

## IIT Mandi Proposal for a New Course

**Course number** : ME 315  
**Course Name** : Manufacturing Engineering-2  
**Credit** : 3-0-0-3  
**Distribution** : L-T-P-C  
**Intended for** : UG  
**Prerequisite** : None  
**Mutual Exclusion:** *courses with high similarity not allowed to credit by the students after or along with this course*

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### 1. Preamble:

This course will cover fundamentals of manufacturing engineering with respect to powder metallurgy, rapid prototyping processes, jigs and fixtures, metrology, integrated manufacturing systems, production planning and control.

### 2. Course Modules with quantitative lecture hours:

- **Powder Metallurgy:** Characterization of Engineering Powders, Production of metallic powders, conventional pressing and sintering, alternative pressing and sintering techniques, hot isostatic pressing, metal injection molding, powder injection molding. (7 Hours)
- **Rapid Prototyping Processes:** Introduction to rapid prototyping and rapid tooling, solid state methods (FDM, LOM), liquid-based (SLA, SGC), powder-based (3DP) RP processes (8 Hours)
- **Jigs and Fixtures:** Usefulness of Jigs and Fixtures, design principles of jigs and fixtures, principle of location and clamping, types of locating and clamping devices, examples of jigs and fixtures used in lathe machine, milling, boring, shaping, welding and grinding, economics of jigs and fixtures, loading and unloading time, modular fixturing. (7 Hours)
- **Metrology:** Dimensions and Tolerances, inspection types and principles, radius and taper measurements, measurement of screw threads gears, limits, fits, dimensional tolerances, Conventional measuring instruments and gages, surfaces, measurements of surfaces. (7 Hours)
- **Integrated Manufacturing Systems:** Material handling, fundamentals of production lines, manual assembly lines, automated production lines, cellular manufacturing,

flexible manufacturing systems and cells, computer integrated manufacturing. **(7 Hours)**.

- **Production Planning and Control:** Aggregate Planning and master production schedule, inventory control, material and capacity requirements planning, Lean production, shop floor control. **(6 Hours)**

**Laboratory/practical/tutorial Modules:** None

**3. Text books:**

- Groover, M.P., 2020. Fundamentals of modern manufacturing: materials, processes, and systems. John Wiley & Sons.
- Kalpakjian, S. and Schmid, S.R., 2018. Manufacturing engineering and technology, 2001. New Jersey: Prentice Hall

**4. References: None**

**5. Similarity with the existing courses: None**  
**(Similarity content is declared as per the number of lecture hours on similar topics)**

S. No.		Course Code	Similarity Content	Approx. % of Content
1.				

**6. Justification of new course proposal if cumulative similarity content is >30%:**

**5. Similarity with the existing courses: None**  
**(Similarity content is declared as per the number of lecture hours on similar topics)**

S. No.	Course Code	Similarity Content	Approx. % of Content
1.			

**6. Justification of new course proposal if cumulative similarity content is >30%:**

**Approvals:**

**Faculty interested in teaching this course: –**

- Dr. Sunny Zafar
- Dr. Prateek Saxena
- Dr. Swati Sharma
- Dr. Mrityunjay
- Dr. Satvasheel



**Proposed by: Dr. Sunny Zafar**

**School: SMME**

**Signature:**

**Date:**

The following faculty (at least 3 faculty) discussed on... and approved the proposal on.....

Sl. No	Faculty Name	Signature
1.	Dr. Prateek	
2.	Dr. Mrityunjay Dadaoimal	

School Chair:

School:

Date:

This proposal is reported in .....th Board of Academics on .....

Dean Academics

Date:

Note: School is responsible for the Course Code. Academic Office provides the IC Course Code.