

Subject Code: 01AE0507

Subject Name: Reverse Engineering

B.Tech. Year – III (Sem 5) Automobile Engineering

Objective: The objective of the module is to go through the Reverse Engineering process as it is a self-learning tool used to summarize the process of reconstructing/ reformation of an already existing object.

Credits Earned: 1Credit

Course Outcomes: After completion of this course, student will be able to

1. Understand the problem in the existing process.
2. Collect the large number of data/ information for the product
3. Depth analyze of the products and extraction of real time data
4. Understand the principles behind the design of the product, ways to redesign and improve the performance of the system.

Pre-requisite of course: Nil

Teaching and Examination Scheme

Teaching Scheme (Hours)			Credits	Theory Marks			Tutorial/ Practical Marks		Total Marks
Theory	Tutorial	Practical		ES E (E)	Mid Sem (M)	Internal (I)	Viva (V)	Term work (TW)	
0	0	2	1	0	0	0	25	25	50

Contents:

Units	Topics	Contact Hours
Module-1 Reverse Engineering Basics	Need of reverse engineering, Methodologies for Reverse Engineering, understanding of Reverse Engineering through example, reasons for reverse engineering, process for Reverse Engineering, Phases of Reverse	6



	Engineering, conceptual System Reasons for Reverse Engineering, Difficulties in Reverse Engineering, Levels of abstraction: Application level, Functional level, Structural level	
Module-2 Reverse Engineering Methodology	Detailed study of Reverse Engineering for Branch Specific learning Disassemble the existing selected artefact/ product/ component/ process/ system to study technical aspects and design detail, Reverse engineering in various computer software/ application, CASE STUDY EIS Client Application, Implementation level	6
Module-3 Software Reverse Engineering	Reverse engineering of software, Binary reverse engineering, Binary software techniques, Software classification, Source code, number of UML tools, Reverse engineering of Protocols	10
Module-4 Capstone Project	Mini project exercise based on understanding of modules contents	6
Total Hours		28

Note: Mentors are advised to take suitable project/activity to explore the above topics and make students understand the various concepts.

References:

1. Reversing: Secret of Reverse Engineering, Eldad Eilam, Wiley Publishing, Inc.
2. Reverse Engineering, Wills, Linda M., Newcomb, Philip (Eds.), Springer, 1996, ISBN 978-0-585-27477-5
3. Practical Reverse Engineering: x86, x64, ARM, Windows® Kernel, Reversing Tools, and Obfuscation, Bruce Dang, Alexandre Gazet, Elias Bachaalany, John Wiley & Sons, Inc, ISBN: 978-1-118-78731-1.



Instructional Method:

- a. The course delivery method will depend upon the requirement of content and need of students. The teacher in addition to conventional teaching method by black board, may also use any of tools such as demonstration, role play, Quiz, brainstorming, MOOCs etc.
- b. The internal evaluation will be done on the basis of continuous evaluation of students in the laboratory and class-room.
- c. Practical examination will be conducted at the end of semester for evaluation of performance of students in laboratory.
- d. Students will use supplementary resources such as online videos, NPTEL videos, e-courses, Virtual Laboratory

Supplementary Resources:

1. <https://canvas.instructure.com/courses/838884/pages/unit-3-lesson-6-reverse-engineering>
2. <https://www.cs.drexel.edu/~spiros/teaching/CS675/>
3. <https://eforensicsmag.com/course/software-reverse-engineering-techniques-level-1/>
4. <http://www.npd-solutions.com/remethodology.html>