

Subject Description Form

Subject Code	BME5130
Subject Title	Advanced Prosthetics and Orthotics
Credit Value	3
Level	5
Responsible staff & Department/School	Prof M S WONG & Dr Toshiki KOBAYASHI (BME)
Pre-requisite / Co-requisite/ Exclusion	Nil
Objectives	This subject aims to provide an in-depth and wide exposure of various approaches in clinical assessment, design, fabrication, fitting & outcome measure in advanced prosthetics and orthotics, to incorporate evidence-based practice by initiating discussion on a number of literatures of research, and to keep abreast with the latest development in advanced prosthetics and orthotics.
Intended Learning Outcomes	Upon completion of the subject, students will be able to: <ul style="list-style-type: none"> a. Perform comprehensive assessment, evaluation and documentation in prosthetic and orthotic service; b. Incorporate evidence-based practice in prosthetic and orthotic service; c. Organize and manage different approaches in design, fabrication, and fitting of prostheses and orthoses; d. Understand the application of the latest prosthetic and orthotic technologies.
Contribution to Programme Outcomes (Refer to Part I Section 2)	<p>Programme Learning Outcome (a): Acquire and apply advanced levels of knowledge and skills in BME discipline. (Teach, Practice, and Measure)</p> <p>Programme Learning Outcome (b): Apply critical analysis and problem-solving skills for evidence-based practice in BME discipline. (Teach, Practice, and Measure)</p> <p>Programme Learning Outcome (c): Demonstrate a higher level of professional competence to cope with the rapid changes in practice in BME discipline. (Teach and Practice)</p> <p>Programme Learning Outcome (e): Demonstrate their abilities to continuously develop in professional practice. (Teach, Practice, and Measure)</p>
Subject Synopsis/ Indicative Syllabus	Principles in Prosthetics and Orthotics: Patient assessment; biomechanical design of prostheses and orthoses, materials and component options; checkout and evaluation of prosthetic and orthotic interventions; clinical documentation.

	<p>Advanced Technology in Prosthetics and Orthotics: Latest prosthetic and orthotic designs, application of advanced components, materials and control strategies in prostheses and orthoses, analysis of kinetic, kinematic, and spatial-temporal parameters of movement of amputees and patients; computer-aided-design and manufacturing (CAD-CAM); 3D printing applications; device-body interface measurement. Critical review of various designs of prosthetic and orthotic interventions.</p>																																																				
<p>Teaching/Learning Methodology</p>	<p>This subject extends the knowledge in prosthetics and orthotics especially in patient assessment, prescription, design, fabrication and evaluation methods. Students are also required to review the literature, to compare and contrasting traditional beliefs / experiences with findings from previous research. In laboratory sessions, students will test and report how different parameters, which include designs of prosthesis / orthosis, and physical conditions of the patients, affect the functioning of the prosthetic / orthotic interventions.</p>																																																				
<p>Assessment Methods in Alignment with Intended Learning Outcomes</p>	<table border="1" data-bbox="459 748 1422 1211"> <thead> <tr> <th rowspan="2">Specific assessment methods / tasks (Continuous assessment)</th> <th rowspan="2">% weighting</th> <th colspan="6">Intended subject learning outcomes to be assessed</th> </tr> <tr> <th>a</th> <th>b</th> <th>c</th> <th>d</th> <th></th> <th></th> </tr> </thead> <tbody> <tr> <td>1. Class Participation</td> <td>10%</td> <td>√</td> <td>√</td> <td>√</td> <td>√</td> <td></td> <td></td> </tr> <tr> <td>2. Student Case Presentation (25% x 2)</td> <td>50%</td> <td>√</td> <td>√</td> <td>√</td> <td>√</td> <td></td> <td></td> </tr> <tr> <td>3. Quiz (20% x 2)</td> <td>40%</td> <td>√</td> <td>√</td> <td>√</td> <td>√</td> <td></td> <td></td> </tr> <tr> <td>Total</td> <td>100 %</td> <td colspan="6"></td> </tr> </tbody> </table>							Specific assessment methods / tasks (Continuous assessment)	% weighting	Intended subject learning outcomes to be assessed						a	b	c	d			1. Class Participation	10%	√	√	√	√			2. Student Case Presentation (25% x 2)	50%	√	√	√	√			3. Quiz (20% x 2)	40%	√	√	√	√			Total	100 %						
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<p>Student Study Effort Expected</p>	<p>Class contact:</p>																																																				
	<ul style="list-style-type: none"> ▪ Lecture 						27 Hrs.																																														
	<ul style="list-style-type: none"> ▪ Tutorial 						6 Hrs.																																														
	<ul style="list-style-type: none"> ▪ Laboratory 						6 Hrs.																																														
	<p>Other student study effort:</p>																																																				
	<ul style="list-style-type: none"> ▪ Self-study 						39 Hrs.																																														
	<ul style="list-style-type: none"> ▪ Assignment and paper preparation 						39 Hrs.																																														
	<p>Total student study effort</p>						117 Hrs.																																														

Reading List and References	Essential References <ul style="list-style-type: none"> ▪ Journal of Prosthetics and Orthotics International ▪ Journal of Prosthetics and Orthotics ▪ Journal of Biomechanics ▪ Journal of Spine ▪ Journal of European Spine ▪ Lusardi M.M., and Nielsen C.C. (eds.) Orthotics and Prosthetics in Rehabilitation. 3rd Edition. St Louis, Mo.: Saunders/Elsevier, 2012.
Date of Last Major Revision	14 August 2023
Date of Last Minor Revision	14 August 2023