

5 th Semester	RCH5D005	PULP & PAPER TECHNOLOGY	L-T-P 3-0-0	3 CREDITS
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Module I: (15 hr)

Importance of paper, definitions of pulp, paper, and paperboard. Flow sheet of complete pulp and paper making process. Fibrous raw materials for paper making: Plant fibres, plant kingdom, plant body and organization of fibres and other cells in plant. Raw material structure: Structure of softwoods, hardwoods, and non-woods. Pulpwood species. Cell types. Physical properties and defects of raw materials.

Module II: (12 hr)

Chemistry of fibrous raw materials: Gross composition. Distribution of wood constituents, cellulose, hemi-cellulose, lignin, extractives, and inorganic components. Lignin hemicellulose bonds. Comparison of different raw materials. Preparation of fibrous Raw material: Transportation, procurement, handling, storage, and preservation. Debarking, chipping, depithing, screening, cleaning, and conveying operations.

Module III: (10 hr)

Pulping and recovery: Pulping processes. Washing, screening and cleaning. Recovery of chemicals. Bleaching of pulp. Preparations of stock for paper making. Secondary fibre utilization. Additives for papermaking. Papermaking: Paper forming, pressing, and drying; Surface treatments, finishing, and coating. Properties and testing of pulp and paper.

Books:

1. Handbook of Pulp and Paper Technology, 2nd ed. by K W Britt, John Wiley.
2. Handbook of Pulping and Papermaking, 2nd ed. by C J Biermann, Academic Press.
3. Handbook for Pulp & Paper Technologists, 3rd ed. by G A Smook, Angus Wilde Publications.
4. Wood Chemistry: Fundamentals and Applications, 2nd ed. by E Sjostrom, Academic Press.
5. Pulp and Paper Chemistry and Technology: Paper Chemistry and Technology, 1st ed. by M Ek, G Gellerstedt, and G Henriksson, Walter De Gruyter Inc.

Digital learning resources:

1. Chemical Technology-1 by Dr. I.D.Mall, Department of Chemical Engineering, IIT Roorkee

Link: <https://nptel.ac.in/courses/103/107/103107082/>