

Master of Science in Biomedical Engineering

Student Handbook (2020-2021)

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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, as well as by international experts, and active professionals working in the industry
- ii. Students can bring their problems from work to classes for group 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)

Take all (12 credit units) as below:

Course Code	Course Title	Level	Credit Units	Remarks
BME6005	Micro Systems Technology	P6	3	CEF approved course For non-UGC funded local students only
BME6101	Manufacturing of Biomedical Devices	P6	3	
BME6111	Biomedical Instrumentation	P6	3	
BME6121	Biomechanics	P6	3	

and take one course (3 credit units) from the recommendation* :

Course Code	Course Title	Level	Credit Units	Remarks
BME5110	Biomedical Engineering Design	P5	3	Recommended for students who do not have biomedical engineering/science or bioengineering background. Students who have not taken it to fulfil the core course requirement can take the course to fulfil the elective requirement.
BME6117	Biomedical Safety and Risk Assessment	P6	3	Recommended for students who have biomedical engineering/science or bioengineering background. Students who have not taken it to fulfil the core course requirement can take the course to fulfil the elective requirement.

*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
BME5108	Human Machine Interface	P5	3	
BME5110	Biomedical Engineering Design	P5	3	Students who have not taken it to fulfil the core course requirement can take the course to fulfil the elective requirement.
BME5111	Regenerative Medicine	P5	3	
BME6008	Dissertation	P6	9	@
BME6022	Project Development Study	P6	3	@
BME6045	Industrial Case Study	P6	3	
MNE6110	Mechanical Behaviour of Materials: From Metallic to Biomedical/ Biological Materials	P6	3	
BME6114	Advanced Control Systems	P6	3	
BME6115	Biorobotics	P6	3	
BME6117	Biomedical Safety and Risk Assessment	P6	3	Students who have not taken it to fulfil the core course requirement can take the course to fulfil the elective requirement.
BME6118	Biomedical Imaging and Biophotonics	P6	3	
MNE6119	Electron Microscopy	P6	3	
BME6122	Physiological Modeling	P6	3	
BME6123	Flexible Bioelectronics for Medical Applications	P6	3	
BME6135	Engineering Principles for Drug Delivery	P6	3	

@ If a student takes both *BME6022 Project Development Study* and *BME6008 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 *BME6008 Dissertation* within one semester 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 (SGS).

<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\$4,000 per credit (2020/21)
Non-Local Students : HK\$5,200 per credit (2020/21)

Duration of Study

	Full-time	Part-time/combined mode
Normal period of study	1 year	1.5 years (via Dissertation) / 2 years (via 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 SGS website.

<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 2020** 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_requirement_on_academic_honesty.htm

9. COMMUNICATIONS

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

- i. Students having academic difficulties in a course should first talk to the **course instructor** concerned.
- ii. Students wishing to discuss other academic-related issues should speak to the relevant **Year Tutor**.
- iii. Students wishing to discuss the overall organisation of the programme should speak to the **Programme Leader** or the **Deputy Programme Leader**.
- iv. **The Joint Staff & Student Consultative Committee (JSSCC)** facilitates communication and enables formal consultations between students and staff of the Department. 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 to sit in the **Programme Committee**.

10. PROGRAMME LEADER AND YEAR TUTOR

<u>Position</u>	<u>Staff Name</u>	<u>Tel / Email</u>
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 (2020 Cohort)	Dr. Chenjie XU	3442 4169 / chenjie.xu@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 homepage (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 class schedule for the current semester. Class schedule for Semester A 2020-21 is available from **28 July 2020** 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 the current and previous semesters.

11.3 How to check Programme Requirements and Course Syllabuses

Log onto the CityU homepage (www.cityu.edu.hk) and click "Academic Programmes".

11.4 Course Registration for Semester A 2020-2021

For Semester A 2020-21, 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 **28 July 2020**. 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 is Add/ Drop done?

- Go to CityU homepage (<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 **24 August 2020** but you need to check your time ticket first from "AIMS".
- iv) All add/drops end on **7 September 2020**.
- v) Detailed arrangements on Course Registration for Semester A 2020-21 will be posted by **31 July 2020**. For details, please refer to the SGS website:

<http://www.sgs.cityu.edu.hk/student/tpg/coursereg/>

11.5 How to access your Student Email Account

- i) Go to CityU homepage (<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 submitted 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 2020-21, the application period is from **15 July to 29 August 2020**.

For details, please refer to the 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	8:45 am to 5:30 pm
<i>Lunch Break</i>	<i>12:30 pm to 1:45 pm</i>
<i>Sat</i>	<i>Closed</i>

Phone:	3442-8420
Fax:	3442-0172
Email:	bmego@cityu.edu.hk
Website:	http://www.cityu.edu.hk/bme/

12. Continuing Education Fund (CEF) – For Non-UGC funded 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-hour hotline 3142-2277 for more information.

With effect from 1 April 2019, applicants who apply for CEF for the first time are only required to complete the Application Form [SFO 302 (2019)], which is a combined application form for both account opening and fee reimbursement. The completed application form with certification by institution / course provider together with copies of supporting documents should be submitted to OCEF. The reimbursement procedures are available at the CEF website www.wfsfaa.gov.hk/cef/en/application/procedures.htm.

Course commencement date for 2020-21:

Semester A: 31 August 2020

Semester B: 11 January 2021

Summer Term: 7 June 2021

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 : To be announced on the departmental website
<http://www.cityu.edu.hk/bme/>

12.2 CEF Reimbursement

Please read carefully the reimbursement procedures under the CEF website www.wfsfaa.gov.hk/cef/ or call the 24-hour 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
- 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.

Model Study Path

MSBME Study Path (2020 Cohort)
Full-time Normal Study Path via Taught Courses (1 Year)
(Taking a load of ≥12 CUs / semester)

Yr.		Courses				CU's
1	A	BME6101 Manufacturing of Biomedical Devices (3CUs)	BME6111 Biomedical Instrumentation (3CUs)	BME6121 Biomechanics (3 CUs)	BME5110 Biomedical Engineering Design # <i>or</i> Elective course (3CUs)	Elective course (3CUs)
	B	BME6005 Micro Systems Technology (3CUs)	Elective course (3CUs)	Elective course (3CUs)	BME6117 Biomedical Safety and Risk Assessment ^Δ <i>or</i> Elective course (3CUs)	Elective course (3CUs)
		<u>Elective courses[®]:</u> (a) BME5111 Regenerative Medicine (b) BME6022 Project Development Study (c) BME6123 Flexible Bioelectronics for Medical Applications (d) MNE6110 Mechanical Behaviour of Materials: From Metallic to Biomedical/ Biological Materials (e) MNE6119 Electron Microscopy				15
		<u>Elective courses[®]:</u> (a) BME6115 Biorobotics (b) BME6114 Advanced Control Systems (c) BME6118 Biomedical Imaging and Biophotonics (d) BME6135 Engineering Principles for Drug Delivery (e) <i>BME61xx New Course pending</i>				15
Total CUs = 30						

Note 1: () number of credit units

Note 2: # 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.

Note 3: [®] Courses list may change subject to changes in the programme and/or demand for individual courses.

MSBME Study Path (2020 Cohort)
Full-time Normal Study Path via Dissertation (1 Year)
(Taking a load of ≥ 12 or 15 CUs / semester)

Dissertation is recommended to students who plan to graduate at the end of Summer Term. Students are also strongly recommended to take dissertation as their elective to complete the programme in 1 year as follows:

Yr.	Sem.	Courses			CUs
1	A	BME6101 Manufacturing of Biomedical Devices (3CUs)	BME6111 Biomedical Instrumentation (3CUs)	BME6121 Biomechanics (3 CUs)	12 or 15
	B	BME6008 Dissertation (6CUs) + (3CUs)	BME6005 Micro Systems Technology (3CUs)	BME6117 Biomedical Safety and Risk Assessment ^Δ or Elective course (3CUs)	
	S				3
					Total CUs = 30

Note 1: () number of credit units

Note 2: # 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.

Note 3: [©] Courses list may change subject to changes in the programme and/or demand for individual courses.

MSBME Study Path (2020 Cohort)
Part-time Normal Study Path via Taught Courses (2 Years)
(Taking a load of ≤ 9 CUs / semester)

Students are required to complete the five core courses plus (i) five electives or (ii) dissertation + one elective + Project Development Study (elective). The advice is not to take more than 11 credit units in a semester.

Yr.		Sem.		Courses		CU's
1	A	BME6101 Manufacturing of Biomedical Devices (3CUs)	BME6111 Biomedical Instrumentation (3CUs)	BME5110 Biomedical Engineering Design # <i>or</i> Elective course (3CUs)		9
	B	BME6005 Micro Systems Technology (3CUs)	Elective course (3CUs)	BME6117 Biomedical Safety and Risk Assessment ^Δ <i>or</i> Elective course (3CUs)		9
2	A	BME6121 Biomechanics (3 CUs)		Elective course (3CUs)		6
	B	Elective course (3CUs)		Elective course (3CUs)		6
<u>Elective courses in Semester A[ⓐ]:</u> (a) BME5111 Regenerative Medicine; (b) BME6022 Project Development Study; (c) BME6123 Flexible Bioelectronics for Medical Applications; (d) MNE6110 Mechanical Behaviour of Materials: From Metallic to Biomedical/ Biological Materials; (e) MNE6119 Electron Microscopy <u>Elective courses in Semester B[ⓑ]:</u> (a) BME6115 Biorobotics; (b) BME6114 Advanced Control Systems; (c) BME6118 Biomedical Imaging and Biophotonics; (d) BME6135 Engineering Principles for Drug Delivery; (e) <i>BME61xx New Course pending</i>						

Total CUs = 30

Note 1: () number of credit units

Note 2: # 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.

Note 3: ⓐ Courses list may change subject to changes in the programme and/or demand for individual courses.

MSBME Study Path (2020 Cohort)
Part-time Normal Study Path via Dissertation (1.5 Years)
(Taking a load of ≤ 11 CUs / semester)

Dissertation is recommended to students who plan to graduate at the end of Summer Term. If students select dissertation as their elective, they can complete the programme as follows:

Yr.		Sem.			Courses		CUs
1	A	BME6101 Manufacturing of Biomedical Devices (3CUs)	BME6111 Biomedical Instrumentation (3CUs)	BME5110 Biomedical Engineering Design # <i>or</i> Elective course (3CUs)		9	
		BME6005 Micro Systems Technology (3CUs)	Elective course (3CUs)	BME6117 Biomedical Safety and Risk Assessment ^Δ <i>or</i> Elective course (3CUs)	BME6008 Dissertation (2CUs) + (3CUs) + (4CUs)		
	B	S	BME6121 Biomechanics (3 CUs)		3		
2	A	<u>Elective courses in Semester A</u> [Ⓞ] : (a) BME5111 Regenerative Medicine; (b) BME6022 Project Development Study; (c) BME6123 Flexible Bioelectronics for Medical Applications; (d) MNE6110 Mechanical Behaviour of Materials: From Metallic to Biomedical/ Biological Materials; (e) MNE6119 Electron Microscopy <u>Elective courses in Semester B</u> [Ⓞ] : (a) BME6115 Biorobotics; (b) BME6114 Advanced Control Systems; (c) BME6118 Biomedical Imaging and Biophotonics; (d) BME6135 Engineering Principles for Drug Delivery; (e) <i>BME61xx New Course pending</i>					7
Total CUs = 30							

Note 1: () number of credit units

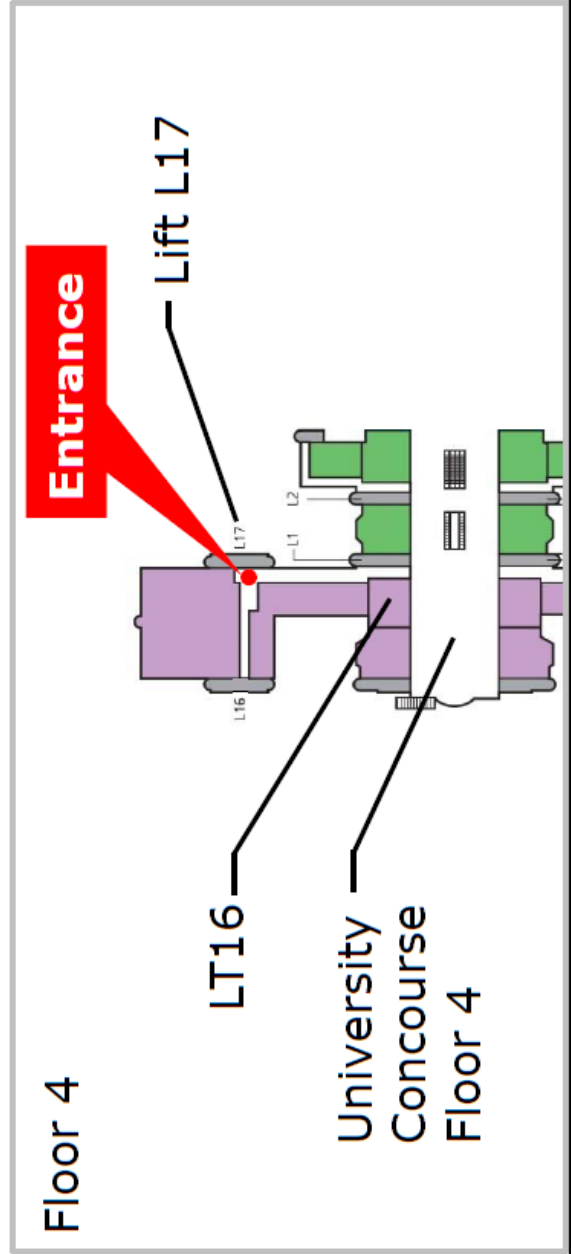
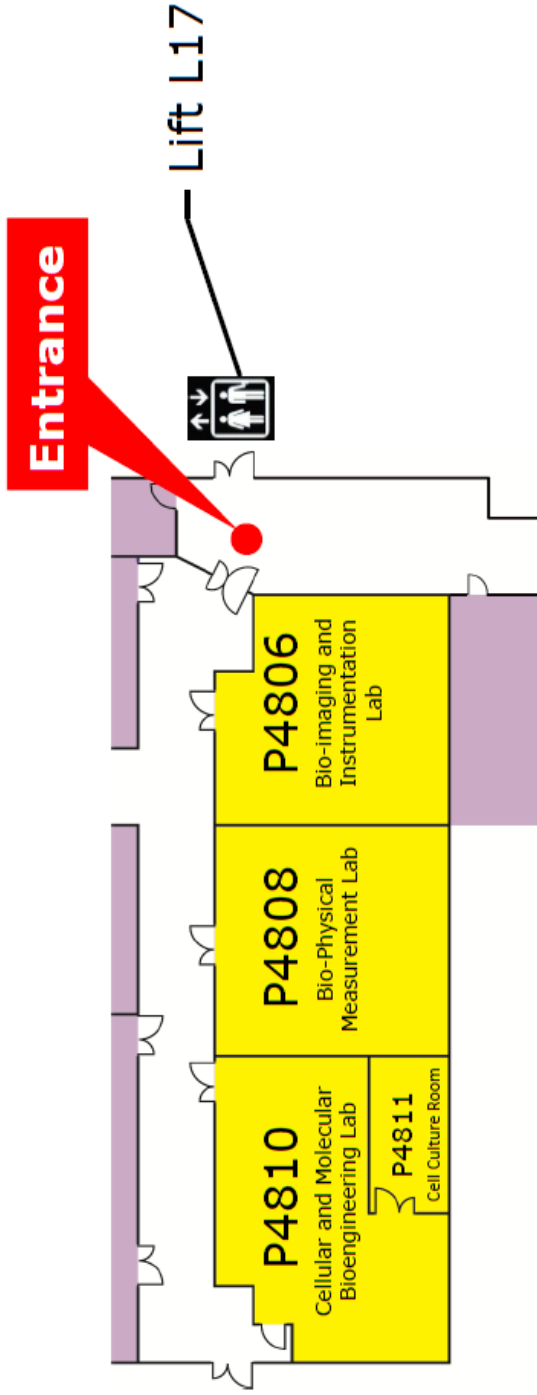
Note 2: # Recommended for students who do not have biomedical engineering/science or bioengineering background.

Δ Recommended for students who have biomedical engineering/science or bioengineering background.

Note 3: Ⓞ Courses list may change subject to changes in the programme and/or demand for individual courses.

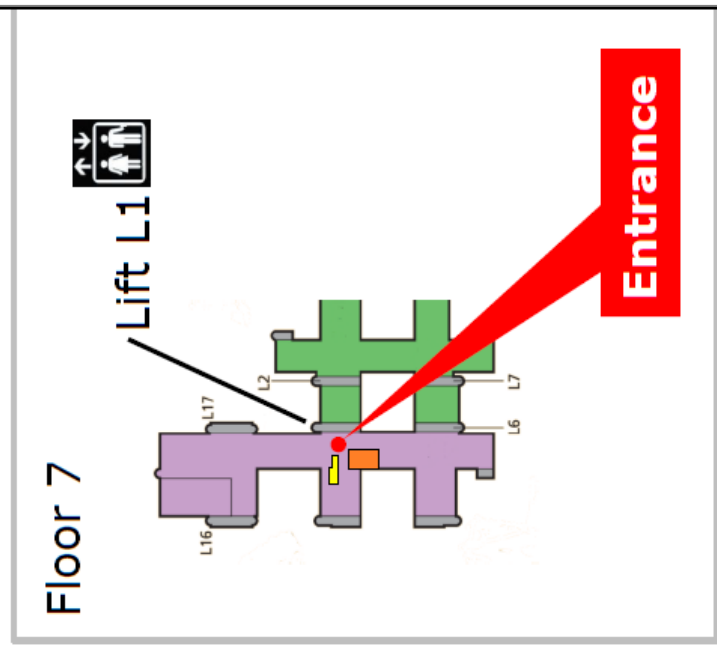
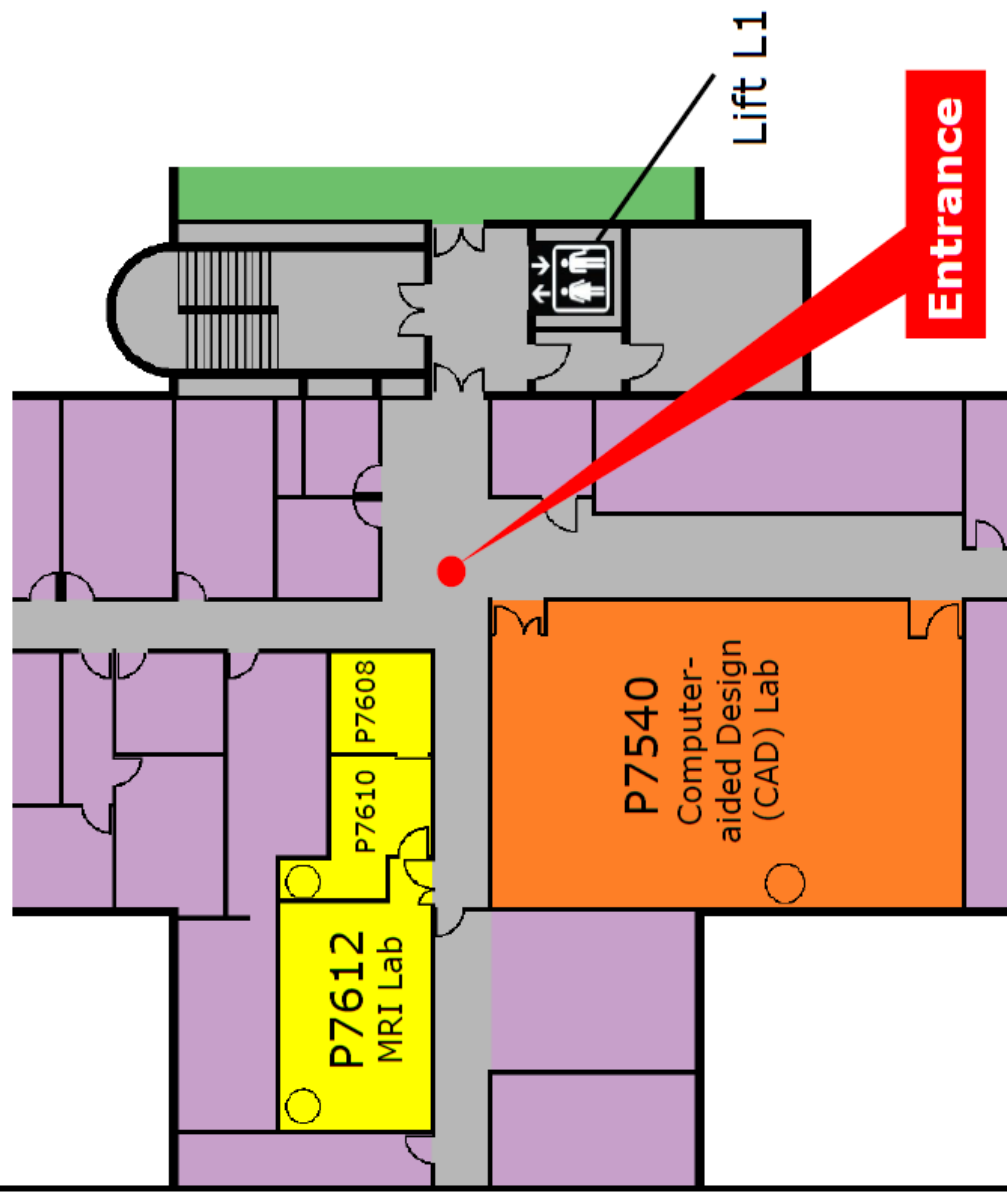
BME Labs (Purple Zone, Floor 4, Yeung Kin Man Academic Bldg.)

Room P4806 - P4811



BME/MNE Labs (Purple Zone, Floor 7, Yeung Kin Man Academic Bldg.)

Room P7540 Computer-aided Design (CAD) Laboratory
 Room P7612 Preclinical MRI for Biomedical Imaging Laboratory



LEGEND:
 BME Lab
 Shared Lab - Hosted by MNE