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|---|---|--------------------|---------------------------|
| Course Code   | PHYS8001 (RPG)  |                    |                           |
| Title   | Selected Topics in Computational Modelling and Data Analysis in Physics   |                    |                           |
| Offering Department   | Physics   |                    |                           |
| Course Co-ordinator   | Prof X D Cui    Physics   |                    |                           |
| Course Co-ordinator Email   | xdcui@hku.hk  |                    |                           |
| Teachers Involved   | Name  | Department         | Percentage                |
|   | Various teachers in the department  | Physics            | 100                       |
| Course Objectives   | This course aims to familiarise students with research oriented techniques in computer modelling and data analysis.   |                    |                           |
| Course Contents & Topics  | <p>Topics include:</p> <ol style="list-style-type: none"> <li>Advanced techniques, with emphasis on recently developed techniques, in branches of experimental physics</li> <li>Data analysis and computer modelling relevant to experiments</li> </ol> <p>Topics in condensed matter physics and the physics of materials will predominate but other fields such as nuclear physics, astrophysics etc. will also be featured from time to time.</p>  |                    |                           |
| Course Learning Outcomes (CLO)                                    | <p>On successful completion of this course, students should be able to:</p> <p>CLO 1 have a comprehensive overview of topics in computational modelling and data analysis in physics</p> <p>CLO 2 understand the basic concepts, research oriented techniques and research advances in computational modelling and data analysis in physics</p> <p>CLO 3 apply knowledge in understanding computational modelling and data analysis in physics</p>  |                    |                           |
| Pre-requisites (and Co-requisites and Impermissible combinations) | Nil   |                    |                           |
| Offer in 2024 - 2025  | Y   | 1st sem    2nd sem | Examination    Dec    May |
| Course Grade  | A+ to F   |                    |                           |
| Grade Descriptors   | <p>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.</p> <p>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.</p> <p>C: Demonstrate general but incomplete command of knowledge and skills required for attaining most of the course learning outcomes. Show evidence of some analytical and critical abilities and logical thinking, and ability to apply knowledge to most familiar situations. Apply moderately effective organizational and presentational skills.</p> |                    |                           |

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|   | <p>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.</p> <p>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.</p> |         |                                     |
| Course Type                                       | Lecture-based elective course   |         |                                     |
| Course Teaching & Learning Activities             | Activities  | Details | No. of Hours                        |
|   | Lectures  |         | 36                                  |
|   | Laboratory  |         | 12                                  |
|   | Tutorials   |         | 8                                   |
|   | Reading/Self study  |         | 80                                  |
| Assessment Methods and Weighting                  | Methods   | Details | Weighting in final course grade (%) |
|   | Examination   |         | 50                                  |
|   | Coursework  |         | 50                                  |
| Quota   | 9999 (9999 if no quota)   |         |                                     |
| Required/recommended reading and online materials | Nil   |         |                                     |