



AICTE -Training and Learning (ATAL) Academy



Sponsored Five Day Faculty Development Programme (FDP)

on

***Bio-hydrogen Production & Technology Development: A future
renewable energy source***

11th – 15th January, 2021



Organized by

Department of Biotechnology

Motilal Nehru National Institute of Technology (MNNIT) Allahabad
Prayagraj, Uttar Pradesh, India – 211004

www.mnnit.ac.in

About the Institute

Motilal Nehru National Institute of Technology Allahabad, Prayagraj (MNNIT) is an institute with total commitment to quality and excellence in academic pursuits. It was established as one of the seventeen Regional Engineering Colleges of India in the year 1961 as a joint enterprise of Government of India and Government of Uttar Pradesh, and was an associated college of University of Allahabad, which is the third oldest university in India. For a short duration of two years (2000-2002), the institute was affiliated to U.P. Technical University.

On June 26th 2002, MNREC was transformed into National Institute of Technology and Deemed University fully funded by Government of India. With the enactment of National Institutes of Technology Act-2007, the institute has been granted the status of the institution of national importance on 15th August 2007.

About the Department

Biotechnology at MNNIT Allahabad was established as a new academic unit under Applied Mechanics in 2006, with the objective of integrating life sciences with engineering and to develop cutting-edge technology through research, training and technological innovation. Initially as a part of the Department of Applied Mechanics, an administratively independent Department of Biotechnology was established in April, 2012. Since its inception, the department has witnessed a consistent rise in the students' demand for the subject. Keeping a beat to the global demands for researchers in this field, a full-fledged postgraduate degree course (M. Tech.) in Biotechnology was introduced in the year 2010. The department has also started a Ph. D. program in biotechnology since 2009.

About the FDP course

The FDP on “Bio-hydrogen production & technology development: A future renewable energy source” is aimed to provide information regarding the emerging field of bio-waste conversion to renewable energy “BIO-HYDROGEN” (carbon-free energy). This potential energy fuel can be used to fulfill the demand of present and future populations along with bio-waste reduction. More than 90% of commercial hydrogen is generated by steam reforming of natural gas that adds tones of CO₂ gas in the environment. The intent of this FDP is to promote healthy discussion regarding bio-waste transformation to eco-friendly hydrogen energy by naturally occurring potent microbes (a small bioreactor) instead of the steam reforming process. The valuable lectures will be delivered by eminent faculty members of academia & provide a forum for the exchange of knowledge & learning. The main objective of the FDP course is to help in imparting quality technical education in the country and to support technical institutions in fostering research, innovation, and entrepreneurship through training. The course will definitely provide positive impact on the participants who are in the practice of this qualitative emerging field or interested in this field.

Topics to be Covered

- Basics of microbes & microbial metabolic pathways
- Potential bio-wastes for bio-hydrogen production
- Direct & indirect photolysis of water
- Dark-fermentation
- Photo-fermentation
- Integrated process: A biorefinery approach
- Tools and techniques used in bio-hydrogen production for data analysis
- Process optimization & strategies for enhanced yield & rate of bio-hydrogen production
- Reactor design and its operation
- Bio-waste management & COD reduction
- Online demonstration of bio-hydrogen production using 1L fed batch bioreactor
- Socioeconomic analysis
- Mental & emotional development, stress management

Target Audience

Faculty Members of AICTE approved institutes; Research Scholars, Students of both Professional and science backgrounds; Professionals of government agencies; Industry professionals.

Venue

The programme will be organized online on **Microsoft Teams platform** (Link/ Team ID will be shared to registered participants).

Registration

The registration for the course is free of cost for all the participants and interested candidates can register by visiting the link <https://www.aicte-india.org/atal> or scan the QR code.



Consent to participate

After registration the candidates have to provide their consent for participation to the coordinator by visiting the link

<https://docs.google.com/forms/d/e/1FAIpQLSe04TPZdP8fs4d6dl25--3PbHEslp3q-MoFHRsBMXQrZxAecq/viewform> or scan the QR code.



***Last date for registration and consent is Jan 04th, 2021.**

****Selected participants will be intimated through mail by Jan 08th, 2021.**

Other relevant information for participants

- Seats are limited (maximum up to 200) & participants will be selected on the first come first serve basis.
- After successful completion of the FDP course, a test will be conducted by the coordinator for the assessment of each participant.
- The certificates shall be awarded only to those participants, who have attended the course with minimum of 80% attendance and scored minimum 60% marks in the test.

Schedule

Date	10:00 AM to 11:30 AM	11:30 AM to 12:00 PM	12:00 PM to 01:30 PM	01:30 PM to 02:30 PM	2:30 PM to 4:00 PM	4:00 PM to 4:30 PM
11/01/2021	Inauguration	Break	Session 1 Professor R.S. Dubey Introduction & advancements in the area of renewable energy	Break	Session 2 Professor Anjana Pandey Bio-hydrogen production history & advancements	-
12/01/2021	Session 3 Dr. Archana Tiwari Application of direct and indirect photolysis in bio-hydrogen production	Break	Session 4 Dr. Archana Tiwari Introduction to photo-fermentative organisms & metabolic pathways	Break	Session 5 Dr. Archana Tiwari Introduction of key factors affecting the photo-fermentation process	-
13/01/2021	Session 6 Dr. Pallavi Sinha Microbial potential participating in dark fermentation process	Break	Session 7 Dr. Pallavi Sinha Biochemistry of dark fermentative bio-hydrogen production	Break	Session 8 Dr. Pallavi Sinha Role of potential bio-waste in bio-hydrogen production	-
14/01/2021	Session 9 Professor Anjana Pandey Process optimization of bio-hydrogen production & metabolic pathways	Break	Session 10 Professor Anjana Pandey Theoretical software, design of experiments & demonstration of bio-hydrogen production set up	Break	Session 11 Professor Anjana Pandey Bioreactor design & operation, tools and techniques, data analysis & interpretation	-
15/01/2021	Session 12 Dr. Akhilesh Tiwari Role of yoga in mental, emotional development, stress management, human values & ethics	Break	Session 13 Dr. Akhilesh Tiwari <u>Importance and value of yoga & meditation in our life</u>	Break	Session 14 Miss Saumya Srivastava Introduction to instrumentation for hydrogen production and analysis *Performance evaluation & feedback	Valedictory function

Contact persons

Patron

Prof. Rajeev Tripathi

Director

Motilal Nehru National Institute of Technology (MNNIT) Allahabad,
Prayagraj, Uttar Pradesh, India - 211004

Programme Coordinator

Prof. Anjana Pandey

Department of Biotechnology,

Motilal Nehru National Institute of Technology (MNNIT) Allahabad,
Prayagraj, Uttar Pradesh, India - 211004

Email: anjanap@mnnit.ac.in

Contact No: 9452690849

Local Organizing Committee

Saumya Srivastava

Priya Rai

Vandita

Nahid Rehman