

1. Course No: **BSEXXX**

(The course will be mandatory for Biomedical Engineering MTech students)

2. Course Title: **Experiential learning about medical devices and diagnostics**

3. Per Week Lectures and credits (L-T-P-D-C: Lecture-Tutorial-Practical-Discussion-Credits): **0-2-24-8-18** [*Kindly note that this course will be offered in the summer and thus the hours are condensed*]

4. Proposing Department/IDP: **Biological Sciences and Bioengineering**

Other Departments/IDPs which may be interested in the proposed course: EE, ME

5. Proposing Instructor(s): **Amitabha Bandopadhyay, Debanjan Dasgupta, Nikunj Bhagat**

6. Course Description:

A) Objectives: This course aims to deliver a practical exposure to the use of engineered products used in healthcare delivery to familiarize the students with the engineering and product space for biomedical engineering. The course will help students to understand the following topics: the current state-of-the art biomedical devices and diagnostics used in different clinical practices; the gaps and issues faced by doctors in such practices and finally thinking about possible ways of solving such gaps using concepts combining different engineering domains.

B) Contents:

S. No	Broad Title	Topics	Hours
1.	Introduction to the clinical Immersion	Introduction to biomedical engineering facilities in a hospital, the departments of a hospital and their staff	10
2.	Site visit – Clinical departments e.g. cardiology, neurology, cardiac surgery, neuro surgery, support departments (cath labs, path labs, sleep lab, pain lab etc.)		74
3.	Identifying potential gaps in the current scenario (through tutorials at the clinical facility)		12
4.	Formulation of a probable solution through discussions with IITK mentor(s) and clinical mentor(s)		48
Total			144

C) Pre-requisites: The students must have credited BSE667.

7. Recommended books and Reference:

There is no recommended textbook for this course. This is an experiential learning course. The students will observe, interact with clinicians and practicing biomedical engineers. The

clinicians will help with gap identification. The students will evaluate the feasibility of potential solutions in discussion with IITK mentors. Extensive literature survey will be needed. The literature to be surveyed will vary from one student to the other depending on the assigned IITK faculty mentor and the problem statement space.

8. Assessment:

Assessment Criteria: One mid-semester (group) presentation; a final presentation & report submission; Class participation