Course title: Advancements in Energy Processes, Systems, Technologies and Applications			
Course code: DSE 121	**No. of credits:** 3	**L-T-P:** 37-8-0	**Learning hours:** 45
Pre-requisite course code and title (if any): N/A			
Department: Sustainable Engineering			
Course coordinator: Prof. Naqui Anwer	**Course Instructor:** Prof. Naqui Anwer/ Prof. S C Mullick/ Prof. D K Sharma		
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Course type: Core	**Course offered in:** Semester 3		

Course description

This course is designed to provide a comprehensive understanding of advancements in energy processes, systems, technologies, and their applications. Electric Vehicles are the talk of the present. Energy storage systems have become more relevant with the penetration of variable renewable energy sources. Hydrogen energy has got policy impetus, and its role is very obvious now. Quantum Computing has the potential to revolutionize renewable energy in various ways in the near future. These four technologies have been included in this course so as to give an in-depth knowledge of these technologies.

Course objective

- Recognize EV/HEV technical and economic objectives. Identify efficient EV/HEV architectures.
- Explain the mechanism of battery and motors in terms of functionality, control, and integration.
- Describe a basic coordinated control between different parts of EV.
- To study details of various energy storage systems along with applications
- Enabling to identify the optimal solutions to a particular energy storage application/utility.
- To provide comprehensive and logical knowledge of hydrogen production, storage, and utilization
- To familiarize with the concept of Quantum Computing.