



LANDMARK UNIVERSITY, OMU-ARAN

# COURSE COMPACT TEMPLATE

**COLLEGE:** Science and Engineering

**DEPARTMENT:** Agricultural and Biosystems Engineering

**PROGRAMME:** Agricultural Engineering

**COURSE COMPACT for:** Agricultural Land Surveying (ABE 312)

## Course

Course code: ABE 312

Course title: Agricultural Land Surveying

Credit unit: 2

Course status: Compulsory

## Lecturer's Data

- (1) Name of the lecturer: Engr. AKINYEMI, Banjo A  
Qualifications obtained: B.Eng, MSc, Regd Engr COREN  
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College: Science and Engineering  
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- (2) Name of the lecturer: Engr. Raphael, David O  
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College: Science and Engineering  
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**Consultation Hours:** Mondays (10am-3pm), Tuesday (10am-3pm) and Friday (11am-1pm)

## INTRODUCTION TO THE COURSE

**Course Description:** The main aim of the course is to educate student on the basic concepts of Agricultural surveying so as to be able to interpret survey data and plans while preparing for agric and civil Engineering works, also to acquire basic knowledge which will allow them to be able to carry out and supervise survey activities so as to enhance the skill in office work preparation for Engineering works.

**Course Justification:** There is need for accurate data acquisition, data analysis and data presentation for accurate earthwork and civil engineering works.

**Course Objectives:** At the end of this course, students would be able to: Example below

- The students should be able to identify Survey Instruments.
- Exposure of the students to the practical use of some of the survey instruments and their technicalities.
- The appropriate instrument for data acquisition for any specified types of survey, accuracy and precision.
- The students ability to capture, analyze, interpret and present data will be broadened
- Students should be able to correctly interpret and differentiate different types of survey plans such as Profile plan, Traverse plan, Topo map, Photographs etc.
- To promote students ability in resolving critical engineering challenges.
- Prepare students ability to carry out some of the survey works accurately for Engineering purpose.

**Course Content:** Introduction of students to the basic concepts of Engineering surveying, the theory and practice of surveying, chain surveying and compass surveying methods, contours and their uses, traversing method application, leveling, Tacheometry and practical sessions on the field.

**Course Expectations:**

S/N	GRADING	SCORE(%)
1.	<b>Continuous Assessments</b>	
	• C.AI	7%
	• C.All (Mid-Semester Test)	15%
	• C.AIII	8%
2.	<b>Assignment</b>	10%
3.	<b>Practical (Laboratory work)/ Case Studies</b>	
4.	<b>Final Examination</b>	60%
5.	<b>Total</b>	100

**Course Delivery Strategies:** Verbal note presentation with illustrative, pictorial and practical demonstrations coupled with soft and hard copies of lecture notes given to student.

**Course Duration:** 2 hours weekly interjected with practical sessions

# LECTURE CONTENT

## Module 1

**Week 1:** Introduction to theory and practice of land survey

**Objectives:** The students at the end of the lectures for the week should be able to

- I. define some terms used in surveying
- II. Know the relevant of engineering surveying to civil Engineering works
- III. identify errors in surveying and differentiate between errors and precisions

➤ **Description**

**First hour:**

Definitions of surveying, branches of surveying, classification of surveying explained.

**Second hour**

Full explanation errors and precisions, types of errors, corrections

**Study Question:** Discuss the relevance of surveying to agric and civil engineering works, differentiate between error and precisions

**Reading List :** Advanced surveying by Jawahar Lal Sharma, C.B.S. Publisher., 1985  
Surveying theory and practice by Davies, Foote and Kelly

## Module 2

### Week II

**Topic:** Chain surveying and compass surveying methods- ranging taping

**Objectives:** The students at the end of the lectures for the week should be able to

Understand the various ways by which chain survey and compass survey can be carried out

➤ **Description**

**First hour:**

Purpose, baseline, trilateration, offsets, check lines,

**Second hour**

Instruments used in chain surveying and compass surveying

**Study Question:** The student should be able to compare and contrast between baseline and check lines. Explain vividly the method of trilateration and its purpose

**Reading List:**

- Land surveying by Ramsey P. Wilson, Published by Macdonald and Evans (1971)

## Module 3

### Week III

**Topic:** Methods, type, procedure, application, corrections to error.

**Objectives:** The students at the end of the lectures for the week should be able to carry out compass survey work and chain survey , also the students should be able to correct errors incurred in survey and the office work.

**Description**

**First hour:**

Methods, type, procedure, application, corrections to error, direction of local attraction

**Second hour**

adjustments problems based on intersection and radiations

**Study Question:** State the principles involved in eliminating the effects of local attraction

2. Magnetic bearing of a property line AB was observed as S43 30'E in 1862. The magnetic declination at the survey location was 3 15' what is the true bearing?

**Reading List:**

- Moffitt F.H and Mikhail E .M- Photogrammetry Edward Arnold Publisher London

## Module 4

### Week IV

**Topic:** Contours and their uses .

**Objectives:** The students at the end of the lectures for the week should be able to discuss the purpose of contour, determination of contours and methodology

## Description

### First hour:

Definitions of contour line, contour intervals, horizontal equivalent, factors affecting contour interval, rule for determination of contour interval

### Second hour

characteristics of contour, uses of contour, contours for natural features, methods of locating contours (a) direct method (b) indirect method

**Study Question:** (1) List and explain the factors affecting contour interval  
(2) List and explain the methods of contour interpolation

## Reading List:

Advanced surveying by Jawahar lal Sharma, C.B.S. Publisher., 1985

## Module 5

### Week V

**Topic:** traversing method application

**Objectives:** The students at the end of the lectures for the week should be able to carry out theodolite traversing work, reduction of field book and adjustment of necessary corrections.

## Description

### First hour:

theodolite adjustment, instrument used for traversing,

### Second hour

procedure of traversing, the field book error and correction

**Study Question** Discuss fully the process of photo evaluation and the expected result analysis

## Reading List:

Advanced surveying by Jawahar lal Sharma, C.B.S. Publisher., 1985

## Module 6

### Week VI

**Topic:** Area calculation, bearing, departure and latitude

**Objectives:** Students at the end of the lectures for the week should be able to compute area, latitude, departure, Easting, Northing, angular and linear adjustments.

## Description

### First hour:

Area calculation, bearing, departure and latitude, easting and northing,

### Second hour

balancing the traverse, compatibility of linear and angular measurements

**Study Question:** Computational work

## Reading List:

- Wolf P.R- Elements of Photogrammetry; McGraw-Hill Book Company, Singapore.

## Module 7

### Week VII: Mid semester Examination

## Module 8

### Week VIII: PRACTICALS

## Module 9

### Week IX

**Topic:** Leveling

**Objectives** Students at the Leveling: leveling instrument, leveling error & adjustment applications, level surface datum, spirit leveling, loop closure and its apportioning, two peg test, leveling techniques, height of instrument and the rise and fall method, introduction to longitudinal section

## Description

### First hour:

leveling instrument, leveling error & adjustment applications, level surface datum, spirit leveling,

### Second hour

**Study Question:** calculations and field book reductions using height of instrument or rise and fall method.

**Reading List:**

- Wolf P.R- Elements of Photogrammetry; McGraw-Hill Book Company, Singapore.

**Module 10**

**Week X**

**Topic:** Tacheometry

**Objectives:** Students at the end of the lectures for the week should be able to fully discuss the importance of tacheometry, methodology and calculations.

**Description**

First hour:

Definitions, procedure, instruments, purpose, topographical mapping

Second hour

Substance heighting, study of self-tacheometer and EDM

**Study Question:** Explain the procedure of tacheometry, method for volume calculation of a particular area

**Reading List:**

- Wolf P.R- Elements of Photogrammetry; McGraw-Hill Book Company, Singapore.

**Module 11**

**Week XI**

**Topic:** Introduction to photogrammetry

**Objectives:** Students at the end of the lectures for the week should be able to differentiate between the modern surveying instruments, its advantages over the ancient ones and also the relevance to agricultural and civil engineering works

**Description**

First hour:

GPS surveying and modern instrument: definition of terms- vertical and tilted photographs

Second hour

Satellite transmitted signals, dilution of precision

**Study Question:** Explain the principle of GPS and also discuss the importance of aerial photograph to an Agric Engineer

**Reading List:**

- Wolf P.R- Elements of Photogrammetry; McGraw-Hill Book Company, Singapore.

**Module 12**

**Week XII: PRACTICALS**

**Module 13**

**Week XIII: REVISIONS**

**HOD's COMMENTS:** *Course Compact is adequate*

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Name: *Dr. A.A. Okunola* Signature: *A.A. Okunola* Date: *21/8/2017*