

Micro Renewable Energy Architecture

Overview

'Although used for millennia, standalone renewable power generators are not viable for most families today. This course examines why, and sets out a roadmap to integrate research with terrestrial mass market needs. The objectives are: (1) introduce the multidisciplinary opportunities in developing renewable power generation systems sized to the needs of a single family, (2) introduce a process to integrate technical knowledge and skills with policy issues and business opportunities into a viable architecture (3) build a testbed approach to generate scientific research and entrepreneurship in the micro-energy area.

Developed from a 2-credit course for all levels in engineering, sciences and management, the course starts with high school concepts. It introduces the language and economics of energy, the climate change debate, and policy relating to massively distributed generation. It teaches how to assess technical claims, and then explores several technologies and ideas. Examples from solar photovoltaic, thermal, thermoelectric, biomass, wind, and water based resources, as well as storage options based on kinetic energy, gravity, pressure, chemical batteries and electrolysis are discussed. The format is slide-based lectures interspersed with sample calculations and in-class discussions, plus on-line reading resources. No experiments are included, but the several testbeds integrating multiple technologies are discussed. Case studies compare energy realities in developed regions against less developed ones. A class project uses teamwork to develop a technical system plan. Each student will have the opportunity to develop a confidential final business plan at the end. Those interested will be guided to resources to learn in depth about individual research areas, while acquiring perspective towards the dream of *Urj Swavalambi*, energy self-reliance.

Dates for the Course	25th July, 2016 to 5th August, 2016
Host Institute	IIT Madras
No. of Credits	2
Maximum No. of Participants	50
You Should Attend If...	<ul style="list-style-type: none">▪ You are interested in learning how to integrate technology, policy and business issues with testbed development and research towards building micro renewable energy testbeds that will bring viable, stand-alone and micro-grid based energy independence to everyone in India.▪ You are an engineer with interests in any field of technology▪ You are an entrepreneur and desire a focused course that gives you access to the multidisciplinary aspects and resources to build a business in this area▪ You are a civil servant or policy maker interested in such a focused roadmap for rural micro-scale renewable, sustainable power.▪ You are a student, teacher or researcher interested in the education and research needed to make a micro-renewable energy architecture successful in India and then the rest of the developing world.
Course Registration Fees	<p>The participation fees for taking the course is as follows: Student Participants: Rs. 2000 Faculty Participants: Rs. 6000 Government Research Organization Participants: Rs. 10000 Industry Participants: Rs. 20000</p> <p>The above fee is towards participation in the course, the course material, computer use for tutorials and assignments. Mode of payment: Demand draft in favour of "Registrar, IIT Madras" payable at Chennai</p>
Accommodation	<p>The participants may be provided with hostel accommodation, depending on the availability, on payment basis. Request for hostel accommodation may be submitted through the link: http://hosteldine.iitm.ac.in/iitmhostel</p>

Course Faculty



Dr. Narayanan Komerath is a Professor in the Daniel Guggenheim School of Aerospace Engineering at Georgia Institute of Technology, Atlanta, USA. His interests are in experimental aerodynamics, propulsion and terrestrial micro renewable energy.



Dr. Satyanarayanan Chakravarthy is a Professor in the Department of Aerospace Engineering at Indian Institute of Technology. His interests are in combustion modeling and diagnostics.

Course Coordinator

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