

## Study Plan of MPhil - PhD Programme

Programme Title: MPhil-PhD in Physics

Offered by: School of Science and Engineering

### 1. Target Participants

The Programme is designed for students who wish to pursue a higher degree in the broad area of Physics, with a research focus on condensed matter physics, semiconductor physics, statistic physics, surface and interface physics, computational physics, and quantum physics. An applicant with a research master's degree should apply for admission to the PhD Stream, while an applicant with a bachelor's degree can apply for admission to either MPhil or PhD Stream. Applicants should have an educational background in science and engineering.

### 2. Programme Information

Study Mode: Full Time

Study Period: The study period for students of different streams / stages under the framework of the new MPhil-PhD Programmes are summarized below:

| Degree  | Mode | Maximum Pre-Candidacy Period <sup>1</sup> | Normative Period | Maximum Period |
|---|------|---|------------------|----------------|
| MPhil   | FT   | --  | 24 months        | 48 months      |
| PhD (entering with a research master's degree)    | FT   | 24 months                                 | 48 months        | 72 months      |
| PhD (entering without a research master's degree) | FT   | 36 months                                 | 60 months        | 84 months      |

<sup>1</sup> Maximum period to pass the candidacy requirement, counted from first entry.

## Requirement for MPhil Students

### 1. Course Requirement

|   |   |   |
|---|---|---|
| MPhil students within Normative Study Period (2 years)    | Lecture Courses   | 3 units × 6 courses = 18 units  |
|   | Thesis Research Courses<br>-PHY8003 Thesis Research-  | 6 units × 4 terms = 24 units  |
|   | Other Courses<br>-PHY6431 Research Seminars-<br>-PHY6421 Research Methodology and Ethics-<br>-PHY6441 Thesis Writing, and Presentation- | 0 units × 4 terms = 0 units<br>0 units × 1 term = 0 units<br>0 units × 1 term = 0 units |
|   | Civic Education Courses   | Refer to the official notice from HSS   |
| MPhil Students Exceeding Normative Study Period (2 years) | Thesis Research Courses<br>-PHY8003 Thesis Research-  | 6 units × 4 terms = 24 units  |

## 1.1. Lecture Courses

### 1.1.1. Course Requirement

- Minimum of 18 units are required from the following list of lecture courses, with **at least 6 units** to be selected from Group A and the rest from Group B. Course list can be found in the appendix.
- Up to 3 courses from Group B can be replaced by courses in other postgraduate programmes at CUHK(SZ) subject to the endorsement by supervisors and the approval by Graduate Panel.

### 1.1.2. Course Exemption

- Students may be granted exemption from courses if they have taken similar or equivalent postgraduate courses with satisfactory performance (“B” grade or above). Supporting documents such as academic transcripts, course syllabus must be provided. Exemption for a maximum of 6 units may be granted. Applications will be assessed individually and subject to the University’s final approval.

## 1.2. Thesis Research Course

Students **MUST** register for thesis research courses in each term, and submit a research progress report in March and September every year respectively. The minimum requirement is listed below.

| Course code  | Course Title    | Units | Contact Hours | Minimum Grade |
|--|-----------------|-------|---------------|---------------|
| PHY8003  | Thesis Research | 6     | 84            | B-            |
| A student is required to meet with his/her supervisor regularly who provides necessary guidance and supervision on the student’s thesis research and monitors his/her academic progress. The minimum grade requirement of this course is “B-”. |                 |       |               |               |

## 1.3. Other Courses

| Course code | Course Title                     | Units | Contact Hours | Minimum Grade |
|-------------|----------------------------------|-------|---------------|---------------|
| PHY6421     | Research Methodology and Ethics  | 0     | 42            | Pass          |
| PHY6431     | Research Seminars                | 0     | --            | Pass          |
| PHY6441     | Thesis Writing, and Presentation | 0     | 21            | Pass          |

## 1.4. Civic Education

Please refer to the official notice from HSS.

## 2. Progress towards Graduation

Please refer to <https://gs.cuhk.edu.cn/sites/gprod.dpsite02.cuhk.edu.cn/files/2022-11/COP%205%20RPG-Oct.2022.pdf>

## 3. Other Information

Code of Practice Research Postgraduate Studies refers to <https://gs.cuhk.edu.cn/RPG>

## Requirement for PhD Students

### 1. Course Requirement

PhD candidates have to complete a minimum number of units for lecture courses and thesis research courses (every term) during the pre-candidacy and candidacy stage. However, since the study period of students may vary, the total number of thesis research courses to be taken may also vary, which will affect the total number of units taken by each student for graduation.

- For PhD students **with** a research master's degree, total number of units required for graduation within normative study period is:

|   |  |   |
|---|--|---|
| Pre-candidacy Stage (2 years)                           | Lecture Courses  | 3 units × 9 courses = 27 units  |
|   | Thesis Research Courses<br><i>-PHY8003 Thesis Research-</i>  | 6 units × 4 terms = 24 units  |
|   | Other Courses<br><i>-PHY6431 Research Seminars-</i><br><i>-PHY6421 Research Methodology and Ethics-</i><br><i>-PHY6441 Thesis Writing, and Presentation-</i> | 0 units × 4 terms = 0 units<br>0 units × 1 term = 0 units<br>0 units × 1 term = 0 units |
|   | Civic Education Courses  | Refer to the official notice from HSS   |
| Candidacy Stage (2 years)                               | Thesis Research Courses<br><i>-PHY8003 Thesis Research-</i>  | 12 units × 4 terms = 48 units   |
|   | Other Course<br><i>-PHY6431 Research Seminars-</i>   | 0 units × 4 terms = 0 units   |
|   | Civic Education Courses  | Refer to the official notice from HSS   |
| PhD Students Exceeding Normative Study Period (2 years) | Thesis Research Courses<br><i>-PHY8003 Thesis Research-</i>  | 12 units × 4 terms = 48 units   |
|   | Other Course<br><i>-PHY6431 Research Seminars-</i>   | 0 units × 4 terms = 0 units   |

- For PhD students **without** a research master's degree, total number of units required for graduation within normative study period is:

|   |  |   |
|---|--|---|
| Pre-candidacy Stage (3 years)                           | Lecture Courses  | 3 units × 9 courses = 27 units  |
|   | Thesis Research Courses<br><i>-PHY8003 Thesis Research-</i>  | 6 units × 6 terms = 36 units  |
|   | Other Courses<br><i>-PHY6431 Research Seminars-</i><br><i>-PHY6421 Research Methodology and Ethics-</i><br><i>-PHY6441 Thesis Writing, and Presentation-</i> | 0 units × 6 terms = 0 units<br>0 units × 1 term = 0 units<br>0 units × 1 term = 0 units |
|   | Civic Education Courses  | Refer to the official notice from HSS   |
| Candidacy Stage (2 years)                               | Thesis Research Courses<br><i>-PHY8003 Thesis Research-</i>  | 12 units × 4 terms = 48 units   |
|   | Other Course<br><i>-PHY6431 Research Seminars-</i>   | 0 units × 4 terms = 0 units   |
|   | Civic Education Courses  | Refer to the official notice from HSS   |
| PhD Students Exceeding Normative Study Period (2 years) | Thesis Research Courses<br><i>-PHY8003 Thesis Research-</i>  | 12 units × 4 terms = 48 units   |
|   | Other Course<br><i>-PHY6431 Research Seminars-</i>   | 0 units × 4 terms = 0 units   |

## 1.1. Lecture Courses

### 1.1.1. Course Requirement

- A student will have to complete 27 units of lecture courses as part of the candidacy requirement, with **at least 6 units** of Group A and the rest from Group B. The course list can be found in the appendix.
- Up to 4 courses from Group B can be replaced by courses in other postgraduate programmes at CUHK(SZ) subject to the endorsement by supervisors and the approval by Graduate Panel.

### 1.1.2. Course Exemption

- Students can submit the prescribed application form with any required supporting documents and apply for exemption for at most three courses (up to 9 units) from Group B. The application should be approved by the Dean of the Graduate School after the endorsement of the Programme Coordinator and the Panel Chair.

## 1.2. Thesis Research Courses

For PhD students at pre-candidacy stage and candidacy stage, students MUST register for thesis research courses that have 6 units and 12 units respectively in each term and submit a research progress report in March and September every year respectively. The minimum requirement is listed below.

| Stage                            | Course Title            | Units | Contact Hours | Minimum Grade |
|----------------------------------|-------------------------|-------|---------------|---------------|
| Pre-candidacy Stage              | PHY8003 Thesis Research | 6     | 84            | B-            |
| Candidacy Stage                  | PHY8003 Thesis Research | 12    | 168           | B-            |
| Exceeding Normative Study Period | PHY8003 Thesis Research | 12    | 168           | B-            |

A student is required to meet with his/her supervisor regularly who provides necessary guidance and supervision on the student's thesis research and monitors his/her academic progress. The minimum grade requirement of this course is "B-".

## 1.3. Other Courses

| Stage                            | Course Title                             | Units | Contact Hours | Minimum Grade |
|----------------------------------|--|-------|---------------|---------------|
| Pre-candidacy Stage              | PHY6421 Research Methodology and Ethics  | 0     | 42            | Pass          |
|                                  | PHY6431 Research Seminars                | 0     | --            | Pass          |
|                                  | PHY6441 Thesis Writing, and Presentation | 0     | 21            | Pass          |
| Candidacy Stage                  | PHY6431 Research Seminars                | 0     | --            | Pass          |
| Exceeding Normative Study Period | PHY6431 Research Seminars                | 0     | --            | Pass          |

## 1.4. Civic Education

Please refer to the official notice from HSS.

## 2. Candidacy Examination

Each PhD student will have to attend a candidacy examination before the end of the maximum pre-candidacy period. Candidacy examination will be comprehensive and rigorous, including two parts:

Part I - A comprehensive written examination.

Part II - Thesis proposal and oral defence of the thesis proposal.

A student must pass both parts of the Candidacy Examination. The examination should be passed by the end of 24 months from the first entry for students with research master's degree or 36 months from the first entry for students without research master's degree.

### 3. Progress towards Graduation

Please refer to <https://gs.cuhk.edu.cn/sites/gprod.dpsite02.cuhk.edu.cn/files/2022-11/COP%205%20RPG-Oct.2022.pdf>

### 4. Other Information

Code of Practice Research Postgraduate Studies refers to <https://gs.cuhk.edu.cn/RPG>

## Appendix

#### Group A:

| Course code | Course Title                               | Units | Contact Hours | Minimum Grade |
|-------------|--|-------|---------------|---------------|
| PHY5110     | Classical Mechanics and Special Relativity | 3     | 42            | C             |
| PHY5130     | Advanced Statistical Mechanics             | 3     | 42            | C             |
| PHY5410     | Advanced Quantum Mechanics                 | 3     | 42            | C             |
| PHY5420     | Classical Electrodynamics                  | 3     | 42            | C             |

#### Group B:

| Course code | Course Title  | Units | Contact Hours | Minimum Grade |
|-------------|---|-------|---------------|---------------|
| CIE6103     | Physics of Photonic Devices                               | 3     | 42            | C             |
| ENE6044     | Electrodynamics II  | 3     | 42            | C             |
| MSE6101     | Selected Topics in MSE                                    | 3     | 42            | C             |
| MSE6104     | Computational Materials                                   | 3     | 42            | C             |
| MSE6105     | Microstructural Evolution in Materials                    | 3     | 42            | C             |
| MSE6106     | Electronic, Optical, and Magnetic Properties of Materials | 3     | 42            | C             |
| MSE6108     | Nanomaterials   | 3     | 42            | C             |
| MSE6109     | Energy Materials  | 3     | 42            | C             |
| MSE6110     | Environmental Materials                                   | 3     | 42            | C             |
| MSE6205     | Advanced Polymer Materials                                | 3     | 42            | C             |
| MSE6307     | Magnetism and Spintronic                                  | 3     | 42            | C             |
| MSE6401     | Fluid Mechanics   | 3     | 42            | C             |
| MSE6402     | Mathematical Modeling                                     | 3     | 42            | C             |
| PHY5430     | Advanced Solid State Physics                              | 3     | 42            | C             |
| PHY5510     | Statistical Field Theory                                  | 3     | 42            | C             |
| PHY5520     | Quantum Many Body Physics                                 | 3     | 42            | C             |
| PHY5530     | Quantum Field Theory                                      | 3     | 42            | C             |
| PHY5540     | Advanced Physics Laboratory                               | 3     | 42            | C             |
| PHY5541     | Introduction to topological phases of matter              | 3     | 42            | C             |