



In addition to Part I (General Handout for all courses appended to the time table) this portion further gives specific details regarding the course.

Course No. : ME F472
Course Title : Precision Engineering
Instructor-in-Charge : Tribeni Roy

1. Course Description:

Precision Engineering deals with accurate and precise measurements of manufactured products. The present course covers various aspects of Precision Engineering such as concept of accuracy, accuracy of numerical control systems, tolerances and fits, acceptance tests for machine tools, static stiffness and its influence on machining accuracy, inaccuracies due to thermal effects, influence of forced vibrations on accuracy, dimensional wear of cutting tools and its influences on accuracy, clamping and setting errors, location principles and errors due to location, surface roughness and microfinishing processes, dimensioning and dimensional chains, methods of improving accuracy and surface finish, thread and gear measuring instruments, coordinate measuring machines, introduction to computer aided tolerancing.

2. Scope and Objective of the Course:

This course is designed to equip students with the fundamental theories in precision engineering. The students will be introduced to various errors that affects precision in manufacturing.

3. Text Books:

- i) R.L. Murty, "**Precision Engineering in Manufacturing**", New Age International Publications, Delhi, 2010 (**T1**).
- ii) R.K. Jain, "**Engineering Metrology**", Khanna Publishers, Delhi, 2013 (**T2**).
- iii) **Lecture Notes (T3)**

4. Reference books

- i) V.C. Venkatesh and S. Izman, "**Precision Engineering**", Tata McGraw-Hill Publishers (**R1**)





5. Course Plan:

Module	Lecture Session	Learning Outcome	References
M1	(L1-4) Concept of accuracy in machine tools and numerical control systems	To understand the basic concepts of accuracy in machine tools	T1, R1
	(L5-7) Limits, fits and tolerances	To understand the differences between designed and actual product	T1
	(L8-9) Acceptance tests for machine tools	To learn about basic type of tests and measuring instruments for testing machine tools	T1
	(L10-20) Errors affecting accuracy	To understand various errors that affect precision such as thermal effects, vibrations etc.	T1, R1
M2	(L21-25) Surface roughness and micro finishing processes	To learn about basics of surface roughness of finished products	T1
	(L26-29) Dimensioning basics	To learn the basics of dimensioning and dimensional chains	T1
	(L30-33) Methods for improving accuracy	To learn methods for improving accuracies in machining processes	T1
M3	(L34-37) Measuring instruments for various components	To learn basics of thread and gear measuring instruments and coordinate measuring machines	T2
	(L38-40) Computer aided tolerancing	To understand basics of computer aided tolerancing	T3

6. Evaluation Scheme:

Components	Duration (minutes)	Weightage (%)	Date	Remarks
Mid-semester test	90	25	Will be announced by AUGSD-AGSRD	OB
Assignments/Projects/Seminars/Quiz	--	35	To be announced in the class	OB
Comprehensive Examination.	120	40	Will be announced by AUGSD-AGSRD	CB/OB





7. Chamber Consultation Hours:

To be announced in the first class.

8. Notices:

All notices related to this course will be put on the Nalanda/Google Classroom/email.

9. Make-up Policy:

Make-up will be granted ONLY in genuine cases with prior permission as per the institute rules.

Instructor- in-Charge
ME F472

