

## UCH723 PULP AND PAPER TECHNOLOGY

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<b>3</b>	<b>0</b>	<b>0</b>	<b>3.0</b>

**Introduction:** Present status of pulp and paper manufacture. Fibrous raw materials, wood composition, Fibre chemistry, Overview of paper manufacturing.

**Raw Material Preparation:** Debarking, chipping, Chip screening, Storage.

**Pulping:** Chemical, Semi-chemical, Mechanical, Chemi-mechanical, Non conventional, Secondary fibre pulping, Advances and recent trends in pulping.

**Chemical Recovery:** Composition and properties of black liquor, Oxidation and desilication, Concentration of black liquor and its incineration, Causticizing and clarification, Sludge washing and burning.

**Bleaching:** Objectives of bleaching, Bleachability measurement, Bleaching chemicals and their production, single and multi-stage bleaching processes, Bleaching of chemical and mechanical pulp, Colour reversion of bleached pulp, Control procedures in bleaching, Biobleaching, Recent trends in bleaching technology, Water reuse and recycle in bleaching.

**Pulp Processing:** Deknotting, Defibering, Brown stock washing, Screening, Cleaning, Thickening, Blending, Beating and refining, Specific edge load concept in refining.

**Papermaking:** Approach flow system, Wire part, Sheet forming process, Sheet transfer mechanism, Press part, Theory of pressing, Dryer part, Paper drying process, Calendaring, Cylinder mould machine, Finishing, Fibre recovery systems, Recent developments in paper making, Coating and lamination.

**Biotech Applications in Pulp and Paper Making:** Use of enzymes in debarking, Pulping, Bleaching, Pulp refining, Fibre modification, Improving fibre drainage, Biopulping, Effluent treatment for xenobiotic compounds.

**Paper Properties:** Physical (optical, strength, and resistance), Chemical and electrical properties, Paper defects, Variables affecting paper properties.

### Text Books:

1. J.P. Casey, Pulp and Paper Chemistry and Chemical Technology, Wiley Interscience (1983).
2. R.G. MacDonald, Pulp and Paper Manufacture, McGraw Hill (1969).
3. P. Bajpai and P.K. Bajpai, Biotechnology in the Pulp and Paper Industry, PIRA International (1998).

### Reference Books:

1. S.A. Rydholm, Pulping Processes, Wiley Interscience (1965).
2. C.J. Biermann, Essentials of Pulping and Paper Making, Academic Press (1996).
3. J.D.A. Clark, Pulp Technology and Treatment for Paper, Miller Freeman (1985).
4. P. Bajpai, P.K. Bajpai and R. Kondo, Biotechnology for Environmental Protection in the Pulp and Paper Industry, Springer-Verlag Berlin Heidelberg (1999).