Zarqa University
Faculty: Science
Department: physics
Course title: thermodynamics 1 (0302343)

Instructor: Dr. Rana Al-faleh
Lecture's time: 11-12
Semester: 1st semester 2018/2019
Office Hours: 10-11 S, Tu, Th

Course description:
This course is intended to provide an introduction to thermodynamics systems and processes, Temperature, Work, The first law of thermodynamics and some of its applications, The second law of thermodynamics, The Carnot cycle, Entropy and reversible processes, Thermodynamic relations, Enthalpy, The Helmholtz function, The Gibbs function, Maxwell's thermodynamic relations, The three Tds equations, some application of thermodynamics to real substance, Heat capacity relations, statistical thermodynamics.

Aims of the course:

- Provide the student with a clear and logical presentation of the basic concepts and Principles of thermodynamics physics.
- Strengthen an understanding of the concepts and principles through a broad range of the interesting applications to the real world.
- Demonstrate and apply knowledge of thermodynamics relations.
- Solve problems concerning the definition of the Enthalpy, The Helmholtz function, The Gibbs function, and Maxwell's thermodynamic relations .
- Understand and apply the definition of the Carnot cycle, Entropy and reversible processes.

Intended Learning Outcomes: (ILOs)

A. Knowledge and Understanding

A1.ConceptsandTheories: This course builds the foundation for preparing students to work professionally in the area of thermal systems. To improve an ability to apply knowledge of mathematics, science, and engineering
And the ability to identify, formulates, and solves thermodynamics problems.

A2.Contemporary Trends, Problems and Research:
At the completion of this course, students should be able to
1. Find values of thermodynamic properties in tables;
2. Draw thermodynamic processes on pressure-temperature, pressure-volume, or temperature-volume diagrams;
3. Use compressibility charts;
4. Calculate expansion or compression work in a closed system;
5. Use conservation of mass to determine the change in mass of a system;

A3.Professional Responsibility: Use computer, graphical and algebraic tools to analyze thermodynamics relation and to apply principles of basic science, and mathematics (including multivariate calculus and differential equations) to model, analyze, design, and realize physical systems, components or processes; and work professionally in both thermal and mechanical systems areas.

B. Subject-specific skills