informatics as part of their Global Initiative of Academic Networks (GIAN) program at IIT-Kharagpur and IIT-ISM (Dhanbad).

Dr. Ajay Chandak has 31 years of academic experience and parallel experience in renewable energy and Sustainability, Training and mentoring researchers and entrepreneurs in sustainability. He completed Ph.D. in



Solar/Mech., M.Tech from IIT Bombay, BE (COEP). He is a Certified Energy Auditor and Chartered Mechanical Engineer. He was consultant to United Nations HQ New York, and Ministry of New & Renewable Energy (UNDP-GEF project) for one year each. He also served as Director on board for "International Solar Energy Society "Freiburg, Germany for 2014 and 2015, Global Adviser for Solar Cookers International, USA. At present he is a "Governing Council" member for SESI (Solar Energy Society of India). He is a Winner of National Grand Challenge for solar cooker design by DST, Govt. of India Oct. 2019. He received Gold Prize at WINTEX 2018 in Indonesia, ENCON, first award in individual category for 4 years and 'Certificate of Excellence in 2016' received from Government of Maharashtra. Other Awards are from Institute of Engineers, Solar Cookers Internationals, ICNEER etc. for credential work in renewable energy, Innovation awards from IITB Alumni association and also from Govt. of India. He has initiated more than 25 patents and commercialized different designs of solar cookers, solar concentrators, biogas plants, biomass stoves, float valve etc. He presented

papers and projects at more than 40 conferences in Germany, USA, Spain, Oman, Nepal, Portugal, Netherlands & India. He was Indian Team leader for the Vocational Trade team to Netherlands in 2014. He specialises in training and mentoring of entrepreneurs in renewable energy. He started organisation PRINCE (Promoters, Researchers, and Innovators in New & Clean Energy). He organised many workshops (hands on training and classroom training) on “Entrepreneurship Opportunities in Renewable Energy”. He is involved in ongoing prestigious development projects for “Oxford University U.K.”, “Sun Buckets Inc USA”, “CTARA IIT Bombay” along with a few indigenous projects.

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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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