ME 321 Applied Thermodynamics (3-0-0-6)

Pre-requisite: Thermodynamics

Steam Power Plant – Reheat, regenerative steam power cycles, low temperature power cycles, ideal working fluid and binary/multi-fluid cycles; Types of boilers and their attachments, Steam Turbine types and analysis using velocity triangles, Properties of moist air: psychrometry and psychrometric charts, condensers and cooling towers; IC Engines – SI, CI, two- and four-stroke engines, MEP, efficiency and specific fuel consumption, conventional and alternative fuels, pressure-crank angle diagram, carburettor and fuel injection systems; Gas Turbine Engines – Types of gas turbine engines, reheat, intercooling and regenerative cycles, combined cycles, introduction to jet propulsion; Compressors and Turbines – Reciprocating air compressors: work transfer, volumetric efficiency, isothermal efficiency, multistage compression with intercooling, centrifugal compressor, axial flow compressors, axial flow turbines.

Texts:

[1] G. F. C Rogers and Y. R. Mayhew, Engineering Thermodynamics Work and Heat Transfer, Pearson, 2003.
[2] T. D. Eastop and A. McConkey, Applied Thermodynamics for Engineering Technologists, Pearson, 2003.

References:

[1] M. M. El-Wakil, Power Plant Technology, McGraw Hill International, 1992.
[2] P. K. Nag, Powerplant Engineering, Tata McGraw Hill, 2002.
[3] W. W. Pulkrabek, Engineering Fundamentals of the Internal Combustion Engine, PHI, 2002.
[4] H. I. H Saravanamuttoo, G. F. C. Rogers and H. Cohen, Gas Turbine Theory, Pearson, 2003.

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