

Approval: 10th Senate Meeting

S2. Course Number: ME 637

Course Name: Wind Power Plant

Credits: 3-0-0-3

Prerequisites: Instructor's consent

Intended for: M. Tech. /UG/MS/PhD

Distribution: Specialized stream elective course for M. Tech. in Mechanical Engineering with specialization in Energy Systems, and elective course for other students

Semester: Odd/Even

Preamble: This course will contribute to a comprehensive understanding of wind power technology.

Course Outline: The objective of the course is to introduce the students to the working of the systems, performance, emissions, economics, and challenges related to wind energy.

Course Modules:

Module 1:

Introduction, General theories of wind machines, Basic laws and concepts of aerodynamics (8 L)

Module 2:

Micro-siting, Description and performance of the horizontal-axis wind machines, Blade design, Description and performance of the vertical-axis wind machines (12 L)

Module 3:

The generation of electricity by wind machines, case studies, Overview of micro mini and small hydro, Site selection and civil works, Penstocks and turbines, Speed and voltage regulation (14 L)

Module 4:

Investment issues, load management and tariff collection, Distribution and marketing issues, case studies (8 L)

Text Books:

1. Gasch Jochen Twele. Wind Power Plants Fundamentals, Design, Construction and Operation. Springer-Verlag Berlin Heidelberg 2012. ISBN 978-3-642-22938-1
2. Mathew Sathyajith. Wind Power Plants: Fundamentals, Resource Analysis and Economics. Springer-Verlag Berlin Heidelberg 2006. ISBN- 978-3-540-30905-5.