



香港城市大學
City University of Hong Kong

Curriculum Information Record for a Minor

Department of Materials Science and Engineering

Effective from Semester B 2023/2024

For Students Admitted to the Minor with Catalogue Term

Semester B 2023/2024

The information provided on this form is the official record of the minor. It will be used for City University's database, various City University publications (including websites) and documentation for students and others as required.

In specifying the curriculum for a minor, "catalogue term" is used to determine the set of curriculum requirements that a student is following. The catalogue term of minor requirements that students will follow will be the effective term of their declared minor (BUS/04/A5R).

Prepared / Last Updated by

Name:	<u>Prof. Stephen TSANG</u>	Academic Unit:	<u>MSE</u>
Phone/email:	<u>4618/saitsang@cityu.edu.hk</u>	Date:	<u>3 August 2023</u>

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Part I Minor Overview

Minor (in English) : Materials Science and Engineering
(in Chinese) : 材料科學及工程學

Exclusive Majors : Materials Engineering / Materials Science and Engineering
(Students who study those majors are not allowed to choose this minor)

1. Aims of Minor

This minor aims to provide students in other disciplines with basic understanding and techniques in the properties and processing of engineering materials. The students may also acquire more in-depth knowledge in areas relevant to their major curriculum through the elective courses. A student awarded with a Minor in Materials Engineering should be able to:

- 1. Describe the basic concepts of materials classification, and to distinguish their properties and processing techniques*
- 2. Carry out some simple tests on materials and analyze the results*
- 3. Recognise the current trends in the development and applications of advanced materials*

2. Intended Learning Outcomes of Minor (MILOs)

(Please state what the student is expected to be able to do on completion of the minor according to a given standard of performance.)

Upon successful completion of this minor, students should be able to:

No.	MINILOs	Discovery-enriched curriculum related learning outcomes (please tick where appropriate)		
		A1	A2	A3
1.	Apply knowledge of mathematics, science, and engineering appropriate to the materials engineering.	√	√	
2.	Conduct experiments, as well as analyze and interpret data relevant to materials engineering.	√	√	
3.	Understand the impact of engineering materials in a global and societal context, especially the importance of health, safety and environmental considerations for both workers and the general public.	√	√	
4.	Use the techniques, skills necessary for engineering practice appropriate to materials engineering.	√		

A1: Attitude

Develop an attitude of discovery/innovation/creativity, as demonstrated by students possessing a strong sense of curiosity, asking questions actively, challenging assumptions or engaging in inquiry together with teachers.

A2: Ability

Develop the ability/skill needed to discover/innovate/create, as demonstrated by students possessing critical thinking skills to assess ideas, acquiring research skills, synthesizing knowledge across disciplines or applying academic knowledge to real-life problems.

A3: Accomplishments

Demonstrate accomplishments of discovery/innovation/creativity through producing/constructing creative works/new artefacts, effective solutions to real-life problems or new processes.

Part II Minor Requirement (15 credit units)

(The catalogue term of minor requirement that students will follow will be the effective term of their declared minor.)

A student has to complete 15 credits from AP courses as shown in the following table and must obtain an average GPA of 1.7 or above for the courses in order to obtain the Minor in Materials Engineering award.

1. Core Courses (9 credit units)

Course Code	Course Title	Level	Credit Units	Remarks
MSE2102	Introduction to Materials Science and Engineering	B2	3	
MSE2104	Mechanical Behaviour of Materials	B2	3	
MSE3171	Materials Characterization	B3	3	

2. Electives (6 credit units)

Course Code	Course Title	Level	Credit Units	Remarks
MSE3110	Deformation and Fracture	B3	3	
MSE3111	Ceramic Materials	B3	3	
MSE3113	Soft Materials	B3	3	
MSE3130	Biomaterials	B3	3	
MSE3172/ PHY3272	Electronic Properties of Solids/ Introduction to Solid State Physics	B3	3	
MSE3190/ PHY3290	Thermodynamics of Materials/ Thermodynamics	B3	3	
MSE3195	Kinetics and Phase Transformations	B3	3	
MSE4118	Composites	B4	3	
MSE4119	Advanced Computational Methods for Materials Science and Engineers	B4	3	
MSE4121	Thin Films	B4	3	
MSE4124	Failure Analysis and Case Studies	B4	3	
MSE4170	Corrosion and Protection of Materials	B4	3	
MSE4179	Advanced Materials Characterization	B4	3	
MSE4307	Building Materials	B4	3	
MSE4714	Special Topics in Materials Science and Engineering I	B4	3	

Part III Additional Information:

Nil

Part IV Curriculum Map

(The curriculum map shows the mapping between courses and the MINILOs. It should cover all courses designed specifically for the minor.)

Course			MILOs				DEC		
Code	Title	Credit	M1	M2	M3	M4	A1	A2	A3
Core Courses									
MSE2102	Introduction to Materials Science and Engineering	3	√		√	√		√	
MSE2104	Mechanical Behaviour of Materials	3	√	√			√	√	
MSE3171	Materials Characterization	3	√	√	√	√	√	√	√
Electives									
MSE3110	Deformation and Fracture	3	√	√	√	√		√	
MSE3111	Ceramic Materials	3	√	√	√	√	√	√	√
MSE3113	Soft Materials	3	√	√	√	√		√	
MSE3130	Biomaterials	3	√		√	√		√	
MSE3171	Materials Characterization	3	√	√	√	√	√	√	√
MSE3172/ PHY3272	Electronic Properties of Solids/ Introduction to Solid State Physics	3	√	√		√	√	√	√
MSE3190/ PHY3290	Thermodynamics of Materials/ Thermodynamics	3	√	√			√	√	
MSE3195	Kinetics and Phase Transformations	3	√	√			√	√	√
MSE4118	Composites	3	√	√		√	√	√	√
MSE4119	Advanced Computational Methods for Materials Science and Engineers	3	√	√		√	√	√	√
MSE4121	Thin Films	3	√	√		√	√	√	√
MSE4124	Failure Analysis and Case Studies	3	√	√	√	√	√	√	√
MSE4170	Corrosion and Protection of Materials	3	√	√	√	√	√	√	√
MSE4179	Advanced Materials Characterization	3	√	√		√	√	√	√
MSE4307	Building Materials	3	√	√	√	√	√	√	

MSE4714	Special Topics in Materials Science and Engineering I	3	√	√	√	√	√	√	
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 Develop an attitude of discovery/innovation/creativity, as demonstrated by students possessing a strong sense of curiosity, asking questions actively, challenging assumptions or engaging in inquiry together with teachers.
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 Develop the ability/skill needed to discover/innovate/create, as demonstrated by students possessing critical thinking skills to assess ideas, acquiring research skills, synthesizing knowledge across disciplines or applying academic knowledge to real-life problems.
- A3: *Accomplishments*
 Demonstrate accomplishments of discovery/innovation/creativity through producing/constructing creative works/new artefacts, effective solutions to real-life problems or new processes.