



# Biotechnology and Process Engineering for Biofuels Production



## Overview

The world is confronting serious problems with increasing energy demand, rising oil prices and depletion of fossil fuel reserves. Researchers are investigating production of green fuels from the resources which is less expensive, and helps in bioremediation. Biofuels production from organic substrates using microbes is considered the most recent Bioenergy source. Production of H<sub>2</sub> and metabolites from algae is very attractive. The fluid dynamics of the fermented liquid for the specific geometry of reactor and pattern of heat transfer throughout the bioreactor plays role towards higher yield of biofuels production. Development of efficient manufacturing processes for preparing novel polymeric biomaterials, production of H<sub>2</sub>; detailed understanding of behaviour of microbial cells with respect to process engineering and optimization towards development of efficient technology is the need of the hour. This course would target towards achieving this goal. This course will cover following topics:

- Microbiology and Biochemistry of microbe that produces Biofuels
- Algal Biorefinery: Metabolites, Biofuels and process engineering
- Microbial Electrochemical Cell: process and material development
- Photosynthetic Bacteria: Biopolymer production of industrial interest
- Biological hydrogen production by various routes
- Bioenergy production from renewable resources
- Optimization of process engineering for Biofuels production
- Specific case studies in designing Bioreactors/ Photobioreactors

<b>Modules</b>	Biotechnology and Process Engineering for Biofuels Production <b>16<sup>th</sup> May to 25<sup>th</sup> May, 2016</b> at Dr B R Ambedkar NIT Jalandhar <b>Number of participants for the course will be limited to fifty.</b>
<b>You Should Attend If...</b>	<ul style="list-style-type: none"><li>• Biotechnologists &amp; Bioprocess Engineer</li><li>• Botanists, Agricultural Scientist, Microbiologists</li><li>• Chemical Process Engineer, Material Scientists</li><li>• Students or Faculty from academic institutions</li><li>• Scientists and product developers from Industry/Research organization</li></ul>
<b>Fees</b>	The participation fee for taking the course would be: Academic Institutions: Rs. 3,000/- Students: Rs 2,000/- Industry/Research: Rs.3,500/- Participants from abroad: US\$200 The above fee includes the instructional materials, internet facility and snacks. The Boarding and Lodging will be provided on payment basis subject to availability.

# The Faculty



**Professor Roberto De Philippis** is Professor ([roberto.dephilippis@unifi.it](mailto:roberto.dephilippis@unifi.it)), in Microbial Biotechnology, Department of Agrifood Production and Environmental Sciences of the University of Florence, Italy. He has 37 years of research & teaching experience in Microbial Biotechnology. He is author of more than 90 publications, on International reviewed journals. He edited 1 book and published 13 chapters in books. His research area includes studies on biochemistry of photosynthetic bacteria and processes related to energy production from renewable resources. He was hosted, as visiting scientist, in China, India, Israel, Mexico, Portugal, Brazil, Canada and USA. He is President of the International Society for Applied Phycology.



**Professor Debabrata Das** is Senior Professor ([ddas.iitkgp@gmail.com](mailto:ddas.iitkgp@gmail.com)) in the department of Biotechnology, IIT Kharagpur. He has 4 patents, published 2 books and 120 research papers in international journals and is expert in Biohydrogen production, Biorefinery, microbial electrochemical cell. He is winner of Akira Mitsue Award (2008) International Association of Hydrogen Energy (IAHE) and Malaviya Memorial Award (2013) from Biotechnology Research Society of India. He is fellow of West Bengal Academy of Science and Technology (WAST), Biotechnology Research Society of India (BRSI), Institute of Engineers, India (IE), Indian National Academy of Engineering (INAE). He has foreign collaborations in USA, Italy, Norway, Germany, Denmark, and Sweden. He has guided 16 PhD.



**Dr Nitai Basak** is Associate Professor in the Department of Biotechnology at DR B R Ambedkar National Institute of Technology, Jalandhar (India). He has contributed more than 37 research papers in International & National journals and Conferences. His research area includes Bioprocess Engineering and Optimization, Enzyme and Protein Engineering, Biological Hydrogen production, Biomaterials and Drug design, Separation and Purification Technology.



**Dr Asim Kumar Jana** is Professor in the Department of Biotechnology at DR B R Ambedkar National Institute of Technology, Jalandhar (India). He has contributed more than 100 research papers in International & National Journals and Conferences. His research area includes Bioprocess Engineering, Enzyme Technology, Environmental Biotechnology, Fermentation Technology, Bioremediation and Biomaterials.

## Course Co-ordinator

**Dr Nitai Basak, Associate Professor,  
Department of Biotechnology, Dr B R Ambedkar NIT Jalandhar  
Email: - [basakn@nitj.ac.in](mailto:basakn@nitj.ac.in), Phone: +91 9417338290**

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**Dr Asim Kumar Jana, Professor,  
Department of Biotechnology, Dr B R Ambedkar NIT Jalandhar  
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<http://www.gian.iitkgp.ac.in>, <http://www.nitj.ac.in>

## Registration Process

### **151024B01: Biotechnology and Process Engineering for Biofuels Production**

#### **Step 1: One time Registration**

Registration for GIAN courses is not free because of constraint in the maximum number of participants allowed to register for a course. In order to register for any course under GIAN, candidate will have to get registered one time first to GIAN Portal of IIT Kharagpur using the following steps:

1. Create login and password at <http://www.gian.iitkgp.ac.in/GREGN/index>
2. Login and complete the registration form.
3. Select courses
4. Confirm your application and payment information.
5. Pay Rs. 500/- (non-refundable) through online payment gateway.
6. Download and print “pdf file” of your enrolment application form for your personal records and copy of the same to be sent to the course coordinator.

#### **Step 2: Institute Registration**

1. Institute registration process is an offline process. Interested candidates are requested to download the Registration Form ([docx/pdf](#))

2. Course Fee (**Non-refundable**):

Participants from abroad: **US \$200.**

Students/Research Scholars: **Rs. 2000/-**

Faculty/Staff of Academic Institutions: **Rs. 3,000/-**

Industry/Research Personnel: **Rs. 3,500/-**

3. The Registration fee has to be paid via **Cheque/ Demand Draft/ NEFT**, in favour of “**GIAN: Biotechnology and Process Engineering for Biofuels Production**” payable at Jalandhar, Account number 65249146477.

4. Scan copy of the filled in “**Registration Form**” along with scan copy of “**Demand Draft/ receipt of NEFT**” and Application form generated in **Step 1** must be sent via email to the Programme Coordinator of the programme [basakn@nitj.ac.in](mailto:basakn@nitj.ac.in), on or before **May 09, 2016**.

5. Hard copy of the above mentioned documents must reach to the Programme Coordinator of the programme on or before **May 11, 2016**.

## HOW TO APPLY:

1. Registration form should accompany **demand draft(s)** of respective registration fees(non-refundable) and/or accommodation fees(non-refundable) as applicable, which should be **drawn in favour of “GIAN: Biotechnology and Process Engineering for Biofuels Production” payable at Jalandhar** Payment can also be done through **National Electronic Funds Transfer (NEFT) to the account of “GIAN: Biotechnology and Process Engineering for Biofuels Production” (Account No 65249146477; Bank: State Bank of Patiala, NIT Campus, IFSC Code: STBP0000841)**
2. Scanned copy of duly filled up registration form, and the demand draft/NEFT must be emailed to the coordinator to **basakn@nitj.ac.in**, before **May 09, 2016**.
3. Hard copy of the form and draft must also be sent by post/courier to Dr. Nitai Basak, Associate Professor and Course Coordinator GIAN, Department of Biotechnology, Dr. B.R.Ambedkar National Institute of Technology, Jalandhar-144 011, Punjab before **May 11, 2016**.
4. **Selection will be made purely on First Come First Serve basis.** (Subject to fulfilling the seats available).
5. **Maximum fifty (50) participants** will be accommodated in the course.
6. The brochure and the registration form may be downloaded from the Institute website [www.nitj.ac.in](http://www.nitj.ac.in).

## IMPORTANT INFORMATION:

1. The students will obtain **academic credits for this course** based on the evaluation and grading process. The host institute will only provide information on the grading system, subject syllabus, and the academic policy. The home university of the student will be mainly responsible for transferring academic credits.
2. As per the host Institute and instruction from GIAN, the course consisting of 30 lectures is of TWO credits. This credit can be included in the student’s marks for seminar/presentation/college tour or any other suitable subject as per the participating Institute/ College rules and regulation.
3. Participants will be provided registration kit & course material covering the entire course.
4. After successful completion of the course, all participants will get participation certificates. Those participating in examinations will get completion certificates with grades and credits.
5. **No TA, DA will be provided to the participants.**
6. **Limited accommodation are available in the Institute campus which will be provided on First come and first serve basis on payment mode.**
7. **Additional Fees for Accommodation (if required):**
  - **Rs 250/day for Students**
  - **Rs 500/day for Faculty (Guest House-Twin Sharing basis)**
  - Food on actual basis
8. List of selected participants will be available on institute website.