Agenda

• Major Streams Selection
• Minor Selection
• Summer Training
• Undergraduate Research Opportunities
• Professional Internships / Work-Study Programme
• Job Placements
• Further Studies
• Programme Outcomes
• Student Experience Questionnaire
Major Streams Selection

- Medical Instrumentation & Biosensors
- Medical Imaging, informatics & Modeling
- Molecular, Cell & Tissue Engineering

Submit to Alexis your stream selection (including NIL) by Monday 11 May 2015
Medical Instrumentation & Biosensors

9 units of the 12 major elective units from:

Biofluids
BioMEMS
Bionanotechnology
Medical Robotics
Neuroengineering
Telemedicine & Mobile Healthcare

PLUS a FYP in Medical Instrumentation & Biosensor

Possible Minors: EE, MAE, or Physics
Biomedical Imaging, Informatics & Modeling

9 units of the 12 major elective units from:

- Bioinformatics
- Biomedical Imaging
- Biomedical Modeling
- Database & Security
- Medical Imaging Applications
- Sound & Light Waves in Medicine

PLUS a FYP in Biomedical Imaging, Informatics & Modeling

Possible Minors: CS or EE
Molecular, Cell & Tissue Engineering

9 units of the 12 major elective units from:
Cell Biology
BioMEMS
Biomolecular Engineering
Bionanotechnology
Genetic Engineering
Intro to Molecular Biotechnology
Musculoskeletal Tissue Engineering

PLUS a FYP in Molecular, Cell & Tissue Engineering

Possible Minors: Biology, Biochemistry, Molecular Biotechnology
BME Minor for Other Majors

Minor Programme Requirement: 18 units

REQUIRED:
- BMEG2000 (2units) & BMEG2010 (1unit)

ELECTIVES:
- BMEG2210 Orthopedic Biomechanics & Musculoskeletal Injuries
- BMEG3210 Bioinformatics
- BMEG3120 Database & Security for BME
- BMEG3130 Telemedicine & Mobile Health
- BMEG3210 Biofluids
- BMEG3320 Biomedical Imaging
- BMEG3330 Neuroengineering
- BMEG3420 Medical Robotics
- BMEG3430 Biomaterials & Tissue Engineering
- BMEG4330 Sound & light Waves in Medicine
- BMEG4410 BioMEMS
- BMEG4450 Bionanotechnology
- BMEG4510 Biomolecular Engineering
- ELEG3101 Medical Instrumentation & Sensors
Additional Suggestions

For students who like to strengthen their computing skills,

- Short non-credit bearing computer courses offered in EE:
  - Intro to MatLab
  - Intro to Java
- CSCI 1-unit courses:
  - CSCI1020 Hands-on Introduction to C++
  - CSCI1050 Hands-on Introduction to MatLab
- CSCI1120 (3 units) Intro to programming using C++

For students who are interested in biomedical research,

- PHPC2015 Biostatistics
Summer Training
(Year-2 Summer, Required as Part of ENGG2600)

  • Main Campus Workshop Training / PWH Training
  • Good for those who want to do summer research / internships

  • PWH Training / Main Campus Workshop Training
  • Good for those who want to take courses in the summer term
Professional/ Industrial Internships

• Past Summer Internships (~8-10 wks) included
  • Ample Link International
  • EMSD
  • HKPC
  • HA
  • HK Adventive Hospital
  • Johnson & Johnson
  • Philips
  • Shenzhen Institute of Advanced Technology

• We are working on some additional ones. Please watch out for our announcements through email.
Professional/ Industrial Internships
Past Work-Studies included (~ 2 terms long)

- Asia Satellite Telecommunication
- ASM Pacific Technology
- AML Health Plus
- EMSD
- HSBC
- ITE Smartcard Solutions
- MiniLogic Device
- Ove Arup & Partners
- Paul C Lauterbur MRI Research Centre
- RF Tech
- Sengital
- Time Medical

We are working on some additional ones. Please watch out for our announcements through email.
Overseas Summer Research Internships (8-10 wks)

- North America
  - Univ. of California at Irvine (Bio-microfabrication)
  - Univ. of California at San Diego (Molecular engineering & single cell imaging)
  - Columbia Univ. (Bone Bioengineering/ Biomaterials, Interface tissue engineering)
  - Northwestern Univ. (Rehabilitation Institute of Chicago: Neuroengineering, rehab robotics) (*Need to submit application also through RIC Website http://www.ric.org/research/fellowships/ )
  - University of Pittsburgh (Biomechanics & Sports Medicine)
  - Pennsylvania State University (Computational cell mechanics, System & network modeling: intracellular signaling network, Nanomedicine)
  - Univ. of Toronto (Holland Bloorview Kids Rehabilitation Hospital: Hybrid brain-computer interfaces, Sensing of functional intention)
Overseas Summer Research Internships (8-10 wks)

- Asia & Europe
  - National University of Singapore (Tissue engineering)
  - Korea Institute of Science & Technology (Optogenetic neuro-modulation)
  - Pohang University of Science & Technology (Photoacoustic med imaging)
  - Imperial College (Hamlyn Center: Body sensors network, medical robotics)
Overseas Summer Research Internships (8-10 wks)

• Potential Financial Supports
  – Charles Kao Overseas Summer Research Scholarships (FoE)
    HKD50K for airfare, room & board, etc.
    Visit FoE Website for Immediate Applications
    Deadline 30 January
  – College scholarships
  – Stipends from hosting institutions
Overseas Summer Research Internships (8-10 wks)

• You should let Prof Mak know by 30 January if you are interested in the above BME Overseas Summer Research Internships.

• After consultation with you concerning your interests, Prof Mak would need to recommend you to the professor of your preferred laboratory.

• For some hosting institutions, you may need to submit your materials via the institutional website or interviewed by a professor-in-charge.

• If you want to apply for different scholarships (Charles Kao, College, OSA, etc.) for your overseas internship, please note their deadlines and submit those applications accordingly.
UG Research

• Lab attachments during regular terms
  – Talk with individual professors
  – Some basic commitment of time & efforts

• BMEG3910 (3-units) UG Research in BME
  – Research under the supervision of a professor in BME
  – Registration through Alexis

• FoE Summer research programme
  – HK10K for 8-10 wks under supervision of a FoE Professor
  – Around 60 students supported each summer
  – Watch out for FoE announcements
Job Placements & Further Studies

(information collected from graduates by our office around September after graduation)

2014

BME Graduates Employment Survey

- Sales / Marketing: 15%
- Technical Engineering / product support: 17%
- Lab / research: 20%
- Further study: 17%
- Others: 11%
- No information: 20%

2013

- ~55% Technical / BME-related
- ~35% Further studies / Univ based research
- ~ 7% Non-BME / Non technical
- ~ 3% No information
Job Placements

BME-related Placements

- ArjoHuntleigh
- Bright Future Pharmaceutical Lab
- Electrical & Mechanical Services Department, HK Government
- Health Care & Co.
- HealthPro Technology
- HK Applied Science & Technology Research Institute (ASTRI)
- HK Adventist Hospital
- HK Productivity Council
- HomeTech Medical Ltd

BME-related Placements

- Innotronik
- Johnson & Johnson
- Medtronic
- Medical Technologies Ltd
- Medisense (Sengital)
- Nobel Biocare
- Roche Diagnostics
- Siemens Healthcare
- Time Medical
- Transmedic
- Tronda Electronics
Job Placements

• Research
  – CUHK FoE
  – CUHK FoM

• Other Technical
  – HK Aircraft Engineering Company Ltd (HAECO)
  – ASM Pacific Technology (Computer Vision)
  – PCCW
  – Science International Corporation

• Non-Technical / Non-BME
  – HSBC/ AIA / Prudential
  – Fire Services Department
  – Secondary school teaching
Further Studies

• Medical Study
  • CUHK

• MSc/MA Studies
  • CUHK / PolyU
  • U Glasgow
  • U Aberdeen

• Research Studies
  • CUHK/ FoE
  • CUHK/ FoM
  • CityU/ FoE
  • UC San Diego
Further Studies

• Should plan to take GRE, TOEFL, IELTS in Term-1
• Many overseas graduate schools have application deadlines around December / January.
• HK PhD Fellowship Scheme (for study in HK universities) application deadline: 1 Dec 2014.
• HK Scholarship for Excellence Scheme (for study in overseas universities) application deadline: 31 Jan 2015.
• PLAN EARLY!
## Programme Outcomes (1)

<table>
<thead>
<tr>
<th>PO1</th>
<th>an ability to master the required knowledge of mathematics, science, and engineering and apply them appropriately to the BME discipline in general and/or to a specialized BME area</th>
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<tbody>
<tr>
<td>PO2</td>
<td>an ability to design and conduct experiments, collect data on humans and other biological specimens, and to analyze and interpret data to address health-related issues</td>
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<tr>
<td>PO3</td>
<td>an ability to design a system, component or process to meet desired needs within realistic constraints, and to develop innovative technologies to serve the healthcare needs of society</td>
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<td>PO4</td>
<td>an ability to identify, formulate and solve engineering problems critically</td>
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<td>PO5</td>
<td>an ability to use the techniques, skills, and modern engineering tools necessary for BME practice</td>
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Which of the above you think you need more helps?
Programme Outcomes (2)

<table>
<thead>
<tr>
<th>PO6</th>
<th>an ability to use the computer/IT tools relevant to the BME discipline along with an understanding of their processes and limitations</th>
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<tbody>
<tr>
<td>PO7</td>
<td>an ability to communicate effectively</td>
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<tr>
<td>PO8</td>
<td>an ability to demonstrate leadership, to manage projects, and to function on multi-disciplinary teams</td>
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<td>PO9</td>
<td>an ability to understand professional and ethical responsibility, and the impact of engineering solutions in a global and social context, especially the importance of health, safety and environmental considerations to both workers and the general public</td>
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<td>PO10</td>
<td>a readiness to engage in lifelong learning to stay abreast of contemporary issues, and a capacity to acquire new knowledge and skills across disciplinary boundaries</td>
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Which of the above you think you need more helps?
Student Experience Questionnaire

Development of Capabilities

2013 FINAL YEAR

2014 FINAL YEAR

2011 (FIRST) (n = 47) (90.4%)

2013 (FINAL) (n = 29) (90.6%)

2012 (FIRST) (n = 34) (69.4%)

2014 (FINAL) (n = 39) (78.0%)

Critical thinking
Creative thinking
Self-managed learning
Adaptability
Problem solving

Communication skills
Interpersonal skills and groupwork
Average of University means
Average of Faculty means
Average of development of capabilities
Student Experience Questionnaire

Teaching and Learning Environment

2013 FINAL YEAR

2014 FINAL YEAR

2011 (FIRST)
(n = 47)
(90.4%)

2013 (FINAL)
(n = 29)
(90.6%)

2012 (FIRST)
(n = 34)
(69.4%)

2014 (FINAL)
(n = 39)
(78.0%)

Active learning
Teaching for understanding
Feedback to assist learning
Assessment
Relationship between teachers and students
Workload

Relationship with other students
Cooperative learning
Coherence of curriculum
Average of University means
Average of Faculty means
Average of T&L environment
Student Experience Questionnaire

Workload

• For a 3-unit course, generally expect an average student should spend ~9 hrs each week in learning:
  – Attending lectures & tutorials
  – Reading and homework assignments
  – Working on project, report and presentation
  – Preparing for quizzes and examination

• Which courses significantly go beyond this guideline?
• Which courses significantly go below this guideline?