# City University of Hong Kong Course Syllabus

## offered by Department of Mechanical Engineering with effect from Semester B 2019 / 2020

Part I Course Overv	riew
Course Title:	Engineering Methods
Course Code:	MNE8108
<b>Course Duration:</b>	1 semester
Credit Units:	3 credits
Level:	R8
Medium of Instruction:	English
Medium of Assessment:	English
<b>Prerequisites</b> : (Course Code and Title)	Nil
Precursors: (Course Code and Title)	Calculus and computational coursework of a Bachelor's degree in mechanical/nuclear engineering or equivalent majors
<b>Equivalent Courses</b> : (Course Code and Title)	MNE6125 Engineering Methods
Exclusive Courses: (Course Code and Title)	Nil

#### Part II **Course Details**

#### 1. **Abstract**

The course is to teach advanced knowledge of mathematical and numerical methods for to the students who are seeking a degree of Doctor of Philosophy in the major of mechanical engineering or nuclear engineering. The topics include linear algebra, partial differential equations, data science, basic concepts of numerical methods, and so on.

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

No.	Io. CILOs		Weighting* Discovery-enriche curriculum related			
			curriculum related			
		applicable)	learnin	ng outcomes		
			(please	tick w	here	
			approp	riate)		
			A1	A2	A3	
	Describe the concepts of engineering methods and their					
1.	impacts on the research and development of mechanical or			✓		
	nuclear engineering.					
2.	Formulate mechanical/nuclear related equations with		<b>✓</b>	./		
2.	proper analytical or numerical methods.		V	•		
	Identify and implement the proper analytical or numerical					
2	method for solving a specific type of engineering problem;		<b>✓</b>	<b>✓</b>		
3.	recognize the advantages, disadvantages and limitations of					
	the methods.					
4.	Identify and implement the proper method for analysing a			<b>✓</b>		
	specific group of data; recognize the advantages,		✓			
	disadvantages and limitations of the method.					
* If we	eighting is assigned to CILOs, they should add up to 100%.	N.A.				

<sup>\*</sup> If weighting is assigned to CILOs, they should add up to 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. Teaching and Learning Activities (TLAs)

TLA	A Brief Description		O N	0.		Hours/week (if applicable)	
		1	2	3	4		
	Take place in classroom which	✓	<b>√</b>	<b>√</b>	<b>√</b>	2 hrs/week for 13 weeks	
Lecture	consists of lectures on different						
	engineering mechanics concepts						
	and applications.						
Tutorial	Take place in classroom which	✓	✓	✓	✓	1 hr/week for 13 weeks	
	consists of tutorials and student						
	activities on learning different						
	engineering mechanics concepts						
	and applications.						

## 4. Assessment Tasks/Activities (ATs)

Assessment Tasks/Activities	CILO No.				Weighting*	Remarks			
	1	2	3	4					
Continuous Assessment: 70%									
Tests/ Assignments	✓	<b>✓</b>	✓	<b>√</b>	30%				
Mini-project/ Lab	✓	✓	<b>✓</b>	✓	40%				
Examination: 30% (duration: 2 hours)									
Examination	<b>√</b>	✓	✓	<b>√</b>	30%				
* The weightings should	l ada	l up i	to 10	100%					

For a student to pass the course, at least 30% of the maximum mark for both coursework and examination should be obtained.

## 5. Assessment Rubrics

Assessment Task	Criterion	Excellent	Good	Fair	Marginal	Failure
		(A+, A, A-)	(B+, B, B-)	(C+, C, C-)	(D)	(F)
Examination	Describe the fundamental concepts of applied mechanics	High	Significant	Moderate	Basic	Not even reaching
	and apply them to explain					marginal
	mechanical behavior of solid					levels
	materials; Analyse and calculate					10,015
	the problems with mechanics					
	theory.					
Test/ Assignment	Describe the fundamental	High	Significant	Moderate	Basic	Not even
	concepts of applied mechanics					reaching
	and apply them to explain					marginal
	mechanical behavior of solid					levels
	materials; Analyse and calculate					
	the problems with mechanics					
	theory.					
Mini-project/ Lab	Ability to conduct effective	High	Significant	Moderate	Basic	Not even
	literature survey, analyse the					reaching
	problem with been taught					marginal
	concepts and theories, and					levels
	demonstrate the idea with a mini-					
	project.					
	Attendance of the lab session;					
	Ability to explain the					
	methodology and procedure and					
	analyse the lab data/phenomena.					

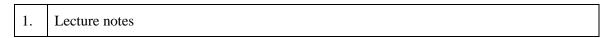
### Part III Other Information

## 1. Keyword Syllabus

Linear algebra, partial differential equations, data science, basic concepts of numerical methods, and so on.

### 2. Reading List

## 2.1 Compulsory Readings



## 2.2 Additional Readings

Students are encouraged to seek out related textbooks and research publication to widen their scope in the subjects.