Course Code	PHYS8201 (RPG)		
Title	Basic research methods in physical science		
Offering Department	Physics		
Course Co-ordinator	Prof H F Chau Physics		
Course Co-ordinator Email	hfchau@hku.hk		
Teachers Involved	Name	Department	Percentage
	Prof H F Chau	Physics	25
	Prof M Gu	Physics	25
	Prof D K Ki	Physics	25
	Dr K M Lee	Physics	25
Course Objectives	This course introduces basic research methods commonly used in various sub-fields in physics.		
Course Contents & Topics	This course comprises of four modules, each introduces commonly used research methods in physics. Students are required to take two out of the four modules. They are 1. Astrophysical techniques: Commonly used techniques and packages in astrophysical data gathering and data analysis are introduced. 2. Computational physics and modelling techniques: Commonly used computational physics and physical modelling methods are introduced. 3. Experimental physics techniques: Commonly used experimental physics apparatus and techniques are introduced. 4. Theoretical physics: Commonly used techniques in mathematical and theoretical physics are introduced.		
Course Learning Outcomes (CLO)	On successful completion of this course, students should be able to: CLO 1 gain the latest knowledge on the basic research methods in physical science CLO 2 select the appropriate methods for use in their own research CLO 3 compare the advantages and disadvantages of the different research techniques in physical science		
Pre-requisites (and Co-requisites and Impermissible combinations)	Nil		
Offer in 2025 - 2026	Y 1st sem	Examination	No Exam
Course Grade	A+ to F		
Grade Descriptors	A: Demonstrate thorough mastery at an advanced level of extensive knowledge and skills required for attaining all the course learning outcomes. Show strong analytical and critical abilities and logical thinking, with evidence of original thought, and ability to apply knowledge to a wide range of complex, familiar and unfamiliar situations. Apply highly effective organizational and presentational skills. B: Demonstrate substantial command of a broad range of knowledge and skills required for attaining at least most of the course learning outcomes. Show evidence of analytical and critical abilities and logical thinking, and ability to apply knowledge to familiar and some unfamiliar situations. Apply effective organizational and presentational skills. C: Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some		

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<tr><td></td><td colspan="3">analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.
D: Demonstrate partial but limited command of knowledge and skills required for attaining some of the course learning outcomes. Show evidence of some coherent and logical thinking, but with limited analytical and critical abilities. Show limited ability to apply knowledge to solve problems. Apply limited or barely effective organizational and presentational skills.
Fail: Demonstrate little or no evidence of command of knowledge and skills required for attaining the course learning outcomes. Lack of analytical and critical abilities, logical and coherent thinking. Show very little or no ability to apply knowledge to solve problems. Organization and presentational skills are minimally effective or ineffective.</td></tr>
<tr><td>Course Type</td><td colspan="3">Lecture-based elective course</td></tr>
<tr><td rowspan="3">Course Teaching & Learning Activities</td><td>Activities</td><td>Details</td><td>No. of Hours</td></tr>
<tr><td>Lectures</td><td></td><td>12 hours per module taken, totaling 24 hours</td></tr>
<tr><td>Reading/Self study</td><td></td><td>96</td></tr>
<tr><td rowspan="3">Assessment Methods and Weighting</td><td>Methods</td><td>Details</td><td>Weighting in final course grade (%)</td></tr>
<tr><td>Assignments</td><td></td><td>30</td></tr>
<tr><td>Two final quizzes, one for each module taken</td><td>1 hour each</td><td>70</td></tr>
<tr><td>Quota</td><td colspan="3">9999 (9999 if no quota)</td></tr>
<tr><td>Required/recommended reading and online materials</td><td colspan="3">Lecture notes provided by Course Coordinator</td></tr>
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