



IIT Mandi Proposal for a New Course

Course number	: BE307P
Course Name	: Reverse Engineering for Bioengineers
Credit Distribution	: 0-0-2-1
Intended for	: B.Tech.-M.Tech. Integrated Dual Degree in Bioengineering (Core Course)
Prerequisite	: No prerequisite (compulsory for Bioengineering students)
Mutual Exclusion	: NA

1. Preamble:

The course is designed to introduce the students to:

- Understanding of basic biomedical engineering systems.
- Understand the terminologies related to re-engineering, forward engineering, and reverse engineering.
- Disassemble products and specify the interactions between its subsystems and their functionality
- Understand Reverse Engineering methodologies.
- Understand Reverse engineering of Biotechnological/ Biomedical devices.

Course Modules (28 total hours):

The students focus on hardware reverse engineering (RE). In the process of RE students understand existing technologies, functions, features, objects, components and systems. By carefully disassembling, observing, testing, analyzing and reporting, students can understand how something works and suggest ways it might be improved. This process requires careful observation, disassembly, documentation, analysis and reporting. Many times, the reverse engineering process is non-destructive. This means that the object or component can be reassembled and still function just as it did before it was taken apart. Throughout the reverse engineering project, the students are able to think of ways these objects could be improved. Is there some way it could function better? or manufactured less expensively? The students will use observations to make suggestions for improvement of the product.

Learning Topics: Reverse Engineering of Biotechnological/Biomedical- Devices/ prototypes.

2. Text books:

- 1. Lam, R.H. and Chen, W., 2019. Biomedical Devices. Materials, Design, and Manufacturing. Springer, Reading, Massachusetts, 1.**
- 2. Boccato C, Cerutti S, Vienken J, editors. Medical devices: improving health care**

through a multidisciplinary approach [Internet]. Cham: Springer International Publishing; 2022

3. References:

- 1. RE as necessary phase by rapid product development by Sokovic and Kopac. Journal of Materials Processing Technology 2005**
- 2. Reversing: Secrets of Reverse Engineering by Eldad Eilam Publisher: Wiley (April 15, 2005)**
- 3. The IDA Pro Book: The Unofficial Guide to the World's Most Popular Disassembler by Chris Eagle**

**4. Similarity with the existing courses:
(Similarity content is declared as per the number of lecture hours on similar topics)**

S. No.	Course Name	Course Code	Similarity Content	Approx. % of Content
1.	NA			
2.				

6. Justification of new course proposal if cumulative similarity content is >30%: NA