



**NATIONAL OPEN UNIVERSITY OF NIGERIA**

**FACULTY OF AGRICULTURAL SCIENCES  
DEPARTMENT OF AGRICULTURAL ECONOMICS AND  
EXTENSION  
KM 4, KADUNA - ZARIA EXPRESSWAY, RIGACHIKUN,  
KADUNA**

**UNDERGRADUATE STUDENT HANDBOOK  
(2018-2020)**



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## **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

## FOREWORD FROM THE VICE-CHANCELLOR

This handbook has been prepared to provide general information on the National Open University of Nigeria and in particular, the Department of Agricultural Economics and Extension.



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, the Faculty of Agricultural Sciences and the Department of Agricultural Economics, its Philosophy, Mission, Vision 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 the Department of Agricultural Economics and Extension and members of the public who want to study Agricultural Sciences in the National Open University of Nigeria (NOUN).

**PROF. ABDALLA UBA ADAMU**  
*Vice-Chancellor, NOUN*

## WELCOME FROM THE DEAN

It is my pleasure to welcome you to the Faculty of Agricultural Sciences, National Open University of Nigeria.

This handbook is a maiden issue by the Department of Agricultural Economics and Extension which contains the rules and regulations governing the undergraduate programmes in the Department. The handbook is a must for all students of the Department.



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 stay in the National Open University of Nigeria (NOUN). It also contains a brief history of the University, the Faculty of Agricultural Sciences, Department of Agricultural Economics.

The SIWES/Farm Practical Year, Laboratory practicals, as well as Teaching and Research Farm. The handbook is therefore, necessary for all students who want to study Agricultural Economics and Extension in the National Open University of Nigeria (NOUN).

It is hoped that this document will serve as a guide to the new and old students in the Department.

It also aimed to provide the general public hands-on information not only about the Department generally but specifically about all the programmes on offer in the Department.

It is my pleasure to therefore recommend this prospectus to all the students, the university community at large and other interested parties.

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

## **PART 1 INTRODUCTION**

### **1.0 Historical Background**

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 so evident and consequently its resuscitation began on the 1<sup>st</sup> 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 'severchanging needs

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

The National Open University of Nigeria is 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 study via ODL at NOUN, students are required to read each study unit of the course materials, textbooks and read other materials which can 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, you will find all the components of the course



listed. 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.

### **1.3 ABOUT THE DEPARTMENT AGRICULTURAL ECONOMICS AND EXTENSION**

The Department of Agricultural Economics and Extension has the following philosophy, vision and mission.

#### **Philosophy**

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

#### **Vision Statement**

To provide functional, cost-effective and flexible agricultural learning required for efficient agricultural production, self employment and sustainable development in various aspects of agriculture.

#### **Mission Statement**

The Department of Agricultural Economics and Extension is dedicated to: train opportunity for sustainable bio-resources management and entrepreneurship in agricultural production; opportunity for vocational training and professional workshops for retooling/reskilling in different areas of agriculture; relevant supportive resources for teaching and research in agriculture and allied disciplines through Open and Distance Learning (ODL) mode of delivery; opportunity for specialization and advance study in major disciplines of agriculture; enhance agricultural production through community based-driven research objectives and themes.

**1.4 Our Core Values in The Department of Agricultural Economics and Extension 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,

**CORE VALUES**

- 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 and future.
- Collaboration:** We shall initiate mutually beneficial relationships with a variety of partners to ensure development of facilities, programmes and research for community development and service.
- Sustainability:** We shall maintain our self-sufficiency by seeking efficiencies and being entrepreneurial in our approach to challenges.

## **1.5 HISTORICAL BACKGROUND OF THE DEPARTMENT OF AGRICULTURAL ECONOMICS AND EXTENSION**

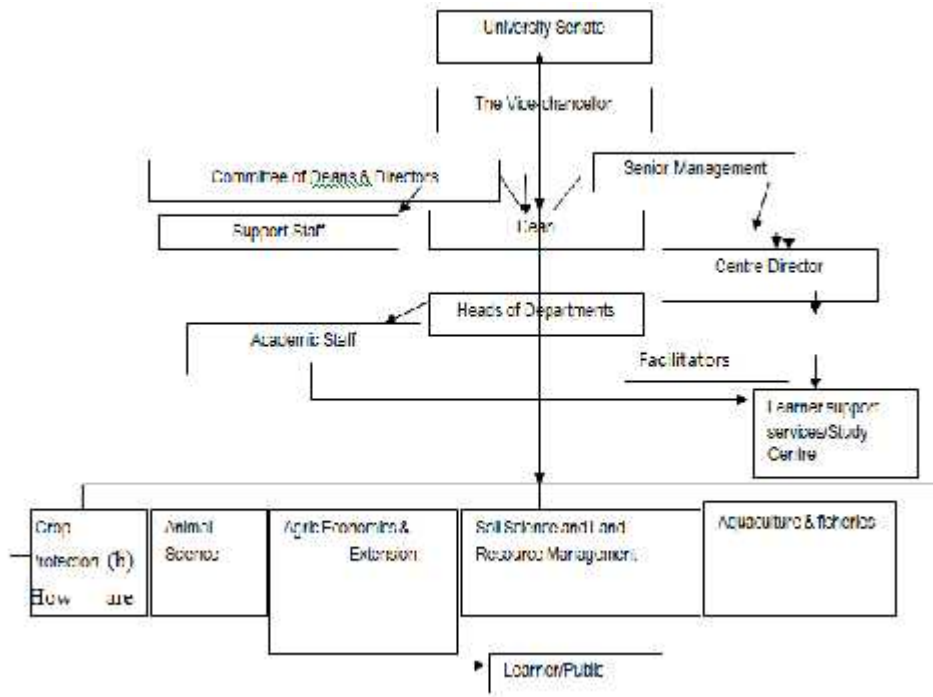
The Faculty of Agricultural Sciences was created in 2016 following the creation of Faculty Systems.

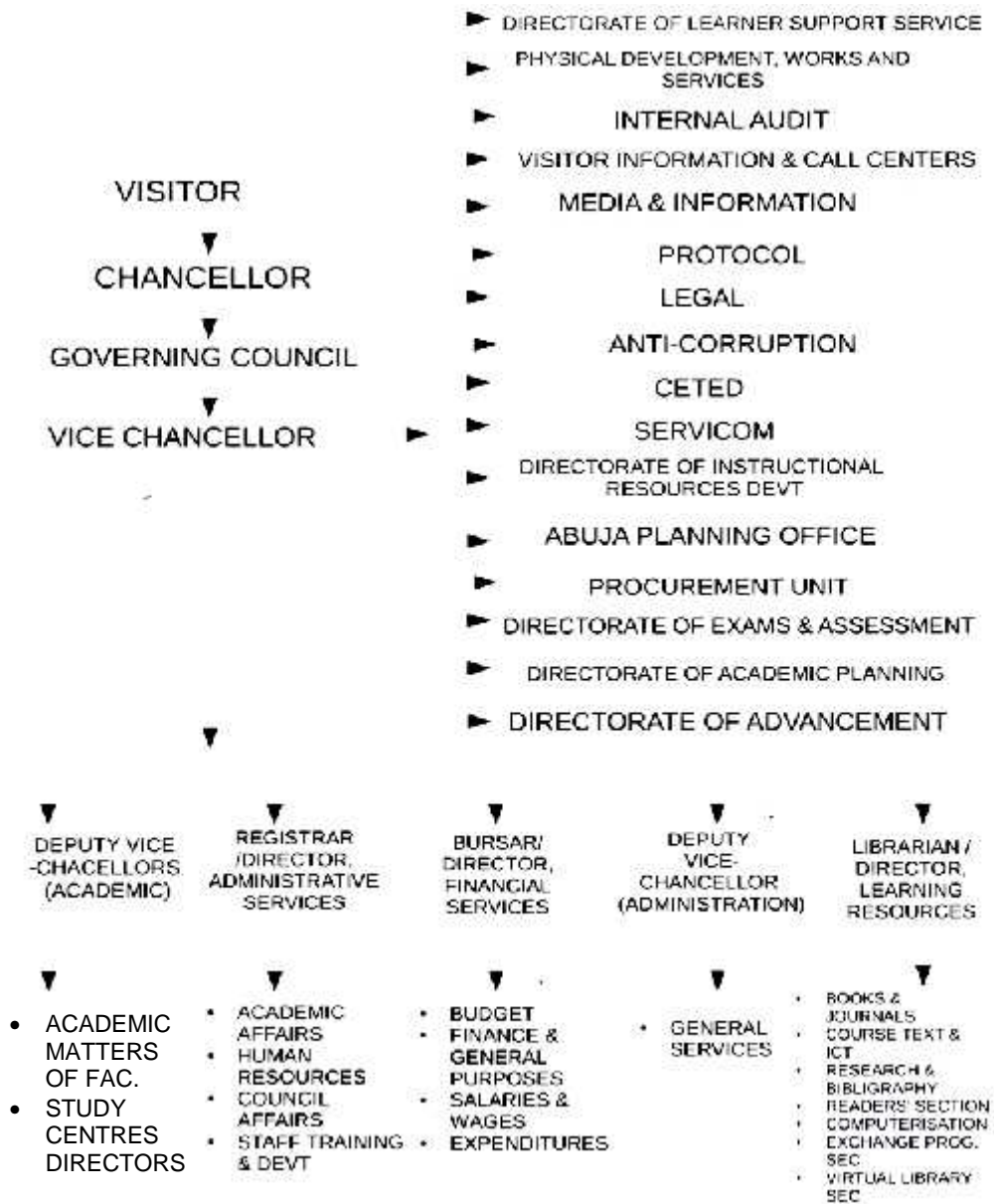
The B.Sc. Agricultural Extension and Management Programme was one of the academic programmes bequeathed to the Department and formed one of the programmes that were offered at the commencement of academic activities in the University. B.Sc. Hotel and Catering Management was initially domiciled at the Faculty of Management Sciences. It was transferred to the Faculty of Agricultural Sciences based on the recommendation of the NUC in 2012 with full accreditation status. The structure of the programme has since been approved by the Senate of the University and also accredited by the National Universities Commission (NUC).

The University Faculty farm is located in Kaduna Campus. The farm is composed of various units or segments such as the livestock and crop units. The livestock comprises of poultry, hatchery, fishery goats, and cattle among others. On the other hand, the crop unit is made up of arable and cash crops. These are available for students' demonstration and extension purposes.

## **1.6 ORGANISATIONAL STRUCTURE OF NATIONAL OPEN UNIVERSITY OF NIGERIA**

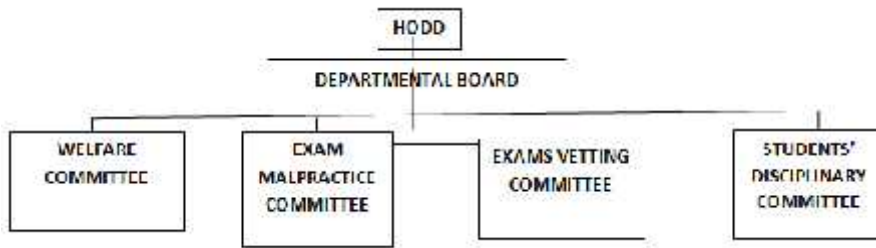
The organisational structure of the university is depicted below in a flow diagram. The President of the Federal Republic of Nigeria is the Visitor to the university. The Senate is the principal decision making body of the university. The Senate of the university comprises the Vice-Chancellor, Deputy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





## 1.7 ORGANISATIONAL STRUCTURE OF DEPARTMENT AGRICULTURAL ECONOMICS AND EXTENSION

(b) How are



### 1.8 Personnel Administration: Staffing

Staffing is an important criterion of Benchmark minimum academic standards. A capable cadre of staff has been employed by the Department. This is believed to transmit knowledge to the students in addition to developing their inquisitive mind. Staff of the Department can be categorized into three: Academic, Technical and Administrative staff.

The Department is administered by a Head of Department who must be of the ranks of Senior lecturer to Professor.

The Heads of Department that have led the Department of Agricultural Economics and Extension, National Open University of Nigeria include:

1. Dr. A. I. N. Kaine – Lecturer I 2016 – 2017
2. Dr. Elizabeth Sabo – Senior Lecturer 2017 – 2018
3. Dr. Peter I. Nwandu – Senior Lecturer 2018 – date

There is a Departmental Academic Board that deals with matters concerning studies and examination. All lecturers are members of this board. Those who are Senior Lecturers, Readers and Professors constitute the Departmental Postgraduate Committee. These two bodies (Departmental Board and Departmental PG Committee) take decision on studies, curriculum and examination matters.

The academic personnel that fall within the ranks of Assistant Lecturers and Lecturer I are charged with responsibility of advising students on courses to register and any other delegated duties by the HOD. These groups of Lecturers are called Academic Advisers. Each level of study has an Academic Adviser. The non-teaching personnel (Technical Support Staff, Computer Operator, Clerical Officer and Messenger/Cleaner) work in the office of the HOD and their activities are directed by HOD. These categories of staff are deployed to the Department by the University Registry.

**Academic Staff**

| S/N | Name of Academic Staff | Rank/Designation             | Qualification  | Status               |
|-----|------------------------|------------------------------|--|----------------------|
| 1.  | Prof. N.E. Mundi       | Professor<br>Dean FAS        | B. Sc.[Ed.]<br>Agric. Science,<br>M.Sc. Agric<br>.Extension, Ph<br>D. Agric.<br>Extension<br>&Rural<br>Sociology | Full<br>Time         |
| 2   | Prof. A.A. Ladele      | Professor                    | B.Sc Agric. Sci,<br>M.Sc.Agri<br>Extension and<br>Ph.D Agric<br>Extension  | External<br>Lecturer |
| 3.  | Dr. P.I. Nwandu        | Senior Lecturer<br>H O D AEE | B.Sc.( Ed.)<br>Agric. Science,<br>M.Sc. Agric.<br>Economics,<br>Ph.D. Agric.<br>Economics                        | Full<br>Time         |
| 4   | Dr. C.U. Nwaobiala     | Senior Lecturer              | HND in Crop<br>Production,<br>PGD Agric Ext,<br>M.Sc Agric Ext.  | External<br>Lecturer |

|    |                                    |             |   |                      |
|----|------------------------------------|-------------|---|----------------------|
|    |                                    |             | Ph.D Agric Ext.   |                      |
| 5  | Prof .<br>Ahmed, S.<br>Gidado      | Professor   | B.Sc.<br>Agriculture,<br>MBA, Ph.D<br>Agric Ext.  | External<br>Lecturer |
| 6. | Dr. A. I.N.<br>Kaine               | Lecturer 1  | HND, PGD,<br>M.Sc. Agric,<br>Economics,<br>MBA,<br>Cooperative &<br>Rural<br>Development,<br>Ph.D. Agric<br>Economics | Full<br>Time         |
| 7  | Mrs. Rhoda<br>I. Alfa              | Lecturer II | NCE ,B.Ed.<br>M.Ed. (Home<br>Economics)   | Full<br>Time         |
| 8. | Dr. Fawole<br>Wasiu O.             | Lecturer II | Ph.D. Agric.<br>Economics and<br>Extension,<br>M.Sc. Agric.<br>Economics and<br>Extension<br>B.Tech.                  | Full<br>Time         |
| 9. | Dr. Helen<br>Inyang                | Lecturer II | B.Agric. Tech.,<br>M.Sc. Agric.<br>Econs , PhD<br>Agric. Econs.   | Full<br>Time         |
| 10 | Dr. (Mrs)<br>Hannatu<br>Michael Y. | Lecturer II | Ph.D Agric.<br>Economics and<br>Extension,<br>M.Sc. Agric.<br>Economics and<br>Extension &<br>Rural<br>Sociology,     | Full<br>Time         |



|     |                          |             |  |           |
|-----|--------------------------|-------------|--|-----------|
|     |                          |             | B. Sc.<br>Sociology  |           |
| 11. | Dr. Okwuokenye Goddey F. | Lecturer II | B.Agric , M.Sc. Agric. Extension, PhD Agric. Extension.            | Full Time |
| 12  | Dr. Sylvanus I. Ogbonna  | Lecturer II | Phd, M Sc, Agric Economics, PGD Agric Extension, HND Crops Science | Full Time |

**Administrative Staff**

| S/N | Name                  | Rank/Designation        | Qualification/Date                        | Status    |
|-----|-----------------------|-------------------------|---|-----------|
| 12. | Mr. Ibrahim Yusuf     | Secretarial Assistant I | OND 2012, NECO                            | Full time |
| 16. | Mr. Dalhatu Adamu     | Clerical Officer        | NECO 2004, Diploma in Computer Operations | Full time |
| 19. | Mr. Shekwodiza Yahaya | Environmental Attendant | SSCE                                      | Full time |
| 22. | Mr. Mohammed Ladan    | Environmental Attendant | Diploma in Computer                       | Full time |

**Technical Staff**

| S/N | Name       | Rank/Designation | Qualification/Date                          | Status    |
|-----|------------|------------------|---|-----------|
| 1.  | Umar Aminu | Farm Officer I   | M.Sc. Economics 2016, B.(Hons) Agricultural | Full time |

|    |                       |                                    |   |           |
|----|-----------------------|------------------------------------|---|-----------|
|    |                       |                                    | Economics and Extension                                   |           |
| 2. | Mark Bernard Gowong   | Laboratory Technologist I          | PGDM 2002; HND Food Technology. 1997                      | Full time |
| 3  | Gbenga T. Attah       | Senior Hardware Information Tech.  | HND, CCNA, ND Information Tech                            | Full time |
| 4  | Muhammed A. Abdullahi | Network Admin I                    | M.Sc. Information Technology<br>B.Sc. Computer Science    | Full time |
| 5  | Umar A. Muhammed      | Web Administration                 | B.Sc. Information Technology                              | Full time |
| 6  | Mr. Adawa Goma Gideon | Farm Officer II                    | B.Agric, M. Sc. Agric Econs and Rural Sociology (in view) | Full time |
| 7  | Mrs, Laitu Depot      | Environmental Assistant (farming)  | FSLC, Certificate in Livestock Management                 | Full time |
| 8  | Mrs. Talatu Danladi   | Farm Assistant (Farming)           | Cert, in Accounting Assistant III<br>TC II NCE            | Full time |
| 9  | Mr, Ayuba Ishaya      | Environmental Attendant (Gardener) | FSLC  | Full time |
| 10 | Mr. Ladi MarKus       | Environmental Assistant (farming)  | No Formal Education                                       | Full time |
| 11 | Mr. Shehu Haruna      | Environmental Attendant (Gardener) | FSLC, SSC.  | Full time |

|    |                  |                                   |            |           |
|----|------------------|-----------------------------------|------------|-----------|
| 12 | Mr. Ibrahim Luka | Environmental Assistant (farming) | FSLC, SSC. | Full time |
|----|------------------|-----------------------------------|------------|-----------|

- (b) **Staff Involvement in Decision Making and Administration:** Staff are involved in decision making as they canvass their views in Board Meetings before jointly taking decisions on study matters and examination issues. On matters concerning students and lecturers' advice are requested and they bring in comments to the Head of Department. They also supervise students' research projects and send in their scores for use by the Department.

### Student's Welfare

- (a) Handling of Academic Grievances:  
Students send their complains to the HOD through the secretary.
- (b) Student Academic adviser:  
Each class (level) has a lecturer as academic adviser.

### Examination

Setting, conduct, marking schemes, moderation scheme-internal and external.

## **PART 2      PROGRAMMES**

### **2.0      PROGRAMMES**

The Department of Agricultural Economics and Extension offers the following approved undergraduate and postgraduate programmes as the current existing programmes.

#### **Undergraduate Programmes:**

1.      B.Sc. Agricultural Extension and Management
2.      B.Sc. Catering and Hotel Management
3.      B. Agric. Agricultural Extension and Rural Development
4.      B. Agric. Agricultural Economics and Agribusiness

#### **Postgraduate Programme**

Postgraduate Diploma in Agricultural Extension and Management

### **2.1      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 student's matriculation number serves as his/her examination number.
- Students should normally write examinations at their designated centres.
- Students must bring to the examination hall their writing materials and any other material, which may be permitted by the University for a particular examination. These materials must have been listed as essential for certain question(s).
- 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.

- 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.
- A student must be accompanied by an invigilator if permitted to leave the examination hall temporarily (e.g. visiting the rest-room, etc.).
- No answer booklets other than those supplied by the University are allowed in 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.
- Silence must be observed in the examination hall. Any student requiring the attention of the invigilator should raise his/her hand.
- 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 examination as contained in the Students' Handbook.
- 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.
- Students are not permitted to smoke or sing or pray aloud or engage in any activity that may distract others in the examination halls.
- Bags and briefcases are not allowed in examination halls. The University will not be liable for any loss or damage of a student's personal effects/property.
- Un-authorized materials (such as textbooks, course materials, notebooks, sheets/scrap of papers) in printed or electronic form are not allowed in examination hall.

- Pagers and mobile phones are not permitted at all in examination halls.
- 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.

## **2.2 INFORMATION FOR NEW STUDENTS INTRODUCTION**

### **2.2.1 Orientation Programme**

Student orientation programme is done at their various Study Centers. 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. Regulations require satisfactory completion of the orientation before matriculation in the University.

### **2.2.2 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 on the registration portal of the University website.

For fresh students, the registration procedures include 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 bonafide 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.

### **2.2.3 Deferment of Admission**

Is entertained only based on 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 would apply with relevant medical report to the Dean of his/her Faculty through the Head of the Department for deferment of a semester or sessions as the case may be to enable him/her fully recover.

### **2.2.4 Change of Programme and Course**

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

### **2.2.5 Registered Students who wish to change their Programme of Study**

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

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

Students who were wrongly admitted to a programme can seek counsel from their counselor.

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

A Student who wants 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) become effective after approval by the HOD. Under no circumstance should a student just abandon a course he/she has registered for or attend 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.

### **2.2.8 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.

### **Credit Unit**

Credit unit (CU) represents the weight assigned to the 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.

### **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 time available.

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

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

### **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.

### **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.

**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), to B (4 points), C (3 points), D (2 points), and F (0 points)

**Grade Point Average (GPA)**

This refers to the evaluation of student' 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:  
 $GPA = TCE/TCR$

Where:

TCR = Total Credits Required

TCE = Total Credits Earned

**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

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 and 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.

### **2.2.9 GENERAL STUDIES COURSES**

Regardless of the academic programmes 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:

#### **Courses**

1. GST 101 - Use of English and Communication Skills I
2. GST 102 - Use of English and Communication Skills II
3. GST 103 – Computer Fundamentals
4. GST 104 - Use of Library
5. GST 105 - History and Philosophy of Science
6. GST 107/707/807 - A Study Guide for the Distance Learner
7. GST 201 - Nigerian Peoples and Culture
8. GST 202 - Fundamentals of Peace Studies and Conflict Resolution
9. GST 203 - Introduction to Philosophy and Logic
10. GST 204 - Entrepreneurship and Innovation
11. GST 302 - Business Creation and Growth

### **2.2.10 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 Centers 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.

### **2.2.11 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.

**Course Duration-** 4 years for direct entry candidates and 5 years for students who came in from 100 levels.

b) Post-graduate Programme

i. PGD Agricultural Extension and Management

Candidates seeking admission for PGD Agricultural Extension and Management must possess a Bachelor's degree with at least 3<sup>rd</sup> class division. Candidates with pass degree and minimum of 3 years cognate experience in related field may be accepted. HND holders in Agricultural Sciences or related disciplines may be admitted. Holders of Bachelor degree in Basic Science, Biological/Earth Sciences and Agricultural Sciences from universities that are recognised by NOUN are admissible.

**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 should include periodic seminars on the student's work as a way of stimulating interest as well as the presentation of a written 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/her 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.

**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 GRADE POINT AVERAGE (CGPA)</b> | <b>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 Department 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                    | Percentage Score | Letter Grades | Grade Points (GP) | Grade Point Average (GPA) | Cumulative Grade Point Average (CGPA) 5-Point System | Class of Degree             |
| Vary according to contact hours | 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 |

|   |         |   |   |                                  |              |                             |
|---|---------|---|---|----------------------------------|--------------|-----------------------------|
| assigned to each course per week per semester and according to work load carried by student | 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                        |

**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.

**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.

**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.

**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 multiplied by the respective Credit Units for all the semesters are added and then divided by the total number of Credit Units for all courses registered by the student.

**Evaluation**

**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% 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:

| <b>CUMULATIVE GRADE POINT AVERAGE (CGPA)</b> | <b>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       |

**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 should be continued.

### **2.2.12 SIWES/Farm Practical Year Rating and Assessment**

The fourth year should be basically left for practical farm training. This training should be for duration of 12 months of which not less than 80% should be devoted to practical training on a farm and related industries. There should be no classroom lectures during the 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.

### **Teaching and Research Farm**

To meet the minimum standard for accreditation (NUC minimum benchmark), the Faculty farm at Kaduna which also serve the Departments 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 training.



### **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.

### **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.

### **Maintenance of Curricular Relevance**

The Department of Economics and Extension in its drive to maintain a standard and also 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.

### **2.2.13 OUTLINE PROGRAMME PROPOSAL (OPP) AND DETAILED PROGRAMME PROPOSAL (DPP) OF AGRICULTURAL EXTENSION AND MANAGEMENT**

#### **Description of the programme:**

Programme Title: B.Sc. Agricultural Extension and Management

#### **Programme Code: (5201)**

##### **(a) Programme Philosophy and objectives:**

The B.Sc. Agricultural Extension and Management is designed to equip the students with the basic skills required for serving in a professional capacity in areas where Agricultural Extension and Management application are inevitable. The programme is also formulated to create quality learning environment for students and agricultural policy makers using high-quality facilities, multi-disciplinary approach, institutional linkages, vigorous and intensive student development programmes. This ensures that students acquired desired comprehensive knowledge, skills and innovation to bring about high quality graduates.

**Aims:** In its mission to make education available for all, the Open and Distance Learning programmers of National Open University of Nigeria (NOUN) have become veritable tools of National development. Agriculture as the main stay of Nigeria's economy after petroleum resources employs a very high percentage of people from the rural sector population, yet the food security situation of the country is constantly under threat.

#### **Objectives:** 1. Prepare the students for self-employment

2. Equip students with necessary skills in identifying, planning, securing, scheduling, executing and evaluating agricultural activities, which lead to reproduction, production and post-production operations within the sector.

3. To train needed manpower consistent with the requirement of an integrated research extension system.

(c) **Admission Requirements:**

Credit Passes in 5 WASCE/GCE/NECO. Subjects including English, Mathematics, Chemistry, Biology/Agricultural Science, at least a pass in Physics. The Credit pass in Agric. Science must be backed up by at least a pass in Biology. Universities may determine the level of Credit pass for admission

*Direct Entry:* OND with upper credit may be admitted into 200 levels of the programme, NCE with credit passes in any one of the options below may be admitted into 200 level of the programme:

- i. Agricultural Science
- ii. Biology/Chemistry
- iii. Integrated Science/Chemistry
- iv. Home Economics and related science based courses
- v. HND with upper credit pass in Agriculture or related programmes, and credit passes in requisite subjects at O' Level may be admitted into 300 level and may be required to take relevant course at 200 level.

### **Graduation Requirements**

To graduate, a student shall have undergone at least 8 – 10 semesters of study depending on entry point, including field practical training. Course work load must meet the graduation requirements of the University based on minimum academic standards. However, in doing so, the student must earn a minimum of 167 credits units for the five years programme and 132 credits units for the four year (Direct entry) programme in Agriculture and related fields as indicated in the NUC minimum academic requirements. The submission of an undergraduate project thesis based on a supervised research is a graduation requirement, which cannot be compromised.

**2.2.14 OUTLINE PROGRAMME PROPOSAL (OPP) AND DETAILED PROGRAMME PROPOSAL (DPP) OF B.SC AGRICULTURAL EXTENSION AND MANAGEMENT**

| Year 1: | Course Code | 1 <sup>st</sup> Semester                   | Credit Unit | Status |
|---------|-------------|--|-------------|--------|
|         |             | Course Title                               |             |        |
|         | GST 101     | Use of English and Communications Skills I | 2           | C      |
|         | GST 105     | History and philosophy of science          | 2           | C      |
|         | GST 107     | The Good Study Guide                       | 2           | C      |
|         | BIO 101     | General Biology I                          | 2           | C      |
|         | BIO 191     | General Biology Practical I                | 2           | C      |
|         | CHM 101     | Introductory Inorganic Chemistry I         | 2           | C      |
|         | CHM 191     | Introductory Practical Chemistry I         | 2           | C      |
|         | CIT 101     | Computers in Society                       | 2           | C      |
|         | MTH 133     | Trigonometry                               | 2           | C      |
|         | PHY 111     | Elementary Mechanics                       | 2           | C      |
|         | PHY 191     | Introductory Practical Physics I           | 2           | C      |
|         |             | <b>Total Credit Units</b>                  | <b>22</b>   |        |
|         |             |  |             |        |
|         |             | <b>2<sup>nd</sup> Semester</b>             |             |        |
|         | GST 102     | Use of English and Communication Skills II | 2           | C      |
|         | GST 122     | Introduction of philosophy and Logic       | 2           | C      |
|         | BIO 102     | General Biology II                         | 2           | C      |
|         | CHM 102     | Introductory Organic Chemistry I           | 2           | C      |
|         | CHM 192     | Introductory Practical Chemistry II        | 2           | C      |
|         | ESM 102     | The Nigerian Environment                   | 2           | C      |
|         | ESM 104     | Introduction to Environmental              | 2           | C      |

|                |         |  |           |   |
|----------------|---------|--|-----------|---|
|                |         | Science                                      |           |   |
|                | ESM 112 | Introductory Ecology                         | 2         | C |
|                | MTH 102 | Introductory Statistics                      | 2         | C |
|                | MTH 112 | Differential Calculus                        | 2         | C |
|                | PHY 192 | Introductory Practical Physics II            | 2         | C |
|                |         | <b>Total Credit Units</b>                    | <b>22</b> |   |
| <b>Year II</b> |         | <b>1<sup>st</sup> Semester</b>               |           |   |
|                | GST 201 | Nigerian Peoples and Culture                 | 2         | C |
|                | AEM 201 | Principles of Agricultural Extension         | 2         | C |
|                | AEM 203 | Introduction to Home Economics and Extension | 2         | C |
|                | AEM 251 | General Agriculture                          | 3         | C |
|                | AGR 201 | Introduction to Agricultural Economics       | 2         | C |
|                | AGR 203 | Principles of Crop Products                  | 2         | C |
|                | SOS 201 | Principles of Soil Science                   | 2         | C |
|                | SOS 203 | Introduction to Agro-climatology             | 2         | C |
|                | FRM 211 | Forestry and Wildlife Management             | 2         | E |
|                |         | <b>Total Credit Units</b>                    | <b>19</b> |   |
|                |         | <b>2<sup>nd</sup> Semester</b>               |           |   |
|                | AEM 202 | Introduction to Rural Sociology              | 2         | C |
|                | AEM 212 | Farm Practice                                | 3         | C |
|                | AGR 202 | Introductory Agricultural Engineering        | 2         | C |
|                | ANP 202 | Principles of Animal Production              | 2         | C |

|                 |         |  |           |   |
|-----------------|---------|--|-----------|---|
|                 | ANP 204 | Introductory Agricultural Biochemistry                     | 2         | C |
|                 | AFS 202 | Principles of Food Science and Technology                  | 3         | E |
|                 | BIO 220 | Fisheries and Wildlife                                     | 2         | E |
|                 | CIT 104 | Introduction to Computer Science                           | 2         | E |
|                 |         | <b>Total Credit Units</b>                                  | <b>18</b> |   |
|                 |         |  |           |   |
| <b>Year III</b> |         | <b>1<sup>st</sup> Semester</b>                             |           |   |
|                 | ACP 301 | Arable Crop Production                                     | 2         | C |
|                 | ACP 305 | Principles of Crop Production                              | 2         | C |
|                 | AEM 301 | Introduction to Agricultural Extension and Rural Sociology | 2         | C |
|                 | AEM 303 | Agrarian Institutions and their Management                 | 3         | C |
|                 | AEM 311 | Introduction to Rural Life                                 | 2         | C |
|                 | AEM 305 | Introduction to Agricultural Insurance                     | 2         | C |
|                 | AEM 307 | Agricultural Production Economics                          | 2         | C |
|                 | ANP 301 | Introduction to non-Ruminant Animal Production             | 2         | C |
|                 | ANP 313 | Poultry production   | 2         | C |
|                 | SOS 301 | Introduction to Pedology and Soil Classification           | 2         | C |
|                 |         | <b>Total Credit Units</b>                                  | <b>21</b> |   |
|                 |         |  |           |   |
|                 |         | <b>2<sup>nd</sup> Semester</b>                             |           |   |
|                 | ACP 303 | Permanent Crop Production                                  | 2         | C |
|                 | AEC 306 | Farm Records & Accounting                                  | 2         | C |
|                 | AEC 308 | Principles of Farm Management                              | 2         | C |
|                 | AEM 302 | Extension Teaching, Learning Process and Methods           | 3         | C |
|                 | AEM     | Agricultural Marketing and                                 | 3         |   |

|                |         |  |           |   |
|----------------|---------|--|-----------|---|
|                | 306     | Price  |           |   |
|                | AEM 302 | Ruminant Animal Production   | 2         | C |
|                | ANP 302 | Communication and Audio-Visual Techniques  | 2         | C |
|                | AGM 314 | Introduction to Farm Mechanization   | 2         | E |
|                | ANP 310 | Genetics and Breeding  | 2         | E |
|                |         | <b>Total Credit Units</b>  | <b>20</b> |   |
|                |         |  |           |   |
| <b>Year IV</b> |         | <b>1<sup>st</sup> Semester</b>   |           |   |
|                | AEC 403 | Agricultural Production Economics and Resource Use Management  | 3         | C |
|                | AEM 405 | Extension Training & Curriculum Development  | 3         | C |
|                | AEM 411 | Social Relationships & Behavioural Change  | 3         | C |
|                | AEM 450 | Agricultural Finance & Marketing   | 3         | C |
|                | AEM 451 | Farm Business Organization   | 3         | c |
|                | AEM 458 | Extension Strategies in Pilot Rural Development Project  | 3         | C |
|                | AGB 404 | Bio Resources Management   | 3         | E |
|                | CSP 401 | Biotechnology in Crop/Pest Management  | 3         | E |
|                |         | <b>Total Credit Units</b>  | <b>24</b> |   |
|                |         |  |           |   |
|                |         | <b>2<sup>nd</sup> Semester</b>   |           |   |
|                | AEM 400 | Student Industrial Works Experience Scheme<br>Covers a period of six months and is compulsory requirement for graduation | 12        | C |
|                |         | <b>Total Credit Units</b>  | <b>12</b> |   |
|                |         |  |           |   |

| Year<br>V |         | 1 <sup>st</sup> Semester                           |           |   |
|-----------|---------|--|-----------|---|
|           | AEM 501 | Statistics and Research Methods in Extension       | 3         | C |
|           | AEM 503 | Diffusion and Adoption of Innovations              | 3         | C |
|           | AEM 504 | Rural Community Development                        | 3         | C |
|           | AEM505  | Administration and Programme Planning in Extension | 3         | C |
|           | AEM 507 | Management of Agricultural Extension Personnel     | 3         | C |
|           | AEM 511 | Leadership and Rural Development                   | 3         | C |
|           | AEM 509 | Agricultural Business Management                   | 3         | E |
|           |         | <b>Total Credit Units</b>                          | <b>21</b> |   |
|           |         |  |           |   |
|           |         | 2 <sup>nd</sup> Semester                           |           |   |
|           | AEM 502 | Extension Organization, Management and Supervision | 3         | C |
|           | AEM 506 | Advanced Rural Sociology                           | 3         | C |
|           | AEM 508 | Technological and Social Change in Agriculture     | 2         | C |
|           | AEM 512 | Rural Youth Programmes in Agricultural Extension   | 2         | C |
|           | AEM 599 | Research Project                                   | 4         | C |
|           | AEM 510 | Psychology for Extension Personnel                 | 2         | E |
|           | CPT 514 | Produce/Post-harvest Management                    | 2         | E |
|           |         | <b>Total Credit Units</b>                          | <b>18</b> |   |



**GST 101 Use of English and Communication Skills 1 (2 units):**

Listening enabling skills, listening and comprehending comprehension, note taking and information retrieval. Including data, figures, diagrams and charts. Listening for main idea, interpretation and critical evaluation. Effective reading. Skimming and scanning. Reading and comprehension at various speed levels. Vocabulary development in various academic context. Reading diverse text in narratives and levels. Vocabulary development in various academic context. Reading diverse texts in narratives and expository. Reading and comprehension passages with tables, scientific texts. Reading for interpretation and critical evaluation.

**GST102 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: techniques of summarizing letters, sounds in English, vowels and consonants. Interviews, seminar presentation, public speech making, articles, concord and sentences including tenses. Gerund, particles, active, passive and the infinitive. Modal auxiliaries.

**GST105 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.

**GST 107: The Good Study Guide (2 units):**

Getting started, reading and note taking; other ways of studying, working with numbers. What is good writing? How to write essays. Preparing for examinations.

**GST122 Introduction of Philosophy and Logic (2 units):**

General introduction to logic; clarity of thought, expression and arguments as basis for conclusions; fundamentals of logic and critical thinking; types of discourse; nature of arguments; validity and soundness; techniques for evaluating arguments; distinction between inductive and deductive inferences; etc. Illustrations from familiar texts, including literature materials, novels, law reports and newspaper publications.

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

Characteristics of living things, cell as the basic unit of living things, cell structure, organization, 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 habits.

**BIO102 General Biology II (2 units):**

Systematic studies of diversity of life including monera, protista, plants (Algae, Fungi, Bryophytes, Pteridophytes, Gymnosperms and Angiosperms) and animals (protozoa, Platyhelminthes, Annelids, Arthropods, Fishes, Amphibians, Reptiles, Birds and Mammals) based on similarities and differences in external morphology. Taxonomic divisions of plant and animal kingdoms, ecological adaptations of these forms.

**BIO191 General Biology Practical I (2 units):**

What practical work in Biology involves. Laboratory organization. Handling common laboratory equipment. Microscopic handling and

maintenance. Making microscopic measurements. Procuring animal materials for practicals. Killing, preserving and maintaining animal materials. Procuring plant materials. External features of plants (differences and similarities). Preparation of temporary slides. Preparation of stains and reagents. Techniques for microbial culture and grain staining. Setting up demonstration for physiological processes in plants. Setting up apparatus for demonstrating physiological processes in animals. Preparation required for dissection.

**CHM 101 Introductory 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 group I, II, IV, V and VII metals.

**CHM102 Introductory Organic Chemistry I (2 units):**

Simple reactions of hydrocarbons, alcohols and acids, petroleum chemistry, oils and fats, hydrogenation of oils. Polymer and biologically important molecules.

**CHM 191 Introductory Practical Chemistry I (2 units):**

Practical based on CHM 101 and CHM 103. Cations and Anions – identification Acid-based titrations. Redox reactions and determinations.

**CHM 192 Introductory Practical Chemistry II (2 units):**

Practical based on general chemistry CHM101 and introductory organic chemistry I CHM 102 – Determination of melting and boiling points and reaction of functional groups.

**CIT 101 Computer 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, copy a text, saving, changes to a document and formatting, spelling checker and introduction to printing a document. Spreadsheet, 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.

**ESM 102 The Nigerian Environment (2 units):**

General description of the natural, physical features of Nigeria. Vegetation, climate and climatic changes within the geographical expression. Geographical distribution of people and natural resources. Brief description of economic importance of these features. Exploration and exploitation of natural resources. Brief impact of these on the environment.

**ESM 104 Introduction to Environmental Sciences (2 units):**

Scope and meaning of environmental science; the concept of the earth's surface as the home of man; atmosphere and atmospheric processes; hydrosphere and the hydrological cycle; the lithosphere and the process of sculpturing the earth's surface; the earth surface in the natural history, the content environmental concern and environmental hazards.

**ESM 122 Introductory Ecology (2 units):**

General consideration of ecosystem including influence and interaction of human beings with their environments. Similarly, differences of ecosystems. Characteristics and ecological adoptions of various forms of life.

**MTH 102 Introductory Statistics (2 units):**

Measures of central tendency and dispersion, (grouped and ungrouped), mean-arithmetic and geometric, harmonic mean, mode, quartiles, deciles, relative and absolute dispersion, sample space and event as sets. Finite probability, space properties of probability. Statistical independent and conditional probability. Tree diagram, Bayes theorem. Discrete and continuous random variables. Expectation, independent Bernoulli trials Binomial distribution and normal distributions. Normal approximation to binomial and Poisson, Hypergeometric.

**MTH 112 Differential Calculus (2 units):**

Real number: The number line, intervals, property of absolute value. Solving inequalities, sign chart. Function from  $\mathbb{R}$  to  $\mathbb{R}$ , domain range, graph, monotonically increasing, decreasing functions, Inverse function, composition of functions. Even and odd functions, periodic functions, limits, convergence sequences. Limit of a function, left and right limit and continuity. Differentiability at a point and on interval. Sum, product and quotient rule. Chain rule for inverse function. Implicit differential.

**MTH 133 Trigonometry (2 units):**

Trigonometric functions; radian measure, law of sine and cosine, sum, differences and product formulas. Trigonometric identities, inverse trigonometric functions, solutions of trigonometric equations, graph of trigonometric functions.

**PHY 111 Elementary Mechanics (2 units):**

Physical quantities, standards and units; kinematics: uniform velocity motion, uniformly acceleration motion; Dynamics: Newton's law of motion; Newton's universal law of gravitation; work, energy. Conservation laws. Concept of mechanical equilibrium. Centre of mass and centre of gravity. Moment of force; rotational motion, angular momentum and torque; total mechanical energy; elasticity:

Hooke's law, Young's shear and bulk modulus; Hydrostatics: pressure, buoyancy, Archimedes' principle; elements of hydrodynamics; molecular properties of fluids: viscosity, surface tension, adhesion, cohesion, capillarity, drops and bubbles.

**PHY 191 Introductory Practical Physics I (2 units):**

Graphs, measurement, error analysis, determination of acceleration due to gravity by means of simple pendulum, determination of force constant of a spiral spring, determination of effective mass 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 co-efficient of limiting static friction between two surfaces, determination of the co-efficient of static friction on two surfaces using an inclined plane, determination 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.

**PHY 192 Introductory Practical Physics II (2 units):**

Refraction through the glass block; image formed by a concave mirror; determination of the focal length of the convex mirror; refraction through the triangular prism; determination of the focal length of a converging lens and the refractive index of groundnuts; determination of resistance of resistors in series and in parallel in simple circuits; determination of internal resistance of a dry cell using potentiometer; to compare the EMF of cells using potentiometer; determine the unknown resistance of a resistor using Wheatstone Bridge; to determine the relationship between current through a Tungsten and a potential applied across it.

**GST 201 Nigerian People and Culture (2 units):**

History of traditional Nigerian people and culture: the pre-colonial history and the culture areas of Nigeria; the evolution of the country as a political unit. How to analyse and understand people's cultures from historical, sociological and anthropological angle.

**AEM 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 organization. Factors which influence rural living conditions. Types of rural economics. Problems of developing rural economies. Rural infrastructures. 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.

**AEM 203 Introductory to Home Economics Extension (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.

**AEM 212 Farm Practice (Practical) (3 units):**

Students are advised to take part in all the listed farm activities: Crop Production: site selection and land clearing – land preparation, tillage practices (ploughing, harrowing and ridging); Crop Establishment – seed sowing (method of sowing), planting and Transplanting; cultural practices – weeding, punning, mulching, thinning, staking, supply, shading; fertilizer application – types of fertilizer, methods of fertilizer application; crop protection – identify types of sprayers, nozzles, carryout sprayer calibration, apply pesticides, herbicides, fungicides, insecticides; Post pesticide application –(cleaning the sprayer and disposing pesticide containers); Crop harvesting, know the various tools for harvesting, hoe, cutlass, sickles, go to hell, chisel, etc; harvest rice, maize, yam, cassava, beans or soya bean, guinea corn (sorghum); Primary processing and storage – carryout some basic primary processing methods for rice, maize, cowpea, sorghum; identify some traditional storage and packaging and

facilities, Rhombus, crib, shelf, underground pits; Animal husbandry – poultry (layer and broilers), non-ruminant (Rabbits), big ruminants (cow, sheep and goats); Students are to partake in management practices like: Dipping, deworming, dehorning, dehoofing, rational formulation and grazing, vaccination, kidding and lampping, milking.

**AEM 251 Introduction to Agricultural Economics (2 units):**

The scope of Agricultural Economics, basic economic principles applied in Agricultural production and marketing. Efficient organization 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 utilization 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 202 Introductory 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.



**AGR203 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 characteristic of arthropod, microorganisms and other pests affecting crops. Weeds and their effects on crop production, pests, disease and weed control. Basic Mendelian genetic. Principles of crop production, harvesting, processing and storage.

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

Animal production and its development. The livestock industry – problems and prospects. Description of the breeds of cattle, sheep, goats, pigs, poultry and rabbit. Systems of livestock production. Feeding habit of farm animals. Principles of breeding and lives judging. General principles of management of the different types of farm animals.

**ANP 204 Introductory Agricultural Biochemistry (2 units):**

Chemistry of carbohydrates, lipids, proteins and nucleic acids. Vitamins and their coenzymes functions. Minerals. The nature, classification and function of enzymes and hormones.

**AFS 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 flavor of food. Cost; traditional and ethnic influences of food preparation and consumption pattern.

**BIO 220 Fisheries and Wildlife (2 units):**

The important fishes and wildlife of West African with emphasis on Nigeria species. Classification, evolution, morphology and basic structure of fishes. The adaptation of fish to aquatic life. Life cycle of principles species of fishes and wildlife industries in Nigeria. Fundamental principles of fish and wildlife management and production.

**CIT 104 Introduction to Computer Science (2 units):**

History of computers, functional components of computer, characteristics of a computer, problem solving; flow charts, algorithms, computer programming, statements; symbolic names; arrays, subscripts expressions and control statement. Introduction of basic or FORTAN programming language, computer applications.

**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, a forestation characteristics of major timber and their uses. Felling and transportation.

**SOS 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.

**SOS 203 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 evapotranspiration. Equipment and maintenance of standard meteorological stations. The tropical climate, relation between agriculture and climate with reference to crops, livestock, irrigation, pests and diseases.

**ACP 301 Arable Crop Production (2 units):** Origin, distribution, soil and climatic requirements of cereals, legumes, root crops, fibre crops, vegetables and other important animals crops in Nigeria. Improved varieties. Production practices, harvesting, utilization, processing, storage and economic aspects of some selected arable crops.

**ACP 303 Permanent Crop Production (2 units):** Origin, distribution and climatic requirements of some important permanent crops such as cocoa, oil palm, rubber, coffee, coconut, mango, sugarcane, bananas, plantains, citrus, kola, cashew, etc. production practices, improvement, harvesting, utilization, processing, storage and economic aspects of some selected permanent and perennial crops.

**ACP 305 Principles of Crop Protection (2 units):**The major pests, insects, fungi, bacteria, viruses and nematodes, weeds and other diseases of tropical crops and stored products. Definition of pests. Study of insects of major local crops, their significance and principles of control. Study of the effects of diseases causes by virus; bacteria, fungi nematodes, control of these disease. Effect of weeds on crop and livestock and the principles and methods of control of weed. Brief outline, shortcomings and advantages of different pest assessment and pest control methods. Strategies of integrated pest control and pest management.

**AEC 306 Farm Records and Accounting (2 units):** Scope of farm records and accounting, and their objectives, basic concepts of accounting. Principles of bookkeeping and accounting, kings functions of farm records and accounts. Concepts of trial balance and final accounts.

**AEC 308 Principles of Farm Management (2 units):** Nature and

scope of farm management. Basic principles of farm management. Special characteristics of agriculture that affect management decisions. The decision making functions of farm manager. The common concepts and tools in management: law of diminishing returns, farm cost, valuation, depreciation as they affect the farmer. The literate versus illiterate farmer in carrying out farm management functions.

**AEM 301 Introduction to Agricultural Extension and Rural Sociology (2 units):** The need for agricultural extension. Agricultural extension in the world and in Nigeria. Basic philosophies behind agricultural work. The institutional setting of agricultural extension. Basic concepts and principles of rural sociology to an understanding rural situation. Importance of rural situation. Importance of rural communities and institutions social stratification, social processes and social changes in rural areas. Leadership in rural communities; role and functions of rural areas. Development of rural community leaders. The extension and the rural community. Communication techniques and strategies of change, various agricultural teaching methods, aids and their use.

**AEM 302 Extension Teaching, Learning Process and Methods (3 units):** Nature and elements of communication process. Principles of analyzing communication problems in extension. 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.

**AEM 306: Agricultural Production Economics (2 Units):** Theory and principles of agricultural production with respect to resource use, resource allocation, resource and product enterprise combination. Forms of production functions and their characteristics; response analysis, measurement of resource productivity.

**AEM 303 Agrarian Institutions and their Management (3 units):** Establishment of the various agrarian institutions of the world, their operation, relevance and efficiency in agricultural production. Nigerian case study of agrarian institution management.

**AEM 304 Communication and Audio-Visual Techniques (2 units):** General principles and nature of communication science. Types and used of audio-visual materials, advantages and disadvantages. Students should be exposed to the handling of the audio-visual equipment. Problems associated with the use of audio-visual techniques.

**AEM 311 Introduction to Rural Life (2 units):** Concepts; meaning of rural life, semi-urban, urban life, characteristics of each. A study of the rural community. Social life, economic life, poverty. Quality of the life and its measurement. The rural communities problems of rural society, their causes and possible solutions.

**AEM 305: Introduction to Agricultural Insurance (2 Units):** Meaning and scope of agricultural insurance. Nature of agriculture necessitating insurance-taking. Principles and concepts of risk and uncertainty. Nigerian Agricultural Insurance Company: history, performance, scope, limitations, future prospects.

**AEM 307: Agricultural Marketing and Prices (3 Units):** Forces determining prices of farm products, measurement of economic relations as they affect agricultural prices. Direct and derived demand for farm products. Prices determination and analysis of price data, price forecasting, price variations over space and time. Commodity price problems, farm price and income problems, time series analysis, farm price data, principles and practices governing international trade in farm products. Government policies concerning International trade (import and export duties, etc), procedures in exporting and importing, with particular reference to the agricultural sector.

**ANP 301 Introduction to Non-ruminant Animal Production (2 units):** Management of breeding stocks, growing and young animals. Housing, equipment and feeding principles of poultry, rabbits and pigs. Production and management practices, livestock economics; health management of stock, processing and marketing of poultry, pigs and rabbits.

**ANP 302 Ruminant Animal Production (2 units):** Management of breeding stock, growing and young animal, housing equipment and feeding principles of cattle, sheep and goats. Production and management practices. Health management of ruminant animals. Products.

**ANP 310 Genetics and Breeding (2 units):** Basic principles of genetics and cytogenetic. Applications to animals and plants breeding.

**ANP 313 Poultry Production (2 units):** Building and equipment, incubation and hatchery management of poultry. Principles of feeding, housing, care, breeding and management as basis for successful production. Production and management of practices in eggs and broiler production, processing and marketing of poultry and poultry products. Diseases and parasites of poultry and their control. Health management practices.

**AGM 314 Introduction to Farm Mechanization (2 units):** Aims and objectives of agricultural mechanization. Basic machines. Workshop tools. Principles of internal combustion engines. Study of farm machinery used for tillage; ploughs, harrows, cultivators, farm power transmission system. Harvesting and processing equipment (sprayers and dusters). Operating principles of farm machinery. Workshop and building materials used on the farm.

**SOS 301 Introduction of Pedology and Soil Classification (2 units):** Soil, 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 soils.

**AEC 403 Agricultural Production Economics and Resource Used Management (3 units):** Concept of production functions. Input-output relationships. Resources in Agriculture. Land, labour, capital and management resources. Marginal analysis. Concept of an agricultural production. Steps in project introduction, appraisal,

analysis and implementation. Methods of project appraisal, MPV, cost benefit ratios DCF. Financial and Economic Analysis. Linear programming.

**AEM 400 Student Industrial Work Experience Scheme (SIWES):**

The second semester will be devoted to practical farm training in established farm/plantation or agricultural establishment/institutions outside the university. The period would expose students to practical training in the following areas:

- i. Crop production techniques (permanent, arable and horticultural crops, etc)
- ii. Animal husbandry techniques (cattle, sheep, goats, poultry, pigs and rabbits)
- iii. Soil fertility and management
- iv. Farm management and accounting
- v. Extension practices; report writing on practical training. By the end of the practical training year, the students would have acquired a sound theoretical and practical knowledge of the subject of agriculture in general

Grading will be divided into sections assigned equal weights as shown below:

***SIWES Section I:*** Shall be guided by the appraisal of student's overall performance by the site supervisor and moderated by the unit.

***SIWES Section II:*** Assessment of the extent of student's exposure to technical aspect of the SIWES programme, work done and academic relevance to theoretical background. Display of knowledge acquired on daily basis and summary of production practices exposed to.

***SIWES Section III:*** Assessment of technical report writing skill: ability to summarize and report field operations in a comprehensive manner.

***SIWES Section IV:*** Ability to present work done and knowledge acquired to an academic audience in a seminar. Extent of knowledge

acquired on practical aspect of training at SIWES site and overall academic grooming would be tested.

**AEM 405 Extension Training and Curriculum Development (3 units):** Meaning of extension training, importance of extension in agricultural development; objectives of the different types of training (e.g. pre-service and in-service training), programmes for different categories of extension personnel. Methods of extension training, farmers. Training; programmes; curriculum development processes; organisation of the causes and evaluation of training programmes.

**AEM 411 Social Relationships and Behavioural Change (3 units):** Social relationship as an analytical unit in agricultural extension system, social relationship as an indicator of individuals and groups, innovation process, major theories of behavioral change in agriculture, programme planning.

**AEM 450 Agricultural Finance and Marketing (3 units):** Credit unitization, sources of finances; loan acquisition, repayments and credit instruments; principles of farm accounting, budgeting and financial control. Farm records keeping and preparation of financial statements; profits and loss accounts and balance sheet; credit agencies and government credit policies and approaches to efficient credit management. Marketing- definition and scope of market function, types of markets and objectives, the importance of marketing. Characteristics of marketing problem, the role of marketing in an agricultural business. Agricultural demand and supply pattern and analysis.

**AEM 451 Farm Business Organization(3 units):** Nature and scope of farm business. Functional division in farm business management; different organization and typology of farm business. Application of management principles of farm organization and operation. Concept of farm labour productivity. Acquisition and use of farm resources, acquire land, capital and credit for farm use business operation. Economic, climate and business in Nigeria.



**AEM 458 Extension Strategies in Pilot Rural Development Project (3 unit):** Objectives of pilot projects, strategies for coordinating sciences, official and non-official agencies, local people, purchase and distribution of inputs, marketing, training of staff and local people and their organization building development models.

**AGB 404 Bio Resources management (3 units):** Biological diversity, genetic diversity, species diversity, species of local cereal, local legumes species, local fruits tree species, genetic diversity expressed through large number of associations or combination of genes in individuals of single species, and whose genetic diversity is crucial ingredients to cross-breeding or hybridization process aimed at given more vigour to the crop varieties that have been cultivated over so many years, loss of crop genetic variability of crops or genetic erosion, species disease resistance, utilization of plant animals genetics resources. Biotechnological protection of forest plantations and economics plants, germplasm appropriation and privatization for crop improvement, patents and plant breeders rights, production of improved plants and animals.

**CSP 401 Biotechnology in Crops/Pest Management (3 units):** Introduction to Agricultural Biotechnology. Micro propagation. Production of pest resistance varieties. Improvement of crop yields, nitrogen fixation, nutritional quality and chemical composition, mutation. Bio fertilizers. Molecular markers.

**AEM 501 Statistics and Research Method in Extension (3 units):** Defining a research problem; development hypothesis and objectives; principle of research design; questionnaire preparation and collection of data; measurement and data collection; statistical theory and different method for handling data; presentation of research finding in narrative, tabular and graphical forms.

**AEM 502 Extension Organization and Supervision (3 units):** Concepts, theories, guidelines and principles of extension organization, management and supervision, roles and responsibilities of various levels of extension and other relevant staff, staff recruitment, selection, replacement and supervision; principles of

moral and motivation; implication of extension staff development and promotion; creating conducive working environment; assessment of extension work accomplishment; improving Nigerian extension services.

**AEM 503 Diffusion and Adoption of Innovation (3 units):**

Definition and element of diffusion; processes of adoption and diffusion of innovation; the innovation decision process; characteristics of innovation; adoption rates and adoption categories opinion leadership; change agents; theoretical formation on diffusion of innovations; sectors related to differential rate of adoption of new agricultural technology ; implication of these processes and factors of effective agricultural extension in rural areas.

**AEM 504 Rural Community Development (3 units):**

Sociological, economical and related policy perspectives as they relate to rural development. The theories of community, as a unit of social change; the micro and macro approaches to social change; dimensions of innovations; approaches to community development; community development and other developments. Model of rural/agricultural development and their relevance to Nigeria situation problems of institutions and infrastructural community. Case studies on community development in Nigeria and other development countries. The future of communities in Nigeria.

**AEM 505 Administration and Programme Planning in Extension**

**(3units):** Concepts, theories, principles and guidelines of administration, organization, supervision as applied to extension. Administrative function staff recruitment, selection, placement and supervision; budget development and fiscal control, importance of programme planning in agricultural extension, need, educative, objective, leaning experience, clientele participation, plan of work, and calendar of work; the role of good public relations, good leadership and cooperation for an extension workers; Association and cooperatives; concepts of evaluation applied to agricultural extension programmes.

**AEM 506 Advanced rural sociology (3 units):** General sociology theory, analysis of social structure of rural agrarian system and societies. Selected theories of social change and their potential for modernization of rural societies, social change and attitude change; measurement of change in rural societies; resistant and conducive forces to change in rural societies. Economic aspects of social change, group dynamics; traditional institution and their transformation; involvement of local people in directed change. Problems of rural societies, their causes and solution. Special topics in rural sociology. Selected case studies.

**AEM 507 Management of Agricultural Extension Personnel (3 units):** Concept/meaning and objectives of personnel management in extension; scope and functions of personnel management; principles of personnel management; personal qualities of a good extension personnel manager. Functions of a personnel department. Problems confronting an extension personnel manager. Duties or tasks of a personnel manager. Expansion of personnel manager.

**AEM 508 Technological and social Change in Agriculture (2 units):** Understanding technological change; basic sociological concepts; technological change and societies; general principles in introducing technological change in Nigerian agricultural development, agricultural extension ethical consideration in introducing technological change; agricultural engineers and public extension system.

**AEM 509 Agricultural Business Management (3 units):** The scope of agricultural business and management; types of agricultural business management and organizations; enterprise selection; production planning; public policies affecting agricultural business farm growth; organisation of large scale farms; legal organisation and tax strategies; economics of agricultural processing, marketing management.

**AEM 510 Psychology for Extension Personnel (2 units):** Concepts of human development, intelligence, individual differences, teaching, learning, motivation, emotion related to extension education.

**AEM 511 Leadership and Rural Development (3 units):** Identification, evaluation and training of leaders for rural development; problems and strategies of rural development; socio-cultural variation and rural resources allocation.

**AEM 512 Rural Youth Programmes in Agricultural extension (2 units):** History, objectives and organisation, promotion of and types of rural youth programmes in Nigeria and selected foreign and African countries; youths/problems and role of government agencies.

**AEM 599 Research Project (4 units):** The students will write an independent project research work as part of the programme requirements. That is, each student under the guidance of a supervisor is required to conduct research into an approved agricultural production problem culminating in the submission of a dissertation.

**CPT 514 Produce/Post-harvest Management (2 units):** Tropical environment in relation to maturity, ripening and senescence, physical and chemical indices of quality in fruits, seeds, vegetables, flowers and other crop products. Storage and storage-life of harvested fruits, seed, vegetables, flowers and other crop products. Fundamentals and principles of crop products processing and storage, storage and shelf life problems in crop products, ideal environment for storage, principles of controlled environment for storage, principles of controlled environment for transit and long term storage, operational equipment for storage and preservation.

### **12.2.15 OUTLINE PROGRAMME PROPOSAL (OPP) AND DETAILED PROGRAMME PROPOSAL (DPP) OF B.Sc. HOTEL AND CATERING MANAGEMENT**

**Description of the programme:**

**Title: B.Sc. Hotel and Catering Management**

**Programme Code: (5201)**

**Programme: Philosophy and objectives:**

The B.Sc. Hotel and Catering Management is designed to equip the students with the basic skills required for serving in a professional capacity in areas where Hotel and Catering Management application are inevitable.

The B.Sc. Hotel and Catering Management is designed to prepare students for positions in the Hotel and Catering Management industry as well as catering business, provide sound foundation for students who choose to make careers in the field. The programme is also formulated to production of graduates that are adequately equipped with the comprehensive theoretical knowledge and practical skills required for engaging in productive economic and industrial production.

**Aims:** The aim of the programme is to expose participants to modern techniques and global best practices of Hotel and Catering Services.

**Objectives:** The objective of this programme is to produce graduates that will compete favourably with practitioners outside the country as well as raise entrepreneurs that will provide employment for others which impact on the economy.

**Admission Requirements:** To be admitted for B.Sc. Hotel and Catering Management programme, a candidate must possess: five credits in relevant subjects such as English Language, Mathematics, Economics, Geography, Food Science and Technology etc at the WASC/SSEC/GCE Ordinary Level/NABTEB, or merits in TC II, at not more than two sittings.

**Direct Entry:** Candidates with National Diploma (ND) or OND in relevant programmes, with a minimum of Lower Credit or its equivalent from recognized institutions may be considered for admission into the 200 level of the programme. Candidates with Advanced Level passes in at least 2 relevant subjects in addition to a minimum of 3 credit passes in GCE level O' Level subjects may be considered for admission into the 200 level. Holders of the Nigerian Certificate in Education (NCE) may be considered for admission into the 200 level.

**Graduation Requirements**

To graduate, a student shall have undergone at least 8 – 10 semesters of study depending on entry point, including field practical training. Course work load must meet the graduation requirements of the University based on minimum academic standards. However, in doing so, the student must earn a minimum of 120 credits units for the four years programme and 90 credits units for the three year (Direct entry) programme in Hotel and Catering management and related fields as indicated in the NUC minimum academic requirements. The submission of an undergraduate project thesis based on a supervised research is a graduation requirement, which cannot be compromised.

**YEAR 1      1<sup>st</sup>Semester**

| <b>Course Code</b> | <b>Course Title</b>                       | <b>Credit Unit</b> | <b>Status</b> |
|--------------------|---|--------------------|---------------|
| GST 101            | Use of English and Communication skills I | 2                  | C             |
| GST 105            | History & Philosophy of Science           | 2                  | C             |
| GST 107            | Good study Guide                          | 2                  | C             |
| CIT 101            | Computers in Society                      | 2                  | C             |
| ECO 121            | Principles of Economics. I                | 3                  | C             |
| SMS 105            | Elements of Management. I                 | 2                  | C             |
| FRE 101            | Basic French Grammer 1                    | 2                  | C             |
| HCM 131            | Introduction to Hospitality Management    | 2                  | C             |
| HCM 133            | Agriculture, Nutrition & Health           | 2                  | C             |
| HCM 135            | Introduction to Food & Beverage Services  | 2                  | C             |

|         |  |           |   |
|---------|--|-----------|---|
| TSM 141 | Understanding Tourism                  | 2         | C |
|         | <b>Total Credit Units (Compulsory)</b> | <b>24</b> |   |

**YEAR 1      2<sup>nd</sup> Semester**

| <b>Course Code</b> | <b>Course Title</b>                         | <b>Credit Unit</b> | <b>Status</b> |
|--------------------|---|--------------------|---------------|
| GST 102            | Use of English and Communication skills II  | 2                  | C             |
| SMS 106            | Elements of Management II                   | 2                  | C             |
| CSS 102            | Introduction of Sociology                   | 2                  | C             |
| MKT 108            | Introduction of Marketing                   | 2                  | C             |
| ECO 122            | Principles of Economics I                   | 3                  | C             |
| HCM 134            | Food and Nutrition                          | 2                  | C             |
| HCM 136            | Introduction to Food & Beverage Services II | 2                  | C             |
| TSM 144            | Tourism Marketing                           | 2                  | C             |
|                    | <b>Total Credit Units (Compulsory)</b>      | <b>17</b>          |               |

**YEAR 2      1<sup>st</sup> Semester**

| <b>Course Code</b> | <b>Course Title</b>                           | <b>Credit Unit</b> | <b>Status</b> |
|--------------------|---|--------------------|---------------|
| GST2 01            | Nigerian Peoples & cultures                   | 2                  | C             |
| GST 203            | Introduction to Philosophy and Logic          | 2                  | C             |
| SMS 201            | Business Statistics. I                        | 2                  | C             |
| SMS 203            | Introduction to Financial Accounting. I       | 3                  | C             |
| SMS 207            | Business Communication                        | 2                  | C             |
| HCM 231            | Introduction to Food & Beverage Production. I | 2                  | C             |
| HCM 235            | Food, Beverage & Costs                        | 2                  | C             |
| HCM 237            | Hospitality Sales and Marketing               | 2                  | C             |
| HCM 239            | Menu Planning & Catering Service              | 2                  | C             |
| TSM 241            | Understanding Tourism                         | 2                  | C             |
|                    | <b>Total Credit Units (Compulsory)</b>        | <b>21</b>          |               |

**2<sup>nd</sup> Semester**

| <b>Course Code</b> | <b>Course Title</b>                           | <b>Credit Unit</b> | <b>Status</b> |
|--------------------|---|--------------------|---------------|
| GST 202            | Fundamentals of Peace and Conflict Resolution | 2                  | C             |
| ENT 216            | Project Appraisal and Evaluation              | 2                  | C             |
| ENT 224            | Business Ethics                               | 2                  | C             |
| HCM 232            | Menu Development & Planning                   | 2                  | C             |
| HCN 234            | Facility Maintenance Management               | 2                  | C             |
| HCM 236            | Beverage Management                           | 2                  | C             |
| HCM 238            | Introduction to Food & Beverage Production II | 2                  | C             |
| SMS 204            | Introduction to Financial Accounting II       | 3                  | C             |
| SMS 202            | Business Statistics II                        | 3                  | C             |
|                    | <b>Total Credit Units (Compulsory)</b>        | <b>21</b>          |               |

**YEAR 3                      1<sup>st</sup> Semester**

| <b>Course Code</b> | <b>Course Title</b>                        | <b>Credit Unit</b> | <b>Status</b> |
|--------------------|--|--------------------|---------------|
| ACC 305            | Cost Accounting                            | 3                  | E             |
| HCM 303            | Food Services & Professionalism            | 2                  | C             |
| HCM 313            | Restaurant Entrepreneurship                | 2                  | C             |
| ENT 321            | Quantitative Method for Business Decisions | 2                  | C             |
| HCM 333            | Food & Beverage Services III               | 2                  | C             |
| HCM 339            | Food & Beverage Production III             | 2                  | C             |
| HCM 343            | Procurement & Supply Management            | 2                  | C             |
| HCM 345            | Wine & Food Pairing Principals             | 3                  | E             |
| MGS 303            | Managerial Economics                       | 2                  | C             |
| TSM 347            | Commercial Recreation Management           | 2                  | C             |
| TSM349             | Introduction to Airline Management         | 2                  | C             |
|                    | <b>Total Credit Units (Compulsory)</b>     | <b>18</b>          |               |
|                    | <b>Total Credit Units (Elective)</b>       | <b>03</b>          |               |
|                    | <b>Total Credit Units</b>                  | <b>18</b>          |               |



**2<sup>nd</sup> Semester**

| <b>Course Code</b> | <b>Course Title</b>                           | <b>Credit Unit</b> | <b>Status</b> |
|--------------------|---|--------------------|---------------|
| SMS 304            | Research Methodology                          | 2                  | C             |
| HCM 304            | Food & Beverage Production IV                 | 2                  | C             |
| HCM 310            | Industrial Training/SIWES (6 Months)          | 6                  | C             |
| HCM 340            | Hospitality Law & Travels                     | 2                  | C             |
| HCM 342            | Current Issues in Food Safety & Sanitation    | 2                  | C             |
| TSM 342            | Concept, Design & Feasibility                 | 2                  | C             |
| ENT 326            | Agro-Business Management                      | 2                  | E             |
| ENT 322            | Principal and Practice of International Trade | 2                  | E             |
| TSM 348            | Hospitality & Tourism Management              | 2                  | C             |
|                    | <b>Total Credit Units (Compulsory)</b>        | <b>18</b>          |               |
|                    | <b>Total Credit Units (Elective)</b>          | <b>02</b>          |               |
|                    | <b>Total Credit Units</b>                     | <b>20</b>          |               |

**YEAR 4      1<sup>st</sup> Semester**

| <b>Course Code</b> | <b>Course Title</b>                   | <b>Credit Unit</b> | <b>Status</b> |
|--------------------|---------------------------------------|--------------------|---------------|
| HCM 431            | Advanced Food & Beverage Production   | 2                  | C             |
| HCM 433            | Management & Organizational Behaviour | 2                  | C             |
| HCM 435            | Security & Loss Prevention Management | 2                  | C             |
| HCM 437            | Advanced Food & Beverage Services     | 2                  | C             |
| HCM 439            | Hotel Planning & Interior Design      | 2                  | C             |

|         |   |           |   |
|---------|---|-----------|---|
| ENT 417 | Production Management I                         | 2         | E |
| ENT 431 | Marketing Ethics & Social Responsibility        | 2         | E |
| TSM 403 | Cultural Tourism                                | 2         | C |
| TSM 441 | Strategic Management in Hospitality And Tourism | 2         | C |
|         | <b>Total Credit Units (Compulsory)</b>          | <b>14</b> |   |
|         | <b>Total Credit Units (Elective)</b>            | <b>02</b> |   |
|         | <b>Total Credit Units</b>                       | <b>16</b> |   |

**2<sup>nd</sup> Semester**

| <b>Course Code</b> | <b>Course Title</b>                            | <b>Credit Unit</b> | <b>Status</b> |
|--------------------|--|--------------------|---------------|
| HCM 412            | Seminar in Hotel and Catering Management       | 2                  | C             |
| TSM 442            | Tourism Entrepreneurship                       | 2                  | C             |
| HCM 432            | Hospitality Information Systems                | 2                  | C             |
| TSM 444            | Global Tourism Issues                          | 2                  | C             |
| HCM 434            | Lodging Facilities Management                  | 2                  | C             |
| HCM 436            | Internal Control in Hospitality Administration | 2                  | C             |
| HCM 438            | Hospitality Supervision & Quality Management   | 2                  | C             |
| HCM 450            | Research Project                               | 6                  | C             |
| ENT 420            | Production Management II                       | 2                  | E             |
| ENT 424            | Feasibility Study & Business Proposals         | 2                  | E             |
|                    | <b>Total Credit Units (Compulsory)</b>         | <b>18</b>          |               |
|                    | <b>Total Credit Units (Elective)</b>           | <b>02</b>          |               |
|                    | <b>Total Credit Units</b>                      | <b>20</b>          |               |

**HCM303: FOOD SERVICES AND PROFESSIONALISM – 2 CREDIT UNITS**

The course aim to expose learners to the professional, techniques of food service in the hospitality Industry with reference to some authors in the area of study. What is food service and professional, purchasing selection and storage of food service items,

Factors affecting food service experience (environment analysis: location, accessibility, interior décor, furniture, ambience, equipment and cleanliness as well as hygiene), measuring service quality in the hospitality industry, cost control in food service, menu development and classification of service, planning and service procedure, role of human resources management in the food service sector, food service ,marketing and customers' behavior, financial management and budgeting for food service operation, latest trend and future of food service industry (design and positioning food service for multicultural markets personalized service).

**ACC 305: COST ACCOUNTING - 3 CREDIT UNITS**  
**Course content:**

**Introduction** definition and purpose of cost accounting of cost function; elements responsibility and behavior – material accounting and control procedure; labour accounting, overhead cost accounting and control procedures; cost centre; cost behavior and cost estimation – costing methods, standard costing techniques; absorption costing, marginal costing, budgeting and budgetary control and cost control.

**HCM313: RESTAURANT ENTREPRENEURSHIP – 2 CREDIT UNITS**

The course is designed to assist student and learners with skills, knowledge and experiences required to run a successful restaurant outfit.

The purpose of this subject is to provide a thorough understanding of the theoretical fundamentals and practices of small and medium

enterprise (SME) business management and planning and insight into the entrepreneurial skills, knowledge and innovation processes required of SME's in today's competitive business environment.

Student will apply the knowledge and skills to the writing of a business plan for the use of innovative and entrepreneurial approaches to business practices and management specifically for a SME. Students will critically analyze contemporary theories in management of a SME.

**ENT 321: QUANTITATIVE METHODS FOR BUSINESS DECISIONS 2 CREDIT UNITS**

To provide the learners with theoretical knowledge and the use of mathematical tools in solving management problems in business. Matrix algebra, linear programming, quality control, network analysis, queuing models, queuing theory, time series and capital investment appraisal.

**HCM 333: FOOD & BEVERAGE SERVICES III – 2 CREDIT UNITS**

Other skill Important to sale situation and beverage service, handing difficult customer /guest, sale promotion in food and beverage services, merchandising; internal selling and public relations, food and beverage service in hotels, fast food operation, nature of franchising, industrial catering services, transport catering services, handling function catering, hospital catering services, bar operation, selection and development off staff in food and beverage services operation, cuisine and service terms I and cuisine and service terms II.

**HCM 339: FOOD AND BEVERAGE PRODUCTION III – 2 CREDIT UNITS**

The aims of this course is to further expose you to the practice of food production, principals of cookery and various approach to food production the aims will be achieved by knowing principal in cake making, preparation of eggs, grains and farinaceous dishes,

preparation of pastries pudding and sweets, preparation of flavors, sandwiches and beverage, process involved in preparation of non-alcoholic drinks, know difference cuts, quality grades, portion size and uses, common uses of poultry preparation and cooking fish and sea foods, utilization of local food commodities in the international acceptable Nigeria dishes and sequence of work schedules and production analysis in menu planning.

Describe the different material in cake making, faults in making cakes, the use of eggs in food production prepare egg dishes and apply garnishes, foods classified as farinaceous dishes aged its accompaniment, grain used in cookery, fat flour and other commodities available for production of pastries, puddings and sweet hot and cold sweets, freezing techniques, chilled and iced confectionaries, convenience products, Hot and cold savories, Use of fillings and toppings, commodities for making non-alcohol icy beverages, healthy and whole some birds, disease poultry cooking, garnishes flavorings, stuffing for poultry game, fish and sea foods, utilization of local commodities acceptable for Nigerian dishes, menu planning and purchases, uses and maintenance of kitchen equipment.

### **HCM 343: PROCUREMENT AND SUPPLY MANAGEMENT – 2 CREDIT UNITS**

The course is designed to enable you define, specify, relate, apply, demonstrate and use or complement policies, principles, techniques and method involve in the physical, quantitative, procurement, planning, financial and management control of materials.

Develop conceptual frameworks and perspective of the subject matter of procurement and supply management (the stuffs, functions, objectives, variable or elements, procedure and interdepartmental relationships) ; quality assurance in PSM ( introduction, specifications, standardization, value analysis, inspection of purchases material ); sourcing procedure, policies and strategies; pricing and payment procedures and policies in PSM; management of procurement and materials related activities ( personnel, JIT, use of computers, records and ethics ); government procurement and

contract administration; competitive bidding and negotiated procurements, international purchasing and expediting.

**HSM 3445: WINE AND FOOD PAIRING PRINCIPLES – 2  
CREDIT UNITS**

On successful completion of this subject, the student will be able to achieve the following learning outcomes: Knowledge and Intellectual Skills – understanding the key factors affecting the taste of wines and major wine producing countries. Students will be able to demonstrate knowledge of the wines produced in the world, old world and other wine producing countries. Student will be able to use simple and appropriate wine terms to describe wine. Student will be able to demonstrate knowledge of fortified wines. Student will be able to demonstrate knowledge of spirits and liqueurs. Student will be able to apply the principle of wine and food matching. Student will be able to understand the correct storage of wine. Types and style of wine (Light wines Sparking wines Fortified wines Vermouth Red wines, White wines and Rose wines Dry, Medium and Sweet wines), Key factors affecting the taste of wines (Grapes Climate Luck of year soil Viticulture Vinification), Old world wine producing countries ( The linkage of viticulture with the European civilization and culture France, Italy, Spain, Portugal and Germany), New world wines producing countries (The expression of New world wines in the context of wine culture: the viticulture and wine making South Africa, Chile, Argentina, United State of America , Canada, Australia and New Zealand), Other wine producing countries (China, Southern and Eastern Europe, the Mediterranean countries), Spirits from various countries ( Whisky , Cognac, Armagnac Flavored spirits, Unflavored spirits Liqueurs), Decanting of wine and its role in social function. The established rules how to achieve the best match and sensory evaluation and tasting techniques (Appearance Nose Palate).

**TMGS 303: MANAGERIAL ECONOMICS – 2 CREDIT UNITS**

To introduce learners to managerial economics skills for decision making and planning in the field of business s management. Objectives of business formulations, Objectives, Motivating business entrepreneurs, major role of profit as business objectives, Internal and External factors influencing business objectives, analysis of investment appraisal, Net Present Value (NPV), Internal Rat of Return (IRR), Traditional and Modern method of investment appraisal, Pricing policies, Pricing techniques, Approach to pricing commodities according to age/life cycle, Nationalization, Privatization and commercialization, Concept of corporate strategy, Study of corporate economics, Uncertainty in today's corporation, Strategic planning and its benefits, Corporate development, Concept of market structures, Operation of various market structures in existence, Monopoly and Oligopoly market structures, Cost analysis, Definition of cost functions of business management, Cost behavior (long-run and short-run), Significance of cost of decision making, Cost concept and break-even analysis.

**TSM 347: COMMERCIAL RECREATION MANAGEMENT – 2 CREDIT UNITS**

Concept of recreation, Tourism and recreational facilities provision in Nigeria, Tourism and the environment, Different opportunities in leisure participation, Leisure product, Role of commercial and home-based leisure facilities ( Accommodation and catering), Provider of leisure services, Environmental planning of tourism attraction , Investment in tourism and the private sector, Sources type method and aims of public sector investment.

**TSM 349: INTRODUCTION TO AIRLINE MANAGEMENT – 2 CREDIT UNITS**

This course is designed to acquaint students with the basic communication tools in organization, Once you have successfully completed the course, it is expected that you should be able to do the

following (Understand what organizational communication is all about and to appreciate its importance; Awareness of the large scope of the communication functions in organization; Acquainted with the principle to acquire the skills needed for effective communication).  
General Introduction to communication, Communication systems mode and Network, Definition of communication, Elements of communication process, Difference between oral writing and non-verbal communication, Formal communication system, Vertical, Horizontal and Quasi- Vertical, Semi-formal and Informal communication system, Barriers and Limitation to effective communication, Analysis of attitude, Feeding and objectives of self and other people with reference to conflict resolution, Motivation to work, Interpretation of technical and non- technical information, Basic communication skills, Listening , Speaking, Reading and writing, Language skills, Vocabulary, Part of speech (form, meaning and usage), Mechanics ( paragraphing, punctuation and spellings), Direct and reported speech, common errors, Pronouncement ( word stress, sentence stress, intonation, minimal pairs, homophones), Essay writing, Speech making, Correspondence ( Letters, Memo and Circular), Meeting ( Note, agenda and minutes), Report writing, Advertisement .

**BHM 304 RESEARCH METHODOLOGY - 2 CREDIT UNITS**

This course is to prepare students on how to gather information and data for research and analysis purposes especially as they relate to hotel and hospitality industry. Define, describe and use research terms correctly, develop the skills and competency for executing s research project, choose an appropriate research techniques most suitable for the nature of the problem (s) to be investigated, analyze and interpret data generated using any of the various statistical and computer tools of analysis, prepare an acceptable and sound project plan (proposal) for investigating the identified problem.

Conceptual framework research; skills of scientific investigation, Information gathering, Analysis and interpretation in dealing with hotel and catering management problems in Nigeria, Steps in research



agenda and proposal, the art of problem identification and analysis and report writing, the typologies of the research method, Statistical tools of analysis, Computer application in research, Research referencing and citation styles, Proposal contents writing skills, Ethical issues.

**HCM 304: FOOD AND BEVERAGE PRODUCTION IV – 2 CREDIT UNITS**

The course aims at describing hotel catering and tourism industry is organized, Identifying the food hygiene regulation, Describing the need to comply with the law in regards to health , Environment condition, Highlight what menu/recipe entails and customer requirements, Describing local food commodities, Explain purchasing of food, Describing the process of effective control system, Describing functional catering, Explaining the procedures for cook chill, Cook freeze and soups vide catering system and describing meat cookery.

Types of catering services rendered, Food hygiene regulations, health, safety and hygiene practice, Menu and recipes, planning and types of menu, Compilation of different menu from food, Local food commodities, Function of food operator in purchasing of food, Control system, Functional catering, Cook chills, Cook freeze and soups vide catering system and meat cookery.

**HCM 310: INDUSTRIAL ATTACHMENT (6 MONTH) – 6 CREDIT UNITS**

There will be industrial attachment of 3 to 6 month in a reputable hotel and catering organization by student. This will enable the student to put into practice all the theories they have learnt. A report will be submitted on their experience to the school. Also, the Industrial Training Fund will be there to monitor the training exercise.

**HCM 340: HOSPITALITY LAWS AND TRAVELS – 2  
CREDIT UNITS**

To introduce to the students necessary rules and regulations as well as liabilities in the hospitalities business. That the student should be aware and be conversant with rules and regulations binding the hospitality practice. To enable the students to be conscious of their interaction with clients when they eventually found themselves working in hospitality establishment after their course of study.

Booking contract, Price display, Registering gush and over booking, Inns and hotels, the rights and duties of the proprietor, the guest in residence, the rights of an innkeeper, the hotel premises, In keepers strict liability.

**HCM 342: CURRENT ISSUES IN FOOD SAFETY AND  
SANITATION – 2 CREDIT UNITS**

The aims of this course are to familiarize learners with the necessary primary and secondary things that are necessary in current issues in food safety and sanitation.

Implementing healthy catering services, health and safety for new catering premises, Food safety temperature control, Pest control, Kitchen floor safety, Food safety, importance of hygiene, Food hygiene (amendments) regulation 1990/1991, Kitchen hygiene, Control of waste and recyclable materials.

**TSM 342: CONCEPT, DESIGN AND FEASIBILITY – 2  
CREDIT UNITS**

The purpose of this subject is to provide conceptual and understandings of design, Location Planning, settings up and the maintenance and management of a quality, legally complaint commercial work environment. The subject examines the interrelationships between the management of facilities and operations management that is concerned with the selection of inputs and transformation process to produce outputs of added value. Students will develop of a facilities plan for a nominated hospitality

business that complements its business strategy and maintains its market competitiveness.

**ENT 326: AGRO –BUSINESS MANAGEMENT – 2CREDIT UNITS**

Overview of agro-business, Strategic planning in agro-business, Forecasting demand in agro-business, Inventory management and control in agro-business, Warehousing management in agro-business, Financing of agro-business, Record management in agro-business, Managing risks in agro-business, The role of Nigerian agricultural insurance, corporation in agro-business, promotion strategies for agro-products, Grading and pricing of agro-product, Corporation in agro-business, Branding and packaging of agro-products, Distinction of agro-product, Market opportunities for agro-products.

**TSM 348: HOSPITALITY AND TOURISM MANAGEMENT – 2 CREDIT UNITS**

Industry Overview, How the industry works, Rail and Ground Transportation and Accommodation, Tours, Cruises and Insurance, World Geography and Documentation, Sales and Administration Procedures, Air Travel, Domestic and International Fares and Ticketing, Computer Reservation System, Basic theory on the Apollo reservation system, Advanced Computer Reservation System, Using SABRE Advanced Computer Reservation System Using APOLLO, Selling Skills for the Professional Travel Counselor, Advanced Fares and Ticketing Construction and Domestic and International Airline Tariff and Ticketing.

**HCM 431: ADVANCED FOOD AND BEVERAGE PRODUCTION – 2 CREDIT UNITS**

Upon satisfaction completion of this course, students should have: developed knowledge, understanding and application of food microbiology at an advanced level, Ability to determine how microorganism impact on the quality and safety of goods and operation efficiency across the total chain of production, Ability to

identify current and future research directions in food microbiology, Enhanced their ability to work in a team and enhanced their oral and written communication skills.

This course takes food microbiology from its basic concept to advanced consideration of current issues in microbial ecology of foods, Food spoilage, Food borne microbial disease (including viruses), Food and beverage fermentations and use of microorganisms as processing aids and sources of food ingredients and additives. Using selected microbial groups and commodities, it examines the biochemical, physiological and molecular mechanisms of microbial growth, Survival and significance in food and beverage ecosystems as they evolve from the raw materials through the processing to the consumer. Emphasis will be in the linkage between microbial activity, product quality and safety, and practical management of these needs. The application of molecular techniques and genomics to food microbiology will be highlighted throughout the course. The topics selected for discussion reflect research interests and projects currently active in the Food Science program at UNSW.

**HCM433: MANAGEMENT AND ORGANISATION  
BEHAVIOUR – 2 CREDIT UNITS**

This course introduces the student to multidisciplinary approaches to human behavior in organizational settings. Attention will be paid to both public and private sector organization. A variety of issues will be examined from the perspective of the manager as well as those of the workers, the client and the citizen. The major objectives of this course include : To provide an overview of the influential theoretical perspectives and research findings in the field of organizational behavior, To offer conceptual frameworks, methodological approaches, and analytical skills which are useful in increasing our understanding of human behavior in organization, To provide opportunities to practice the use of these conceptual frameworks through their application to organizational problem, To challenge the student to think analytically and creatively about significant issues facing organizational stakeholders now and in the future.

**HCM 435: SECURITY AND LOSS PREVENTION  
MANAGEMENT -2 CREDIT UNITS**

Explain the completion of this course , students should be able to :  
Discuss legal concerns in providing safe and secure accommodation for guests, Identify preliminary consideration in settings up a security program, including the importance of law enforcement liaison and security training, Identify and explain the function of a wide variety of security equipment, including physical security system, surveillance system, communication systems, alarm system and guestroom security equipment such as locks, Identify and explain the purpose of security procedures that deal with guest protection and internal control. Procedures are discussed generally and on a department-by- department basis, with special attention given to the accounting department and the protection of funds, Discuss the element of need for computer security, Cite the special security concerns involved in report writing and report keeping, media relations, the presence of special guest or events, and maintaining swimming pools, health clubs and jogging trails, Contribute to the development of an emergency management programs that deal with bombs and bomb threats, fires, hurricanes, tornadoes, floods, earthquakes, blackouts, robberies, medical emergencies and terrorism, Discuss the elements of a safety program, Identify many Occupational Safety and Health Act regulations that contain information to lodging property managers and personnel.

**HCM 439: HOTEL PLANNING AND INTERIOR DESIGN –  
2 CREDIT UNITS**

Project development, hotel planning, operational criteria and building system, conceived and initiated student term case study to develop hotel concept. Hospitality, Facilities, Design interpretation and analysis of hotel and restaurant plans, drawing conventions, drawing skills and introduction to AutoCAD software. Hotel planning and Interior Design Market criteria, hotel space planning, interior design and renovation requirement, major interior design presentation.

### **ENT 417: PRODUCTION MANAGEMENT – 2 CREDIT UNITS**

Examination of production processes from small manufacturing outfits to full- automated production lines such as exists in brewing industry. Production systems and models, Production planning, Sales forecasting factors of production and linear programming, CPM and PERT system of production control, Plant layout and material handling system, Inventory control mechanisms as applied to inventories of raw materials work-in-progress and finished goods, Inventory control models such as Economics Order Quantity, Tools for integrated planning and control functions in production.

### **ENT 431      MARKETING ETHICS AND SOCIAL RESPONSIBILITY CREDIT UNITS**

This course different concepts of ethics and social responsibility, Societal marketing practice, Macro marketing, Social responsibility activities of marketing, Social criticisms of marketing, Consumerism, Environmentalism, Green marketing, Arguments on marketing ethics, The role ethics in marketing, Nature and significance of ethics in marketing, Difference between ethical and legal behaviour in marketing , Factors influencing ethical marketing management decisions, Public action to regulate marketing concept, Public policy on marketing in Nigeria, Importance of ethical and socially responsible in consumer behaviour.

### **TSM 403: CULTURAL TOURISM – 2 CREDIT UNITS**

Visitors to museums and heritage organizations everywhere are seeking authentic, engaging and memorable experiences that foster an awareness of the history and culture of local communities. This course explores the complex dynamics of cultural tourism and provides you with practical tools to assess the opportunities and implications associated with tourism development programming for your cultural institution.

**TSM 441: STRATEGIC MANAGEMENT IN  
HOSPITALITY AND TOURISM – 2  
CREDIT UNITS**

For the student to identify and understand strategic management in hospitality and tourism industry as a process of integrating organizational plans for achieving operational goals.

The strategic management process: In general and hospitality /tourism industry, Strategic in making task, Strategic vision, Setting objectives and crafting a strategy, Industrial and competitive analysis, Evaluating company resources and competitive capabilities, Strategy and competitive advantage in hospitality and tourism industry.

**HCM 412: SEMINER – 2 CREDIT UNITS**

Problem identification, objectives of seminar enquiry, historical background of the issue of interest, survey of the problem area, Analysis of information, report of findings, and presentations.

NOTE: student will present a research-based report of not less than 3000 words.

**TSM 442: TOURISM ENTREPRENEURSHIP-(2 CREDIT UNITS)**

Course outlines for the following courses are attached: developing new tourism enterprises; tourist behaviour; major in entrepreneurship – new program proposal major in entrepreneurship proposal; Tourism strategy; managing small tourism enterprises; Tourism in a global environment; information technology and tourism; managing the tourist experience and Tourism enterprise field course.

**TSM 444: GLOBAL TOURISM ISSUES – (2 CREDIT UNITS)**

This course focuses on travel and tourism as the vehicle for studying selected world regions. Using a variety of geo-technologies and inquiry and communication methods, students will conduct and present case studies that develop their understanding of the unique characteristics of selected world regions; the environmental, cultural,

economic, and political factors that influence travel and tourism; and the impact of the travel industry on communities and environments around the world.

**HCM 432: HOSPITALITY INFORMATION SYSTEMS – 2 CREDIT UNITS**

Gives employees a thorough understanding of hospitality computer technology and the management of information systems. Features applications for all functional areas, including reservations, room, food and beverage, sales and event management, and accounting, employees learn to improve efficiency while serving guests better.

**HCM 434: LODGING FACILITIES MANAGEMENT – 2 CREDIT UNITS**

As many organizations, both private and public, invests in leisure facilities and the staging of special events, it is essential that the managers of such facilities and events are aware of planning, design and management issues that are in keeping with current practices and trends. This course addresses these issues and aims to provide knowledge and skills, both strategic and operational, through a series of lectures, examination of case studies and site visits.

This course extends the application of management knowledge to the specific area of facilities and events and aims to equip students with a working knowledge of facility and event management processes and the skills required to design, plan and manage facilities and special events.

After successfully completing this course, students should be able to: Discuss and critique the political and economic forces behind and the impacts that result from, the staging of special events and the planning and provision of leisure facilities; provide examples of how particular management strategies are applied to leisure venues and events; Articulate the specific planning and management needs of facilities and special events including differences, for example, between large scale sport, cultural and community recreation facilities and events; provide informational on the operational requirements



related to staging a special event in a leisure facility; demonstrate an understanding of the application of evaluation techniques as they apply to facilities and special events.

**HCM 436: INTERNAL CONTROL IN HOSPITALITY  
ADMINISTRATION – 2 CREDIT UNITS**

This is designed to impart necessary skills on the learners on internal control system in hospitality administration. Thus at the completion of the course, the learner should be able to define internal control systems. Types of internal control system. To achieve this, the following topics will be covered: Definitions of internal; types of internal control; importance of internal control system assessment and evaluation of the internal control system in hospitality administration; general features of internal control system; internal audit; relationship between internal auditor; techniques of recording in hospitality administration; problems of internal control system in hospitality admin; internal control of stock in hospitality admin, cash disbursement control in hospitality admin; petty cash control in hospitality admin; account receivable control in hospitality administration; and control of employees remuneration in hospitality administration.

**HCM: 438 HOSPITALITY SUPERVISION & QUALITY  
MANAGEMENT – 2 CREDIT UNITS**

For the student to be equipped with the skills of quality supervision and management in hospitality industry.

Development of hotel & catering industry; communication and formal organization; leadership and management (effective & efficiency); quality human resource; job security; enabling environment (government & society); the customer, financial resources, industry and the dynamic society.

**HCM 450: RESERCH PROJECT – 6 CREDIT UNITS**

Students are expected to submit project work for approval bringing into focus all they have learnt in programme.

**ENT 424: FEASIBILITY STUDY AND BUSINESS PROPOSALS – 2 CREDIT UNITS**

Sources of information for feasibility studies; generation data for feasibility studies; business description; choice of business location; technical analysis; management plan for operation; marketing strategy; marketing analysis; ; financial analysis plan implementation; financing plan (sources of funds etc); writing business proposal; writing a loan proposal.

**2.2.16 OUTLINE PROGRAMME PROPOSAL AND DETAILED PROPOSAL FOR B.AGRIC. (AGRICULTURAL EXTENSION & RURAL DEVELOPMENT OPTION)**

**100 LEVEL  
FIRST SEMESTER**

| Course Code | Course Title                              | Credits | Status |
|-------------|---|---------|--------|
| GST 101     | Use of English and Communication Skills I | 2       | C      |
| CIT 101     | Computers in Society                      | 2       | C      |
| GST 121     | Use of Library                            | 1       | C      |
| GST 105     | History and Philosophy of Science         | 2       | C      |
| BIO 101     | General Biology I                         | 2       | C      |
| BIO 191     | Practical Biology                         | 1       | C      |
| CHM 101     | Introduction to Inorganic Chemistry I     | 2       | C      |
| CHM 191     | Practical Chemistry I                     | 1       | C      |
| AGR 101     | Mathematics for Agriculture I             | 2       | C      |
| PHY 121     | General Physics                           | 2       | C      |
| PHY 191     | Practical Physics I                       | 1       | C      |

|                              |                                     |           |   |
|------------------------------|-------------------------------------|-----------|---|
| CHM131                       | Organic Chemistry for Agriculture I | 2         | C |
| <b>Sub Total Credit Unit</b> |                                     | <b>20</b> |   |

**SECOND SEMESTER**

| Course Code                   | Course Title                               | Credits   | Status |
|-------------------------------|--|-----------|--------|
| GST 102                       | Use of English and Communication Skills II | 2         | C      |
| CHM 132                       | Organic Chemistry for Agriculture II       | 2         | C      |
| BIO 102                       | General Biology II                         | 2         | C      |
| CHM 192                       | Introductory Practical Chemistry II        | 1         | C      |
| PHY 192                       | Practical Physics II                       | 1         | C      |
| BIO 192                       | Practical Biology                          | 1         | C      |
| AGR 102                       | Mathematics for Agriculture II             | 2         | C      |
| CHM 102                       | Physical Chemistry                         | 2         | C      |
| GST 104                       | Introduction to Social Sciences            | 2         | C      |
| <b>Sub Total Credit Units</b> |  | <b>15</b> |        |

**Total credit units for 100 level course = 35**

**200 LEVEL**

**FIRST SEMESTER**

| Course Code | Course Title                           | Credits | Status |
|-------------|--|---------|--------|
| ARD 201     | Principles of Agricultural Extension   | 2       | C      |
| ARD 251     | Introduction to Agricultural Economics | 2       | C      |
| AGR 201     | General Agriculture                    | 3       | C      |
| ARD 203     | Introduction to Home Economics         | 2       | C      |
| SLM 201     | Principles of Soil Science             | 2       | C      |
| AGR 203     | Principles of Crop Production          | 2       | C      |
| AGR 205     | Introduction to Agro-                  | 2       | C      |

|                               |  |           |   |
|-------------------------------|--|-----------|---|
|                               | Climatology                            |           |   |
| FRM 211                       | Forestry and Wildlife Management       | 2         | C |
| ANP 201                       | Introduction to Biotechnology          | 2         | C |
| AGR 207                       | Anatomy and Physiology of Farm Animals | 2         | C |
| GST 201                       | Nigerian People and Culture            | 2         | C |
| <b>Sub Total Credit Units</b> |  | <b>23</b> |   |

**SECOND SEMESTER**

| <b>Course Code</b>            | <b>Course Title</b>                                  | <b>Credits</b> | <b>Status</b> |
|-------------------------------|--|----------------|---------------|
| ARD 202                       | Introduction to Rural Sociology                      | 2              | C             |
| ANP 202                       | Principles of Animal Production                      | 2              | C             |
| ANP 204                       | Introduction to Agricultural Biochemistry            | 3              | C             |
| AGR 204                       | Computer Appreciation and Application to Agriculture | 2              | C             |
| AGR 202                       | Introduction to Agric. Engineering                   | 2              | C             |
| FST 202                       | Principles of Food Science and Technology            | 3              | C             |
| AFS 220                       | Introduction to Fisheries and Wildlife               | 2              | C             |
| ENT 204                       | Entrepreneurship and Change Management Studies I     | 2              | C             |
| AGR 206                       | Crop Anatomy, Taxonomy and Physiology                | 3              | C             |
| <b>Sub Total Credit Units</b> |  | <b>20</b>      |               |

**Total credit units for 200 level course = 43**

**All Courses are Core- Course for all programmes**

**300 LEVEL  
FIRST SEMESTER**

| <b>Course Code</b>            | <b>Course Title</b>                                  | <b>Credits</b> | <b>Status</b> |
|-------------------------------|--|----------------|---------------|
| CRP 308                       | Agric. and Bio- Resource Management                  | 3              | E             |
| ARD 301                       | Introduction to Agric. Extension and Rural Sociology | 2              | C             |
| CRP 309                       | Arable Crops Production                              | 2              | C             |
| CRP 305                       | Crop Genetics and Breeding                           | 2              | C             |
| ANP301                        | Introduction to Non-Ruminant Animal Production       | 2              | C             |
| SLM 303                       | Introduction to Pedology and Soil Physics            | 2              | C             |
| CRP 303                       | Principles of Crop Protection                        | 3              | E             |
| AGR 307                       | Environmental Impact Assessment                      | 2              | E             |
| AEA 303                       | Agricultural Production Economics                    | 2              | C             |
| AGR 302                       | Research Technique and Scientific Writing            | 3              | C             |
| <b>Sub Total Credit Units</b> |  | <b>15</b>      |               |

**SECOND SEMESTER**

| <b>Course Code</b> | <b>Course Title</b>                       | <b>Credits</b> | <b>Status</b> |
|--------------------|---|----------------|---------------|
| ARD 302            | Teaching, Learning Process and Methods    | 3              | C             |
| AGR 314            | Introduction to Farm Mechanisation        | 2              | C             |
| ARD 304            | Communication and Audio Visual Techniques | 2              | C             |
| ARD 308            | Principles of Cooperative Practices       | 2              | C             |
| ARD 312            | Management of Agric. Extension            | 2              | C             |

|                               |  |           |   |
|-------------------------------|--|-----------|---|
|                               | Personnel                                    |           |   |
| AEA 306                       | Farm Record and Accounting                   | 2         | C |
| AEA 308                       | Principle of Farm Management                 | 2         | C |
| ANP 302                       | Introduction to Ruminant Animal Production   | 2         | C |
| ANP 312                       | Introduction to Animal Breeding and Genetics | 2         | C |
| EMS 310                       | Cultural Change and Entrepreneurship         | 2         | C |
| <b>Sub Total Credit Units</b> |  | <b>21</b> |   |

**Total Credit for 300Level =36**

**400 LEVEL**

**SEMESTER – FARM PRACTICAL YEAR/SIWES**

| <b>Course Code</b> | <b>Skill</b>  | <b>Credits</b> | <b>Status</b> |
|--------------------|---|----------------|---------------|
| ARD 403            | Extension Strategies in Pilot Rural Development Projects                        | 2              | C             |
| ARD 401            | Extension Practices   | 2              | C             |
| CRP 401            | Crop Production Techniques (Permanent, Arable and Horticultural Crops etc)      | 2              | C             |
| ANP 405            | Animal Husbandry Techniques ( Cattle , Sheep, Goats, Poultry, Pigs and Rabbits) | 2              | C             |
| CRP 405            | Agricultural Product Processing and Storage                                     | 2              | C             |
| CRP 407            | Crop Protection and Pest and Disease Control                                    | 1              | C             |
| ANP 407            | Animal Health Management  | 1              | C             |
| SLM 401            | Soil Fertility, Soil and Water Management                                       | 1              | C             |
| SLM 403            | Farm Design Survey and Land Use Planning  | 1              | C             |
| AEC 401            | Farm Management Records and Accounts  | 2              | C             |
| AGM                | Farm Mechanisation Practices  | 1              | C             |

|            |  |           |   |
|------------|--|-----------|---|
| 401        |  |           |   |
| SLM<br>403 | Agricultural Meteorology                 | 1         | C |
| AGM<br>403 | Workshop Practices                       | 1         | C |
| AGR<br>403 | Biotechnology in Agricultural Production | 1         | C |
| AFM<br>401 | Fisheries                                | 1         | C |
| AGR<br>401 | Report Writing                           | 3         | C |
|            | <b>Total</b>                             | <b>24</b> |   |

### 2.2.17 PRACTICUM/ENTERPRISE DETAIL PROGRAMME PROPOSAL (DPP)

**ARD 403: Extension Strategies in Pilot Rural Development Projects.**

Concept of Extension Strategies in Pilot Rural Development Project., Procedure for achieving pilot rural objectives; case study of development rural pilot project. Strategies for rural development. Training of beneficiary, participating agents and extension staff of government and non-government organization. Extension strategies for the transfer of technology.

**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 of 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 vices-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 pig 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.

**AGR 403: 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 concerns

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 tenor 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.

**500 LEVEL  
FIRST SEMESTER**

| Course Code                   | Course Title  | Credits   | Status |
|-------------------------------|---|-----------|--------|
| AEA 505                       | Econometrics  | 3         | E      |
| ARD 503                       | Diffusion and Adaptation of Innovation                        | 3         | C      |
| ARD 509                       | Agricultural Business Management and Finance                  | 3         | C      |
| ARD 511                       | Leadership And Rural Development                              | 2         | C      |
| CRP 516                       | Produce/Post-harvest Management                               | 2         | E      |
| ARD 507                       | Administration and Programme Planning in Extension Management | 3         | C      |
| ARD 513                       | Gender Issues in Agriculture                                  | 3         | C      |
| ARD 505                       | Extension Training Curriculum and Development                 | 2         | C      |
| ARD 501                       | Statistics and Research Methods                               | 3         | C      |
| AGR 515                       | Techniques of Scientific Writing and Presentation             | 1         | C      |
| <b>Sub Total Credit Units</b> |   | <b>20</b> |        |

**SECOND SEMESTER**

| Course Code | Course Title                                      | Credits | Status |
|-------------|---|---------|--------|
| ARD 502     | Extension Organisation Management and Supervision | 2       | C      |
| ARD 504     | Rural Community Development                       | 2       | C      |

|                               |  |           |   |
|-------------------------------|--|-----------|---|
| ARD 506                       | Advanced Rural Sociology                       | 2         | C |
| ARD 508                       | Technological And Social Change in Agriculture | 2         | C |
| ARD 510                       | Psychology for Extension Personnel             | 2         | C |
| ARD 512                       | Rural Youth Programme in Agricultural Ext.     | 3         | C |
| AGR 502                       | Student Seminar                                | 1         | C |
| AGR 599                       | Project  | 4         | C |
| <b>Sub Total Credit Units</b> |  | <b>18</b> |   |

**Total Credit Units For 500 Level = 38**

**DPP**

**100 LEVEL**

**FIRST SEMESTER**

**BIO 101: General Biology I (Botany/Zoology) (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.

**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 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.

**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.

**CHM 101: Introductory 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 Agriculturist 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: Introductory Practical Chemistry I (1 Unit)**

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

**PHY 191: Introductory 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.



**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

**AGR 101: Mathematics for Agriculturists 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.

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

Simple practical based on BIO 101 theoretical courses

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

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

## **SECOND SEMESTER**

### **AGR 102: Mathematics for Agriculturists 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.

### **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.

### **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.

### **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 organizations; writing reports; reporting events, experiments, writing summaries.

**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.

**CHM 132: Organic Chemistry for Agriculturist 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.

**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.

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

Simple practical based on BIO 102 theoretical courses

## **200 LEVEL**

### **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 Extension (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.

**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.

**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.

**SECOND SEMESTER -200 LEVEL**

**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.

**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.

**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 of 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.

**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.

**AGR 202: Introductory 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.

**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.



**AGR 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.

**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 cooperate outlook in Nigeria; phase of change; resistance to change and overcoming or managing resistance to change.

**300 LEVEL**

**FIRST SEMESTER**

**AEA 303: Agricultural Production Economics (2 Units)**

Theory and principles of agricultural production with respect to resource use, resource allocation, resource and product enterprise combination. Forms of production functions and their characteristics; response analysis, measurement of resource productivity.

**ARD 301: Introduction to Agric. Extension and Rural Sociology (2 Units)**

The need for agric extension. Agricultural extension in the world and in Nigeria. Basic philosophies behind agric. extension work. The institutional setting of agric extension. Basic concepts and principles of rural sociology to understanding rural situations. Importance of rural communities, institutions, social stratifications, social processes and social changes in rural areas. Leadership in rural communities: role and functions of rural leaders. Development of rural community leaders. The extension agent and the rural community. Communication techniques and strategies for change. Various agricultural extension teaching methods, aids and their uses.

**CRP 308: Agriculture and Bio-resource Management (2Units)**

Biological diversity, genetic diversity, specific diversity, species of local cereal, local legume species, local fruit tree species, genetic diversity expressed through large number of associations or combination of genes in individuals of single species, wild local plants related to cultivated species, or whose genetic diversity is crucial ingredient to cross-breeding or hybridisation process aimed at giving more vigour to the crop varieties that have been cultivated over so many years, loss crop genetic variability of crops or genetic erosion, species disease resistance, utilisation of plant and animal genetic resources. Biotechnological protection of forest plantations and economic plants, germplasm appropriation and privatization for crop improvement, patents and plant breeders rights, production of improved plants and animals.

**CRP 309: Arable Crop Production (2Units)**

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 305: Crop Genetics and Breeding (2 Units)**

History of genetics; chromosomes structure, number and variations. Gene and genotype. Genetic code, Mendelism; fundamental principles of inheritance, quantitative and qualitative characters and their inheritance. Different types of gene actions, values and means, repeatability, heritability etc. Crop variation and selection principles. Breeding and environmental effects, in-breeding, pure line breeding, cross breeding and other breeding methods.

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

Management of breeding stock, growing and young animals. Housing, equipment and feeding principles of poultry, rabbits and pigs. Production and management practices; Livestock economics;

health management of stock; processing and marketing of poultry, pigs and rabbits.

**SLM 303: Introduction 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 soils. Classification of soil separates; solid texture, surface area of particles; aggregation soil structure and stability; porosity, soil water relations, soil and water the hydrological cycle, soil temperature and conduction, soil erosion.

**CRP 303: Principles of Crop Protection (3 Units)**

Major pests, fungi, bacteria, viruses and nematodes, weeds and other diseases of tropical crops and stored products. Definition of pests. Study of insect pests of major local crops, their significance and principles of their control. Study of the effects of plant diseases caused by viruses, bacteria, fungi and nematodes and their control. Effects of weeds on crops and livestock and the principles and methods of their control. Strategies of integrated pest management. Characteristics of disease agents (fungi, bacteria, viruses, nematodes).Crop protection methods (cultural, biological, physical, chemical, host-plant resistance).Shortcomings and advantages of different pest assessment and control methods.

**AGR 307: Environmental Impact Assessment (2Units)**

Definition of Environmental Impact Assessment (EIA); Classification of EIA; Elements of EIA; Basic Guidelines of EIA Role and Function of Environmental Impact Assessment.

**SECOND SEMESTER**

**ARD 308: Principles of Cooperative Practices (2 Units)**

Evaluation of cooperatives especially farmer, marketing, and purchasing cooperatives. Cooperative as a form of business; purpose and advantages of cooperatives in agriculture as compared to other businesses. Principles and operating techniques essential for

successful cooperative activities, limitations and possibilities for cooperatives in Nigeria. Management of cooperatives.

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

Management of breeding stock, growing and young animal, housing, equipment and feeding principles of cattle, sheep and goats. Production and management practices. Health management of ruminant animals.

**ARD 302: Extension Teaching -Learning Process and Method (3Units)**

Nature and elements of communication process. Principles of analysing communication problems in extension. 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.

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

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.

**ARD 304: Communication and Audio Visual Techniques (2Units)**

General principles and nature of communication science. Types and use of audio-visual materials, advantages and disadvantages. Students should be exposed to the handling of the audio-visual equipment. Problems associated with the use of Audio-visual techniques.

**ARD 312: Management of Agric. Extension Personnel (2Units)**

Concept/meaning and objectives of personnel management in extension; scope and functions of personnel management; principles of personnel management; personal qualities of a good extension personnel manager. Functions of a personnel department. Problems confronting an extension personnel manager. Duties or tasks of a personnel manager. Expansion of personnel manager.

**ANP 312: Introduction to 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.

**AEA 306: Farm Records and Accounting (2 Units)**

Scope of farm records and accounting, and their objectives. Basic concepts of accounting. Principles of book-keeping and accounting, kinds, functions of farm records and accounts. Concepts of trial balance and final accounts.

**AEA 308: Principles of Farm Management (2Units)**

Nature and scope of farm management. Basic principles of farm management. Special characteristics of agriculture that affect management decisions. The decision making functions of farm manager. The common concepts and tools in management: law of diminishing returns, farm cost, valuation, depreciation as they affect the farmer. The literate versus illiterate farmer in carrying out farm management functions.

**AGR 302: Agricultural Statistics and Data Processing (3 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 (2units)**

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 experience that have affected entrepreneurial practices of groups in the Nigeria Society.

**500 LEVEL  
FIRST SEMESTER**

**ARD 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 findings in narrative, tabular and graphical forms.

**ARD 503: Diffusion and Adoption of Innovations (3 Units)**

Definition of elements of diffusion, processes of adoption and diffusion of innovation, the innovation decision processes, characteristics of innovation, adoption rate and adapter categories, opinion leadership, change agents, theoretical formulations on the diffusion of innovation, sectors related to differential rate of adoption of new agricultural technology, implication of these processes and factors of effective agricultural extension in rural areas.

**ARD 513: Gender Issues in Agriculture (3 Units)**

Definition and elements of gender in agriculture. Gender roles in production, processing, marketing and distribution and consumption. Access to production inputs, credit, and assets. Empowerment of gender by government, NGOs, private sector. Roles changes in space and time.

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

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.

**ARD 511: Leadership and Rural Development (2Units)**

Identification, evaluation and training of leaders for rural development; professional and local leaders; principles of rural development, problems and strategies of rural development; socio-cultural variation and rural resources allocation.

**CRP 516: Produce/Post- Harvest Management (2 Units)**

Tropical environment in relation to maturity, ripening and senescence, physical and chemical indices of quality in fruits, seeds, vegetables, flowers and other crop products. Storage and storage-life of harvested fruits, seeds, vegetables, flowers and other crop products. Fundamentals and principles of crop products processing and storage, storage and shelf life problems in crop products, ideal environment for storage, principles of controlled environment for storage, principles of controlled environment for transit and long term storage, operational equipment for storage and preservation.

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

Techniques of scientific writing and seminar presentations for agricultural students.

**ARD 507: Administration and Programme Planning in Extension (3 Units)**

Concepts, theories, principles and guidelines of administration, organisation supervision as applied to extension. Administrative function and responsibility in agricultural extension; staff recruitment, selection, placement and supervision, budget development and fiscal control; importance of programme planning in extension; principles and concept of programme planning in agricultural extension need; education objectives, learning experience, clientele participation, plan of work and calendar of work, the role of good public relations, good leadership and cooperation for an extension worker, associations and cooperatives. Concepts of evaluation applied to agricultural extension programme.

**ARD 505: Extension Training Curriculum and Development (2 Units)**

Meaning of extension training, importance of extension in agricultural development; objectives of the different types of training (e.g. pre-service and in-service training) programmes for different categories of extension personnel. Methods of extension training, farmers. Training; programmes; curriculum development processes; organisation of the causes and evaluation of training programmes.

**500 LEVEL**

**SECOND SEMESTER**

**ARD 502: Extension Organisation Management and Supervision (2Units)**

Concepts theories principles and guidelines of administration, organisation, supervision as applied to extension. Administrative functions and responsibilities in agricultural extension, staff recruitment, selected placement and supervision, budget development and fiscal control, importance of programme planning in agricultural extension need, education objective, learning experience, clientele participation, plan of work and calendar of work; the role of good public relations, good leadership and cooperation for an extension worker, association in cooperative; concept of evaluation applied to agricultural extension programmes.



**AGR 502: Students Seminar (1 Unit)**

Presentation and discussion of various topics in Agricultural Extension and Rural Development, the student is also expected to prepare and participate in all seminars and present a seminar in the final year.

**ARD 504: Rural Community Development (2 Units)**

Sociological economic and related policy perspective as they relate to rural development. The theories of community, community as a unit of social change, the micro and macro approaches to social change, dimensions of innovations, approaches to community development, community development and other development. Model of rural/agricultural development and their relevance to Nigerian situations. Problems of institutions and infrastructural community. Case studies and community development in Nigeria and other developing countries. The future of communities in Nigeria.

**AEA 505: Econometrics (3 Units)**

Definition and scope of econometrics. Formulation of hypothesis. Analytical techniques used in econometrics. Characteristics of OLS estimation; blue estimate; Use of econometric models for prediction and forecasting. Empirical and case studies.

**ARD 506: Advanced Rural Sociology (2Units)**

General sociology theory, analysis of social structure of rural agrarian system and societies. Selected theories of social change and their potential for modernization of rural societies. Social change and attitude change; measurement of change in rural societies, resistance and conducive forces to change in rural societies. Economic aspect of social change, group dynamics, traditional institutions and their transformation, leadership pattern, involvement of local people in direct change. Problem of rural societies, their causes and solutions. Special topics in rural sociology. Selected case studies.

**ARD 508: Technological and Social Change in Agriculture(2Units)**

Understanding technological change; basic sociological concepts. Technological change and societies; general principles in introducing

technological changes, technological change in Nigerian agricultural development, agric. extension; ethical considerations in introducing technological change, agricultural engineers and public extension system.

**ARD 510: Psychology for Extension Personnel (2units)**

Concepts of human development, intelligence, individual differences, teaching, learning, motivation, and emotion related to extension education.

**ARD 512: Rural Youth Programme in Agricultural Extension (3 Units)**

History, objectives and organisation and promotion of and types of rural youth programmes in Nigeria and selected foreign and African countries; youths/problems and role of government agencies.

**AGR 599: Project (4 Units)**

The students will write an independent project research work as part of the programme requirements. That is, each student under the guidance of a supervisor is required to conduct research into an approved agricultural production problem culminating in the submission of a dissertation.

**2.2.18 PROGRAMME PROPOSAL AND DETAILED PROGRAMME PROPOSAL FOR B.AGRIC. [AGRICULTURAL ECONOMICS AND AGRIBUSINESS OPTION]**

**100 LEVEL  
FIRST SEMESTER**

| <b>Course Code</b>           | <b>Course Title</b>                       | <b>Credits</b> | <b>Status</b> |
|------------------------------|---|----------------|---------------|
| GST 101                      | Use of English and Communication Skills I | 2              | C             |
| CIT 101                      | Computers in Society                      | 2              | C             |
| GST 121                      | Use of Library                            | 1              | C             |
| GST 105                      | History and Philosophy of Science         | 2              | C             |
| BIO 101                      | General Biology I                         | 2              | C             |
| BIO 191                      | Practical Biology                         | 1              | C             |
| CHM 101                      | Introduction to Inorganic Chemistry I     | 2              | C             |
| CHM 191                      | Practical Chemistry I                     | 1              | C             |
| AGR 101                      | Mathematics for Agriculture I             | 2              | C             |
| PHY 121                      | General Physics                           | 2              | C             |
| PHY 191                      | Practical Physics I                       | 1              | C             |
| CHM131                       | Organic Chemistry for Agriculture I       | 2              | C             |
| <b>Sub Total Credit Unit</b> |   | <b>20</b>      |               |

**SECOND SEMESTER**

| <b>Course Code</b> | <b>Course Title</b>                        | <b>Credits</b> | <b>Status</b> |
|--------------------|--|----------------|---------------|
| GST 102            | Use of English and Communication Skills II | 2              | C             |
| CHM 132            | Organic Chemistry for Agriculture II       | 2              | C             |
| BIO 102            | General Biology II                         | 2              | C             |
| CHM 192            | Introductory Practical Chemistry II        | 1              | C             |
| PHY 192            | Practical Physics II                       | 1              | C             |

|                               |                                 |           |   |
|-------------------------------|---------------------------------|-----------|---|
| BIO 192                       | Practical Biology               | 1         | C |
| AGR 102                       | Mathematics for Agriculture II  | 2         | C |
| CHM 102                       | Physical Chemistry              | 2         | C |
| GST 104                       | Introduction to Social Sciences | 2         | C |
| <b>Sub Total Credit Units</b> |                                 | <b>15</b> |   |

**Total credit units for 100 level course = 3**

**200 LEVEL  
FIRST SEMESTER**

| <b>Course Code</b>            | <b>Course Title</b>                    | <b>Credits</b> | <b>Status</b> |
|-------------------------------|--|----------------|---------------|
| ARD 201                       | Principles of Agricultural Extension   | 2              | C             |
| ARD 251                       | Introduction to Agricultural Economics | 2              | C             |
| AGR 201                       | General Agriculture                    | 3              | C             |
| ARD 203                       | Introduction to Home Economics         | 2              | C             |
| SLM 201                       | Principles of Soil Science             | 2              | C             |
| AGR 203                       | Principles of Crop Production          | 2              | C             |
| AGR 205                       | Introduction to Agro-Climatology       | 2              | C             |
| FRM 211                       | Forestry and Wildlife Management       | 2              | C             |
| ANP 201                       | Introduction to Biotechnology          | 2              | C             |
| AGR 207                       | Anatomy and Physiology of Farm Animals | 2              | C             |
| GST 201                       | Nigerian People and Culture            | 2              | C             |
| <b>Sub Total Credit Units</b> |  | <b>23</b>      |               |

**SECOND SEMESTER**

| <b>Course Code</b> | <b>Course Title</b>             | <b>Credits</b> | <b>Status</b> |
|--------------------|---------------------------------|----------------|---------------|
| ARD 202            | Introduction to Rural Sociology | 2              | C             |

|                               |  |           |   |
|-------------------------------|--|-----------|---|
| ANP 202                       | Principles of Animal Production                      | 2         | C |
| ANP 204                       | Introduction to Agricultural Biochemistry            | 3         | C |
| AGR 204                       | Computer Appreciation and Application to Agriculture | 2         | C |
| AGR 202                       | Introduction to Agric. Engineering                   | 2         | C |
| FST 202                       | Principles of Food Science and Technology            | 3         | C |
| AFS 220                       | Introduction to Fisheries and Wildlife               | 2         | C |
| ENT 204                       | Entrepreneurship and Change Management               | 2         | C |
| AGR 206                       | Crop Anatomy, Taxonomy and Physiology                | 3         | C |
| <b>Sub Total Credit Units</b> |  | <b>20</b> |   |

**Total credit units for 200 level course = 43**

**All Courses are Core- Course for all programmes**

**300 LEVEL**

**FIRST SEMESTER**

| <b>Course Code</b> | <b>Course Title</b>                                  | <b>Credits</b> | <b>Status</b> |
|--------------------|--|----------------|---------------|
| AEA 303            | Agricultural Production Economics                    | 2              | C             |
| AEA 305            | Introduction to Agricultural Insurance               | 2              | C             |
| ARD 301            | Introduction to Agric. Extension and Rural Sociology | 2              | C             |
| CRP 309            | Arable Crop Production                               | 2              | C             |
| AGR 301            | Statistics and Field Experimentation                 | 3              | E             |
| CRP 313            | Permanent Crop Production                            | 2              | C             |
| ANP 301            | Introduction to Non-Ruminant Animal Production       | 2              | C             |
| SLM 303            | Introduction to Pedology and Soil Physics            | 2              | C             |
| CRP 303            | Principles of Crop Protection                        | 2              | C             |

|                              |                                     |           |   |
|------------------------------|-------------------------------------|-----------|---|
| CRP 305                      | Crop Genetics and Breeding          | 2         | C |
| AGR 307                      | Environmental Impact Assessment     | 2         | C |
| ARD 308                      | Principles of cooperative Practices | 2         | C |
| <b>Sub Total Credit Unit</b> |                                     | <b>22</b> |   |
|                              |                                     |           |   |

**SECOND SEMESTER**

| Course Code                   | Course Title                          | Credits   | Status |
|-------------------------------|---------------------------------------|-----------|--------|
| CRP 312                       | Farm Power and Agric.Mechanisation    | 3         | E      |
| AEA 302                       | Agricultural Finance                  | 3         | C      |
| AEA 304                       | Agricultural Marketing and Price      | 3         | C      |
| ARD 304                       | Communication Audio Visual Techniques | 3         | C      |
| AEA 310                       | Farm Business Organisation            | 3         | C      |
| AEA 306                       | Farm Records and Accounting           | 2         | C      |
| AEA 308                       | Principles of Farm Management         | 2         | C      |
| ANP 302                       | Intro to Ruminant Animal Production   | 2         | C      |
| ENT 310                       | Cultural Change and Entrepreneurship  | 2         | C      |
| <b>Sub Total Credit Units</b> |                                       | <b>20</b> |        |

**Total Credit Units For 300 Level = 42**

**400 LEVEL – FARM PRACTICAL YEAR/ SIWESS**

| Course Code | Skills to be Acquired  | Credits | Status |
|-------------|--|---------|--------|
| AEC 401     | Farm Management Records and Accounts                                       | 2       | C      |
| AEC 403     | Farm Appraisal and Evaluation  | 2       | C      |
| ARD 401     | Extension Practices  | 2       | C      |
| CRP 401     | Crop Production Techniques (Permanent, Arable and Horticultural Crops etc) | 2       | C      |

|         |   |           |   |
|---------|---|-----------|---|
| ANP 405 | Animal Husbandry Techniques ( Cattle , Sheep, Goats, Poultry, Pigs and Rabbits) | 2         | C |
| CRP 405 | Agricultural Product Processing and Storage                                     | 2         | C |
| CRP 407 | Crop Protection and Pest and Disease Control                                    | 1         | C |
| ANP 407 | Animal Health Management  | 1         | C |
| SLM 401 | Soil Fertility, Soil and Water Management                                       | 1         | C |
| SLM 403 | Farm Design Survey and Land Use Planning  | 1         | C |
| AGM 401 | Farm Mechanisation Practices  | 1         | C |
| SLM 407 | Agricultural Meteorology  | 1         | C |
| AGM 403 | Workshop Practices  | 1         | C |
| AGR 403 | Biotechnology in Agricultural Production  | 1         | C |
| AFM 401 | Fisheries   | 1         | C |
| AGR 401 | Report Writing  | 3         | C |
|         | <b>Total</b>  | <b>24</b> |   |

**Total Credit Units 400 Level = 24**

**500 LEVEL  
FIRST SEMESTER**

| <b>Course Code</b> | <b>Course Title</b>                               | <b>Credits</b> | <b>Status</b> |
|--------------------|---|----------------|---------------|
| AGR 501            | Statistics and Research Methods                   | 3              | C             |
| ARD 503            | Diffusion and Adaptation of Innovation            | 3              | C             |
| AEA 509            | Principles of Agricultural Business Management    | 3              | C             |
| AEA 507            | Agricultural Risk Management                      | 2              | C             |
| AEA 505            | Econometrics                                      | 3              | C             |
| ANP 509            | Ruminant Animal Production                        | 2              | E             |
| AGR 515            | Techniques of Scientific Writing and Presentation | 1              | C             |

|                               |           |  |
|-------------------------------|-----------|--|
|                               | <b>15</b> |  |
| <b>Sub Total Credit Units</b> |           |  |

**SECOND SEMESTER**

| Course Code                   | Course Title                                       | Credits   | Status |
|-------------------------------|--|-----------|--------|
| AEA 504                       | Agric. Policy and Development                      | 3         | C      |
| ARD 502                       | Extension Organisation, Management and Supervision | 2         | E      |
| AEA 502                       | Advanced Agro-Business Management                  | 3         | C      |
| AEA 506                       | Agric. Project Appraisal, Monitoring & Evaluation  | 3         | C      |
| CRP 516                       | Produce Post-Harvest Management                    | 2         | E      |
| AEA 510                       | Environmental Economics                            | 2         | C      |
| ANP 516                       | Livestock Economics                                | 2         | E      |
| CRP 510                       | Organic and Urban Farming                          | 2         | E      |
| AGR 502                       | Student Seminar                                    | 1         | C      |
| AGR 599                       | Project  | 4         | C      |
| <b>Sub Total Credit Units</b> |  | <b>16</b> |        |

**Total Credit Units = 31**



## **DPP**

### **100 LEVEL COURSES**

#### **FIRST SEMESTER**

##### **BIO 101: General Biology I (Botany / Zoology) (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.

##### **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 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.

##### **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.

**CHM 101: Introductory 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 Agriculturist 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: Introductory Practical Chemistry I (1 Unit)**

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

**PHY 191: Introductory 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.

**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

**AGR 101: Mathematics for Agriculturists 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.

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

Simple practical based on BIO 101 theoretical courses

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

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

**SECOND SEMESTER**

**AGR 102: Mathematics for Agriculturists II (2Units)**

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.

**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.

**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.

**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.

**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.

**CHM 132: Organic Chemistry for Agriculturist 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.

**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.

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

Simple practical based on BIO 102 theoretical courses

**200 LEVEL**

**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 Extension (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.

**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.

**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.

**SECOND SEMESTER -200 LEVEL**

**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, Dioscoreaceae, 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.

**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.

**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.

**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.

**AGR 202: Introductory 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.

**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.

**AGR 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.

**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 cooperate outlook in Nigeria; phase of change; resistance to change and overcoming or managing resistance to change.

**300 LEVEL  
FIRST SEMESTER**

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

Management of breeding stock, growing and young animals. Housing, equipment and feeding principles of poultry, rabbits and pigs. Production and management practices; Livestock economics; health management of stock; processing and marketing of poultry, pigs and rabbits.

**SLM 303: Introduction 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 soils. Classification of soil separates; solid texture, surface area of particles; aggregation soil structure and stability; porosity, soil water relations, soil and water the hydrological cycle, soil temperature and conduction, soil erosion.

**CRP 303: Principles of Crop Protection (2 Units)**

Major pests, fungi, bacteria, viruses and nematodes, weeds and other diseases of tropical crops and stored products. Definition of pests. Study of insect pests of major local crops, their significance and principles of their control. Study of the effects of plant diseases caused by viruses, bacteria, fungi and nematodes and their control. Effects of weeds on crops and livestock and the principles and methods of their control. Strategies of integrated pest management. Characteristics of disease agents (fungi, bacteria, viruses, nematodes).Crop protection methods (cultural, biological, physical, chemical, host-plant resistance).Shortcomings and advantages of different pest assessment and control methods.

**AEA 305: Introduction to Agricultural Insurance (2 Units)**

Meaning and scope of agricultural insurance. Nature of agriculture necessitating insurance-taking. Principles and concepts of risk and uncertainty. Nigerian Agricultural Insurance Company: history, performance, scope, limitations, future prospects.

**AEA 303: Agricultural Production Economics (2 Units)**

Theory and principles of agricultural production with respect to resource use, resource allocation, resource and product enterprise combination. Forms of production functions and their characteristics; response analysis, measurement of resource productivity.

**ARD 301: Introduction to Agricultural Extension and Rural Sociology (2Units)**

The need for agric. extension. Agricultural extension in the world and in Nigeria. Basic philosophies behind agric. extension work. The institutional setting of agric extension. Basic concepts and principles of rural sociology to understanding rural situations. Importance of rural communities, institutions, social stratifications, social processes and social changes in rural areas. Leadership in rural communities: role and functions of rural leaders. Development of rural community leaders. The extension agent and the rural community. Communication techniques and strategies for change. Various agricultural extension teaching methods, aids and their uses.

**CRP 309: Arable Crop Production (2Units)**

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.

**AGR 301: Statistics and Field Experimentation (3 Units)**

Basic concepts of statistics. Frequency distribution, measure of location and measure of variation. Probability distribution, normal

and binomial distribution, Histograms, mean, mode and median, sampling, statistical inference, test of significance, F-test, t-test, Chi-square test, analysis of variance. Principles of field experimentation in crops and soil sciences; research methodology; experimental layout; field survey; normal distribution and sampling; measurements and data analysis; Basic concepts of field experimentation; selection of experimental designs for specification; collection and analysis of data; interpretation of results of different designs; paired plot, completely randomized, randomised complete block, Latin square, split plot, factorial experiments. Correlation and regression.

**CRP 305: Crop Genetics and Breeding (2 Units)**

Cell structure and components, Chromosomes; structure, number and variations, linkage and crossing over, mutation and genes in population. Multiple alleles, Mitosis and meiosis. Theory of evolution. Fundamental principles of inheritance. Mendelism. Introduction to population and quantitative genetics. Objectives and general principles of crop breeding including their application to self-pollinated cross 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.

**AGR 307: Environmental Impact Assessment (2 Units)**

Definition of Environmental Impact Assessment (EIA); Classification of EIA; Elements of EIA; Basic Guidelines of EIA Role and Function of Environmental Impact Assessment.

**ARD 308: Principles of Cooperative Practices (2 Units)**

Evaluation of cooperatives especially farmer, marketing, and purchasing cooperatives. Cooperative as a form of business; purpose and advantages of cooperatives in agriculture as compared to other businesses. Principles and operating techniques essential for successful cooperative activities, limitations and possibilities for cooperatives in Nigeria. Management of cooperatives.

**CRP 313: Permanent Crop Production (2 Units)**

Origin, distribution, soil and climatic requirements of some important permanent crops such as cocoa, oil palm, rubber, kola nut, coffee, coconut, citrus, plantain, bananas, mango, sugarcane, cashew etc. Production practices, improvement, harvesting, processing, utilisation, storage and economic aspects of some selected permanent and perennial crops. Principles of tree crop practices such as nursery, propagation, transplanting, mulching, irrigation, fertilisation, harvesting and post-harvest handling of some selected fruit tree crops (citrus, mango, oil palm, guava, cashew etc).

**SECOND SEMESTER**

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

Management of breeding stock, growing and young animal, housing, equipment and feeding principles of cattle, sheep and goats. Production and management practices. Health management of ruminant animals.

**ENT 310: Cultural change and Entrepreneurship (2units)**

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 experience that have affected entrepreneurial practices of groups in the Nigeria Society.

**AEA 302: Agricultural Finance (3 Units)**

Financial needs of individual farmers and farm organisations and problems of financing agriculture and agricultural development. Principles applicable to borrowing by farmers and farm organisations. Analysis of government credit policies with respect to efficient credit management.

**AEA 304: Agricultural Marketing and Prices (3 Units)**

Forces determining prices of farm products, measurement of economic relations as they affect agricultural prices. Direct and derived demand for farm products. Prices determination and analysis

of price data, price forecasting, price variations over space and time. Commodity price problems, farm price and income problems, time series analysis, farm price data, principles and practices governing international trade in farm products. Government policies concerning International trade (import and export duties, etc), procedures in exporting and importing, with particular reference to the agricultural sector.

**AEA 310: Farm Business Organisations (3 Units)**

Planning, organising and controlling as management functions. Proponents and schools of thought of business organisations. Special features and study approaches to agro-business. Empirical issues.

**CRP 312: Farm Power and Agric. Mechanisation (3Units)**

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.

**ARD 304: Communication Audio Visual Techniques (3 Units)**

General principles and nature of communication science. Types and use of audio-visual materials, advantages and disadvantages. Students should be exposed to the handling of the audio-visual equipment. Problems associated with the use of audio-visual techniques.

**AEA 306: Farm Records and Accounting (2 Units)**

Scope of farm records, accounting, and their objectives. Basic concepts of accounting. Principles of book-keeping and accounting, kinds, functions of farm records and accounts. Concepts of trial balance and final accounts.

**AEA 308: Principles of Farm Management (2 Units)**

Nature and scope of farm management. Basic principles of farm management. Special characteristics of agriculture that affect management decisions. The decision making functions of farm manager. The common concepts and tools in management: law of diminishing returns, farm cost, valuation, depreciation as they affect the farmer. The literate versus illiterate farmer in carrying out farm management functions.

**500 LEVEL COURSES**

**FIRST SEMESTER**

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

Defining research problems, developing hypotheses and objectives. Principles of research design, questionnaire preparation and collection of data, management and data collection. Statistical theory: different statistical methods for handling data. Presentation of research findings in narrative and graphical forms.

**ARD 503: Diffusion and Adoption of Innovations (3 Units)**

Definition of elements of diffusion, processes of adoption and diffusion of innovation, the innovation decision processes, characteristics of innovation, adoption rate and adapter categories, opinion leadership, change agents, theoretical formulations on the diffusion of innovation, sectors related to differential rate of adoption of new agricultural technology, implication of these processes and factors of effective agricultural extension in rural areas.

**AEA 507: Agricultural Risk Management (2 Units)**

Definition and scope of risk. Types of risk, sources of risk in agriculture. Making risky decisions. Pay off matrix, probabilities. Attitude towards risk, evaluating risk, risk management strategies. Risk minimisation techniques.

**AEA 505: Econometrics (3 Units)**

Definition and scope of econometrics. Formulation of hypothesis. Analytical techniques used in econometrics. Characteristics of OLS



estimation; blue estimate; Use of econometric models for prediction and forecasting. Empirical and case studies

**AEA 509: Principles of Agricultural Business Management (3 Units)**

Meaning and scope of agricultural business management. The decision-making process. Tools for decision-making. Business information sources and uses. Business and enterprise analysis. Types of business organisations. Methods of business expansion- vertical and horizontal integration. Public policies affecting agro-business financial control.

**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.

**CRP 517: Organic and Urban Farming (2 Units)**

Definition of urban farming. Major types of horticultural crops grown under organic and urban farming system. Importance of organic farming. Protected crops cultivation. Peculiarities of organic and urban farming. Concepts of home gardening, market gardening and commercial gardening. Certification of organic horticultural products. Materials used in organic crops production. Sources of organic fertilizer materials. Environmental and health implications of organic and urban farming. Influence of urbanisation and environmental factors. Problems of organic and urban/ dry season horticultural farming. Maintenance of soil fertility and crop protection. Irrigation in urban farming. Prospects in urban/ dry season horticultural farming.

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

Techniques of scientific writing and presentation.

**AGR 599: Projects**

A student is expected to choose and execute a special project under the supervision of staff. Duration of the project is two semesters.

**SECOND SEMESTER**

**AEA 502: Advanced Agro-Business Management (3 Units)**

Application of management principles to various agro-businesses in Nigeria including production inputs; improved seed industries, livestock feeds, agro-chemicals. Crop production management, machinery management, animal and fishery production management. Application of marketing management and agricultural financing principles to agro-businesses. Legal issues and tax strategies as applied to agro-businesses. Approaches to efficient credit management, farm accounting, inventory, balance sheets, and cash book analysis. Economics and diseconomies of size of operations. Economics of agricultural processing. Case studies of agro-businesses in Nigeria.

**AEA 504: Agricultural Policy and Development (3 Units)**

Historical and analytical treatment of government agricultural policies and programmes in Nigeria, and developing countries in general. Theories and policies of agricultural development; the role of agriculture in the economy; interrelationships between agricultural and individual development sectoral planning of agriculture. Problems of agricultural development and planning; integrated rural development planning.

**AEA 506: Agricultural Project Appraisal Management and Evaluation (3 Units)**

Introduction to project appraisals and evaluation of agricultural projects and programmes. Project identification, tools of project analysis. The arithmetic of project appraisal, cost v-benefit analysis, rate of return calculations, cash flow procedures. Farm and other resources evaluation, case studies and practical problems of project evaluation in developing countries.

**AEA 510: Environmental Economics (2 Units)**

Agricultural production and the environment: land, water and forest resources management for sustainable agricultural production; economics of irrigation and water use in agriculture; measurement of environmental degradation, cost-benefit analysis of environmental conservation.

**ANP 516: 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.

**ARD 502: Extension Organisation Management and Supervision (2 Units)**

Concepts theories, principles and guidelines of administration, organisation, and supervision as applied to extension. Administrative functions and responsibilities in agricultural extension, staff recruitment, selected placement and supervision, budget development and fiscal control, importance of programme planning in agricultural extension need, education objective, learning experience, clientele participation, plan of work and calendar of work; the role of good public relations, good leadership and cooperation for an extension worker, association in cooperative; concept of evaluation applied to agricultural extension programmes.

**CRP 516: Produce Post -Harvest Management (2 Units)**

Tropical environment in relation to maturity, ripening and senescence, physical and chemical indices of quality in fruits, seeds, vegetables, flowers and other crop products. Storage and storage-life of harvested fruits, seeds, vegetables, flowers and other crop products. Fundamentals and principles of crop products processing and storage, storage and shelf life problems in crop products, ideal environment for storage, principles of controlled environment for storage,

principles of controlled environment for transit and long term storage, operational equipment for storage and preservation.

**AGR502: Student Seminar (1Unit)**

Presentation and discussion of various topics in Agricultural Extension and Rural Management, the student is also expected to prepare and participate in all seminars and present a seminar in the final year.

**AGR 599: Project (4 Units)**

A student is expected to choose and execute a special project under the supervision of staff. Duration of the project is two semesters.