

5 <sup>th</sup> Semester	RPR5D003	Maintenance Engineering and Management	L-T-P 3-0-0	3 Credits
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**Module I: (10 Hours)**

Introduction: Maintenance definition, Maintenance objectives and scopes, Challenges and functions of Maintenance Management, Maintenance cost. Maintenance – key to reliability and productivity. Basic elements of Maintenance system – Inspection, planning and scheduling, job execution, record keeping, data analysis, learning and improvement. Preventive, operating and shutdown maintenance; Condition based maintenance and application of preventive maintenance for system of equipment.

**Module II: (10 Hours)**

Maintenance models and Testing: Maintenance policies, Imperfect maintenance, preventive and break down maintenance, PM schedule and product characteristics, Inspection decisions. Maximizing profit- Minimising downtime- Replacement methods. Non-destructive testing- visual examination-optical aids, liquid penetrate testing, magnetic particle testing, eddy current testing, radiography, ultrasonic testing, acoustic emission testing, thermography, leak testing, corrosion monitoring, standards of NDT.

**Module III: (8 Hours)**

Maintenance Logistics: Maintenance crew size, Human factors, resource requirements: Optimal size of service facilities, Optimal repair efforts, Maintenance planning and scheduling, spare control.

**Module IV: (3 Hours)**

Maintenance quality: Five zero concept, FMECA, Maintainability prediction, Design for maintainability, Reliability centered maintenance.

**Module V: (5 Hours)**

Total Productive Maintenance: TPM Fundamentals, Chronic and sporadic losses, six big losses, OEE as measure, TPM Pillars, Autonomous Maintenance, TPM Implementation. Maintenance planning, maintenance scheduling, work order, work measurements, maintenance cost budgeting, store and spare control, Maintenance planning and control techniques, Incentives for maintenance work.

**Books:**

- [1] Andrew K.S.Jardine & Albert H.C.Tsang, “Maintenance, Replacement and Reliability”, Taylor & Francis, 2006
- [2] Bikas Badhury & S.K.Basu, “Tero Technology: Reliability Engineering and Maintenance Management”, Asian Books, 2003
- [3] Seichi Nakajima, “Total Productive Maintenance”, Productivity Press, 1993

**Digital Learning Resources:**

Course Name: Maintenance

Engineering

Course

Link:

<https://nptel.ac.in/courses/112/105/112105232/>

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