

Module Code	MEP56BM9
Module Name	Medical Device Design Fundamentals
ECTS Weighting	5 ECTS
Semester taught	Semester 1
Module Coordinator/s	Bruce Murphy
Module Learning Outcomes with reference to the Graduate Attributes and how they are developed in discipline	<p>On successful completion of this module, students should be able to:</p> <p>LO1. Understand the medical device regulatory systems in the US and European Union</p> <p>LO2. Apply engineering principles to determine how medical devices either have successfully treated patients or have failed.</p> <p>LO3. Understand the importance of the patenting system within the arena of medical device design</p> <p>LO4. Understand the importance of legal and ethical aspects of medical device design and development</p> <p>Graduate Attributes: levels of attainment</p> <p>To act responsibly - Enhanced</p> <p>To think independently - Enhanced</p> <p>To develop continuously - Enhanced</p> <p>To communicate effectively - Enhanced</p>
Module Content	<p>The course is designed to educate students in the area of medical device design. This is a broad course and its focus does not solely revolve around the engineering challenges associated with designing a medical device, lectures focus on many aspects: understanding clinical trial data, understanding the anatomical fundamentals associated with the device area, developing intellectual property strategies, regulation of medical devices, risk analysis, manufacturing techniques and requirements, reimbursement, and case studies of successful and unsuccessful medical device development.</p>
Teaching and Learning Methods	<p>This module uses Blackboard, podium lectures, self-directed assignments, to help students achieve the required learning outcomes.</p>

Assessment Details¹ Please include the following: <ul style="list-style-type: none"> • Assessment Component • Assessment description • Learning Outcome(s) addressed • % of total • Assessment due date 	Assessment Component	Assessment Description	LO Addressed	% of total	Week due
	Exam	Medical device design exam	LO1-L04	100	
Reassessment Requirements	Examination				
Contact Hours and Indicative Student Workload¹	Contact hours: (35) 33 Lectures, 2 hour interactive workshop				
	Independent Study (50) (preparation for course and review of materials):				
	Independent Study (35) (preparation for assessment, incl. completion of assessment):				
Recommended Reading List	<p>Intellectual Property, Medicine and Health (Intellectual Property, Theory, Culture) 2nd Edition by Johanna Gibson (Author)</p> <p>**Biodesign: The Process of Innovating Medical Technologies 2nd Edition by Paul G. Yock (Author), Stefanos Zenios (Author), Josh Makower (Author), Todd J. Brinton (Author), Uday N. Kumar (Author), F. T. Jay Watkins (Author), Lyn Denend (Author),</p> <p>The Founder's Dilemmas: Anticipating and Avoiding the Pitfalls That Can Sink a Startup (The Kauffman Foundation Series on Innovation and Entrepreneurship) Paperback – April 1, 2013 by Noam Wasserman (Author)</p> <p>The Innovator's Dilemma: The Revolutionary Book That Will Change the Way You Do Business Paperback – October 4, 2011 by Clayton M. Christensen</p> <p>Zero to One: Notes on Startups, or How to Build the Future Hardcover – September 16, 2014 by Peter Thiel</p>				

	<p>Venture Deals: Be Smarter Than Your Lawyer and Venture Capitalist Hardcover – December 26, 2012 by Brad Feld (Author), Jason Mendelson</p> <p>The Survival Guide to Eu Medical Device Regulations Paperback – June 20, 2017 by Petri Pommelin</p> <p>** Highly recommended</p>
Module Pre-requisite	4BIO5 Biomechanics and 4BIO6 Biomaterials
Module Co-requisite	
Module Website	
Are other Schools/Departments involved in the delivery of this module? If yes, please provide details.	
Module Approval Date	
Approved by	
Academic Start Year	
Academic Year of Date	