

Curriculum Information Record for a Taught Postgraduate Programme

Department of Biomedical Sciences
Effective from Semester A 2024/25
For Students Admitted with Catalogue Term
Semester A 2024/25 and thereafter

This form is for completion by the *Programme Leader*. The information provided on this form is the official record of the Programme. 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 Programme, "catalogue term" is used to determine the set of curriculum requirements that a student is following. By mapping the student record and the version of curriculum rules applicable, the graduation requirements of individual students will be evaluated accordingly. The catalogue terms of curriculum requirements that students will follow are summarized below.

Prepared / Last Updated by

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City University of Hong Kong

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Department of Biomedical Sciences
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Part I Programme Overview

Programme Title (in English) : Master of Science in Health Sciences and Management
(in Chinese) : 理學碩士 (健康科學與管理)

Award Title[#] (in English) : Master of Science in Health Sciences and Management
(in Chinese) : 理學碩士 (健康科學與管理)

Please make reference to the "Guidelines on Award Titles" approved by the Senate when proposing new award titles or changes to existing award titles (Senate/86/A5R).

1. Normal and Maximum Period of Study

	Years (full-time)	Years (part-time/combined mode)
Normal period of study	1 year	2 years
Maximum period of study	2.5 years	5 years

2. Number of Credit Units Required for the Award:

30 credit units

3. Programme Aims

- a. To provide a professional education in the discipline of health sciences and management;
- b. To upgrade existing biomedical studies' graduates with the knowledge in health sciences;
- c. To prepare students with academic knowledge to become managers and engineers of pharmaceutical companies and health related organisations, and scientists or technicians in different research areas in life sciences and health related fields.

4. Programme Intended Learning Outcomes (PILOs)

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

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

No.	PILOs	Discovery-enriched curriculum related learning outcomes (please tick where appropriate)		
		A1	A2	A3
1.	Acquire essential concepts and knowledge of advanced health sciences and management as well as across the boundaries of interdisciplinary disciplines	✓	✓	
2.	Develop empathy and social responsibility, moral sensibility, critical thinking, sustained interest and management skills in healthcare and management, such as ageing, chronic diseases, etc.	✓	✓	
3.	Apply specialized knowledge to manage and/or solve problems that are critical to future growth of industry, business and social service in government-oriented and non-government organizations		✓	✓
4.	Manage skillfully and work effectively with people possessing diverse educational and experiential backgrounds	✓	✓	✓
5.	Apply interdisciplinary knowledge to develop abilities for the increasingly competitive and dynamically changing world market		✓	✓

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 Programme Requirement

Core Courses (18 credit units, choose 6 core courses out of the 7 courses)

Course Code	Course Title	Level	Credit Units	Remarks
BMS5001	Common Diseases and Genomic Medicine	P5	3	
BMS5002	Infectious Disease Management	P5	3	
BMS5007	Pharmacology Principles in Drug Discovery and Development	P5	3	
BMS5008	Fundamental and Advanced Multi-omics Research	P5	3	
BMS5009	Ageing and the Science of Human Longevity	P5	3	
BMS5010	Artificial Intelligence in Health Science Research and Management	P5	3	
BMS5011	Wearable Technologies and Health Science Research	P5	3	

Electives* (12 credit units)

The Master of Health Science and Management programme is divided into two streams: **(1) the Research Training Stream and (2) the Management Training Stream**. Each of them comprising 12 credit units. The Research Training Stream is designed for students who wish to focus on developing advanced research skills and knowledge, particularly those considering future doctoral study. On the other hand, the Management Training Stream is geared towards students who wish to equip knowledge and practical experience in the field of management of health science, providing opportunities for experiential learning in professional settings. Students are required to select one of these streams at the beginning of their study, allowing them to tailor to their career goals and academic interests.

1. Research Training Stream

a) Major Elective Course

- BMS5100 Research Project Study in Biomedical Sciences, Life Sciences and Relevant Disciplines (9 credit units); and

Course Code	Course Title	Level	Credit Units	Remarks
BMS5100	Research Project Study in Biomedical Sciences, Life Sciences and Relevant Disciplines	P5	9	Semester A + B <u>OR</u> Semester B + Summer Term

b) Elective Courses (3 credit units), choose from the list of Courses for Research Training Stream in the table below:

Course Code	Course Title	Level	Credit Units	Remarks
BIOS5801	Statistical Computing	P5	3	Maximum: 5 quotas (offered by Department of Biostatistics)
BMS8103	Cell and Molecular Biology Research	P8	3	
BMS8105	Biotherapy and Nanomedicine	P8	3	
BMS8106	Stem Cell and Regenerative Medicine	P8	3	
BMS8107	Cancer Biology and Precision Medicine	P8	3	
BMS8110	Genomics and Bioinformatics	P8	3	not open for students who have taken BMS5008 already
BMS8111	Immunology and Infectious Diseases	P8	3	not open for students who have taken BMS5002 already

2. Management Training Stream

Students are required to register 12 credit units from the list of elective courses below.

Course Code	Course Title	Level	Credit Units	Remarks
BIOS5800	Probability	P5	3	Maximum: 5 quotas (offered by Department of Biostatistics)
BIOS5801	Statistical Computing	P5	3	Maximum: 5 quotas (offered by Department of Biostatistics)
BIOS6900	Time Series Analysis	P6	3	Maximum: 5 quotas (offered by Department of Biostatistics)
BMS5101	Project Study in Management and Relevant Disciplines	P5	6	Semester A + B <u>OR</u> Semester B + Summer Term
BMS8103	Cell and Molecular Biology Research	P8	3	
BMS8105	Biotherapy and Nanomedicine	P8	3	

BMS8106	Stem Cell and Regeneration Medicine	P8	3	
BMS8107	Cancer Biology and Precision Medicine	P8	3	
BMS8110	Genomics and Bioinformatics	P8	3	not open for students who have taken BMS5008 already
BMS8111	Immunology and Infectious Diseases	P8	3	not open for students who have taken BMS5002 already
MS5216	Decision Analytics	P5	3	Maximum: 5 quotas (offered by Department of Management Sciences)
MS5217	Statistical Data Analysis	P5	3	Maximum: 5 quotas (offered by Department of Management Sciences)
MS5411	Healthcare Management	P5	3	Maximum: 30 quotas (offered by Department of Management Sciences)
SYE5006	Operations Management	P5	3	Maximum: 5 quotas (offered by Department of Systems Engineering)
SYE5010	Engineering Management Principles and Concepts	P5	3	Maximum: 5 quotas (offered by Department of Systems Engineering)
SYE6009	Project Management	P6	3	Maximum: 5 quotas (offered by Department of Systems Engineering)
SYE6012	Technological Innovation and Entrepreneurship	P6	3	Maximum: 5 quotas (offered by Department of Systems Engineering)
SYE6037	Managing Strategic Quality	P6	3	Maximum: 5 quotas (offered by Department of Systems Engineering)

*Remarks:

- Elective courses will be offered subject to sufficient enrolment.
- Courses offered by different departments might have timetable conflicts, please plan ahead for the courses to register.

Part III Accreditation by Professional / Statutory Bodies

Not applicable

Part IV Additional Information

Not applicable

Part V Curriculum Map

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

Code	Title	Credit	PILOs					DEC		
			P1	P2	P3	P4	P5	A1	A2	A3
Core Courses										
BMS5001	Common Diseases and Genomic Medicine	3	√	√	√	√		√	√	√
BMS5002	Infectious Disease Management	3	√	√	√	√		√	√	√
BMS5007	Pharmacology Principles in Drug Discovery and Development	3	√	√	√	√		√	√	√
BMS5008	Fundamental and Advanced Multi-omics Research	3	√	√	√	√		√	√	√
BMS5009	Ageing and the Science of Human Longevity	3	√	√	√	√		√	√	√
BMS5010	Artificial Intelligence in Health Science Research and Management	3	√	√	√	√		√	√	√
BMS5011	Wearable Technologies and Health Science Research	3	√	√	√	√		√	√	√
Elective Courses										
BIOS5800	Probability	3	√	√	√	√		√	√	√
BIOS5801	Statistical Computing	3	√		√	√	√	√	√	√
BIOS6900	Time Series Analysis	3	√		√	√	√	√	√	√
BMS5100	Research Project Study in Biomedical Sciences, Life Sciences and Relevant Disciplines	9			√		√		√	√
BMS5101	Project Study in Management and Relevant Disciplines	6			√		√		√	√
BMS8103	Cell and Molecular Biology Research	3	√		√		√	√	√	√
BMS8105	Biotherapy and Nanomedicine	3	√				√	√	√	√
BMS8106	Stem Cell and Regenerative Medicine	3			√		√		√	√
BMS8107	Cancer Biology and Precision Medicine	3	√		√			√	√	√
BMS8110	Genomics and Bioinformatics	3			√		√		√	√
BMS8111	Immunology and Infectious Diseases	3			√		√		√	√
MS5216	Decision Analytics	3	√		√	√		√	√	√
MS5217	Statistical Data Analysis	3	√		√	√	√	√	√	√
MS5411	Healthcare Management	3	√	√	√	√	√	√	√	√
SYE5006	Operations Management	3	√	√	√		√	√	√	√
SYE5010	Engineering Management Principles and Concepts	3	√		√	√		√	√	√
SYE6009	Project Management	3	√		√	√	√	√	√	√

SYE6012	Technological Innovation and Entrepreneurship	3	√		√	√	√	√	√	√
SYE6037	Managing Strategic Quality	3		√	√	√	√	√	√	√

- 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 VI Research Elements in Programme Design

(A description on how research elements are embedded in the proposed programme design for ALL students as guided by the 2016-19 Academic Development Proposal (ADP) should be included. Research elements need to be incorporated into core or compulsory course(s) in order that all students can be benefited from the learning experience.)

Description on how research elements are embedded in the programme design:

The Master of Science in Health Sciences and Management program incorporates research elements through its core courses, Fundamental and Advanced Multi-omics Research and Application of Artificial Intelligence (AI) in Health Science Research and Management.

In the Fundamental and Advanced Multi-omics Research course, students learn about various omics technologies and their applications in health science research. They gain skills in conducting literature reviews, designing experiments, analysing multi-omics data, and understanding research ethics.

The Artificial Intelligence in Health Science Research and Management course focuses on the integration of AI techniques in healthcare. Students explore current research papers, learn data-driven research methodologies, understand AI algorithms, and consider ethical implications.

Both courses encourage students to critically analyse scientific literature, develop research questions, and apply appropriate methodologies. The programs emphasize the importance of data analysis, interpretation, and visualization. Additionally, ethical considerations, such as privacy, consent, and responsible data sharing, are integrated into the coursework.

By embedding research elements into these core courses, the program equips students with a comprehensive understanding of multi-omics research, AI applications, and the necessary skills to conduct advanced research in health science and management. Graduates are prepared to contribute to the field through evidence-based practices and address complex healthcare challenges.

Core/Compulsory Courses

Course Code	Course Title	Level	Credit Units	Information on research elements in the course design*
BMS5008	Fundamental and Advanced Multi-omics Research	P5	3	Students will be expected to participate in the class activities that are made up of lectures and tutorials. The latter is used as platform for reflective and interactive learning among the students and the instructors or research supervisors. Activities include in-class discussion, group discussion and final reports.
BMS5010	Artificial Intelligence in Health Science Research and Management	P5	3	

**indicative of planned teaching and learning activities / assessment tasks incorporating research elements*

Besides, we have also embedded BMS5101 Project Study in Management and Relevant Disciplines (6 CUs) OR BMS5100 Research Project Study in Biomedical Sciences, Life Sciences and Relevant Disciplines (9 CUs) as elective course into the MSc programme. The course will provide an opportunity for the students to apply the acquired knowledge in other theoretical subjects to a practical project. Through the project study, students are expected to develop critical thinking, analytical and evaluative skills.

Upon completion of the subject, students will be able to:

- a. To pursue an in-depth study of a professional issue which is relevant to a chosen area of specialisation,
- b. To develop critical thinking, analytical and evaluative skills through the conduct of the project, and
- c. To develop the ability to write and present in a scientific context.

The student may choose to perform project work in an area related to the chosen field of specialisation. The course leader will approve the topic of each project. The supervisor will ensure that there will be sufficient resources to support the project.

- an in-depth exploration of a controversial professional or academic issue,
- development of health administration strategy
- social science studies examining behavioural changes that occur in people with health-related professions,
- research project related to health sciences and management.

The chosen project may be related to one of the current research activities of proposing departments or the workplace of the student.

The project report may take any form subject to the approval of the course leader. Some examples are

- a manuscript that may subsequently be submitted to a professional journal. This may be the appropriate form if the project is a conventional research study.
- a treatise which is an in-depth exploration of professional knowledge
- a business plan if the project involves management strategy development

The project report will be assessed to determine if a student has fulfilled the learning outcomes of project study. The specific assessment criteria of a report may vary in different cases depending on the nature of the project. The criteria for project assessment will be agreed between the course leader and the supervisor prior to the examination. The following list show the potential project range.

- Experimental project with submission of a manuscript - presentation, research design, credibility, implementation, analysis, potential to be published
- Treatise - presentation, depth and breadth of knowledge demonstrated, analysis, insight into the issue, conclusions/recommendations
- Technical report - presentation, method, implementation, analysis, recommendations for users

Business plan - presentation, justification and feasibility of the idea, market analysis, management and implementation, financial plan, analysis
Students will be expected to gather information which will be relevant to their project work. They will be provided with appropriate reading resources by the supervisor if necessary.