IC101P Reverse Engineering

Credits :0-0-3-2

Prerequisite: Consent of the faculty member

Students intended for: B.Tech

Elective or Core: Core Semester: Even/Odd

Course objective:

After the completion of the course, students should be able to:

- Understand basic 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 Systems, Mechanical RE, Electronic RE, and Computer RE.

Course content: The students focus on either software or 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: Forward Engineering Design, Design Thought and Process, Design Steps, System RE, RE Methodology, RE Steps, System level Design, and Examples, Product Development, Product Functions, Engineering Specifications, Product Architecture, Mechanical RE, Computer-Aided RE, Electronic RE, Identify electronic components, PCB RE, Schematic Drawings and Analysis, S/W RE, Reverse Engineering in Computer Applications, Re-engineering of PLC programs.

References

1. Product Design: Techniques in Reverse Engineering and New Product Development by K. Otto and K. Wood Prentice Hall, 2001.
2. Reverse Engineering: An Industrial Perspective by Raja and Fernandes. Springer-Verlag 2008
3. RE as necessary phase by rapid product development by Sokovic and Kopac. Journal of Materials Processing Technology 2005
4. Reversing: Secrets of Reverse Engineering by Eldad Eilam Publisher: Wiley (April 15, 2005)
5. The IDA Pro Book: The Unofficial Guide to the World's Most Popular Disassembler by Chris Eagle