MECH1905 Building for Contemporary Living

Course Code: MECH1905	**Course Title:** Building for Contemporary Living
Required Course Or Elective Course: **Elective**	**Terms Offered (Credits):** Spring (3 credits)
Faculty In Charge: Yi-Kuen Lee	**Pre/Co-Requisites:** NA
Course Structure: 2 classes (1.5 hours) per week	
Textbook/Required Material: Class notes and online references on Canvas	

Bulletin Course Description:

(1) Overview: This course introduces applications of modern mechanical engineering technologies applied to building systems and their role in enhancing contemporary living.

(2) Key Focus Areas: Analysis and design of building systems to promote indoor comfort, health, safety, and energy efficiency. Examination of intelligent and green building trends to ensure sustainability, energy conservation, efficiency, and adaptation to future challenges.

(3) Course Objective: Equip students with both fundamental principles and up-to-date case studies on emerging technologies and social, environmental, and economic impacts of building innovations.

Course Topics:

(1) Introduction
(2) Urban Living
(3) Building Systems
(4) Intelligent/Smart Buildings
(5) IoT Sensors Technologies for Buildings
(6) Green Buildings
(7) Heat Transfer in Buildings
(8) Air-Conditioning and Refrigeration
(9) Water Supply for Buildings
(10) Use of Electricity in Buildings
(11) Introduction to the applications of AI and robotics for smart building construction

Course Objectives: (correlated program objectives)	1. To equip the students with fundamental working principles and technologies in building services (P-O1, P-O2, P-O3) 2. To introduce basic and entry level theories and terminology of mechanical engineering that are foundations of building services (P-O3). 3. To provide students an overview and understanding of the social and environmental influence related to building services (PO-4).
Course Outcomes: (Correlated course objectives and program outcomes)	1. Provie students with online quizes to learn the basic principles of science will be applied to the development of building systems and how energy is used and the consequential social and philosophical implications of scientific discoveries and technological development will be evaluated. [1,2](POC3)

	2. Social impact of building engineering: through case studies and guest lectures, students will explore the societal and behavioral dimensions driven by technology developments in contemporary living. [(POC4)]. [1,2](POC4) 3. Students will evaluate the significance of physical, psychological, social, and occupational wellness as influenced by emerging building technologies [3] (POC9, PO10, POC11)
Assessment Tools: (correlated course outcomes)	(1) Attendance and Quiz via Canvas 15 % (2) Mid-term Examination 35 % (3) Final Examination 50 %

BEng in Mechanical Engineering (4-year program)

Program Objectives:

P-O1. Be able to communicate and perform as an effective engineering professional in both individual and team-based project environments,

P-O2. Have an international outlook with clear perspectives on the Pearl river Delta and Greater China,

P-O3. Be able to research, design, develop, test, evaluate and implement engineering solutions to problems that are of complexity encountered in professional practice and leadership,

P-O4. Clearly Consider the ethical implications and societal impacts of engineering solutions,

P-O5. Continuously improve through lifelong learning.

Program Outcomes:

POC1. ability to identify and formulate problems in multidisciplinary environment with an understanding of engineering issues and constraints;

POC2. ability to design and conduct experiments as well as analyze and interpret data;

POC3. ability to apply knowledge of mathematics, science, and engineering for problem solving in mechanical engineering and related sectors or for further education in a research career;

POC4. ability to develop specification and to design system, component, or process to meet needs;

POC5. ability to understand the manufacturability, maintainability, and recyclability of engineering system and components;

POC6. ability to use modern engineering tools, techniques, and skills in engineering practice;

POC7. ability to communicate effectively;

POC8. ability to function in multi-disciplinary teams and provide leadership;

POC9. broadly educated with an understanding of the impact of engineering solutions on issues such as economics, business, politics, environment, health and safety, sustainability, and societal context;

POC10. clear understanding of professional and ethical responsibilities;

POC11. recognition of the need for life-long learning and continuing education;

POC12. international outlook with knowledge of contemporary issues.