Course Descriptor

CNMN 4003 Mechanical and Electrical

ACADEMIC YEAR	2021-2022	**SEMESTER**	Spring
Course Code	**CNMN 4003**	**Course Title**	**MECHANICAL AND ELECTRICAL SYSTEMS**
Credit hours	4	**Level of study**	Undergraduate
College / Centre	Engineering	**Department**	Civil and Environmental Engineering
Pre-requisites	CVEN 202 & CNMN 301	**Co-requisites**	

1. COURSE OUTLINE

This course prepares students with the basic knowledge of mechanical, electrical, and plumbing systems in buildings so that it can be applied efficiently in coordinating the work of specialty contractors.

2. AIMS

This course is introduces the students to the mechanical, electrical, and plumbing systems in buildings to include basic design principles, conservation measures and green building practices.

3. LEARNING OUTCOMES, TEACHING, LEARNING and ASSESSMENT METHODS (Indicative)

Learning Outcomes (Definitive)	Teaching and Learning methods (Indicative)	Assessment (Indicative)
1. Make design decisions based on environmental and site resources.	Lecture	Assignments + Exams
2. Understand the design principles of mechanical systems and use them to choose the appropriate system to provide comfort and indoor air quality.	Lecture	Assignments + Exams
3. Choose appropriate lighting systems and understand their design to meet the necessary luminary standards.	Lecture	Assignments + Exams
4. Understand and apply the design principles of water supply and waste water systems.	Lecture	Assignments + Exams
5. Understand and apply the design principles for electrical systems within buildings.	Lecture	Assignments + Exams

6. Apply the design principles of the above outcomes in order to minimize the buildings environmental footprint.	Lecture	Assignments + Exams

4. ASSESSMENT WEIGHTING

Assessment	Percentage of final mark (%)
Assignments	15%
Mid term	15%
Final Exam	70%
TOTAL	**100%**

5. ACHIEVING A PASS

Students will achieve **4** credit hour for this course by passing **ALL** of the course assessments *(Assignments, Quiz, Midterm and Final examinations)* and achieving a **minimum overall score of 50.**

6. COURSE CONTENT (Indicative)

WEEK	LECTURE TOPIC	TIME (HOURS)
1	Environmental & Site Resources	
2	Comfort & Design Strategies	
3	Indoor Air Quality	
4	Heat Flow in Buildings	
5	.HVAC Design Overview	
6	Lighting Fundamentals and Sources	
7	Electric Lighting Design	
8,9	Electric Systems, Materials, and Design	
10,11	Supply Water Design	

6. COURSE CONTENT (Indicative)		
WEEK	**LECTURE TOPIC**	**TIME (HOURS)**
12,13	Waste Water Design	
14,15	Conservation and Green Building Practices	
	TOTAL HOURS	**60**
1 - 15	Plus **RECOMMENDED INDEPENDENT STUDY HOURS**	**90**
	TOTAL COURSE HOURS	**150**

7. RECOMMENDED READING

Mechanical and Electrical Equipment for Buildings 10th Ed by Stein, Reynolds, Grondzik, and Kwok; Wiley (Required)

Library + online resources:

https://www.globe.gov/documents/348614/348678/atinst.pdf

https://toolkit.climate.gov/case-studies/health-care-facilities-maintain-indoor-air-quality-through-smoke-and-wildfires