



## Materials Failure Analysis-Case Studies and Design Implications (For the Industry)

Conducted by:

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In manufacturing a component or constructing a structure, design engineers typically consider pertinent factors such as functional requirements, reliability, safety, cost and adverse environmental conditions that might potentially affect their design. Quite unfortunately, however, we regularly come across of failure of various engineering designs due to limitations in material performance having been altogether overlooked or critical loading conditions having been conveniently ignored in the analysis. In a nutshell, this course on Engineering Materials Failure Analysis aims to prevent engineering failures by reviewing real life failures. In addition, relevant aspects of mechanical behavior of materials to the design process are explored and explained

### Specific Objectives

- Should be able to analyze engineering failures critically in a given design considering all possible failure mechanisms (sometimes, these failure mechanisms may be competing with one another).
- Should be able to understand the significance of generic mechanical properties of materials and their behavior when influenced by structural, process and environmental considerations.
- Should be able to obtain grater exposure to the inter-relationship among the material, functional and analytical aspects of the design process.

### Course Outline

This course will be taught by means of real life industrial studies case. Structural or component failures that involve the following mechanisms will be thoroughly examined.

- Elastic instability

- Plastic yield
- Fast fracture
- Fatigue
- Creep
- Corrosion and other environmental failure
- Comprehensive failure of composites

### Who Should Attend?

This is a continuing Professional Development (CPD) course targeted at practicing engineers in the industry, researchers, professional engineers (PEs), designers, manufactures and technical specialist with a wide spectrum of interests centered on the problems and the challenges associated with failure analysis and design implications of engineering structures and components. With failure analysis becoming increasingly important to engineers and designers, the aim of this course is to provide an intensive introduction to the subject via vivid case examples.