The Hong Kong University of Science and Technology

[Course Title] **Air Conditioning Systems**

[Course Code] **MECH 4340**

[No. of Credits] **3 Credits**

[Any pre-/co-requisites] **MECH3310**

Name: Hong Tao

Email: maehongtao@ust.hk

(Office: Rm 2569, Lift 27/28)

Course Description

This course will provide a general introduction to modern Heating, Ventilation, and Air Conditioning (HVAC) systems through understanding the fundamental concepts about moist air properties and conditioning process, comfort and health and refrigeration, heat transmission in building structures, solar radiation, heating and cooling load calculations, with extended topics on fluid flow, pumps and piping designs as well as fans and building air distribution system designs.

In the end of this course, students should be able to:

(1) Understand the principles of various types of HVAC systems based on the fundamentals of Thermodynamics, Fluid Mechanics and Heat Transfer;
(2) Analyze various types of HVAC systems;
(3) Develop creativity and capability in the design of HVAC systems.

To showcase the theoretical concepts and components that are taught in lectures, we will organize an HKUST HVAC plant tour in mid – April of 2025 to enhance students' understanding and enrich their learning experiences.

Assessments:

Assessment Task	Contribution to Overall Course grade (%)
Assignments	15%
In-class quizzes	10%
HVAC Plant tour attendance	5%
Mid – term exam	30%
Final project report and presentation	40%

Required Texts and Materials

Heating, Ventilating, and Air Conditioning-Analysis and Design by McQuiston; Parker; Spitler