



PD205 Aug 2:1

Materials, Manufacturing and Design

Instructor

Satish V Kailas

Email: satvk@iisc.ac.in

Teaching Assistant

NA

Email: NA

Department: Centre for Product Design and Manufacturing

Course Time: Tue, Thu 9-10.30 AM

Lecture venue: MMCR CPDM

Detailed Course Page: NA

Announcements

No attendance will be taken. At the end of each class (last 10 minutes) the student is given a sheet of paper on which the student has to write (after closing the notes) what they have learnt in the class. This ensures that the student has to concentrate in the class, this sheet becomes the attendance and no proxy is possible.

Brief description of the course

The course is to teach students the fundamental basis for material selection for design.

Prerequisites

None

Syllabus

Sustainability, Engineering materials, metals and their properties, uses, processing methods, design data and applications, selection criteria, manufacturing and processing limitations, comparative studies. Plastics and composites, types, classification, properties, processing techniques and limitation, Reliability and failure analysis

Course outcomes

The students are introduced to the concept of sustainability, the process of design based on boundary conditions, selection of materials for the given properties, reliability, failure analysis. At the end of the course

they should be in a position to choose the right material for a given application.

Grading policy

20% assignment, 30% mid-term and 50% final

Assignments

Assignments are of various kinds that include current literature and redesigning of projects carried out in CPDM.

Resources

Dieter, G.E., Engineering Design – A Materials and processing approach, McGraw Hill, 1991.

Ashby, M.F., Materials selection in Mechanical Design, Pergamon press, 1992.

Patton, W.J., Plastics Technology, Theory, Design and Manufacture, Lenton Publishing Co.