



शिक्षा मंत्रालय
MINISTRY OF
EDUCATION

Global Initiative on Academic Network (GIAN) Programme

Tools and Techniques for Life Cycle Analysis of Biofuels

Overview

The exponential increase in global population and economic activity has led to an increase in demand for transportation fuels over the past several centuries. In order to address the impending energy challenge, there has been keen interest to develop low cost fuels. The use of biomass for energy (i.e. bioenergy) is deemed to be one of the most promising renewable energy alternatives. In particular, modern biomass applications are becoming increasingly important to countries as a low-carbon, distributed, renewable component of national energy sources. There is a growing interest in bioenergy at a national and global level, as proven by recent policy documents.

Despite the regulations to promoting biofuels, questions about sustainability of bioenergy pathways are raised. The conversion of biomass to bioenergy has input and output flows which may affect its overall environmental performances. In addition, indirect effects like land-use change and N-based soil emissions may contribute to complicate the overall picture.

The technique life-cycle assessment (LCA) is used to evaluate the energy efficiency of bioenergy production systems where system inputs and outputs are computed in terms of either C or energy equivalents to assess the net gains in energy or C offsets. In order to meet the goals of increased renewable fuel production and reduced GHG emissions, complete understanding of the energy efficiency and GHG fluxes of different feedstock is necessary. The upcoming GIAN programme will prepare the researchers to use the LCA techniques to estimate lignocellulosic bioethanol production and the associated energy and/or GHG balances.

Objective of the Programme

1. Exposing participants to the concepts and practices of life cycle analysis
2. Contribution of microorganisms in the bioenergy production and their role in LCA pathways analysis.
3. To understand the LCA techniques concerning prevalent Indian cropping systems and their contribution in the supply chain of biofuels
4. Motivating participants to conduct research in areas of life cycle analysis local opportunities and concerns.

Duration	Jan 27-31, 2025 Number of participants for the course will be limited to fifty.
You Should Attend If...	<ul style="list-style-type: none"> ▪ Engineers, Researchers, Executives and Personnel working on biofuel related research from organizations including R&D Institutions/Laboratories and Industries. ▪ Student at all levels (B.Tech./M.Sc./M.Tech./Ph.D./Post-docs) and Faculty from reputed academic institutions and research institutions. ▪ Applicants must have a basic working knowledge of environmental impact assessment and ecosystem services, biotechnology and microbiology ▪ Admittance to course is subject to selection and preference will be given to students and junior scientists
Fees	<p>The participation fee for the course is as follows:</p> <p>Participants from abroad : US \$500</p> <p>Industry/NGO and other participants: INR 5000/-</p> <p>Academic/Research Institutions: INR 3000/-</p> <p>Students and Ph.D. scholars: INR 1000/-</p> <p>The above fee includes all instructional materials and working lunch. The accommodation will be provided to outstation participants on payment basis.</p>
How to Register	<p>Register for course at registration link (https://forms.gle/fJZFFjpGGpjAezsu9). Registration fee can be paid through National Electronic Transfer (NEFT), to the account of Central University of Haryana GIAN ; Account No: 7824000100009605; IFSC Code: PUNB0782400, Branch: Jant Pali; Swift Code: PUNBINBBRR; MICR code: 123024106</p>

The Faculty



Dr. Gerfried Jungmeier is Key researcher on “Future Energy Systems and Lifestyles” JOANNEUM RESEARCH, LIFE – Centre for Climate, Energy and Society, Graz, Austria. He has more than 25 years research experience in the field of transportation fuels and systems, GHG balance of biomass and bioenergy systems, biorefinery, life cycle assessment, bioenergy, emission and energy balances, sustainable transportation systems. He has handled many public and industry funded projects on GHG emissions and carbon footprint for products and services; Development and assessment of biorefinery concepts; Biofuels (incl. biomethane) for transportation and biorefinery; EcoMobility with renewable fuels; Life cycle assessment (LCA) and life cycle sustainability assessment (LCSA) and scenarios for future sustainable energy and transportation systems



Prof. Surender Singh received his M.Sc. and Ph.D. in Microbiology from Indian Agricultural Research Institute (IARI), New Delhi before joining as Scientist (ARS) in IARI, New Delhi. He joined Central University of Haryana in 2018. His current research focuses on bioethanol production from lignocellulosic material including pretreatments strategies, cellulose enzyme production and thermotolerant yeast for SSF. He was also awarded with Young Scientist award 2015 by Association of Microbiologists of India (AMI), Young Scientist Award (2015-16) by National Academy of Agricultural Sciences (NAAS), New Delhi and Haryana Yuva Vigyan Ratan (2018) by Department of Science and Technology, Government of Haryana. Dr. Singh has been involved in 6 research projects funded extramurally by ICAR, DBT, DST and MoEF (Government of India). He is currently supervising 6 doctoral scholars and has supervised 25 PG dissertations in the past. He has authored more than 100 research articles, two books, and 25 book chapters.

The Host University and Department

The Central University of Haryana, Mahendergarh (Haryana) spanned over 484 acres of lush green campus in Aravalli Foothills (<https://cuh.ac.in/information-about-cuh.aspx>). The CUH offers 85 different programmes through 34 departments under 8 schools. The CUH is home to more than 4500 students from 25 different states. The CUH is one of the fastest growing research universities with an h-index of 53 and credited with 40 patents, 05 DST-FIST sponsored departments, 39 ongoing extramural projects, 50 functional MoUs and more than 300 consultancy projects.

The Department of Microbiology was established in June 2015 with the vision of bridging the gap between classical microbiology and applied aspects of microbiology with research on infectious diseases, immunology, biofuels and bioenergy. M.Sc and Ph.D. program in microbiology encompasses a wide area of study, consisting of immunology, medical microbiology, microbial genetics, virology, Environmental Microbiology Soil & Agricultural Microbiology, Industrial Microbiology, Microbial Physiology and Metabolism.

Patron: Prof. Tankeshwar Kumar, Vice-Chancellor CUH

Course Co-ordinator: Prof. Surender Singh

Local GIAN Coordinator: Prof. Gunjan Goel

Organizing Team: Prof. Vikas Beniwal, Dr. Avijit Pramanik, Dr. Puja Yadav, Dr. Jitendra Kumar Saini, Dr. Vinod Yadav

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