AICTE TRAINING AND LEARNING (ATAL) ACADEMY SPONSORED

One-Week OFFLINE Faculty Development Program on

Solar Effect on Climate Dynamics and Renewable Energy towards Sustainable Solutions

November 18 – 23, 2024

Organized by

Department of Applied Electronics and Instrumentation Engineering (NBA Accredited)

HALDIA INSTITUTE OF TECHNOLOGY

(An Autonomous, NAAC Accredited Grade 'A' Institute, affiliated to Maulana Abul Kalam Azad University of Technology)

ICARE Complex, Hatiberia
Haldia, Dist-Purba Medinipore, WB,
Pin-721657

About the Institute

Haldia Institute of Technology (An Institute of ICARE, Haldia, Approved by AICTE, and Affiliated to MAKAUT) began its journey in the year 1996. It is the first private and accredited academic institution catering technical education in West Bengal. The Institute is situated at Haldia – an industrial hub in Eastern India. The institute offers 4 years UG (B. Tech) degree courses in AEIE, AG, EE, ECE, CE, ME, IT, CSE, CHE, BT, FT, CSE - Cyber Security, CSE - Data Science and CSE - AI & ML. It also offers PG courses in CHE, CSE, ECE, BT, ME, MBA and MCA. It has been accredited with grade "A" by NAAC and all of the departments are NBA accredited.

ATAL Academy

AICTE Training and Learning (ATAL) Academy is established with the vision "To empower faculty to achieve goals of Higher Education such as access, equity and quality". AICTE is committed for the development of quality technical education in the country by initiating various schemes launched by Govt. of India, Ministry of Human Resource Development. Training is required for increasing the knowledge and skills of students to make them more employable to acquire global competencies.

About the Department

The Department of Applied Electronics and Instrumentation Engineering was established in 1996, with the Vision to become a dynamic contributor to the community by ensuring excellence in academic and research in the field of Applied Electronics and Instrumentation Engineering and to create an environment that will facilitate the growth of individuals in this field through innovative teaching, research and involvement of industry.

About the FDP

Climate change, both natural and human-caused, poses significant threats to ecosystems, economies, and cultures worldwide. Solar radiation is a key natural force, and understanding its impact on weather patterns, short-term and long-term changes is crucial for developing effective climate models and mitigation plans. Improving solar energy systems' efficiency, storage, and distribution is essential for renewable to become the global power generation benchmark.

The FDP aims to enhance faculty members' knowledge and teaching skills in solar influence on climate systems and renewable energy technology integration, encouraging collaboration on research projects and enhancing research and development abilities.

Objective:

- Understanding Sun's internal dynamics and Sun – Earth connection.
- Understanding fundamental principles of solar radiation.
- Knowledge of various renewable energy sources, focusing on solar energy.
- Enhancing climate change predictions accuracy and minimizing effects.
- Promoting development of solar and renewable energy technologies towards a sustainable energy future.

Course contents

- Sustainable Energy aspects
- Parameters to be considered for Energy Crisis
- Green Environment and conservation of natural environmental resources
- Global warming, climate change and natural disaster
- Recent Challenges in Renewable Energy Sources
- Climate Change and Sustainable Development
- Research challenges in Solar Thermal Energy Storage
- Research challenges in use of Nanomaterials for energy applications
- Energy, Environment and Advances in Phase Change Materials
- Computational modelling of energy systems

Outcomes

The outcomes of the FDP include improved student learning, a rise in the number of research activities, and a strengthening of institutional reputations in the field of energy and climate education. The purpose of this program is to generate a domino effect by strengthening the capacities of academic members, expanding research, and contributing to the development of solutions for carbon emissions and sustainable energy.

Target Participants:

Faculty members from AICTE approved institutions, Research Scholars, Industry personnel and PG students, Participants from Government, Industry Bureaucrats / Technicians / Professionals.

- External participants who travel more than 20KM to attend FDPs and attend at least 90% of the sessions will receive Rs. 1600/- for travel. Working lunch will be provided.
- No registration fee.

Requirements to get Certificate

Continuous Comprehensive Assessment of Candidates will be conducted, and a certificate will be granted if they score at least 70% in the following weightage areas.

- Attendance - minimum 80% attendance - (individual) - weightage 50%.
- One assessment - combination of MCQs/short answer type/reasoning based, etc. (Individual) - weightage 30%.
- Report/outcome of industry visit- (Team) - weightage 20%.

Resource Persons

Prof. (Dr.) Bhanu Bhusan Khatua. Professor, Materials Science Centre Indian Institute of Technology Kharagpur
Er. Chandra Prakash Engineer-E (Electronics) Aryabhatta Research Institute of Observational Sciences, Nainital
Prof. (Dr.) Chandan Kumar Chanda Professor (HAG), Dept. of EE, IIEST, Shibpur
Prof. (Dr.) Ratan Mandal Dean - Faculty of ISLM and Director & Professor, School of Energy Studies Jadavpur University, Kolkata
Dr. Sankar Narayan Patra Associate Professor, Dept. of IEE Jadavpur University, Kolkata
Dr. Koushik Ghosh Assistant Professor, Dept. of Mathematics UIT, University of Burdwan, Burdwan
Dr. Tamal Basak Assistant Professor. Indian Centre for Space Physics, Kolkata
Dr. Santanu Maity Assistant Professor, School of Advanced Materials, Green Energy and Sensor Systems IIEST, Shibpur.
Dr. Aashish Kumar Bohre Assistant Professor, Dept. of EE, National Institute of Technology Durgapur
Dr. Aniruddha Bhattacharya Assistant Professor, Dept. of EE National Institute of Technology Durgapur

Chief Patron

Dr. Lakshman Chandra Seth, D. Litt.
Chairman,
Haldia Institute of Technology

Advisory Committee

Sri Sayantan Seth, Vice Chairman, HIT
Sri Asish Lahiri, Secretary, HIT
Prof. (Dr.) Subrata Mondal, Principal, HIT
Dr. Anjan Mishra, Registrar General, HIT
Prof. (Dr.) Tarun Kanti Jana, Dean, SoE, HIT
Sri Sudipta Kr. Basu, Finance Manager, HIT

Coordinator

Dr. Soumya Roy
Associate Professor, Department of AEIE, HIT
Mob: 8900506630
Email: soumyaroy.burdwan@gmail.com

Co-Coordinator

Dr. Moumita Sahoo
Assistant Professor, Department of AEIE, HIT
Mob: 9433414569
Email: mou.sahoo@gmail.com

Organizing Committee

All the Faculty and Staff members of AEIE Department, Haldia Institute of Technology

Detailed Schedule

18.11.2024 [Monday]	19.11.2024 [Tuesday]	20.11.2024 [Wednesday]	21.11.2024 [Thursday]	22.11.2024 [Friday]	23.11.2024 [Saturday]
9:00 – 9:30 **Inauguration**					
9:30 – 12:00 **Session 1** "Designing High performance Energy Harvesting and Energy storage Materials: Piezoelectric nanogenerarators and Supercapacitors" - Prof. (Dr.) Bhanu Bhusan Khatua.	**9:30 – 12:00** **Session 3** "Understanding Inertia in a smart grid : It's challenges and solutions" - Prof. (Dr.) Chandan Kumar Chanda.	**9:30 – 12:00** **Session 5** "Analysis of different Solar based HRES Systems" - Dr. Aashish Kumar Bohre.	**9:30 – 12:00** **Session 7** "Impact of Solar Activity Cycle on Earth's Climate" - Dr. Koushik Ghosh.	**9:00 – 1:00** **Industrial visit** Haldia Energy Limited, Jhikurkhali, Haldia, West Bengal 721658	**9:30 – 12:00** **Session 10** "Prediction of solar activity cycle using deep learning based long forecasting technique" - Dr. Sankar Narayan Patra.
12:00 – 1:00 **Article Discussion**	**12:00 – 1:00** **Article Discussion**	**12:00 – 1:00** **Article Discussion**	**12:00 – 1:00** **Article Discussion**		**12:00 – 1:00** **Article Summary**
1:00 – 2:00 **Lunch**	**1:00 – 2:00** **Lunch**	**1:00 – 2:00** **Lunch**	**1:00 – 2:00** **Lunch**	**1:00 – 2:00** **Lunch**	**1:00 – 2:00** **Lunch**
2:00 – 4:30 **Session 2** "Anthropogenic Emissions Influence the Solar Power Generation" - Er. Chandra Prakash.	**2:00 – 4:30** **Session 4** "Industrial Compatible Crystalline Silicon Solar Cells" - Dr. Santanu Maity	**2:00 – 4:30** **Session 6** "Impact of Solar Power to reduce Fossil fuel consumption in power system considering its dynamics" - Dr. Aniruddha Bhattacharya.	**2:00 – 4:30** **Session 8** "Monitoring of sub-ionospheric Very Low Frequency (VLF) signal: a systemized tool for remotely scrutinizing the D-region ionosphere during solar energetic incidences" - Dr. Tamal Basak	**2:00 – 4:30** **Session 9** "Solar Photovoltaic as Emerging Technology for Sustainable Energy Solution and Future Trends of Research" - Prof. (Dr.) Ratan Mandal.	**2:00 – 4:00** **MCQ & Reflection Journal**
4:30 – 5:30 **Hands on training /Labs** **[Computer Lab]**	**4:30 – 5:30** **Hands on training /Labs** **[IoT Lab]**	**4:30 – 5:30** **Hands on training /Labs** **[Computer Lab]**	**4:30 – 5:30** **Hands on training /Labs** **[AICTE HIT IDEA Lab]**	**4:30 – 5:30** **Hands on training /Labs** **[Computer Lab]**	**4:00 – 5:00** **Valedictory Session**