

**City University of Hong Kong  
Course Syllabus**

**offered by Department of Physics  
with effect from Summer Term 2023**

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**Part I Course Overview**

<b>Course Title:</b>	<b>Frontiers in Physics</b>
<b>Course Code:</b>	<b>PHY5502</b>
<b>Course Duration:</b>	<b>One Semester</b>
<b>Credit Units:</b>	<b>3 credits</b>
<b>Level:</b>	<b>5 (for MSc students)</b>
<b>Medium of Instruction:</b>	<b>English</b>
<b>Medium of Assessment:</b>	<b>English</b>
<b>Prerequisites:</b> <i>(Course Code and Title)</i>	<b>Nil</b>
<b>Precursors:</b> <i>(Course Code and Title)</i>	<b>Nil</b>
<b>Equivalent Courses:</b> <i>(Course Code and Title)</i>	<b>Nil</b>
<b>Exclusive Courses:</b> <i>(Course Code and Title)</i>	<b>Nil</b>

## Part II Course Details

### 1. Abstract

*(A 150-word description about the course)*

This course is to bring the recent advances of physics research to students. It will cover several research themes, such as Atomic, Molecular, and Optical Physics; Quantum materials; Soft Matter and Biophysics; Spectroscopy and Imaging; Theoretical and Computational Physics. Each lecture will cover a different topic.

### 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.	To be familiar with frontiers in physics			✓	
2.	To be able to write a literature review of a research area			✓	
* If weighting is assigned to CILOs, they should add up to 100%.		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)

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

TLA	Brief Description	CILO No.						Hours/week (if applicable)
		1	2	3	4			
1	Lectures to cover the recent advances of several research areas	✓	✓					4 hours per week

**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						
Continuous Assessment: 100%								
Write a literature review	√	√					100%	Pick a research topic, read relevant literature and write a short review article
							100%	

*\* The weightings should add up to 100%.*

## 5. Assessment Rubrics

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

Applicable to students admitted in Semester A 2022/23 and thereafter

Assessment Task	Criterion	Excellent (A+, A, A-)	Good (B+, B)	Marginal (B-, C+, C)	Failure (F)
1.	Writing of a review article that clearly describe (i) the motivation of a research area; (ii) specific research problems of this research area; (iii) contributions made by the researchers in this research area; (iv) future directions of this research area.	High	Significant	Moderate	Not reaching marginal level

Applicable to students admitted before Semester A 2022/23

Assessment Task	Criterion	Excellent (A+, A, A-)	Good (B+, B, B-)	Fair (C+, C, C-)	Marginal (D)	Failure (F)
1.	Writing of a review article that clearly describe (i) the motivation of a research area; (ii) specific research problems of this research area; (iii) contributions made by the researchers in this research area; (iv) future directions of this research area.	High	Significant	Moderate	Reaching marginal level	Not reaching marginal level

**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.)*

- Recent advances in various research areas of physics

**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.)*

1.	Articles in the journal “Reviews of Modern Physics”
2.	
3.	
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