1.	Title of the course	Design for Manufacturing and Assembly
2.	Course number	ME510L
3.	Structure of credits	3-0-0-3
4.	Offered to	PG
5.	New course/modification to	Modification To ME5206/6
6.	To be offered by	Department of Mechanical Engineering
7.	To take effect from	July 2022
8.	Prerequisite	Nil
9.	**Course Objective(s):** 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	
10.	**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.	
11.	**Textbook(s):** 1. Ashby M F, *Materials Selection in Mechanical Design*, Butterworth-Heinemann (2016). 2. Swift K G, Booker J D, Process Selection: From Design to Manufacture, Butterworth-Heinemann, (2003).	
12.	**Reference(s):** 1. Dieter G E, Schmidt L C, Engineering Design, McGraw-Hill higher education, (1991). 2. Bralla JG, Handbook for Product Design for Manufacture: A practical guide to low-cost production, McGraw-Hill (1986). 3. Ashby M F, Johnson K, Materials and Design – the art and science of materials selection in product design, Butterworth-Heinemann, (2014) 4. Courtney T H, Mechanical Behaviour of Materials, McGraw Hill (2000).	