

## Subject Description Form

<b>Subject Code</b>	BME32127
<b>Subject Title</b>	<b>Medical Technology Management</b>
<b>Credit Value</b>	3
<b>Level</b>	3
<b>Prerequisite</b>	Nil
<b>Objectives</b>	This subject provides students with the knowledge on the development of innovative engineering technologies in medicine and how technology and engineering skills are applied to clinical environment to ensure safe and proper use of technology in healthcare settings.
<b>Intended Learning Outcomes</b>	<p>Upon completion of the subject, students will:</p> <ol style="list-style-type: none"> <li>a. Apprehend the history and development of engineering technologies applied in healthcare settings; and able to establish the role concept of a clinical engineer;</li> <li>b. Understand the global and national health technology policies, assessment, regulation and management; and can interpret the essence of medical technology management practice;</li> <li>c. Focus on MD life cycle costing approach, appreciate the emphasis on technology and equipment acquisition, tender assessment and product selection.</li> <li>d. Understand information system management and their importance in the delivery of modern health care; Identify areas of IT application in healthcare settings, such as eHealth, wearables, mobile devices and “software as medical devices”;</li> <li>e. Be able to design a clinical engineering management program; Appreciate the application of engineering technology to selected specialties such as Radio-diagnostic and radio-therapy, Endoscopy Centre, Biochemistry &amp; Laboratory, OT &amp; ICU Equipment, Ophthalmic Equipment, Beauty Therapy, MGPS, eHealth &amp; IT Applications etc.</li> <li>f. Develop self-learning initiatives and integrate learned knowledge for problem solving.</li> </ol>
<b>Contribution to Programme Outcomes (Refer to Part I Section 10)</b>	<ul style="list-style-type: none"> <li>▪ Programme Outcome 3: Demonstrate an ability to design a system, component, or process relevant to Biomedical Engineering (BME) to meet desired needs within realistic constraints, such as economic, environmental, social, political, ethical, health and safety, manufacturability and sustainability. (Teach)</li> <li>▪ Programme Outcome 14: Demonstrate an understanding of entrepreneurship and leadership. (Teach)</li> </ul>

<b>Subject Synopsis/ Indicative Syllabus</b>	<ul style="list-style-type: none"> <li>▪ Medical Technology Management: a general overview</li> <li>▪ Development history of medical and engineering technology and impacts to healthcare services;</li> <li>▪ Global Initiatives of Health Technology Assessment (HTA), Health Technology Regulation (HTR) and Health Technology Management (HTM): the interlinking relationship</li> <li>▪ Innovative medical technologies: the WHO Compendium</li> <li>▪ Technology assessment: role of technology assessment in technology planning, principles and practice of medical technology assessment methodology, role of clinical engineering professional in assessing medical technology;</li> <li>▪ Impact analysis: technology management in preventive, primary and tertiary care, strategic planning, asset management</li> <li>▪ Supplement on MD life cycle management and management systems: with emphasis on technology and equipment acquisition, tender assessment and life cycle costing approach.</li> <li>▪ Identify applicable international standards for medical devices and appreciate hospital accreditation systems as quality control means for the healthcare institutions;</li> <li>▪ Review on selected specialty technologies, such as Radio-diagnostic and radio-therapy, Endoscopy Centre, Biochemistry &amp; Laboratory, OT &amp; ICU Equipment, Ophthalmic Equipment, Beauty Therapy, MGPS, eHealth &amp; IT Applications etc. and other areas such as dialysis, infection control, sterilization, EMC, electrical safety, MD safety, nomenclature naming systems etc.</li> </ul>																																																
<b>Teaching and Learning Methodology</b>	<p>There will be lectures, case studies, specialty seminars and group mini-projects.</p>																																																
<b>Assessment Methods in Alignment with Intended Learning Outcomes</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2" style="width: 20%;">Specific assessment methods/tasks</th> <th rowspan="2" style="width: 10%;">% weighting</th> <th colspan="8">Intended subject learning outcomes to be assessed (Please tick as appropriate)</th> </tr> <tr> <th style="width: 5%;">a</th> <th style="width: 5%;">b</th> <th style="width: 5%;">c</th> <th style="width: 5%;">d</th> <th style="width: 5%;">e</th> <th style="width: 5%;">f</th> <th style="width: 5%;"></th> <th style="width: 5%;"></th> </tr> </thead> <tbody> <tr> <td>Assignments, quiz, and mini-project</td> <td style="text-align: center;">70%</td> <td style="text-align: center;">√</td> <td style="text-align: center;">√</td> <td style="text-align: center;">√</td> <td style="text-align: center;">√</td> <td style="text-align: center;">√</td> <td style="text-align: center;">√</td> <td></td> <td></td> </tr> <tr> <td>Final test</td> <td style="text-align: center;">30%</td> <td style="text-align: center;">√</td> <td style="text-align: center;">√</td> <td style="text-align: center;">√</td> <td style="text-align: center;">√</td> <td style="text-align: center;">√</td> <td></td> <td></td> <td></td> </tr> <tr> <td><b>Total</b></td> <td style="text-align: center;"><b>100%</b></td> <td colspan="8"></td> </tr> </tbody> </table>	Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)								a	b	c	d	e	f			Assignments, quiz, and mini-project	70%	√	√	√	√	√	√			Final test	30%	√	√	√	√	√				<b>Total</b>	<b>100%</b>								
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	<p><i>Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:</i></p> <p>Different assignments will be used to guide the students toward the learning objectives of the subject contents. Mini-project is used to facilitate students in applying learned knowledge to solve real-life problems. Students are expected to demonstrate their knowledge through a mid-term and a final test.</p>	
<b>Student Study Effort Required</b>	Class contact:	
	▪ Lectures	21 Hrs.
	▪ Specialty seminars	15 Hrs.
	▪ Presentations	3 Hrs.
	▪ Other student study effort: Self-study	87 Hrs.
	Total student study effort	126 Hrs.
<b>Reading List and References</b>	<p><b><u>Textbook</u></b></p> <ul style="list-style-type: none"> <li>▪ Chan A., Medical Technology Management Practice, Charles C Thomas, 2003.</li> </ul> <p><b><u>References</u></b></p> <ul style="list-style-type: none"> <li>▪ David Y. (Ed.), Clinical Engineering, CRC Press, 2003.</li> <li>▪ Dyro J. (Ed.), Clinical Engineering Handbook, Elsevier Academic Press, 2004.</li> <li>▪ Geddes L.A., Medical Device Accidents and Illustrative Cases, Lawyers &amp; Judges Pub. Co., 2002.</li> </ul>	
<b>Date of Last Major Revision</b>	31 August 2017	
<b>Date of Last Minor Revision</b>		