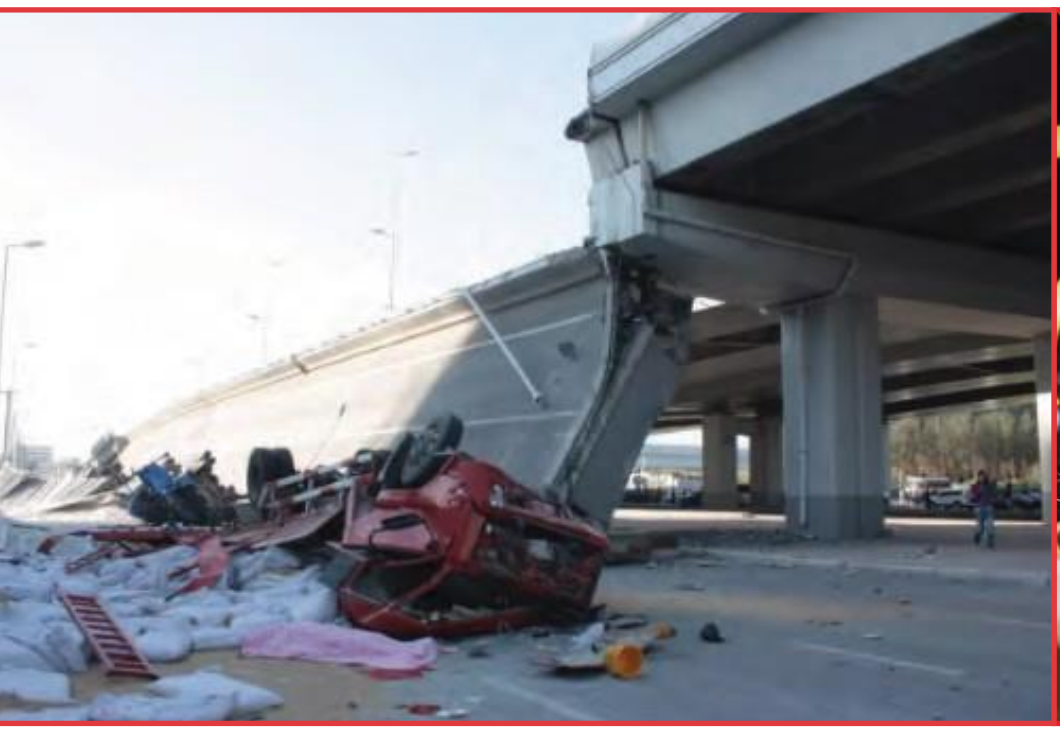
ENME 695: Design for Reliability: Spring 2020

A graduate course open to students from all disciplines

Professor Michael Pecht

Mondays at 9:30AM – 12:10PM | J.M. Patterson Building #83, Room 2217



Failures of engineered systems continue to compromise the safety, productivity, and profitability of a product. Many of these problems can be traced back to a lack of emphasis on reliability.

Reliability is a product or system's capacity to perform as intended, without failure and within specified performance limits, for a specified time in its life-cycle conditions. Knowledge of reliability concepts and principles, as well as risk assessment, mitigation, and management strategies, prepares engineers to contribute effectively to product development and life-cycle management and product safety.

Course Objectives:

- Learn to efficiently and cost-effectively design and manufacture reliable products
- Implement derating, uprating, reliability prediction, and allocation
- Plan and conduct product testing to assess and achieve reliability
- Assess the suitability of the supply chain members to contribute to the development, manufacturing, distribution, and support of reliable products
- Understand process capability and process control
- Apply design and analysis tools, such as failure modes, mechanisms, and effects analysis; fault tree analysis; design of experiments; and others
- Analyze degradation, failure, and warranty return data to estimate fundamental reliability parameters
- Conduct root cause analysis
- Address reliability issues associated with warranties, regulatory requirements, and liabilities

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