## Faculty of Engineering & Technology

## Heating& Ventilation and Air Conditioning

**Information :**

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| **Course Code :** | MPR 466 | **Level :** | Undergraduate | **Course Hours :** | 2.00- Hours |

**Department :** Specialization of Mechatronics Engineering

**Instructor Information :**

| Title | Name | Office hours |
|---|---|---|
| Lecturer | Zakaria Mostafa Abdo Salim Marouf | |
| Assistant Lecturer | Moustafa Raafat Aziz Shousha | 1 |

**Area Of Study :**

- Understand fundamentals of Heating, ventilation and Air Conditioning
- Apply the fundamental principles of Heating, ventilation and Air Conditioning
- Explore the fundamental principles of Heating, ventilation and Air Conditioning through experimentation
- Develop skills for analyzing experimental data and working in teams
- Share ideas and work in a team.

**Description :**

Properties of Moist Air, Psychrometry of Air-Conditioning Processes, Design Conditions, Heat Transfer through Building Structures, Load Calculations and, Applied Psychrometrics, Design of Air Conditioning Apparatus, Fans.

**Course outcomes :**

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| **a.Knowledge and Understanding: :** | |
| 1 - | Define the basic concepts of Heating, ventilation and Air Conditioning |
| 2 - | Understand the properties of the Moist Air |
| 3 - | Understand the Psychrometry of Air-Conditioning Processes |
| 4 - | Understand the Design Conditions |
| 5 - | Understand Load Calculations and Applied Psychrometric |
| **b.Intellectual Skills: :** | |
| 1 - | Ability to define and solve problems related to properties of the Moist Air. |
| 2 - | Ability to define and solve problems related to Psychrometry of Air- Conditioning Processes. |
| 3 - | Ability to define and solve problems of Design Conditions |
| 4 - | Ability to define and solve problems of Load Calculations and Applied Psychrometric |
| **d.General and Transferable Skills: :** | |
| 1 - | Ability to work in a team. |
| 2 - | Ability to share ideas and communicate with others |

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| 3 - | Ability to deal with others according to the rules of the professional ethics |

**Course Topic And Contents :**

| Topic | No. of hours | Lecture | Tutorial / Practical |
|---|---|---|---|
| Properties of Moist Air | 4 | 2 | 2 |
| Psychrometry of Air-Conditioning Processes | 6 | 4 | 2 |
| Design Conditions | 6 | 4 | 2 |
| Heat Transfer through Building Structures | 6 | 4 | 2 |
| Load Calculations and Applied Psychrometrics | 9 | 6 | 3 |
| Design of Air Conditioning Apparatus | 8 | 6 | 2 |
| Fans | 6 | 4 | 2 |

**Teaching And Learning Methodologies :**

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| Interactive Lecturing |
| Problem solving |
| Experiential learning |
| Research activity |

**Course Assessment :**

| Methods of assessment | Relative weight % | Week No | Assess What |
|---|---|---|---|
| 1st Midterm | 25.00 | 6 | |
| 2nd Midterm | 25.00 | 11 | |
| Assignments | 10.00 | | |
| Final Exam | 40.00 | 16 | |

**Recommended books :**

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| Refrigeration and Air Conditioning, S.C. Arora, S. Domkundwar, 2000. |