MNE8009: RESEARCH METHODOLOGY

Effective Term
Semester A 2025/26

Part I Course Overview

Course Title
Research Methodology

Subject Code
MNE - Mechanical Engineering
Course Number
8009

Academic Unit
Mechanical Engineering (MNE)

College/School
College of Engineering (EG)

Course Duration
Non-standard Duration

Other Course Duration
To be completed normally in 1 academic year or 2 semesters

Credit Units
0-2

Level
R8 - Research Degree

Medium of Instruction
English

Medium of Assessment
English

Prerequisites
Nil

Precursors
Nil

Equivalent Courses
Nil

Exclusive Courses
MNE8002M Research Seminar

Part II Course Details

Abstract

This course aims to provide MPhil/PhD students with

a. the fundamental elements of research methodology which include problem definition, literature review, quantitative and qualitative methods, research tools and research reporting;

b. formal forums for the research students to -

- broaden their knowledge and expertise;

- present their research findings and discuss their learning experiences with their peers and academic staff; and

- develop a strong research mindset and scholarship.

Course Intended Learning Outcomes (CILOs)

	CILOs	Weighting (if app.)	DEC-A1	DEC-A2	DEC-A3
1	Discuss the fundamentals of research methodology and tools.		x		
2	Formulate a research framework for the selected MPhil/PhD research topic.		x	x	
3	Critique relevant literature relating to the selected MPhil/PhD research topic.		x	x	
4	Apply the research methodology and tools in the development of the research proposal.			x	x
5	Communicate with fellow peers regarding own or others' research findings and experience scholarly and logically.			x	x

A1: Attitude
Develop an attitude of discovery/innovation/creativity, as demonstrated by students possessing a strong sense of curiosity, asking questions actively, challenging assumptions or engaging in inquiry together with teachers.

A2: Ability
Develop the ability/skill needed to discover/innovate/create, as demonstrated by students possessing critical thinking skills to assess ideas, acquiring research skills, synthesizing knowledge across disciplines or applying academic knowledge to real-life problems.

A3: Accomplishments
Demonstrate accomplishment of discovery/innovation/creativity through producing /constructing creative works/new artefacts, effective solutions to real-life problems or new processes.

Learning and Teaching Activities (LTAs)

	LTAs	Brief Description	CILO No.	Hours/week (if applicable)
1	Class Participation	Class activities are made up of lectures and research seminars from other students.	1, 2, 3, 4	9 hours

2	Groupwork	Groupwork is used as platform for reflective and interactive learning among the students and the instructors or research supervisors. Activities include presentation, group discussion and critique of fellow students' research design and methodology in general and their thesis proposals development in particular.	2, 3, 4	9 hours
3	Attending Research Seminars and Technical Workshops	Each student is required to attend a minimum of 5 approved technical seminars each semester; each student is also required to present at least once the research progress or results to peers and faculty in class. Each student is required to submit a portfolio (as defined each semester) of brief write-ups and reflections of the research seminars attended and presented. Apart from the MNE research seminars, PhD students can also attend other officially sanctioned research or technical seminars held at CityU or other universities/ professional institutions like HKIE, IIE, IEE, and IEEE. Participation in a relevant full-day technical workshop is equivalent to the attendance of 3 research seminars.	3, 4, 5	13 hours

Assessment Tasks / Activities (ATs)

	ATs	CILO No.	Weighting (%)	Remarks ("-" for nil entry)	Allow Use of GenAI?
1	Continuous Assessment	1, 2, 3, 4, 5	100	-	Yes

Continuous Assessment (%)

100

Additional Information for ATs

The portfolio is a collection of critiques and reflections of the research seminars attended. Students are also encouraged to include documented evidence of his/her learning from the lectures and groupwork in the portfolio

Assessment Rubrics (AR)

Assessment Task

Groupwork

Criterion

Evidence of reflective and interactive learning among the students and the instructors or research supervisors in a group setting. Quality of presentation, group discussion and critique of fellow students' research design and methodology in general and their thesis proposals development in particular.

Pass (P)

(P) Strong evidence of critical thinking through group discussion and personal presentation and the ability of self-learning for the development of their thesis proposals.

Failure (F)

(F) Little evidence of critical thinking and inability of development of their thesis proposals through literature review and self-learning.

Assessment Task

Research Seminar

Criterion

Quality of presentation about the research progress or results to peers and faculty in class. Quality of the submitted portfolio (as defined each semester) of brief write-ups and reflections of the research seminars attended.

Pass (P)

(P) Strong evidence for presenting their research progress through presentations and write-ups with good clarity and self-consistency.

Failure (F)

(F) Little evidence for presenting their research progress through presentations and write-ups or these presentations lack good clarity and self-consistency

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Part III Other Information

Keyword Syllabus

Literature search, research design, research methodology, quantitative and qualitative methods, research writing and presentation, research seminars

Reading List

Compulsory Readings

	Title
1	N.A.

Additional Readings

	Title
1	Experimental Methods for Engineers, McGraw-Hill Series in Mechanical Engineering, 8th Edition, Jack Holman
2	Professional and Technical Writing/Presentations, Wikibooks: https://enwikibooksorg/wiki/Professional_and_Technical_Writing/Presentations
3	Online Resources Online learning material is provided via University computer network.