

Syllabus for B.Tech – Energy Engineering

Course Number & Title: EN302 – Wind, Hydro and Ocean Technology	
L-T-P-C: 3-0-0-6	
Offered in (Odd/ Even / Any): Semester V	
Pre-Requisite: Nil	
Preamble / Objectives (Optional): To provide the basic knowledge about wind, hydro and ocean based energy conversion technologies.	
Course Content/ Syllabus: Global and Indian wind scenarios of wind, hydro and ocean energy resources. wind energy: classification and descriptions of wind turbines, wind resource assessment and data analysis; energy in the wind and energy extraction; components of wind energy systems; analysis of wind blade profiles; mean wind speed and energy estimation; mathematical derivation of Betz limit; performance analysis and design of wind farms; hydropower: classification; working principle; major components of hydropower plant; specific speed; system analysis and design of hydropower plants; ocean energy: classification; working principle; system analysis and design of ocean thermal energy conversion (OTEC) plant.	
Books (In case UG compulsory courses, please give it as “Text books” and “Reference books”. Otherwise give it as “References”).	
Texts: (Format: Authors, <i>Book Title in Italics font</i> , Volume/Series, Edition Number, Publisher, Year.)	
1.	J Twidell, <i>Renewable Energy Resources</i> , 4 th Edition, Routledge, 2021.
2.	J Earnest and S Rachel <i>Wind Power Technology</i> , 3rd Edition, PHI, 2019
References: (Format: Authors, <i>Book Title in Italics font</i> , Volume/Series, Edition Number, Publisher, Year.)	
1.	J Andrews and N Jelley (2007), <i>Energy science principles, technologies and impacts</i> , Oxford University Press, 2007
2.	P K Nag, <i>Power Plant Engineering</i> , Tata McGraw-Hill Education, 2002
3.	M Kanoglu, Y A Cengel and J M Cimbala, <i>Fundamentals and Applications of Renewable Energy</i> , McGraw-Hill, 2020