7B15 CURRENT RESEARCH TOPICS AND TECHNIQUES IN MEDICAL DEVICES – [10 Credits]

Lecturers: Assistant Prof. Bruce Murphy (bruce.murphy@tcd.ie)

Semester: 2

Module Organisation
This module will introduce MSc students to cutting-edge research in medical device design and to many of the skills required to engage in such research. The module meetings will typically take place on the Trinity College Campus, however, a number of the meetings will be hosted by our clinical collaborators at hospitals around Dublin.

Module Description
This module is centered on a specific new medical device innovation. Over the course of the module the students are required to understand the clinical need, the proposed solution for the clinical need, the regulatory and risk profile of the device, and the intellectual property associated with the device. Subsequent to gaining this knowledge over semester 2 and the summer months the students must document a certain aspect of the particular medical field in a final report. E.g. analyzing the FDA MAUDE database to determine the impact that design changes have on the pattern of adverse events

Learning Outcomes
On successful completion of this module, students should have developed:
1. The ability to extract, through literature search, information pertinent to an unfamiliar problem.
2. Develop a broad knowledge and understanding of emerging cell and tissue engineering strategies.
3. Develop a broad knowledge and understanding of emerging biomaterials and manufacturing techniques relevant to a field of medical device design.
4. Develop a broad knowledge and understanding of developing technologies that will impact on the fields of medical device innovation.
5. The ability to critically assess the scientific/clinical literature.
6. The ability to recognise the interactions between different technologies (including those outside the discipline of Biomedical Engineering) that will impact on the fields of cell and tissue engineering.
7. The ability to write technical reports that synthesise the work of others.
8. The ability to lead an oral discussion of emerging technologies related to their field

Assessment Modes
There will be no formal examination for this module. Students will receive written, e-mail feedback on their presentations from the faculty. This feedback, as well as an evaluation of student write ups and participation in discussions will be incorporated into a final evaluation. A satisfactory evaluation throughout the year is needed to complete this requirement.