



Materials Selection for An Optimal Cost Effective Design (A Critical Bridging Course) For the Industry

Conducted By:

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Today it is widely accepted that knowledge of the science and technology of materials is paramount to cost effective design and manufacturing of innovative products. For example, in designing a structure or device what mechanical properties should an engineer pay attention to? Should he limit himself to conventional engineering materials or use other materials that would optimize his/her design and reduce cost at the same time. This course aims to educate industry professionals on how to choose materials swiftly and effectively in engineering design of structures and components. It also aims to give them a broad introduction to material properties, their limitations and related industrial applications. Formal procedures and main principles of materials selection using

state-of-the-art selection charts will be introduced.

Specific Objectives

- Understand different material properties useful for design
- Understand stages involved in mechanical system design and the role of materials
- Develop formal selection strategies using property limits and material indices
- Solve a number of case studies using a combination of formal selection procedures and understand salient engineering properties of materials in design
- Develop a systematic approach for design problems.

Course Outline

- Review of various types and properties of materials used in engineering design
- Material properties summarized on materials selection charts
- Mechanical system design concepts

- Understanding and developing a systematic strategy for material selection in a given component
- Formal procedures and main principles of materials selection using state-of-the-art selection charts
- Case-studies in materials selection for various practical engineering applications

Who Should Attend?

This course assumes no previous background knowledge in Materials Selection. As such it can be a very useful preparatory or bridging course for industry professionals engaged in the design of mechanical structures or components. This course would also be useful for manufacturers and technical specialists with a wide spectrum of interests centered on the problems and challenges associated with materials properties and their application. The focus of the course would be on basic concepts, worked examples and practical case studies.