

# TOWN HALL MEETING

# MAKE BME GREAT TOGETHER

PROF. RAYMOND TONG 26 MAR 2018

# REGULAR TOWN HALL MEETING

■ Town Hall meeting will be held <u>every semester</u> to ensure a good communication channel with all students in Year 2, Year 3 and Year 4 in BME.

# **AGENDA**

- 1. Temporary Accommodation of BME General Office
- 2. Updates on Summer Exchange and Internship
- 3. Course Offering in 2018-19
  - -Stream Declaration
  - -Report on Survey Results
  - -Request on Offering Elective Courses
  - -Course changes for BMEG4330 Sound and Light Waves in Medicine
- 4. Class Attendance and Feedback from Students
- 5. Graduate Employment Survey (Class of 2016-17)
- 6. BME Society and Activities

# I.TEMPORARY ACCOMMODATION OF BME GENERAL OFFICE

#### Location

Room I 106, I 1/F, William M.W. Mong Engineering Building (ERB), CUHK

### Opening hours

Monday-Thursday: 8:45am — 5:30pm

Friday: 8:45am — 5:45pm

Saturday, Sunday and Public Holiday: Closed

#### Contact

Undergraduate Programme:

Ms. Yan Wong

(Email: yan.wong@cuhk.edu.hk; Tel: 3943 3025)

Ms. Heidi Chan

(Email: heidichan@cuhk.edu.hk; Tel: 3943 8261)

# 2. UPDATES ON SUMMER EXCHANGE AND INTERNSHIP

### Summer Exchange

Reminder for students joined Summer Research Exchange >> Apply and follow-up with your visa application ASAP

## Summer Internship

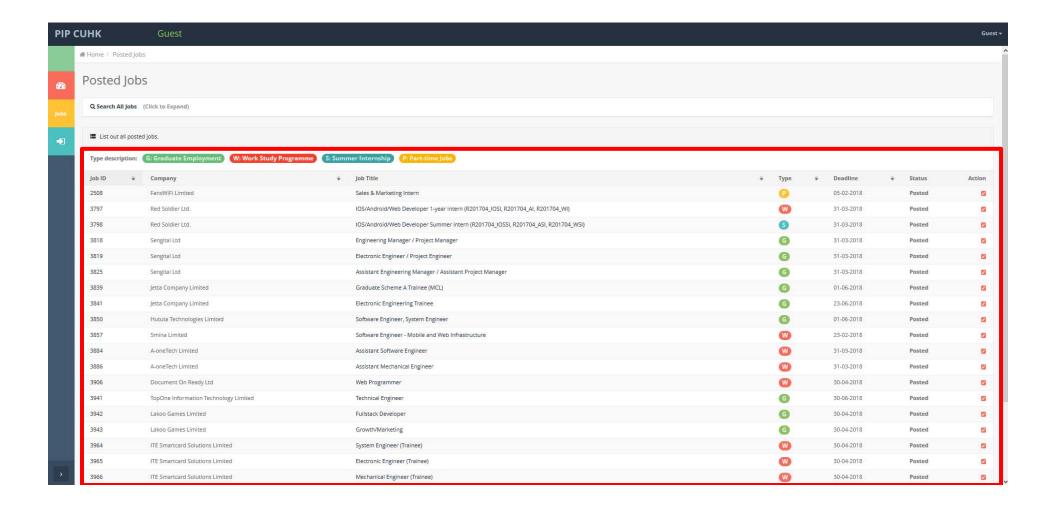
More may be available later in April, e.g. EMSD, Johnson & Johnson's etc.

Company	Deadline	
ASTRI	29 Mar 2018	
Sanwa Biotech Limited	29 Mar 2018	
Belun Technology	31 Mar 2018	
Deltason Medical Ltd.	31 Mar 2018	
Rehab-Robotics Co Ltd	31 Mar 2018	
Sucabot MedTech International Limited	I Apr 2018	
Hong Kong Adventist Hospital - Tsuen Wan	6 Apr 2018	



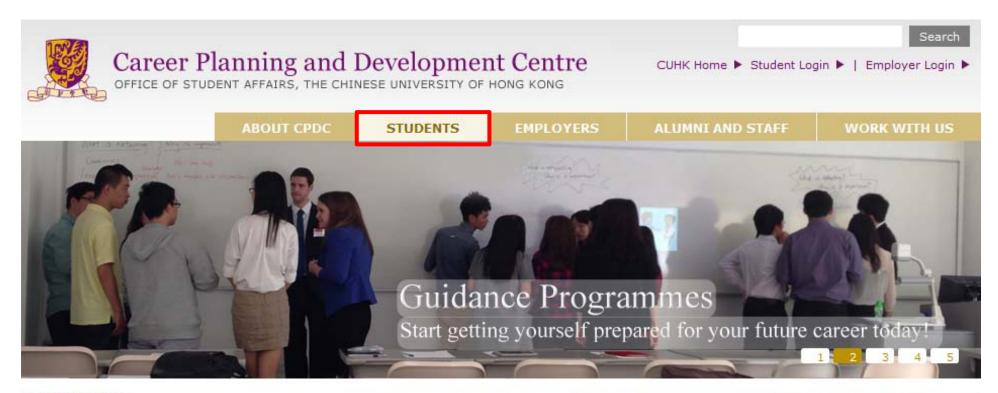
# Placement & Internship Programme via CINTEC

Link: https://pip.cintec.cuhk.edu.hk/web/



# Placement & Internship Programme via Career Planning and Development Centre (CPDC)

Link: https://cpdc.osa.cuhk.edu.hk/



#### LATEST NEWS ALL NEWS ▶

- Working in Japan (BizReach, Mizuho Financial Group and SoftBank)
   5 February 2018
- CUHK Business School : Alumni Sharing Session Property Leasing
   5 February 2018





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Career Preparation & Skills

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Programmes & Workshops

Global Internship Programme (GIP)

Career Resources

Career Counselling

Career Information & Quick Links

#### Boao Forum for Asia Annual Conference 2018 博鰲亞洲論壇2018年年會- Call for Volunteers 5 February 2018

Dear UG Students, The Boao Forum for Asia (BFA) will organize its Annual Conference 2018 from 8 to 11
 April in Hainan, China. Under ...

#### CUHK Business School: Alumni Sharing Session - Property Leasing 5 February 2018

■ Dear Students, CUHK Business School (Faculty of Business Administration) is inviting registration for its Alumni Sharing Session - Property ...

#### Working in Japan (BizReach, Mizuho Financial Group and SoftBank) 5 February 2018

 Dear Students, The following companies are offering graduate opportunities to work in Japan. Details are shown as below. ...

#### Allegiance Limited - Book Translation Intern 5 February 2018

■ Dear Students, Allegiance Limited is inviting applications for its Book Translation Intern. Hereunder please find the job descriptions and ...

#### The Garden Company Ltd - Management Trainee Program 2 February 2018

Dear Students, The Garden Company Limited is inviting applications for its Management Trainee
 Program. Hereunder please find the jo ...

#### Hong Kong Television Network Ltd - Management Trainee Program 2 February 2018

Dear Students, Hong Kong Television Network Limited is inviting applications for its Management Trainee
 Program. Hereunder please find the job ...

#### AlphaSights (Hong Kong) Case Competition 2018 2 February 2018

 Dear Students, AlphaSights (Hong Kong) Case Competition 2018 is now inviting applications. The Competition allows students to learn ...

- Stream Declaration
  - (I) Medical Instrumentation and Biosensors
  - (2) Biomedical Imaging, Informatics and Modeling
  - (3) Molecular, Cell and Tissue Engineering
- Cohort 2015-16 → To complete <u>a minimum of 9 units</u> of courses, at most one elective at 2000 or below level, plus BMEG4998 and 4999, prescribed by the stream.
- Cohort 2016-17 and thereafter → To complete <u>a minimum of 12 units</u> of courses, at most one elective at 2000 or below level, plus BMEG4998 and 4999, prescribed by the stream.

# (I) Medical Instrumentation and Biosensors

- For Cohort 2015-16, at least 9 units chosen from the following courses
- For Cohort 2016-17 and thereafter, at least 12 units chosen from the following courses
- BMEG4998 and 4999 in an approved topic relevant to the Stream

#### **Elective Courses**

- BMEG3130 Tele-Medicine and Mobile Healthcare
- BMEG3210/ESTR3212 Biofluids
- BMEG3330 Neuroengineering
- BMEG3420 Medical Robotics
- BMEG4220 Body Sensor Networks
- BMEG4330/ESTR4201 Advanced Imaging and Spectroscopy Techniques in Biomedicine
- BMEG4410/ESTR4203 BioMEMS
- BMEG4450/ESTR4202 Bionanotechnology
- BMEG4520 Cardiovascular Engineering
- BMEG4540 Electrophysiology
- ELEG3201/ESTR3200 Microelectronic Devices and Circuits
- ENGG2120 Introduction to Digital and Microprocessor Systems

# (2) Biomedical Imaging, Informatics and Modeling

- For Cohort 2015-16, at least 9 units chosen from the following courses
- For Cohort 2016-17 and thereafter, at least 12 units chosen from the following courses
- BMEG4998 and 4999 in an approved topic relevant to the Stream

#### **Elective Courses**

- BMEG3102 Bioinformatics
- BMEG3120 Database and Security for Biomedical Engineering
- BMEG3320 Biomedical Imaging
- BMEG4103 Biomedical Modelling
- BMEG4320/ESTR4200 Biomedical Imaging Applications
- BMEG4330/ESTR4201 Advanced Imaging and Spectroscopy Techniques in Biomedicine
- CSCI courses

# (3) Molecular, Cell and Tissue Engineering

- For Cohort 2015-16, at least 9 units chosen from the following courses
- For Cohort 2016-17 and thereafter, at least 12 units chosen from the following courses
- BMEG4998 and 4999 in an approved topic relevant to the Stream

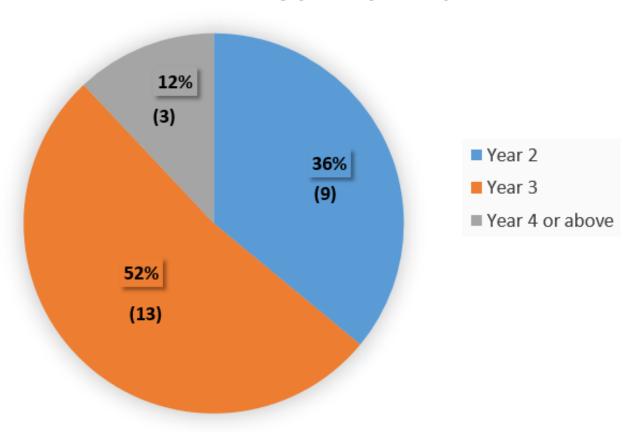
#### **Elective Courses**

- BIOL2120 Cell Biology
- BMEG3210/ESTR3212 Biofluids
- BMEG4410/ ESTR4203 BioMEMS
- BMEG4450/ESTR4202 Bionanotechnology
- BMEG4510/ESTR4204 Biomolecular Engineering
- BMEG4530/ESTR4214 Musculoskeletal Tissue Engineering
- MBTE4320 Genetic Engineering
- CSCI courses

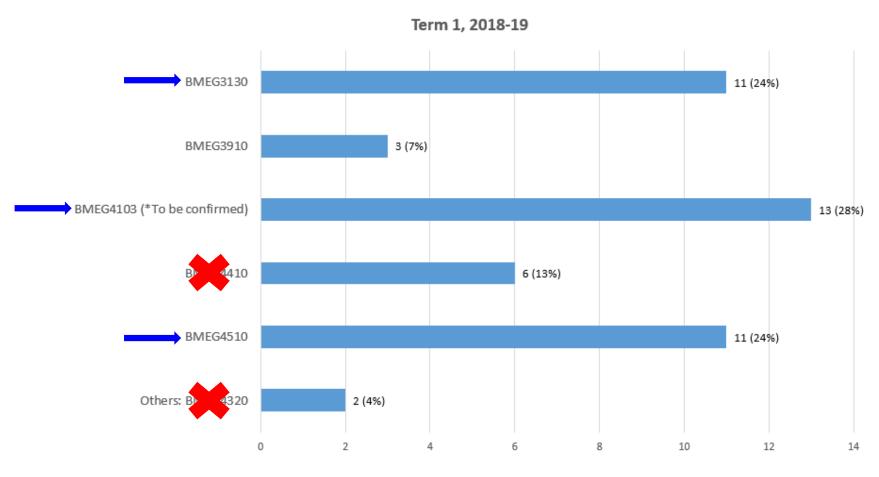
## **Report on Survey Results**

25 students responded to the BMEG Elective Courses in 2018-19 survey

## Year of Study (25 responses)



# 3. PROPOSED ELECTIVE COURSES IN 2018-19



BMEG3130-Tele-Medicine and Mobile Healthcare 遙距醫療與流動保健

BMEG3910-Undergrad Research in BME 生物醫學工程本科研究

BMEG4103-Biomedical Modelling 生物醫學建模 (\*To be confirmed)

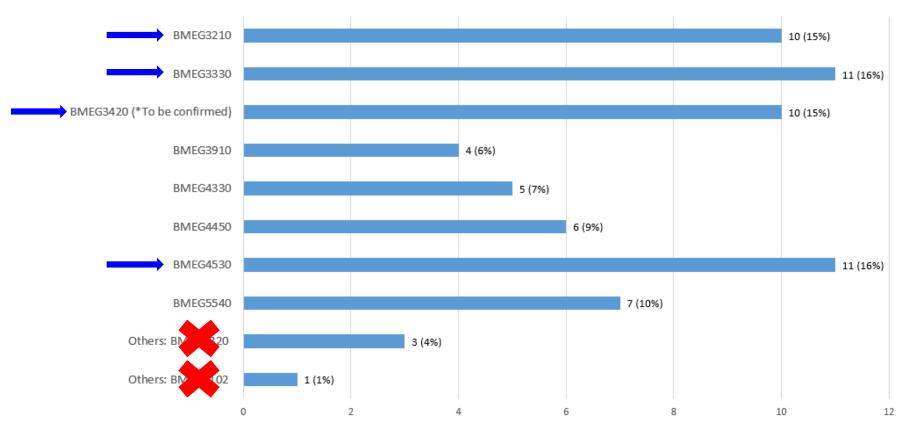
BMEG4410-BioMEMS 生物微機電系統 (\*Not offer in 2018-19, due to low popularity)

BMEG4510-Biomolecular Engineering 生物分子工程

Others: BMEG4320-Biomedical Imaging Applications (\*Not offer in 2018-19)

# 3. PROPOSED ELECTIVE COURSES IN 2018-19





BMEG3210-Biofluids 生物流體學

BMEG3330-Neuroengineering 神經工程學

BMEG3420-Medical Robotics 醫療機器人學 (\*To be confirmed)

BMEG3910-Undergrad Research in BME 生物醫學工程本科研究 BMEG4330-Advanced Imaging and Spectroscopy Techniques in Biomedicine 先進生物醫學成像與光譜技術

BMEG4450-Bionanotechnology 生物納米技術

BMEG4530-Musculoskeletal Tissue Engg 肌肉骨骼組織工程學

BMEG5540-Biophotonics 生物光子學 (\*New Elective Course)

Others: BMEG3102-Bioinformatics (\*Offered in T2, 2017-18)

Others: BMEG3320-Biomedical Imaging (\*Offered in T2, 2017-18)

# 3. ELECTIVE COURSES IN 2017/18 - 2019/20

Course Code	Course Title	Unit(s)	2017-18	2018-19	2019-20 (Pending)
BMEG3102	Bioinformatics	3	Term 2	X	Term 2
BMEG3130	Tele-Medicine and Mobile Healthcare	3	X	Term I	X
BMEG3210/ESTR3212	Biofluids	3	Х	Term 2	X
BMEG3320	Biomedical Imaging	3	Term 2	Х	Term 2
BMEG3330	Neuroengineering	3	Term 2	Term 2	Term 2
BMEG3420	Medical Robotics	3	Term 2	To be confirmed	To be confirmed
BMEG3910	Undergraduate Research in Biomedical Engineering	3	Term I/2	Term I/2	Term I/2
BMEG4103	Biomedical Modelling	3	Term I	To be confirmed	To be confirmed
BMEG4330/ESTR4201	Advanced Imaging and Spectroscopy Techniques in Biomedicine	3	X	Term 2	X
BMEG4410/ESTR4203	BioMEMS	3	Term I	Х	Term I
BMEG4450/ESTR4202	Bionanotechnology	3	Term 2	Term 2	Term 2
BMEG4510/ESTR4204	Biomolecular Engineering	3	Term I	Term I	Term I
BMEG4520	Cardiovascular Engineering	3	Х	Х	To be confirmed
BMEG4530/ESTR4214	Musculoskeletal Tissue Engineering	3	Term 2	Term 2	Term 2
BMEG5540	Biophotonics	3	N/A	Term 2	Х

#### Remarks:

<sup>&</sup>quot; $\sqrt{}$ " = Proposed offering courses; "X" = Not offer

<sup>\*</sup>The above information are for reference only. Courses offering are subject to the actual enrollment numbers.

# 3. REQUEST ON OFFERING ELECTIVE COURSES

If some of you are interested in those elective course(s)\* that we are not going to offer in 2018-19, please provide information to your class representatives and send the list to Ms. Yan Wong
 (yan.wong@cuhk.edu.hk) by 6 Apr 2018 (Friday) before 10:00am:-

#### Required information

- (I) Course code & title
- (2) Interested students' name & SID

\*Our department would consider to offer the elective course(s), if the interested students number are  $\geq 10$ .

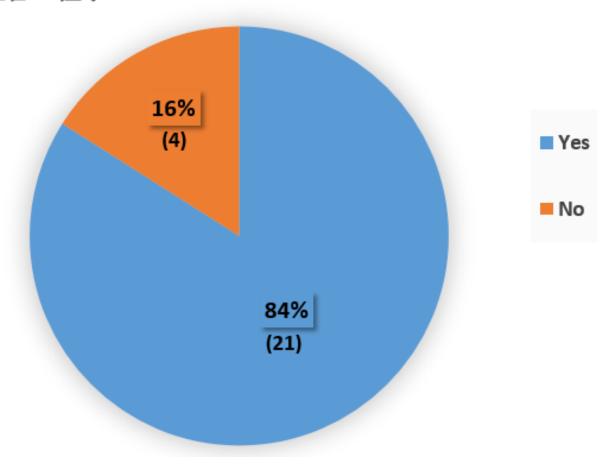
#### Class Representatives:-

Yr. 2 – Mr. PANG Cheuk Him (Johnny) & Mr. SHUEN Cheuk Yin (Calvin)

Yr. 3 – Mr. AU Chun Ki (Franklin) & Mr. NG Ka Wai (Kerry)

Yr. 4 or above – Mr. LEE Kit Cheung (Leo) & Mr. LAM Yuk Hong (Jason)

Are you interested in "BMEG4520-Cardiovascular Engineering 心血管工程學" if we offer this course in future?



## Suggestions from students:-

- Although the course "BMEG3130 Tele-Medicine and Mobile Healthcare", is claimed by other students as "so chur", I think it is still a good course for interested students to take and the course will boost students to learn more in different disciplines, such as Android app development. And I think this course will also teach students to think in a more commercial way (or practical way). Although students may have good ideas, it is also necessary for students to think on the side of product users.
- Can more electives courses be offered in term I rather than packing mostly in term 2.

Course changes for BMEG4330 Sound and Light Waves in Medicine

 Course name changed from "Sound and Light Waves in Medicine" to "Advanced Imaging and Spectroscopy Techniques in Biomedicine"

# BMEG4330: Advanced Imaging and Spectroscopy Techniques in Biomedicine

Prof. Renjie Zhou
Chinese University of Hong Kong





# Course information

**Course teacher:** Professor Renjie ZHOU

Room 414, Ho Sin Hang Engineering Building

Email: rjzhou@cuhk.edu.hk

Office: 3943 0874

TAs: **TBD** 

Venue: **TBD** 

Time: **TBD** 

Semester: Term 2, 2018-19

**Course website:** https://blackboard.cuhk.edu.hk

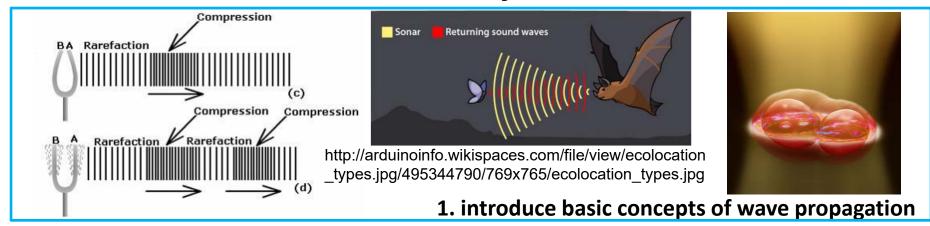


# What will this course cover?

- Introduction to medical imaging and treatment techniques which make use of sound and electromagnetic waves, including ultrasound, laser, and terahertz techniques.
- Ultrasound imaging techniques and applications: sound wave propagation theory (wave equation, transmission and reflection coefficients, and attenuation), sonography design aspects, and medically relevant examples.
- Optical imaging and spectroscopy techniques and applications: optical wave propagation theory, generation and detection methods, microscopy instrument design considerations, principles of data analysis, molecular spectroscopy, and potential medical applications.
- Laser techniques for medical treatments: laser instrumentation aspects, photodynamic therapy, and laser surgery.
- Independent project: design and build biomedical imaging/spectroscopy devices.

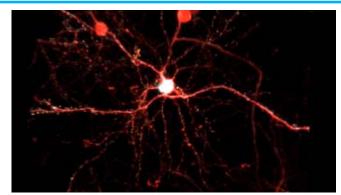


# In this course, we will...





https://vanessajunkin.wordpress.com



PTC So Lab@MIT

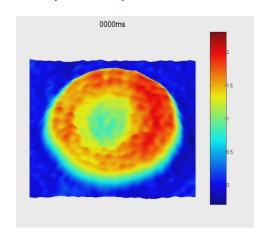
- 2. discuss the use of ultrasound and light for biomedical imaging
- 3. Watch and perform measurements using biomedical imaging instrument in the labs
- 4. Design and build your own biomedical imaging/spectroscopy devices

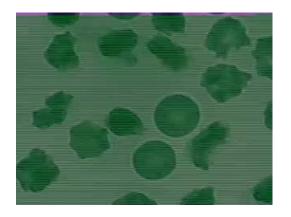


# Optical imaging lab tour

You can image your own red blood cells (RBCs)!

- 1. Choose an appropriate imaging setting to image your red blood cells (if not scared ©)
- 2. Capture the optical images and use MATLAB to calculate the wavefront perturbations due to your red blood cells. This will use your knowledge in Fourier transforms!
- 3. Convert the wavefront into membrane height. Analyze the height fluctuations and extract RBC stiffness information.
- 4. Study RBC-related diseases and propose using optical microscopy techniques to target them (e.g., diagnosis and treatment)







# Learning outcomes

- Describe the basic physical principles of ultrasound waves and light waves
- Identify the physical principles of major biomedical instruments
- Understand the design principles behind those instruments
- Understand the benefits and limitations of each of the imaging/treatment techniques introduced.
- Understand the safety aspects relevant to each technique
- Design your own biomedical imaging and/or treatment device with specifically targeted applications
- Develop the skills of turning concepts and designs into practices and solve complex engineering problems
- Understand how biomedical technologies can provide positive societal impacts and values
- Have an increased awareness and responsibility of promoting medical technologies to undeveloped countries/regions



# **Outcome-based Assessment**

# Assessment weighting

Task nature	Description	Weight
Assignment	Homework assignments	20%
Quizzes	In-class quizzes to encourage students to prepare for lectures and keep up with course schedule	15%
Mid-term Test	Mid-term evaluation to assess if the learning outcomes are achieved	15%
Final Examination	Final evaluation to assess the knowledge of the students on all topic	30%
Project	Design and build a biomedical imaging/spectroscopy device	30%

**Bonus points** can be earned by asking good questions and answering questions (in class only). One good question accounts for 1 point, maximum is 5 points



# Schedule

Date	Topics
Week #1	Introduction, ultrasound-wave equation
Week #2	Ultrasound-transmissivity and reflectivity
Week #3	Ultrasound instrumentation and therapeutics
Week #4	Ultrasound lab tour, light-wave equation
Week #5	Biomedical device design,
Week #6	Project briefing, midterm exam
Week #7	Optical microscopy
Week #8	Optical spectroscopy
Week #9	Advanced Optical imaging and spectroscopy techniques
Week #10	Optical imaging lab tour, lasers in biomedicine
Week #11	Guest lectures
Week #12	Photo dynamic therapy
Week #13	Project presentation



# Text Books and References

- Textbook for ultrasound section: Medical Imaging Signals and Systems, by J.L. Prince and J.M. Links (Pearson-Prentice Hall 2006).
- Biomedical Optics: Principles and Imaging. LV Wang and H-I. Wu (John Wiley & Sons, 2012)

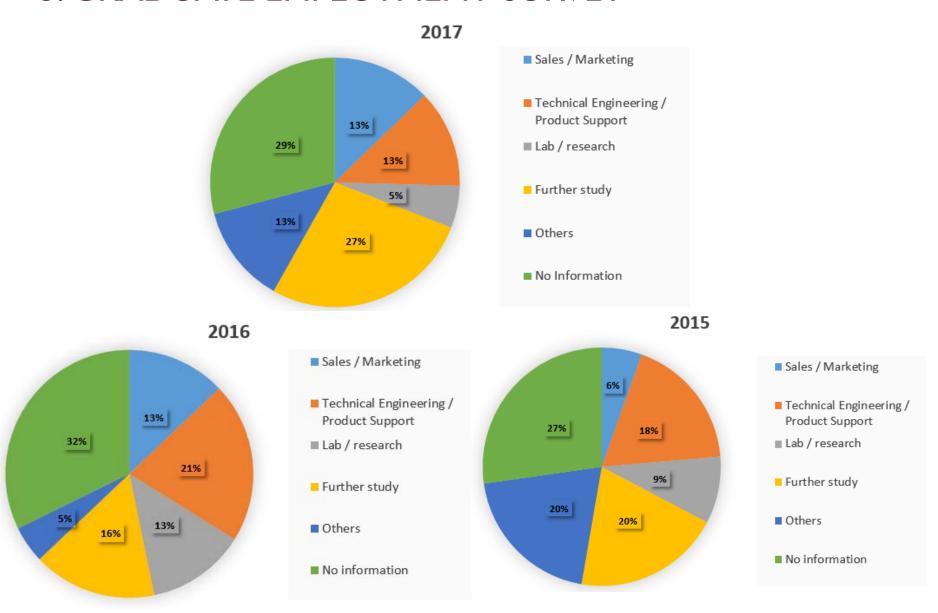
I look forward to having you joining us in BMEG4330 ©



#### 4. CLASS ATTENDANCE AND FEEDBACK FROM STUDENTS

- Low class attendance in Term 2, especially:-
  - -SBMS1432 Human Anatomy and Physiology II
  - -SBMS1440 Cell and Molecular Biology in Biomedical Engineering
  - -BMEG2300 Circuits and Signals for Biomedical Engineering
- Feedback on BMEG2300 Circuits and Signals for Biomedical Engineering
  - -Heavy workload (i.e. 2 mid-terms tests + 4 quizzes)
  - -Suggest to upload PPT before the class
  - -Lack of reference books information
- Feedback on SBMS1432 Human Anatomy and Physiology II and SBMS 1440 Cell and Molecular Biology in Biomedical Engineering
  - -Too heavy to have 2 SBMS courses in one term
  - -Too much contents for both courses

# 5. GRADUATE EMPLOYMENT SURVEY



# 6. BME SOCIETY & ACTIVITIES

Zintech - the 8th Biomedical Engineering Society

**f** cuhkzintech

Member	Position
CHENG Ho Chun, Martin	President
LIN, David Cheng-xian	Vice President
PANG Cheuk Him, Johnny	External Vice President
TUNG Lok Him, Marco	Secretary
YIM Kam Kuen, Vincent	Financial Secretary
LUI Yin Kwan, Ingrid	College Representative & General Officer
CHEUNG Yuk Shing, David	SHAW College Representative & Promotion Officer
NG Wai Hou Daniel	Liaison





# 6. BME ACTIVITIES









# 6. UPCOMING BME ACTIVITY



# Join now for BME updated news!



**CUHK Biomedical Engineering** 





#### **CUHK BME Alumni Association**

