BEng in Biomedical Engineering
Programme Briefing

http://www.bme.cuhk.edu.hk
CUHK Biomedical Engineering
Department of Biomedical Engineering

- 2006
  - Launch of the Graduate Division
- 2007
  - Launch of the MSc Programme
- 2010
  - Launch of the BEng (Hons) Programme
- 2012
  - Launch of the MPhil/PhD Programme
- 2017
  - Establishment of the BME Department
BME Core Faculty Members

Prof. Raymond TONG
Professor & Chairman

Prof. Liming BIAN
Assistant Professor

Prof. Jonathan CHOI
Assistant Professor

Prof. Aaron HO
Professor

Prof. Megan HO
Assistant Professor

Prof. Arthur MAK
Professor

Prof. Renjie ZHOU
Assistant Professor
Highlights of Biomedical Engineering Programme
Prof. Raymond Tong
Biomedical Engineering (BME)

- An interdisciplinary division offered by the Faculty of Engineering in close collaboration with the Faculty of Medicine
- Both basic and applied research
- Wide access to courses offered by different divisions
- Tailor-made learning programmes
- Individualized PhD candidacy examination
Fields of Specialization in BME

- Medical Instrumentation & Biosensors
- Biomedical Imaging, Informatics & Modeling
- Molecular, Cell & Tissue Engineering
Biomaterials and Regenerative Medicine

BioFabrication and Characterization Laboratories
Prof. Arthur MAK
Department of Biomedical Engineering and
Department of Mechanical and Automation Engineering

Biomaterials and Tissue Engineering Lab
Prof. Liming BIAN
Department of Mechanical and Automation Engineering

Musculoskeletal Research Laboratory
Prof. Ling QIN, Prof. Gang LI
Department of Orthopaedics and Traumatology
Faculty of Medicine
Biomolecular Engineering and Nanomedicine

Bionanotechnology Lab
Prof. Jonathan CHOI
Department of Biomedical Engineering

Biophotonics Laboratory
Prof. Aaron HO
Department of Biomedical Engineering

DNA nanosensors
Prof. Megan HO
Department of Biomedical Engineering

Advanced Nanomaterials & Micromachines Laboratory
Prof. Li ZHANG
Department of Mechanical and Automation Engineering
Medical Imaging and Informatics

Prof. Emma MacPHerson
Department of Electronic Engineering

Prof. Xiaogang WANG
Department of Electronic Engineering

Prof. Kevin YIP
Department of Computer Science and Engineering

Prof. Thierry Albert BLU
Department of Electronic Engineering

Prof. Pheng Ann HENG
Department of Computer Science and Engineering

Prof. Lin SHI
Department of Medicine and Thereapeutics
Faculty of Medicine
Medical Instrumentation and Biosensors

Biomedical Engineering Laboratory
Prof. Raymond TONG
Department of Biomedical Engineering

Medical Robotics Laboratory
Prof. Max MENG
Department of Electronic Engineering

Smart Materials and Structures Laboratory
Prof. Wei Hsin LIAO
Department of Mechanical and Automation Engineering

Multi-scale Precision Instrumentation Laboratory
Prof. Shih Chi CHEN
Department of Mechanical and Automation Engineering

CUHK Jockey Club Minimally Invasive Surgical Skills Centre
Prof. Philip CHIU
Department of Surgery, Faculty of Medicine
Minimum Graduation Requirements

### University Core Requirements

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Units</th>
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</thead>
<tbody>
<tr>
<td>Chinese Language</td>
<td>6</td>
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<tr>
<td>English Language</td>
<td>9</td>
</tr>
<tr>
<td>University GE</td>
<td>9</td>
</tr>
<tr>
<td>College GE</td>
<td>6</td>
</tr>
<tr>
<td>Foundation Courses</td>
<td>6</td>
</tr>
<tr>
<td>IT (Equivalent to ENGG1110)</td>
<td>1 (exempted)</td>
</tr>
<tr>
<td>PE</td>
<td>2</td>
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<tr>
<td><strong>Total:</strong></td>
<td><strong>39</strong></td>
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Free Electives: 10

Minimum Units for Graduation: **123**

### Major Programme Requirements

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Units</th>
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</thead>
<tbody>
<tr>
<td>Faculty Package</td>
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<tr>
<td>Foundation Science Courses</td>
<td>9</td>
</tr>
<tr>
<td>Foundation Math Courses</td>
<td>12</td>
</tr>
<tr>
<td>Major Required Courses</td>
<td>27</td>
</tr>
<tr>
<td>Research Component Courses</td>
<td>6</td>
</tr>
<tr>
<td>Major Elective Courses</td>
<td>12</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td><strong>75</strong></td>
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</tbody>
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Let's talk about here
### Recommended Study Pattern: Year 2

<table>
<thead>
<tr>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 2 - Term 1</td>
</tr>
<tr>
<td>BMEG2001 Introduction to Biomedical Engineering</td>
</tr>
<tr>
<td>BMEG2210 Orthopaedic Biomechanics and Musculoskeletal Injury</td>
</tr>
<tr>
<td>ENGG2420 Complex Analysis and Differential Equations for Engineers</td>
</tr>
<tr>
<td>SBMS1431 Human Anatomy and Physiology I</td>
</tr>
<tr>
<td>Year 2 - Term 2</td>
</tr>
<tr>
<td>ENGG2601 Technology, Society and Engineering Practice</td>
</tr>
<tr>
<td>BMEG2011 Biomedical Engineering Laboratory</td>
</tr>
<tr>
<td>BMEG2300 Circuits and Signals for Biomedical Engineering</td>
</tr>
<tr>
<td>ENGG2450 Probability and Statistics for Engineers</td>
</tr>
<tr>
<td>SBMS1432 Human Anatomy and Physiology II</td>
</tr>
<tr>
<td>SBMS1440 Cell and Molecular Biology in Biomedical Engineering</td>
</tr>
<tr>
<td>Year 2 - Summer</td>
</tr>
<tr>
<td>ENGG2602 Engineering Practicum (A summer workshop; reserve your time &amp; take it in year-2 summer!!!)</td>
</tr>
</tbody>
</table>

For Year 2 students, all required courses will be pre-assigned to you (unless there is time clash due to re-take foundation courses)
# Recommended Study Pattern: Year 3-4

<table>
<thead>
<tr>
<th>Year 3 - Term 1</th>
<th>Units</th>
</tr>
</thead>
</table>
| Major required: (1) BMEG3430 Biomaterials and Tissue Engineering  
(2) BMEG3101 Medical Instrumentation and Design  
(3) BMEG3320 Biomedical Imaging | 12 |
| Major Elective: 1 BMEG3xxx / BMEG4xxx | |
| Year 3 - Term 2 | 3 |
| Major Elective: 1 BMEG3xxx / BMEG4xxx | |
| **Year 4: Work-Study if you want to** | |
| **Note: may get one unit from ENGG1820 Engineering Internship** | |
| Year 4 - Term 1 (or Year 5 for workstudy) | 9 |
| Major required: (1) BMEG4010 Global Medical Device Regulatory Affairs  
(2) BMEG4998 Final Year Project I | |
| Major Elective: 1 BMEG3xxx / BMEG4xxx | |
| Year 4 - Term 2 | |
| Major required: (1) BMEG4999 Final Year Project II | |
| Major Elective: 1 BMEG3xxx / BMEG4xxx | |

Just talk to me or your Academic Advisor by then!
Stream Specialization

Students may choose not to specialize in any stream or to specialize in one of the three streams and complete a minimum of 12 units of courses, at most one elective at 2000 or below level, plus BMEG4998 and 4999[e], prescribed by the stream.

**Medical Instrumentation & Biosensors (MIB)**
- TeleMedicine & Mobile Healthcare
- Biofluids
- Medical Robotics
- BioMEMS
- Neuroengineering
- Bionanotechnology

**Biomedical Imaging, Informatics & Modeling (MII)**
- Bioinformatics
- Biomedical Imaging
- Biomedical Modeling
- Medical Imaging Applications
- Sound and Light Waves in Medicine

**Molecular, Cell & Tissue Engineering (BCTE)**
- Cell Biology
- Genetic Engineering
- Biomolecular Engineering
- BioMEMS
- Bionanotechnology
Check on CUSIS who is your academic advisor
Town Hall Meeting

- We will organize Town Hall Meeting as one of the student-staff consultative channels every term to let BME students (all years) and BME teachers come together to share any opinion, suggestion, discussion regarding study life, academic issues etc.

- The Town Hall Meeting for this term is **6:30pm on 20 Nov 2017 (Monday)**. You will receive email invitation when date is confirmed.
Work-study Programme
Prof. Aaron Ho
Work-study Programme

► 16 current students have joined the work-study programme in 2016-17

► A University supervisor is assigned to you and he/she will visit you at least twice during your placement

► >8 weeks of full-time internship (with approval by the Faculty and Department), you can register the 1-unit ENGG1820 course as free elective

► After completion, you and your industrial supervisor should submit a report to the Department
<table>
<thead>
<tr>
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<tbody>
<tr>
<td>ASM Pacific Technology Ltd.</td>
<td>ASM Pacific Technology Ltd.</td>
<td>AML Health Plus Ltd.</td>
<td>ITE Smartcard Solutions Ltd.</td>
<td></td>
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<tr>
<td>AML Health Plus Ltd.</td>
<td>Automatic Manufacturing Ltd.</td>
<td>Electrical and Mechanical Services Department</td>
<td>AML Health Plus Ltd.</td>
<td></td>
</tr>
<tr>
<td>The Hongkong and Shanghai Banking Corp. Ltd. (HSBC)</td>
<td>Medisen Ltd.</td>
<td>Medisen Ltd.</td>
<td>Electrical and Mechanical Services Department</td>
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</tr>
<tr>
<td>ITE Smartcard Solutions Ltd.</td>
<td>Paul C. Lauterbur Research Centre (SZ)</td>
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<td>Ove Arup &amp; Partners Hong Kong Ltd.</td>
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<tr>
<td>Paul C. Lauterbur Research Centre (SZ)</td>
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<tr>
<td>Sengital Ltd.</td>
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</table>
Lead Frame Solutions
One-stop packaging solution from lead frame design to assembly process optimization. With vast product portfolio, leading-edge technologies, operation efficient factories, we value-add for you.

Copper Bonding Solutions
Field proven!

Stocked Die Solutions
Our Layers of Challenges

Advanced Fine Pitch Solutions
World's best 30µm SPP

Encapsulation Solutions
You are protected!

LED Solutions
One-stop Solution for LED Packaging and Manufacturing

Image Sensor Applications
Sure Leader in providing particle-controlled image sensor in-line assembly solutions

Highlighted Products

LEXIWAY
Tracking Device and System
Our tracking device uses satellite GPS technology coupled with cellular's location based services to determine the precise location of a vehicle, person or asset to which it is attached.

Ngong Ping 360
Public Announcement System
We have successfully developed and installed a Public Announcement System for Ngong Ping 360, the cable car system in Hong Kong.

Aztech
Innovate to connect
Leader in POWERLINE NETWORKING
Ultimate Silicon Solution
For Every Display System

Embedded Solutions
AirPrime® Modules | Programmable modems

Networking Solutions
Routers & Gateways
AirLink® | InMotion Solutions™

SIMs, Connectivity & Cloud Services
Smart SIM | AirVantage IoT Platform
More Job Information

http://pip.cintec.cuhk.edu.hk

(for Pre-final Year Students only)
Overseas Exchange Programme and Engineering Practicum

Prof. Arthur Mak
Overseas Exchange

- To gain different learning experience
- To know the world
- To know other people
- To reflect and to plan for the future
Term-time Exchange Program
Term-time Exchange Program

- 6 month - 12 month
- With partner institution (agreement signed on credit transfer)
- Normally you pay CUHK tuition fee, no matter where you go
- Large-scale, open to all disciplines
- Some of the institutions target specifically at engineering students (e.g., UIUC, KTH)
- Applications centrally administrated by OAL (Office of Academic Links: http://www.oal.cuhk.edu.hk)
- Watch out the application deadlines!
Short-term Exchange Programs

- Usually summer time
- May or may not be with credit transfer
- College-administrate cultural interflow or thematic study
- Engineering Faculty’s programs
  - Research based or course based
  - With financial support
  - e.g., Charles Kao Overseas Research Exchange Scheme, Peking University GLOBEX summer school
Considerations

- Objective: general experiential learning or discipline-specific study
- Are you ready to meet possible cultural and study challenges?
- Where to go?
- Which year should you go?
- Does the target institution use English to teach?
- Credit transfer matters:
  - Could the courses you take during exchange be transferred to CUHK and counted as graduation requirements?
  - Approval process of credit transfer
Preparation

- Get a good GPA
- Take English test (e.g., IELTS)
- Search for information, ask your seniors who went exchange
- Improve interview skill
- Make clear study plan
- Contact the department about credit transfer possibility
- Know the expense and prepare
- Communicate well with parents
Outgoing Engineering Exchange Students (2016-17)
Distribution by Region of Destination

- USA: 28%
- Sweden: 18%
- Singapore: 16%
- United Kingdom: 7%
- Canada: 5%
- Mexico: 2%
- Korea: 3%
- Japan: 2%
- China: 2%
- Ireland: 2%
- France: 3%
- Denmark: 2%
- Belgium: 2%
- Australia: 3%
<table>
<thead>
<tr>
<th>Host Institution (2016-17 Regular Term-time)</th>
<th>No. of Engineering Student(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia - The University of Melbourne</td>
<td>2</td>
</tr>
<tr>
<td>Belgium - Katholieke Universiteit Leuven</td>
<td>1</td>
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<tr>
<td>Canada - The University of British Columbia</td>
<td>1</td>
</tr>
<tr>
<td>Canada - University of Toronto</td>
<td>2</td>
</tr>
<tr>
<td>China - Tsinghua University</td>
<td>1</td>
</tr>
<tr>
<td>Denmark - Technical University of Denmark (Engineering and Science Programme)</td>
<td>1</td>
</tr>
<tr>
<td>France - TELECOM SudParis (Engineering Programme)</td>
<td>1</td>
</tr>
<tr>
<td>France - Universite Catholique de Lille</td>
<td>1</td>
</tr>
<tr>
<td>Germany - Albert-Ludwigs-Universitat Freiburg</td>
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<tr>
<td>Ireland - The University of Dublin, Trinity College</td>
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</tr>
<tr>
<td>Japan - Doshisha University</td>
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<tr>
<td>Japan - Soka University</td>
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<tr>
<td>Korea - University of Seoul</td>
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<tr>
<td>Korea - Yonsei University</td>
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<tr>
<td>Mexico - Tecnologico de Monterrey</td>
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</tr>
<tr>
<td>Singapore - Nanyang Technological University</td>
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<tr>
<td>Singapore - National University of Singapore (Engineering Programme)</td>
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<tr>
<td>Sweden - Chalmers University of Technology (Engineering Programme)</td>
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<tr>
<td>Sweden - KTH Royal Institute of Technology (Engineering and Science Programme)</td>
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<tr>
<td>Sweden - Lund University</td>
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</tr>
<tr>
<td>Sweden - University of Gothenburg</td>
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</tr>
<tr>
<td>Sweden - Uppsala University</td>
<td>2</td>
</tr>
<tr>
<td>United Kingdom - University College London (Engineering Programme)</td>
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</tr>
<tr>
<td>United Kingdom - University of Southampton (Maritime Studies - Engineering Programme)</td>
<td>1</td>
</tr>
<tr>
<td>USA - American University</td>
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<tr>
<td>USA - Baylor University</td>
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<tr>
<td>USA - Brown University</td>
<td>1</td>
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<tr>
<td><strong>USA - Dartmouth College (Engineering Programme)</strong></td>
<td>1</td>
</tr>
<tr>
<td>USA - Rensselaer Polytechnic Institute</td>
<td>1</td>
</tr>
<tr>
<td><strong>USA - Stony Brook University (Engineering Programme)</strong></td>
<td>2</td>
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<tr>
<td>USA - The Pennsylvania State University</td>
<td>1</td>
</tr>
<tr>
<td>USA - University of California, San Diego</td>
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<tr>
<td>USA - University of Illinois at Urbana-Champaign</td>
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<tr>
<td><strong>USA - University of Illinois at Urbana-Champaign (Engineering Programme)</strong></td>
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<tr>
<td>USA - University of Massachusetts Amherst</td>
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<tr>
<td><strong>USA - University of Pennsylvania (Engineering Programme)</strong></td>
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<tr>
<td>USA - University of South Carolina</td>
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<tr>
<td>USA - University of Wisconsin-Madison</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>57</strong></td>
</tr>
</tbody>
</table>
Enjoy vibrant campus life and go on exchange!

Faculty international exchange opportunities

- GLOBEX Summer Programme@PKU
- HIT - WALL . E@Harbin Institute of Technology
- Prof. Charles Kao Research Exchange Scholarships Scheme
Special exchange opportunities for ELITE students

European Innovation Academy
Summer Experiential Programme in Beijing
Workshop on Skills for Success - Effective Entrepreneurship and Leadership
Engineering Practicum (ENGG2602)

- Mandatory training workshop held in the summer term of Year 2 study

- Students must attend and complete this workshop to satisfy the graduation requirements
Introduction to Scholarships
Prof. Megan Ho
Why Scholarship?

- Financial benefit
- Looks good on your resume
Types of Fellowships

- University Scholarships
  - Coordinated by Office of Admissions and Financial Aid (OAFA)
  - https://www.oafa.cuhk.edu.hk/sfas/open-for-application/scholarships

- Departmental Scholarships
  - Notification via e-mail from time to time

- College Scholarships
Departmental Scholarships

- Biomedical/Electronic Engineering Outstanding Achievement Scholarships
- Charles Kao Scholarship
- Professor Charles K. Kao Research Exchange Scholarships
- Chen Chih-Fan Scholarship
- T. Y. Wu Foundation Scholarships
- Winbridge Scholarship for UG Exchange Programmes
- ....etc
Requirements

- Academic Merit
- Financial Need
- Community Service (e.g. Hang Seng Community Service Scholarship)
- Extracurricular Activities (International Prizes, Competitions, etc)
- Local/International
Scholarship Tips

- Study hard and do well (academic achievement)
- Actively participate in international competitions and/or community service
- Seek out opportunities
- Nomination required
- Inform our administration with your updated CV
Be prepared!

Stay Tuned!