PHILADELPHIA UNIVERSITY
FACULTY OF ENGINEERING
Department of Mechanical Engineering

Course Title:	**Refrigeration systems (620449)**
Text Book:	**Principles of refrigeration. By Roy J. Dossat and Thomas J. Horan, 5th edition.**
Providing Dept.:	**Mechanical Engineering**
Instructor:	**Dr. Shatha Ammourah**
Level:	**4th year** **Credit Hours: 3**

Course Goals:
To understand the refrigeration principles and application in order to make the right choice of a refrigeration system or component in the practical life.

Time Schedule:
Duration: 16 Weeks
Tutorial: 0 hour / week
Lectures: 3 hours / week
Laboratories: 0 hours / week

Objectives:
- Understand the basic terminology of refrigeration science and its applications and learn the methods of refrigeration.
- Be capable of identifying thermodynamic properties of refrigerants in a manner that allows a student to comprehend the science related to refrigeration processes.
- Understand effectively the processes that occur in a gas compression refrigeration cycle and to develop the foundation needed to understand the underlying theory of refrigeration component and system operation.

Course Contents

	Weeks
• Introduction to mechanical refrigeration, Internal properties of matter	1
• The theoretical vapor compression cycle, Cycle diagram, and the actual vapor compression cycle.	3
	2
• Characteristics of refrigerants.	1
• Evaporators, Types of evaporators, Methods of defrosting evaporators	2
• Compressors, Compression cycle, Analysis, Types of compressors	2
• Condensers, Condensers load, Air cooled condenser, Water cooled condenser, Evaporative condensers, Analysis	2
• Refrigerant Expansion Valves, Constant pressure, Thermostatic expansion valve, Expansion valves selection	2
• Optional related topic (depends on the time left of the semester)	

Mode of Assessment

1. first exam (15%)
2. second exam (15%)
3. Project, home works and quizzes (20%)

4. Final exam (50%)

References

1. W.F. Stoecker, Refrigeration and Air conditioning, McGraw-Hill Book Company, 1985.
2. S.K. Kulshrestha, Refrigeration and Air conditioning, Khanna phblishers, 1996.
3. C P Arora, Refrigeration and Air conditioning, Tata McGraw Hill 1996.
4. Y. Cengel, Thermodynamics and engineering approach, 5^{th} edition.