



## AUA-IITB Overseas Study Programme 2021 – Sustainable Energy Systems

**When:** 5<sup>th</sup> July 2021 to 16<sup>th</sup> July 2021

**Where:** Indian Institute of Technology Bombay (IIT Bombay), India

**Who:** Undergraduate (final year students), Postgraduate (open for all students), and PhD students

**Why:** Over the last two decades, IIT Bombay has been at the forefront of energy education and research. Based on this vast experience, this online course will provide the students with an overview of the various renewable energy conversion and storage technologies. Various sustainability and climate related aspects will be discussed along with equipping the students with knowledge on evaluating alternatives based on economic and environmental aspects. There will also be virtual visits to the labs and energy system installations in the institute campus in India. The course will therefore give the students a strong exposure to the current energy scenario, with particular focus on the AUA countries, and help them develop a perspective by comparing the energy scenario in their country with that in the other AUA countries. This shall lead to the students being prepared to participate as engineers or policy makers in the energy transitions towards a more sustainable society.

### **Program Schedule:**

*Morning sessions: 11:30 am to 1 pm (India time)*

*Afternoon sessions: 2 pm to 3:30 pm (India time)*

Date	Time	Topic
05-Jul-21	11:30 am to 1 pm	Course introduction; World energy scenario
	2 pm to 3:30 pm	Energy sustainability and climate goals
06-Jul-21	11:30 am to 12:30 pm	Solar PV technologies
	12:30 pm to 1 pm	Tutorial on solar PV system sizing
	2 pm to 3 pm	Solar thermal technologies
	3 pm to 3:30 pm	Solar energy lab - instruments and experiments
07-Jul-21	11:30 am to 12:30 pm	Biomass gasification and combustion
	12:30 pm to 1 pm	Tutorial on bioenergy systems
	2 pm to 3 pm	Bioenergy system sizing and calculations
	3 pm to 3:30 pm	Bioenergy system lab

<b>Date</b>	<b>Time</b>	<b>Topic</b>
08-Jul-21	11:30 am to 12:30 pm	Fuel cells for stationary and mobile applications
	12:30 pm to 1 pm	Tutorial on fuel cell performance assessment
	2 pm to 3:30 pm	Next generation vehicles and pollution norms
09-Jul-21	11:30 am to 12:15 pm	Electrochemical energy storage
	12:15 pm to 1 pm	Battery sizing for stand-alone and grid connected systems
	2 pm to 3 pm	Hydrogen storage
	3 pm to 3:30 pm	Hydrogen storage lab
12-Jul-21	11:30 am to 12 noon	Microgrids and smart grids
	12 noon to 1 pm	Microgrids and smart grids tutorial and lab
	2 pm to 3 pm	Grid integration of renewables
	3 pm to 3:30 pm	Grid integration lab
13-Jul-21	11:30 am to 1 pm	Waste-to-energy systems
	2 pm to 3:30 pm	Design and optimization of energy systems
14-Jul-21	11:30 am to 12 noon	Energy economics
	12 noon to 1 pm	Tutorial on economic viability of energy systems
	2 pm to 2:30 pm	Energy management, auditing
	2:30 pm to 3:30 pm	Tutorial on energy efficiency and energy economics
15-Jul-21	11:30 am to 12:15 pm	Energy policy and energy security
	12:15 pm to 1 pm	Interactive session on energy policies of AUA countries
	2 pm to 3:30 pm	Student presentations
16-Jul-21	11:30 am to 1 pm	Student presentations
	2 pm to 3:30 pm	Student presentations; Course conclusion