



THE FEDERAL UNIVERSITY OF TECHNOLOGY, AKURE

Department of Forestry and Wood Technology

FWT 515 – Forest Protection

COURSE PARTICULARS

Course Code: FWT 515

Course Title: Forest Protection

No. of Units: 2

Course Duration: One hour of theory and three hours of practical per week for 15 weeks.

Status: Compulsory

Course Email Address:

Course Webpage:

Prerequisite: NIL

COURSE INSTRUCTORS

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COURSE DESCRIPTION

This course is designed to expose students to the three major enemies against which forest should be protected – Insects, Fungi and Fire. Hence the course is composed of three major sections vis: Forest Entomology, Forest Pathology (Mycology) and Forest Fire. The Forest Entomology component of Forest Protection includes consideration of the roles that insects play in forest landscapes. Both the positive and negative effects that insects have on management values are examined. The important pest species are examined in the context of their natural history, the type of damage they cause, and the ways and means used to manage their impact. Forest pathology is considered, with special reference to important forest diseases, e.g. butt and

root rot, top killing, die back etc. Topics to be considered under fire include: combustion and the triangle; breaking the fire triangle; heat transfer; fire fighting methods and tools.

COURSE OBJECTIVES

The objectives of this course are to:

- Introduce the students to principles underlying forest disease and pest control
- Introduce methods of sampling and preservation of insect.
- Educate the student the ecological effect of disease and pest in forest ecosystem.
- Make students understand the identity, ecology, and management of forest insect pests and diseases
- Make students understand how and why tree diseases, insect pest and fire outbreaks occur and develop in forests and how they can be prevented/controlled

COURSE LEARNING OUTCOMES / COMPETENCIES

Upon successful completion of this course, the student will:

(Knowledge based)

- Understand classification, biology, natural history and diversity of insects affecting forest ecosystems;
- Identify insects common to forests and recognize their damage;
- Understand the ecology of forest pests; including host-plant interactions, population dynamics, and natural enemies of forest insects;
- Appreciate insect sampling in forest ecosystems, with particular attention paid to monitoring, forecasting and assessing the risk of insect outbreaks;
- Recognize the importance of cultural, physical, biological, and chemical strategies for preventing, controlling and managing forest pests and diseases
- Understand factors influencing fire behavior; reasons for using prescribed fire; strategies and methods of wildfire management

GRADING SYSTEM FOR THE COURSE

This course will be graded as follows:

Assignments	20%
Test(s)	20%
<u>Final Examination</u>	<u>40%</u>
<u>TOTAL</u>	<u>100%</u>

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.

Assignments and Group Work: Students are expected to submit assignments as scheduled. Failure to submit an assignment as at when due will earn you zero for that assignment. Only under extenuating circumstances, for which a student has notified any of the instructors in advance, will late submission of assignments be permitted.

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.

READING LIST

¹Ross, H. H. () *A Textbook of Entomology*. Call No. QL463.R67

¹Thresh, J. M. () *The role of weed and wild plants in the ecology of crop pest and diseases*. Call No. SB599.P47 (FUTA Main Library)

¹Bland R. G. () *How to know the Insects* 3rd Edition Call No. QL463.B642 (FUTA -Reference)

^{2,4}Wagner M.R., Cobbinah J.R. and Bosu P.P. (2008) *Forest Entomology in West Tropical Africa: Forest Insects of Ghana*. Springer, the Netherlands. 244 pages.

^{2,4}Nair K.S.S.(2007) *Tropical Insect Pests: Ecology Impact and Management* Cambridge University Press, Cambridge 404 pages.

Legend

- 1- Available in the University Library
- 2- Available in Departmental/School Libraries
- 3- Available on the Internet.
- 4- Available as Personal Collection
- 5- Available in local bookshops.

COURSE OUTLINE

Week	Topic	Remarks
1	Introduction and Course Overview Introduction to forest entomology	During this first class, the expectation of the students from the course will also be documented.
2	Arthropod classification and diversity and insect structure and function	
3	Insect population dynamics Pest: Using general equilibrium to categorise insect pest to damage level. <ul style="list-style-type: none"> • Types of Forest insect pest. 	
4&5	Insect sampling in a forest ecosystem: monitoring Forecasting and assessing risk of insect outbreaks Methods of sampling or collecting insect pest. <ul style="list-style-type: none"> • Direct counting • Quadrat • Knock down method • Brushing • Washing • Sweeping • Trapping Methods Preservation of insect pest <ul style="list-style-type: none"> • Oven dry • Liquid preservation • Bulk preservation 	Students will be required to make insect collection of specimens of at least 5 orders and 10 major families of forest pests or natural enemies. Students will be required to process their collections for museum specimen.
6	<ul style="list-style-type: none"> • Type of Insect damage • Information needed for planning control programme. • Control of Insects pest. • Ecological effect of Forest diseases and Pest 	Student will be made to known type of insect damage, practical observations on the field will be carried out
7	Biological principles underlying plant diseases	MID-SEMESTER TEST
8&9	Specific examples of important forest diseases <ul style="list-style-type: none"> • Butt and root rot • Damping off • Canker • Blue stain • Smut rust 	Students will be required to make field visits, observe diseased trees and collect samples
10&11	Basidiomycetes	

	<p>Somatic structure Basidiocarp Basidium Basidiospore Sexual and asexual reproduction in the basidiomycetes</p>	
12	<p>Fire:</p> <ul style="list-style-type: none"> • Combustion and the fire triangle • Breaking the fire triangle 	
13	<p>Heat transfer and implications for fire occurrence</p> <ul style="list-style-type: none"> • Conduction • Convection • Radiation 	<p>Students will be required to prepare and submit a term paper on occurrence, causes and control of forest fires in the country.</p>
14	Fire control methods	
15	REVISION	<p>This is the week preceding the final examination. At this time, evaluation will be done to assess how far the students' expectations for the course have been met.</p>