City University of Hong Kong
Course Syllabus

offered by
Department of Mechanical Engineering
with effect from Semester A 2024 / 2025

Part I Course Overview

Course Title:	Research Methodology
Course Code:	MNE8009
Course Duration:	To be completed normally in 1 academic year or 2 semesters
Credit Units:	2
Level:	R8
Medium of Instruction:	English
Medium of Assessment:	English
Prerequisites: *(Course Code and Title)*	Nil
Precursors: *(Course Code and Title)*	Nil
Equivalent Courses: *(Course Code and Title)*	Nil
Exclusive Courses: *(Course Code and Title)*	MNE8002M Research Seminar

Part II Course Details

1. 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.

2. Course Intended Learning Outcomes (CILOs)

(CILOs state what the student is expected to be able to do at the end of the course according to a given standard of performance.)

No.	CILOs	Weighting (if applicable)	Discovery-enriched curriculum related learning outcomes (please tick where appropriate)		
			A1	*A2*	*A3*
1.	**Discuss** the fundamentals of research methodology and tools.		✓		
2.	**Formulate** a research framework for the selected MPhil/PhD research topic.		✓	✓	
3.	**Critique** relevant literature relating to the selected MPhil/PhD research topic.		✓	✓	
4.	**Apply** the research methodology and tools in the development of the research proposal.			✓	✓
5.	**Communicate** with fellow peers regarding own or others' research findings and experience scholarly and logically.			✓	✓
		100%			

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.

3. Learning and Teaching Activities (LTAs)

(LTAs designed to facilitate students' achievement of the CILOs.)

LTA	Brief Description	CILO No.					Hours/week (if applicable)
		1	2	3	4	5	
Class Participation	Class activities are made up of lectures and research seminars from other students.	√	√	√	√		9 hours
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.		√	√	√		9 hours
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.			√	√	√	13 hours

4. Assessment Tasks/Activities (ATs)

(ATs are designed to assess how well the students achieve the CILOs.)

Assessment Tasks/Activities	CILO No.					Weighting	Remarks
	1	2	3	4	5		
Continuous Assessment:	√	√	√	√	√	100%	
Examination: 0%							
						100%	

- 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.

5. Assessment Rubrics

(Grading of student achievements is based on student performance in assessment tasks/activities with the following rubrics.)

Assessment Task	Criterion	Pass (P)	Failure (F)
Groupwork	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.	Strong evidence of critical thinking through group discussion and personal presentation and the ability of self-learning for the development of their thesis proposals.	Little evidence of critical thinking and inability of development of their thesis proposals through literature review and self-learning.
Research Seminar	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.	Strong evidence for presenting their research progress through presentations and write-ups with good clarity and self-consistency	Little evidence for presenting their research progress through presentations and write-ups or these presentations lack good clarity and self-consistency

Part III Other Information (more details can be provided separately in the teaching plan)

1. Keyword Syllabus

(An indication of the key topics of the course.)

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

2. Reading List

2.1 Compulsory Readings

(Compulsory readings can include books, book chapters, or journal/magazine articles. There are also collections of e-books, e-journals available from the CityU Library.)

N.A.

2.2 Additional Readings

(Additional references for students to learn to expand their knowledge about the subject.)

Experimental Methods for Engineers, McGraw-Hill Series in Mechanical Engineering, 8th Edition, Jack Holman.
Professional and Technical Writing/Presentations, Wikibooks: https://en.wikibooks.org/wiki/Professional_and_Technical_Writing/Presentations.

Online Resources

Online learning material is provided via University computer network.