FWT 409 - Biometrics

COURSE PARTICULARS

Course Code: FWT 409
Course Title: Biometrics
No. of Units: 3
Course Duration: Two hours of theory and one hour of tutorials per week for 15 weeks.
Status: Compulsory
Course Email Address: fwt409@futa.edu.ng
Course Webpage: http://www.fwt.futa.edu.ng/courseschedule.php?coursecode=FWT%20409
Prerequisite: NIL

COURSE INSTRUCTORS

Professor S. O. Akindele
Room 112, SAAT Annex,
Dept. of Forestry & Wood Technology,
Federal University of Technology, Akure, Nigeria.
Phone: +2348063040384
Email: soakindele@futa.edu.ng

Prof. J.C. Onyekwelu
Adamu Building
Dept. of Forestry and Wood Technology,
Federal University of Technology, Akure, Nigeria.
Phone: +2348034721633
Email: jconyekwelu@futa.edu.ng and

Dr. V. A. J. Adekunle
Room 013, SAAT Annex,
Dept. of Forestry & Wood Technology,
Federal University of Technology, Akure, Nigeria.
Phone: +2348102919537
Email: vajadekunle@futa.edu.ng

and

Dr. O. V. Oyerinde
Room 128, 1st Floor, SAAT Building,
Dept. of Forestry & Wood Technology,
Federal University of Technology, Akure, Nigeria.
Phone: +2348062741606
Email: ovoyerinde@futa.edu.ng

COURSE DESCRIPTION

This course will primarily provide students with basic knowledge and skills in statistics as applied to various fields of agriculture. Several methods of data analysis will be treated using portable scientific calculator as well as the computer (for lab exercises). Depending on students' interest and time availability, some special topics with relevance to specific fields may also be treated. Topics to be covered include review of biometrical concepts in agriculture; planning of experiment; analysis of variance; transformation of data; experimental designs such as completely randomized design, Latin square, missing values, multiple comparisons, nested designs, factorial experiments, split-plot and split-split-plot designs; analysis of data from qualitative variables; application of correlation and regression analyses in agricultural experiments.

COURSE OBJECTIVES

The objectives of this course are to ensure that students:

- become acquainted with common statistical methods used for analysing data in agriculture;
- are able to determine appropriate experimental designs for various agricultural experiments;
- become acquainted with best practices in design and analysis of agricultural experiments;
- are able to use simple statistical software for data analysis; and
- are able to extract relevant results from computer print-outs after statistical analysis and interpret the results correctly.

COURSE LEARNING OUTCOMES / COMPETENCIES

Upon successful completion of this course, the student will be able to:
(Knowledge based)

- understand the principles of experimentation in agriculture and allied fields;
- determine the most suitable experimental design to adopt for various experiments;
- state appropriate hypotheses for different experimental conditions;

(Skills)

- use hand-held calculator to analyse experimental data;
- interpret results of statistical analyses.

GRADING SYSTEM FOR THE COURSE

This course will be graded as follows:

Assignments	20%
Test(s)	20%
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. 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. Food and drinks are not permitted in the laboratories. Respect other students' comments, questions, opinions and ideas even when they are different from yours. Don't shout people down. Allow them to air their views freely without any intimidation. You are all here to learn.

Computers for lectures and practical exercises: Each student is encouraged to own a laptop and bring it to all class sessions. Having your personal laptop will enable you to practise at your convenience and master the skills faster. You are not allowed to engage in other activities (such as surfing the net, watching videos, *etc*.) during lectures. For every hour you spend in class or lab, spend at least an additional hour outside of class reviewing and practicing what you have been taught in class. This is a practical course that requires regular practice to attain the required skills.

READING LIST

Akindele, S. O. (1996). Basic Experimental Designs in Agricultural Research. Montem Paperbacks, Akure, Nigeria. (ISBN 978-32973-8-4). 102pp.

Gomez, K.A. and A.A. Gomez (1984). *Statistical Procedures for Agricultural Research*. 2nd Edition. John Wiley and Sons, Inc., New York. 680p.

Little, T.M. and F.J. Hills (1978). *Agricultural Experimentation: Design and Analysis*. John Wiley & Sons,Inc., New York. 350p.

Steel, R.G.D. and J.A. Torrie (1980). *Principles and Procedures of Statistics: A Biological Approach*. 2nd Edition (International Student Edition). McGraw-Hill Book Company, Inc., New York. 633p.

Zar, J.H. (1984). *Biostatistical Analysis*. 2nd Edition. Prentice-Hall International Inc., Englewood Cliffs, New Jersey. 718p.

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 Review of simple biometrical concepts in agriculture	During this first class, the expectation of the students from the course will also be documented.
2	Planning of experiments	
3	Introduction to the Concept of Analysis of variance • Assumptions • ANOVA Models	
4	Data Transformation • Logarithmic transformation • Square Root Transformation • Arcsin Transformation • Reciprocal Transformation	

5 - 7	Design and Analysis of Experiments
	• Completely Randomized Design
	• Multiple Comparisons
	  ○ Least Significant Difference
	  ○ Duncan's Multiple Range Test	

8 & 9	• Randomised Complete Block Design • Latin Square Design • Missing values	MID-SEMESTER TEST
10 - 12	• Factorial experiments • Split-plot Design • Split-split Plot Design	
13 & 14	• Correlation and Regression Analyses	
15	REVISION	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.