

## **FOREWORD**

Welcome to the Department of Animal Science, University of Port Harcourt. Our focus is to advance Animal Agriculture for increased productivity for the betterment of animals and humans through research, teaching, and community service. Our department conducts cutting-edge research that has widespread implications for both traditional and emerging agriculture, along with animal and human health. The department offers an exciting field that has application from production through agribusiness and processing as well as in research and other scientific endeavours. We hope that our programme in Animal Science will fulfill your needs and expectations for self reliance and sustainable livestock production especially in the current situation of mass unemployment in the nation. The Department is fortunate to have hard working, dedicated and talented members of staff. We are pleased to welcome you to this unique community of scholars and friends.

**Dr. (Mrs) Letorn A.F. Akinola**  
(Acting Head of Department)

## **HISTORY OF THE DEPARTMENT OF ANIMAL SCIENCE**

The Department of Animal Science formerly known as the Department of Animal Science and Fisheries was created alongside three others namely: Agricultural Economics and Extension, Crop and Soil Science, and Forestry and Wildlife Management at the inception of the Faculty of Agriculture in 2005. The Department awards the Bachelor of Agriculture (Animal Science) degree to students upon graduation after a five-year programme.

In 2005, four academic and one non-academic staff were employed and 24 students admitted, through the University's Remedial (Basic) Programme, into the Department with the numbers increasing to 16 academic staff, five non-academic staff and 100 students, respectively by 2012. In her 397<sup>th</sup> meeting on 26<sup>th</sup> March 2014, the Senate of the University approved the splitting of the former Department of Animal Science and Fisheries into the Department of Animal Science and Department of Fisheries with effect from 2013/2014 session. Currently, the department has 18 academic staff, 9 non-academic staff and 249 students. The post graduate programmes of the department has commenced after the Senate of the University approved it in her 415<sup>th</sup> meeting on 22<sup>nd</sup> February, 2016.

The programme is designed to equip Animal Science graduates with the right technical and entrepreneurial skills/capacity necessary to appropriate scientific know how for the advancement of the agricultural sector. Also, it is concerned with the development of practical solutions to agricultural production problems vis-à-vis Animal Agriculture and other allied sub-sectors to make our graduates registerable by the Nigerian Institute of Animal Science (NIAS), the professional body that regulates animal production practices in Nigeria.

The following have been Head of Department since inception in the old Department of Animal Science and Fisheries and the new Department of Animal Science.

Prof. E.S. Erondu	August 2005 – June 2010
Dr. I. Etela	June 2010 - June 2012
Dr. (Mrs) M.O. Ironkwe	June 2012 – Jan. 2013
Dr. (Mrs) F.O. Ajayi	Jan. 2013 - Feb. 2015
Dr. (Mrs) L.A.F. Akinola	Feb. 2015 - Date

### **Vision**

Our vision is to be recognized as leaders amongst entrepreneurial and research-intensive departments and as key players in the training of graduates that will acquire sufficient practical skills and theoretical knowledge to engage in

teaching, research, entrepreneurial and other related activities in the Animal Industry.

### **Philosophy**

Our philosophy is to produce animal scientists with the right competence that would enable them to harness the tremendous opportunities in agriculture through designing appropriate technologies that are demand-driven in response to local needs for sustainable animal agriculture and livestock production that is economically viable and profitable, socially acceptable, and environmentally friendly.

### **Objectives**

- a). To produce the appropriate manpower equipped with necessary skills to establish and profitably operate animal and livestock enterprises;
- b). To improve the genetic stock and introduce scientific animal and livestock management in the Delta Creek ecosystem.
- c). To promote animal and livestock production and productivity by local small scale farmers, thereby providing solutions to the country's animal science and livestock production problems and challenges.
- d). To equip our graduates with the right technical and entrepreneurial skills and capacity necessary to appropriate their scientific knowhow for the development of practical solutions and the advancement of the animal and livestock sub-sector.
- e). To design appropriate technologies that would be demand-driven in response to local needs and resolve ecological challenges for increased and sustainable animal agriculture and livestock productivity.

### **a. Admission Requirements:**

Candidates seeking admission into the programme must:

- i. Pass the UTME, which must include Use of English, Chemistry, Mathematics or Physics, and Biology or Agricultural Science and meet up the University (Uniport) minimum score for the session in view.
- ii. Pass the Post-UTME screening exercise of the University and meet up the requirements for the Faculty.
- iii. Possess five credits in GCE/SSCE/NECO in the following subjects: Mathematics, English Language, Chemistry, Biology or Agricultural

Science and any one of Physics, Economics or Geography at not more than two sittings.

**b. Structure and period of studies in the Universities, Industrial Training, planned visit and projects.**

Students spend a minimum of five academic sessions (that is, 10 semesters) to complete the programme. The students are first exposed to external farm environment courtesy of farm practice and field course at 200 and 300 Levels, respectively that require excursions and field trips to any functional farm, usually an integrated farm within or outside the state. The whole of the fourth year is used for Industrial Training (IT) programme (also referred to as the Students' Industrial Work Experience Scheme; SIWES) at relevant farms and/or institutions.

Presently, the Department places or sends students on IT to:

- i) Domita Farms – Uyo in Akwa Ibom State;
- ii) Fidelity Farm – Omagwa in Rivers State;
- iii) Rivers State Sustainable Development Agency (RSSDA) – Songhai Farms Bunu-Tai, Rivers State;
- iv) Songhai Farms – Bunu - Tai, Rivers State
- v) The African Regional Aquaculture Centre (ARAC) – Aluu in Rivers State;
- vi) The Faculty of Agriculture Demonstration Farm as well as the University Teaching and Research Farm.

Also, as part of strategies to strengthen our relationship with the industry partners for the IT programme to enhance the practical skills of students, we have also signed Memorandum of Understanding (MOU) with Domita Farms and Rivers State Sustainable Development Agency (RSSDA) – Songhai Farms Bunu-Tai, Rivers State and has been sending students to these farms for a more sustainable and mutually rewarding IT programme (SIWES).

Every student is made to initiate and complete a project under the supervision of one or more lecturer(s), depending on the nature of the project. Such projects are, usually, part of courses in the second semester of the final year and are core/compulsory for each student. Such projects must be passed as students are expected to be successful at both oral examinations (*viva voce*) by the internal examiner(s) and the external examiner.

**Examination**

Examiners ensure that question papers are prepared under strict security and made available on time for moderation by one or two very senior and trusted colleagues in the Department, while all photocopying of the question papers are done in the department. Students are checked into examination halls using the students' identity card, at least, 30 minutes before the commencement of the examination. The Head of Department is responsible for conducting course examinations. During examinations, security is stepped up around centres to ensure safety of students, invigilators and supervisors. Marking schemes are usually drawn up by Examiners to guide the marking of scripts for each course.

Degree examination questions are subjected to external moderation by an External Examiner approved by the Senate of the University. Results are returned in quadruplicate distributed as follows: a copy to the course lecturer, a copy to the Head of Department and two copies to the Dean who signs and returns one copy of the mark sheet to the Department. Summary of results for all courses taken in the Department, with the dates of Departmental and Faculty board meetings reflected on them are then presented to the Extra-ordinary meeting of Senate.

### **Academic Atmosphere**

Taught courses in the department include tutorial, laboratory practical and farm demonstration components. Each student registers between 15 and 24 credit units and the Department ensures that students comply with the mandatory lecture 75% attendance to qualify for the semester examinations. A CGPA of one point (1.00) is the minimum graduation point (and 1.5 from 2014/2015 session).

### **Criteria for Graduating Students**

1. Students shall be allowed to graduate with a maximum of any two (2) failed courses, provided these are not Research Projects, Student Industrial Work Experience Scheme (SIWES) and GES Courses.
2. The following courses; Research Projects, Student Industrial Work Experience Scheme (SIWES), GES Courses and Community Service Course must be used in computing the degree results.

3. The minimum requirement for the award of degree in the Department of Animal Science is 150 credit units. All courses taken from Years 3 – 5 are compulsory together with all the University –wide courses: Community services, Research project, GES Courses and the balance are taken from best Years 1 & 2 Courses.
4. **Pass grade(s)** shall replace **fail grade(s)** and the pass grade(s) shall be used to compute the CGPA. The maximum grade to be earned in respect of replacement of fail grade with a Pass grade is “C”

### **Academic Advisers**

- a. Every student is attached to an Academic Adviser who is a member of the academic staff in the Department and who will advise him/her on academic affairs as well as on personal matters. Academic Advisers are expected to follow their students’ academic progress and provide counseling to them.
- b. It is the duty of the Head of Department to assign an Academic Adviser to each student at the beginning of each session.
- c. Academic Advisers should give clear information on their office doors about appropriate times at which they will be available to students who wish to consult them.

### **Registration of Courses**

- 1 The period for normal registration is the first three weeks of each academic year, excluding the orientation week.
- 2 The period for late registration is the fourth and fifth weeks of the first semester of the academic year. Late registration will attract a surcharge.
- 3 Course registration is the responsibility of the student’s parent department. The Head of Department/Academic Adviser should guide on the courses to register.
- 4 In registering students, the department should ensure that students re-register all previously failed courses in which the programme requires a pass, and meet the prescribed requirements for each Course registered; furthermore, that the total credit units registered are not less than 15 or more than 24 per semester.
- 5 Registration of courses is online, thereafter; the student should submit a copy of his/her Course Registration Print-out to his/her Head of Department.

- 6 Any student who fails to pay his/her school charges and registers his/her courses online in a session loses his/her studentship for that session.
- 7 Students are not allowed to sit for examinations in courses for which they have not previously registered. Such actions are fraudulent and culprits will be appropriately disciplined.
- 8 Only results of bona-fide students (that is those who have paid their school charges and registered their courses online will be published online).
- 9 A list of students registered for each course should be kept (see Appendix 1). This list should be displayed for one week immediately after the close of registration for necessary corrections.
- 10 The parent faculty and the parent department will retain one copy each of this list and forward copies to the Teaching Faculty to be distributed as follows: one to the Faculty, one to the Department and one to the Course Lecturer. This list becomes the authentic register for the course examination.
- 11 Students should be encouraged to join their departmental associations, but the dues for such associations should not be tied to registration.
- 12 Application for adding or dropping a course must be made on the prescribed **ADD/DROP** Form after obtaining the approval of the Heads of Departments concerned, not later than four weeks before the examination in each semester. Any change of course made by altering the hard copy of the course registration form will be null and void.

### **Grading System**

1. The following system of Grade Points shall be used for all Departmental /Faculty courses.

<b>MARK/SCORE</b>	<b>GRADE NOTATION</b>	<b>GRADE POINT</b>
70% and above	A	5.00
60 – 69	B	4.00
50 – 59	C	3.00
45 – 49	D	2.00
40 – 44	E	1.00
0 -39	F	0.00

2. Students are obliged to sit for examinations in all registered courses. Any student who fails to sit for a course examination without satisfactory reason earns the grade of ‘F’ and must re-register for the course(s)

## **Computation of Grade Point Average**

1. Every course carries a fixed number of Credit Units (CU), one Credit Unit being when a class meets for one hour every week for one semester, or three hours every week in the laboratory, workshop or field.
2. Quality points (QP) are derived by multiplying the Credit Units for the course by the Grade Points earned by the student: e.g. in a course with 3 Credit Units in which a student earned a B with 4 Grade Points, the Quality Points are  $3 \times 4 = 12$ .
3. Grade Point Average (GPA) is derived by dividing the Quality Points for the semester by the Credit Units for the Semester: e.g. in a semester where the student earned 56 Quality Point for 18 Credit Units, the GPA is  $56 \div 18 = 3.11$ .
4. Cumulative Grade Point Average (CGPA) is derived by adding the Total Quality Point (TQP) to date and dividing the Total Credit Units (TCU) to date: e.g. if the TQP are 228 and the TCU are 68, then the CGPA is  $228 \div 68 = 3.35$ .

## **Continuation, Probation and Withdrawal**

### **1. Continuation Requirement.**

The continuation requirements in the University is a CGPA of 1.50 shall be at the end of every academic year (from the 2014/2015 session).

### **2. 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 1.50 at the end of a particular year of study earns a period of probation for one academic session.

### **3. Limitation of registration**

Students on probation may not register more than 15 units per semester. The purpose of the restriction is to give the students a chance to concentrate on improving their performance and thus raising their CGPA.

### **4. Warning of danger of probation**

Students should be warned by their Department if at the end of any semester their GPA falls below 1.50.

### **5. Repeating Failed Course Unit(s)**

Subject to the conditions for withdrawal and probation, a student must repeat the failed course unit(s) at the next available opportunity, provided



that the total number of credit units carried during that semester does not exceed 24.

**6. Temporary Withdrawal from study.**

- (i) Any student who takes ill and goes into hospital should write and inform the university about the sickness, and when discharged should write to inform the university and attach the medical report(s) to the application of resumption of study. The medical papers should be authenticated by the Health Services Department. Any student who takes off without permission or informing the university and stays away for more than 2 years should regard himself or herself as being out of the programme. Application for temporary withdrawal is one year for the first instance and thereafter renewable for another one year only.

The Application should specify the period (Session) to be away and the session for resumption of study. The HOD of the student should furnish the Faculty with the CGPA of the student at the time of the request.

- (ii) Any student who has genuine reason(s) to request for temporary withdrawal from study should inform the University in writing through the Department and Faculty stating the reason(s) and session to be away; and obtain approval by Senate.
- (iii) Temporary withdrawal from study is for one academic session and for a just cause may be renewed for only one more session.

**7. Resumption of Studies**

The student should notify the University at the time he/she resumes studies with evidence of approval of temporary withdrawal from studies.

**8. To Write Examination as First Attempt**

Any student who takes ill and goes into hospital during examination should write and inform the University and attach the original of the Medicals Report(s). The application to write the missed examination as first attempt should indicate the course(s), semester and session involved. The medical report(s) should be authenticated by the Health Services Department of the University. Thereafter, the application will be considered by the Departmental Faculty Boards respectively and recommended to Senate for approval.

**9. Withdrawal**

A student whose Cumulative Grade Point Average is below 1.50 at the end of one year's probation shall be required to withdraw from the programme. However, in order to minimize waste of human resources, consideration should be given to withdrawal from programme of study

and possible transfer to other programmes within the University. The student shall meet the departmental and Faculty requirement with regards to UTME subjects, UTME Score, and relevant O-Level credits. The Faculty/Department must be willing to accept the student.

#### 10. Duration of Degree Programmes

The maximum length of time that a student shall be permitted to spend on a 5-year programme in the Department of Animal Science shall be 7 years. A student who after the maximum length of time allowed for a degree programme, has not obtained a degree, shall have his degree result calculated on fail out basis.

#### Classification of Degrees

- The degree shall be awarded with 1<sup>st</sup>, 2<sup>nd</sup> Upper, 2<sup>nd</sup> Lower, or 3<sup>rd</sup> Class Honours degree. The Cumulative Grade Point Averages for these classes shall be:

CLASS OF DEGREE	CUMULATIVE GRADE POINT AVERAGE
1 <sup>st</sup> Class	4.50 - 5.00
2 <sup>nd</sup> Class Upper	3.50 - 4.49
2 <sup>nd</sup> Class Lower	2.40 - 3.49
3 <sup>rd</sup> Class	1.50 - 2.39
Pass	Abolished from 2014/2015 session

#### Research Project

Every student is made to initiate and complete a project under the supervision of one or more lecturer(s), depending on the nature of the project. Such projects are, usually, part of courses in the second semester of their final year and are core/compulsory for each student. Such projects must be passed as students are expected to be successful at both oral examinations (*viva voce*) by the internal examiner(s) and the external examiner.

### BACHELOR OF AGRICULTURE (ANIMAL SCIENCE) PROGRAMME

#### 100 LEVEL (YEAR 1) COURSES -FACULTY WIDE-

FIRST SEMESTER			SECOND SEMESTER		
Course	Course Titles	Units	Course	Course Titles	Units

Codes			Codes		
GES100.1	Communication Skills in English	3	GES 103.2	Nigerian People and Culture	2
FSB 101.1	General Biology I	3	FSB 102.2	General Biology II	3
CHM 130.1	General Chemistry I	3	CHM 131.2	General Chemistry II	3
PHY 101.1	Mechanics and Properties of Matter	3	CHM 132.2	Introduction to Principles of Organic Chemistry	3
MTH 120.1	Calculus	3	PHY 115.2	Heat, Light and Sound	2
GES 102.1	Introduction to Logic and Philosophy	2	GES 101.2	Computer Appreciation and Application	2
MTH110.1	Elementary Algebra and Sets	2	AGR 101.2	Introductory Statistics for Agriculture	2
PHY 102.1	Physics Practical	1			
<b>TOTAL</b>		<b>20</b>			<b>17</b>

**Total units = 37**

**200 LEVEL (YEAR 2) COURSES  
-FACULTY WIDE-**

FIRST SEMESTER			SECOND SEMESTER		
Course Codes	Course Titles	Units	Course Codes	Course Titles	Units
AGR 201.1	General Agriculture	2	AGR 205.2	Agro-Climatology and Meteorology	2
CPS 201.1	Crop Anatomy, Taxonomy and Physiology	2	CPS 202.2	Principles of Crop Production	2
AGE 201.1	Principles of Agricultural Economics	2	ANS 201.2	Anatomy and Physiology of Farm Animals	2
FWL 201.1	Introduction to Forestry and Wildlife Management	2	ANS 202.2	Principles of Animal Production	2
AGR 2CS.1	Community Service	1	FSH 201.2	Introduction to Fisheries	2
AGX 201.1	Introduction to Agricultural Extension and Rural Sociology	2	AGR 206.2	Principles of Food Science and Technology	2
AGR 202.1	Introduction to Farm Power and Machinery	2	AGF 201.2	Farm Practice	2
SOS 201.1	Introduction to Soil Science	2	AGR 207.2	Introduction to Home Economics	2
AGR 203.1	Introduction to Agric. Microbiology	2			
AGR 204.1	Computer Application to Agriculture	2			
<b>Total</b>		<b>19</b>			<b>16</b>

**Total units = 35**

## BACHELOR OF AGRICULTURE (ANIMAL SCIENCE)

### 300 LEVEL (YEAR 3) COURSES

FIRST SEMESTER			SECOND SEMESTER		
Course Codes	Course Titles	Units	Course Codes	Course Titles	Units
ANS 301.1	Animal Health and Diseases	2	ANS 303.2	Ruminant Animal Production	2
ANS 302.1	Non-Ruminant Animal Production	2	ANS 304.2	Animal Genetics and Breeding	2
CPS 301.1	Arable Crop Production	2	SOS 302.2	Soil Chemistry I	2
SOS 301.1	Pedology and Soil Physics	2	AGX 301.2	Extension Teaching, Learning Methods and Processes	2
CPP 302.1	Introduction to Entomology	2	CPS 303.2	Permanent Crops	2
AGE 301.1	Introduction to Farm Management	2	AGR 303.2	Agricultural Biochemistry	2
AGE 302.1	Introduction to Mathematical Economics for Agriculture	2	GES 300.2	Fundamentals of Entrepreneurship	2
AGR 301.1	Introduction to Remote Sensing	2	CPS 304.2	Crop Genetics and Breeding	2
AGE 303.1	Economic Analysis	2	CPP 305.2	Introduction to Phytopathogens and Weed science	2
AGR 302.1	Agricultural Research and Report Writing	2	AGF 301.2	Field Course	1
<b>TOTAL</b>		<b>20</b>			<b>19</b>
<b>Total units = 39</b>					

### 400 LEVEL (YEAR 4) SIWES

Course codes	Course Title	Units
GES 400	Entrepreneurship project	2
AGR 400	SIWES	30
<b>Total</b>		<b>32</b>
<b>Total units = 32</b>		

## 500 LEVEL COURSES

FIRST SEMESTER			SECOND SEMESTER		
Course Code	Course Title	Unit	Course Code	Course Title	Units
ANS 501.1	Monogastric Nutrition	2	ANS 508.2	Ruminant Nutrition	2
ANS 502.1	Applied Animal Breeding	2	ANS 509.2	Animal Products and Handling	2
ANS 503.1	Game Production and Utilization	2	ANS 510.2	Pasture and Range Management	2
ANS 504.1	Poultry, Swine and Rabbit Production	2	ANS 511.2	Reproductive Physiology and Artificial Insemination	2
ANS 505.1	Cattle, Sheep and Goat Production	2	AGE 508.2	Agri-Business Management and Finance	2
ANS 506.1	Nigerian Feeds and Feeding Stuff	2	ANS 500.2	Seminar	1
ANS 507.1	Animal Experimentation and Research Techniques	2	ANS 599.2	Research Project	6
AGR 502.1	Advances in Agriculture	2	ANS 512.2	Livestock Economics	2
AGX 501.1	Programme Development and Administration in Agricultural Extension	2			
<b>Total</b>		<b>18</b>			<b>19</b>

**Total units = 37**

### **CUMULATIVE UNITS**

**Animal Science option      180 units**

## COURSE SYNOPSIS FOR THE BACHELOR OF AGRICULTURE (ANIMAL SCIENCE) PROGRAMME

### -FACULTY WIDE COURSES-

#### **YEAR ONE (FIRST SEMESTER)**

#### **GES 100.1 Communication Skills in English (3 units)**

Study/library skills and methods: methods for taking and making notes; techniques for organizing study time; study methods and coping with examinations; Library skills and location of library materials. Listening skills: skills for effective listening comprehension. Basic skills in understanding lectures, dialogue or conversation. Identifying/understanding relevant Language Points in the discourse. Making notes/summaries of lectures. Decoding texts/information, vocabulary, *inference* and meaning, understanding grammar, usage, and style. Reading skills: Importance of Reading; reading as study technique. Kinds of reading: speed reading, skimming, scanning, intensive, extensive, reading for evaluation. Understanding text organization. Reading comprehension: SQ3R method. Reading and developing Vocabulary. Using grammar in Reading and Writing. The Hierarchy: Words and their classes, phrases/clauses. Level of the sentence: English as a SVOCA language. Vocabulary, using the dictionary and word relationships: polysemy, antonym, synonymy, homonyms, homophones, denotation/connotation, collocational patterns: affixation, suffixation, etc. Writing and Speaking Skills.

**FSB 101.1 General Biology I (3 units)**

Characteristics of life. Investigation in biology. The scientific substance of life; the unit of life (including methods of study); activities of cells; the control of metabolic activities, cell division. Basic principles of inheritance.

**CHM 130.1 General Chemistry I (3 units)**

Introduction to chemistry; matter, energy, measurement, significant figures; dimensional analysis. State and classification of matter, mixtures, compounds and elements. Atomic theory and molecular structure. Atoms, molecules, ions, periodic table, inorganic nomenclature. Equations, types of reactions, atomic and molecular weights, the mole. Empirical formulae, stoichiometry limiting reagent, molarity, titration. Energy, enthalpy, Hess's law, standard heat of formation, calorimetry. Size of atoms, patterns on periodic table. Chemical bonding, valence, electrons, ionic bonding and size of ions, covalent bonding, valence, electrons, covalent bonding and Lewis structures, resonances forms, bond energies, polarities. Hydrogen bonding in solids. Types of solution, concentrations, solution process, T and P effects, reactions in aqueous solutions, colligative properties

**PHY 101.1 Mechanics and Properties of Matter (3 units)**

Topics covered in this course will include the following: motion in one dimension in a plane, work and energy, conservation laws, oscillation, solid friction rotational kinematics and rotational dynamics, equilibrium of rigid bodies, gravitation, Galilean invariance, surface tension, elasticity and viscosity.

**MTH 120.1 Calculus (3 units)**

Function of a real variable, graphs, limits and idea of continuity. The derivative as limit of rate of change. Technique of differentiation. Extreme curve sketching, integration as an inverse of differentiation. Methods of integration. Definite integrals. Application to areas, volumes.

**GES102.1 Introduction to Logic and Philosophy (2 units)**

Symbolic logic, special symbols in symbolic logic; conjunction, negative, affirmation, disjunction, equivalence and conditional statement; the laws of thought; the method of deduction using rules of inference and bi-conditionals and quantification theory.

**MTH 110.1 Elementary Algebra and Sets (2 units)**

Algebra and Trigonometry; Real number system, Real sequences and series: sets and sub sets; unit intersection, complements, empty and universal sets, Venn diagram; one way correspondence between sets; quadratic functions and equations; solution of linear equation, simple properties of determinants; indices and binomial theorem; transformations e.g. Log transformation equation of the straight line and application to simple regression equation; permutations and combinations; circular measure, trigonometric functions of angles, addition and factor formulae; complex numbers; moments and couples; relative velocity; calculus; elementary function of simple real variables; graphs of simple functions; the differentiations of simple algebra; exponential and log functions, 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 102.1 Physics Practical (1 unit)**

Motion in one dimension in a plane; work and energy; conservation laws; oscillation; solid friction, rotational kinematics and rotational dynamics; equilibrium of rigid bodies; gravitation, Galilean invariance, surface tension, elasticity and viscosity. Emphasis is on

experimental verifications and quantitative measures of physical laws, treatment of measurement errors and graphical analysis. The experiments include studies of mechanical systems; static and rotational dynamics of rigid bodies, viscosity, elasticity, surface tension and hydrostatics

### **YEAR ONE (SECOND SEMESTER)**

#### **GES 103.2 Nigerian People and Culture (2 units)**

Concepts of culture; The study of Nigerian history and culture in the pre-colonial, colonial and contemporary times; the Nigerian's perception of his world; cultural areas of Nigeria and their characteristics; cultural contact and social change; ethnicity and integration; evolution of Nigeria as a political unit. Norms, values, moral obligations of citizens- environmental sanitation.

#### **FSB 102.2 General Biology II (3 units)**

Varieties of organisms. Principles of classification of organisms- systematics. A study of selected animals and plant groups. Analysis of flora and fauna of assigned habitats.

#### **CHM 131.2 General Chemistry II (3 units)**

Application of the principles of chemical and physical change to the study of the behaviour of matter and interaction between matters. Course content includes, the chemistry of the representative elements and their common compounds with emphasis on graduation of their properties. Brief chemistry of the first, series of transition elements, general principles of extraction of metals; introductory nuclear chemistry.

#### **CHM 132.2 Introduction to Principles of Organic Chemistry (3 units)**

A survey of carbon compounds including an overview of the common functional groups in aliphatic and benzenoid compounds. Introduction to reactants and reaction in organic chemistry.

#### **PHY 115.2 Heat, Light and Sound (2 units)**

Thermodynamics, calorimetry and heat transfer. Geometrical optics will include reflection of light at the plane and curved surfaces, and optical instruments. Properties and progression of sound waves. Sound waves propagating in air columns. Doppler effect.

#### **GES 101.2 Computer Appreciation and Application (2 units)**

Introduction to basic computer concepts. Historical development and classification of computers. Hardware, software and firm wave components of a computer. Computer programming languages, introduction to data bases, data capture techniques. Introduction to computer networks, computer operation. Introduction to Disk Operating System (DOS). Microsoft windows and windows applications. Introduction to data processing. An introduction to the internet.

#### **AGR 101.2 Introductory Statistics for Agriculture (2 units)**

Idea of statistics. Sequence of statistical investigation; Data collection methods; Sampling; Basic statistical notations; Methods of collation and presentation of data; Measures of location (mean, mode, median); quantities; Measures of dispersion (variance, standard deviation, standard error, coefficient of variation), skewness and kurtosis.

### **YEAR TWO (FIRST SEMESTER)**

#### **AGR 201.1 General Agriculture (2 units)**

Definition, scope and importance of agriculture; Agricultural ecological zones and distribution of farm; Introduction to Agricultural Economics and Extension; Introduction to Forestry and Wildlife Management; Introduction to Crop Science; Introduction to Soil

Science; Introduction to Farm Mechanization; Introduction to Animal Science; Introduction to Fisheries and Aquaculture; Post-harvest handling of agricultural products.

**CPS 201.1 Crop Anatomy, Taxonomy and Physiology (2 units)**

Parts of the crop cell, cell biology and cell types. Development of cells and tissues, comparative anatomy of major plant organs. Enzymes, photosynthesis, respiration and energy utilization; Transpiration; pollination and fertilization; seed dormancy and germination, mineral nutrition. Introduction to plant taxonomy, characteristics, distribution, economic importance and local examples of leguminosae, gramineae, compositae, dioscoreasae, rutaceasae, use of plant keys. Growth and development, structure and function of plant growth hormones. **Practical:** dormancy and seed germination studies; mineral nutrition experiment.

**AGE 201.1 Principles of Agricultural Economics (2 units)**

Economics of agriculture, efficiency of resource allocation; Agricultural resources; Production, processing, marketing/distribution and utilization of farm produce; Cost Price analysis, demand, supply.

**FWL 201.1 Introduction to Forestry and Wildlife Management (2 units)**

Nature and scope of forestry and forest. Structure, classification and importance of forest. Forest products; fauna and flora. Introduction to wildlife, importance of wildlife, forestry and wildlife interlinks.

**AGR 2CS.1 Community Service (1 unit)**

The course is designed to make the students appreciate the dignity of labour and to acquire a sense of service to the community. Students are to execute various special projects modeled in line with their field of study.

**AGX 201.1 Introduction to Agricultural Extension and Rural Sociology (2 units)**

The need for agricultural extension; agricultural extension in the world and in Nigeria; basic philosophy and principles of agricultural extension; basic concepts and principles of rural sociology to an understanding of rural situation; Importance of rural communities and institutions, social stratification, social processes and social changes in rural areas; Leadership in rural communities; opinion leadership; role and function of rural leaders; communication techniques and strategies of change; various agricultural extension teaching methods, aids and their use

**AGR 202.1 Introduction to Farm Power and Machinery (2 units)**

Aims and objectives of farm mechanization. Basic mechanics. Workshop tools. Principles of internal combustion engines and electric motor. Study of farm machinery used 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, feeding and watering equipment, milking and milk handling equipment, meat processing equipment). Water lifting and irrigation equipment. Survey instruments used on the farm. Operating principles, selection and maintenance procedure of farm machinery. Farm machinery costing and records. Workshop and building materials used on the farm. **Practical on farm machines and machinery.**

**SOS 201.1 Introduction to Soil Science (2 Credits)**

Soils -genesis and formation, factors of soil formation, weathering (physical, chemical and biological), physico-chemical properties of soils. Soil moisture, air, and temperature, soil classification and survey, scope of soil science. Soil colloids, soil reactions. Soil organic



matter and soil organisms, soil and water conservation, nutrient requirements and mineral nutrition of plants, introduction to fertilizers. **Practical:** Description of soil profile pit; particle size analysis.

**AGR 203.1 Introduction to Agricultural Microbiology (2 units)**

Importance of microbiology in agriculture; Introduction to microbial world; Broad groups of microflora and micro-fauna; Classification of microorganisms and other soil organisms (bacteria, fungi, viruses, nematodes, protozoans, earthworms, and other annelids) Morphology, growth and reproduction of bacteria, yeast, moulds, viruses; Importance of soil microbiology in agriculture, classification of soil organisms; soil organic matter decomposition; microbial transformation of phosphorus, iron, nitrogen and sulphur; biochemistry and microbiology of nitrification; nitrogen fixation by legumes and non legumes and its significance. Microbial release of nutrients in soils and plant nutrition. Influence of soil factors on population and activities of microbes; role of micro-organisms in soil fertility. Transformation of hydrocarbons and pesticides. Rhizosphere and its importance. **Practical:** use of microscopes; Cultivation of micro-organisms, preparation of culture media, isolation of bacteria and fungi; Preparation of slides for microscopic examination and identification; safety precautions in microbiology laboratory.

**AGR 204.1 Computer Applications to Agriculture (2 units)**

Importance of computers in Agriculture; ICT applications in Agriculture; Design of agricultural research, data collection techniques (or instruments). Use of spreadsheet; use of graphics for agricultural communication; use of Power point for presentation. Data management; Use of statistical packages

**YEAR TWO (SECOND SEMESTER)**

**AGF 201.2 Farm Practice (2 units)**

<b>Fisheries:</b>	<b>Animal Science:</b>	<b>Crop/Soil Science:</b>	<b>Forestry/Wildlife:</b>
Fish culture; Hatchery production; Fish feed production	Livestock production; Silage making	Mushroom production; Composting Budding/Grafting; Soil Survey	Bee keeping; Snail production Game management and utilization

**AGR 205.2 Agro-climatology and Meteorology (2 units)**

The principles, aims and scope of climatology and biogeography. The elements and control of climate and weather and the dynamics of the earth atmosphere. Radiation and heating of the atmospheric systems, atmospheric moisture, the dynamics of pressure and wind systems. Condensation and precipitation processes. Seasonal variation in temperature, day length, radiation, rainfall and evapotranspiration. Equipment and maintenance of standard meteorological stations. The climate; relation between agriculture and climate with reference to crops, livestock, irrigation, pests and diseases. Environment and its significance to agriculture, influence of moisture, humidity temperature, radiation and wind in crop growth and production; wind breaks and shelter belts; micro-changes within crop stands and their effects on crops, selection of crops in relation to environmental factors. **Practical:** measurements of net radiation and micro-climatic parameter in crop stands, study of agro meteorological data; field trips to meteorological stations.

**AGR 206.2 Principles of Food Science and Technology (2 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 and natural sources; Composition and structures of Nigerian/West African food; factors contributing to texture, colour, aroma and flavour of food; Cost; Traditional and ethnic influences of food preparation and consumption pattern; Elementary Biotechnology. **Practicals**

#### **AGR 207.2 Introduction to Home Economics (2 units)**

Philosophy, scope, objectives and historical development of home economics (Food and Nutrition, Home management, Clothing and Textile); Examination of basic human needs with respect to food, clothing, shelter and health. Programme approaches in home economics which help to meet these needs. Preparation for careers in a variety of occupation. Roles of women in agriculture. **Practicals**

#### **CPS 202.2 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 uptake, weeds, weed control, and their effects on crop production, pests and diseases. Basic Mendelian genetics. Principles of crop production, harvesting, processing and storage. **Practical:** test of seed viability, germination of seeds in laboratory and in field; tillage practices; identification of fertilizers; field trip to different cropping systems.

#### **ANS 201.2: Anatomy and Physiology of Farm Animals (2 units)**

Introduction and glossary of some anatomical and physiological terms. External features of farm animals including their functions and usefulness. Skeletal, digestive and other systems in ruminants and non-ruminants. Nature of farm animals (body fluids; homeostasis; temperature regulation). Blood cells and their various functions. Classes and roles of farm animals. Nutrition and digestion in non-ruminants and ruminants. Endocrinology and its functions. Egg formation and production in poultry. Lactation and milk letdown in farm animals.

#### **ANS 202.2: Principles of Animal Production (2 units)**

Animal production and its development. The livestock industry – problems and prospects. Introduction to the factors of production in animal husbandry. Descriptions of different breeds of cattle, sheep and goats; pigs, poultry and rabbits, etc. Feeding habits of farm animals. Principles of breeding and livestock judging. General principles of management for different classes of farm animals (parent stock, breeders, weaners, etc). Livestock husbandry operation and production systems for different livestock – cattle, sheep and goats, poultry, swine, and rabbit. The impacts of the environment on livestock production.

#### **FSH 201.2 Introduction to Fisheries (2 units)**

Introduction, definitions, nature and scope of fisheries; Fish products and their importance. External morphological features of bony and cartilaginous fishes.

### **YEAR THREE (FIRST SEMESTER)**

#### **AGR 301.1 Introduction to Remote Sensing (2 units)**

Introduction; Physics of EMR (Energy sources, radiation principles); characteristics of Remote Sensing sensors and satellites; Reflectance properties of earth surface and atmospheric features (energy interactions, spectral reflectance curve, spectral reflectance of soil, water and vegetation); Remote sensing, data analysis (visual image interpretation, digital image processing); Integration of remote sensing with GPS and GIS; Reference field data; successful applications. **Practicals**

**AGR 302.1: Agricultural Research and Report Writing (2 units)**

Purpose and type of research; research proposal; problem identification and hypothesis formulation; methods of primary and secondary data collection; data organization and presentation; scientific writing; formats for project and thesis presentation. Review of basic statistics: frequency distribution, measures of location and dispersion; Principles of field experimentation.

**AGE 301.1 Introduction to Farm Management (2 units)**

The nature of farm management and production economics. Theory of agricultural production and revenue concepts; Elements of time, risk, and uncertainty in agricultural production. Break-even, gross net margin, and budgetary analysis.

**AGE 302.1 Introduction to Mathematical Economics for Agriculture (2 units)**

Simple production function. The nature of Mathematics for Economists, Terminologies, Concepts and Tools in Mathematics for Economists; variables, constants, parameters and coefficients. Graphs, slopes and intercepts. Supply and Demand analysis. Derivatives and rules of differentiations. Income and determination models IS-LM analysis. Marginal concepts in Economics. Integration and logarithms.

**AGE 303.1 Economic Analysis (2 units)**

Nature and scope of macro-economics, circular flow of national income and product. Determinants of aggregates. National income, expenditure, investments, interest rates, savings and employments. Demand and supply of money and monetary policies. Macro-economic equilibrium. Nature, causes and remedies of inflation. International trade

**ANS 301.1: Animal Health and Diseases (2 units)**

The economic impacts of diseases on livestock and poultry production; environmental factors in relation to major livestock and poultry diseases. Helminth and protozoal parasites of livestock and poultry. Bacterial, fungal and viral infections of farm animals; The classification, diagnosis, epidemiology, prevention, treatment and control of different livestock and poultry diseases. Notifiable diseases. Principles of immunity and disease resistance and their practical applications. The science, handling and management of sick animals; Drug administration, vaccination programmes and schedules. Ante- and post-mortem examinations in the diagnosis of diseases; Applied entomology and elements of chemical and biological control of disease vectors in livestock and poultry; Applied parasitology in livestock and poultry, and their socio-economic effects.

**ANS 302.1: Non-Ruminant Animal Production (2 units)**

Non-ruminant animal industry and its contribution to national growth and development. Importance and distribution of non-ruminant animals. Breeds and production systems. Nature of non-ruminant farm animals – poultry, swine, rabbits, and selected micro-livestock of socio-economic importance. Management and husbandry practices. Animal health and hygiene. Non-ruminant products and by-products, and marketing.

**CPS 301.1 Arable Crop Production (2 units)**

Origin, distribution, soil and climatic requirements of cereals, grain legumes, root and tuber crops, fibre crops, sugar crops and other important arable crops in Nigeria. Improved varieties, production practices, harvesting, utilization, processing, storage and economic aspects of the selected arable crops. **Practical:** study of various production practices of some selected crops from sowing to harvesting in small plots.

### **CPP 302.1 Introduction to Entomology (2 units)**

Insect morphology, structure and function; life cycles and metamorphosis, semio-chemicals – kairomones, allomones, pheromones; insects classification and identification; orders of insects of economic importance with special emphasis on insects found in Nigeria. **Practical:** insects morphology, taxonomy and identification; killing and preservation of insects; preparation for insects parts, fixing, staining and drawing.

### **SOS 301.1 Pedology and Soil Physics (2 units)**

Soils, its origin, and formation. Soil morphological characteristics, soil components, rock and mineral weathering. Profile pit, soil survey, soil mapping, soil classification, properties and management of Nigerian soils. Definition of soil physics, physical properties of soils, mechanical analysis of soils, textural profile, soil structure, bulk density, porosity, effects of applied stress on soil, soil compaction and compression, soil air and aeration, soil water content, properties and forces acting on soil water, management of soil physical conditions, soil tith and tillage, soil physics and agriculture **Practical:** laboratory and field determinations of soil physical properties, soil profile pit description.

## **YEAR THREE (SECOND SEMESTER)**

### **ANS 303.2: Ruminant Animal Production (2 units)**

Ruminant animal industry and its contribution to the growth and development of an economy. Breeds and production systems. Housing, feeding, breeding and reproduction in ruminants. Management of breeding stock; growing of young ruminants including housing and feeding of cattle, sheep and goats. Ruminant health and hygiene. Ruminant products and by-products, and marketing.

### **ANS 304.2: Animal Genetics and Breeding (2 units)**

History of genetics and breeding; Chromosomes structure, number and variation; Gene and genotype; Genetic code; Mendelism; fundamental principles of inheritance; Quantitative and qualitative characters and their inheritance. Different types of gene action, values and means, repeatability, heritability, etc. Animal variation and selection principles; Breeding and environmental effects; Inbreeding, pure line breeding, cross breeding and other breeding methods. Selection in breeding, and genetic engineering in contemporary livestock production systems.

### **AGF 301.2 Field Course (1unit)**

Study visit to areas, institutions, industries, etc, relevant to students' area of specialization. Students are required to write a report on the trip.

### **AGR 303.2 Agricultural Biochemistry (2 units)**

Biochemistry in agriculture, food and nutrition; Proteins, vitamins, minerals in farm produce-eggs, meat, vegetable, etc. food processing and natural products; Metabolism of carbohydrates, proteins and lipids (metabolic pathways).

### **CPS 303.2 Permanent Crops (2 units)**

Origin, distribution, soil and climatic requirements of some important permanent and perennial crops such as cocoa, oil palm, rubber, coffee, tea, coconut, sugarcane, kola, cashew, mango, bananas, plantain, citrus, guava, gum Arabic, etc. Production practices, improvement, harvesting, utilization, processing, storage and economic aspects of some selected permanent and perennial crops. **Practical:** visit to different nurseries and plantations to observe practices followed in the propagation of permanent crops; propagation of few permanent crops in the University farm.

**CPS 304.2 Crop Genetics and Breeding (2 units)**

Cell structure and components, chromosomes, structure, number and variations; linkage and cross-over, mutation and genes in population and transmission of biological variations, theory of evolution, fundamental principles of inheritance. Mendelian genetics, introduction to population and quantitative genetics. Objectives and general principles of crop breeding including their application to self-pollinated and vegetatively propagated crops. General and special methods of selection, in-breeders and out-breeders; compatibility; male sterility. Heterosis, polyploidy in crop breeding; mutation breeding. Breeding methods for crop improvement, development, multiplication and distribution of improved varieties.

**CPP 305.2 Introduction to Phytopathogens and Weed Science (2 units)**

The major fungi, bacteria and viruses; nematodes, weeds and other disease organisms of crops and stored products. Study of the effects of bacteria, fungi, viruses and nematodes – their biology and ecology; morphology and taxonomy of weeds; modes of dispersal and germination; characteristics, classification and biology of weed. Taxonomy, morphology and life history of plant parasitic nematodes. **Practical:** identification of common weeds in the area; field study in the University farm. Microscopic studies of nematodes; techniques of processing soil and plant material by means of sifting and gravity and Berman-funnel techniques

**SOS 302.2 Soil Chemistry I (2 units)**

The soil chemical composition, soil colloids, saline, alkaline, and acid soil properties, ion exchange, cation exchange capacity, base saturation, chelating agents and soil organic matter. Laboratory exercises. **Practical:** Determination of soil carbonates, organic matter content, extraction, fractionation, and characterization. Exchangeable Ca, Mg, K, Na, and ESP determination, specific anion reactions, soil pH measurement, electrical conductivity measurement, exchangeable  $\text{NO}_3^-$  and  $\text{NH}_4^+$  determination.

**AGX 301.2 Extension Teaching, Learning Methods and Processes (2 unit)**

The nature and elements of communication; The meaning of the concepts of teaching, learning and motivation; steps and principles of teaching and learning; extension teaching methods; preparation and use of teaching materials and aids

**GES 300.2: Fundamentals of Entrepreneurship (2 units)**

Concept, history and development of entrepreneurship; The entrepreneur qualities and characteristics; The Entrepreneur and Business environment; identifying business opportunities; starting and developing new business ventures; legal forms of business ownership and registration; Types of business ownership; Feasibility studies; Role of small and Medium Scale Enterprise (SME) in the economy; Role of government on Entrepreneurship; Business location and layout; Accounting for SME; Financing SME; Managing of SME; Marketing in SME; Risk Management of SME; Success and Failure factors of SME; Prospects and Challenges of Entrepreneurship and Intrapreneurship; Ethical behaviour in small business.

**YEAR FOUR**

**GES 400 Entrepreneurship project (2 units)**

**AGR 400 (SIWES): Report writing (30 units)**

**YEAR FIVE (FIRST SEMESTER)**

**ANS 501.1: Monogastric Nutrition (2 units)**

Brief history of nutrition as a science. Principles of monogastric nutrition, elements of human nutritional dietary allowances, food surveys and balance sheets; Feeding standards; Nutrient requirements for the various classes of animals; Feed additives and probiotics. Water metabolism in nutrition. Feed evaluation and composition. Ration formulation; Large scale feed mixing and manufacture. The feed industry.

**ANS 502.1: Applied Animal Breeding (2 units)**

Determination of genetic parameters in farm animals; Statistical tools for studying inheritance, genetic variation and co-variance; Heritability and repeatability; Gene mutation and lethal genes; Improvement of farm animals by application of genetic principles; Breeding systems; Selection methods; Sex determination; Foundation stock and its determination in livestock and poultry production; Advanced techniques in animal breeding – molecular biology, animal genomics, biotechnology, gene cloning, etc. The contribution of animal breeding to the growth and development of animal agriculture.

**ANS 503.1: Game Production and Utilization (2 units)**

Game production; Traditional uses of game and game products; Problems of game cropping; harvesting strategies and hunting techniques; “bush meat” processing methods; Growth behaviour and reproduction of game animals in captivity; Habits and food preferences; Game ranching and domestication. Design of paddocks, game animal houses and cages; Husbandry techniques and health care in captivity.

**ANS 504.1: Poultry, Swine and Rabbit Production (2 units)**

Importance of poultry, swine and rabbits; Production, management and husbandry practices, feeding, housing, etc. Sexing in chickens and other techniques peculiar to poultry. Specific techniques relevant to swine and rabbits. Poultry, swine and rabbit health and hygiene. Products processing, distribution, marketing, and utilization.

**ANS 505.1: Cattle, Sheep and Goat Production (2 units)**

Description and importance of meat and milk types; Milking and ruminant physiology; Husbandry practices including feeding and housing; Health and hygiene. Product processing, distribution, marketing, and utilization.

**ANS 506.1: Nigerian Feeds and Feeding Stuff (2 units)**

The Nigerian feed industry: past, present and future challenges and prospects. Feeds and feedstuffs in animal (non-ruminant and ruminant) nutrition. Grains, pasture and fodder, concentrates, sources of feeds and feeding stuff and their nutritional value. Identification and feed value of, locally, available feed resources. The place of animal by-products, and crop residues and by-products as feed resources in animal agriculture.

**ANS 507.1: Animal Experimentation and Research Techniques (2 units)**

Overview of animal experimentation and instrumentation, including precautions to be taken while, planning, developing and executing animal experiments. Techniques and procedures for experiments in the Animal Sciences: animal breeding and genetics; Animal nutrition and biochemistry including grazing trials, studies in pasture and range management; Animal physiology including studies in bioclimatology; Animal products processing and storage; Animal health and diseases diagnostic studies and post-mortem examination. Experimental

designs and data analysis using basic statistical tools such as frequency distribution, variation, standard error and deviation, variance, *t*-Tests, *F*-Test, Chi-Squared test, measures of location and dispersion, regression and correlation analyses as well as the application of computer-aided statistical packages for data analysis in Animal Science research. Presentation (graphical, pictorial, tabular, etc) and interpretation of results from animal experiments. Project report write-up and scientific communication in the Animal Sciences.

**AGR 502.1: Advances in Agriculture (2 units)**

Historical background, Principles (principles of health, fairness, ecology, care) and practice of organic agriculture; Organic crop production, pest and disease management, predator control for sustainable and organic livestock production. Organic forestry, climate change and carbon sequestration, pasture management. Enterprise budgets and production costs for organic production, organic marketing resources and green markets; Hydroponic Agriculture: Preparation of nutrient solutions, media and methods (water culture, sub irrigation, slop and drip). Benefits and constraints; Tissue Culture and Cloning Technology: Introduction, laboratory requirements, effects of hormone balance on explants growth and morphogenesis, callus formation and multiplication, establishment of suspension cultures and anther culture. Applications and relevance to Agriculture. Criticisms and laws (Bioethics and Biopyracy). Genetically modified organisms (GMOs) (Health issues, influence on biodiversity, benefits and demerits); organic farm certification and export markets.

**YEAR FIVE (SECOND SEMESTER)**

**ANS 500.2: Seminar (1 unit)**

Each final year student is expected to deliver seminar on a chosen topic.

**ANS 508.2: Ruminant Nutrition (2 units)**

Rumen microbiology and ecology; Physiology of rumen action; Metabolic processes and pathways; Non-protein nitrogen utilization; Determination of digestion coefficients; Balance trials; Systems for energy evaluation; Scheme for protein values; Water metabolism in ruminant nutrition; Water and other nutrient requirements and their inter-relationship in ruminant nutrition; Feed additives and probiotics, feed/forage evaluation; Ration formulation, metabolic and nutritional disorders in ruminants.

**ANS 509.2: Animal Products and Handling (2 units)**

Preparation of farm animals for slaughter, evisceration and dressing percentages; Care of carcass and its cuts. Processing and care of hides, skin and wool. Meat and meat products processing, cooking flavour and storage. Milk and milk products hygiene, microbiology, processing and cooking flavour. Post-harvest physiology of animal products; Egg quality, sorting and grading; Chemistry and nutritive value of meat, milk and eggs. Products such as butter, cheese, whey, bacon, sausage, ham, pork, poultry products, and so on as well as their processing and storage should be discussed. Food additives; flavours and aroma. Marketing and distribution of animal products.

**ANS 510.2: Pasture and Range Management (2 units)**

Adaptation and botany of indigenous and exotic pastures and forage plants. Characteristics of grasses, legumes and shrubs. Establishment, production and management of pasture and range plants; Utilization and maintenance in permanent and temporary pastures. Range management and paddock designs; Grazing systems; Forage conservation (hay, silage, etc), dry season feeds.

**ANS 511.2: Reproductive Physiology and Artificial Insemination (2 units)**

Reproductive physiology of farm animals – cattle, sheep and goats, poultry, swine, and so on. The reproductive process – mating, gestation and parturition. The role and influence of hormones in animal reproduction. Artificial insemination – importance, processes, techniques and challenges.

**ANS 512.2: 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.

**ANS 599.2: Research Project (6 units)**

Each final year student is expected to take up a project topic, propose his research and present findings of the research work. This should be under the supervision of a lecturer(s) in the Department. Hard copies of the project shall then be submitted to the Department.



## ACADEMIC STAFF

S/N	Name	Qualification	Specialization	Designation
1	Prof B.M. Oruwari	BSc. MSc. Animal Science. (University of Nebraska, Lincoln)), PhD. Animal Science (Virginia Poly Ins. & State Univ. Blackburg))	Monogastric Nutrition & Nutritional Physiology	Professor (Adjunct)
2	Prof S.N Wekhe	DVM (UNN) PGD, PhD, Cytogenetics (RSUST)	Animal Health	Professor (Adjunct)
3.	Prof A. Monsi	BSc(UNN); MSc; PhD(GOLD STATE UNIV, USA)	Reproductive Physiology	Professor (Adjunct)
4.	Dr. (Mrs) L.A.F. Akinola	B.Sc., MSc., PhD, Animal Science (RSUST)	Monogastric Nutrition & Production	Senior Lecturer & Ag. Head of Department
5	Dr. (Mrs) M.O. Ironkwe	B.Sc Agric Education (Animal Science option) (RSUST), MSc.; PhD. Animal Science (RSUST)	Monogastric Nutrition & Production	Reader
6	Dr. Ibisime Etela	BSc. Animal Science MSc. Animal Science (RSUST); PhD. Animal Science (Benin)	Ruminant Nutrition & Production	Reader
7.	Dr (Mrs) F.O Ajayi	B. Agric.; MSc, Animal Production (UNILORIN) PhD. Animal Breeding and Genetics (RSUST)	Animal Breeding & Genetics	Senior Lecturer
8	Dr. O.A. Ekine	HND. Animal Health & Production (Vom), PGD.; MSc. Animal Sc. PhD, Animal Science (RSUST)	Animal Production & Nutritional Physiology	Senior Lecturer
9	Dr. A.C. Elenwo	DVM (UNN). MSc, PhD, Parasitology & Environmental Biology (UNIPOINT)	Animal Health & Diseases, and Public Health	Senior Lecturer
10	Dr. (Mrs) A.I. Ukanwoko	B Agric.; MSc. ;PhD, Animal Science (MOUA)	Dairy Science	Senior Lecturer
11	Dr. B.O. Agaviezor	B.Tech, (Animal Production & Health) (FUTA), M. Agric. ;PhD. Animal Breeding & Genetics (UNAAB)	Animal Breeding & Genetics & Animal Molecular Biology	Senior Lecturer
12	Dr. S.G. Kaegon	MVSc, Veterinary Medicine (KIEV, Ukraine)	Veterinary Medicine & Neurophysiology of Small Ruminants	Lecturer I
13	Dr. A.A. Lamidi	NCE (Oyo) B. Agric. Animal Science (UNAAB). M. Agric. Animal Production & Health, PhD. Ruminant	Pasture & Ruminant Production	Lecturer I

		Production. (UNAAB)		
14	Dr. O.S. George	BSc. Animal Science (RSUST) MSc. Animal Science (RSUST) PhD. Animal Science (RSUST)	Micro-Livestock Nutrition & Production	Lecturer I
15	Dr. J.N. Ingweye	B Agric. Animal Science (UNICAL) MSc. Animal Nutrition & Biochemistry. (UNICAL). PhD. Animal Production & Nutrition (UNICAL)	Micro-Livestock Nutrition and Production	Lecturer I
16	Mr. P.K. Ajuogu	OND, Animal Production & Health Tech (Micheal Okpara); HND, Animal Health (Vom, Plateau); PGD. Animal Science (RSUST) MSc, Animal Science (RSUST)	Reproductive Physiology	Lecturer II
17	Mr. F.I. Ologbose	BSc, Animal Science; MSc, Animal Breeding & Genetics	Animal Breeding & Genetics	Assistant Lecturer
18.	Mr N.H. Benneth	B.Agric. (Animal Science) UNIPORT	Animal Breeding & Genetics	Graduate Assistant

#### TECHNICAL/LABORATORY STAFF

S/N	Name	Qualification	Responsibility	Designation
1	Mr. Rapheal Ikpokini	WASC	Assisting the Technologist in Lab. Work	Senior Lab. Assistant
2	Mr. Second Wali	WASC	Assisting the Technologist in Lab. Work	Lab. Assistant
3	*Mr. Uchechukwu R. Ezinwo	WASC	Assisting the Technologist in Lab. Work	Lab. Assistant
4	*Mrs Esther Foby	WASC	Assisting the Technologist in Lab. Work	Lab. Assistant (Currently helping in the Departmental Library)
5	*Mrs Juliet Ogbuji	WASC	Assisting the Technologist in Lab. Work	Lab. Assistant
6	Mrs Beatrice N. Nwadibia	WASC	Cleaning of laboratory equipment	Head Lab Attendant

\*Support staff from the Faculty

### ADMINISTRATIVE STAFF

s/n	Name	Qualification	Responsibility	Designation
1	Ms. T.N. Enyindah	BSc, Public Administration	Administrative work	Assistant Registrar
2	Gladys Adoki	B.Sc Ed (Economics)	Administrative work	Administrative Assistant
3	Mrs. Anty N Anokari	Diploma in Computer Operation	Typing & secretarial assistance work	Computer Operator I
4	Mrs Love Obindah	FSLC	Office cleaning work/Messenger	Messenger/Cleaner

### FARM STAFF (for the various units)

S/N	Name	Qualification
1	Ms. Basseyy-Anwan Brown	B. Agric, Animal Science (Benin)
2	Nwidag, L. F.	B.sc Agric. Econs & Extension
2	Mr. Simon Igilla	Diploma, General Agriculture
3	Onyije, Ngozi	FSLC, Head, Farm Attendant
4	Woke, Gloria	FSLC
5	Nwangborogwu Okwudili	FSLC
6	Nwobuele, Endurance	FSLC
7	Ekuhule, Mercy	FSLC

Plus other support staff from the Faculty Farm

### EXAMINATION REGULATIONS

1. Examiners should ensure that question papers are prepared under conditions of maximum security and are ready in time. For all examinations, well-packaged question papers must be accompanied by a list of supervisors/Invigilators and the relevant forms. The examiners should ensure that the question papers, adequately packaged and sealed, are submitted to the supervisor at least one hour before the start of the examination.

2 Subject only to administrative supervision by the office of the Provost/Dean/Director, the conduct of course examinations shall be the responsibility of Head of Departments. The Head of Department should ensure that examination questions are moderated.

3 For each examination, there should be a supervisor and invigilator in a ratio of at least one invigilator to 50 students, including both male and female invigilators.

4 It is the responsibility of each department to appoint supervisors and invigilators. The list should be forwarded to the head of the teaching department not later than one week before the commencement of semester examinations. Students should be seated according to their Departments and they should be invigilated by academic staff from their departments.

5 Supervisors should be appointed from the rank of Senior Lecturers and above and invigilators should be other members of academic staff. Part-time teachers, where necessary are also regarded as Internal Examiners.

6 Supervisors must identify and check students into the examination hall using the authenticated register of students for that course or the students' identification card. The students must show the invigilators his/her registration/identity card on entry to every examination. He/she must leave these on the desk throughout the examination for easy inspection by the invigilator.

7 All examination scripts used by the students must be endorsed by the supervisor at least 30 minutes after the commencement of the examination.

8 The invigilator must ensure that no student removes from the examination venue any paper or examination material except the printed question paper where it is allowed. Answer booklets are the property of the university and must not be in the possession of students.

9 During examinations security must be stepped up, especially around examination centers, to ensure the safety of staff and students. The security department is to ensure that no person not involved in the examinations is allowed to loiter around the hall.

10 No unregistered student is allowed to take any examination.

11 A student should be in the examination room at least 30 minutes before the start of the examination. A student who is up to 30 minutes late shall be admitted, but shall not be given any extra time. A student who arrives more than 30 minutes after the start of the examination shall not be admitted. A student may be allowed to leave the examination room temporarily before the end of the examination, but must NOT:

- a. Do so during the first hour of the examination except in cases of emergency like illness;
- b. Do so unaccompanied OR with his scripts.

12 All students must write their name and matriculation number and sign the attendance register within the first hour of the examination.

13 All students must write their number (not name) at the appropriate places on the cover and pages of the answer booklet.

14 No student shall keep any handbag, briefcase, books, notebooks, or paper near him/her during the examination.

15 No student shall directly or indirectly give or accept any assistance during the examination, including lending, borrowing any materials.

16 No student shall continue when, at the end of the allotted time, the invigilators orders all students to stop writing

17 A student shall avoid noise making and/or communicating with any other student or with any other person, except with the Invigilator if necessary.

18.18 Students who disrupt an examination at any venue shall have their 'examination cancelled', and they will be required to re-register for the course.

19 At the end of the examination, the supervisor/invigilator should ensure that the scripts are checked, properly packaged, and returned along with relevant forms to the chief examiner.

20 A member of staff who fails to turn up for invigilation shall lose a monthly examination allowance for each offence and be queried for this act the first time. If this is repeated during any other period of examination the member of staff will lose the monthly allowance for each offence, and will in addition lose the next promotion and be warned in writing by the Vice-Chancellor.

21 The Provost/Dean is responsible for reporting to the Vice-Chancellor any defaulting invigilator.

22 These examination regulations apply to any student studying for the award of University of Port Harcourt degrees, diplomas and certificates, and where appropriate to all staff.

## **RESULTS**

1 Results should be returned in quadruplicate distributed as follows: a copy to the course lecturer, a copy to the Head of Department, two copies to the Dean, who signs and returns and return one copy of the mark sheet to the Department.

2 Summary of results for all courses taken in the Department with the date of departmental meeting reflected on them shall be presented to the Extra-Ordinary meeting of the Senate five weeks following the conclusion of the semester and degree examinations. Lecturers who fail to meet the deadline shall face strict sanctions of salary suspension. The Dean shall report such lecturer to the Vice-Chancellor for the necessary sanctions to be applied.

3 A moderator of an examination must have access to the script and the course mark sheet must show an itemized distribution of the score. All results must be published online after the Senate has approved them.

19.4 Computation of result should be restricted to academic staff.

19.5 Examiners should ensure the security of scripts, and the scripts should normally be returned to the Head of Department along with the marking scheme during the presentation of the result at the departmental level. Scripts are not to be disposed off until after five years.

19.6 Faculty Officers, Head of Departments, and Provost/Deans/Directors should ensure that mark sheets and results are treated as high security documents. A copy of the mark sheets of all the courses should be sent to the Registrar for preparation of students' transcripts.

## **PROCEDURE FOR CHANGE OF RESULT**

1 Results may be changed as a result of a review or as the result of the discovery of an error or fraudulent change in the recording of either semester or degree results.

2 No result/grade approved by the Faculty Board shall be changed without reference to the Faculty Board.

3 No result/grade approved by the Senate shall be changed without reference to the senate.

4 Any application for a change of grade must be made in writing appropriately routed, giving clearly defined reasons for the change.

5 Where the change is suspected to be the result of fraud, it should be investigated at the appropriate level and a recommendation made to Senate.

6 The application must not be personal, i.e. an appeal by someone for the review of someone else's script shall not be entertained.

7 No group appeal by candidates involved in the examination in question, (or any other group of persons) shall be entertained.

## **PROCEDURE FOR INVESTIGATION OF EXAMINATION MALPRACTICES**

1 Definition Examination Malpractice.

Examination malpractice shall be defined as all forms of cheating which directly or indirectly falsify the ability of the student. These shall include cheating within an examination hall, cheating outside an examination hall, and any involvement in all illegal examination-related offences. Forms of cheating are categorized as follows;

### **A. Cheating within an examination hall/room**

1. Copying from one another/exchanging questions/answer sheets.
2. Bringing in prepared answers, copying from textbooks, notebooks, laboratory specimens or any other instructional aids smuggled into the examination hall.
3. Collaboration with an invigilator/lecturer where it involves the lecturer providing written/oral answers to a student in the examination hall.
4. Oral/written communication between/amongst students.
5. Bringing in prepared answers written on any part of the body.
6. Receiving information, whether written or oral, from any person(s) outside an examination hall.
7. Refusal to stop writing at the end of the examination.
8. Impersonation
9. Non-submission of answer scripts at the end of an examination.
10. Illegal removal of an answer script from an examination hall.
11. Copying laboratory material or field work reports and/or term paper or others.
12. Manipulation of registration forms in order to sit for an examination for which the student is not qualified.
13. Sitting for an examination which the student is not qualified as a result of manipulation of registration.

14. Colluding with a medical doctor in order to obtain an excused duty/medical certificates on grounds of feigned illness.

### **B. Cheating inside the examination hall/room**

1. Plagiarism is a form of examination malpractice and should be investigated and punished. Plagiarism is the use of another person's work without appropriate acknowledgement both in the text and in the references at the end.
2. Colluding with a member to obtain or on his own initiative obtaining set questions or answers beforehand.
3. Colluding with a member of staff to modify or on his/her own initiative modifying students' score cards, answers scripts and/or mark sheets.
4. Colluding with a member of staff in order to submit a new, prepared answer scripts as a substitute for the original script after the examination.
5. Writing of projects, laboratory and/or field reports on behalf of a student by a member of staff.
6. Soliciting for help after an extermination
7. Secretly breaking into a staff office or departmental office in order to obtain question papers, answer scripts or mark sheets, or substituting a fresh answer script for the original script.
8. Refusing to co-operate with the faculty Investigating Panel or the Senate Committee on Examinations Malpractices in the investigation of alleged examination malpractices.

### **C. Related offences**

1. Producing a fake medical certificate
2. Assault and intimidation of the invigilator within or outside the examination hall.
3. Attempting to destroy and/or destroying evidence of examination malpractice.
4. Intimidation/threats to extort sex/money/other favours from students by a member of staff in exchange for grades.

#### **Investigation of Examination Malpractice**

- 1 Any unauthorized material found in the possession of a student shall be seized by the invigilator after the student has signed it, acknowledging that it was retrieved from him/her. Refusal to sign is tantamount to acceptance of guilt.
- 2 Where the student refuses to sign, the invigilator should make a clear statement on the answer sheet.
- 3 The student shall, however, not be prevented from finishing the examination.

- 4 The invigilator shall, immediately after the examination, submit a written report to the Head of Department conducting the examination.
  - 5 The report shall include all necessary information, following the format given in Appendix 4.
  - 6 The department conducting the examination shall set up a committee/panel to examine the merit of the case.
  - 7 If the Departmental Board feels that a prima facie case has been established, the cases shall be presented to the Faculty Board which shall appoint a panel to investigate the case and report back to the Faculty.
  - 8 If the faculty is satisfied that a case has been established, the case should be reported to the Senate Committee on Examination Malpractices (SCEM).
9. The Senate Committee on Examination Malpractices (SCEM) shall investigate the case and report to Senate for decision. The investigation of examination malpractices should take as much time as it takes to dispose off the matter, but it must not go beyond the end of the semester following the one in which the offence was allegedly committed. Meanwhile, the student allegedly involved in an examination malpractice shall be allowed to register for courses and take examinations in them. But results of the courses shall not be released by the parent or any other department until investigation has been completed and his/her innocence established by Senate.

#### **PUNISHMENT FOR EXAMINATION MALPRACTICE**

1 (a) A student found guilty of examination malpractice in section **A**, has the result in the course cancelled and suspended for one semester for a first offence. Suspension for one session is the punishment for a second offence.

(b) A student found guilty of any form of examination malpractice in section **B**, has the result in the course cancelled and is suspended for the first offence. Expulsion from the university is the punishment for a second offence.

(c) A student found guilty of any offence in section **C**, is expelled from the University.

(d) Member of staff involved in aiding and abetting students in then examination malpractice should be made to appear before an investigation panel. If the member of the staff is found guilty, the report should be sent to the appropriate Disciplinary Committee.

2 This decision should be communicated to all students and their sponsors before the commencement of each session. The information should be pasted on all notice boards throughout the university and should also be contained in each faculty prospectus so as to give it the widest possible publicity.

3 The decision should take effect immediately after its publication.

4 Member of staff involved in aiding and abetting students in then examination malpractice should be made to appear before an investigation panel. If the member of the staff is found guilty, the report should be sent to the appropriate Disciplinary Committee.

5 For students involved in an examination malpractice and proven guilty, Senate should take the ultimate decision, while for staff, the appropriate Disciplinary Committee (as prescribed in the conditions of service) should forward its recommendation to Council.



## **SECRET SOCIETIES/CULT**

1 Secret societies/cults are anti-social and are banned by the University. Any student proved to belong to a secret society will be expelled.

## APPENDIX 1

List of students registered for course

Course number:..... Session.....

Teaching Department .....Course title.....

Teaching faculty..... Parent department.....

Parent faculty.....

	For use during registration				For use during examination	
S/N	Mat. No.	Name	Gender	Signature	Mat No.	Signature
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						

APPENDIX 2

Examination supervisor's report

Course no:.....

Course title.....

Date of examination.....

Venues used.....

The invigilators allocated	The invigilators present

(Continue on back if necessary)

Total No. of students present:.....

Total No. of scripts submitted.....

Comments on the examination.....

.....

.....

.....

(Continue on back if necessary)

Name of supervisor.....Sign.....

APPENDIX 3

EXAMINATION SUPERVISOR'S REPORT

Course number:.....  
Course title.....  
Date of examination.....  
Venue of examination.....  
Time examination started.....  
Time examination ended.....  
Number of students.....  
Number of answer booklets collected .....  
Number of answer booklets used .....  
Number of answer booklets returned .....  
Comments on the examination.....  
.....  
.....  
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.....  
.....  
.....  
.....

CONTINUE ON BACK IF NECESSARY

NAME OF INVIGILATOR..... SIGN.....



STUDENT'S SIGNATURE (IF POSSIBLE).....

DATE:.....

APPENDIX 5

UNIVERSITY OF PORT HARCOURT

ADD/DROP COURSE REGISTRATION FORM

.....SESSION

To be completed in quadruplicate: (1) Dean’s Office (2) Exams & Records (3) Department and (4) Students copy

Name.....

(Surname first) (other names)

Matriculation No..... Sex.....

Department.....

Year of study.....

COURSES TO BE DROPPED

Serial No.	Course No.	Course Title	Credit Units	Lecturer’s Signature & Date
1				
2				
3				
4				

COURSES TO BE ADDED

Serial No.	Course No.	Course Title	Credit Units	Lecturer’s Signature & Date
1				
2				
3				
4				

The above changes are approved

Name Signature Date

Academic adviser.....

Head of Department.....

