TA202T MANUFACTURING PROCESSES II (2020-21 - I)

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COURSE SCHEDULE

Lectures: in the Asynchronous mode; Discussion hours: see schedule on P2; Labs: Summer 2021 (?).

COURSE DELIVERY

Course will be delivered through: https://hello.iitk.ac.in/. Video lectures, lecture slides, and supplementary material will be uploaded to this platform. Course evaluation will also be through the same platform. Your registration data from Pingala will be transferred to the platform.

COURSE OVERVIEW

This course is about secondary manufacturing processes. The course will mainly discuss machining – conventional and not, and equipment necessary to machine. Though this course has been originally designed for the lectures to complement the laboratory component of the course, given how this semester is being conducted in the 'online-only' mode, and given that laboratory sessions may happen in the summer of 2021, if at all, in this current offering of the course, only introductory concepts of secondary manufacturing processes will be discussed in the lectures. And, as such, the original learning objectives related to laboratory-based project work involving hands-on-experience of manufacturing a product will remain unmet. Instead the rearticulated course objectives are as listed under.

COURSE OBJECTIVES

- To celebrate manufacturing.
- To introduce concepts and working principles of machines that make things.
- To introduce select conventional and non-conventional machining processes.
- To introduce the basics of additive manufacturing.
- To introduce concepts of metrology.

COURSE OUTCOMES

Students, at the end of the course, should:

- Appreciate how manufacturing adds value to raw material.
- Be familiar with machine tools and the possible machining operations on them.
- Gain some basic understanding of the physics of secondary manufacturing processes.

COURSE MATERIAL

Course notes will be provided. Reference Books: (1) Manufacturing Engineering and Technology by Kalpakjian and Schmid, (2) Fundamental of Modern Manuf. Materials, Processes and Systems by Groover.

GRADING (INDICATIVE ONLY)

Suggested evaluation metrics:

- Online quizzes (x 4): 90%
- Online participation: 10% (analytics of participation and lectures viewed)

Suggested grading criteria (absolute):

A* ≥ 95%; A ≥ 85%; B ≥ 70%; C ≥ 50%; D ≥ 40%;

F < 40%.

COURSE SCHEDULE. INDICATIVE ONLY

Lecture Number	Planned lecture release date	Topic	Assessment	Delivered by	Schedule of discussion hour (8 am to 9 am) and date of Quiz
1	1st Sept. 2020	Introduction. Course overview.	-	ML	8th Sept. 2020 (Discussion hour)
2		Mechanisms	-	ML	-
3A		Machines and Machining Processes	-	ML	15th Sept. 2020 (Discussion hour)
3B		CNC machines	-	ML	
4		NC programing	Quiz 1	ML	22nd Sept. 2020*† (Quiz)
5		Mechanics of machining	-	ML	6th Oct. 2020 (Discussion hour)
Mid-semester exam period			Quiz 2	ML	13th Oct. 2020*† (Quiz)
7	13th Oct. 2020*	Overview of non-conventional machining processes	-	NS	20th Oct. 2020 (Discussion hour)
8		Physics of select non-conventional machining processes	-	NS	-
9		Overview of additive manufacturing	Quiz 3	NS	3rd Nov. 2020*† (Quiz)
10		Physics of select additive manufacturing processes	-	NS	10th Nov. 2020 (Discussion hour)
11		Micro/nano fabrications processes	-	NS	-
12		Engineering Metrology	-	NS	24th Nov. 2020 (Discussion hour)
End-semester exam period			Quiz 4	NS	1st or 8th Dec. 2020*† (Quiz)

* All dates are tentative. They will be confirmed as the course progresses.

† If you miss these for bona fide reasons, make up quizzes will be governed by policies outlined in the UG manual.