



Arab Academy for Science, Technology & Maritime Transport  
College of Engineering & Technology  
Mechanical Engineering Department

**University/Academy:** Arab Academy for Science, Technology & Maritime Transport  
**Faculty/Institute:** College of Engineering & Technology  
**Program:** B.Sc. Mechanical Engineering

### Form no. (12): Course Specification

#### 1- Course Data

Course Code: <b>ME 532</b>	Course Title: <b>Refrigeration Applications</b>	Academic Year/Level: <b>5th year / 9th semester</b>	
Specialization: <b>Mechanical</b>	No. of Instructional Units <b>3 credits</b>	Lecture <b>2 hrs.</b>	Practical <b>2 hrs.</b>

#### 2- Course Aim

- To acknowledge the student about the refrigeration applications in many fields

#### 3- Intended Learning Outcomes

<b>a- Knowledge and Understanding</b>	<b>Through knowledge and understanding, students will be able to:</b>  a.5) Methodologies of solving engineering problems, data collection and interpretation  a.10) Technical language and report writing  a.p.1) Fundamentals of thermal and fluid processes
<b>b- Intellectual Skills</b>	<b>Through intellectual skills, students will be able to:</b>  b.2) Select appropriate solutions for engineering problems based on analytical thinking.  b.11) Analyze results of numerical models and assess their limitations.
<b>c- Professional Skills</b>	<b>Through professional and practical skills, students will be able to:</b>  c.3) Create and/or re-design a process, component or system, and carry out specialized engineering designs  c.5) Use computational facilities and techniques, measuring instruments, workshops and laboratory equipment to design experiments, collect, analyze and interpret results  c.6) Use a wide range of analytical tools, techniques, equipment, and software packages pertaining to the discipline and develop required computer programs.  c.8) Apply safe systems at work and observe the appropriate steps to manage risks. c.12) Prepare and present technical reports

	c.p.1) Use basic workshop equipment safely and appropriately. c.p.2) Prepare engineering drawings, computer graphics and specialized technical reports
<b>d- General Skills</b>	<b>Through general and transferable skills, students will be able to:</b> d.9) Refer to relevant literature

#### 4- Course Content

<b>Week No.1</b>	Domestic systems
<b>Week No.2</b>	Commercial
<b>Week No.3</b>	Industrial
<b>Week No.4</b>	Ice manufacturing-1
<b>Week No.5</b>	Ice manufacturing-2
<b>Week No.6</b>	Food refrigeration-1
<b>Week No.7</b>	Food refrigeration-2 / 7th week evaluation
<b>Week No.8</b>	Food refrigeration-3
<b>Week No.9</b>	Freezing units
<b>Week No.10</b>	Freezing cycles-1
<b>Week No.11</b>	Freezing cycles-2
<b>Week No.12</b>	Freezing cycles-3 / 12 <sup>th</sup> week evaluation
<b>Week No.13</b>	Low temperature refrigeration.
<b>Week No.14</b>	Gas liquefaction
<b>Week No.15</b>	Industrial refrigeration plants
<b>Week No.16</b>	Final Examination

#### 5- Teaching and Learning Methods

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- Lectures
- Tutorials
- Reports & sheets
- Laboratories
- Seminars

**6-Teaching and Learning Methods for Students with Special Needs**

- Lectures
  - Tutorials
  - Reports & sheets
  - Laboratories
  - Seminars
- Engineering Requirements and Design Considerations in college Buildings and its Leading Passages**
- The design of college buildings and pedestrian passages leading to it are sloppy to allow the transportation of the handicapped;
  - Doors are wide enough to let wheel chairs pass through easily and conveniently.
  - Lifts are provided for movement between floors.
  - Doors are made from light weight materials to make it easy for the handicapped suffering from weakness in limb muscles or those handicapped using prosthetic limbs to deal with them with the least muscular effort.
  - Class floors are made from non-slippery materials to prevent falls on the part of the handicapped.
  - Sudden changes in the floor level are prevented.
- Design Considerations of the Classes**
- Class boards are placed at 60 cm high to allow wheeled chair users or those suffering from limited arm mobility use them.
  - Enough spaces are left between seats and benches to prevent hindering the movement of wheeled chairs between them.
  - Handicapped students sit among normal people in class to be able to interact with them. Nevertheless, in urgent cases according to the nature of the disability, the handicapped students sit in fixed suitable places whether at the front or the back of the class.
  - Handicapped students sit close to the main exits of the class to be able to evacuate in case of emergencies.
- Academic Support:**
- The general academic advisor appoints an academic supervisor for handicapped students.
  - Continuous follow ups are made for handicapped students after each assessment to evaluate their academic level of achievement

**7- Student Assessment**

<b>a-Procedures used</b>	1-Written Examinations to assess The Intended Learning Outcomes. 2-Class Activities (Reports, Discussions, -----) to assess The Intellectual Skills.
<b>b- Schedule:</b>	Assessment 1                      7 <sup>th</sup> Week Assessment Assessment 2                      12 <sup>th</sup> Week Assessment Assessment 3                      Continuous Assessments Assessment 4                      16 <sup>th</sup> Week Final Written Exam

<b>c- Weighing of Assessment</b>	7 <sup>th</sup> Week Evaluation	30 %
	12 <sup>th</sup> Week Evaluation	20 %
	Final-term Examination	40 %
	Oral Examination	00 %
	Practical Examination	00 %
	Semester Work	10 %
	Total	100%

**8- List of References:**

<b>a- Course Notes</b>	N/A
<b>b- Required Books</b> (Textbooks)	<ul style="list-style-type: none"> <li>• Modern Refrigeration and Air Conditioning, Althous, Androw GoodHeart, Willcox</li> </ul>
<b>c- Recommended Books</b>	<ul style="list-style-type: none"> <li>• ASHRAE Handbook, "Refrigeration volume", published by: American Society of Heating, Refrigeration and Air Conditioning Engineers.</li> <li>•</li> </ul>
<b>d- Periodicals, Web Sites, etc.</b>	N/A

**Course Instructor: Prof. Rouchdy Hamouda**

**Head of Department: Prof. El-Sayed Saber**

**Program Manager: Prof. El-Sayed Saber**

**Dean of College of Engineering and Technology of AASTMT**

Name: **Prof. Moustafa Hussein Aly**

Signature:

**Executive Manager of Quality Assurance Center of AASTMT**

Name: **Prof. Aziz Ezzat**

Signature: