



**NATIONAL OPEN UNIVERSITY OF NIGERIA**  
**FACULTY OF AGRICULTURAL SCIENCES (FOAS)**  
**DEPARTMENT OF ANIMAL SCIENCE AND FISHERIES**  
**KM 4, KADUNA - ZARIA EXPRESSWAY, RIGACHIKUN, KADUNA**

**Undergraduate Student Handbook**  
**(2018-2020)**

**NATIONAL OPEN UNIVERSITY OF NIGERIA**  
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*Vice Chancellor, NOUN*



**PROF. NDA E. MUNDI**  
*Dean, Faculty of Agricultural Sciences*

## **VISION AND MISSION STATEMENTS OF THE NATIONAL OPEN UNIVERSITY OF NIGERIA**

### **Vision Statement**

To be regarded as the foremost University providing highly accessible and enhanced quality education anchored by social justice, equity, equality and national cohesion through a comprehensive reach that transcends all barriers.

### **Mission Statement**

To provide functional, cost effective, flexible learning which adds lifelong value to quality education for all who seek knowledge.

### **NOUN Anthem**

National Open University of Nigeria  
Determined to be the foremost university in Nigeria  
Providing highly accessible  
And enhanced quality education  
Anchored on social justice  
Equity, equality and national cohesion

Come to NOUN  
For quality, cost effective and flexible learning  
That adds lifelong value  
For all who yearn  
For quality education  
And for all who seek knowledge

## FROM THE HEAD OF DEPARTMENT



This handbook has been prepared to provide general information on the National Open University of Nigeria, Faculty of Agricultural Sciences and in particular Department of Animal Science and Fisheries. The information contained in it are necessary for students' registration, choice of course, programme planning, duration of study and other relevant information that will help the students during their course of study in the university. It also contains a brief history of the University, Faculty of Agricultural Sciences and Department of Animal Science and Fisheries, its Philosophy, Vision, Mission and Objectives, the Farm Practical Year/SIWES, Laboratory Practicals, as well as Teaching and Research Farm.

I therefore, recommend this handbook to all students of Department of Animal Science and Fisheries and members of the public who desire to study Animal Science in the National Open University of Nigeria (NOUN).

**PROF. GRACE E. JOKTHAN**  
*HOD, Animal Science and Fisheries*

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## **PART 1: INTRODUCTION**

### **1.0 About the National Open University of Nigeria**

#### **1.1 History of the National Open University of Nigeria**

The National Open University was initially established on 22nd July, 1983 as a springboard for open and distance learning in Nigeria. It was suspended by the Government on 25th April, 1984. However, its tremendous and unassailable role in tackling the country's educational problems including access, equity, and education for all became evident. Consequently the University was resuscitated on 1st October, 2002. The University dedicates itself to preparing professionals in various disciplines through the distance learning mode. It offers a choice of qualifications from certificates, diplomas to post-graduate diplomas and degrees. The National Open University of Nigeria is designed to increase the access of all Nigerians to formal and non-formal education in a manner convenient to their circumstances. It also caters for the continuous educational development of professionals such as teachers, accountants, bankers, lawyers, doctors, engineers, politicians, self-employed, businessmen and businesswomen. The range of target clientele is elastic; and it is continually reviewed to meet Nigeria's ever-changing needs.

#### **1.2 Studying through Open and Distance Learning at NOUN**

The National Open University of Nigeria is an open and distance learning (ODL) Institution renowned for providing functional, flexible, accessible, cost effective education adequate for flourishing in the 21<sup>st</sup> Century and beyond. To complete studying via ODL at NOUN, students are required to read each study unit of the course materials, text books and read other materials which may be provided by the National Open University of Nigeria.

Each unit contains self-assessment exercises and at certain points in the course, students would be required to submit assignments for assessment purposes. At the end of the course, there is a final examination. Below, are all the components of the course, what you

have to do and how you should allocate your time to each unit in order to complete the course on time and successfully.

The course requires you to spend a lot of time to read. It is advisable that you avail yourself the opportunity of attending the tutorial sessions where you will have the opportunity of comparing knowledge with others.

## **PART 2: HISTORICAL BACKGROUND**

### **2.0 Faculty of Agricultural Sciences and Department of Animal Science and Fisheries**

A proposal for the establishment of the Faculty of Agricultural Sciences was presented to the Senate by the then Vice-Chancellor, Professor Vincent A. Tenebe at its 68<sup>th</sup> regular meeting held on Tuesday, 24<sup>th</sup> January, 2012. A committee was setup under the chairmanship of the erstwhile Dean, of Post-Graduate Studies, Professor Israel F. Adu, an agriculturist for this purpose.

At the 69<sup>th</sup> meeting of the Senate held on Tuesday, 24<sup>th</sup> April, 2012, the report and approval for the birth and establishment of the Faculty of Agricultural Sciences was ratified. The Faculty of Agricultural Sciences (FAS) was carved out of the then existing School of Science and Technology (SST) now called Faculty of Sciences (FOS) as the first of its kind in Africa to have a full-fledge-core courses in agriculture on the platform of Open and Distance Learning (ODL).

The Faculty officially took off in July, 2014 with Prof. Matthew Dada Alegbejo as the pioneer Dean. Currently, Prof. Nda E. Mundi is the substantive Dean of the Faculty.

Department of Animal Science and Fisheries headed by Professor Grace Esrom Jokthan is one of the three Departments in the Faculty of Agricultural Science of the University. Other Departments in the Faculty are: Department of Crop and Soil Science and Department of Agricultural Economics and Extension

#### **2.1 About the Department of Animal Science and Fisheries**

The Department of Animal Science and Fisheries currently offers the approved undergraduate programme namely; Bachelor of Agriculture with option in Animal Science. It has the following philosophy, vision and mission.

## **2.2 Philosophy**

Through the Open and Distance Learning, the Department of Animal Science and Fisheries aims to create quality learning environment for teaching, research and development to meet the challenges of modern society.

### **2.2.1 Vision Statement**

“The Department of Animal Science and Fisheries aspires to be a Centre of Excellence in imparting Technology-based knowledge, skills and innovations relevant to the needs of the society and capable of developing the animal agricultural potentials of Nigeria”

### **2.2.2 Mission Statement**

“The Department of Animal Science and Fisheries will advance the frontiers of learning in animal agriculture and produce the highest quality human capital capable of meeting present and future challenges for sustainable development.”

The Department of Animal Science and Fisheries is committed to providing:

- i. Training opportunity for sustainable bio-resource management and entrepreneurship in animal agriculture.
- ii. Opportunity for vocational training and professional workshops for retooling/reskilling in different areas of livestock production.
- iii. Relevant supportive resources for teaching and research in animal science, fisheries and allied disciplines through the Open and Distance Learning (ODL) mode of delivery.
- iv. Opportunity for specialisation and advance study in major disciplines of animal agriculture.
- v. Enhanced agricultural production through community-based and farmer-driven research activities.

### 2.2.3 Core Values

Our Core Values in the Faculty of Agricultural Sciences are:

- Excellence:** We shall continue to set our sights and standards high.
- Achievement:** We shall capitalize on our distinctive strengths and unique opportunities to excel in an increasingly competitive world.
- Collegiality:** We shall maintain an inclusive and supportive yet challenging environment that attracts the best students, staff and faculty, working together with mutual respect.
- Innovation:** We shall be creative in our efforts to achieve our objectives.
- Relevance:** We shall seek to continually improve our programs, ensuring that they are appealing and well suited to the society and development, equipping our graduates for successful career in future.
- Collaboration:** We shall initiate mutually beneficial relationships by collaborating with a variety of partners to ensure development of facilities, programmes and research for community development and services.

**Sustainability:** We shall maintain our self-sufficiency by seeking efficiencies and being entrepreneurial in our approach to challenges in the cause of delivering learning.

## 2.3 Administration

### 2.3.1 Statutory and Administrative Committees

#### 2.3.2 Statutory Committees

**Departmental Board** – Members of the Board comprises of all academic staff in the Department and one representative from other Departments in the Faculty.

- i) Farm Management Committee**
  - Prof. G. E. Jokthan Chair
  - Prof. Isaac Butswat Member
  - Dr. Ahmed A. Njidda Member
  - Dr. Awolumate Samuel Member
  - Dr. Samuel Bankole Member
  
- ii) Research And Seminar Committee**
  - Prof. G. E. Jokthan Chair
  - Dr. Ahmed A. Njidda Member
  - Dr. Samuel Awolumate Member
  
- iii) Welfare Committee**
  - Dr. Samuel Bankole Chair
  - Dr. Agbo Aderonke N. Member
  - Mr. Emmanuel Alao Member
  
- iv) Examination Committee**
  - Dr. Awolumate Samuel Chair
  - Dr. Samuel Bankole Member

- v) **Course Material Development Committee**
- Prof. G. E. Jokthan Chair
  - Prof. I. S. Butswat Member
  - Dr. Ahmed A. Njidda Member
- iv) **Admission Committee**
- Dr. Bankole Samuel Chair
  - Dr. Agbo Aderonke N. Member
- vii) **Library Committee**
- Dr. Awolumate Samuel Chair
  - Prof. Gregory Okagbare Member
  - Dr. Samuel Bankole Member
- viii) **Departmental Representatives**
- Dept of Crop and Soil Science  
Dr. Buba Shani
  - Dept of Agricultural Economics and Extension  
Dr. G. F. Okwuokenye.
- ix) **Quality Assurance Committee**
- Dr. Ahmed A. Njidda Chair
  - Prof. Gregory Okagbare Member
  - Dr. Samuel Bankole Member
- x) **Departmental Strategic Planning Committee Members**
- HOD Chair
  - All Academic Staff Members
- xi) **Departmental Academic Brief Members**
1. HOD Chair
  2. All Academic Staff Members

## 2.4 Students' Examination Guidelines and Regulations

Examination constitutes a very important aspect of the University's activities. The conduct of its examinations is taken seriously. Therefore, the University does not condone any form of examination misconduct. Students are advised to abide by the following rules and guidelines:

- a) Your Student's matriculation number shall serve as your examination number throughout your period of studentship.
- b) All Students are normally expected to write all their examinations at their designated Study Centres, but there are few exceptions which shall only be considered on merit, discretion and / or compassionate ground.
- c) Students must bring to the examination hall their writing materials and any other approved materials, which may be permitted by the University for a particular examination. These materials must have been listed as essential for certain question(s).
- d) Students arriving an hour after the commencement of an examination shall be allowed to sit for the examination only at the discretion of the Supervisor. Such a student will not be allowed an extra time.
- e) Once a student is admitted into the examination hall, he/she may not leave the hall until he/she has finished with the examination. If for any cogent reason the student must leave the Hall, he/she must do so with the permission of the Supervisor.
- f) A student must be accompanied by an invigilator if permitted to leave the examination hall temporarily (e.g. visiting the rest-room, etc.).
- g) No answer booklets other than those supplied by the University are allowed into the examination hall. All rough works must be done in the supplied answer booklets and crossed out neatly. All supplementary answer sheets/booklets must be tied/attached to the main answer booklet.

- h) Silence must be observed in the examination hall at all times. Any student requiring the attention of the invigilator should raise his/her hand.
- i) Any activity or behaviour which may be construed as examination misconduct or malpractice (e.g. cheating, etc.) shall be liable to discipline in accordance with the University's rules and regulations governing conduct of examinations as contained in the Students' Handbook.
- j) Communication between students is strictly forbidden during examinations. Any student found receiving or giving assistance would be sanctioned. Such a student may be required to withdraw from the examination and subsequently made to face the University Examination Malpractice Panel.
- k) Students are not permitted to smoke or sing or pray aloud or engage in any activity that may distract others in the examination halls.
- l) Bags and briefcases are not allowed into examination halls. The University will not be liable for any loss or damage of any student's personal effects/property.
- m) Unauthorised materials (such as textbooks, course materials, notebooks, sheets/scrap of papers) in printed or electronic form are not allowed in examination hall.
- n) Electronic devices such as Pagers and mobile smart telephones are not permitted at all in examination halls.
- o) Students must observe the Supervisor's instructions regarding the commencement and end of an examination. Students who start writing before being told to do so, or who continue writing after being asked to stop would be sanctioned accordingly.

## **PART 3: INFORMATION FOR NEW STUDENTS**

### **3.0 Introduction**

#### **3.1 Orientation Programme**

Student orientation programme is done at their various Study Centers nationwide. All fresh students are required to undergo an orientation programme prior to their registration. The programme is intended to acquaint the students with the whole range of services and privileges available to them as well as their responsibilities as members of an academic community. The University regulations require satisfactory completion of the orientation before matriculation in the University.

##### **3.1.1 Registration**

The University's registration system is computerized and so, most of the registration exercise is online. Each student is provided with internet access, user name and password to log unto the registration portal of the University website.

For fresh students, the registration procedure includes participation in interview and screening exercise where credentials are screened for authenticity. It also includes payment of relevant fees for both fresh and returning students. The University's academic year comprises of two semesters. Each student is assigned an academic adviser during the registration exercise in the Department. It is important for students to get proper advice from their assigned Academic Adviser, regarding the number and relevance of the courses to register for.

To be accepted as a bona-fide student, eligible to attend lectures as the case may be and take examinations, the student must duly register within the stipulated period for all prescribed courses at the beginning of each semester. Any student who fails to duly register within the specified time period will pay a late registration fee. This concession is only for the period approved for the late registration.

### **3.2 Deferment of Admission**

This is only to be entertained based on the University policy and conditions; such could be when a student falls sick or suffers an accident after registering for a programme in the University. Such a student is expected to apply with relevant medical report(s) to the Dean of Faculty through the Head of the Department for deferment of a semester or session as the case may be to enable him/her fully recover.

### **3.3 Change of Programme and Course**

Student process change of courses via their respective study centers. The students download the required Application Form via their Study Centers and process it through their respective Study Centers.

#### **3.3.1 Registered Students who wished to change their Programme of Study**

Registered Students who wished to change their Programme of Study process it via their respective study centers. The students download the required Application Form via their Study Centers and process it through their respective Study Centers.

#### **3.3.2 New Students who were wrongly admitted to a Programme**

Students who were wrongly admitted to a programme can seek counsel from their Counselors at their respective Study Centres.

#### **3.3.3 Change of Registered Courses through “Add/Drop” Provision**

A Student who wishes to make changes to his/her registered courses after completion of his/her registration shall do so on prescribed “Add/Drop” Forms. This provides students’ the opportunity to delete (drop), add or substitute courses he/she has previously registered for during the current registration exercise. The change(s) shall become

effective after being approved by the HOD. Under no circumstance should a student just abandon a course he/she has registered for or attended lectures and/or sit for examinations of course(s) for which he/she has not duly registered without first having his/her change(s) approved through the Add/Drop Forms.

#### **3.3.4 Credit Transfer**

Credit transfer is the process by which recognition is granted by NOUN to applicants on the basis of previous studies undertaken in another institution, and also on the basis of prior learning. Credit transfer may be approved when a course previously passed in another institution is assessed as being equivalent to a course in NOUN.

#### **3.3.5 Credit Unit**

Credit unit (CU) represents the weight assigned to a course, and is recorded in unit hours. One credit is considered as one hour of classroom lecture per week or two hours of laboratory exercise per week. Thus, CU consists of specified number of student – teacher hours / week / semester.

#### **3.3.6 Minimum Credit Unit Requirement:**

There is a minimum credit weight loading of courses allowed at any particular semester for academic purposes if a student is studying in the full-time mode. However, the minimum number of credits one can register for in a semester in the open learning system is still dictated by one's purse, ability and availability of time.

#### **3.3.7 Maximum Credit Unit Requirements:**

There is also a maximum number of credits the University can allow for registration in any given semester.

### **3.3.7.1 Core Courses**

There are courses that are compulsory for all students in a given programme. A student must pass these courses before he or she will be allowed to register for courses at the next level or indeed graduate if the course is at the highest level.

### **3.3.7.2 Required Courses**

A student must register for all required courses. Failure in any of these courses does not prevent graduation if the student has passed enough credits for graduation. Failing a required course however, will affect the Grade Point Average (GPA), because all such courses registered for will be used in computing their GPA.

## **3.4 Grade Point (GP)**

This involves the assigning of numerical or alphabetical letter to the scores of students at examination, reports or projects. Letter systems generally run from A (5 points), B (4 points), C (3 points), D (2 points), and F(0 points)

## **3.5 Grade Point Average (GPA)**

This refers to the evaluation of student's performance in any semester. It is the average of weighted grade points earned in the courses offered by a student in a semester. The GPA is calculated as follows:

$$\text{GPA} = \text{TCE} / \text{TCR}$$

Where:

TCR = Total Credits Required

TCE = Total Credits Earned

## **3.6 Cumulative Grade Point Average (CGPA)**

The CGPA represents an up-to-date average (i.e. cumulative) of the GPA earned by the student in at least two semesters. It is an indication of the student's overall performance at any point in the

course of his/her training at the University. Cumulative Grade Point Average (CGPA) is attained after two semesters or more in an academic programme.

Calculation of CGPA/GPA

CGPA is calculated as follows:

$CPE / CCR$

Where:

CPE = cumulative points earned

CCR = cumulative credits registered

### **3.7 Elective Courses**

These are courses available in one's domicile University or from other Faculties in the University. While students are advised to work hard to pass their elective courses, they can still graduate if they have sufficient credits to do so even if they failed some electives. They should however note that the number of failed courses will eventually affect their grading, because all such failed courses will be used in computing their GPA.

### **3.8 General Studies Courses**

Regardless of the academic programme at the undergraduate level and to some extent Postgraduate level, in which a student is enrolled, all first year undergraduate students must register for and pass some general courses. These are GST courses. If a student fails any of these, he or she would not be allowed to graduate. These courses are:

- Study Skills I and II
- Use of English and Communication Skills
- People and Culture
- Computer Fundamentals
- Logic and Creative Thinking
- Nigeria and her Neighbours
- The Good Study Guide

### **3.9 Programme Delivery Method**

The NOUN employs a range of delivery methods to take education to the people and make learning an enjoyable activity. These methods include:

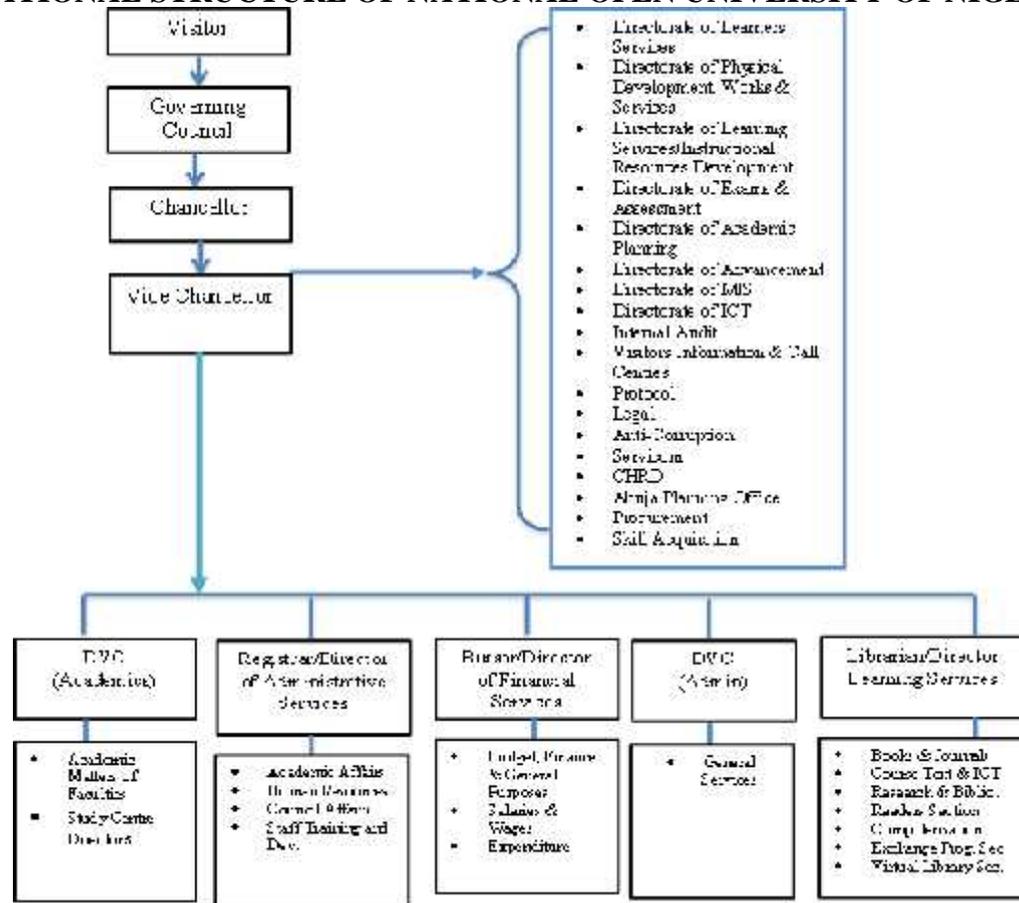
- Printed instructional materials, audio, video tapes and CD-ROMs. These would be transported to you by courier companies, NIPOST and NOUN's in-house transport division.
- Television and radio broadcast of educational programmes.
- Electronic transmission of materials in multimedia (voice, data, graphics, video) over fixed line (telephone or leased lines), terrestrial and VSAT wireless communication systems.

Study Centres in each of the geo-political zones, states and local government areas shall perform critical roles in the delivery of instruction. Study Centres are resource places where a student picks up course and other study materials as well as interact with instructional facilitators and tutors, student counsellors, Study Centre Directors and with other students. A number of other learner support facilities including internet browsing, e-mailing, library and a range of communication channels are also available at the Study Centres.

### **3.10 Organisational Structure**

The organisational structure of the university is depicted below in a flow diagram. The President of the Federal Republic of Nigeria is the Visitor to the university. The Senate is the principal decision making body of the university. The Senate of the university comprises the Vice-Chancellor, Deputy Vice-Chancellor (Academic), Deputy Vice-Chancellor (Administration), Registrar, Bursar, Librarian, Deans of Faculty, Directors and Heads of Departments and all professors in the university.

## ORGANISATIONAL STRUCTURE OF NATIONAL OPEN UNIVERSITY OF NIGERIA



### 3.11 Our Study Centers

Title		City	Email	Geo Political Zone
Lagos Office		Victoria Island	centralinfo@noun.edu.ng	
Abuja HQ		Abuja	centralinfo@noun.edu.ng	
NOUN Special Study Centre, Nigeria Prisons Services, Port Harcourt		Port Harcourt		South South
NOUN Special Study Centre, Keffi Prisons		Keffi		North Central
Yola Study Centre		Yola	yolastudycentre@noun.edu.ng	North East
Kano Study Centre		Kano	kanocentre@noun.edu.ng	North West
Minna Study Centre		Bosso, Minna	minnacentre@noun.edu.ng	North Central
Sokoto Study Centre		Sokoto	sokotocentre@noun.edu.ng	North West
Ilorin Study Centre		Ilorin	ilorinstudycentre@noun.edu.ng	North Central
Port Harcourt		Port Harcourt	riverscentre@noun.edu.ng	South South

*National Open University of Nigeria: Department of Animal Science and Fisheries*

<b>Title</b>	<b>City</b>	<b>Email</b>	<b>Geo Political Zone</b>
Study Centre			
Benin Centre	Study Benin, Edo	beninstudycentre@noun.edu.ng	South South
Akure Centre	Study Akure, Ondo	akurestudycentre@noun.edu.ng	South West
Awka Centre	Study Abagan, Anambra	awkastudycentre@noun.edu.ng	South East
Lokoja Centre	Study Lokoja, Kogi	lokojacentre@noun.edu.ng	North Central
Umudike Centre	Study Umahia, Abia	umudikecentre@noun.edu.ng	South East
Enugu Centre	Study Nike-Lake Road, Enugu	enugucentre@noun.edu.ng	South East
Owerri Centre	Study Okigwe Road, Owerri	owerristudycentre@noun.edu.ng	South East
Bauchi Centre	Study Bauchi	bauchistudycentre@noun.edu.ng	North East
Maiduguri Centre	Study Maiduguri	maiduguricentre@noun.edu.ng	
Jos Study Centre	Jos	joscentre@noun.edu.ng	North Central
Katsina Centre	Study Kaita road, Katsina	katsinacentre@noun.edu.ng	North West

*National Open University of Nigeria: Faculty of Agricultural Sciences (FOAS)*

<b>Title</b>		<b>City</b>		<b>Email</b>	<b>Geo Political Zone</b>
Lagos Centre	Study	Victoria Island, Lagos		lagoscentre@noun.edu.ng	South West
Abuja Study Centre	Model	Kubwa Expressway, Abuja		abujastudycentre@noun.edu.ng	North Central
Abeokuta Centre	Study	Abeokuta, Ogun		abeokutacentre@noun.edu.ng	South West
Kaduna Centre	Study	Kaduna		kadunastudycentre@noun.edu.ng	North West
Calabar Centre	Study	Calabar, Cross River		calabarcentre@noun.edu.ng	South South
Yenagoa Centre	Study	Yenogoa, Bayelsa		yenagoacentre@noun.edu.ng	South South
Makurdi Centre	Study	Kanshio, Makurdi		makurdicentre@noun.edu.ng	North Central
Osogbo Centre	Study	Osogbo, Osun		osogbocentre@noun.edu.ng	South West
Damaturu Centre	Study	Damaturu			North East
Lafia Centre	Study	Lafia		lafiastudycentre@noun.edu.ng	North Central
Dutse Centre	Study	Kiyawa Road, Dutse		dutsecentre@noun.edu.org	North West

*National Open University of Nigeria: Department of Animal Science and Fisheries*

<b>Title</b>	<b>City</b>	<b>Email</b>	<b>Geo Political Zone</b>
Jalingo Study Centre	Jalingo	jalingocentre@noun.edu.ng	North East
Gombe Study Centre	Gombe	gombecentre@noun.edu.ng	
NOUN Special Study Centre, Nigerian Army.	sobi, Ilorin	sobiarmysc@noun.edu.ng	North Central
UYO Study Centre	Uyo, Akwa Ibom	uyocentre@noun.edu.ng	South South
Ado-Ekiti Study Centre	Ado-ekiti	adoekitistudycentre@noun.edu.ng	South West
Otukpo Study Centre	Otukpo, Benue	otukpocentre@noun.edu.ng	North Central
NOUN Special Study Centre, Nigerian NAVY	Apapa, Lagos	nigeriannavyspecialstudycentreapapa@noun.edu.ng	South West
NOUN Special Study Centre, Nigerian Air Force	Airforce base, Kaduna	kadunaairforcecentre@noun.edu.ng	North West
Ibadan Study Centre	Ibadan	ibadancentre@noun.edu.ng	South West

*National Open University of Nigeria: Faculty of Agricultural Sciences (FOAS)*

<b>Title</b>	<b>City</b>	<b>Email</b>	<b>Geo Political Zone</b>
Community Study Centre Awa-Ijebu	Oru, Ogun	awacentre@noun.edu.ng	South West
NOUN Special Study Centre, Nigerian Immigrations Services	Gwagwalada, Abuja	nigerianimmigrationspecialstudycentreabuja@noun.edu.ng	North Central
NOUN Special Study Centre Nigeria Prisons Enugu Maximum Prisons	Okpara Avenue, Enugu	enuguprisonscentre@noun.edu.ng	South East
NOUN Special Study Centre, Kuje Prisons	Kuje, Abuja		North Central
NOUN Special Study Centre, Nigerian Prisons Services	Sauka, Abuja	prisonservicespecialstudycentre@noun.edu.ng	North Central
NOUN Special Study Centre, Nigerian Security and Civil Defense	Sauka, Abuja	specialstudycentreforcivildefencecorpsabuja@noun.edu.ng	

<b>Title</b>	<b>City</b>	<b>Email</b>	<b>Geo Political Zone</b>
Corps (NSCDC)			
Community Study Centre Ogori	Ogori	ogoricentre@yahoo.com	North Central
Gusau Study Centre	Gusau	gusaustudycentre@noun.edu.ng	North West
Asaba Study Centre	Emevor, Delta	asabastudycentre@noun.edu.ng	South South
Community Study Centre, Gulak	Gulak	gulakcentre@noun.edu.ng	North East
Kebbi Study Centre	Kebbi	kebbistudycentre@noun.edu.ng	North West
Community Study Centre Iyara	Iyara, Kogi	iyarastudycentre@noun.edu.ng	North Central
NOUN Special Study Centre, National Union of Road Transport Workers (NURTW)	Garki 1, Abuja	nurtwstudycentre@noun.edu.ng	North Central
NOUN Special Study Centre, Nigerian Police	Dei dei, Kubwa, Abuja	nounpolicecentre@noun.edu.ng	North Central
NOUN Wuse II	Wuse, Abuja	abujacentre@noun.edu.ng	North Central

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<b>Title</b>	<b>City</b>	<b>Email</b>	<b>Geo Political Zone</b>
Study Centre, Abuja			
Mccarthy Study Centre	Obalende, Lagos	mccarthycentre@noun.edu.ng	South West
Community Study Centre, Bogoro	Bogoro	bogorostudycentre@noun.edu.ng	North East
Community Study Centre, Azare	azare, Bauchi	azarestudycentre@noun.edu.ng	North East
Community Study Centre, Fugar	Edo	fugarstudycentre@noun.edu.ng	South South
Community Study Centre, Fugar	Edo	fugarstudycentre@noun.edu.ng	South South
Community Study Centre Awgu	Awgu, Enugu	awgustudycentre@noun.edu.ng	
Community Study Centre Offa	Offa	offastudycentre@noun.edu.ng	North Central
NOUN, Special Study Centre for National Assembly	Central area, Abuja	nationalassemblycentre@noun.edu.ng	North Central
Abakiliki Study Centre	Abakiliki, Eboyin	abakalikistudycentre@noun.edu.ng	South East
Mushin Study	Mushin, Lagos	mushinstudycentre@noun.edu.ng	South West

<b>Title</b>	<b>City</b>	<b>Email</b>	<b>Geo Political Zone</b>
Centre			
NOUN Community Study Centre Otan- Ayegbaju	Otan Ayegbaju Osun State	otan-ayegbaju.comsc@noun.edu.ng	South West
NOUN Special Study Centre. Victory International Institute of Theology and Education.	Kwali, Abuja	victoryinstitutestudycentre@noun.edu.ng	North Central
Community Study Centre, Ikom	Ikom, Cross River	ikomstudycentre@noun.edu.ng	South South
Kagoro Study Centre	Kagoro		North West
Idah Community Study Centre	Idah, Kogi	eamanabo@noun.edu.ng	North Central
Owhrode Community Study Centre	Udu, Delta	owhrodestudycentre@noun.edu.ng	South South
Iwo Study Centre	Iwo, Osun State	iwostudycentre@noun.edu.ng	South West
Wukari Study	Wukari, Taraba	wukaristudycentre@noun.edu.ng	North East

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<b>Title</b>	<b>City</b>	<b>Email</b>	<b>Geo Political Zone</b>
Centre			
Ugbokolo Study Centre	Ugbokolo, Benue	ugbokolostudycentre@noun.edu.ng	North Central
Uromi Community Study Centre	Uromi. Edo state	uromistudycentre@noun.edu.ng	South South
NOUN Special Study Centre Nigeria Prisons Awka	Awka, Anambra		South East

### **3.12 Basic Admission Requirements and Expected Duration of the Programmes**

To be admitted into the 5-year B.Agriculture, or B.Aquaculture and Fisheries Management degree programmes, candidates must have:

#### **a) Undergraduate programmes (100 Level)**

5 credits in WASC/GCE/NECO subjects including English, Mathematics, Chemistry, Biology/Agricultural Science and any one of the following: Physics, Geography or Economics, at least a pass in Physics.

#### **b) For Direct Entry (200 Level)**

- "A" Level passes in the relevant subjects.
- ND with a minimum of Upper Credit plus 5 credits in WASC/GCE/NECO subjects including English, Mathematics, Chemistry, Biology/Agricultural Science and any one of the following: Physics, Geography or Economics, at least a pass in Physics is required for 200level.

#### **3.12.1 Course Duration**

Four years for direct entry candidates and 5 years for students who came in through 100 levels.

#### **3.12.2 Graduation Requirements**

To graduate, a student shall have undergone 4 or 5 years of study depending on his entry point, including 12 calendar months of Farm Practical Year (FPY/SIWES). The activities of the farm practical year shall include periodic seminars on the student's work as a way of stimulating interest as well as the presentation of a written technical report to be graded at the end of the year.

Course workload must meet the graduation requirements of the University. However, in doing so, the student must earn a minimum of 167 Credit Units for the five -year programme and 132 Credit

Units for the four- year (direct entry) programme in Agriculture and related fields as indicated under course requirements.

The submission of an undergraduate project report based on supervised research is a graduation requirement, which must not be compromised. This requirement exposes the student to problem-solving techniques and provides him with the ability to organise ideas from literature and research findings. In short, it prepares the student for the work ahead and for further training at the post-graduate level. This area of academic preparation needs to be maintained and developed further.

### 3.12.3 Degree Classification

The determination of the class of degree shall be based on the Cumulative Grade Point Average (CGPA) earned at the end of the programme. The GPA is computed by dividing the total number of credit points (TCP) by the total number of units (TNU) for all the courses taken in the semester. The CGPA shall be used in the determination of the class of degree according to the following table:

<b>CUMULATIVE POINT AVERAGE (CGPA)</b>	<b>GRADE CLASS OF DEGREE</b>
4.50 – 5.00	First Class
3.50 – 4.49	2 <sup>nd</sup> Class Upper
2.40 – 3.49	2 <sup>nd</sup> Class Lower
1.50 – 2.39	3 <sup>rd</sup> Class

The maximum length of time allowed to obtain a degree in the Faculty shall be sixteen semester for the 5-year degree programme and fourteen semesters for students admitted directly into the 200 level. For extension beyond the maximum period, a special permission of Senate shall be required on the recommendation of the Faculty Board.

(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)
Credit Units Vary according to contact hours assigned to each course per week per semester and according to work load carried by student	Percentage Score	Letter Grades	Grade Points (GP)	Grade Point Average (GPA)	Cumulative Grade Point Average (CGPA) 5-Point System	Class of Degree
	70 – 100	A	5	Derived	4.50 5.00	1 <sup>st</sup> Class
	60 – 69	B	4	by Multiplying (i) & (iv)	3.50 4.49	2 <sup>nd</sup> Class Upper
	50 – 59	C	3	and divide by total credit units	2.5 - 3.49	2 <sup>nd</sup> Class Lower
	45 – 49	D	2		1.50 to 2.49	3 <sup>rd</sup> Class
	40 - 44	E	1		<1.5	Fail

### 3.13 Probation

Probation is a status granted to a student whose academic performance falls below an acceptable standard. A student whose Cumulative Grade Point Average is below 1.00 at the end of a particular year of study, earns a period of probation for one academic session.

### **3.13.1 Withdrawal**

A candidate whose Cumulative Grade Point Average is below 1.00 at the end of a particular period of probation should be required to withdraw from the University. Any student who cannot satisfy the graduation requirements within 2-years after the prescribed duration for the programme (i.e. 6 or 7 years after admission) shall be required to withdraw from the University.

### **3.14 Course Credit Unit System**

This should be understood to mean a 'quantitative system of organisation of the curriculum in which subject areas are broken down into unit courses which are examinable and for which students earn credit(s) if passed. The courses are arranged in progressive order of difficulty or in levels of academic progress, e.g. Level or year 1 courses are 100, 101 etc. and Level II or Year II courses are 200, 202 etc. The second aspect of the system is that courses are assigned weights allied Credit Units.

#### **3.14.1 Cumulative Grade Point Average (CGPA)**

This is the up-to-date mean of the Grade Points earned by the student in a programme of study. It is an indication of the student's overall performance at any point in the training programme. To compute the Cumulative Grade Point Average, the total of Grade Points is multiplied by the respective Credit Units for all the semesters that are added and then divided by the total number of Credit Units for all courses registered by the student.

### **3.15 Evaluation**

#### **3.15.1 Course Evaluation**

Continuous Assessment should be a significant component of the assessment of a student's performance in a course. It should constitute between 30 and 40 percent of the final grade awarded. The

Grade Point Average (GPA) and the Cumulative Grade Point Average (CGPA) systems are the yardsticks for evaluating students' performance from semester to semester and from year to year.

The final degree classification should be based on the final CGPA ranges contained in the following table:

CUMULATIVE POINT AVERAGE (CGPA)	GRADE	CLASS OF DEGREE
4.50 – 5.00		First Class
3.50 – 4.49		2 <sup>nd</sup> Class Upper
2.40 – 3.49		2 <sup>nd</sup> Class Lower
1.50 – 2.39		3 <sup>rd</sup> Class

### 3.15.2 External Examiners System

External Examiners should be used only in the final year of the undergraduate programme to assess final year courses and projects, and to certify the overall performance of the graduating students, as well as the quality of facilities and teaching. However, the existing practice of using external examiners for major subject areas in professional programmes shall be continued.

### 3.15.3 SIWES/Farm Practical Year

The Farm Practical Year (FPY/SIWES) programme as recommended by Nigeria Universities Commission (NUC) is premised on the philosophy that a 12 calendar month hands-on training programme be mounted at 400 level for B. Agricultural Science Students to make them “learn by doing” via undertaking practical farming activities on both crops and livestock. However, given the open and distance learning mode of the university, The FPY/SIWES year will comprise of seventy two (72) weekends (Fridays and Saturdays) of field work as indicated below.

- 200level – 8weeks
- 300level – 12 weeks
- 400level - 52weeks

The 72 weeks of weekend-time farm practical work must be completed before registering for any 500 Level courses.

#### **3.15.4 Teaching and Research Farm**

To meet the minimum standard for accreditation (NUC minimum benchmark), The Faculty farm at Kaduna is being upgraded into a teaching and research farm where face-to-face facilitation will be done for students within the Kaduna catchment area. Identified designated schools/colleges of agriculture and large farms around the country are being approached with Memorandum of Understanding (MoU) to use their facilities for students' practical training.

#### **3.15.5 Laboratory Practical**

This will be done via the following ways:

- i. Using the existing laboratories of other tertiary institutions at least one in each geo-political zone. MOU will be signed with these institutions.
- ii. Virtual laboratory/use of video clips.
- iii. Established model laboratory at the Faculty.

#### **3.15.6 Research Project/Thesis**

The submission of an undergraduate project/thesis based on supervised research is a graduation requirement, which must not be compromised. This requirement exposes the student to problem-solving techniques and provides him with the ability to organise ideas from literature and research findings. In short, it prepares the student for the work ahead and for further training at the post-graduate level. This area of academic preparation needs to be maintained and developed further.

#### **3.16 Maintenance of Curricular Relevance**

The Department of Animal Science and Fisheries in its drive to maintain a standard and as a follow up with the progress of its graduates, shall:

- Maintain a 2-way communication strategy involving the Department, and employers/professional bodies for periodic evaluation of competency and/or work output of its graduates.
- Undertake a 5-year periodic review of curriculum by a group of experts who should be Professors and Associate Professor/Readers.
- Innovate quality enhancing strategies: Encouragement of research at all levels (including undergraduate programme) into low cost affordable technologies that farmers can adapt and adopt for sustainable entrepreneurship.
- Use of indigenous technology and culture to make the curriculum relevant.

### **3.17 Staff**

Staffing is an important criterion of benchmark minimum academic standards. The Department employed capable cadre of staff in various disciplines in Animal Science and fisheries. They are believed to have the capacity to transmit knowledge to the students in addition to developing their inquisitive minds. Often, the development of incapable graduates is a direct result of inadequate capabilities of the academic staff. Capability is intimately tied to rank or seniority in a discipline.

Indicators of staff include parameters such as number, rank and distribution of academic staff: teacher student ratio and support staff ratio. The NUC guidelines on these parameters were applied.

Staff of the Department are categorised into three:

- i. Academic,
- ii. Technical and
- iii. Administrative staff.

### 3.17.1 Academic Staff

S/N	Name Of Staff	Area Of Specialization	Qualification/Date	Rank
1.	Prof. Grace E. Jokthan	Animal Science	Ph. D Animal Science 2006, M.Sc. Animal Science 2002, B. Agric. 1990.	Director CHRD/ Professor
2.	Prof. Isaac S. R. Butswat	Animal Science	Ph. D Animal Science 1994, M.Sc. Animal Science 1989, B.Sc. Agric. 1983.	Director, Abuja Model Study Centre Professor
3.	Prof. G. O. Okagbare	Animal Science	Ph. D Animal Science, M.Sc. B.Ed. Agric.	Director, Leaner's Support Services Professor
4.	Dr. Njidda Ahmed Amin	Animal Science	Ph. D Animal Nutrition and Biochemistry 2011, M.Sc. Animal Production and Management (Ruminant Animal), 2002, B.Sc. Animal Science 1995	Assc. Professor/Reader
5.	Dr. Awolumate Samuel	Fisheries	Ph. D Fisheries Economics & Extension 2017, M.Sc. Fisheries and Aquaculture 2005, B. Agric. Agricultural Economics and Rural Sociology 1993.	Lecturer I
6.	Dr. Agbo Aderonke N.	Fisheries	Ph. D Fisheries 2015, M.Sc. Zoology 1990, B.Sc Zoology 1987	Lecturer II
7.	Dr. A. S. Bankole	Vet. Medicine	Doctor of Veterinary Medicine (DVM) 2005.	Asst. Lecturer

### 3.17.2 Administrative Staff

S/N	Name Of Staff	Area Of Specialization	Qualification/Date	Rank
1.	Mr. Alao Emmanuel Abiodun	Administrative Staff	PGDM 2002, HND Animal Health 2014, Adv. Dip. Bus. Admin 2000, AMNIM 2007	Principal Executive Officer I (Marketing)
2.	Mr. Abdulwahab Umar	Fisheries	Nat. Dip. Fisheries Technology 2009	AEO

### 3.17.3 Technical Staff

S/N	Name Of Staff	Area Of Specialization	Qualification/Date	Rank
1.	Mr. Jamiu Danjuma Ibrahim	Animal Production Tech.	HND Animal Production Technology 2008	Senior Executive Officer (Farm)
2.	Mr. Hamidu Ibrahim	Animal Production	HND Animal Production Technology 2009.	Higher Technical Officer (Farm Mgt.)
3.	Mr. Usman Bala Dado	Animal Health Technology	HND Animal Health Technology 2006.	Farm Manager II
4.	Mr. Hussaini Isah	Animal Health and Production	National Diploma in Animal Health and Production	Senior Assistant Technologist
5.	Mr. Abdullahi	Fisheries	National Diploma Fisheries	Assistant Technical

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	Aminu	Technologist	Technology 2009	Officer
6.	Mr. Abdulkadir Muhammad	Animal Health Science	National Diploma Animal Health & Production 2010	Assistant Technical Officer
7.	Miss. Obed Nankling Dabit	Animal Production	National Diploma Animal Health & Production	Assistant Technical Officer Animal Production



**NATIONAL OPEN UNIVERSITY OF NIGERIA  
FACULTY OF AGRICULTURAL SCIENCES**

**DEPARTMENT OF ANIMAL SCIENCE AND FISHERIES**

**4.0 OUTLINE PROGRAMME PROPOSAL (OPP) FOR B.  
AGRIC. (ANIMAL SCIENCE OPTION)**

**FIRST SEMESTER 100 level**

S/N	Course Code	Course Title	Credits	Status
1	GST101	Use of English and Communication Skills I	2	C
2	CIT101	Computers in Society	2	C
3	GST121	Use of Library	1	C
4	GST105	History and Philosophy of Science	2	C
5	BIO101	General Biology I	2	C
6	BIO191	Practical Biology	1	C
7	CHM101	Introduction to Inorganic Chemistry I	2	C
8	CHM131	Organic Chemistry for Agriculture I	2	C
9	CHM191	Practical Chemistry I	1	C
10	AGR101	Mathematics for Agriculture I	2	C
11	PHY121	General Physics	2	C
12	PHY 191	Practical Physics I	1	C
<b>Sub Total Credit Unit</b>			<b>20</b>	

<b>SECOND SEMESTER 100 LEVEL</b>				
S/N	Course Code	Course Title	Credits	Status
1	GST102	Use of English and Communication Skills II	2	C
2	GST104	Introduction to Social Sciences	2	C
3	AGR 102	Mathematics for Agriculture II	2	C
4	BIO 102	General Biology II	2	C
5	BIO 192	Practical Biology	1	C
6	CHM 102	Physical Chemistry	2	C
7	CHM 132	Organic Chemistry for Agriculture II	2	C
8	CHM 192	Introductory Practical Chemistry II	1	C
9	PHY 192	Practical Physics II	1	C
<b>Sub Total Credit Units</b>			<b>15</b>	
<b>FIRST SEMESTER 200 LEVEL</b>				
S/N	Course Code	Course Title	Credits	Status
1	GST201	Nigerian People and Culture	2	C
2	ANP201	Introduction to Biotechnology	2	C
3	ARD201	Principles of Agricultural Extension	2	C
4	ARD203	Introduction to Home Economics	2	C
5	ARD251	Introduction to Agricultural Economics	2	C
6	AGR201	General Agriculture	3	C

7	AGR203	Principles of Crop Production	2	C
8	AGR205	Introduction to Agro-Climatology	2	C
9	AGR207	Anatomy and Physiology of Farm Animals	2	C
11	FRM211	Forestry and Wildlife Management	2	C
10	SLM201	Principles of Soil Science	2	C
<b>Sub Total Credit Units</b>			<b>19</b>	
<b>SECOND SEMESTER 200 LEVEL</b>				
S/N	Course Code	Course Title	Credits	Status
1	ARD202	Introduction to Rural Sociology	2	C
2	ANP202	Principles of Animal Production	2	C
3	ANP204	Introduction to Agricultural Biochemistry	3	C
4	AGR202	Introduction to Agric. Engineering	2	C
5	CIT204	Computer Appreciation and Application to Agriculture	2	C
6	AGR206	Crop Anatomy, Taxonomy and Physiology	2	C
7	FST202	Principles of Food Science and Technology	3	C
8	AFS220	Introduction to Fisheries and Wildlife	2	C
9	ENT204	Entrepreneurship and Change Management	2	C
<b>Sub Total Credit Units</b>			<b>20</b>	

<b>B. AGRIC. (ANIMAL SCIENCE OPTION)</b>				
<b>300 LEVEL</b>				
<b>FIRST SEMESTER</b>				
<b>S/N</b>	<b>Course code</b>	<b>Course Title</b>	<b>Credits</b>	<b>Status</b>
1	ANP301	Introduction to Non-Ruminant Animal Production	2	C
2	ANP303	Introduction to Animal Product Processing and Preservation	2	C
3	ANP307	Elementary Topics in Animal Breeding	2	C
4	AGR305	Analytical Techniques for Animal Production I	2	C
5	AGR309	Agro-climatology and Biogeography	3	C
6	CRP301	Arable Crop Production	2	C
7	CRP303	Permanent Crop Production	2	C
8	SLM303	Introduction to Pedology and Soil Physics	2	E
<b>Sub Total Credit Units</b>			<b>17</b>	
<b>SECOND SEMESTER</b>				
<b>S/N</b>	<b>Course Code</b>	<b>Course Title</b>	<b>Credits</b>	<b>Status</b>
1	ANP302	Introduction to Ruminant Animal Production	2	C
2	ANP304	Forage and Fodder Crop Production	2	C
3	ANP306	Animal Physiology, Reproduction and Growth	2	C
4	ANP308	Metabolism of Carbohydrates, Lipids, Proteins and Nucleic Acid	2	C
5	ANP310	Analytical Technique for	2	C

		Animal Production II		
8	ANP312	Introduction to Genetics and Breeding	2	C
6	ANP314	Environment and Animal Production	2	C
7	AGM314	Introduction to Farm Mechanisation	2	E
9	AGR302	Agricultural Statistics and Data Processing	2	C
10	ENT310	Cultural Change and Entrepreneurship	2	C
	<b>Sub Total Credit Units</b>		<b>18</b>	
<b>400 LEVEL (FARM PRACTICAL YEAR)</b>				
<b>SIWES</b>				
<b>S/N</b>	<b>Course Code</b>	<b>Skills to be Acquired</b>	<b>Credits</b>	<b>Status</b>
1	ANP401	Animal Husbandry Techniques I Ruminant	2	C
2	ANP403	Animal Husbandry Techniques II Non- Ruminant	2	C
3	ANP407	Animal Health Management	2	C
4	AFS401	Fisheries	2	C
5	CRP405	Agricultural Processing and Storage	2	C
6	CRP403	Crop Protection Techniques	1	C
7	CRP401	Crop Production Practices (Arable and Horticultural Crops)	1	C
8	SLM401	Soil Fertility and Water Management	1	C
9	SLM403	Farm Design Survey and Land Use Planning	1	C
10	AEC401	Farm Management Records and Accounts	1	C

11	ARD401	Extension Practices	1	C
12	AGM401	Farm Mechanisation Practices	1	C
13	SLM405	Agricultural Meteorology	1	C
14	AGR403	Biotechnology in Agricultural Production	2	C
15	AGM403	Workshop Practices	1	C
16	AGR401	Report Writing ( Book form)	3	C
	<b>Total</b>		24	
	Each student will write a report on each of these areas that will be evaluated.			
	<b>FIRST SEMESTER 500 Level</b>			
<b>S/N</b>	<b>Course Code</b>	<b>Course Title</b>	<b>Credits</b>	<b>Status</b>
1	ANP501	Poultry Production	2	C
2	ANP503	Swine and Rabbit Production	2	C
3	ANP505	Monogastric Nutrition	2	C
4	ANP507	Animal Breeding and Livestock Improvement	2	C
5	ANP509	Ruminant Animal Production	2	C
6	ANP 511	Animal Production Resources	2	C
7	ANP513	Animal Production Research Techniques	2	C
8	AGR501	Statistics and Research Methods	3	C
9	AGR515	Techniques of Scientific Writing and Presentations	1	C
10	ARD509	Agricultural Business Management and Finance	3	C
	<b>Sub Total Credit Units</b>		<b>21</b>	

<b>SECOND SEMESTER 500 LEVEL</b>				
<b>S/N</b>	<b>Course Code</b>	<b>Course Title</b>	<b>Credits</b>	<b>Status</b>
1	ANP502	Ruminant Nutrition	2	C
2	ANP504	Biotechnology in Animal Production	2	C
3	ANP506	Animal Health and Diseases	2	C
4	ANP508	Feed Formulation	2	C
5	ANP510	Livestock Economics	2	C
6	ANP512	Pasture and Range Management	2	C
7	ANP514	Seminar	1	C
8	ANP599	Project	4	C
<b>Sub Total Credit Units</b>			<b>17</b>	



**NATIONAL OPEN UNIVERSITY OF NIGERIA  
FACULTY OF AGRICULTURAL SCIENCES**

**DEPARTMENT OF ANIMAL SCIENCE AND FISHERIES**

**4.1 DETAILED PROGRAMME PROPOSAL FOR B. AGRIC  
(ANIMAL SCIENCE OPTION)**

**100 LEVEL COURSES**

**FIRST SEMESTER**

**GST 101: Use of English and Communication Skills (2 Units)**

This course is to enable students learn the skills of listening and comprehension, retrieve information, for interpreting and evaluation, effective reading skills, comprehending at varying speed levels, reading for vocabulary development in various academic contents.

**CIT 101: Computers in Society (2 Units)**

What is computer, types of computer, history of digital computer, element of a computer hardware and software, how to work with a computer, operating system, windows, files, word processing, copying a text, saving, changes to a document and formatting, spelling checker and introduction to printing a document, spread sheet, entering and correcting data, using formula, numeric formats, creating charts, types of charts, power points and presentation, networking, internet and e-mail, reading and responding to an e-mail message.

**GST 121: Use of Library (1 Unit)**

Brief history of libraries, library and education, university library and other types of libraries, types of library materials, using library materials including e- learning, e-materials, understanding library

catalogues and classification, copyright and its implications, database resources, bibliographic citations and referencing development of modern CIT, hardware technology software technology, input, output and storage devices, communication and internet services, word processing skills

**GST 105: History and Philosophy of Science (2 Units)**

General description of the nature of science and basic scientific methods and theories; history of western science and science in ancient times, middle ages and the rise of modern science; an overview of African science; man and his environment and natural resources; nature, scope and technological development and inventions; great scientist of Nigerian origin.

**BIO 101: General Biology I (2 Units)**

Characteristics of living things, cell as the basic unit of living things, cell structure, organisation, cellular organelles, tissues, organs and systems. Classification of living things, general reproduction and concept of inter-relationships of organism, heredity and evolution, elements of ecology (introduction) and habitats.

**BIO 191: Practical Biology I (1 Unit)**

Simple practical based on BIO 101 theoretical courses

**CHM 101: Introduction to Inorganic Chemistry I (2 Units)**

Hypothesis, theory and law with appropriate illustrations, nature of matter – 3 states of matter, atomic structures, electronic energy levels and orbitals, Periodic classification of elements and its relationship to their electronic configuration, Chemical bonding, survey of properties and trends in groups I II, IV, V & VII metals.

**CHM 131: Organic Chemistry for Agriculture 1(2 Units)**

Definition, nomenclature; functional groups; homologous series; families of organic compounds – composition, structure, formulae, synthesis, isolation and purification; isomerism; electronic theory in organic chemistry; alkanes, alkenes and alkynes; Benzene ring and aromatic compounds.

**CHM 191: Practical Chemistry I (1 Unit)**

Practical based on CHM 101 and CHM 131: Cations and Anions-Identification, Acid-base titrations, redox reactions and determinations.

**AGR 101: Mathematics for Agriculture 1 (2 Units)**

Algebra and trigonometry: Real number system; real sequences and series; set and subsets; unit interaction, complements; empty and universal sets; Venn diagram; one way correspondence between sets; quadratic function and equations; solution of linear equations; simple properties of determinants; indices and binomial theorem; transformations; e.g. log transformation; equations of straight line and application to simple regression equations; permutations and combinations; circular measure, trigonometric functions of angles; addition and factor formulae; complex numbers; moments and couples; relative velocity; calculus; elementary functions of simple real variable; graphs of simple functions, the differentiation of simple algebraic: exponential and log functions; the differentiation of a sum; product, quotient, function of function rules; implicit differentiation : definite and indefinite integrations of functions; application of definite and indefinite integrals to areas and volumes.

**PHY 121: General Physics (2 Units)**

Relevance of Physics to Agriculture. Selected topics and application to agriculture in mechanics, properties of matter, waves and sound, vibrations, electromagnetism, heat optics, light, thermal physics. Atomic and nuclear physics

**PHY 191: Practical Physics 1 (1 Unit)**

Graphs, measurement; error analysis; determination of acceleration due to gravity by means of simple pendulum; determination of force constant of a spiral spring and the constant; determination of surface tension of water; determination of specific latent heat of fusion of ice; determination of the coefficient of limiting static friction between two surfaces; determination of the coefficient of static friction on two surfaces using an inclined plane; determination of the relative density of kerosene using the specific gravity bottle; determination of the

relative density of a granular substance not soluble in water using the specific gravity bottle.

## **SECOND SEMESTER**

### **GST 102: Use of English and Communication Skills II (2 Units)**

Writing paragraphs; topic, sentence and coherence, development of paragraphs; Illustration, description, cause and effect including definitions, formal letters, essential parts and stylistic forms; complaints and requests, jobs ordering goods, letters to government and other organisations; writing reports; reporting events, experiments, writing summaries.

### **GST 104: Introduction to Social Science (2 Units)**

Classification of social systems, interpersonal relationships, personality traits and leadership qualities. The role of the media, meaning, scope and indices of development: historical perspectives, ideological bases, economic, political and social factors of development, self reliance and national development. Growth and spatial distribution of population, delivery of public goods through public enterprises and agencies, peaceful co-existence among nations.

### **AGR 102: Mathematics for Agriculture II (2 Units)**

Types of vectors and their application; matrices; simple linear equations; loci; integration; differential equations; first and second-order chemical equations; straight lines and planes; angle between lines and planes; distance of point from a plane; distance between 2 skew lines; circles. Introduction to statistics; diagrammatic representation of descriptive data; measures of location and dispersion for grouped data; curves and graphs; histograms; scatter diagram; theory of probability; binomial distribution; collection, tabulation and representation of agricultural data; mean; mode and median; analysis of variance; linear regression and correlation.

### **BIO 102: General Biology II (Botany and Zoology) (2 Units)**

Cellular basis of life; general structure and functions of plant cells and cellular organelles; plant cell division; heredity; diversity in plant cells and habitats; Morphology general characteristics, life cycles and range of forms of bacteria, viruses, fungi, algae, bryophytes, Lichens

and pteridophytes, general structure of animal cell. Functions of animal cells and cellular organelles; animal cell types and division. Forms, functions and life history of invertebrates using selected examples from classes of invertebrates such as Protozoa, Coelenterates, Arthropods, Plantyhelminthes, Aschelminthes, Annelida and Mollusca.

**BIO 192: Practical Biology I (1Unit)**

Simple practical based on BIO 102 theoretical courses

**CHM 102: Physical Chemistry (2 Units)**

Atoms; Sub-atomic particles, Isotopes, Avogadro's number; The Mole Concept; Chemical Formulae; The Laws of Chemical Combinations; Equations and Calculations; State of Matter; Gases, Liquids and Solids; Chemical Thermodynamics; Energetic and Thermo chemistry; Buffers, Chemical Equilibrium and Equilibrium Constants; Solubility Products; Chemical kinetics; Electrochemistry; Nuclear Binding Energy, Fission and Fusion.

**CHM 132: Organic Chemistry for Agriculture II (2 Units)**

Simple reactions of hydrocarbons, alcohols and acids, introductory organic basic chemistry and importance of lipids, proteins and carbohydrate and other natural products, petroleum chemistry, oils and fats, hydrogenation of oils. Polymer and biological important molecules, relevance of physics to agriculture. Selected topics and application to agriculture in mechanics, properties of matter, waves and sound, vibrations, electromagnetism, heat optics, light, thermal physics. atomic and nuclear physics

**CHM 192: Introductory Practical Chemistry II (1 Unit)**

Practical based on general chemistry CHM 101 and introductory organic chemistry I CHM 102- Determination of melting and boiling points and reaction of functional groups.

**PHY 192: Practical Physics II (1 Unit)**

Selected experiments on topics covered in PHY 111 and PHY 122, application of a variety of simple experimental techniques with

emphasis on quantitative measurements, experimental errors and graphical analysis.

## **200 LEVEL COURSES**

### **FIRST SEMESTER**

#### **GST 201: Nigerian Peoples and Culture (2 Units)**

Nigerian's perception of his world, culture areas of Nigeria and their characteristics, evolution of Nigeria as a political unit, concept of functional education, social justice, individual and national development, norms and values and moral obligation of citizens.

#### **ANP 201: Introduction to Biotechnology (2 Units)**

Nucleic acids, nucleotides and nucleosides, structure and function of DNA and RNA, translation into proteins, the genetic code, DNA errors and repair: Genes; Gene structure, function, replication, expression; Gene repair, mutation, recombination and cloning; Principles of DNA recombination. Molecular Tools/Techniques, Biotechnology application in animal agriculture: DNA probes, transformation of microorganisms, recombinant DNA vaccines, transformation of animals. Other biotechnology applications: Delivering peptides and enzymes, targeting rumen protozoa, developing a new feed additive, reducing phosphorus pollution, pathogens in manure and the environment, improving fibre digestion.

**Practical:** Extraction of DNA and RNA from animal tissues; *in vitro* translation, transcription, recombination and cloning.

#### **ARD 201: Principles of Agricultural Extension (2 Units)**

The meaning of extension science, the scope of agricultural extension, the need for agricultural extension, basic extension principles in agricultural production. The extension agents, rural communities and communication principles and strategies: Discussion of principles behind agricultural extension.

#### **ARD 203: Introduction to Home Economics (2 Units)**

Philosophy, scope, objectives and historical development of Home Economics. Examination of basic human needs with respect to food,

clothing, shelter and health; programme approaches in Home Economics which will help meet these needs. Preparation for careers in variety of occupations, role of women in agriculture.

**ARD 251: Introduction to Agricultural Economics (2 Units)**

The scope of agricultural economics. Basic economic Principles applied in agricultural production and marketing. Efficient organisation of scarce resources and factors of agricultural production, discussions of principles and philosophies involved in Agricultural Economics.

**AGR 201: General Agriculture (3 Units)**

The distribution of agriculture: World population and food supply, history, scope and importance of agriculture to man. Agriculture and natural environment. Characteristic features of tropical agriculture and how they affect production. Land use and tenure, trends in the production, distribution and utilisation of agricultural products, Measures of improving Nigerian agriculture, climatic, edaphic and social factors in relation to crop production and distribution in Nigeria, systems of crop farming, types, distribution and significance of farm animals; basic principles of animal farming. Place of forestry, fish farming and wildlife in agriculture.

**AGR 203: Principles of Crop Production (2 Units)**

Crop production and its development, The principles, problems and prospects of crop production, importance of crop rotation, cultural practices, water and soil conservation; irrigation and drainage, general types of characteristics of arthropods, microorganisms and other pests affecting crops. Weeds and their effects on crop production, pests, disease and weed control. Basic Mendelian genetics. Principles of crop production, harvesting, processing and storage.

**AGR 205: Introduction to Agro-Climatology (2 Units)**

The principles, aims and scope of climatology, the elements and controls of climate and weather and dynamics of the earth's atmosphere, radiation and heating of the atmospheric system; atmospheric moisture, the dynamics of pressure and wind systems, condensation and precipitation process, seasonal variations in

temperature, daylight, radiation, rainfall and evapo-transpiration, equipment and maintenance of standard meteorological stations, the tropical climate; relation between agriculture and climate with reference to crops, livestock, irrigation, pests and diseases.

**AGR 207: Anatomy and Physiology of Farm Animals (2 Units)**

Parts of the beef and dairy cattle, sheep, goats, pigs, rabbits and poultry, fundamentals of cell biology, anatomy and physiology of the cell, cell types. anatomy and physiology of animal tissues, nervous system, skeletal system, muscle, bone, circulatory system, reproductive, digestive, special senses and other systems of farm animals. Physiological functions of animals – homeostatic, nutrition and digestion, respiration. Temperature regulation, excretion and reproduction, endocrinology, the blood and circulation, lactation, milk let down and egg production, water balance.

**FRM 211: Forestry and wildlife Management (2 Units)**

Renewable natural resources, availability, distribution and potential, the important forest trees and wildlife (with emphasis on Nigerian species) classification, morphology and distribution of important forest trees, forest and game reserves in Nigeria, silviculture, afforestation characteristics of major timber and their uses. Felling and transportation.

**SLM 201: Principles of Soil Science (2 Units)**

Soils, their origin and formation, physical properties of soils, Soil moisture, air and temperature, soil classification and survey, soil colloids; soil reactions, soil organic matter and soil organisms, soil and water conservation; nutrient requirements and mineral nutrition to plants, introduction to fertilizer.

**SECOND SEMESTER**

**ARD 202: Introduction to Rural Sociology (2 Units)**

Meaning, importance, and basic concepts and principles of rural sociology, rural versus urban living culture, cultural values and cultural environment, settlement patterns and village organisation, factors which influence rural living conditions, types or rural economics, problems of developing rural economies, rural

infrastructure, major rural social institutions – marriage and family, religion, politics, social theories and interactions, general strategies to rural development, role of communities, social aspects of production and marketing in the rural areas, communication and technological change in rural society.

**ANP 202: Principles of Animal Production (2 Units)**

History of animal agriculture, the role of livestock in the national economy. Livestock breeds and distribution in Nigeria. Management practices and systems including housing, feeding, breeding and reproduction, health and products processing, effects of climate and other factors on behaviour and handling of animals, Animal production as a business and its interface with other sectors of the national economy, the role of innovations in science and technology through research in the development of animal production.

**Practical:** Identification of different livestock species and breeds, housing and equipment, common livestock parasites and diseases, livestock products and by-products.

**ANP 204: Introduction to Agricultural Biochemistry (3 Units)**

Chemistry of living matter; cells, enzymes and intermediary metabolism, tissues and their chemicals. Hormones: classification, control and interactions. Use of natural and synthetic hormones in animal production. Chemistry and metabolism of carbohydrates: definition, classification, reactions of monosaccharide's, tests of carbohydrates; Glycolysis, citric acid cycle, hexose monophosphate shunt, gluconeogenesis, glycogenesis, glycogenolysis. Chemistry, physical properties and metabolism of lipids: definition and classification; biosynthesis of saturated fatty acids (SFA) synthesis of acylglycerols, oxidation of FA, energy balance sheet from SFA oxidation. Chemistry and metabolism of proteins, enzymes and nucleic acids, Amino acid structure, properties and reactions, enzyme properties, functions and inhibition.

**Practical:** Testing of carbohydrates, acidic hydrolysis of starch. Tests for lipids – saturated and unsaturated, tests for proteins, proximate analysis of plant and animal products.

**AGR 202: Introduction to Agricultural Engineering (2 Units)**

Concepts and objectives of agricultural engineering, workshop tools; principles of internal engine. Study of farm machinery used for tillage, plough, cultivation, farm power and operating, principles, maintenance procedures of farm machinery.

**CIT 204: Computer Appreciation and Application to Agriculture (2 Units)**

History of computers, functional components of computer, characteristics of a computer, problem solving; flow charts, Algorithms, computer programming, statements; Introduction to the use of EXCEL, SAS, SPSS, GENSTAT, Introduction to problem solving with the computer; Data entry and editing with the computer. Data analysis using different statistical packages.

**AGR 206: Crop Anatomy Taxonomy and Physiology (2 Units)**

Parts of the crop cell types. Introduction to plant taxonomy, characteristics, distribution, economic importance and local examples of leguminosae, gramineae, compositae, Dioscoreacea, Rutaceae, development of cells and tissues; use of plant keys, cell biology, cell and cell types, comparative anatomy of major plant organs, enzymes, photosynthesis and translocation; pollination, respiration and energy utilisation; seed dormancy and germination, development; mineral nutrition, growth regulation.

**FST 202: Principles of Food Science and Technology (3 Units)**

Definition and scope of food science and technology, food distribution and marketing, food and its functions, food habits, food poisoning and its prevention, principles of food processing and preservation, discussion of different preservation methods, deterioration and spoilage of foods, other post-harvest changes in food, contamination of foods from natural source, composition and structures of Nigeria/West African food; factors contributing to texture, colour, aroma and flavour of food, cost; traditional and ethnic influences of food preparation and consumption pattern.

**AFS 220: Introduction to Fisheries and Wildlife (2 Units)**

The important fishes and wildlife of West Africa with emphasis on Nigeria species, classification, evolution, morphology and basic structure of fishes, the adaptation of fish to aquatic life, life cycle of principal species of fishes and wildlife industries in Nigeria, fundamental principles of fish and wildlife management and production.

**ENT 204: Entrepreneurship and Change Management (2 Units)**

This course exposes students to the need for organizational transformation required for value creation and competitiveness in the changing world of business. Topics will cover new management challenges and poor corporate outlook in Nigeria; phase of change; resistance to change and overcoming or managing resistance to change.

**B. AGRIC. (ANIMAL SCIENCE OPTION)**

**300 LEVEL COURSES**

**FIRST SEMESTER**

**ANP 301: Introduction to Non-Ruminant Animal Production (2 Units)**

Classification and importance of non-ruminant animals, anatomy and physiology of the digestive system of non-ruminants, production and distribution of non-ruminants in Nigeria. Terms used in non-ruminant animal production; characteristics of the local and exotic breeds of poultry, pigs and rabbits. Management practices involved in breeding, feeding, housing, disease control, handling, processing and marketing of poultry, pigs and rabbits.

**Practical:** Reports on visits to poultry, piggery and rabbit farms and hatcheries

**ANP 303: Introduction to Animal Product Processing and Preservation (2 Units)**

Classification of animal products and by-products, meat, eggs and milk industry in Nigeria, Animal growth and development, body

composition, slaughter and conversion of muscle to meat, fresh meat properties, meat preservation, processing and storage, Egg formation and production, egg quality indices, egg processing and storage, Milk production, milk quality, sterilization, pasteurization and evaporation.

**Practical:** Reports on visits to meat, egg and milk collection, processing and packaging plants. Identification of fresh and processed products.

**ANP 307: Elementary Topics in Animal Breeding (2 Units)**

Objectives and history of breeding, principles and problems in breeding animals for disease resistance, and increased productivity, fundamental principles of inheritance, sex determining mechanism. Variations: types, causes and measurements. Repeatability and heritability. Different types of gene actions; lethal and detrimental genes and their control. Quantitative and qualitative characters and their inheritance.

**Practical:** Collection and classification of indigenous ecotypes of chickens, Muscovy ducks, turkeys, guinea fowls, pigeons and pheasants. Calculation of frequency of major gene characteristics – naked neck, frizzle, dwarf, etc. Photo album of different breeds of cattle, sheep and goats, pigs, rabbits and snails in Nigeria.

**AGR 305: Analytical Techniques for Animal Production I (2 Units)**

Sources of errors and sampling procedures; statistical treatment of analytical data, chemical methods of analysis including volumetric, gravimetric, thermometric and electrochemical methods, optical methods of analysis; separation methods.

**AGR 309: Agro Climatology and Biogeography (3 Units)**

The principles, aims and scope of climatology and bio -geography, the elements and control of climate and weather and the dynamics of the earth's atmosphere. radiation and heating of the atmospheric systems, atmospheric moisture, the dynamics of pressure and wind systems. Condensation and precipitation processes. Seasonal

variations in temperature day length, radiation, rainfall and evapotranspiration, equipment and maintenance of standard meteorological stations. The tropical climate; relation between agriculture and climate with reference to crops, livestock, irrigation, pest and disease. Climate change issues in agriculture and various methods of amelioration.

**CRP 301: Arable Crop Production (2 Units)**

Origin, distribution, soil and climatic requirements of cereals, legumes, oilseeds, tubers, fibre crops, root crops and other important annual crops in Nigeria, improved varieties of major annual crops, production practices, harvesting, processing, storage, utilisation and economic aspects of selected arable crops. Factors affecting yield, propagation methods and cultivation and improvement practices for selected arable crops.

**CRP 303: Permanent Crop Production (2 Units)**

Origin distribution soil climatic requirements of some important permanent crops such as cocoa, oil palm, rubber, coffee, coconut, mango, sugarcane, banana. Plantain, citrus, cola, cashew etc. Production practices, improvement, harvesting, utilisation, processing, storage and economic aspects of some selected perennial crops.

**SLM 303: Introductions to Pedology and Soil Physics (2 Units)**

Soils, its origin and formation, soil morphological characteristics, soil components, soil forming rocks and minerals, weathering of rocks and minerals, profile description, soil survey, soil mapping, soil classification, properties and management of Nigerian soil.

**SECOND SEMESTER**

**ANP 302: Introduction to Ruminant Animal Production (2 Units)**

Classification and importance of ruminant animals; anatomy and physiology of the digestive tract of ruminants, the Nigerian ruminant animal production and distribution. Terms used in ruminant production; characteristics of the local and exotic breeds of cattle, sheep and goats. Performance traits, reproduction and mating in cattle, sheep and goats. Establishment of ruminant production

enterprises; building and equipment, health and general management practices; feeding and nutrition. Metabolic disease of ruminants.

**Practical:** Visit to cattle, sheep and goat farms and reports on the various management practices and disease control measures. Live animal handling and control. Animal marking and identification methods.

**ANP 304: Forage and Fodder Crop Production (2 Units)**

Adaptation and botany of indigenous and introduced forage plants. Characteristics of topical grasses, legumes and shrubs. Establishment, production and seed production of forage plants; the utilization and maintenance in permanent and temporary pastures. Forage conservation, dry season feeds.

**ANP 306: Physiology of Animal Reproduction and Growth (2 Units)**

Anatomy and physiology of domestic animals with emphasis on digestion, reproduction, lactation and the nervous, muscular, skeletal and circulatory systems. Endocrine system and its relationship with other systems of the body. Biosynthesis and regulation of hormonal secretions and the effects of abnormal hormonal secretions. Artificial insemination; sperm, ovum, estrus cycle, fertilization and pregnancy. Reproductive efficiency and problems.

**Practical:** Physical examination of bones, models of organs, laboratory and field specimens of different domestic animals. Anatomy of the reproductive tracts, estrus detection, semen collection and evaluation. Feed intake and body growth measurements and analysis of efficiency of growth.

**ANP 308: Metabolism of Carbohydrates, Lipids, Proteins and Nucleic Acids (2 Units)**

Definition, classification and metabolism of carbohydrates. Reactions of monosaccharide, tests for carbohydrates. Glycolysis, citric acid cycle, hexose monophosphate shunt, gluconeogenesis, glycogenesis, glycogenolysis. Definitions, classification physical properties and metabolism of lipids. Biosynthesis of saturated fatty acids, synthesis

of acylglycerols, oxidation of saturated fatty acids; energy balance sheet from SFA oxidation. Chemistry and metabolism of proteins, enzymes and nucleic acids. Amino acid structure, properties and reactions. Enzyme properties, functions and inhibitions.

**ANP 310: Analytical Techniques for Animal Production II (2 Units)**

Artificial insemination techniques in animal breeding. Digestibility trials (*in vivo* and *in vitro*). Biological assays involving PER, NPU, AD, ID and BV. Separation and characterisation of components involving the use of chromatography, electrophoresis, radio-isotopy, manometry, colorimetry, spectrometry. Determination, preparation and purification of enzymes.

**ANP 312: Introductory Genetics and Breeding (2 Units)**

The cell, mitosis, meiosis, spermatogenesis and oogenesis. Mendelian laws of segregation and independent assortment. Genetic ratios, linkage and crossing over. Chromosomal aberrations. Gene structure: deoxyribonucleic acid, ribonucleic acid, gene replication and gene mutations. Protein synthesis. Genetic properties of populations, gene frequencies, Hardy-Weinberg equilibrium, factors affecting gene frequency changes. Quantitative and qualitative characters and their inheritance.

**ANP 314: Environment and Animal Production (2 Units)**

Concept of the environment; components of the environment, climate change and the environment; environmental degradation and its consequences; effect of climate factors on farm animals (survival, performance, and productivity); special topics will include global warming, greenhouse gas emission, pollution, erosion, desertification, stratospheric ozone, environment control; physiological factors contributing to heat load in farm animal; global view on the environment.

**AGM 314: Introduction to Farm Mechanisation (2 Units)**

Aims and objectives of agricultural mechanisation. Basic mechanics, workshop tools. Principles of internal combustion engines and electric motors. Study of farm machinery use for tillage: ploughs, harrows

cultivators, farm power transmission system. Harvesting and processing equipment (sprayers and dusters). Equipment for livestock (automatic feed conveyors, automatic drinkers for poultry, feed and watering equipment, milking and milk handling, surveying instrument use on the farm. Operating principles, selection and maintenance procedures of farm machinery. Farm Machinery costing and records. Workshop and building materials use on the farm.

**AGR 302: Agricultural Statistics and Data Processing (2 Units)**

Basic concept of statistics. Frequency distribution, measures of location, measures of variation. Probability distribution, normal and binomial distribution. Histograms, means, mode and median, sampling, data collection, data processing techniques, statistics reference, test of significance, F –test, T-test chi square, anova analysis of variance, and analysis of co- variance, correlation and regression analysis, goodness of fit, research objectives, research design, field experimentation, collection and processing of data.

**ENT 310: Cultural Change and Entrepreneurship (2 Units)**

This course will identify and discuss how changes in the experience of people, entity or society impact on their entrepreneurial orientation. The course is designed to enable students appreciate their culture and learn from other cultures. Reference will be made to particular experiences that have affected entrepreneurial practices of groups in the Nigeria Society.

**400 LEVEL SIWES (FARM PRACTICAL YEAR)**

**ANP401: Animal Husbandry Techniques Ruminant**

***Enterprises of importance:***

Fattening of sheep and goat, production and multiplication of improved breed, Rearing of cattle/breeding and fattening. Pasture production and management.

***Techniques:*** Estimation of age using dentition and horn; determination of weight without scale; Castration methods –

burdizzo, surgical, elastration methods; Animal/Stock identification methods- tagging, branding, notching etc; Animal handling and restraining methods; Artificial insemination techniques - insemination equipments, semen collection, insemination techniques; Design of teaser dummy; Oestrus detection gadgets/methods, oestrus synchronization ; Milking utensils and milking methods; Deworming /drenching, hoof trimming, dehorning/disbudding and range fencing. Description of condition for body score of cattle, sheep and goats. Forage conservation and grazing management. Silage making

**ANP403: Animal Husbandry Techniques Non-Ruminant**

***Enterprises of importance:***

Production of table and hatchable eggs, Rearing of broiler chickens (or poultry species), Production / multiplication of pigs, Fattening of pigs and production of micro-livestock (rabbits, grass cutters and snails)

***Techniques:*** Identification of breeds of poultry, pigs and rabbits. Handling and restraining poultry, pigs and how to carry rabbits. Pig handling tips- use pf voice, touch and food; Restraining pigs for oral treatments, handling young pigs for inspection, handling for lifting/picking up pigs, managing stress during handling of pigs. Management of ecto parasites in poultry and pigs; Control of vice- habits i.e de-beaking, de-spurring and de-clawing. Rearing and management skills of day-old chicks, broilers, layers, cockerels and turkeys. Techniques for enhancing performance. Rodent control; poultry and pih house hygiene. Vaccinations and medications in poultry and pig rearing. Identification of feedstuffs used in feeding poultry and pigs. Feed formulation and feed milling. Disease control.

**CRP401: Crop Production Practices (Arable and Horticultural Crops)**

***Enterprises of importance:***

Grain legume crops production; cereal crops production; roots and tuber crops production; vegetable crop production; ornamental crop/landscaping .

**Techniques:** Site selection, land clearing and preparation techniques, crop selection; Crop establishment; fertilizer application; Weed /Pest/Disease management; Calibration of sprayers; Harvesting; Crop/Seed production; Cleaning, sorting and grading; Drying of produce; Methods of threshing and shelling; identification and selection of vegetable and ornamental seeds/cultivar; Nursery management skills, cultural practices (irrigation and weeding)

**CRP403: Crop Protection Techniques**

**Enterprise of importance:**

Production of bio-pesticides and botanicals. Fumigation

**Techniques:** Seed dressing techniques, farm and farm tool sanitation; types of calibration sprayers; operation of sprayers; Pesticide dosage calculation and application; Safety precautions and demonstration of first aid in pesticide poisoning; identification of signs of insect pest management and symptoms of diseases; Determination of disease incidence and severity; Disease album preparation.

**CRP405: Agricultural Processing and Storage**

**Enterprise of importance:**

Meat processing enterprise; Post harvest processing

**Techniques:** Animal products, processing and storage management- Meat processing : sausage, burger, smoking. Milk handling, processing into yoghurt, cheese, ghee, butter. Slaughtering methods, retail cuts of meats. Determination of egg quality; storage of egg; Production of egg powder.

Crop produce handling, sorting and grading. Storage methods/ structures and conditions; Packing and storage; Post harvest deterioration of produce; treatment against storage pest and diseases.

**SLM401: Soil Fertility and Water Management**

**Enterprise of importance:**

Compost production

**Techniques:** Identification of mineral deficiency symptoms; Familiarization with common organic and inorganic fertilizers and methods of application; Production of compost; Soil sampling methods and preparation; Soil water conservation techniques; Erosion control methods

**SLM403: Farm Design Survey and Land Use Planning**

*Techniques:* Identification of farm survey equipments and their uses; Common procedure for surveys; mapping of plots; Soil profile description and classification; soil productivity evaluation techniques; Land use planning.

**AEC401: Farm Management Records and Accounts**

*Techniques:* Farm record keeping: Concept of book keeping; Financial statements; Financial ratios; Farm planning; Farm budgeting; Farm labour management; Feasibility studies preparation; and report preparation. Practical field works: Farm survey; broadsheet preparation and data encoding; farm business analyses and assessment. Practical collaborative training: Personnel from established farms; Formal lending institution and financial would be invited to give professional talks on setting up and operating farm business, utilizing loan.

**ARD401: Extension Practices**

Extension trips to rural communities/villages; Extension trips to electronic, print and media houses; Training on radio and television production/broadcast; Video and audio recording/auditioning; Video and documentary production, production of extension guide (magazine, handbill leaflets, posters etc.) script writing and drama presentation/production; Training on web development, graphic design/artwork/painting; Interaction with state extension agencies.

**AGM401: Farm Mechanization Practices**

Concept of agricultural mechanization; Need for mechanization, basic roles of farm mechanization; Various areas of mechanization; Farm machinery operation and maintenance; Tractor and tractor components; Tractor driving and operation; Sheet metal to produce simple farm tools and equipment such as feeding trough, livestock cage, etc.; Simple machine for cleaning and sorting, refrigerator, packaging and crop storage; Construction of battery cages, rabbit cages, cribs, carrying crates and feeders.

**SLM405: Agricultural Meteorology**

Agricultural Meteorological Elements and their observation (the physical climate elements such as temperature, sunshine and radiation, wind, clouds, humidity, rainfall, soil temperature and soil moisture and other hydrometeors including dews, fog, open water evaporation, plant transpiration etc.); Biological/agricultural elements (including plants, animals, trees, both as individuals and as communities); Introductory concept of crop phenology and climate effect on the objects of agriculture in general); Simple layout of agro meteorological station and required weather instruments, procedures of data collection, and simple processing, analysis and mapping of agro meteorological information.

**ANP407: Animal Health Management**

*Techniques* Livestock hygiene and sanitary measures on livestock, farms, disease diagnosis, treatment and general drug administration techniques, vaccination programme for different classes of livestock and other preventive measures for various livestock diseases; Ante-mortem and post mortem inspection animals of slaughter houses.

**AGR403 Biotechnology in Agricultural Production**

The concept of Agricultural Biotechnology; Conventional Biotechnology. Modern Biotechnology, Tools of Biotechnology Micropropagation, Mutation, Constraint on crop production and the circumventing impact of Production of biotechnology; Pest Resistant varieties, Improvement of Crop Yields, Nitrogen Fixation, Nutritional Quality and Chemical Composition, Biofertilizers; Conventional Control of Fungal Pathogens, Bacterial pathogens, biosafety measures, Insect and Nematodes resistance, GM Control of Pest, Molecular Markers: RFLP (or Restriction fragment length polymorphism), AFLP (or Amplified fragment length polymorphism), RAPD (or Random amplification of polymorphic DNA), VNTR (or Variable number tandem repeat), Microsatellite polymorphism, SNP (or Single nucleotide polymorphism), STR (or Short tandem repeat)

**AFS401: Fisheries: Fish Biology:** Fish dissection to reveal the internal anatomical features of fish in the three living groups of fishes

(cyclostomes, chondrichthyes and the osteichthyes. Demonstration of respiration, circulation or skeletal system in fish using plastic models.

**Ichthyology:** Application of existing fish identification keys in identifying named freshwater and marine species. Morphometric and meristic analysis of fish. Preparation of different stock solution of formaldehyde for the preservation of different specimens (whole, fish, tissues, organs). Fish composition survey of a nearby river;

**Limnology:** Laboratory and field determination of physical (Temp, turbidity, current, light, etc.) and chemical (PH, DO, CO<sub>2</sub>, Nitrite, Nitrate, ammonia BOD, etc.) properties of fresh water as well as biological factors (primary productivity, energy flow, plankton sampling/analysis.

**Fisheries Ecology:** A visit to a nearby river and the application of different sampling techniques in the different ecosystem (e.g. plankton net in open water, qualitative and quantitative analysis of plankton) sediment sampling in the bottom and analysis of organisms, in fast-flowing versus slow or static water habitats, relationship between D.O. and temperature using forested wetland and river through barren land. Assessment of fish biomass;

**Aquatic Flora and Fauna :** Field identification of the different aquatic flora (emergence and sub-mergence weeds, by names/botanical classification. Identification of the different aquatic fauna in a typical fresh water ecosystem (invertebrates, vertebrates, benthos), a practical note on the economic importance of each. Fish Farming Technique and Hatchery Management : Demonstration of induced breeding of fish (Clarias or Heterobranchus) using crude pituitary extract (CPE) or synthetic hormone (Ovaprim).

**Fish Nutrition:** Proximate analysis of fish feed/ingredients, determination of calorific value of fish feed (bomb calorimetry), feed formation (pearson's method etc), determination of food metabolism/utilization in fish.

**Fishing Gear Technology:** Determination of hanging ratio of nets, buoyancy and sinking. Visit to fishing net market and identification of netting, twines, netting bundles, specifications and designations. Transformation of net designs to fishing nets from a given netting bundle. A visit to a boat yard and identification of materials for boat building, parts of the boat and engines employed (students to demonstrated boat propulsion with outboards). Excursion to riverine States/fishing companies and observation of the application of marine fishing gear (gillnets, longlines, trawlnets, boat

seines etc.) **Fish Parasites and Diseases** Microscopic inspection of smear preparations (e.g. slime or wound) and identification of associated pathogenic organism (bacteria, fungus, protozoa). Seining the pond to identify diseased fish. Dissection of gut of fish and extracting the endo-parasites as well as identifying them. How to prepare treatment “ dips”, “baths” for the treatment of fungal diseases. Calculation of oral drugs (food additives /antibiotics) against bacteria diseases. **Oceanography** : Visit to maritime environment, oceanography institutions, boat yards and fishing terminals in maritime states and exposure to the sea voyage, marine organisms, tidal rhythms, wave and oceanic vessels. Identification of instrument for oceanic data (current metre, echo sounder, sediment samplers, under – water cameras, etc.). **Ornamental Fisheries and Aquaria Design**: Identification of implements utilized in the construction of an aquarium, Demonstration of the step – by – step construction of an aquarium, Identification of different kinds of aquarium (ornamented) fishes, Demonstration of installation of the ornamented fish, ornamented plants, the aerator, the filter and the lighting

### **Workshop Practices**

Set up a typical workshop with different layout; Safety regulations in the workshop; Carpentry tools, materials, types of wood and their characteristics and Processes OR operations in wood working; Preparation of simple joints: Cross half Lap joint and T-Halving joint, Dovetail joint, Mortise and tenon joint; Jobs on Bending, shaping, Drawing, Punching, Riveting; Introduction to tools and measuring instruments for fitting; Jobs on sawing, filing and right-angle fitting of MS Flat; Practical in more complex fitting job; Operations of drilling" reaming, and threading with tap and dies; Practical test; Introduction to tools and operations in sheet metal work; Making different types of sheet metal joints using G.I. sheets. Jobs on welding, different types of joints

### **Report Writing (Book form)**

Trainee proficiency will be based on hands-on practical experience in all the 16 enterprises. Report on attendance at each enterprise also forms a component of the final grading. Written report that covers all

activities should be presented in bound form with original signed Farm Report Cover. Assessment reports are to be completed by the supervisor for each enterprise and returned back to the university by host farm or institution before attainment can be credited.

Each student will write a report on each of these areas that will be evaluated.

## **500 LEVEL COURSES**

### **FIRST SEMESTER**

#### **ANP 501: Poultry Production (2 Units)**

Poultry industry in Nigeria. Biology and morphology of domestic chicken; physiology of egg production; egg formation process; hormonal effect on male and female reproductive organs; egg incubation and hatchery management; care of day-old chicks, growers and laying hens. Nutrition of starters, growers and layers. Broiler production; rational formulation, nutrition and feeding. Products marketing and processing. Poultry buildings and equipment. Poultry production systems. Rural family poultry production. Production of other poultry species: Muscovites, ducks, guinea fowls, turkey, geese, quail and ostrich.

#### **ANP 503: Swine and Rabbit Production (2 Units)**

Importance of swine- raising in the tropics. Breeds, breeding and selection. Feeding and nutrition, routine management and health care; buildings and equipment; processing of pig products. Records and monitoring. Characteristics of rabbits, breeds and breeding, housing, feeds and feeding. Record- keeping, processing and handling of rabbit products.

#### **ANP 505: Monogastric Nutrition (2 Units)**

The chemical composition of the animal body. Feedstuffs, feeding standards and their inadequacies. Feed preparation and its importance. Proximate analysis and ration formulation. Carbohydrates, lipids and protein metabolism and their requirements in the body for maintenance, growth, and reproduction. Energy, protein, mineral and vitamin metabolism and their interrelationship in nutrition. Factors

affecting such requirements and interrelationships. Feed additives, antibiotics, anti-oxidants, colouring and flavouring agents, growth promoters and final product quality. Nutritional disorders.

**ANP 507: Animal Breeding and Livestock Improvement (2 Units)**

Production traits, their measurement and evaluation, selection for breeding for improvement of livestock performance. Breeding systems and selection methods. Performance testing, progeny testing. Identifying and incorporating genetic markers and major genes in animal breeding programmes. DNA tests and segregation analysis for genetic disorders. Determining associations between genetic markers and quantitative test loci (QTL).

**ANP 509: Ruminant Animal Production (2 Units)**

World demand and supply of products of beef, dairy, sheep and goats. The Nigerian beef and dairy industries. Beef production systems and types of cattle. Performance traits of beef and dairy cattle, characteristics of local and exotic breeds of beef and dairy cattle. Establishment of beef and dairy production: buildings and equipment, management practices, reproduction and mating, breeding and selection. Slaughter methods, meat hygiene, carcass quality. Milk collection, holding and sale. Breeds of sheep and goats; production systems, feeding, breeding, selection. Common diseases of sheep and goats, their prevention and treatment. Modern improvement methods, biotechnology, innovations in rearing and management practices.

**ANP 511: Animal Production Resources (2 Units)**

Classification of foods, feeding stuffs and feed supplements; chemistry and nutritive values of succulent feeding stuffs, concentrate feeds, cereals, legumes and oil seeds. Chemistry and nutritive values of some Nigerian grasses and legume species. Storage and quality control of feeding stuff and feeds

**ANP 513: Animal Production Research Techniques (2 Units)**

The design of animal production research experiments in the different fields of animal science. Artificial insemination techniques in animal breeding; digestibility trials (*in vivo* and *in vitro*), biological assays involving PER, NPU, AD, ID and BV, separation and characterisation

of components involving the use of chromatography, electrophoresis, radioscopy, calorimetry, spectrometry.

**AGR 501: Statistics and Research Methods (3 Units)**

Defining a research problem; developing hypotheses and objectives; principles of research design; questionnaire preparation and collection of data; measurement and data collection; statistical theory; different statistical methods for handling data; presentation of research finding in narrative tabular and graphical forms.

**AGR 515: Techniques of Scientific Writing and Presentations (1 Unit)**

Techniques of scientific writing and seminar presentations for agricultural students.

**ARD 509: Agricultural Business Management and Finance (3 Units)**

The scope of agricultural business and management; types of agricultural business management and organisation: enterprise selection, production planning: public policies affecting agric. business: farm growth, organisation of large scale farms. Legal organisation and tax strategies, economics of agricultural processing, marketing management. Principles of agricultural finance: principles of farm credit; capital needs of agricultural industries; sources of loans; funds and collateral security for loans; credit agencies and government credit policy and approaches to efficient credit management. Farm accounting inventory balance sheet and cash book and cash book analysis

**SECOND SEMESTER**

**ANP 502: Ruminant Nutrition (2 Units)**

Microbiology of the rumen, physiology of rumen action, metabolic processes and pathways, non-protein nitrogen utilisation. Determination of digestive coefficients, balance trials, systems of energy evaluation, scheme of protein values, water in relation to nutrition and water metabolism, requirements and their interrelationship in nutrition; feed additives, proximate analysis, ration formulation, nutritional disorders.

**ANP 504: Biotechnology in Animal Production (2 Units)**

Definition of biotechnology / recombinant DNA technology / genetic engineering. Tools: cloning, marker-assisted selection, QTL mapping, physical and genetic mapping, transgenes, transgenesis, gene banks, gene sequencing, DNA fingerprinting, bio-informatics. Application of biotechnology in animal and feed production, nutrition, reproduction, genetics and breeding, disease and metabolic control, pollution abatement and environmental management. Use of DNA tests for meat quality genotype identification, paternity testing, disease diagnostics. Conservation of animal genetic resources, *ex situ* and *in situ*.

**ANP 506: Animal Health and Diseases (2 Units)**

Bacterial and viral infections of livestock in Nigeria, their prevention and control. Infections and immunity, wounds and wound infections. Helminth and protozoan parasites of domestic livestock; their classification, diagnosis, epidemiology, prevention, treatment and control, their impact on the livestock industry in Nigeria. External parasites and disease they transmit; their control in ruminants. Plant poisoning, diseases and their prevention. Use of medicaments and routine vaccination of livestock. Zoonotic diseases and their public health importance. Ethno- veterinary practices.

**ANP 508: Feed Formulation (2 Units)**

Classification of feeds, feedstuffs and supplements based on their chemical composition. Storage and quality control of feeding stuffs and feeds. Methods used in ration formulation for various classes of farm animals. Economic factors in ration formulation. Principles of commercial feed production and the problem of feedstuffs availability. Anti-nutritional factors in livestock feedstuffs and compounded feeds. Advantages and disadvantages of compounded feeds. Feed milling in Nigeria, types of machines, raw materials handling, the milling process, handling storage and delivery of finished products. Legislation and quality control for commercial feed formulations. Feed formulation on-farm.

**ANP 510: Livestock Economics (2 Units)**

The place of livestock in the Nigerian economy, consumer and consumption pattern of livestock product, micro and macro-economics in animal production, agricultural production functions including data collection and analysis, marketing theory in relation to livestock production, application of economic theory and quantitative analysis. Capital investment and depreciation of capital; the economics of egg, meat and milk production. Livestock feed economics, input/return relationship in livestock production.

**ANP 512: Pasture and Range Management (2 Units)**

Common terminologies in pasture and range science, range versus pasture, morphology of grasses, legumes and shrubs. Vegetation zones; adaptation and botany of indigenous and introduced plants. Establishment of pasture plan. Maintenance and utilisation of pastures, fertilizer in pasture production, forage yield determination, forage conservation – hay, silage, haylage. Range management, harvesting frequencies, nutritive value of pasture crops. Systems of grazing management, determination of stocking rate.

**ANP 514: Seminar (1 Unit)**

Students will present seminar.

**ANP 599: Project in Animal Science (4 Units)**

Execution of a special research project under a supervisor. Data assembly, cleaning, statistical analysis and summary in tables and graphs as well as writing of results and discussion, presentation and defense of the project report will be graded.

For Further Enquiries & Information,  
*Please contact the Administrative Secretary of the Department  
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