

MS8301 Materials and Man

[Lectures: 26 hrs; Tutorials: 13 hrs; Pre-requisites: NIL; Academic Units: 3.0]

Learning Objective

The main objective of the course is to cultivate appreciation for the impact of materials on human civilization. It will be presented by a series of topics (case studies) from the materials harnessed by human being since the beginning of the civilization to the new materials that are needed for a sustainable growth in the future. While adequate technical explanation is provided to understand the subject matter, emphasis will be laid on the social and economic impacts brought by innovations in materials and materials technologies. At the end of the course, student will develop a better understanding of how materials advances have drastically changed our way of life. The demand for new materials will be discussed as we are facing increasingly serious problems in renewable energy, clean water and environment.

Content

Historical trace of Material usage through different epochs of civilization: Material technology along nine major areas of human endeavor: Habitat, Transportation, Communication, Food & Water, Energy, Warfare, Healthcare, Entertainment, Computation.

Learning Outcome

At the end of this course students will be able to:

- Appreciate the importance of materials and how their development is intimately linked to human civilization.
- Understand the evolution of material usage in nine major areas of human progress
- Understand how material properties shape our accepted outlook of our environment
- Understand how material technology is linked to the economy, the environment, and the sustainability of future growth.
- Understand the key material advances needed to maintain the current rate of societal progress.