THE FEDERAL UNIVERSITY OF TECHNOLOGY, AKURE

Department of Forestry and Wood Technology

FWT 405 – Pulping and Bleaching Technology

COURSE PARTICULARS

Course Code: FWT 405

Course Title: Pulping and Bleaching Technology

No. of Units: 2

Course Duration: 2 hours of theory and 3 hours of practicals per week for 15 weeks.

Status: Compulsory

Course Webpage:

Prerequisite: NIL

COURSE INSTRUCTORS

Dr. J. S. Fabiyi

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COURSE DESCRIPTION

Overview of pulp and paper industry in Nigeria. Raw materials for pulp production. Waste paper recycling. Relationship between fibrous raw material and paper quality. Conversion of wood to mechanical and chemical pulps. Kraft, sulphite and semichemical pulping processes. Chemical recovery systems. Biopulping. Bleaching of mechanical and chemical pulps. Environmental issues associated with pulp production.

COURSE OBJECTIVES

The objectives of this course are to:

- provide the student with the fundamental principles guiding the production of pulp for paper production; and
- give the students an understanding of the various processes and their implications on the environment and paper properties.

COURSE LEARNING OUTCOMES / COMPETENCIES

Upon successful completion of this course, the student will be able to:

(Knowledge based)

- describe the basic principles of raw material selection towards high grade paper manufacturing; and
- explain pulp manufacturing processes and how they affect cost of production
- describe the typical properties of pulp

(Skills)

- produce conventional and eco-friendly pulp

GRADING SYSTEM FOR THE COURSE

This course will be graded as follows:

Class Attendance	5%
Assignments	5%
Practicals	20%
Test(s)	10%
Final Examination	60%
TOTAL	**100%**

GENERAL INSTRUCTIONS

Attendance: It is expected that every student will be in class for lectures and also participate in all practical exercises. Attendance records will be kept and used to determine each person's qualification to sit for the final examination. In case of illness or other unavoidable cause of absence, the student must communicate as soon as possible with any of the instructors, indicating the reason for the absence.

Academic Integrity: Violations of academic integrity, including dishonesty in assignments, examinations, or other academic performances are prohibited. You are not allowed to make copies of another person's work and submit it as your own; that is plagiarism. All cases of academic dishonesty will be reported to the University Management for appropriate sanctions in accordance with the guidelines for handling students' misconduct as spelt out in the Students' Handbook.

Assignments and Group Work: Students are expected to submit assignments as scheduled. **No late assignments will be accepted without prior arrangement.** Missing assignments due to improper submission by the student will be given a grade of zero.

Code of Conduct in Lecture Rooms and Laboratories: Students should turn off their cell phones during lectures. Students are prohibited from engaging in other activities (such as texting, watching videos, *etc*.) during lectures. Food and drinks are not permitted in the laboratories. Cover shoe should be wear to the lab.

READING LIST

Fuwape, J.A., Fabiyi, J.S. and Adebayo, B.A. (2010). *Introduction to Pulp and Paper Technology in Nigeria*. Stebak Books and Publishers, Nigeria. 221p. [ISBN: 9789784919203].

Sources of materials for further reading

1- Available in the University Library

2- Available in Departmental/School Libraries

3- Available on the Internet.

4- Available as Personal Collection

COURSE OUTLINE

Week	Lecture	Laboratory
1&2	Overview of pulp and paper industry in Nigeria Fundamental steps in paper production Fibrous raw materials for pulp	No Lab.
3	Wastepaper recycling	Lab. safety issues will be discussed.
4&5	Mechanical pulping	Pulping of waste papers
6	Chemical pulping / Sulphite Process	Pulping of waste papers
7	Review for the Mid Semester Test Sulphite Process	MID-SEMESTER TEST
8	**MID-SEMESTER BREAK**	**MID-SEMESTER BREAK**
9 & 10	Kraft Pulping	Organosol vs pulping
11	Semi-chemical and chemi-mechanical pulping	Organosol vs pulping
12	Biopulping	Pulp bleaching
13	Chemical recovery Environmental issues	No Lab
14	Pulp bleaching	No Lab
15	REVISION	No Lab

Laboratory content:

- Production of pulp (waste paper recycling and organosolvs pulping)
- Microscopic analysis of the various pulp
- Submission of the laboratory report on pulping of waste papers is due by week 9 while organosolvs pulping is due by week 14