

INDIAN INSTITUTE OF TECHNOLOGY TIRUPATI
PROFORMA FOR NEW COURSE

1.	Title of the Course	Design for Manufacturing and Assembly
2.	Course Number	ME5206
3.	Status of the Course	Core
4.	Structure of Credits	3-0-0-3
5.	Offered To	PG
6.	New Course/Modification to	New
7.	To be Offered by	Department of Mechanical Engineering
8.	To take effect from	January 2019
9.	Prerequisite	Nil
10.	Whether approved by the Department	Yes
11.	Course Objective: To develop an in-depth understanding on the concepts of Design for Manufacturing (DFM) of a product with a careful contemplation on the selection of materials, shapes and manufacturing processes, consideration of manufacturability and ease or difficulty in assembly of parts and assessment of quality, reliability, and cost-effectiveness.	
12.	Course Content: Introduction - Need Identification and Problem Definition, Concept Generation and Evaluation; Selection of Materials and Shapes - Properties of Engineering Materials, Selection of Materials, Selection of Shapes, Co-selection of Materials and Shapes; Selection of Manufacturing Processes - Review of Manufacturing Processes, Design for Casting, Design for Bulk Deformation Processes, Design for Sheet Metal Forming Processes, Design for Machining, Design for Powder Metallurgy, Design for Polymer Processing, Co-selection of Materials and Processes; Design for Assembly - Review of Assembly Processes, Design for Welding, Design for Brazing and Soldering, Design for Adhesive Bonding, Design for Joining of Polymers, Design for Heat Treatment; Design for Reliability and Quality - Failure Mode and Effect Analysis, Design for Quality, Design for Reliability, Approach to Robust Design, Design for Optimization.	
13.	Text book(s): 1. Ashby M.F., <i>Materials Selection in Mechanical Design</i> , Butterworth-Heinemann, (2016). 2. Swift K.G., Booker J.D., <i>Process Selection: From Design to Manufacture</i> , Butterworth-Heinemann , (2003).	
14.	Reference(s): 1. Dieter G.E., Schmidt L.C., <i>Engineering Design</i> , McGraw-Hill higher education, (1991). 2. Bralla J.G., <i>Handbook for Product Design for Manufacture: A practical guide to low cost production</i> , McGraw-Hill, (1986). 3. Ashby M.F., Johnson K., <i>Materials and Design – the art and science of materials selection in product design</i> , Butterworth-Heinemann, (2014). 4. Courtney T.H., <i>Mechanical Behaviour of Materials</i> , McGraw Hill, (2000).	