City University of Hong Kong
Course Syllabus

offered by Department of Systems Engineering
with effect from Semester A 2024 / 25

Part I   Course Overview

Course Title:	Special Topics in Quantitative Methodologies
Course Code:	SYE8101
Course Duration:	One semester
Credit Units:	3
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)*	SEEM8101 Special Topics in Quantitative Methodologies (offered until 2021/22)/ ADSE8101 Special Topics in Quantitative Methodologies (offered until 2023/24)
Exclusive Courses: *(Course Code and Title)*	Nil

Part II   Course Details

1.   **Abstract**

This course aims to develop PhD/MPhil students the knowledge and skills of one or two specialized quantitative analysis techniques in statistics, operations research, and other relevant areas. After completing this course, students should be able to; and use these techniques in their research.

2.   **Course Intended Learning Outcomes (CILOs)**

No.	CILOs	Weighting (if applicable)	Discovery-enriched curriculum related learning outcomes		
			A1	*A2*	*A3*
1.	Understand theories and concepts of some specialized quantitative analysis techniques	20%	✓		
2.	Critique relevant literature relating to the specialized quantitative analysis techniques	40%		✓	
3.	Apply the specialized quantitative analysis techniques and tools in their research	40%		✓	
		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 self-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)

LTA	Brief Description	CILO No.			Hours/week (if applicable)
		1	2	3	
Class (Lecture)	Class activities are made up of lectures and groupwork. The latter is used as platform for reflective and interactive learning among the students and the lecturer. Activities include presentation, group discussion.	✓	✓	✓	39 hours/sem (6 hours per week in summer with 7 weeks)

4. Assessment Tasks/Activities (ATs)

Assessment Tasks/Activities	CILO No.			Weighting	Remarks
	1	2	3		
Continuous Assessment: __100__ %					
Coursework (Assignments, presentation and group discussion)	✓	✓	✓	100%	
Examination: __0__ % (duration: , if applicable)					
				100%	

5. Assessment Rubrics

Applicable to students admitted before Semester A 2022/23 and in Semester A 2024/25 & thereafter

Assessment Task	Criterion	Pass (P)/ Fail (F)
1. Coursework 2. Quiz	The assessment includes the student's coursework assignments, presentation, and quiz.	Pass/ Fail

Applicable to students admitted from Semester A 2022/23 to Summer Term 2024

Assessment Task	Criterion	Pass (P)/ Fail (F)
1. Coursework 2. Quiz	The assessment includes the student's coursework assignments, presentation, and quiz.	Pass/ Fail

Part III   Other Information

1.   Keyword Syllabus

This course is for students who wish to pursue research in a particular area of quantitative analysis methodologies. It is designed to provide students with the necessary background training in some specialized quantitative techniques for their MPhil/PhD research. Student will learn the theories and concept, principles and development of theory and empirical research in one or more selected topics in quantitative analysis. Topics vary depending on the interests and students and availability of lecturers. Examples of topics are: Modern Data Mining Modeling, Bayesian Statistics; Optimization Techniques; Analytic Hierarchy Process; Dynamic Programming; Integer programming; Game Theory, etc.

2.   Reading List
2.1   Compulsory Readings

NIL

2.2   Additional Readings

NIL