1.	Title of the course	Wind Turbine Systems
2.	Course number	ME611L
3.	Structure of credits	3-0-0-3
4.	Offered to	PG
5.	New course/modification to	Modification To ME6027/20
6.	To be offered by	Department of Mechanical Engineering
7.	To take effect from	July 2022
8.	Prerequisite	CoT
9.	**Course Objective(s):** To introduce the fundamentals, technologies, modern day applications of wind turbines. To discuss the basic principles of wind energy generation and conversion, and the broad range of relevant technical topics.	
10.	**Course Content:** Historical review and trends in wind energy; Basic concepts of wind energy converters; Physical principles of wind energy conversion and Betz limit; Wind turbine rotor aerodynamics and power coefficient; Structural design of wind turbine blades, heavy storms and hurricane loads; Vibration characteristics basics, impact of wind shear; Subsystems including rotor blades, the hub, and the blade pitch mechanism; Nacelle and drive train; Control systems and operational sequence; Wind resource assessment and wind rose; Wind farms, near and far wake; Power output and energy yield calculations.	
11.	**Textbook(s):** 1. Hau E, *Wind Turbines: Fundamentals, Technologies, Application, Economics*, 3rd Edition, Springer (2013).	
12.	**Reference(s):** 1. Burton T, Nick J, David S and Ervin B, *Wind Energy Handbook*, 1st Edition, John Wiley & Sons, (2011). 2. Manwell J F, Jon G M and Anthony L R, *Wind Energy Explained: Theory, Design and Application*, 2nd Edition, John Wiley & Sons (2010).	