Course title: Field visits / exposure to RE plants

Course code: ENR 103	**No. of credits:** 1	**L-T-P:** 3-2-20	**Learning hours:** 25
Pre-requisite course code and title (if any): NA			
Department: Department of Energy and Environment			
Course Coordinator: Dr. Naqui Anwer	**Course instructor(s):**		
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Course type: Core	**Course offered in:** Semester 2		

Course description

The course is designed to provide the students an exposure to some of the operational renewable energy projects such as solar photovoltaic, solar thermal, wind energy, biomass energy and green energy technology projects such as green building, waste to energy etc. through field visit. The course includes visiting operational renewable energy plants, attending techno-economic lectures, visiting different equipment blocks and open interaction with the plant operators and managers.

Course objective

- To provide exposure of the design, infrastructure and energy generation/conservation capacities of renewable energy plant and green energy projects.
- To help the students develop a thorough understanding of the design & implementation, operation strategies, maintenance and performance parameters of RE plants.
- To aware students of the local, national and global impact of these plants/projects.

Course contents

Module	Topic	L	T	P
1	**Introduction to specific plants (before visit)** Types of projects, their basic technology and broad system design, key performance parameters related to power generation, power evacuation, waste to energy, biogas generation for cooking, solar water heating, hot water, energy conservation etc.	3	0	0
2	**Field visit and discussion** Approaches to organizational level planning and feasibility analysis Design and implementation of project Component/block level specifications Technologies used and theirs advantages and limitations Project performance and financial viability Power evacuation and project stakeholders Operation, monitoring and maintenance of plant Social-environmental benefits	0	0	14
3	**Analysis and reporting (after visit)** Project background review Technical specifications sheet and plant layout Performance and financial data Challenges and scope of improvement	0	2	6
	Total	**2**	**2**	**20**

Evaluation criteria

- Test 1: Interaction during visit (during Module 2): 10%
- Test 2: Report submission (after Module 3): 40%
- Test 3: Presentation (after Module 3): 50%

Learning outcomes

- Understand and assess the implementation and operation of renewable energy plants/ green energy projects (Test 1, 2).
- Record and analyze system design and specification of major components of large projects (Test 2, 3).
- Assess and analyze plant performance and maintenance issue (Test 2,3).
- Analyze overall impact of the plant/project in renewable energy context (Test 1-3).

Pedagogical approach Class-room interactions; Field study; Interaction with expert; Group Discussion
Materials Available project report or annual reports of the respective plants/projects Reports available on MNRE/Govt. of India/Other organization relevant to specific plant/projects
Additional information (if any)
Student responsibilities Attendance; discipline; Q&A with the experts during field visit

External reviewers:

1. Dr. Anish Modi, Assistant Professor, IIT Bombay
2. Mr. Mudit Jain, Head (Research), Tata Cleantech Capital Limited
3. Mr. Alok Kumar Jindal, GM (RE), Tractebel Engineering Pvt. Ltd.