Subject Description Form

Subject Code	BME11108
Subject Title	**Biomedical Engineering in Society**
Credit Value	2
Level	1
Prerequisite	Nil
Objectives	This subject provides Year 1 students with an overview of how biomedical technologies are developed and translated into clinical practice and home-based health care. Students will learn the professional and societal roles of a biomedical engineer as well as the ethical and legal concerns in practicing engineering. General concerns of engineering practices will also be covered. To enhance student's interest and understanding to the biomedical engineering discipline and prepare for their option of various study concentrations, different exposures to the real clinical and industrial working environments of biomedical engineering disciplines will be provided.
Intended Learning Outcomes	Upon completion of the subject, students will be able to: a. Have understanding on the required competence and professional responsibility of a biomedical engineer in clinical and industrial settings; b. Demonstrate the awareness of challenges and opportunities in biomedical engineering practice and entrepreneurship; c. Understand how societal needs that can be met by applying biomedical engineering principles to practice; d. Have basic understanding of ethical and regulatory issues in biomedical engineering; e. Develop professional communication and interpersonal skills.
Contribution to Programme Outcomes (Refer to Part I Section 10)	▪ Programme Outcome 5: Demonstrate an ability to understand the impact of (Biomedical Engineering) BME solutions in a global and societal context, especially the importance of health, safety, and environmental considerations to both workers and the general public. (Teach) ▪ Programme Outcome 10: Demonstrate an understanding of professional and ethical responsibility. (Teach) ▪ Programme Outcome 11: Demonstrate an ability to communicate effectively and advise clients, professional colleagues, and other members of the community. (Teach and Practice) ▪ Programme Outcome 12: Demonstrate an ability to recognize the need

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<tr><td></td><td>for and to engage in life-long learning. (Teach)
▪ Programme Outcome 13: Demonstrate an understanding of contemporary issues. (Teach and Practice)
▪ Programme Outcome 14: Demonstrate an understanding of entrepreneurship and leadership. (Teach)</td></tr>
<tr><td>Subject Synopsis/ Indicative Syllabus</td><td>The contents of this course cover:
▪ History of biomedical engineering
▪ Role of biomedical engineering in society
▪ Health, welfare policy, and medical services in Hong Kong
▪ Concepts of health and illness and impact to patients
▪ Clinical management, including patient handling, infection controls, patient data handling, etc.
▪ Technology assessment and regulatory issues in healthcare technologies
▪ Professional responsibility, engineering ethics, and safety
▪ Entrepreneurship
▪ Factory and hospital visits
▪ Environmental protection and related issues
▪ Professional communication skills</td></tr>
<tr><td>Teaching and Learning Methodology</td><td>Lectures, presentation, and field visits.</td></tr>
<tr><td>Assessment Methods in Alignment with Intended Learning Outcomes</td><td>
<table>
<tr><td rowspan="2">Specific assessment methods/tasks</td><td rowspan="2">% weighting</td><td colspan="8">Intended subject learning outcomes to be assessed (Please tick as appropriate)</td></tr>
<tr><td>a</td><td>b</td><td>c</td><td>d</td><td>e</td><td></td><td></td><td></td></tr>
<tr><td>Individual report</td><td>50%</td><td>√</td><td>√</td><td>√</td><td>√</td><td>√</td><td></td><td></td><td></td></tr>
<tr><td>Individual reflective journal</td><td>25%</td><td>√</td><td>√</td><td>√</td><td>√</td><td>√</td><td></td><td></td><td></td></tr>
<tr><td>Group oral presentation</td><td>25%</td><td>√</td><td>√</td><td>√</td><td>√</td><td>√</td><td></td><td></td><td></td></tr>
<tr><td>Total</td><td>100%</td><td colspan="8"></td></tr>
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Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:
In the individual report, students have to find biomedical engineering-related evidence/data in daily life. In the individual reflective journal, students have</td></tr>
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	to write an essay about the four field visits. In the group oral presentation, students have to present what they have learned from an assigned mentor interview.	
Student Study Effort Expected	Class contact:	
	▪ Lectures	13 Hrs.
	▪ Visits and presentation	13 Hrs.
	Other student study effort:	
	▪ Individual report preparation	38 Hrs.
	▪ Individual reflective report preparation	10 Hrs.
	▪ Group oral presentation preparation	10 Hrs.
	Total student study effort	84 Hrs.
Reading List and References	▪ Bronzino JD, Peterson DR, The Biomedical Engineering Handbook, Fourth Edition: Four Volume Set, CRC Press, 2015. ▪ Saltzman WM, Biomedical Engineering: Bridging Medicine and Technology, Second Edition, Cambridge University Press, 2015. ▪ Enderle JD, Bronzino JD, Introduction to Biomedical Engineering, Third Edition, Academic Press, 2012. ▪ Street LJ, Introduction to Biomedical Engineering Technology, Second Edition, CRC Press/Taylor & Francis Group, 2012. ▪ Richards-Kortum R, Biomedical Engineering for Global Health, Cambridge University Press, 2010. ▪ Lee JS, Biomedical Engineering Entrepreneurship, World Scientific, 2010.	
Date of Last Major Revision	14 July 2014	
Date of Last Minor Revision	3 September 2017	