Master of Science in Biomedical Engineering

Student Handbook (2018-2019)

August 2018

1. PROGRAMME AIMS

Biomedical Engineering focuses on using engineering principles, techniques and design concepts for healthcare purposes. There is an increasing demand for education and development in the field to improve healthcare and quality of life. The demand has driven the need for developing professionals who will advance the evolution of modern healthcare system, treatment and technology. The Master of Science in Biomedical Engineering (MSBME) Programme aims to offer education and training opportunity to engineers to pursue higher-level study in biomedical field to promote engineering to future healthcare applications.

2. PROGRAMME INTENDED LEARNING OUTCOMES (PILOs)

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

i. explore appropriate scientific and technological development in healthcare related industry that is of benefit to the society;
ii. address the issues and challenges related to the development of biomedical instruments, systems and devices;
iii. apply state-of-the-art technologies to generate creative solutions to improve healthcare products by using biomedical approach; and
iv. apply knowledge of designing, implementing, manufacturing and evaluating equipment that can advance biomedical engineering practice.

3. TEACHING and LEARNING

i. The programme utilizes a variety of learning modes and methods including the following:

   a. Lectures & Tutorials
   b. Co-operative Learning
   c. Seminars, Interactive Workshops & Panel Discussions offered by external, and international experts, as well as active professionals working in the industry

ii. Students can bring their problems from work to classes for team discussions and further analysis, and earn course credits upon satisfactory results.

4. PROGRAMME STRUCTURE

15 credit units of Core Courses + **15 credit units** of Elective Courses (30 credit units).

Students may obtain the MSc degree either by completing:

- 5 core courses (15 CUs) + 5 elective taught courses (15 CUs)
  (to broaden knowledge in biomedical engineering and healthcare)

  Or

- 5 core courses (15 CUs) + dissertation (9 CUs) + 2 elective taught courses (6 CUs)
  (to gain in-depth learning in biomedical engineering and healthcare)

Core Courses (15 credit units)

Course Code	**Course Title**	**Level**	**Credit Units**	**Remarks**
MBE6005	Micro Systems Technology	P6	3	CEF approved course for local students only
MBE6101	Manufacturing of Biomedical Devices	P6	3	
MBE6111	Biomedical Instrumentation	P6	3	
MBE6118	Biomedical Photonics	P6	3	
One of the following recommended courses (3 credit units)*				
MBE5110	Biomedical Engineering Design	P5	3	Recommended for students who do not have biomedical engineering/science or bioengineering background
MBE6117	Biomedical Safety and Risk Assessment	P6	3	Recommended for students who have biomedical engineering/science or bioengineering background

*Decision will be made by the Programme Leader based on individual student's academic background.

Elective Courses (15 credit units)

Course Code	Course Title	Level	Credit Units	Remarks
MBE5108	Human Machine Interface	P5	3	
MBE5111	Regenerative Medicine	P5	3	
MBE6002	Computer Controlled Systems	P6	3	
MBE6007	Advanced Automation Technology	P6	3	
MBE6008	Dissertation	P6	9	@ #
MBE6022	Project Development Study	P6	3	@
MBE6045	Industrial Case Study	P6	3	
MBE6046	Nano-manufacturing	P6	3	
MBE6110	Mechanical Behaviour of Materials: From Metallic to Biomedical/ Biological Materials	P6	3	
MBE6119	Electron Microscopy	P6	3	
MBE6121	Biomechanics	P6	3	

@ If a student takes both MBE6022 Project Development Study and MBE6008 Dissertation, the student may further pursue the case topic explored in the former course by substantially enhancing the study with new and advanced research work towards achieving the project objectives.

Full-time students who want to complete MBE6008 Dissertation within one semester only must obtain prior approval from the Supervisor and Programme Leader, and must have attained a CGPA of 3.5 or above.

5. ASSESSMENT AND AWARD CLASSIFICATIONS

Students should observe the University's regulations and guidelines on assessment at all times. More information are available on the website of the Chow Yei Ching School of Graduate Studies.

http://www.sgs.cityu.edu.hk/student/tpg/regulation

Students will be awarded the degree with one of the following classifications based on their CGPA attained upon completion of all graduation requirements.

Taught Master's Degree	CGPA
Distinction	3.5 or above
Credit	3.2 - 3.49
Pass	2.0 - 3.19

6. TUITION FEES AND PROGRAMME DURATION

Tuition Fees

Local Students : HK$3,520 per credit (2018/2019)
Non-Local Students : HK$4,370 per credit (2018/2019)

Duration of Study

	Full-time	**Part-time/combined mode**
Normal period of study	1 year	1.5 years (by Dissertation) / 2 years (by Taught Courses)
Maximum period of study	2.5 years	5 years

7. ACADEMIC REGULATIONS AND GUIDELINES

Students should observe the University's regulations and guidelines on assessment at all times. More information are available on the website of the Chow Yei Ching School of Graduate Studies.

http://www.sgs.cityu.edu.hk/student/tpg/regulation

8. ACADEMIC HONESTY

Academic honesty is central to the conduct of academic work. Students are responsible for knowing and understanding the Rules on Academic Honesty. As part of the University's efforts to educate students about academic honesty, all students are required to complete an online tutorial, take on online quiz and fill out an online declaration by **30 November 2018** in order to access their course grades online.

For details, please refer to the Office of the Provost's website:
http://www.cityu.edu.hk/provost/academic_honesty/university_requirment_on_academic_honesty.htm

9. COMMUNICATIONS

The following communication channels between students and the department are available:

i. Students who are having academic difficulties with a course should speak directly to the instructor of that course.

ii. Student wishing to discuss other academic-related issues should speak to the Year Tutor.

iii. Student wishing to discuss the overall organisation of the programme should speak to the Programme Leader or his/her deputy.

iv. A formal consultative process between students and staff exists in the department in the form of a Joint Staff & Student Consultative Committee (JSSCC). At least one student from each year will be nominated or invited to sit in the Committee.

v. One part-time student from each year of the programme and two full-time students will be nominated or invited to sit in the Programme Committee.

10. PROGRAMME LEADER AND YEAR TUTORS

Position	Staff Name	Tel / Email
Programme Leader	Dr. King W. C. LAI	3442 9099 / kinglai@cityu.edu.hk
Deputy Programme Leader	Dr. Lidai WANG	3442 6157 / lidawang@cityu.edu.hk
Year Tutor (2018 Cohort)	Dr. Kannie W. Y. CHAN	3442 9141 / KannieW.Y.C@cityu.edu.hk
Dissertation Coordinator	Dr. Yajing SHEN	3442 2045 / yajishen@cityu.edu.hk

11. INFORMATION TO NEW STUDENTS

11.1 How to access your Personal Class Schedule

i) Go to CityU home page (www.cityu.edu.hk) from any terminal on campus or off campus.
ii) Log onto "Portal" under "Quick Links".
If you have problems in logging in, please follow the instructions in "Having problems logging?".
iii) Under the tab "Student", you can find a quick link "Student Schedule" to view your timetable for current semester. Timetable for Semester A 2018-19 is available from 31 July 2018 onwards.

11.2 How to get instructors' handouts through Canvas

i) Log onto Canvas (https://canvas.cityu.edu.hk) from any terminal on campus or off campus.
ii) Click "All Courses" under "Courses" to see all courses you have registered in current and previous semesters.

11.3 How to check Programme Requirements and Course Syllabuses

Log onto the CityU home page and click "Academic Programmes".

11.4 Course Registration for Semester A 2018-2019

For Semester A 2018-19, students will be pre-registered in required courses and programme electives in most cases if possible.

i) The date for release of your class schedule is **31 July 2018**. Please check your curriculum requirements, review your study plan and then make appropriate adjustments to your pre-registered courses.
ii) Add/Drop of courses can be made through AIMS for web-enabled courses during the web registration period. For non-web-enabled courses, approval is required from the major department and you can submit your change request by using the Add/Drop Form.

> How to do the Add/ Drop:
> - Go to *http://www.cityu.edu.hk* from any terminal on campus or off campus, then point to "Quick Links" at the top and click "AIMS".
> - Log onto "AIMS" and then click "Course Registration".
> - Choose "Add or Drop Classes".

iii) Web registration begins on **20 August 2018** but you need to check your time ticket first from "AIMS".
iv) All add/drops end on **10 September 2018**.
v) Detailed arrangements on Course Registration for Semester A 2018-19 will be posted by **31 July 2018**. For details, please refer to SGS website: *http://www.sgs.cityu.edu.hk/student/tpg/coursereg/*

11.5 How to access your Student Email Account

i) Go to *http://www.cityu.edu.hk* from any terminal on campus or off campus, then point to "Quick Links" at the top and click "Email".
ii) In the Email Services homepage, click "**@my.cityu.edu.hk**" under "Student" to go to the CityU "Office 365" Sign In page.
iii) At the "**Account:**" field in the Sign In screen, enter your Office 365 account in the form of "*YourEID*-**c**", where *YourEID* is your CityU Electronic ID.
iv) At the "**Password**:" field, enter your Office 365 Account password, then click "Log On".

> **Important note:**
> For email communication, please state your **name in full**, **student number** and **contact telephone number**.

11.6 Course Exemption/Credit Transfer

Applications for course exemption or credit transfer must be made before the first semester of the student's admission. Students granted course exemption are required to take other courses to make up the credits required for fulfilling the award requirements. For Semester A 2018-2019, the application period is from **16 July to 1 September 2018.**

For details, please refer to SGS website:
www.sgs.cityu.edu.hk/student/tpg/record/credittransfer

11.7 Laboratory Safety Orientation

All students are REQUIRED to complete the on-line Laboratory Safety Orientation through the Departmental On-line Information System (IntraMEL). A Lab Tour session will be held by the Laboratory Office in week 1 of Semester A for interested students. Details of the session will be sent to you by e-mail.

11.8 Administrative Support from General Office

Office Hours

Mon to Fri	8:30 am to 5:30 pm
Lunch Break	*12:30 pm to 1:45 pm*
Sat	*Closed*

Phone:	3442-8420
Fax:	3442-0172
Email:	bmego@cityu.edu.hk

12. Continuing Education Fund (CEF) - (For local students only)

12.1 CEF Application

Please read carefully the guidelines and regulations under the CEF website www.wfsfaa.gov.hk/cef/ or call the 24-hr hotline 3142-2277 for more information.

If you have not submitted any application for CEF before, please bring your completed CEF Application Form (SFO 192 (2015) Rev.) to the BME/MNE General Office during office hours for certification before the commencement of the course(s). You are only required to submit the said application form once even if you are claiming reimbursement for more than one course.

Course commencement date for 2018-2019:
Semester A: 3 September 2018
Semester B: 14 January 2019
Summer Term: 10 June 2019

Please note the references to be quoted on your documents on CEF forms:

Name of Institution/Course Provider	:	City University of Hong Kong
CEF Institution Code	:	005
CEF Course Title	:	Micro Systems Technology
CEF Course Code	:	21Z048678

12.2 CEF Reimbursement

Please read carefully the reimbursement procedures under the CEF website www.wfsfaa.gov.hk/cef/ or call the 24-hr hotline 3142-2277 for more information.

If you have successfully completed any CEF reimbursable course(s) and plan to claim your reimbursement from CEF, you need to obtain the proof of successful completion of the course(s) from the Department.

COMPLETION CRITERIA:

- A minimum attendance of 70% (Students should sign on the attendance record for every lesson attended); and
- A Grade C+ or above of the reimbursable course(s).

12.3 Students seeking CEF reimbursement MUST NOT hold any other publicly-funded financial assistance for the same course.

Appendix I

Model Study Path

MSBME Study Path (2018 Cohort)

Full-time Normal Study Path by Taught Courses (1 Year)

(Study load: ≥ 12 CUs / semester)

<table>
<tr><th>Yr.</th><th>Sem.</th><th colspan="5">Courses</th><th>CUs</th></tr>
<tr><td rowspan="2">1</td><td>A</td><td rowspan="2">MBE6101
Manufacturing of Biomedical Devices (3CUs)</td><td>MBE6111
Biomedical Instrumentation
(3CUs)</td><td>MBE5110
Biomedical Engineering Design #
or
Elective course
(3CUs)</td><td>Elective course
(3CUs)</td><td>Elective course
(3CUs)</td><td rowspan="2">15</td></tr>
<tr><td colspan="5">Elective courses:
(a) MBE6007 Advanced Automation Technology
(b) MBE6022 Project Development Study
(c) MBE6110 Mechanical Behaviour of Materials: From Metallic to Biomedical/ Biological Materials
(d) MBE6119 Electron Microscopy</td></tr>
<tr><td rowspan="2">B</td><td rowspan="2">MBE6005
Micro Systems Technology
(3CUs)</td><td rowspan="2">MBE6118
Biomedical Photonics
(3 CUs)</td><td>MBE6117 Biomedical Safety and Risk Assessment Δ
or
Elective course
(3CUs)</td><td>Elective course
(3CUs)</td><td>Elective course
(3CUs)</td><td rowspan="2">15</td></tr>
<tr><td colspan="3">Elective courses:
(a) MBE6002 Computer Controlled Systems
(b) MBE6046 Nano-Manufacturing
(c) MBE6121 Biomechanics</td></tr>
</table>

Total CUs = 30

Recommended for students who do not have biomedical engineering/science or bioengineering background.
Δ Recommended for students who have biomedical engineering/science or bioengineering background.

MSBME Study Path (2018 Cohort)

Full-time Normal Study Path <u>by Dissertation</u> (1 Year)

(Study load: ≥ 12 CUs / semester)

<table>
<tr><th>Yr.</th><th>Sem.</th><th colspan="4">Courses</th><th>CUs</th></tr>
<tr><td rowspan="3">1</td><td>A</td><td>MBE6101
Manufacturing of Biomedical Devices (3CUs)</td><td>MBE6111
Biomedical Instrumentation
(3CUs)</td><td>MBE5110
Biomedical Engineering Design #
or
Elective course
(3CUs)</td><td>Elective course
(3CUs)</td><td rowspan="2">12</td></tr>
<tr><td colspan="3"><u>Elective courses</u>:
(a) MBE6007 Advanced Automation Technology
(b) MBE6022 Project Development Study
(c) MBE6110 Mechanical Behaviour of Materials: From Metallic to Biomedical/ Biological Materials
(d) MBE6119 Electron Microscopy</td></tr>
<tr><td>B</td><td>MBE6005
Micro Systems Technology
(3CUs)</td><td>MBE6118
Biomedical Photonics
(3 CUs)</td><td>MBE6117
Biomedical Safety and Risk Assessment Δ
or
Elective course
(3CUs)

<u>Elective courses</u>:
(a) MBE6002 Computer Controlled Systems
(b) MBE6046 Nano-Manufacturing
(c) MBE6121 Biomechanics</td><td rowspan="2">MBE6008
Dissertation
(6CUs)
+
(3CUs)</td><td>15</td></tr>
<tr><td></td><td>S</td><td></td><td></td><td></td><td>3</td></tr>
</table>

Total CUs = 30

Recommended for students who do not have biomedical engineering/science or bioengineering background.
Δ Recommended for students who have biomedical engineering/science or bioengineering background.

MSBME Study Path (2018 Cohort)

Part-time Normal Study Path by Taught Courses (2 Years)

(Study load: ≤ 9 CUs / semester)

Yr.	Sem.	Courses			CUs
1	A	MBE6101 Manufacturing of Biomedical Devices (3CUs)	MBE6111 Biomedical Instrumentation (3CUs)	MBE5110 Biomedical Engineering Design # *or* Elective course (3CUs)	**9**
	B	MBE6005 Micro Systems Technology (3CUs)	MBE6118 Biomedical Photonics (3 CUs)	MBE6117 Biomedical Safety and Risk Assessment Δ *or* Elective course (3CUs)	**9**
2	A	Elective course (3CUs)	Elective course (3CUs)		**6**
	B	Elective course (3CUs)	Elective course (3CUs)		**6**
Elective courses in Semester A: (a) MBE6007 Advanced Automation Technology / (b) MBE6022 Project Development Study (c) MBE6110 Mechanical Behaviour of Materials: From Metallic to Biomedical/ Biological Materials / (d) MBE6119 Electron Microscopy Elective courses in Semester B: (a) MBE6002 Computer Controlled Systems / (b) MBE6046 Nano-Manufacturing / (c) MBE6121 Biomechanics					

Recommended for students who do not have biomedical engineering/science or bioengineering background.
Δ Recommended for students who have biomedical engineering/science or bioengineering background.
The elective course list may change subject to changes in the programme and/or demand for individual courses.

MSBME Study Path (2018 Cohort)

Part-time Normal Study Path <u>by Dissertation</u> (1.5 Years)

(Study load: ≤ 11 CUs / semester)

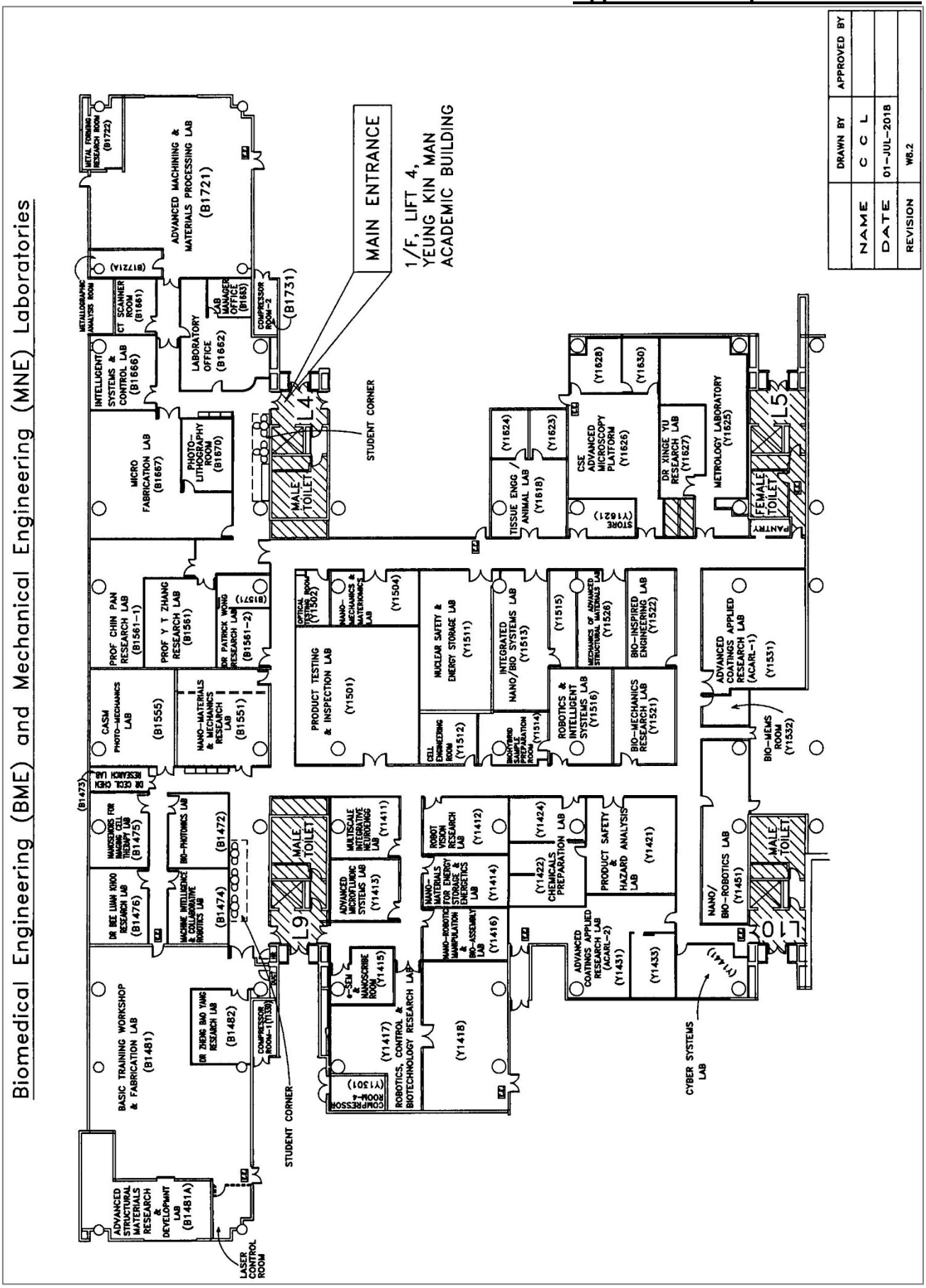
<table>
<tr><th>Yr.</th><th>Sem.</th><th colspan="4">Courses</th><th>CUs</th></tr>
<tr><td rowspan="3">1</td><td>A</td><td>MBE6101
Manufacturing of Biomedical Devices (3CUs)</td><td>MBE6111
Biomedical Instrumentation
(3CUs)</td><td colspan="2">MBE5110
Biomedical Engineering Design #
or
Elective course
(3CUs)</td><td>9</td></tr>
<tr><td>B</td><td>MBE6005
Micro Systems Technology
(3CUs)</td><td>MBE6118
Biomedical Photonics
(3 CUs)</td><td>MBE6117
Biomedical Safety and Risk Assessment Δ
or
Elective course
(3CUs)</td><td rowspan="4">MBE6008
Dissertation
(2CUs)
+
(3CUs)
+
(4CUs)

(Maximum - 6 semesters)</td><td>11</td></tr>
<tr><td>S</td><td></td><td></td><td></td><td>3</td></tr>
<tr><td>2</td><td>A</td><td>Elective course (3CUs)</td><td></td><td></td><td>7</td></tr>
<tr><td colspan="5"><u>Elective courses in Semester A</u>:
(a) MBE6007 Advanced Automation Technology /
(b) MBE6022 Project Development Study /
(c) MBE6110 Mechanical Behaviour of Materials: From Metallic to Biomedical/ Biological Materials /
(d) MBE6119 Electron Microscopy
<u>Elective courses in Semester B</u>:
(a) MBE6002 Computer Controlled Systems / (b) MBE6046 Nano-Manufacturing / (c) MBE6121 Biomechanics</td></tr>
</table>

Total CUs = 30

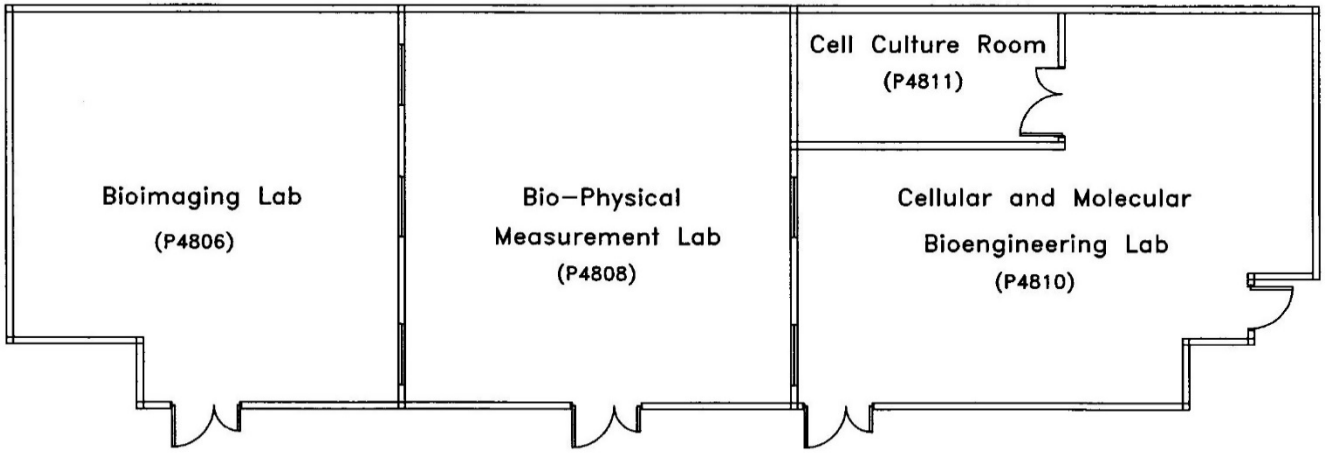
Recommended for students who do not have biomedical engineering/science or bioengineering background.
Δ Recommended for students who have biomedical engineering/science or bioengineering background.
The elective course list may change subject to changes in the programme and/or demand for individual courses.

Appendix II: Maps of Laboratories



BIOMEDICAL ENGINEERING LABORATORIES (BME LAB.)

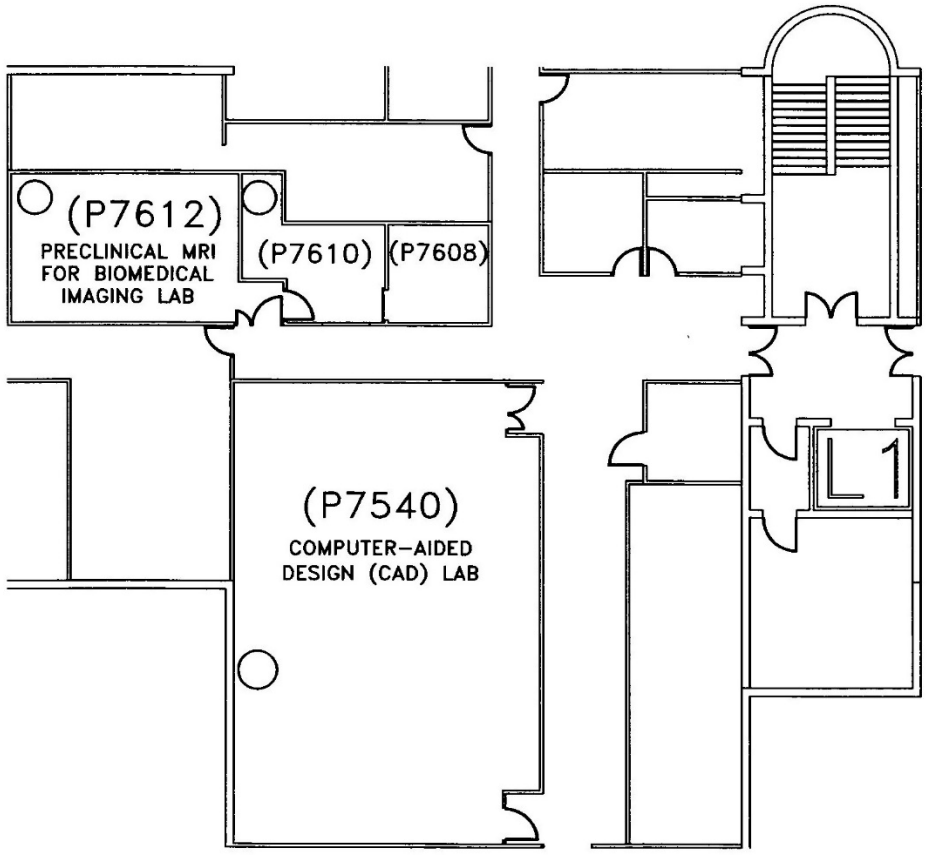
4/F, LIFT 17, PURPLE ZONE,
YEUNG KIN MAN
ACADEMIC BUILDING



	DRAWN BY	APPROVED BY
NAME	C C L	
DATE	03–Jul–2018	
REVISION	0	

Biomedical Engineering (BME) and Mechanical Engineering (MNE) Laboratories

7/F, LIFT 1, PURPLE ZONE,
YEUNG KIN MAN
ACADEMIC BUILDING



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NAME	C C L	
DATE	03-JUL-2018	
REVISION	A	