Introduction to Composites - Web course

COURSE OUTLINE

This course has been developed for both PG and UG students, wishing to get introduced to composite materials. The course is divided into several 8 modules, as described below.

- Module 1: Introduction to composites
- Module 2: Fibers, matrices and fillers
- Module 3: Manufacturing of composites
- Module 4: Unidirectional and short-fiber composite behavior
- Module 5: Orthotropic laminates
- Module 6: Laminated composites
- Module 7: Failure of composites
- Module 8: Hygrothermal effects, and residual stresses

COURSE DETAIL

No.	Module No.	Topic
1	Module 1	Introduction to composites
2		Introduction to composites
3		Introduction to composites
4	Module 2	Glass Fibers
5		Graphite Fibers
6		Aramid, Metallic and Other Fibers
7		Matrix materials and Polymers
8		Polymer Matrix Materials
9		Metals and Fillers
10	Module 3	Manufacturing of thermoset composites
11		Manufacturing of thermoset composites
12		Manufacturing of thermoset composites

NP-TEL

NPTEL

http://nptel.iitm.ac.in

Mechanical Engineering

Pre-requisites:

Solid mechanics, and strength of materials

Coordinators:

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13		Other Composite Fabrication Methods
14		Important Terminologies
15	Module 4	Behavior of unidirectional composites
16		Behavior of unidirectional composites
17		Behavior of unidirectional composites
18		Short-fiber composites
19		Short-fiber composites
20		Short-fiber composites
21		Short-fiber composites
22	Module 5	Orthotropic laminate
23		Orthotropic laminate
24		Orthotropic laminate
25	Module 6	Laminated Composites
26		Laminated Composites
27		Laminated Composites
28	Module 7	Failure of Composites
29		Failure of Composites
30		Failure of Composites
31		Failure of Composites
32		Failure of Composites

33	Module 8	Hygrothermal Effects
34		Hygrothermal Effects
35		Hygrothermal Effects
36		Hygrothermal Effects
37		Hygrothermal Effects
38		Thermal stresses in beams
39		Residual Thermal Stress
40		Closure

References:

1. Analysis and Performance of Fiber Composites, Agarwal, B.D. and Broutman, L. J., John Wiley & Sons.
2. Mechanics of Composite Materials, Jones, R. M., Mc-Graw Hill.
3. Engineering Mechanics of Composite Materials, Daniel, I. M. and Ishai, O., Oxford University Press.