

## Thermodynamics-II

<b>Course Code: ME-217</b>	<b>Credit Hrs: 2-0</b>
----------------------------	------------------------

### **Text Books & Reference Books:**

1. Yunus A. Cengel and Michael A. Boles, Thermodynamics, An Engineering Approach, McGraw-Hill.
2. M. J. Moran and H. O. Shapiro, Fundamentals of Engineering Thermodynamics, John Wiley & Sons.
3. Sonntag, Borgnakke, and Van Wylen, Fundamentals of Thermodynamics, John Wiley & Sons.
4. Ibrahim Dincer and Marc A. Rosen, Exergy: Energy, Environment, and Sustainable Development, Springer.
5. T.D. Eastop and A. McConkey, Applied Thermodynamics and Engineering, Pearson.

### **Course Outline:**

- **Review of Thermodynamics I:** Energetics & Efficiencies
- **Exergy:** Exergy balance, Exergetic efficiency
- **Gas Power Cycles:** Air-Standard-Otto cycle: Diesel cycle, Dual and Brayton cycle, Regenerative gas turbines with reheat & inter cooling, Combined cycles.
- **Vapor and Combined Power Cycles:** Modeling and analyzing, Superheat and Reheat vapor power cycles, Regenerative vapor power cycles, other vapor cycle aspects.
- **Refrigeration Cycles:** Vapor compression refrigeration systems, Cascade and Multistage systems & Absorption refrigeration, Heat pump, and Gas refrigeration systems
- **Thermodynamic Property Relations and Gas Mixtures:** Mixture composition, P-v-T

relations for gas mixtures & U, H, S and specific heats for gas mixtures.

- **Chemical Reactions:** Combustion process and conservation of energy in reacting systems

& Importance of mathematical relations

- **Chemical and Phase Equilibrium:** Combustion process and conservation of energy in

reacting systems & Importance of mathematical relations

Experiments related to Thermodynamics will be covered.

**Assessments:**

Quizzes, Assignments, Mid Exam, Final Exam.