

# Teaching Time Tables

## Teaching Terms

First term	September 4, 2023 (Mon) – December 23, 2023 (Sat)
Add/Drop	September 4, 2023 (Mon) at 10:00 a.m. – September 18, 2023 (Mon) at 5:30 p.m.
Course Examination	The <b>LAST</b> lesson of the course (to be confirmed)
Second term	January 8, 2024 (Mon) – May 11, 2024 (Sat)
Add/Drop	January 8, 2024 (Mon) at 10:00 a.m. – January 22, 2024 (Mon) at 5:30 p.m.
Course Examination	The <b>LAST</b> lesson of the course (to be confirmed)

**\*\*No Summer Term to be offered\*\***

## Timetable of Required and Elective Courses

1st Term, 2023-2024 (Period: September 4, 2023 (Mon) – December 23, 2023 (Sat))							
Day	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	To be arranged by supervisor
Course code	BMEG5710	BMEG5720	BMEG5820	BEMG5830	BEMG5540	BMEG5860	BMEG5920
	Required	Required	Elective	Elective	Elective	Elective	Elective
2nd Term, 2023-2024 (Period: January 8, 2024 (Mon) – May 11, 2024 (Sat))							
Day	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	To be arranged by supervisor
Course code	BMEG5530	BMEG5850	BMEG5750	BMEG5790	BMEG5760	BMEG5840	BMEG5930
	Elective	Elective	Elective	Elective	Elective	Elective	Elective

\*\* Students are allowed to take up TWO elective courses from the specified group, subject to approval of Divisions/Units concerned. For course detail from specific group, please refer the Curriculum Structure.

## **Course Information**

**1st Term, 2023-2024 (Period: September 4, 2023 (Mon) – December 23, 2023 (Sat))**

- BMEG 5540
- BMEG 5710
- BMEG 5720
- BMEG 5820
- BMEG 5830
- BMEG 5860
- BMEG 5920

### **BMEG 5540**

Course Code:	<b>BMEG 5540</b>
Course Title:	<b>BioMEMs and Biophotonics</b>
Day of Week:	Friday
Period:	6:45 p.m. - 9:45 p.m.
Venue:	Lecture Theater 4, Wong Foo Yuan Bldg (FYB_LT4)
Course Outline:	Review of physical properties of light. Optical sources and detectors. Interaction between light and biological materials. Introduction to cell and tissues, DNA and protein. Photo-absorption, emission and spectroscopy. Bio-imaging principles and techniques. Modeling of light-tissue interaction. Light-activated therapy. Micro-array technology. Laser tweezers. Emerging biophotonic technologies.

### **BMEG 5710 (Required Course for Year 1 Student)**

Course Code:	<b>BMEG 5710</b>
Course Title:	<b>Introduction to Biomedical Engineering</b>
Day of Week:	Monday
Period:	6:45 p.m. - 9:45 p.m.
Venue:	Lecture Theater 9, Yasumoto International Academic Park (YIA_LT9)
Course Outline:	Definition, scope, basic principles and problems in biomedical engineering. Applications of technology to medicine and biology. Contemporary issues and roles of engineering applied to complex biological systems. Brief description of professional ethics.

**BMEG 5720 (Required Course for Year 1 Student)**

Course Code:	<b>BMEG 5720</b>
Course Title:	<b>Basic Biomedical Science</b>
Day of Week:	Tuesday
Period:	6:45 p.m. - 9:45 p.m.
Venue:	Lecture Theater 9, Yasumoto International Academic Park (YIA_LT9)
Course Outline:	This course introduces students to the structure and function of anatomy, physiology, and chemical constituents of living systems. The course provides a system-based review of the structure and function, normal as well as abnormal, of cells, organs and systems. Emphases will be placed on those structures/functions that are important in biomedical engineering. Case studies will also be included to introduce the importance of medical sciences related to biomedical engineering.

**BMEG 5820**

Course Code:	<b>BMEG 5820</b>
Course Title:	<b>Virtual Medicine and Computer Aided Surgery</b>
Day of Week:	Wednesday
Period:	6:45 p.m. - 9:45 p.m.
Venue:	1. Prince of Wales Hospital, Shatin; OR 2. Room 508, Wu Ho Man Yuen Bldg (WMY_508)
Course Outline:	Image guided surgery, including CT base, fluoro-image, and others; non-image guided surgery. Introduction to clinical applications. Virtual reality and surgical simulation. Augmented reality and image-guided minimally invasive surgery. Use of telerobotics in surgery. Surgical navigation.

**BMEG 5830**

Course Code:	<b>BMEG 5830</b>
Course Title:	<b>Medical Imaging</b>
Day of Week:	Thursday
Period:	6:45 p.m. - 9:45 p.m.
Venue:	Room 406, Wu Ho Man Yuen Bldg (WMY_406)
Course Outline:	The course introduces various diagnostic medical imaging modalities, such as projection radiography, conventional X-ray, computerized tomography (CT), nuclear medicine (PET and SPECT), ultrasound, and magnetic resonance imaging (MRI). Each of these modalities will be introduced from basic physical

principles to the process of image formation. This course also reviews the basic signal processing techniques. Image processing and analysis will be introduced.

## **BMEG 5860**

Course Code:	<b>BMEG 5860</b>
Course Title:	<b>E-Health Technologies</b>
Day of Week:	Saturday
Period:	2:30 p.m. - 5:30 p.m.
Venue:	Room 304, Wu Ho Man Yuen Bldg (WMY_304)
Course Outline:	Concepts of tele-medicine, E-medicine, and M-health. Basic techniques in tele-medicine and M-health: communication systems and networks, medical devices, E-medical records, information security and confidentiality, medical data coding and compression, functions of PACS and HIS. Applications include: tele-surgery, tele-geriatrics, tele-monitoring and M-health etc.

## **BMEG 5920**

Course Code:	<b>BMEG 5920</b>
Course Title:	<b>M.Sc. Project I</b>
Period:	To be arranged by supervisors
Day of week:	Meetings will be arranged between students and supervisors
Course Outline:	The objective of this course is for students to get hands-on practical experience. Each student is required to design, simulate or test a medical device/algorithm/bioinformatics database.

## 2nd Term, 2023-2024 (Period: January 8, 2024 (Mon) – May 11, 2024 (Sat))

- BMEG 5530
- BMEG 5750
- BMEG 5760
- BMEG 5790
- BMEG 5840
- BMEG 5850
- BMEG 5930

### BMEG 5730

Course Code:	<b>BMEG 5530</b>
Course Title:	<b>Tissue Engineering</b>
Day of Week:	Wednesday
Period:	6:45 p.m. - 9:45 p.m.
Venue:	G02, Lee Shau Kee Architecture Bldg (ARC_G02)
Course Outline:	This course provides an overview on the fundamental elements of tissue engineering including stem cell, extracellular matrix, biomaterials, soluble factor, drug delivery, mechanotransduction and bioreactor and recent advances in these fields. This course helps the students to understand how knowledge and techniques from biochemistry, biology, material science and various engineering disciplines can be applied to promote the advancement in tissue engineering of various physiological systems. Basic level of knowledge in biomaterials, biology and biochemistry is recommended.

### BMEG 5750

Course Code:	<b>BMEG 5750</b>
Course Title:	<b>Medical Robotics</b>
Day of Week:	Wednesday
Period:	6:45 p.m. - 9:45 p.m.
Venue:	Room 408, Wu Ho Man Yuen Bldg (WMY_408)
Course Outline:	Introduction to robotics and its applications in biomedical engineering including diagnosis, surgery, and medical simulation. Classification of robot systems, forward and inverse kinematics associated to manipulator motion, robot design, control, sensing, and programming.

## BMEG 5760

Course Code:	<b>BMEG 5760</b>
Course Title:	<b>Bioelectronics and Nanotechnology</b>
Day of Week:	Friday
Period:	6:45 p.m. - 9:45 p.m.
Venue:	Room 406, Wu Ho Man Yuen Bldg (WMY_406)
Course Outline:	<p>This course covers the essential elements of bioelectronics and nanotechnology specific to biomedical engineering.</p> <p>The first part of this course (Bioelectronics) includes overview of bioelectronics, functional materials for bioelectronics, biomolecule-based transistors, electrochemical biosensors, device fabrication and characterisation, lab-on-a-chip, wearable devices, and implantable bioelectronics and bionics.</p> <p>The second part of this course (Nanotechnology) includes introduction to nanotechnology, nanolithography, solution-based synthesis of nano-materials, characterisation techniques, scanning probe-based biomanipulation, soft-lithography for DNA, proteins and cells, self-assembly of peptides and proteins, nanoscale drug delivery systems, and bio-nano-informatics fusion.</p>

## BMEG 5790

Course Code:	<b>BMEG 5790</b>
Course Title:	<b>Bioinformatics</b>
Day of Week:	Thursday
Period:	6:45 p.m. - 9:45 p.m.
Venue:	Room 1122, William M.W. Mong Engineering Building, CUHK
Course Outline:	<p>This course covers DNA and protein bioinformatics. It introduces basic programming techniques, sequence analysis, including alignment of sequence, database search, statistical analysis, phylogenetic trees, scoring matrices, pattern recognition, clustering and structural prediction in bioinformatics.</p>

## BMEG 5840

Course Code:	<b>BMEG 5840</b>
Course Title:	<b>Biomedical Engineering Laboratories</b>
Day of Week:	Saturday
Period:	6:45 p.m. - 9:45 p.m.

Venue:	Lecture Part: Room 304, Wu Ho Man Yuen Bldg (WMY_304)
Course Outline:	This course aims to provide students from different science & engineering backgrounds opportunities to learn how to fabricate simple medical materials and devices, how to collect data on human subjects and other biological samples, and how to analyze the results to address various health-related issues. The course starts with a series of lectures on the principles underpinning each of the planned laboratory modules. Students will then form teams to conduct a number of hand-on laboratory modules in different areas of biomedical engineering to achieve the course aims and learning outcomes. Examples of laboratory modules include fabrication of basic biomedical device for biosignal acquisition, advanced electrophysiological techniques, fabrication of biomaterials for drug deliveries, PCR and gel electrophoresis, confocal fluorescence microscopy, functional MRI data processing, biomedical imaging for musculoskeletal applications, measurement of interfacial pressure at body support surfaces, electromyography & exoskeleton hand robot, etc.

### **BMEG 5850**

Course Code:	<b>BMEG 5850</b>
Course Title:	<b>Medical Device Regulatory Affairs and Intellectual Property</b>
Day of Week:	Tuesday
Period:	6:45 p.m. - 9:45 p.m.
Venue:	Room 408, Wu Ho Man Yuen Bldg (WMY_408)
Course Outline:	This course provides an overview on medical device regulation and intellectual property. Regulatory affairs is how to get a medical product registered in different countries' health authorities. A registered product would demand a lot of technical documentation to prove its efficacy, safety, and quality. To successfully and smoothly register a product, knowledge and skills are required to deal with various key stakeholders in governments, testing centers, hospitals, and medical doctors. Intellectual Property, such as patent, is to protect the invention and to support licensing their rights to manufacturers in the medical device industry.

### **BMEG 5930**

Course Code:	<b>BMEG 5930</b>
Course Title:	M.Sc. Project II
Period:	To be arranged by supervisors
Day of week:	Meetings will be arranged between students and supervisors
Course Outline:	The objective of this course is for students to get hands-on practical experience. Each student is required to design, simulate or test a medical device/algorithm/bioinformatics database.

## **General Information**

### **General Arrangements for Classes and Examinations on Approach of Typhoons and Rainstorms**

#### *A. Suspension of Classes (face-to-face class meetings\*)*

- (i) If the local storm warning signal No. 8 or above or the black rainstorm signal is issued at the following hours, classes will be suspended as appended below:

<u>Signal issued by</u>	<u>Sessions/Periods suspended</u>
7:00 a.m.	8:30 a.m. - 1:15 p.m.
12:00 noon	1:30 p.m. - 6:15 p.m.
5:00 p.m.	6:30 p.m. onward

- (ii) If the announcement of “extreme condition” by the Government after super typhoons is issued at 7:00am or after, all classes will be suspended for whole day.
- (iii) If the local Tropical Cyclone Warning Signal No. 8 or above, the Black Rainstorm Signal or the announcement of “extreme condition” by the Government after super typhoons is issued during a class period, all classes will be suspended immediately. Students are advised to take shelter at a safe place until the weather and transport conditions have improved.
- (iv) Public announcements on suspension of classes made by the Education Bureau are not applicable to the University.

*Note: \*Course teacher concerned may arrange online class as scheduled when face-to-face class suspension happen due to weather conditions. Please refer to relevant announcement on blackboard.*

#### *B. Examination Arrangements (face-to-face examinations)*

The arrangements for course examinations will be as follows:

<u>Typhoon Signal</u>	<u>Rainstorm Signal</u>	<u>Signal Issued</u>	<u>Examination Arrangements*</u>
No. 1 or No. 3	Amber or Red	-	Examinations to be held as scheduled
No. 8 or above or the announcement of "extreme condition"	Black	After the start of the examination 7:00 a.m. or after 5:00 p.m. or after	Examinations will continue until the end of the session All course examinations, daytime postgraduate examinations postponed Evening examinations of postgraduate programmes postponed

#### *C. Arrangements for Online Classes and Online Examinations*



- (i) Unless otherwise advised by the course teachers concerned with alternative arrangements, all online classes and online examinations will continue as scheduled under any weather conditions, including when Tropical Cyclone Warning Signal No. 8 or above and/or Black Rainstorm Signal is hoisted.
- (ii) For face-to-face meetings or face-to-face examinations, please refer to “A. Suspension of Classes” and “B. Examinations Arrangements” above for class/examination suspension. Course teachers concerned should arrange class make-up and postponement of examination when such class/examination suspension happen due to weather conditions.