Syllabus for B.Tech – Energy Engineering

Course Number & Title: EN202 – Engineering Thermodynamics

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L-T-P-C: 3-1-0-8	
Offered in (Odd/ Even / Any): Semester III	
Pre-Requisite: Nil	
Preamble / Objectives (Optional): The course emphasis on the basic principles, concepts, and the governing laws of thermodynamics and its applications in energy systems.	
Course Content/ Syllabus: Basic concepts, zeroth law of thermodynamics, pure substance and its properties, perfect and real gases, energy, heat, work, conservation of energy, its application to closed and open systems, heat engine, second law of thermodynamics: Carnot principles, Clausius inequality, entropy, principle of increasing entropy, exergy, second law analysis, psychometric processes, refrigeration cycles, vapor and gas power cycles.	
Books (In case UG compulsory courses, please give it as "Text books" and "Reference books". Otherwise give it as "References".	
Text Books: (Format: Authors, *Book Title in Italics font,* Volume/Series, Edition Number, Publisher, Year.)	
1.	Y Cengel, Michael A Boles and M Kanoglu. *Thermodynamics - An Engineering Approach*, 9th Edition, McGraw-Hill, 2019.
2.	P K Nag. *Engineering Thermodynamics*, 6th Edition, McGraw-Hill Education, 2017.
Reference Books: (Format: Authors, *Book Title in Italics font,* Volume/Series, Edition Number, Publisher, Year.)	
1.	M J Moran, H N Shapiro, Daisie D Boettner and Margaret B Bailley. *Fundamental of Engineering Thermodynamics*, 9th Edition, John Wiley and Sons, 2018.
2.	R E Sonntag and C Borgnakke. *Fundamental of Thermodynamics*, 10th Edition, Wiley, 2020.
3.	I Dincer. *Thermodynamics: A Smart Approach*, Wiley, 2020.
4.	P Atkins, *The Law of Thermodynamics : A Very Short Introductions*, Oxford University Press, 2010.