Al-Hussein Bin Talal University  Faculty of Engineering

Department of Mechanical Engineering

Course Syllabus

Course title Thermodynamics (2)	**Course No. /Code: 0507342**
Course pre-requisite: 0307341	**Course teaching language:** English
Course level: 3	**Credit hours: [3 Cr. Hrs.]**

Course Description:

Review of basic laws and principles. Irreversibility and availability, Vapor ,air power and refrigeration cycles. Mixtures of real gases and vapors. Psychrometry. Combustion. Elementary chemical kinetics.

Course objectives:

1.Irreversibility ,availability and exergy
2. Several power cycles in power plants, internal combustion engines and steam and gas turbine cycle.
3.Refrigeration Cycles.
4.Combustion
5.Chemical Reactions.
6. Psychrometry chart and process
7. Gas-Vapor Mixtures

Learning outcomes (understanding, knowledge and practical skills):

Upon completing this course, the student is expected to be able to:

1. Identify several power cycles in power plants, refrigeration and internal combustion engines ,steam and gas turbine cycle.
2. Identify basic mixture concepts and properties for ideal and real gases
3. Identify basic concepts of psychrometry
4. Apply basic concepts in the calculation of various cycle efficiencies
5.Analyze various power cycles and find the effect of various parameters on those cycle.
6.Identify and apply basic concepts of availability and irreversibility on thermal systems.
7. Identify and apply basic concepts of combustion
8. Identify and apply basic concepts of chemical kinetics to find the adiabatic flame temperature

Textbook & References:

Book Title	Author(s)	Publisher	Edition
1Thermodynamics: an engineering approach **2- Introduction to Engineering thermodynamics**	**Yunus Cengel,** **R.E. Sonntag; C Borgnakke**	**McGraw-Hill** **Wiley**	**Eighth Ed.,** **Second Ed**

Assessment Methods:

Assessment no.	Assessment Method	Week Due	Allocated Mark
1	First Exam	2019/3/21	**20%**
2	Second Exam	**12 or 13 week**	**20%**
3	Participation	14 week	**10%**
4	Final Exam	End of semester	**50%**