



香港中文大學(深圳)  
The Chinese University of Hong Kong, Shenzhen

## **Study Plan of MPhil - PhD Programme**

Programme Title: MPhil-PhD in Materials Science and Engineering

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 Materials Science and Engineering (MSE), with a research focus on advanced structure materials, functional materials, smart materials, polymer materials, biomaterials, nanomaterials, composites, surface chemistry and interfacial engineering, materials modelling and simulation, materials production and processing, energy materials, materials for environmental purification, aerosol and nanoparticle engineering, green chemistry and materials life cycle. An applicant with a research master's degree should apply for admission to the PhD Stream, while an applicant with a bachelor degree can apply for admission to either MPhil or PhD Stream. Applicants should have education 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:

| <b>Degree</b>                                     | <b>Mode</b> | <b>Maximum Pre-Candidacy Period<sup>1</sup></b> | <b>Normative Period</b> | <b>Maximum Period</b> |
|---|-------------|---|-------------------------|-----------------------|
| 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.

### 3. Requirement for MPhil Students

For MPhil students, total number of units required for graduation within normative study period is:

|                |                         |   |
|----------------|-------------------------|---|
| MPhil students | Lecture Courses         | 3 units×6 courses = 18 units            |
|                | Thesis Research Courses | 6 units ×4 terms = 24 units             |
|                | Civic Education Courses | (Refer to the official notice from HSS) |

#### 3.1 Lecture Courses

For MPhil students, minimum of 18 units/6 courses are required from the list of lecture courses (given in Appendix), with 6 units of required courses, and 12 units of elective courses.

Up to three elective courses can be replaced by courses in other postgraduate programmes at CUHK(SZ) subject to the endorsement by supervisors and approval by the Graduate Panel.

Student can submit undergraduate and postgraduate transcript and apply for waiver of the elective courses and units. The courses to be waived must be approved by the graduate panel. Please check the details of the policy via: <https://gs.cuhk.edu.cn/page/52> .

#### 3.2 Thesis Research Courses

Students MUST register and take thesis research courses that have 6 units 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 |
|-------------|-----------------|-------|---------------|---------------|
| MSE6511     | Thesis Research | 6     | 84            | B-            |

There are some other courses offered as below.

| Course code | Course Title                     | Units | Contact Hours | Minimum Grade |
|-------------|----------------------------------|-------|---------------|---------------|
| MSE6521     | Research Methodology and Ethics  | 0     | 42            | Pass          |
| MSE6531     | Research Seminars                | 0     | --            | Pass          |
| MSE6241     | Thesis Writing, and Presentation | 0     | 21            | Pass          |

#### 3.3. Civic Education

Please refer to the official notice from HSS.

#### 3.4. Thesis Defense

An MPhil candidate is required to pass an oral examination held by the thesis assessment committee, which will consist of one external examiner selected globally, one CUHK faculty member, and a few CUHK (SZ) academic staffs as determined by the Graduate Panel.

## 4. Requirement for PhD Students

PhD candidates have to complete a minimum number of units of Lecture courses and Thesis research courses, during the pre-candidacy and post-candidacy stage. However, since the study period of the 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 | 6 units × 4 terms = 24 units            |
|                                | Civic Education Courses | (Refer to the official notice from HSS) |
| Candidacy Stage (2 years):     | Thesis Research Courses | 12 units × 4 terms = 48 units           |
|                                | Civic Education Courses | (Refer to the official notice from HSS) |

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 | 6 units × 6 terms = 36 units            |
|                                | Civic Education Courses | (Refer to the official notice from HSS) |
| Candidacy Stage (2 years):     | Thesis Research Courses | 12 units × 4 terms = 48 units           |
|                                | Civic Education Courses | (Refer to the official notice from HSS) |

### 4.1 Lecture Courses

For PhD students at pre-candidacy stage, minimum of 27 units/9 courses are required from the list of lecture courses (given in Appendix), with 6 units of required courses, and 21 units of elective courses.

Up to four elective courses can be replaced by courses in other postgraduate programmes at CUHK(SZ) subject to the endorsement by supervisors and the approval by the Graduate Panel.

Student can submit undergraduate and postgraduate transcript and apply for waiver of the elective courses. The courses to be waived must be approved by supervisor committee or programme committee. Please check the details of the policy via: <https://gs.cuhk.edu.cn/page/52>.

### 4.2 Thesis Research Courses

For PhD students at pre-candidacy stage and candidacy stage, students MUST register, take 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 | Thesis Research | 6     | 84            | B-            |
| Candidacy Stage     | Thesis Research | 12    | 168           | B-            |

There are some other courses offered as below.

| <b>Stage</b>        | <b>Course Title</b>              | <b>Units</b> | <b>Contact Hours</b> | <b>Minimum Grade</b> |
|---------------------|----------------------------------|--------------|----------------------|----------------------|
| Pre-candidacy Stage | Research Methodology and Ethics  | 0            | 42                   | Pass                 |
|                     | Research Seminars                | 0            | --                   | Pass                 |
|                     | Thesis Writing, and Presentation | 0            | 21                   | Pass                 |
| Candidacy Stage     | Research Seminars                | 0            | --                   | Pass                 |

### **4.3. Civic Education**

Please refer to the official notice from HSS.

### **4.4 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.

### **4.5. Thesis Defense**

A PhD candidate is required to pass an oral examination held by the thesis assessment committee, which will consist of one external examiner selected globally, one CUHK faculty member, and a few CUHK(SZ) academic staffs as determined by the Graduate Panel.

## Appendix

### Required Courses:

| Course code | Course Title                               | Units | Contact Hours | Minimum Grade |
|-------------|--|-------|---------------|---------------|
| MSE6001     | Advanced Materials Science and Engineering | 3     | 42            | C             |
| MSE6002     | Engineering Economics and Management       | 3     | 42            | C             |

### Elective Courses:

| Course code | Course Title  | Units | Contact Hours | Minimum Grade |
|-------------|---|-------|---------------|---------------|
| CIE6103     | Physics of Photonic Devices                               | 3     | 42            | C             |
| MSE6304     | Statistical Physics                                       | 3     | 42            | C             |
| MSE6101     | Selected Topics in MSE                                    | 3     | 42            | C             |
| MSE6102     | Laboratory-General  | 3     | 42            | C             |
| MSE6103     | Lab Special in Materials                                  | 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             |
| MSE6107     | Advanced Ceramic Materials                                | 3     | 42            | C             |
| MSE6108     | Nanomaterials   | 3     | 42            | C             |
| MSE6109     | Energy Materials  | 3     | 42            | C             |
| MSE6110     | Green Engineering and Environmental Compliance            | 3     | 42            | C             |
| MSE6111     | Materials Processing                                      | 3     | 42            | C             |
| MSE6112     | Polymer Physics   | 3     | 42            | C             |
| MSE6201     | Advanced Inorganic Chemistry                              | 3     | 42            | C             |
| MSE6202     | Advanced Organic Chemistry                                | 3     | 42            | C             |
| MSE6203     | Advanced Physical Chemistry                               | 3     | 42            | C             |
| MSE6204     | Advanced Analytical Chemistry                             | 3     | 42            | C             |
| MSE6205     | Advanced Polymer Chemistry                                | 3     | 42            | C             |
| MSE6206     | Advanced Biochemistry                                     | 3     | 42            | C             |
| MSE6207     | Advanced Computational Chemistry                          | 3     | 42            | C             |

|         |                                       |   |    |   |
|---------|---------------------------------------|---|----|---|
| MSE6208 | Principles of Chemical Engineering    | 3 | 42 | C |
| MSE6209 | Chemical Reaction Engineering         | 3 | 42 | C |
| MSE6210 | Transport Phenomena                   | 3 | 42 | C |
| MSE6211 | Thermodynamics and Kinetics           | 3 | 42 | C |
| MSE6301 | Quantum Mechanics                     | 3 | 42 | C |
| MSE6302 | Theoretical Mechanics                 | 3 | 42 | C |
| MSE6304 | Statistical Physics                   | 3 | 42 | C |
| MSE6305 | Electrodynamics                       | 3 | 42 | C |
| MSE6306 | Physics of Semiconductors Devices     | 3 | 42 | C |
| MSE6307 | Magnetism and Spintronic              | 3 | 42 | C |
| MSE6401 | Fluid Mechanics                       | 3 | 42 | C |
| MSE6402 | Mathematical Modeling                 | 3 | 42 | C |
| MSE6403 | Tissue Engineering                    | 3 | 42 | C |
| MSE6501 | Research Inquiry and Literature Study | 3 | 42 | C |