

FAUT-TOLERANT SYSTEMS

(Elective Subject)

Course Code:	11M1WEC433	Semester:	3 rd Semester, M. Tech (ECE)
Credits:	3	Contact Hours:	L-3, T-0, P-0

Course Objectives

The objectives are to study

1. This course focuses on the design of fault-tolerant and reliable systems.
2. It covers the concepts and terminologies of Fault-Tolerant System Design including: Reliability, Dependability, Maintainability etc.

Course Outcomes

After studying this course the students would gain enough knowledge

1. Introduction to availability, reliability, dependability etc.
2. Evaluation of dependability and reliability.
3. Knowledge about reliability block diagram and fault tree.
4. Application of fault-tolerance techniques.

Course Contents

Unit	Topics	References (chapter number, page no. etc)	Lectures
1.	Define common terms such as availability, reliability, dependability etc.	Shooman: Chapter 2, 3	6
2.	List common threats to dependability and their mitigation methods	Shooman : Chapter 4	11
3	Solve reliability block diagrams involving series, parallel and networks of components. Apply the laws of discrete probability to evaluating systems	Shooman : Chapter 5	11
4	Evaluate simple redundancy schemes through the laws of continuous probability, provided the failures are exponentially distributed.	Shooman : Chapter 6 Uymera : Chapter 10	11
5	Apply fault-tolerance techniques such as error correcting circuits and duplicate execution to the design of hardware systems.	Shooman : Chapter 7	8

Total Number of Lectures			47

Evaluation Scheme

1. Test 1 :15 marks
2. Test 2 : 25 marks
3. Test 3 : 35 marks
4. **Internal Assessment** : 25 marks
 - 10 Marks : Class performance, Tutorials & Assignments
 - 10 Marks : Quizzes
 - 5 marks : Attendance

Text Books

1. Martin L. Shooman, Reliability of Computer Systems and Networks: Fault Tolerance, Analysis, and Design, Wiley 2002.

Reference Books

1. Israel Koren C. Krishna, Fault-Tolerant Systems 1st Edition, Morgan Kaufmann