Subject Description Form

<table>
<tr><td>Subject Code</td><td>BME5124</td></tr>
<tr><td>Subject Title</td><td>Biomaterials and Tissue Engineering</td></tr>
<tr><td>Credit Value</td><td>3</td></tr>
<tr><td>Level</td><td>5</td></tr>
<tr><td>Responsible staff & Department/School</td><td>Dr Youhua TAN (BME)</td></tr>
<tr><td>Pre-requisite / Co-requisite/ Exclusion</td><td>Nil</td></tr>
<tr><td>Objectives</td><td>The objective of this course is to prepare the students with the knowledge of biomaterials and to introduce the concepts and applications of tissue engineering for the repairing of damaged or lost tissues and to substitute the biological functions of injured organs by making use of cells with high proliferation and differentiation potential.</td></tr>
<tr><td>Intended Learning Outcomes</td><td>Upon completion of the subject, students will be able to:
e. Evaluate the properties of biomaterials that have been successfully developed and used in human bodies
f. Integrate the basic knowledge with the most recent developments in biomaterials and tissue engineering
g. Apply knowledge of biomaterials on interconnecting issues in biomaterials research and development
h. Develop the appropriate techniques and right strategies through case studies in the successful development of new biomaterials for medical applications</td></tr>
<tr><td>Subject Synopsis/ Indicative Syllabus</td><td>Introduction to Biomaterials; Protein-Surface Interactions; Cell-surface Interaction; Plasma Treatments; Polymer/Organic Coatings; Patterned Surfaces; Surface Characterization in Vacuum and in Situ; Biosensors and Diagnostic Devices; Tissue engineering: principles; Tissue engineering: applications</td></tr>
<tr><td>Teaching/Learning Methodology</td><td>Students will learn the knowledge in lectures and seminars. They are exposed to various facets of biomaterials research and development. They are also provided with the latest development in the recently emerged field of tissue engineering. Students are given assignments and need to make presentations.

<table>
<tr><td rowspan="2">Teaching/learning methodology</td><td colspan="4">Intended subject learning outcomes</td></tr>
<tr><td>a</td><td>b</td><td>c</td><td>d</td></tr>
<tr><td>1. Lectures</td><td>√</td><td>√</td><td>√</td><td>√</td></tr>
<tr><td>2. Seminars</td><td></td><td>√</td><td>√</td><td>√</td></tr>
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Assessment Methods in Alignment with Intended Learning Outcomes

Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed					
		a	b	c	d		
1. Continuous assessment: a. Assignments	30%	√	√	√	√		
b. Quiz	30%	√	√	√	√		
c. Individual report and presentation	40%	√	√	√	√		
Total	100 %						

Continuous assessment will include homework assignments, quiz, individual repot and individual presentation.

Homework assignments will be designed to test how the students know the most recent developments in biomaterials and tissue engineering in different research areas for the outcomes a, b c and d. Then, the students are required to choose one topic for the recent development of one biomaterial in tissue engineering. Each student gave individual oral presentation and turned in the individual project paper.

Student Study Effort Expected		
	Class contact:	
	▪ Lectures	36 Hrs.
	▪ Seminars	3 Hrs.
	Other student study effort:	
	▪ Self study	63Hrs.
	▪ Assignments and preparation for presentation	40 Hrs.
	Total student study effort	142 Hrs.

Reading List and References

1. Biomaterials and tissue engineering, Berlin ; New York : Springer, c2004
2. Biomaterials : principles and applications Boca Raton : CRC Press, c2003