

Department of Agricultural Process Engineering

Course No.: PFE 111 **Course Title:** Thermodynamics
Credits: 2(1+1) **Semester:** I

Syllabus

Theory

Thermodynamics properties, closed and open system, flow and non-flow processes, gas laws, laws of thermodynamics, internal energy. Application of first law in heating and expansion of gases in non-flow processes. First law applied to steady flow processes. Carnot cycle, Carnot theorem. Entropy, physical concept of entropy, change of entropy of gases in thermodynamics process. Otto, diesel and dual cycles.

Thermodynamic properties of moist air, perfect gas relationship for approximate calculation, adiabatic saturation process, wet bulb temperature and its measurement, psychometric chart and its use,

Steam, Generation of steam, Types of steam, Properties of steam, Phase change, Dryness fraction, critical point of water.

Practical

Tutorials on thermodynamic air cycles, Study and application of P V and T S chart, Study of psychrometric charts with numericals, Study of vertical boiler, Cochran boiler, Lancashire boiler, Locomotive, Babcock-wilcox boiler., study of various mountings of Boilers, Study of various accessories of boilers, Performance of steam boiler, study of steam tables and numericals.