B.Tech IV Year I Semester
JNTUA COLLEGE OF ENGINEERING (AUTONOMOUS) PULIVENDULA

<u>19AME75c – REVERSE ENGINEERING</u>
(Open Elective-III)

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Course Objectives: The objectives of the course are to make the students learn about
- Introduce the concepts of reverse engineering
- Familiarize with the tools and techniques for reverse engineering
- Teach the principles of various rapid prototyping methods
- Discuss the legal aspects of reverse engineering.

UNIT – 1: Introduction   8 Hrs
Scope and tasks of RE, Process of duplicating, Definition and use of Reverse Engineering, Reverse Engineering as a Generic Process

Learning Outcomes:
At the end of this unit, the student will be able to
- Recall the definition and use of reverse engineering.   L1
- Identify reverse engineering as a generic process.   L2
- List various tasks of reverse engineering.   L1

UNIT – II: Tools and Techniques for RE   6Hrs
Object scanning: contact scanners, noncontact scanners, destructive method, coordinate measuring machine, Point Data Processing: pre processing and post processing of captured data, geometric model development, construction of surface model, solid model, noise reduction, feature identification, model verification

Learning Outcomes:
At the end of this unit, the student will be able to
- Summarize various techniques in reverse engineering.   L2
- Compare preprocessing and post processing of captured data.   L4
- Explain noise reduction, feature identification and model verification.   L2

UNIT – III: Rapid Prototyping   6Hrs
Introduction, current RP techniques and materials, Stereo Lithography, Selective Laser Sintering, Fused Deposition Modelling, Three-dimensional Printing, Laminated Object Manufacturing, Multi – jet Modelling, Laser-engineered Net Shaping, Rapid Prototyping, Rapid Tooling, Rapid Manufacturing

Learning Outcomes:
At the end of this unit, the student will be able to
- Identify the developments in the rapid prototyping techniques   L2
- Classify rapid prototyping techniques.   L2
- List the advantages and disadvantages of rapid prototyping methods.   L1

UNIT – IV: Integration   6 Hrs
Cognitive approach to RE, Integration of formal and structured methods in reverse engineering, Integration of reverse engineering and reuse.

Learning Outcomes:
At the end of this unit, the student will be able to
- Explain the cognitive approach to reverse engineering. **L2**
- Discuss the integration of formal and structured methods in reverse engineering. **L2**

UNIT – V: Legal Aspects of Reverse Engineering   6Hrs

Legal Aspects of Reverse Engineering: Introduction, Copyright Law.

Learning Outcomes:
At the end of this unit, the student will be able to
- Identify the legal aspects of reverse engineering **L2**
- Understand the concepts of copyright law. **L2**

Text Books:
1. Biggerstaff T. J., "Design Recovery for Maintenance and Reuse", IEEE Corporation, 1991.
2. Katheryn, A. Ingle, "Reverse Engineering", McGraw-Hill, 1994.

Reference Books:
1. Aiken Peter, "Data Reverse Engineering", McGraw-Hill, 1996.
2. Linda Wills,"Reverse Engineering" ,Kluiver Academic Publishers, 1996.
3. Donald R. Honsa , "Co-ordinate Measurement and reverse engineering", American Gear Manufacturers Association, 1996.

Course Outcomes:
At the end of this Course the student will be able to
- Understand the importance of reverse engineering. **L2**
- Make use of tools and techniques of reverse engineering. **L3**
- Identify the applications of rapid prototyping techniques. **L2**