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| 1. | Title of the course | Energy Conversion Systems |
| 2. | Course number | ME315L |
| 3. | Structure of credits (L-T-P-C) | 3-0-0-3 |
| 4. | New course/modification to | Modified with ME401M/ENERGY CONVERSION SYSTEMS |
| 5. | To be offered by | Mechanical Engineering |
| 6. | Proposed by | AVULAPATI MADAN MOHAN |
| 7. | Prerequisite | None |
| 8. | Course Objective(s): To discuss the working principles of IC engines and turbomachines. To estimate the performance of energy conversion devices using simple thermodynamic cycles. To analyze turbo machine processes and components. | |
| 9. | Course Content: Gas power cycles: internal combustion (IC) engine cycles, air standard otto, diesel and dual cycles, air standard Brayton cycle, effect of reheat, regeneration and intercooling; Classification of IC engines; Construction and working of two-stroke and four-stroke petrol and diesel engines, IC engine emissions and testing; Turbo Machines: types, static and stagnation states and representation of expansion and compression processes in T-s/h-s plots, application of first and second laws of thermodynamics to turbomachines, velocity triangle, absolute and relative velocities; Euler equation for turbomachines degree of reaction, losses and non-dimensional groups in turbomachines; Steam and gas turbines. | |
| 10. | Textbook(s): 1. Dixon S L and Hall C A, Fluid Mechanics and Thermodynamics of Turbomachines, 7th Edition, Butterworth-Heinemann (2010). 2. Stone R, Introduction to Internal Combustion Engines, 4th Edition, Palgrave Macmillan (2012). | |
| 11. | Reference(s): 1. Ganesan V, Internal Combustion Engines, 4th Edition, Tata McGraw-Hill (2003). | |