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: **ME 434**	Course Title: **Refrigeration & Air conditioning**		Academic Year/Level: year / semester
Specialization: **Mechanical**	No. of Instructional Units **3 credits**	Lecture **2 hrs.**	Practical **2 hrs.**

2- Course Aim

- To give the basic principles of the refrigeration and air conditioning systems and cycles

3- Intended Learning Outcomes

a- Knowledge and Understanding	**Through knowledge and understanding, students will be able to:** a.4) Principles of design including elements design, process and/or a system related to specific disciplines. a.p.1) Fundamentals of thermal and fluid processes a.p.7) Basic theories and principles of some other engineering and mechanical engineering disciplines Providing support to mechanical power and energy disciplines.
b- Intellectual Skills	**Through intellectual skills, students will be able to:**
c- Professional Skills	**Through professional and practical skills, students will be able to:** c.2) Professionally merge the engineering knowledge, understanding, and feedback to improve design, Products and/or services c.5) Use computational facilities and techniques, measuring instruments, workshops and laboratory equipment to design experiments, collect, analyze and interpret results a.p.7) Basic theories and principles of some other engineering and mechanical engineering disciplines

	Providing support to mechanical power and energy disciplines.
d- General Skills	**Through general and transferable skills, students will be able to:** d.9) Refer to relevant literature

4- Course Content

Week No.1	Introduction
Week No.2	Basic Vapor compression System-1
Week No.3	Basic Vapor compression System-2
Week No.4	Basic Vapor compression System-3
Week No.5	Load Estimation
Week No.6	Load Calculations
Week No.7	Load Calculations / 7th week evaluation
Week No.8	Air Conditioning Fundamentals-1
Week No.9	Air Conditioning Fundamentals-2
Week No.10	Air Conditioning Fundamentals-3
Week No.11	Air conditioning design
Week No.12	Summer & Winter Cycles / 12th week evaluation
Week No.13	Special systems.
Week No.14	Air Conditioning Equipment
Week No.15	Air Conditioning Units
Week No.16	Final Examination

5- Teaching and Learning Methods

- 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

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

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

8- List of References:

a- Course Notes	N/A
b- Required Books (Textbooks)	• ASHRAE Hand book
c- Recommended Books	• Charts and tables. • Stoecker W.F., "Refrigeration and Air Conditioning", McGraw Hill , NY
d- Periodicals, Web Sites, etc.	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: