

Subject Description Form

Subject Code	BME5110				
Subject Title	Biomedical Microdevices				
Credit Value	3				
Level	5				
Pre-requisite / Co-requisite/ Exclusion	Nil				
Objectives	The objective of this course is to prepare the students with the knowledge of biomedical microdevices and to introduce the concepts and applications of biomedical microdevices for micro-total analysis systems, drug delivery systems, cellular phenomena observation, stem cell study, bacteria detection, gene delivery system for diagnostics and treatment of human disease.				
Intended Learning Outcomes	<p>Upon completion of the subject, students will be able to:</p> <ol style="list-style-type: none"> a. Analyze the design and fabrication of microdevices for biological applications. b. Integrate the basic knowledge with the applications of biomedical microdevices c. Discuss the most recent developments in biomedical microdevices research d. Apply the appropriate techniques and right strategies through case studies in the successful development of biomedical microdevices for medical applications 				
Subject Synopsis/ Indicative Syllabus	Introduction to biomedical microdevices; Material choices for biomedical microdevices; Fabrication techniques for biomedical microdevices; Silicon based biomedical microdevices; Polymer based biomedical microdevices; Microsensors for biological application; Microactuators for biological application; Microdevices for drug delivery; Microdevcies for cell culture; ; Microdevcies for stem cell study; Microdevices for bacteria detection, Microdevices for diagnostics.				
Teaching/Learning Methodology	Students will learn the knowledge in lectures and seminars. They are exposed to various facets of biomedical microdevice research and development. They are also provided with the latest development in the recently emerged field of biomedical microdevices. Students are given assignments and need to make presentations.				
	Teaching/learning methodology	Intended subject learning outcomes			
		a	b	c	d
	1. Lectures	√	√	√	√
2. Seminars		√	√	√	

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 %						
<p>Continuous assessment will include homework assignments, quiz, individual report and individual presentation.</p> <p>Homework assignments will be designed to test how the students know the most recent developments in biomedical microdevices 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 biomedical microdevices. Each student gave individual oral presentation and turned in the individual project paper.</p>							
Student Study Effort Expected	Class contact:						
	▪ Lectures						24 Hrs.
	▪ Seminars						9 Hrs.
	▪ Tutorials						6 Hrs
	Other student study effort:						
	▪ Self study						64 Hrs.
	▪ Assignments and preparation for presentation						39 Hrs.
	Total student study effort						142 Hrs.
Reading List and References	Method in bioengineering: microdevices in biology and medicine, Norwood, Mass. ; London : Artech House, 2009.						