



भारतीय प्रौद्योगिकी संस्थान कानपुर
INDIAN INSTITUTE OF TECHNOLOGY KANPUR
P.O.: IIT Kanpur, 208 016, Uttar Pradesh, India
ACADEMIC SECTION : UNDERGRADUATE OFFICE

Prof. Shashank Shekhar
Chairperson, SUGC

No. A(U)/New _Course/2025/UG/09
September 30, 2025

1967

OFFICE MEMORANDUM

The SUGC, in its meeting 2025-26/1st, approved the proposal of the Mechanical Engineering (ME) department to offer a new course as detailed below:

Sl. No.	Course No.	Course Credits	Course Title	Course Type
1.	ME362	3-0-0-0 [9]	Manufacturing Science and Technology	REGULAR

The copy of the course proposals is enclosed for reference.


Shashank Shekhar

Copy to:

1. Dean, Academic Affairs
2. Associate Dean, Academic Affairs
3. All SUGC members
4. Heads of All Departments
5. OARS Section

Indian Institute of Technology Kanpur

Proposal for a new course

1. Course No: ME362
2. Course Title: Manufacturing Science and Technology
3. Per Week Lectures: (L), Tutorial: (T), Laboratory: NA(P),
Additional Hours [0-2]: (A), NA
4. Credits ($3*L+0*T+0*P+0*A$): 9
5. Pre-requisite: TA211, TA212.
6. Duration of Course: Full Semester
7. Proposing Department: Mechanical Engineering
8. Proposing instructors(s): Dr. A. Kumar, Dr. M. Law, Dr. S. Mukhopadhyay, Dr. V. Kumar, Dr. S. Mishra, Dr. N. Sinha

9. Course Description:

A) Objectives:

The main objective of this course is to acquaint students with various manufacturing processes such as casting, joining, bulk deformation, additive manufacturing, machining and metrology. In addition to their classification, this course includes design aspects, physics-based analysis and defects associated with these processes besides measurement techniques used in manufacturing.

B) Contents (preferably in the form of 5 to 10 broad titles):

Total Number of Lectures: 40

1. Introduction to manufacturing and properties of materials (1 lectures)
2. Introduction to manufacturing machines (3 lectures)
Machines related to primary and secondary manufacturing processes and their operation.
3. Casting (7 lectures)
Overview of casting and solidification of alloys and its mechanism; Estimation of solidification time, analysis of cooling curve; Runner and gating system design; Riser design; Defects and their causes; Industrial casting processes; Crystal growth.
4. Joining (4 lectures)
Overview of joining process; Fusion welding mechanism; Heat flow and material transfer mechanism; Analysis of cooling curve; Microstructure formation; Welding defects and inspection; Industrial joining processes.
5. Bulk Deformation (7 lectures)
Overview of bulk deformation process; Brief review of plastic deformation and yield criteria; Mechanistic analysis of Forging, Rolling, Drawing and Forming processes including defects.
6. Additive Manufacturing (4 lectures)

AP-18 (Minutes of 2025-26/1st SUGC Meeting)

Date: 01.08.2025

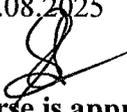
Proposer(s):

Dr. A. Kumar, Dr. M. Law, Dr. S. Mukhopadhyay, Dr.
V. Kumar, Dr. S. Mishra, Dr. N. Sinha

Supratik Mukhopadhyay

Date: 01.08.2025

DUGC Convener: _____


The course is approved/~~not approved~~

Chairman, SUGC

Date: _____