**Course Title:** Refrigeration systems (620449)


**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
  - **Lectures:** 3 hours / week
- **Tutorial:** 0 hour / 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**

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

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