भारतीय प्रौद्योगिकी संस्थान गुवाहाटी
Indian Institute of Technology Guwahati

Short Term Course

Recent Developments in Biomass Deployment Technologies for Energy, Fuel and Bio-products

February 8th -12th, 2021

Conducted by: Centre for Energy

Organized by:
Knowledge Incubation for TEQIP
Centre for Educational Technology
URL: http://www.iitg.ac.in/cet

ABOUT THE COURSE / EVENT

There is an ever increasing interest in developing biomass based technologies to meet our demand for energy, liquid fuels and products, while reducing environmental pollution, addressing climate change concerns, and security of supply issues. Globally, it has become an endeavor for establishment of bio-refineries that will convert biomass into a range of valuable fuels, chemicals, materials, and products, much like oil refineries and petrochemical plants do. This co-production strategy offers a more efficient, cost-effective, and integrated approach to the utilization of our nation's biomass resources. As a renewable resource, biomass is considered as either a feedstock or waste and due to government incentives, corporate sustainability goals and climate change initiatives, a majority of the conversion technologies use biomass to produce various forms of renewable energy, which includes electrical power, thermal energy, renewable natural gas, biodiesel, jet fuel, and ethanol. Biomass also can be used as a substitute for fossil fuels in the manufacturing of high value products including plastics, lubricants, industrial chemicals, and many other products derived from petroleum or natural gas. Biomass based technologies has the potential to manage the available biomass resources in several diverse routes and thus can provide innumerable prospects for economical and environmentally friendly solutions for meeting the growing demand for energy, fuel and bio-products.

The primary objective of this short term course is to share know-how of state of the art technologies for biomass conversion into various forms of renewable energy and bio-products. The course tends to provide the engineers and researchers an in-depth understanding of recent development made in biomass conversion technologies.

The course is intended to be multidisciplinary, reflecting the many scientific and engineering disciplines involved, and is anticipated to be very helpful for teachers, engineers and researchers thriving to consider the subject matter for teaching and research purpose. The pedagogy session is designed so as to enamor the participants with a comprehensive technical detail. It is aimed to inspire them and their students and audience to develop interest in process development, plant design, product formulation, entrepreneurship development, and commercialization routes related to biomass based technologies. The course shall be of five days. In addition to online lectures, online laboratory demonstrations have also been planned for the participants.

COURSE CONTENTS

- Technology options for biofuel from algae, challenges and potential
- Bio Energy Systems for Energy generation and Energy Storage
- Microalgae as bio factories for high value products and derived pharmaceutical
- Bioprocess engineering for biofuel
- Biofuel Cells for Power Generation and Biosensor Application
- Green engineering for energy, fuel and chemicals
- Biomass Gasifier for Thermal and Power applications
- Bioprocess for converting Natural Gas into Liquid Fuels (Bio-GTL)
- Genetic engineering of bioenergy plants
- Bio-inspired adaptive building envelope
- Biotransformation of waste to biofuels and other valuable products
- Research methodologies for promoting biomass technologies
- Development of catalyst for biotransformation
- The role of biomass and bioenergy in future economy
- Contribution of biomass technologies for societal up-liftment
- Online laboratory demonstrations of energy technologies

Topics to be covered

- Energy technologies for conversion of biomass to energy
- Bioinspired solar energy technologies
- Biotransformation process and catalyst for biofuel
- Algae for biofuel and bio-products
- Biological electrochemical system for power and biosensor applications
- Green engineering for energy, fuel and chemicals
- Plant tissue culture engineering for bioenergy plants
- Research methodologies and scope for societal contribution bioenergy technologies
- Online laboratory demonstrations of energy technologies

ELIGIBILITY

The course/event is open to Faculty members/Students (strike off, whichever is not applicable) from TEQIP mapped Institutions/Engineering Colleges/ATUs. No course fee is charged. TA & DA for the eligible participants will be reimbursed from their respective institutions.

BOARDING AND LODGING

Due to the pandemic situation, the Short Term Course is proposed to be conducted online. However, otherwise the boarding and lodging facilities (Guest House/Hostel rooms or other permissible accommodation) will be provided for the participants from TEQIP mapped institutions.

IMPORTANT DATES

The last date for the receipt of duly sponsored application:
By email: scanned copy: 31/12/2020
Hard copy must reach by: 07/01/2021
Refundable fee: 07/01/2021
Intimation of selection: 20/01/2021

SELECTION CRITERIA

Number of seats: 30
Selection will be based on ***First cum first serve basis*** and subject to the deposition of refundable fee (Rs 2000.00) in the form of demand draft in favor of **Registrar, IIT Guwahati, Guwahati, Assam 781039**.

ADDRESS FOR CORRESPONDENCE

Course Coordinator: Prof. Kaustubha Mohanty
Course Co-coordinator: Dr. Lepakshi Barbora

Center for Energy
Indian Institute of Technology Guwahati
Guwahati- 781 039
http://www.iitg.ac.in/ceer/rdbdt

Application Form

1. Name (block letters):

2. Sex: Male ☐ Female ☐

3. Category: General ☐ Reserved ☐

4. Highest Academic Qualification:

5. Specialization:

6. Designation & pay scale:

7. Name of the organization:

8. Experience:

(a) Teaching: (b) Industrial:

9. Address for communication:

Pin code: Mobile No.:

E-mail:

10. Choice of Accommodation: Guest House ☐

Hostel ☐ Will make my own arrangement. ☐

Please register me for the course on **"Deployment Technologies for Energy, Fuel and Bio-products"** to be held at IIT Guwahati.

I am sending an advance copy of this application by email to the coordinator of the course.

I undertake to send the Hard copy signed by the Head of my Institution along with the draft of refundable fee.

Place:

Date: *Signature of the applicant*

SPONSORSHIP / NOMINATION CERTIFICTE

Prof/Dr./Mr./Ms./Mrs./.....

.....

is an employee of our institute and his/her application is hereby sponsored/nominated. The applicant is permitted to attend the short-term course **"Deployment Technologies for Energy, Fuel and Bio-products"** at IIT Guwahati during 08/02/2021 to 12/02/2021 if selected.

I also certify that our institute/college is under the "Institution List" of 3rd phase of TEQIP Project of MHRD.

Date

Signature of Authority

Designation

Official Seal

Selected participants will be informed by e-mail. The duly sponsored/nominated application form should be mailed to:

Prof. Kaustubha Mohanty
Head, Center for Energy
Indian Institute of Technology, Guwahati
North Guwahati, Guwahati-781 039, Assam
Ph. No. 0361-3126/2267, Email: kmohanty@iitg.ac.in

ABOUT TEQIP

TEQIP conceived in pursuance of the NPE-1986 (revised in 1992) by Govt of India as a long term program to be implemented in different phases. After successful execution of TEQIP II, TEQIP III starts from 2017-18 as Central Sector Scheme with a focus on the Low Income States, Northeast, Hill States and Islands. The third phase of TEQIP is also special in a way that it incorporates twinning arrangements between mentee & mentor institutions with an emphasis on Focused Training (PT) and Focused Interventions from IITs in terms of deliverables and accountability. KIT, established at IIT Guwahati under 2nd phase of TEQIP is a focal point for training Faculty, Staff and students from TEQIP-III institutions in Knowledge Engineering, Content Creation, Improving Teaching, Pedagogy & administrative skills in identified niche areas/disciplines.

ABOUT KIT

KIT (**K**nowledge **I**ncubation Cell for **T**EQIP) at IIT Guwahati functions as a multi-disciplinary as well as interdisciplinary Innovation Incubation Centre with a focus to impart Knowledge, infusing innovation and leading a path to achieve academic excellence. Its activities are in the area of improving quality of technical education, incubator of Innovative Ideas; implementer of contemporary pedagogy practices and development of Learning Content in Technical institutions while mentoring them.

ABOUT IIT GUWAHATI

SNAP OF CAMPUS

IIT Guwahati campus is spread over a sprawling 785 hectares plot of green land on the north bank of the river Brahmaputra around 25 km from the heart of the city. With hills and vast open spaces, the campus provides an ideal setting for training. Details on how to reach IITG Campus are available on the institute website

Website: www.iitg.ac.in