

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:

Degree	Mode	Maximum Pre-Candidacy Period ¹	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

¹ Maximum period to pass the candidacy requirement, counted from first entry.

Requirement for MPhil Students

1. Course Requirement

MPhil students within Normative Study Period	Lecture Courses	3 units × 6 courses = 18 units
	Thesis Research Course -MSE6511 Thesis Research-	6 units × 4 terms = 24 units
	Other Course -MSE6531 Research Seminars-	0 units × 4 terms = 0 units
	Civic Education Courses	Refer to the official notice from HSS
MPhil Students Exceeding Normative Study Period	Thesis Research Course - MSE6511 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 6 units of required courses, and 12 units of elective courses**. The course list can be found in the appendix.
- Up to 3 elective courses can be replaced by courses in other postgraduate programmes at CUHK, Shenzhen that are approved by the course offering unit, and Dean of the Graduate School after the endorsement of the Programme Coordinator and the Panel Chair for this purpose.

1.1.2. Course Exemption

- Students may be granted course and unit exemptions if they have taken similar or equivalent post-graduate 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. The application should be approved by the Dean of the Graduate School after the endorsement of the Programme Director and the Graduate Panel Chair.

1.2. Thesis Research Course

Students **MUST** register for thesis research courses in each term (summer term excluded), and submit a research progress report in the end of each term (summer term excluded). The minimum requirement is listed below.

Course code	Course Title	Units	Contact Hours	Minimum Grade
MSE6511	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

Starting from AY2024-25, students are required to register for Research Seminars course in each term (summer term excluded) and complete **at least 5 seminar attendances before the end of each term** (summer term excluded) related to your own major and record your attendance via

<https://docs.qq.com/form/page/DSUhkTUVZdGljSmlL?u=f1cfee0bf8f64d4dbdd1e95108014a6b#/fill>.

Course code	Course Title	Units	Contact Hours	Minimum Grade
MSE6531	Research Seminars	0	--	Pass

1.4. Civic Education

Please refer to the official notice from HSS.

2. Progress towards Graduation

Please refer to 5. Progress towards Graduation in Code of Practice.

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 Course -MSE6511 Thesis Research-	6 units × 4 terms = 24 units
	Other Course -MSE6531 Research Seminars-	0 units × 4 terms = 0 units
	Civic Education Courses	Refer to the official notice from HSS
Candidacy Stage (2 years)	Thesis Research Course -MSE6511 Thesis Research-	12 units × 4 terms = 48 units
	Other Course -MSE6531 Research Seminars-	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 Course -MSE6511 Thesis Research-	12 units × 4 terms = 48 units
	Other Course -MSE6531 Research Seminars-	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 Course -MSE6511 Thesis Research-	6 units × 6 terms = 36 units
	Other Course -MSE6531 Research Seminars-	0 units × 6 terms = 0 units
	Civic Education Courses	Refer to the official notice from HSS
Candidacy Stage (2 years)	Thesis Research Course -MSE6511 Thesis Research-	12 units × 4 terms = 48 units
	Other Course -MSE6531 Research Seminars-	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 Course -MSE6511 Thesis Research-	12 units × 4 terms = 48 units
	Other Course -MSE6531 Research Seminars-	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 6 units of required courses, and 21 units of elective courses**. The course list can be found in the appendix.

Up to 4 elective courses can be replaced by courses in other postgraduate programmes at CUHK, Shenzhen that are approved by the Dean of the Graduate School after the endorsement of the Programme Coordinator and the Panel Chair for this purpose.

1.1.2. Course Exemption

Students may be granted course and unit exemptions if they have taken similar or equivalent post-graduate courses with satisfactory performance (“B” grade or above). Supporting documents such as academic transcripts, course syllabus must be provided. Exemption for a maximum of 9 units may be granted. The application should be approved by the Dean of the Graduate School after the endorsement of the Programme Director and the Graduate 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 (summer term excluded) and submit a research progress report in each term (summer term excluded). The minimum requirement is listed below.

Stage	Course Title	Units	Contact Hours	Minimum Grade
Pre-candidacy Stage	MSE6511 Thesis Research	6	84	B-
Candidacy Stage	MSE6511 Thesis Research	12	168	B-
Exceeding Normative Study Period	MSE6511 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

Starting from AY2024-25, students are required to register for Research Seminars course in each term (summer term excluded) and complete **at least 5 seminar attendances before the end of each term** (summer term excluded) related to your own major and record your attendance via

<https://docs.qq.com/form/page/DSUhkTUVZdGjSmlL?u=f1cfee0bf8f64d4dbdd1e95108014a6b#/fill>.

Stage	Course Title	Units	Contact Hours	Minimum Grade
Pre-candidacy Stage	MSE6531 Research Seminars	0	--	Pass
Candidacy Stage	MSE6531 Research Seminars	0	--	Pass
Exceeding Normative Study Period	MSE6531 Research Seminars	0	--	Pass

1.4. Civic Education

Please refer to the official notice from HSS.

2. Pre-candidacy stage to candidacy stage

There are two stages of PhD study: the pre-candidacy stage and the candidacy stage. No student will be admitted directly as a PhD student in candidacy stage; such a status can only be gained by a pre-candidacy PhD student upon satisfying all the Candidacy Requirements. Only a PhD candidate (i.e. PhD student in the candidacy stage) can submit a thesis and be examined.

No PhD student shall proceed to the candidacy stage until s/he has fulfilled all components of the requirements. The requirements are as follow:

- (a) Candidacy examination (including written and oral examinations) ; and
- (b) Credit requirements for 9 lecture courses at the pre-candidacy stage (Grade no lower than C, F&W grade will not be counted toward to the credit requirements.); and
- (c) Requirements for the civic education course (CEC) corresponding to the year of admission; and
- (d) Thesis research credit requirements; and
- (e) Attendance requirements for seminars.

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.

The Candidacy Examination Policy of MSE refers to:

[MSE Implementation Guidelines for Candidacy Examination 1017.pdf](#)

3. Progress towards Graduation

Please refer to 5. Progress towards Graduation in Code of Practice.

4. Other Information

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

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
MSE5121	Solid-State 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	Environmental Materials	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 Materials	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
MSE6212	Bioproduct Engineering and Biorefineries	3	42	C
MSE6215	Water-Energy Nexus and Technologies	3	42	C
MSE6216	Advanced Chemical Kinetics	3	42	C
MSE6217	AI and Robotics in Materials Science	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
GGE5001F	Academic Writing and Presentation	2	28	Pass
SSE5001	Research Methodology and Ethics	1	14	Pass