

Syllabus for B.Tech – Energy Engineering

Course Number & Title: EN 306 Modelling and Simulation Laboratory	
L-T-P-C: 0-0-3-3	
Offered in (Odd/ Even / Any): Semester V	
Pre-Requisite: Nil	
Preamble / Objectives (Optional): To equip the student with the simulation of different energy systems ranging from a power plant to desalination plant.	
Course Content/ Syllabus: Solar power plant, nuclear power plant, hybrid energy system, desalination plant, hydrogen generation plant, microgrids, fossil fuels, battery	
List of experiments:	
1)	Design of a wind power plant
2)	Design of a hydro power plant
3)	Design of nuclear power plant for cogeneration application
4)	Comparison between different desalination methods using different source of energy such as nuclear and fossil fuels
5)	Economics of large-scale hydrogen production using nuclear energy
6)	Design of a hybrid system (wind+solar) for residential applications
7)	Design of battery management system
8)	State of health and state of charge for battery
9)	Design of DFIG based wind energy conversion system
10)	Design of PMSG based wind energy conversion system
11)	Design of microgrids
Books (In case UG compulsory courses, please give it as “Text books” and “Reference books”. Otherwise give it as “References”).	
Text Books: (Format: Authors, <i>Book Title in Italics font</i> , Volume/Series, Edition Number, Publisher, Year.)	
1.	R Pratap, <i>Getting started with MATLAB</i> , Oxford Press, 2010.
2.	
3.	
Reference Books: (Format: Authors, <i>Book Title in Italics font</i> , Volume/Series, Edition Number, Publisher, Year.)	