Course title: Variable Energy and Decentralized Systems– Resources, Technologies, Applications			
Course code: DSE 112	**No. of credits:** 3	L-T-P:39-6-0	**Learning hours:** 45
Pre-requisite course code and title (if any): N.A.			
Department: Department of Sustainable Engineering			
Course coordinator: Dr. Ramkishore Singh		**Course instructor(s):** Prof. Naqui Anwer and Dr. Ramkishore Singh	
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Course type: Core		**Course offered in:** Semester 2	

Course description:

This course has been designed to inculcate the design and assessment principles used for variable energy systems and technologies and their applications. Further, students will be taught about different energy conversion procedures and address the difficulties arising due to variable nature of energy sources and its impact on economic viability. Also, students will be made aware of recent advances on the conversion technologies and future prospective.

Course objectives:

1. To get students understand and familiarize with energy resource assessment procedure for different variable energies and their potential.
2. To inculcate skills required for designing the technologies to harness and utilize variable energy sources.
3. To introduce students with different thermal and power applications of variable energy conversion technologies and systems.

Evaluation criteria

Assignment1: 10% (after Module 4)
Assignment 2: 10% (after Modules 6)
Minor test 1: 10% (after Module 4)
Minor test 2: 10% (after Module 6)
Major test: 60% (after all module)

Learning outcomes:

This course inculcates the skills that shall make the students to:

1. be able to assess the resources of energy potential of variable energies sources i.e. solar, wind, tidal and wave energies.
2. be able to understand essential design principles used for developing the systems and technologies required for harnessing variable energy resources.
3. be able to assess the performance of variable energy conversion and utilization system and technologies.
4. be able to identify the applications of solar thermal collectors, solar PV systems and wind turbines.
5. be able to design and implement the system and devices used for converting wave and tidal power into electrical energy.