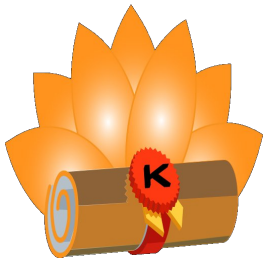
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Maintenance of Machine Tools — Complete Syllabus

BTEUP Diploma in Mechanical Engineering (Production) • 6th Semester • Session 2026–27

Subject 6.4.2 (Theory) • Elective Specialization • Total 100 Marks • 3 Credits

КАМАЛДНП

About this document: Maintenance of Machine Tools is subject 6.4.2 of the 6th semester of the Diploma in Mechanical Engineering (Production). It is one of the four Elective Specialization options — a student picks any ONE of the four: Green Energy & Engineering (6.4.1), Maintenance of Machine Tools (6.4.2), Non-Destructive Testing (6.4.3) and Product Design & Development (6.4.4). This document gives the complete unit-wise syllabus, the examination scheme and the reference books from the official curriculum.

Examination Scheme

Code	Paper	Type	L – P	Credits	Internal	External	Total
6.4.2	Maintenance of Machine Tools	Theory	3 – 0	3	Theory 40	Theory 60 (3 hrs)	100
Maintenance of Machine Tools Total				**3**	**40**	**60**	**100**

What This Subject Aims To Do

To give diploma technocrats a thorough knowledge of dismantling and assembly, installation, maintenance and repair of machine tools, and of the techniques that predict a premature failure before it happens.

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Unit-Wise Complete Topic List

Unit	Topic	Periods	Marks
1	Maintenance	6	12
2	Testing of Machine Tools	8	12
3	Maintenance of Lathe	10	12
4	Geometrical Checks and Alignment Tests	10	12
5	Oil Inspection and Coolants	8	12

Total: 42 periods, 60 marks (external theory). Each of the five units carries 12 marks in the external theory paper, as per the suggested distribution of marks in the official syllabus.

Unit 1 — Maintenance (6 Periods, 12 Marks)

Topics: Objective, definition, types of maintenance, advantages of good maintenance, disadvantages of bad maintenance, instruments needed for maintenance.

In simple words: Why maintenance matters — what good maintenance saves, what bad maintenance costs, and the instruments a maintenance team needs.

Unit 2 — Testing of Machine Tools (8 Periods, 12 Marks)

Topics: Measuring equipment and tools used for testing of machine tools: dial gauges, test mandrels, straight edges, squares, spirit levels, level measurement by water level, alignment by wire and measuring microscope.

In simple words: The measuring equipment and tools used to test a machine tool's accuracy, and how the tests are done.

Unit 3 — Maintenance of Lathe (10 Periods, 12 Marks)

Topics: Lathe maintenance, drive belts, adjusting belt tension, gib adjustment (cross slide, compound slide), wiper pads, adjusting the tail stock clamp, alignment test on lathe.

In simple words: Lathe maintenance in practice — alignment, adjustments and inspection of the machine's parts.

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Unit 4 — Geometrical Checks and Alignment Tests (10 Periods, 12 Marks)

Topics: Types of geometrical checks on machine tools, various tests conducted on machine tools, alignment test on surface grinding and milling, details for testing various machine tools: slotter maintenance, driving pulley alignment checking, belt tension adjustment, pinion gear inspection, table jib adjustment.

In simple words: Geometrical checks and alignment tests on milling machines, grinding machines, slotters and other machine tools.

Unit 5 — Oil Inspection and Coolants (8 Periods, 12 Marks)

Topics: Inspection of the drained oil for contaminants and wear debris with focus on visual inspection, preparation of coolants, practice on oil removing and filling for a gear box.

In simple words: Lubricants and coolants — how to inspect them, what wear and contamination look like, and how gearbox oil is removed and refilled.

Learning Outcomes

- Describe the objectives, types, and importance of maintenance and identify instruments required for effective maintenance.
- Identify and use measuring equipment and tools for testing and evaluating the accuracy of machine tools.
- Perform maintenance activities on lathe machines including alignment, adjustments, and inspection of components.
- Analyze and carry out geometrical checks and alignment tests on various machine tools such as milling, grinding machines, and slotters.
- Inspect lubricants and coolants, identify wear and contaminants, and perform oil removal and refilling operations for gearboxes.

Reference Books (as listed in the syllabus)

- Er. Sushil Kumar Srivastava, Maintenance Engineering, Reprint 2016, S. Chand Publication.
- Georg Schlesinger, F. Koenigsberger, M. Burdekin, Testing Machine Tools, 8th Edition, Pergamon Press, 1978.
- K. J. Bag, Preventive Maintenance, ISTE Professional Centre Continuing Education Programme, Anna University Campus, Chennai.
- Web: https://www.youtube.com/watch?v=f58SW0Hwcf0 — Principle of Maintenance, NPTEL, IIT Kharagpur.

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Source: IRDT Kanpur NEP-2020 curriculum for the Diploma in Mechanical Engineering (Production), updated and approved by the Board of Technical Education, U.P., Lucknow, in the C.D.C. meeting held on 16.07.2026. Topic lists follow the official syllabus; short explanations are the author's own plain-language summaries, not syllabus text. Please confirm with your own polytechnic for any local changes.

