

Short Course on **SOLAR ENERGY**

Basics and Applications



07-09 March 2024



ME Seminar Room, Heat Engine Lab (First Floor)
RUET, Rajshahi-6204, Bangladesh.

Welcome to our comprehensive short course on solar energy, an exciting journey into the world of sustainable power. In this engaging program, participants will explore the principles and practices behind solar energy generation, from photovoltaic systems to solar thermal technology. Our expert-led sessions will cover everything from the basics of solar panels to the complexities of solar power storage and its integration into existing energy grids.

Throughout the course, you'll gain hands-on experience through practical demonstrations that allowing you to grasp the field level application of solar energy concepts. Additionally, learn about the environmental benefits, cost-efficiency, and the latest advancements driving innovation in the solar energy industry.

Participating in a solar energy short course equips graduate students with essential skills (installation, system design, maintenance) and industry insights, enhancing employability. Networking opportunities and certifications obtained amplify market credibility, benefiting graduates from diverse backgrounds, positioning them for successful careers in the expanding renewable energy sector.

Whether you're an industry professional seeking to expand your knowledge or an enthusiast eager to explore the future of renewable energy, this course is tailored to provide invaluable insights and expertise in the exciting field of solar energy.

Join us on this educational journey as we harness the power of the sun and unlock the potential of sustainable energy sources for a brighter, greener future.

Registration Fees and Procedure

Interested people participating in the short course are requested to complete a registration form that is available on the institute website <https://www.iees.ruet.ac.bd/> The registration fee for each participant is BDT 2000.00 and should be paid no later than 05 March 2024. The registered participants will be provided with event materials, refreshments, lunch pack, and tea during the sessions.



Organized by
Institute of Energy and Environmental Studies (IEES)
Rajshahi University of Engineering & Technology (RUET)
Rajshahi-6204, Bangladesh



Program Schedule

Day	Time	Topics	Resource Persons
Day 1 (7 March 2024, Thursday)	09:00 AM-10:00 AM	Reporting of Registered Participants, Short Course Materials Collection & Inauguration Ceremony	
	10:00 AM-10:30 AM	Refreshment	
	10:30 AM-11:20 AM	Introduction to Solar Energy: Status of renewable energy sources, importance and potential of solar energy in Bangladesh.	Prof. Dr. Engr. Md. Jahangir Alam Vice-Chancellor, RUET
	11:30 AM-12:20 PM	Solar Radiation and Resource Assessment in Bangladesh: Fundamentals of solar radiation, detailed understanding of sunlight as an energy source, measurement techniques. Geographic and seasonal variations in solar energy availability in Bangladesh. Global trends in solar technology, Bangladesh's current energy scenario, government policies, and initiatives promoting solar energy.	Dr. Md Shazib Uddin Assistant Professor, Dept of ME, RUET
	12:30 PM-01:20 PM	Semiconductor Fundamentals & Basics of Solar Photovoltaics: History of solar cell technology, generations of solar cells, semiconductor materials specifically used in solar photovoltaics, mechanism of electron-hole pair generation and recombination in semiconductors, carrier injections in photovoltaic p-n junctions.	Mst. Farzana Khatun Assistant Professor, IEES, RUET
	01:20 PM-02:30 PM	Prayer & Lunch Break	
	02:30 PM-03:20 PM	Solar Photovoltaic Characteristics: Basic principles and working mechanism of solar cells, differentiating between dark and illuminated characteristics of solar cells, explanation of solar cell output parameters, efficiency limits, and measurement methods.	Prof. Dr. Md. Faruk Hossain Dept. of EEE & Director of RE, RUET
	03:30 PM-05:30 PM	Lab Demonstration	
Day 2 (8 March 2024, Friday)	08:30 AM-10:00 AM	Solar PV Components and Equipment: Types of solar technologies suitable for Bangladesh, components of a solar PV system: panels, inverters, batteries. quality standards and considerations for choosing equipment. Off-Grid and On-Grid Solar Systems: Off-grid solar systems: standalone solutions, on-grid solar systems: feeding power to the national grid, pros, and cons of each system in the context of Bangladesh.	Dr. Md. Rabiul Islam School of Electrical, Computer, and Telecommunications Engineering University of Wollongong, Australia.
	10:00 AM-10:30 AM	Refreshment	
	10:30 AM-11:20 AM	Transparent Solar Panels: Basics of the Transparent Solar Cells, Potential Impact and Developments of Transparent Solar Cells, Brief Discussion on Transparent Solar Panels, Impacts of Transparent Solar Panels over Traditional Solar Panels, Future Aspect of Transparent Solar panels.	Prof. Dr. Muhammad Abdul Goffar Khan Dept. of EEE, RUET
	11:30 AM-12:30 PM	Operation of Solar PV Systems Running in Bangladesh: Solar parks, rooftop solar, solar irrigation, solar home system (SHS), solar mini-grid, solar streetlights, solar-powered telecom BTS, and solar charging stations. Maintenance of Solar Systems: Importance of regular maintenance for optimal performance. Troubleshooting common issues in solar systems.	Mr. Robel Ahmed Lecturer, IEES, RUET
	12:30 PM-02:30 PM	Prayer & Lunch Break	
	02:30 PM-04:30 PM	Lab Demonstration	
Day 3 (9 March 2024, Saturday)	08:30 AM-09:30 AM	Modern Solar Thermal Energy System: Principles of solar thermal energy conversion, different types of solar collectors (flat plate, concentrating collectors), solar thermal energy storage system applications of solar thermal energy in heating water, space heating, air conditioning, and industrial processes. overview of concentrating solar power (CSP) generation systems, and their working principles.	Prof. Dr. Md Rabiul Islam Sarker Head, Dept of ME, RUET
	09:30 AM-10:00 AM	Refreshment	
	10:00 AM-11:00 AM	Solar Energy Projects and Sustainable Development Goals (SDGs) in Bangladesh: Case studies of successful solar energy projects in Bangladesh, Overview of applications of solar energy in rural electrification, agriculture, and industries, the contribution of solar energy towards sustainable development, addressing energy access and environmental concerns. Challenges and Solutions in Solar Energy Implementation: Common challenges faced in implementing solar projects, solutions, and strategies to overcome barriers.	Prof. Dr. Mohammad Rofiqul Islam Dept of ME & Director of IEES, RUET
	11:10 AM-01:30 PM	Site Visit	
	01:30 PM-02:30 PM	Prayer & Lunch Break	
	02:30 PM-04:00 PM	Discussion, Certificate Giving & Closing Ceremony	



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