NIRMA UNIVERSITY
INDUSTRIAL DESIGN PROGRAMME
Bachelor of Design, Department of Design
Year III, Semester VI

L	T	P	C
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Course Code	**IDSK 321**
Course Title	**Materials & Processes IV (New Emerging Materials)**

Course Learning Outcomes (CLO):
At the end of the course the students will:

1. Develop a prototype keeping in mind its user functionality, design aesthetics etc.
2. Analyze the multi-dimensional properties of the new emerging materials to determine a suggestive approach to design
3. Select new materials that can be used to develop divergent design opportunities

Syllabus: **Total Teaching hours: 82.5**

This module inculcates an understanding of materials that are unconventional and innovative in nature. Materials that have emerged in the market in response to factors like social hazards, scarcity of resources, innovation through smart technology are introduced here. A meticulous study of the multidimensional properties of the same is followed in order to create better design solutions.

Unit 1: Introduction to New Emerging Materials **Teaching hours: 34.5**

1.1 Introduction to a range of materials, beyond the mainstream materials that are available in the market. (E.g. Concrete fabric or Canvas, Carbon fibers, Hydrogel, Transparent wood composites, Protein based fiber etc.)

1.2 Industry Visits

i. Research & Development departments of Institutions such as CIPET etc.
ii. Interaction with Material scientists/experts

1.3 Identify materials and understand the following aspects:

i. Composition
ii. Functional, mechanical, endurance and performance properties
iii. Environmental impact and Costing

1.4 SWOT analysis of the properties of the researched materials

Unit 2. Ideating and Material explorations

Teaching hours: 24

2.1 Determine the properties of the material
2.2 Hands - on exploration with material to identify potential

Unit 3: Prototype Development **Teaching hours: 24**

3.1 Ideation through sketches, material explorations, user functionality
3.2 Demonstration and review
3.4 Final design prototype

Suggested Readings:

1. *Materials Innovation & Design :* by Dimitris Kottas, Links International, 2011
2. *Materials for Design* : by Chris Lefteri, Laurence King, 2014

w.e.f. Academic year _2019 and onwards
Key: L= Lecture, T= Tutorial, P= Practical, C= Credit