DEPARTMENT OF

CROP PRODUCTION AND PROTECTION

FACULTY OF AGRICULTUREOBAFEMI AWOLOWO UNIVERSITY ILE IFE

HANDBOOK 2024 – 2029

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FOREWORD

The Department of Crop Production and Protection is pleased to introduce this Departmental Handbook to all our undergraduates. It is a necessary ingredient for a successful commencement and completion of your academic programme. It has spelled out all the required courses that you must take from your first through your final year in a systematic fashion. Guiding rules including assessments by way of tests and examinations, as well as rewards and prizes have also been specified.

You are charged to make this handbook your 'vade mecum'. Remember no one plans to fail but many fail to plan and hence, fail. The academic programme is predicated on the Course Unit System which allows for exceptional students to successfully complete their programmes and graduate within the stipulated minimum period while also allowing the somewhat less endowed to complete successfully within the stipulated maximum period and end up even with the same class of Degree. You must therefore know yourself and fit in as appropriate.

The extent to which you excel at every stage of your programme is determined on the basis of a Cumulative Grade Point Average (CGPA) that you score at the end of each Semester right from your first, through to your final year. Planning your work and being adequately prepared from your first through to the final year, are therefore very crucial to ending up with a desirable CGPA that will place you in no less than a Second Class Upper Degree which can stand in good stead for available job opportunities in life. You can be brilliant but without appropriate planning and adequate preparation, still end up in an unexpected lower class of Degree.

Use this Handbook judiciously and tenaciously to plan and prepare for your academic programme, to guarantee a resounding success for yourself. If you need any clarification, feel free to consult your Staff Adviser or the Head of Department.

Emeritus Prof. E. A. Akingbohungbe

1.0 INTRODUCTION

1.0.1 MEMBERS OF STAFF OF THE DEPARTMENTACADEMIC STAFF

	Name of Staff/Qualification	Status	Specialization
1.	**Opabode J.T.,** B. Agric., M.Phil.,Ph.D	Head of Dept./ Professor	Plant Physiology /Biotechnology
2.	**Akingbohungbe A. E.,** B.Sc., M.S., Ph.D	Emeritus Professor	Entomology/Insect Taxonomy
3.	**Ajayi S. A.,** B. Agric., M.Phil., Dr. Sc.agr.	Professor	Seed Science & Technology
4.	**Adekunle O.K.,** B.Sc., M.Sc., Ph.D	Professor	Plant Pathology /Nematology
5	**Salami A.O. (Mrs.),** B.Sc. Ed., M.Sc., Ph.D	Professor	Plant Pathology/ Mycology/Soil Microbiology
6.	**Adebooye O. C.,** B. Agric., M.Phil., Ph.D	Professor	Plant Physiology
7.	**Amujoyegbe B.J.,** B. Agric., M.Sc., M.Phil., Ph.D	Professor	FarmingSystems
8.	**Sosan M.B.,** B. Agric., M.Phil., Ph.D	Professor	Entomology/Insecticide Toxicology
9.	**Odu B. O.,** B. Agric., M.Sc., Ph.D	Professor	Plant Pathology /Virology
10.	**Soyelu O.J.,** B. Agric., M.Phil., Ph.D	Professor	Entomology/Insect Physiology
11.	**Oluwaranti A. (Mrs.),** B. Agric.,M.Sc., Ph.D	Professor	Plant Breeding /Genetics
12.	**Akinwale R.,** B. Agric., M.Sc., Ph.D	Reader	Plant Breeding/Genetics/ Biometry
13.	**Awosanmi F. E.,** B.Tech.,M.Phil., Ph.D	Senior Lecturer	Seed Science & Technology
14.	**Oladejo A.S.,** B. Agric., M.Phil., Ph.D	Senior Lecturer	Plant Breeding /Genetics
15.	**Udah O.,** B. Agric. M.Phil., Ph.D	Lecturer I	Entomology /Taxonomy
16.	**Alagbo O. O.** B. Agric. M.Phil.PhD	Lecturer I	Weed Science
17.	**Olawole O.I.,** B. Agric. M.Phil.	Assistant Lecturer	Plant Pathology /Bacteriology

List of Technical and Administrative Staff in the Department

Name of Staff/Qualification	Designation
Mrs. A. E. Adegoroye	Principal Confidential Secretary
Mrs. O. B. Oke	Senior Executive Officer
Mr. R. O. Ajibade, H.N.D., P.G.D.	Asst. Chief Technical Officer
Mr. N. Osude,	Principal Technologist
Mrs. O. Osuolale, H.N.D.P.G.D.	Senior Technologist
Mr. A. J. Oguntoye, H.N.D.	Principal Agric. Superintendent
Mrs. O. Adeyemi, W.A.S.C.	Senior Laboratory Superintendent
Mr. M. A. Ibrahim W.A.S.C.	Farm Supervisor
Mr. K. Fadairo W.A.S.C.	Farm Supervisor

1.1 HISTORICAL NOTES.

1.1.1 History of the University

Obafemi Awolowo University, Ile-Ife is one of the three Universities established in Nigeria between 1961 and 1962 as a result of the report submitted to the Federal Government in September, 1960, by a Commission it appointed in April 1959 under the Chairmanship of Sir Eric Ashby, Master of Clare College, Cambridge, to survey the needs of post-secondary and higher education in Nigeria over the next twenty years. On 8th of June, 1961, the law providing for the establishment of the provisional council of the University was formally inaugurated under the chairmanship of Chief Rotimi Williams.

On 11th June, 1970, an edict known as the University of Ife edict, 1970 was promulgated by the Government of the Western State to replace the Provisional Council Law of 8th June, 1961. This edict has since been amended by the Obafemi Awolowo University, Ile-Ife (Amended) Edict No. 11 of 1975 (Transitional Provisions) Decree No. 23 of 1975. This new Decree effected a takeover of the Obafemi Awolowo University by the Federal Military Government and established a Provisional Council as an interim governing body of the University which shall subject to the general direction of the Head of the Federal Government, control the policies and finances of the University and manage its affairs. This Provisional

Council has since been replaced by a Governing Council.

The University started with five Faculties – Agriculture, Arts, Economics and Social Studies (now Social Sciences), Law and Science. Six new Faculties have since been added, namely the Faculty of Education (established on 1st October, 1967), the Faculty of Pharmacy (established on 1st October, 1969), the Faculties of Technology and Health Sciences (now College of Health Sciences) (both established on 1st October, 1970), Faculty of Administration (with effect from 1st October 1979) and Faculty of Environmental Design and Management (established on April 6, 1982).

In 1992, the University established a collegiate system with five Colleges. The system did not function effectively and was abandoned after two years. However, the Postgraduate College and the College of Health Sciences were retained. The College of Health Sciences now comprises of the Faculties of Basic Medical Sciences, Clinical Sciences and Dentistry.

The following other Institutes and major units exist in the University: Adeyemi College of Education located in Ondo
The Institute of Agricultural Research and Training, Ibadan
The Natural History Museum
The Institute of Ecology and Environmental Studies
The Centre for Gender and Social Policy Studies
The Centre for Industrial Research and Development The Institute of Public Health
The Institute of Cultural Studies
African Institute for Science Policy and Innovation (AISPI)
The Computer Centre
The Drug research and Production Unit
The Equipment maintenance and Development Centre The Central Technological Laboratory Workshop
The Central Science Laboratory
Centre for Gender and Social Policy Studies
The Distance Learning Centre

Institute for Entrepreneurship and Development Studies (IFEDS)
Obafemi Awolowo University Investment Company Limited

There are some other agencies over which the University has no direct, or, insome cases limited control, sited within the University premises as listed below:

- The Regional Centre for Training in Aerospace Surveys
- The National Centre for Technology management
- The Centre for Energy Research and Development
- The African Regional Centre for Space Science and Education inEnglish

The student population rose steadily from 244 in 1962/63 to about 35,000 as at present.

1.1.2 Mission, Vision, Major Thrusts of the University

(a) MISSION

To nurture a teaching and learning community; advance frontiers of knowledge; engender a sense of selfless public service; and add value to African culture.

(b) VISION

The vision is of a top rated University in Africa.

(c) The major thrust of the University strategic plan for 2020-2024 are:

- Teaching
- Research and Innovation
- Governance
- Fund Generation and Management
- Human Resources Development and
- Infrastructure and Estate Development

These major thrusts involve the following broad objectives:

- The modernization of the University's teaching programmes, through a continuous review of the curricula and teaching

support services.

- The pursuit of a research agenda that will deepen the University's contribution to national development through research outputs and products uptake.
- The preparation of students for self-employment and entrepreneurship.
- The continued development and expansion of information and communication Technology (ICT) for all aspects of the institution's functions.
- An expanded revenue base backed by improved financial management capability.
- The development of strategic linkages and partnerships.

1.1.3 History of the Faculty of Agriculture

The Faculty of Agriculture, Obafemi Awolowo University, Ile-Ife is one of the five foundation Faculties with which the University started functioning in 1962. In 1966/67, the Faculty was one of the first unitsof the University to move to the permanent site at Ile-Ife and it is now one of the 13 Faculties in the University.

In the 1977/78 session, the Faculty offered a unified 4-year degree programme with one-year compulsory Internship designed to promote practical exposure to students. A subsequent revised programme resulting from recent national needs and global trends led to the award of undergraduate degrees (B.Agric.) by five Departments – Agricultural Economics, Agricultural Extension & Rural Sociology (now Agricultural Extension & Rural Development), Animal Science (now Animal Sciences), Plant Science (now Crop Production & Protection) and Soil Science (now Soil Science and Land Resources Management) while the Department of Family, Nutrition and Consumer Sciences offers a 4-year undergraduate programme leading to B.Sc. Consumer Sciences. The teaching, research and extension facilities in the Departments are complemented by the field laboratory teaching, research and extension facilities in the OAU Teaching and Research (T&R) Farm. The Faculty also maintain a very close working relationship with the Institute of Agricultural Research

and Training (IAR&T), Ibadan.
The programmes in the various Departments are designed and tailored toward meeting the challenges of the new millennium, promote entrepreneurship in graduates as well as extend the frontiers of knowledge in the various disciplines.

1.1.4 History of the Department of Crop Production and Protection

The Department of Crop Production and Protection (Formerly Plant Science) is one five Departments in the Faculty of Agriculture that have been in existence since the Faculty departmentalized in 1966/1967 session. The Faculty of Agriculture operated as unified degree Programme from 1962-1977 in which every department made a contribution toward undergraduate training in General Agriculture. Thereafter, with the introduction of the Bachelor of Agriculture (B.Agric.) degree Programme, the department graduated its first set of graduates of B.Agric. (Plant Science) in 1981.

1.1.5 Mission, Vision, Objectives of the Department

Mission Statement

The Department of Crop Production and Protection aims at providing academic, research and practical training opportunities to undergraduate students in all specialized areas of Crop Production; that the students would be confident and competent to enter into the job market after their training. Often after graduation, most of the graduates seek employment in the Public Service, Teaching Service, and in the industry in varied capacities

Objectives

The main objectives of the Department are to meet the manpower needsand provide knowledge-based solution to the problems of the agricultural sub-sector and the society at large.

The undergraduate program has been designed to:

a. provide opportunity for acquaintance with commonly grown

food, industrial, vegetable, and horticultural crops in the southwest zone of Nigeria as well as to impart the basic expertise in the management of these crops for maximum productivity;

b. impart the technical know-how regarding the control of insect pests, weeds and diseases of economic crops and, at the same time, alert undergraduates of necessary precautions to be taken in Crop protection activities to avoid environmental pollution;
c. expose undergraduates to how these economic crops may be improved genetically for better and higher yields, resistance or tolerance to biotic and abiotic stresses, and be better adapted to unpredictable environmental conditions;
d. provide opportunity for students to eventually specialize in any of the core areas of Crop Production and Protection: Plant Breeding and Genetics, Seed Production, Agronomy, Weed Science, Farming Systems, Crop Physiology, Horticulture, Insect Taxonomy, Insect Ecology, Insecticide Toxicology, Biological Control of Insects, Nematology, Virology, Bacteriology and Mycology.

1.1.6 Members of the University

The members of the University as defined in statute 2(1) are:

(a) the Officers of the University;
(b) the members of the Council;
(c) the members of the Senate;
(d) the members of the Academic Staff;
(e) the Graduates;
(f) the students; and such other persons as may by Statute be granted thestatus of members

A person shall remain a member of the University only as long as he is qualifiedfor such membership under any of the sub-paragraphs (10) of this Statute.

1.1.7 The Officers of the University

The Officers of the University as contained in Statute 3 shall be:

(a) the Chancellor;
(b) the Pro-Chancellor;
(c) the Vice-Chancellor;
(d) the Deputy Vice-Chancellor (Academic);
(e) the Deputy Vice-Chancellor (Administration);
(f) the Registrar;
(g) the Librarian;
(h) the Bursar; and
such other persons as may by Statute be granted the status of officers

The Principal Officers of the University

Professor A. S. Bamire	- Vice-Chancellor
Professor M. O. Babalola	- Deputy Vice-Chancellor (Academic)
Professor O. M. A. Daramola	- Deputy Vice-Chancellor (Administration)
Professor A. I. Akinyemi	- Deputy Vice-Chancellor (RI &D)
Mr. A. K. Bakare	- Registrar
Dr. O. A. Fadehan	- University Librarian
Mrs. O. I. Abogan	- University Bursar

1.1.8 Establishment of the University Council

(a) Functions

The University Council to be known as the Council of the Obafemi Awolowo University, Ile-Ife was established by an Edict. The Edict states that Council shall be the governing authority of the University and shall have the custody, control and disposition of all the property and finances of the University and, except as may otherwise be provided in the Edict and the Statutes, shall manage and superintend generally the affairs of the University and, in any matter concerning the University not provided for under this Edict, the Council may act in such manner as appears to it best calculated to promote the interests, objects and purposes of the University. The Council, subject to the provisions of the Edict and Statutes has

the following functions among others:

i. to determine, in consultation with Senate, all University fees;
ii. to establish, after considering the recommendation of the Senate on that behalf, Faculties, Institutes, Schools, Boards, Departments and other units of learning and research; to prescribe their organization, constitution and functions and to modify or revise the same;
iii. to authorize, after considering the recommendations of the Senate inthat behalf, the establishments for the academic in the University, and with approval of the Senate, to suspend or abolish any academic post except a post created by this Edict or the Statutes;
iv. to authorize the establishments for the administrative staff and other staff in the University and to suspend or abolish any such posts other than posts created by the Edict or the Statutes;
v. to make the appointments authorized by this Edict and the Statutes;
vi. to exercise powers of removal from office and other disciplinary control over the academic staff, the administrative staff and all other staff in the University;
vii. to supervise and control the residence and discipline of students of the University and to make arrangements for their health and general welfare.

(b) Composition of the Members of Council

The Council as contained in Statute 10(1) as amended by Decree No.11 of 1963 and Decree 25 of 1996 shall consist of the following members:

i. Ex-Officio Members: Pro-Chancellor
The Vice-Chancellor
The Deputy Vice-Chancellors
ii. 1 member from the Federal Ministry of Education
iii. 4 members appointed by National Council of Ministers
iv. 4 members of Senate appointed by Senate

v. 2 members of the Congregation elected by the Congregation
vi. 1 member of Graduates Association elected by Graduates Association

The Senate shall prescribe which Departments and subjects of study shall form part or be the responsibility of each of the Faculties. The next level of organization is the Faculty where the teaching and other activities of the Departments are coordinated. Proposals generally come from Departments to the Faculty Board although they can also be initiated at the Faculty level in which Departments normally have an opportunity to consider them before the Faculty Board takes a decision. The membership of the Faculty Board is stipulated in Statute 13(3) thus:

a) The Vice-Chancellor
b) The Deputy Vice-Chancellors
c) The Dean of the Faculty
d) The Professors and Heads of Departments comprising the Faculty;
e) Such other full-time members of the academic staff of the Departments comprising the Faculty as the Senate may determine after considering the recommendation of the Faculty Board;
f) Such other Professors and other Heads of Departments, as the Senate may determine after considering the recommendation of the Faculty Board;
g) Such other persons within or outside the University as the Senate may appoint after considering the recommendation of the Faculty Board.

The next level is that of Departments which consist of groups of Teachers and sometimes Research Fellows in a single subject with a Head who is usually, although not always, a Professor generally appointed by the Vice-Chancellor.

The Department is the normal basic unit of academic organization. It is at this level that the organization of teaching and the use of research facilities are primarily worked out. Senate may however

recommend the creation of Institutes for groups of specialized subjects or discipline that require interdisciplinary research efforts and thus, cut across Faculties in scope.

1.2 ORGANIZATION, ADMINISTRATION AND CONTROL

The Vice-Chancellor is the Chief Executive Officer of the University and six other Principal Officers of the University, namely: the Deputy Vice-Chancellor (3), the Registrar, the University Librarian and the Bursar report to him. The University Librarian is in charge of the University Library while the Bursar takes charge of the University finances. The Registrar is the Secretary to Council and the Chief Administrative Officer of the University and he assists the Vice-Chancellor in the day-to-day administration. He is also the Secretary to Senate and heads the Registry, comprising the Directorate of Academic Affairs, the Directorate of Council Affairs, Division of Corporate Services and the Director of Personal Affairs. The Planning, Budgeting, Monitoring/Management Information System Unit takes care of the academic planning, budgeting and monitoring needs of the University and is under the Vice-Chancellor's Office.

The University Central Administration also includes some Units providing common services. They are the Medical and Health Services, the Division of Maintenance Services, the Physical Planning and Development Unit and the Computer Centre, Heads of these units report to the Vice-Chancellor.

1.2.1 CONGREGATION

The congregation comprises all full-time members of the academic staff and every member of the administrative staff who holds a degree of any recognized University. It discusses and declares an opinion on any matter whatsoever relating to the well-being of the University. It has twelve elected members in Senate and two elected members in the University Council.

1.2.2 INFORMATION ON FACILITIES

A. Hezekiah Oluwasanmi Library.

Plan of the University Library:

The Library consists of the North and South wings, which are connected by walkways on two levels

Membership:

Membership of the Library is available, on completion of a registration card, to all students, members of the senior staff of the University and such other persons as may be determined by the Library Committee or the University Librarian on behalf of it.

Students are required to renew their registration at the beginning of each academic year. Library Cards and Borrower's Tickets are not transferable; books issued on them remain the responsibility of the person whose name appears on them.

A lost Library Card or Borrower's Ticket may be replaced on submission ofwritten application.

The Library Collection Hezekiah Oluwasanmi Library now contains over 380,000 volumes. It consists of two main areas:

(i) The Undergraduate Areas and
(ii) The Research Areas

1. Serials Collection

The Serial Collection consists of current journals, the most current issues of which are shelved in the displayed section of the Serials Room

a. Latest back files i.e. the latest 10 years of journals which are on open access to registered senior staff and postgraduate students; and
b. Older back files i.e. journals older than ten years on closed access to all categories of readers who must obtain and complete request forms at the serial hatch.

2. Africana Special Collection

The Africana Special Collection is a collection of rare and other books of primary interest to people whose fields of interest are in Africana Studies. Staff publications and theses submitted for higher degrees of the University as well as of other Universities are also housed there. The collection is closed access.

3. Documents Collection

The Documents Collection includes official publications of the Federal Government of Nigeria, the old regional governments, the present state governments and the Federal Capital Territory. It also includes publications of other African governments and international organizations.

4. Reference Collection

Dictionaries, encyclopedia, handbooks, directories, atlas, University Calendars e.t.c., are shelved in the reference Room. Bibliographies, indexes and abstracts are available in the Bibliography Room. Reference books do not ordinarily circulate. A newspaper clippings file (post- October, 1985) and a vertical file of reprints and other pamphlet type material is kept in the Reference Room.

5. Reserve Collection

(i) Day reserve collection

Multiple copies of textbooks, particularly some of those recommended for specific courses, are shelved in the Reserved Books Room on Floor 3 North Wing East.

(ii) Two Hour Reserve

Some other materials, periodical articles in particular, are placed on 2-hour reserve. These may be obtained on request (signature and seat number required) and retained for a period of two hours at a time, subject to renewal, provided other readers have not demanded the materials.

6. Recent Accessions

A selection of books added to the Library stock is normally displayed for several days before being put in the main collection. The books may not be borrowed while on display but may be reserved at the loan Desk.

Catalogues

A library catalogue is a finding list of books and other materials available in the Library. The following catalogues can be found in the Catalogue Hall:

(i) The author/Title Catalogue
(ii) The Subject Catalogue
(iii) The Shelf List
(iv) The Serial Catalogue
(v) The Documents Catalogue

How to Borrow a Book

When you have found the book that you want to borrow, you will be required to sign your name and address on the book card provided in duplicate. You must surrender a borrower's Ticket for each book borrowed. When you return a book, you must ensure that you receive your Borrower's Ticket back immediately.

Reservation

A book can be reserved by filling a reservation slip; in which case, it will not be renewed for the present borrower when returned; and if it is already overdue, it will be recalled at once.

B. Division of Student Affairs

1. Guidance and Counseling Unit:

The Division of Student Affairs has Professional Counselors who are committed to helping students grow in self-understanding in the process of integrating their personal and academic experiences. The services are free to students and are confidential (i.e. not used

as part of his/her other University records). The services include personal counseling, group counseling, study skills improvement, tests anxiety reduction, personal crisis intervention, psychological testing, career and occupational counseling and settlement of grievances between students. Where necessary, consultations are made with campus organizations, specialist and academic Department, to ensure that students' problems are resolved satisfactorily.

The Counselors can be contacted in Rooms 9 and 10, Division of Student Affairs between 10.00 am and 2.00 p.m. Monday to Friday

2. Scholarship and Financial Assistance:

The Division of Students' Affairs serve as a link between students and sponsoring authorities, both within and outside Nigeria. Students are advised to check the Notice Boards in their respective Faculties as well as those at the Division of Student Affairs Building for advertisements and other relevant information.

Liaison is also maintained between students and governments at various levels for scholarship and bursaries.

1.2.3. Roll of Honours for Students

Senate at a special meeting held on Wednesday 1st November, 2006 decided that the Roll of Honours for students be instituted in the University to enhance discipline and good performance among students. All students are enjoined to strive to be on the Honours' Rolls.

The details are as follows:

(i) The Honours Roll should be at three levels, namely:
   (a) Departmental;
   (b) Provosts/Deans; and
   (c) University/Vice-Chancellor's;

(ii) The beneficiaries must have a minimum CGPA of 4.0 for Departmental Honours in all Faculties except the Faculty of Pharmacy and College of Health Sciences where the

candidates are expected to have a cumulative/ weighted average of 60% and 62% respectively;

(iii) The beneficiary must maintain this grade annually to continue to enjoy the award;

(iv) The recommendations must be processed along with Rain Semester examination results;

(v) The student must be of good conduct;

(vi) He/She must not have any outstanding or carry-over courses and must notbe repeating the year;

(vii) No student on Leave of Absence shall enjoy the Annual Rolls of Honours award;

(viii) No student that has a disciplinary problem shall enjoy the award;

(ix) The award shall be based on the recommendation of the Departmental Board of Examiners and the Faculty Board of Examiners, while that pertaining to the Vice-Chancellor/University shall be processed through the Committee of Deans

(x) Names of beneficiaries shall be displayed as follows: Departmental Honours – Departmental Notice Board Provost/Deans Honours – Faculty Notice Board Vice-Chancellor/University Honours: Floor 'O' Secretariat Building

(xi) Each beneficiary shall be given a certificate

1.3 UNIVERSITY EXAMINATION REGULATIONS

University Examination Regulations made pursuant to the provisions of Section 27 of the Obafemi Awolowo University Law, 1970 (as amended). PART I: The Organization of Examinations 1. CONTROL OF UNIVERSITY EXAMINATIONS (a) The Senate shall have control and general direction of all University examinations and shall exercise such powers as may be necessary to discharge these functions. (b) The Committee of Deans shall be responsible for the details of organization and administrative arrangements for University Examinations. The University Time-table Sub-Committee shall assist it in the performance of these functions. The Director of Academic Affairs shall be the Secretary

to the Sub-Committee. (c) Subject to the overriding control of the Senate, exercised through the Committee of Deans under Regulation (Ib) above, University examinations shall be conducted by Departmental Boards of Examiners appointed by the Business Committee of Senate on the recommendations of the appropriate Faculty Boards. (d) The Senate shall determine any matter relating to the conduct of organization and arrangement of examinations.

1.3.1 REGISTRATION FOR UNIVERSITY EXAMINATIONS

(a) A candidate for a university examination must have registered for the courses in the prescribed format not later than the closing date prescribed for registration for such courses. Any candidate who fails to register for courses at the appropriate time as prescribed by Senate will not be allowed to take any examination in such courses. Any examination taken without course registration shall be null and void.

(b) Students who register for courses are committed to the number of units registered for and are expected to take examinations in such courses. If a student failed to take an examination, he would be scored 'OF' for the number of units he had registered for and in which he had failed to take the prescribed examination.

(c) Any student who does not have any course or courses to offer in a particular semester should apply for leave of absence.

(d) A candidate who has less than 15 units in a particular semester to graduate should apply to his/her Faculty Board for permission to register for less than 15 units. Failure to do so constitutes a breach of regulation which may result in the non-processing of the candidate's results.

(f) A candidate who cannot register for courses during the prescribed period for registration because of an illness, must ensure that medical report on his illness is forwarded by him or his parents/sponsors to reach the Dean of his Faculty not later than four weeks after the end of the normal registration period as scheduled in the University Calendar. Such a medical report should be forwarded for authentication by the Director of Medical and Health Services for it to be considered valid.

Such a candidate shall be exempted from the penalties of late registration. All applications should be routed through the Head ofDepartment.

(g) Students must attend a minimum of 75% of course instructions including lectures, tutorials and practicals where required to qualify to sit for examination in any course. (h) A candidate for a university examination in a particular degree programme should not be a regular candidate for another degree in this or any other university concurrently. Any candidate so discovered shall forfeit his/her studentship.

1.3.2 ABSENCE FROM EXAMINATION

Candidates must present themselves at such University examinations for which they have registered. Candidates who fail to do so for reason other than illnessor accident shall be bound by the following regulations: (a) Any student who fails to register for courses during one semester without permission should be deemed to have scored "O F" in the minimum number of units required for full time student (i.e. 15 units.) (b) Candidates who registered for courses, attended classes regularly, did all practicals and tests but did not take required given continuous Semester examinations should be by assessment grade in each of the affected courses and a grade of "O" in the examination which they should have taken, but which they did not take. (c) Candidates who have less than 15 units to graduate but who fail to take the required examinations should be deemed to have scored "OF" in the outstanding courses only provided such candidates obtained permission to register for less than 15 units. (d) Any candidate who on account of illness, is absent from a University examination may be permitted by the Senate on the recommendation from the appropriate Faculty Board, to present himself for such examination at the next available opportunity provided that: (i) A full-time student in the University shall report any case of illness to the University's Health Centre at all times. (ii) When a student falls ill during examination he should first report to the Director, Medical and Health Services before attending any hospital outside the University. A report of sickness should be made to the Registrar

within a week and a medical certificate for validation of his illness within three weeks. (iii) When a student falls ill before an examination he shall be under an obligation to send a medical report countersigned by the Director, Medical and Health Services within one week of such illness. Any time outside this period, shall be considered on its own merit. (iv) The Director of Medical and Health Services should, within 48 hours, submit a medical report on a candidate who is ill during an examination and is taken to the Health Centre or referred by it to the hospital for treatment. (v) A candidate applying for leave of absence on medical grounds must forward his application together with a medical report to the Dean of his Faculty through his Head of Department. The Medical report must be countersigned by the Director of Medical and Health Services. All applications for Leave of Absence must be taken by the appropriate Faculty Board.

1.3.3 EXAMINATION OFFENCES AND PENALTIES

EXAMINATION OFFENCES

(a) A candidate shall not be allowed during an examination to communicate by word or otherwise with any other candidates nor shall he leave his place except with the consent of an invigilator. Should a candidate act in such a way as to disturb or inconvenience other candidates, he shall be warned and if he persists he may, at the discretion of the invigilator, be excluded from the examination room. Such an action by the invigilator must also be reported in writing through the Head of Department to the Vice-Chancellor within 24 hours.

(b) It shall be an examination offence for any student, staff or any person whatsoever to impersonate a candidate in any University examination. Any student or staff of the University found guilty under this regulation shall be subjected to disciplinary action by the appropriate authority of the University. The candidate impersonated shall also be liable of an infraction of this regulation where it is established directly

from circumstantial evidence that the impersonation is with his knowledge or connivance.

(c) No candidate shall take into an examination room, or have in his possession during an examination any book or paper or printed or written documents, whether relevant to the examination or not, unless specifically authorized to do so. An invigilator has authority to confiscate such documents.

(d) Mobile phones are not allowed in examination halls.

(e) A candidate shall not remove from an examination room any papers, used or unused, except the question paper and such book and papers, if any, as he is authorized to take into the examination room.

(f) Candidates shall comply with all "direction to candidates" set out on an examination answer book or other examination materials supplied to them. They shall also comply with direction given to them by an Invigilator.

(g) Candidates shall not write on any paper other than the examination answer books. All rough work must be done in the answer books and crossed out neatly. Supplementary answer books, even if they contain only rough work must be tied inside the main answer books.

(h) When leaving the examination room, even if temporarily, a candidate shall not leave his written work on the desk but he shall hand it over to an invigilator. Candidates are responsible for the proper return of their written work.

(i) Smoking shall not be permitted in examination room during examination sessions.

(j) Any candidate or staff who attempts in any way to unlawfully have or give pre-knowledge of an examination question or to influence the marking of scripts or the award of marks by the University examiner shall be subjected to disciplinary action by the appropriate authority of the University.

(k) If any candidate is suspected of cheating, receiving assistance or assisting other candidates or of infringing any other examination regulation, a written report of the circumstance shall be submitted by the invigilator to the Vice-Chancellor within 24 hours of the examination session. The candidate concerned shall be allowed to continue with the examination.

(1) Any candidate suspected of examination malpractice shall be required to submit to the invigilator a written report immediately after the paper. Failure to make a report shall be regarded as a breach of discipline. Such report should be forwarded along with the invigilator's report to the Vice-Chancellor.

(m) Where a Head of Department fails to forward a report on examination malpractice to the Vice-Chancellor such action would be considered as misconduct.

(n) Where the Vice-Chancellor is satisfied on the basis of the reports forwarded to him that any candidate has a case to answer, he shall refer the case to the Central Committee on Examination Malpractice.

PENALTIES FOR EXAMINATION MALPRACTICE AND OTHER OFFENCES

(a) Any examination offence would attract appropriate penalty including outright dismissal from the University.

(b) Where the Vice-Chancellor has reason to believe that the nature of any question or the content of any paper may have become known before the date and time of the examination to any persons other than the examiners of the paper, the Board of Examiners, and any official of the University authorized to handle the paper, he may order the suspension of the examination or the cancellation of the paper or setting of a new paper and shall report the matter to the Senate. The Vice-Chancellor shall also take any disciplinary measure against any student or students involved as he may deem appropriate.

(c) If in the opinion of an invigilator, circumstances arise which render the examination unfair to any candidate he must report the matter to the Vice- Chancellor within 24 hours after the examination. Where such matter is reported to the Vice-Chancellor he may take such action as he deems fit. If he directs that another examination be held, that examination shall be the examination for the purpose of this regulation.

(d) Any candidate or member of staff may complain to the Vice-Chancellor that an examination has been improperly conducted. The Vice-Chancellor shall investigate the complaint and report the result of his investigation to the Senate which shall take such action as it may deem appropriate, including with-holding a result or deprivation of the award of a degree, diploma e.t.c. as laid down in Statue 17. However, where it is shown to the satisfaction of the Committee of Deans that any alteration or amendment of a University regulation involving a change in a course of study or in examination requirements

has caused hardship to a candidate in any examination, the Committee of Deans shall make such provisions as it thinks fit for the relief of each hardship and report same to Senate.

1.4 The Course Unit System and the Computation of Grade Point Average (GPA), Pattern of Examination and Assessment under the Course Unit System

1.4.1 Introduction

1.4.2 Calculation of Grade Point Average (GPA)

(a) Pattern of Examination

(i) Each course shall be examined at the end of the course. The examination shall be conducted as prescribed by Senate.
(ii) Each examination shall be 1-3 hours in duration in addition theremay be a practical paper and/or an oral examination.
(iii)There shall be continuous assessment of each course and this shallconstitute a percentage of the final grade.

(b) Measurement of Performance

Performance in a course shall be measured in terms of:
(i) the results of prescribed theory and practical examination
(ii) continuous assessment which shall constitute 40% of measured performance
(iii) Assessment of such essay, practical exercises and reports prescribed for each course.

(c) Level of Performance

A candidate shall be recorded as having attained in a course a level of achievement grade as follows:

A = Excellent 70% - 100%

B = Very Good	60% - 69%
C = Good	50% - 59%
D = Satisfactory	45% - 49%
E = Adequate	40% - 44%
F = Failure	0% - 39%

1.4.3 DEFINITION OF TERMS

(i) Student Workload:

This is defined in terms of course units. One unit represents one hour of lecture or one hour of Tutorial or 2-4 hours of practical work per week throughout a semester. Thus, for example, a course in which there are 2 hours of lectures and 1 hour of Tutorial per week is a 3 unit course.

(ii) Total Number of Units (TNU):

This is the total number of course units carried by a student in aparticular semester. It is the summation of the load units on all courses carried during the semester. For example, a student who is carrying 6 courses of 3 units each has a TNU of 18 for that semester. No student shall be allowed to carry (i.e. register for) or be examined in more than 24 units in any particular semester.

(iii) Cumulative Number of Units (CNU):

This is the total number of course units over all the semesters from the beginning to date. A student who is prone to repeating courses will finish (if he does drop out) with a higher CNU than his non-repeating colleague and will most likely require a longer time to complete requirements for the award of Degrees.

(iv) Level of Performance Rating:

This is the rating of grades obtained in terms of credit points per load unit. The rating used is as follows:

Level of Performance	Rating (credit points per unit)
A = 70% - 100%	5

B = 60% - 69%	4
C = 50% - 59%	3
D = 45% - 49%	2
E = 40% - 44%	1
F = 0% - 39%	0

Based on the above, a student who obtained a grade of 'A' in a 4-unit course has scored 20 credit points and one who obtained a grade of C inthat course has scored 12 credit points.

(v) **Total Credit Points (TCP):** This is the sum of the products of the course units and rating in each course, for the entire semester period. For example, consider a student who took four courses of 5 units each. Let's say the grade obtained in the four courses were C. B. F. and D respectively. The TCP of this student is obtained as 5 x 3 + 5 x 4 + 5 x0 + 5 x 2 = 45.

(vi) **Cumulative Credit Point (CCP):** This is the summation of Total Credit Points over all semesters from the beginning to date.

(vii) **Grade Point Average (GPA):** This is the total credit points (TCP) divided by the total units (TNU). For example, consider the student's scores referred above. His TCP is 45 and of course, his TNU is 20 (i.e. 4 courses at 5 units each, for the semester). The highest GPA that can be earned is 5.0 and that is when a student has earned a grade of 'A' in every course during the semester. The lowest GPA obtainable is 0.0 and this would happen if the student has 'F' all round during thesemester.

(viii) **Cumulative Grade Point Average (CGPA):** This is the summation of TCPs for all semesters, divided by the summation of TNUs for the said semesters. Like the GPA,

CGPA obtainable ranges from 0 to 5.

1.4.4 GPA AND CGPA SAMPLE COMPUTATIONS

Sample Computations: Consider a student who has enrolled in a course programme designed as EES and has just completed 2 full semesters in the University. His course programme and his GPA and CGPA couldbe as follows:

SEMESTER I

	L	T	P	UNITS	RESULTS		
COURSE CODE					GRADES	CREDIT POINTS	GPA/CGPA
CPP 101	1	0	0	1	78%(A)	1×5 =5	GPA=29/18=1.61
CPP 103	3	0	2	4	60%(B)	4×4 =16	CCP=29+0 = 29
CPP 105	3	0	3	4	45%(D)	4×2 =8	CNU = 18 + 0 = 18
CPP 107	3	1	5	6	38%(F)	6×0 =0	CGPA = 29/18 = 1.61
CPP 109	2	0	0	3	27%(F)	3×0 =0	
				18 (TNU)		29 (TCP)	In this case the TCP, TNU and GPA will be the same for CCP, CNU and CGPA

SEMESTER II

	L	T	P	UNITS	RESULTS		
COURSE CODE					GRADES	CREDIT POINTS	GPA/CGPA
CPP 102	2	0	0	2	66%(B)	2×4=8	GPA=29/18=1.61
CPP 104	3	0	2	4	72%(A)	4×5=20	CCP=29+0 = 29

CPP 106	3	0	3	4	47%(D)	4×2 =8	CNU = 18 + 0 = 18
CPP 108	3	1	0	4	53%(C)	4×3=12	CGPA = 29/18 = 1.61
CPP 110	2	1	3	4	42%(E)	4×1=4	
				21 (TNU)		51 (TCP)	In this case the TCP, TNU and GPA will be the same for CCP, CNU and CGPA

1.5 ASSESSMENT AND AWARD OF DEGREES

(i) A student's workload is defined in terms of course units. One unit represents one hour of lecture or one hour of tutorial, or 2 – 4 hours of practical work per week throughout a semester or a full session of two semesters.

(ii) The final award and the class of the degree shall be based on the cumulative grade point average (CGPA) obtained by each candidate in all prescribed courses approved by the university. The final cumulative grade point average shall be calculated on the basis of the total number of credit points and the total number of course units registered for during the course of the student's programme. In the case of failed course, the candidate must repeat the course at the next available opportunity. If the course is an elective, the candidate may substitute another course and shall not be required to pass the failed elective course. If the course is a restricted elective, substitution can only be made from the list of restricted electives. The failed grade would however be reflected in the transcript.

(iii) A candidate who has satisfactorily completed all requirements for the degree with an overall grade point average of not less than 1.00 shall be awarded the honours degree as indicated below;

First Class: 4.50 – 5.00
Second Class (Upper Division): 3.50 – 4.49

Second Class (Lower Division):	2.40 – 3.49
Third Class Honours:	1.50 – 2.39
Pass:	1.00 – 1.49

(iv) Passes in 12 units of Special Electives is a requirement for graduation.

(v) A candidate who scores a cumulative grade point average (CGPA) of less than 1.00 in two consecutive semesters shall be required to ***withdraw*** from the university.

1.6 TRANSFER WITHIN THE UNIVERSITY AND LENGTH OF STAY IN THE UNIVERSITY

(a) To qualify for a degree, a candidate will normally be required to spend a minimum of 4 – 5 academic years at the Obafemi Awolowo University.

(b) If a student transfers from one faculty to another, the transfer would be treated as if he/she is just being admitted into the University since as part of the requirement for graduation the student has to take all the foundation/compulsory courses in the new Faculty/Department. In that case, his/her stay in the new Faculty/Department should be 1½ times the number of semesters required to complete a programme.

(c) Where a student transfers from a science-based Faculty to another, the computation of his result in the new Faculty shall take cognizance of his previous CGPA in the new Department. The duration of stay in the University will be what remains of the 1½ times the number of semesters required to complete the programme as approved by Senate.

(d) Where a student is transferring from a science-based to Humanities/Arts- based Faculty or vice-versa, the transfer should be treated as if the student is just being admitted into the university. The GPA of the student will not be transferred to the new Department. He/She will however be required to take all the foundation/compulsory courses in the new Department.

2.0 BACHELOR OF AGRICULTURE (B. AGRIC., CROP PRODUCTION AND PROTECTION)

BRIEF HISTORY

The Department of Crop Production and Protection (Formerly Plant Science) is one five Departments in the Faculty of Agriculture that have been in existence since the Faculty departmentalized in 1966/1967 session. The Faculty of Agriculture operated as unified degree Programme from 1962-1977 in which every department made a contribution toward undergraduate training in General Agriculture. Thereafter, with the introduction of the Bachelor of Agriculture (B.Agric.) degree Programme, the department graduated its first set of graduates of B.Agric. (Plant Science) in 1981.

2.1 OBJECTIVES

MAIN OBJECTIVE

The Department of Crop Production and Protection aims at providing academic, research and practical training opportunities to undergraduate students in all specialized areas of Crop Production; that the students would be confident and competent to enter into the job market after their training.

SPECIFIC OBJECTIVES

The specific objectives of the Department include:

a. provide opportunity for acquaintance with commonly grown food,industrial, vegetable, and horticultural crops in the southwest zoneof Nigeria as well as to impart the basic expertise in the management of these crops for maximum productivity;
b. impart the technical know-how regarding the control

of insect pests, weeds and diseases of economic crops and, at the same time, alert undergraduates of necessary precautions to be taken in Crop protection activities to avoid environmental pollution;

c. expose undergraduates to how these economic crops may be improved genetically for better and higher yields, resistance or tolerance to biotic and abiotic stresses, and be better adapted to unpredictable environmental conditions;
d. provide opportunity for students to eventually specialize in any of the core areas of Crop Production and Protection: Plant Breeding and Genetics, Seed Production, Agronomy, Weed Science, Farming Systems, Crop Physiology, Horticulture, Insect Taxonomy, Insect Ecology, Insecticide Toxicology, Biological Control of Insects, Nematology, Virology, Bacteriology and Mycology.

2.2 DEGREE OFFERED

ACADEMIC PROGRAMMES

(a) Undergraduate: The Department of Crop Production and Protection runs a Bachelor of Agriculture (B. Agric. Crop Production and Protection programme)**.** Essentially, the programme emphasizes practical (field and laboratory) training in all aspects of Crop Production and Protection. The first 4 years of the programme is devoted to the exposure of students in the B.Agric. Programme to all aspects of Agriculture, including a full year internship during the 4th year. Students take courses from all Departments in the Faculty of Agriculture. Also, courses are taken in the Departments of Agric. Engineering and Civil Engineering (Practical Land Survey). Overall, the training is geared towards preparing the students for future challenges in the agricultural sector. The fifth year is dedicated to specializing in the Department by taking the compulsory and elective courses as stipulated. Currently, the undergraduate programme has been revised using

NUC BMAS and in line with the global trends and recent developments in Crop Production and Protection.

(b) Postgraduate Programme: The postgraduate programme emphasizes sound training in specialized areas of Crop Production and Protection including Breeding and Genetics, Crop Physiology, Agronomy, Plant Pathology, and Entomology.

2.3 ADMISSION REQUIREMENTS AND AWARD OF B. AGRIC. DEGREE

UME Entry Requirements

Credit passes at G.C.E. '0' Level or School Certificate or Senior Secondary School Certificate (S.S.S.C) in English Language, Mathematics and at least three other subjects which must include Chemistry, Biology or Agricultural Science.

UME Subjects: English Language, Biology or Agriculture Science, Chemistry and Physics or Mathematics.

Direct Entry to Part Two and Exemption from internship ear

Candidates with Ordinary National Diploma (OND) in Agriculture obtained at Upper Credit Level from this University or any other recognized institution or equivalent status may be considered for direct entry to Part II, but they will not be exempted from the Internship year.

Direct Entry to Part Two

(a) Two 'A' Levels Passes in Chemistry and any of Biology, Agricultural Science, Zoology and Botany.

(b) Candidates with Higher National Diploma in Agriculture obtained at Upper Credit Level from this University or any other recognized Institution of equivalent status may be considered for Direct Entry to Part II provided they satisfy the '0' Level requirements. They may also be exempted from the Internship year.

2.4 REQUIREMENTS FOR AWARD OF B. AGRIC. DEGREE

(a) To be eligible for admission to a degree of Bachelor of Agriculture acandidate must have:

i. Satisfied the normal University requirements for the award of a degree;
ii. Satisfied the approved Faculty of Agriculture requirements in respect of workload, registration for courses and programme duration.
iii. Satisfied the departmental requirements by satisfactorily completing approved courses as scheduled under section 4 below.
iv. Taken and passed the prescribed 12 units of special Electives and 180units of core and restricted electives.

2.5 GRADUATION REQUIREMENTS

iii. LIST OF SPECIAL ELECTIVES FOR THE DEPARTMENT OFCROP PRODUCTION AND PROTECTION

Harmattan Semester

SEA 001	Government and Administration of Public Sector
SEE 001	Education and Social Organization
I 001	Man and His Health
SEL 001	Introduction to Law
SEM 001	Fundamentals of Building Design for Human Habitat
SEO 001	Fundamentals of Human Behaviour
SEP 001	Drugs and the Society I
*SER 001	Use of English

Rain Semester

SEA 002	Elements of Business Administration

SEE 002	Indigenous Educations in Nigeria
I 002	Community Health and Man's Behaviour
SEL 002	Introduction to Legal Institutions and Processes
SEM 002	Issues in Land and Management
SEO 002	Man and his Environment
SEP 002	Drugs and the Society II
SER 002	The Humanities and The African Experience

*A total of 12 units of Special Electives including SER 001 which is compulsory is required before graduation.

(b) MINIMUM TOTAL NUMBER OF UNITS REQUIRED FOR GRADUATION

The minimum total number of units required for graduation is:

UME = 208 units
Direct Entry = 172 units

2.6 OUTLINE OF PROGRAMME FOR PARTS I – V

The period of study for the degree is 5 years for candidates with the minimum entry qualifications. The Programme is divided into five parts, each lasting two semesters (one academic session) as follows:

Part I (2 Semesters)
Basic Science courses in the Faculty of Science

Part II (2 Semesters)
General Agricultural Science courses in all the Departments inthe Faculty of Agriculture.

Part III (2 Semesters)
General Agricultural Science courses in all the Departments inthe Faculty of Agriculture

Part IV (2 Semesters)
Internship students with previous experience in practical Agriculture from approved institutions are exempted. Such

students proceed from Part III to Part V.

Part V (2 Semesters)

A few more general agriculture courses in all Departments plus a concentration programme in one Department of the student's choice, leading to specialization in a single discipline.

Students are free to select any twelve (12) units of special Electives from any Faculty other than Faculty of Agriculture for the duration of their programme. Total number of Special Elective Units to be offered is 12.

Summarized in the following tables are the courses for each of the 5 years of the Crop Production and Protection track in the Faculty of Agriculture.

YEAR I

Course code	**Course Title**	**Harmattan L-T-P**	**Rain L-T-P**	**Total Units**
MTH 105	Elementary Mathematics I	3-1-0	-	4
MTH 106	Elementary Mathematics II	-	3-1-0	4
PHY 105	Physics for Biological Science I	3-1-0	-	4
PHY 106	Physics for Biological Science II	-	3-1-0	4
PHY 107	Experimental Physics IA	0-0-3	-	1
PHY 108	Experimental Physics IB	-	0-0-3	1
CHM 101	Introductory Chemistry I	3-1-4		5
CHM102	Introductory Chemistry II	-	3-1-4	5
BOT 102	Introductory Botany	-	2-1-0	3
BOT 104	Experimental Botany	-	0-0-3	1
ZOO 101	Introductory Zoology	2-1-0	-	3
ZOO 103	Experimental Zoology	0-0-3	-	1
Total Number of Units to be offered				36

YEAR II

Course code	Course Title	Harmattan L-T-P	Rain L-T-P	Total Units
CPP 201	Agricultural Botany	2-0-3		3
CPP 202	Principles of Plant Science	-	2-3-0	3
AEC 201	Introduction to Agric. Economics I	2-1-0		3
AEC 202	Introduction to Agric. Economics II	-	2-3-0	3
ANS 201	Anatomy and Physiology of Farm Animals	2-0-3	-	3
ANS 202	Introductory to Agricultural Genetics		2-0-3	3
ANS 204	Agricultural Chemistry II		2-0-3	3
ANS 208	Introduction to Fisheries and Wildlife		2-0-2	2
AXD 201	Introduction to Rural Sociology	2-1-0		3
AXD 202	Organization of Village Communities		2-1-0	3
SLM 201	Agricultural Chemistry II	2-0-1		3
SLM 202	Principle of Soil Science		2-0-1	3
Total Number of Units to be offered				35

YEAR III

Course code	Course Title	HarmattanL-T-P	Rain L-T-P	Total Units
CPP 301	Agronomy of Arable Crops and Agroclimatology	2-1-0	-	3
CPP 302	Agronomy of Permanent Crops and Agroforestry	-	2-1-0	3
CPP 303	Introduction to Agricultural Entomology	2-0-3	-	3
CPP 304	Plant Pathology	-	2-0-3	3
AEC 301	Statistics and Biometry	2-1-0	-	2
AEC 302	Farm Management	-	2-0-0	2
AEC 303	Principles of Agricultural Economics I	2-0-0	-	2
AEC 304	Principles of Agricultural Economics II	-	2-0-0	2
AGE 352	Agricultural Engineering I	-	2-0-3	3
ANS 301	Non-Ruminant Animal Production	2-0-0	-	2
ANS 302	Ruminant Animal Production	-	2-0-0	2
SLM 301	Introductory Pedology and Soil Physics	2-0-3	-	3
SLM 302	Soil Chemistry and Microbiology	-	2-0-3	3
AXD 301	Extension Teaching and Learning Process and Methods	2-1-0	-	3
Total Number of Units to be offered				36

YEAR IV

Course code	Course Title	Harmattan L-T-P	Rain L-T-P	Total Units
AEC 401	Farm Accounts and Budgeting	1-0-3	-	2
AEC 402	Farm Management	-	0-0-3	1
AEC 403	Fisheries Management	0-0-3		1
AEC 408	Report Writing in Agricultural Economics	-	0-0-3	1
AXD 401	On-Farm Demonstration	0-0-3		1
AXD 402	Extension Records	-	0-0-3	1
AXD 403	Training and Visit Extension	0-0-3	-	1

AXD 404	Teaching in Secondary School	-	0-0-3	1
AXD 405	Workshop Practice	0-0-3	-	1
AXD 408	Report Writing in Agricultural Extension	-	0-0-3	1
ANS 401	Livestock Feed Production	0-0-3	-	1
ANS 402	Poultry Management Practices	-	0-0-3	1
ANS 403	Beef Cattle Management Practices	0-0-3	-	1
ANS 404	Sheep and Goat Management Practices	-	0-0-3	1
ANS 405	Rabbit Management Practices	0-0-3	-	1
ANS 406	Pig Management Practices	-	0-0-3	1
ANS 407	Process of Animal Products	0-0-6	-	2
ANS 408	Report Writing in Animal Sciences	-	0-0-3	1
CPP 401	Processing and Storage of Plant Produce	0-0-3		1
CPP 402	Management of Tree Crops		0-0-3	1
CPP 403	Management of Arable Crops	0-0-3		1
CPP 404	Plant Propagation		0-0-6	2
CPP 405	Greenhouse Operations	0-0-3		1
CPP 406	Nursery Practices and Vegetable Production		0-0-3	1
CPP 407	Field Plot Techniques	2-0-3		3
CPP 408	Report Writing in Plant Science		0-0-1	1
SLM 401	Soil Fertility and Plant Nutrition	0-0-3		1
SLM 402	Land Use Planning (Pedology)		0-0-3	1
SLM 403	Soil and Water Management	0-0-3		1
SLM 408	Report Writing in Soil Science		0-0-3	1
AGE 401	Agricultural Surveying	0-0-6		2

AGE 402	Farm Mechanization Practices		0-0-6	2
AGE 408	Report Writing in Agricultural Engineering		0-0-3	1
AGR 400	Application of Computers to Agriculture	0-1-3	0-0-3	3
Total Number of Units to be offered				43

PART V

Coursecode	Course Title	Harmattan L-T-P	Rain L-T-P	Total Units
*AEC 505	Agricultural Development and Policy	2-1-0		3
#AEC 508	Agribusiness Management		2-1-0	3
**CPP 501	Genetics and Crop Improvement	2-1-0		3
#CPP 502	Crop Physiology		2-0-3	3
**CPP 503	Applied Entomology	2-0-3		3
**CPP 505	Introductory Plant Biochemistry	2-0-3		3
#CPP 506	Plant Disease Control		2-0-3	3
**CPP 507	Horticulture	2-0-3		3
#CPP 508	Seed Production and Production		2-0-3	3
**CPP 509	Pasture and Forage Management	2-1-0		3
#CPP 510	Principles of Weed Control		2-0-3	3
#CPP 512	Plant Breeding Methods		2-0-3	3
*CPP 513	Research Methods in Crop Production and ProtectionI	2-0-0		2
*CPP 514	Research Methods in Plant Science		0-1-6	4
*AGE 558	Farm Machinery		2-0-3	3
#AGE 560	Farm Power		2-0-3	3

*Compulsory Course

**Harmattan restricted elective courses (take any 4 from five courses dependingon area of specialization).

Rain restricted elective courses (take any 4 from seven courses depending onarea of specialization).

Total Number of all units to be offered: **36**

iv. COURSE CONTENT/DESCRIPTION OF COURSES

YEAR 1

CHM 101-Introductory Chemistry 1 (5 units) Harmattan Semester
Emphasis is laid on fundamental chemical principles including detailed atomic structure and physical principles involved in chemical reactions. Topics include: measurement and precision; significant figures; methods of science; S.I. Units; estimation of errors; nature of matter; matter and energy types of chemical reactions; Dalton's atomic theory; atomic weight, Avogadro's number; structure of the atom; divisible atom; cathode rays; mass spectrometer; discovery of the nucleus; periodic law; electronic energy levels and the periodic table; atomic size; ionization potential; electron affinity; ionic radii; electronic configuration; stoichemistry; chemical formulae and equations; simplest formulae; molecular formulae; mole concept; calculation of formulae and equations from gravimetric data and vice-versa; ionic equations for neutralization and precipitation; concentrations, morality and volumetric calculations based on stoichiometric coefficients; oxidations and reductions as a electron transfer; oxidation number, balancing of equations including balancing of redox equations by electro-transfer equality; relevant calculations including volumetric analysis (e.g. KMn04, etc); chemical equilibra; the equilibrium state; mass action equilibrium constant calculation; equilibrium changes; water equilibria and Ph; weak acids; buffer solutions; dissociation theory of hydrolysis; solubility of ionic slides; solubility products; precipitation reactions (using solubility product principles) as applied to qualitative and quantitative analysis; state of matter: balancing intermolecular forces; hydrogen bonding; order-disorder phenomena; Entropy, free energy; energy effects; exothermic and endothermic changes; enthalpy of reaction; Hess's law of enthalpy summation; relevant calculations; heats of neutralization, combination and formation; bond dissociation energies, relevant calculation; free energy and spontaneous changes;

electrochemistry; redox reactions; oxidation potentials treated in terms of free energy; change; cells and batteries; introduction to chemical kinetics; basic definitions of order of reaction; molecularity; reaction rates; activation energy; kinetics theory.
No Prerequisite

CHM 102–Introductory Chemistry II (5 units) Rain Semester
Applications of physical principles to descriptive chemistry of the elements, and an introduction to organic chemistry. Topics include; the molecule and chemical bonding; electrons in molecules; ionic bond, covalent bonds; polarity of bonds; co-ordinate bond; metallic bonds; basic crystalline structures e.g. NaCland metallic lattices; periodic table: trends in properties of the elements – structures, ionization energies; physical properties; chemical properties of elements; properties of selected types of compounds related to the periodic law- hydrides, oxides, acids and bases; properties of elements and their compounds; hydrogen; alkali metals (Na and K particularly); alkaline earth metals; d-block elements-complexes and electronic configuration and IUPAC nomenclature of complexes; chemistry of Cr, Fe, Co, Ni. Cu, particularly of the most common oxidation states comparisons of transition elements of groups I and II trends and chemistry of Al, main group IV trends; main group V – trends and chemistry of N and P (Particularly oxides); main group Vi and chemistry of 0; main group Vii; main Viii – the insert gases. Introduction to organic chemistry: scope of organic chemistry and natural sources of organic compounds with emphasis on petroleum sources; hybridization and shape of carbon compounds; characteristics of covalent bonds; bonds length, bond angels and bond strength, and consequence of reactivity, polarity of bonds and molecules and consequences in physical and chemical properties of organic compounds intermolecular forces and consequences on melting point and boiling point of organic compounds; acid-base behaviors of organic compounds chemical principles and methods of detection of elements in organic compounds; isolation and purification of organic compounds determination of empirical, molecular and structural formula of organic compounds; principles

of organic nomenclature with emphasis on IUPAC systems for all functional groups; common types of organic reactions; a survey of the general characteristics of the common functional groups and general reactions of alkenes, alkynes, alcohol, aldehydes, acids, ketones and amines; introduction to aromatic compounds; introduction to macro-molecular compounds and natural products.
No Prerequisite

PHY 105–Physics for Biological Science I (4 Units) Harmattan Semester Treatment of elementary principles of physics as in PHY 101 but with applications and examples chosen from the life sciences.
Prerequisite: O.L. Mathematics, O.L. Physics or PHY 100

PHY 106–Physics for Biological Science II (4 Units) Rain Semester
Treatment of elementary principles of physics as in PHY 102 but including elementary modern physics and with examples and applications chosen from the life sciences.
Prerequisite: PHY 105

PHY 107-Experimental Physics I (1 unit) Harmattan Semester

BOT 104 –Experimental Botany I (1 unit) Rain Semester

BOT 102 –Introductory Botany (3 units) Rain Semester
Forms and Functions of Higher Plants: Activities of living things; respiration, taking and using feed, growth and reproduction, irritability. The cell, its general structure and activity, the possible origin of living matter; DNA, RNA: viruses, chromosomes prokaryotic and eukaryotic cells, cell division, the gametes, sexual and asexual reproduction: growth. Plant classification, its history and relevance today. Viruses, Bacteria. The fungi, Schizophyta, Ruinycophyta, Alga, Lichens-crustose, fractions. Liverworts and mosses, vascular plants; psithophyta through coniferophyta.
Anthophyta and their evolution; major categories of Anthophyta. The stem; external morphology, internal structure, function. The

root, the least, the flower; general structure; reproductive anatomy and physiology, floral diversity. Propagates. Introduction to plant identification and the use of keys.

ZOO 101–Introductory Zoology (3 units) Rain Semester
Animal complexity-Accellular and metazoan. Grades of organization protoplasmic grade (protozoa), cellular grade, cell-tissues grade, tissue-organ and organ-system grades. Animal embryology–type of eggs, fertilization, cleavage, gastrulation, differentiation of tissues, organs and systems. Outline of animal classification. Diversity of animal life, Acellular animals (protozoa): e.g. Amoeba, paramecium, euglena and 46rypanosome. Radiate animals (Coelenterate) e.g. Hydra and Obelia. Acoelentrate animals (Platyhelminthes) e.g. Ascaris, Coelentrate animals (segmented worms e.g. earthworm): Mollusca e.g land snail and cephalopods. Arthropods-equation mandibulates e.g. crayfish (crustacean) and terrestrial mandibulates e.g. centipedes, millipedes and insects, chelicerate arthropods e.g. scorpions and spiders (Arachnidan); Echinoderata e.g. starfishes; Protochadate e.g. Tunicates. Chordates-general characteristics and diversity-fishes, amphibians, reptiles, birds and mammals. Concepts of ecology, Niche, Ecosystem, Population, Habitat and Environment.

ZOO 103–Experimental Zoology (1 unit)
General laboratory procedure: use and care of microscope: Diversity of living things, plant cells, animal cells, animal embryology: eggs of chicken, starfish, toad. Animal classification, dissection of the earthworm, dissection of toad.

MTH 105/106 –Preliminary Mathematics for Students of Agriculture (8 units)
Set Theory: Set, union, interaction, empty and universal sets; complement, subsets Venn diagram, one-one correspondence between sets, the theory of quadratic functions and of quadratic equations; indices, logarithms and surds.

Algebra: Quadratic functions and equations; solution of Linear equations in 3 – unknowns; simple properties of determinants; indices and binominals theorem for positive integral indices; factor and remainder theorems; transformations e.g. log transformations, elementary examples of induction; equations of the straight line and application to simple regression equations; limits.
Elementary Vector algebra: Moments and couples; equilibrium of a particle and or rigid body under the action of a system of eoplancir forces: friction; relative velocity.

Calculus: The differentiation of simple algebraic, exponential and log functions; differentiation of a sum product, quotient and simple cases of function and of implicitly functions; gradients maximal and minima; definite and indefinite integration of simple functions; application of definite and indefinite integrals to areas and volumes I simple integration by substitution and by parts; elementary vectors; mix matrices (m, n, 3) addition of matrices; metric multiplication and inversion. Matrices and simple linear equations; consistency and linear dependence; determinants; summation of simple finite algebra series; Taylor's theorem with application to exponential and logarithmic series. Partial fractions remainder theorem and simple unequal laities; rectangular Cartesian co-ordinates; including parameters applied to the straight line, circle, parabola, ellipse and hyperbola, easy problems on loci; simple example of integration.

Differential Equations: First order ordinary differential equations with separable variable and applications to first and second order chemical reactions.

Statistics: Collection, tabulation and representation of agricultural data; frequency distribution, histograms or give, mean, mode and median; and measures of dispersion

YEAR 2 COURSES
AEC 201-Introduction to Agricultural Economics I (2 units) Harmattan Semester

Introduction to Agricultural Economics – scope and method, price theory and functions of the market with particular reference to agriculture; theory of agricultural production; cost analysis with respect to agricultural production.

AEC 202-Introduction to Agricultural Economics II (2 units) Rain Semester Macro-economic theory as it relates to agriculture; the components of agriculture in national income; introduction to international trade and commodity agreements in agriculture; public finance and agricultural development; inflation and the rural sector.

ANS 201-Anatomy and Physiology of Farm Animals (3 units) Harmattan Semester
General introduction to the animal and of animal science; parts of the beef and dirty cattle, pigs, sheep, and goats and the fowl, anatomy and physiology of the cell, cell types; anatomy and physiology of animal tissues, tissue types, anatomy and physiology of systems of the body, poultry anatomy; ecology and adaptation; skeletal systems.

ANS 202-Introduction to Agricultural Genetics (3 units) Rain Semester
Animal and plant improvement before Mendel, Mendelian generics, the cell, mitoses and cell division, gamete genesis and mitoses; principles of segregation and independent assortment; sex determination and sex linkage; elements of heredity; genes in population; genetics in crop and animal improvement.

CPP 201–Agricultural Botany (3 units) Harmattan Semester
Microscope and its manipulation; introduction to plant taxonomy; characteristics of the following crop families; Sterculiaceae, Solanaceae, Malvaceae, Rubiaceae, Euphobiaceae Dioscoreacaea; Musaceae, Rutaceae; recognition of members of each family; factors of environment and their effects on crop distribution in Nigeria; photosynthesis, pollination transpiration, nitrogen

metabolism; growth regulations and their relation to crop performance and yield.

CPP 202–Principles of Plant Science (3 units) Rain Semester
General types and characteristics of arthropods and micro-organisms affecting crop plans, nuisance of insects and micro-organics on crop production; weeds and their effects on crop polarity, basic Mendelian genetics and cropimprovement.

AXD 201-Introduction to Rural Sociology (3 units) Harmattan Semester Sociology as a science; definition of Rural Sociology; a special study of Sociology; importance of study of Rural Sociology.

AXD 202 – Organisation of Village Communities (3 units) Rain Semester Village organization of major ethic groups in Nigeria; social groups and association; leadership in rural communities; characteristics, types, functions, role of leaders in rural development and extension work; development of rural community leaders, organization for rural development in Nigeria.

SLM 201-Agricultural Chemistry II (3 units) Harmattan
Review of basic chemistry; solution; acid and bases; thermodynamics, chemical equilibrium; chemical kinetics; redox reaction; complex reaction; nuclear chemistry; colloid chemistry.

SLM 202-Principles of Soil Science (3 units) Rain
Composition of the soil; soil forming rocks and minerals; factors and processes of soil formation; silicate chemistry; factors affecting plant growth; soil microorganisms; shifting cultivation and the fallow system. Physical state of soil; structure; density; soil-water relationships; evapotranspiration; tillage and soil properties.

YEAR 3 COURSES
AEC 301–Principles of Agricultural Economics I (2 units) Harmattan Semester Theory of production; consumption and

resource allocation with special emphasis to agriculture.

AEC 302–Principles of Agricultural Economics II (2 units) Rain Semester Agriculture in economic development; elements of agricultural marketing and land economics; agricultural resources; capital and credit in agriculture.

ANS 301 – Non-Ruminant Animal Production (2 units) Harmattan Semester Introduction to types and breeds of non-ruminant livestock; problems of livestock production in Nigeria; types of gene action quantitative variations of animals, cross breeding, inbreeding and selection in non-ruminant animals; pig breeds non-ruminant animal products.

ANS 302–Ruminant Animal Production (2 units) Rain Semester
The chemical composition of the animal body, water in relation to nutrient; seems for describing energy and protein values of feeds; minerals and vitamin; the proximate analysis scheme; feed classification and nation formulating characteristics of the difference classes of ruminant animals; breeds of sheep; goat, beef and dairy cattle, management and care of the different classes of ruminant animals; breeding and improvement programmes; ruminant animal products.

CPP 301–Agronomy of Arable Crop (3 units) Harmattan Semester
Crop environment culture, utilization, and improvement of cereals, legumes root crop; fibre crops; and other important annual crop in Nigeria, performance at the end of the first semester in order to further ensure the attainment of the objectives of the practical training.

CPP 302–Agronomy of Permanent Crops
Establishment, management, utilization and improvement of tree and plantation crops, such as cocoa, oil palm, rubber, coffee, coconut, sugar-cane, bananas and plantains, citrus and cashew.

CPP 303–Introduction to Agricultural Entomology (3 units)

Harmattan Semester Morphology and physiology of insects and closely related arthropods, biology, classification and control of annual and crop insect pests in West African; practical classes on morphology and taxonomy of insects.

CPP 304-Plant Pathology (3 units) Rain Semester
Introduction to non-parasitic, bacterial, fungal, virus and Nematode diseases of plants; fundamentals of phytopathology etiology, epidemiology and control of diseases of economic plants found in West Africa.

AXD 301–Extension Teaching Learning Process and Methods (3 units) Harmattan Semester
The meaning of the concept of communication, nature of communication, nature of communication process, and the elements in the process; principles of communication; application of communication analyzing communication problems extension; the meaning of the concepts of teaching, leaning and motivation; steps in teaching and learning, teaching of and learning; extension, by teaching methods, making classification, examples from different classes; preparation of teaching materials and aids, use of teaching methods/aids, visit to ministry's extension stations and villages.

SLM 301-Introduction to Pedology and Soil Physics (3 units) Harmattan Semester
Soil components; soil forming rocks and minerals; factors and processes of soil formation; profile descrip0tion; soil classification and mapping. Soils of Southern Nigeria; Soil separates; soil texture. Surface area of particles; aggregation, soil structure and stability; porosity; soil-water relations; soil and the hydrologic cycle; soil temperature and conduction; soil erosion.

SLM 302-Introduction to Soil Chemistry and Microbiology (3 units) Rain Semester
Soil fertility conversion units and calculations; silicate mineral chemistry, soil cation exchange capacity and base saturation; soil

acidity and liming; soil nutrients availability; soil fertility evaluation; (soil testing and fertilizers) Survey of microorganisms in soils and their role; the dynamics of N, P and S pools; association between microbes and plants.

AGE 351–Agricultural Engineering (3 units) Harmattan Semester
Workshop tools; basic mechanics; agricultural tractors, farm power transmission system; aims and objects of agricultural mechanization land clearing and land preparation technology, planting and harvesting machinery; fertilizer distributors; farm machinery costings and records.

YEAR 4 COURSES

AEC 401–Farm Accounts and Budgeting (1 unit) Harmattan Semester
Types of records, books of account and application to farm enterprises. Type of budges, preparation of sources and uses of cash. Budgeted balance sheet statement. Budget production trading, profit and loss accounts, profitability measurement.

AEC 402–Farm Management (1 unit) Rain Semester
Nature and scope of farm management, management functions in traditional agriculture, organization of the farm set-up, farm records and accounting, farm business analysis, capital budgeting, farm and enterprise budgeting linear programming (maximization). Management, Decision making and agricultural production. Agricultural production relationships: Concept of production function. Use of production functions in Economic analysis. Planning for maximum profits: compounding and discounting methods; the inter-temporal choice problem. Marketing management.

AEC 403–Fisheries Management (1 unit) Harmattan Semester
Role of Fisheries in the Nigerian Economy–value, problems, and feasibility of investment and costs in fisheries production; cost and return appraisal of various types of domestic fisheries production.

AEC 404–Project in Agricultural Economics (1 unit) Rain Semester

ANS 401–Livestock Feed Production (1 unit) Harmattan Semester
Identification of feed ingredients consumed by various livestock, ration formulation. Machinery and equipment used in the feed mill operation. Grinding, mixing and pelleting of feeds. Handling and distribution of feed and water.

ANS 402–Poultry Practices (1 unit) Rain Semester
Identification of the various breeds of poultry. Broiler production, management of chicks from day old to maturity.

ANS 403–Beef Cattle Management Practices (1 unit) Harmattan Semester
Beef types–Characteristics of boss Taurus indices, procedures for cattle control- padlocking, restraining, cattle crush. Post calving routines castration, branding, ear marking, dehorning, and vaccination. Post matting routines: pregnancy testing, weaning, culling, second mating. Growth concepts: Intensive production (dealers), semi-intensive (yearlings and steers), extensive (bullocks, steers, cul-cows). Feeding systems: pasture feeding, supplementary feeding, silage systems, feedlot. Breeding and management: Adaptability, selection, performance records, artificial insemination, management and disease control.

ANS 404–Sheep and Goats Management Practices (1 unit) Rain Semester Conservation methods for pasture to rage: hay and silage. Buildings for sheep and goats health management practices. Prevention and control of diseases and parasites. Care at lambing and kidding season. Keeping records of sheep and goats. Docking, castration and foot tromping in sheep and goats. Marking or identification of sheep and goats. Breeding sheep and goats and the use of slatted floors. Weaning lambs and kids. Routine management practices: Feeding watering etc.

ANS 405–Rabbit Management Practices (1 unit) Harmattan Semester Identification of breeds, Feeding, Mating, Pregnancy diagnosis, Care of do and kids from kidding until weaning, construction of rabbit hutches.

ANS 406–Pig Management Practices (1 unit) Rain Semester
Housing for swine. Management practices from mating to clipping of needle teeth, ear notching, castration etc. Indicators of good libido in bears. Good estrus in sow. Health management practices including ecto and endo- parasite control. Feeding practices before breeding, during gestation, post parturition growers and adults of different sexes.

ANS 407–Animal Product Processing (1 unit) Harmattan Semester
External features of live animals (cattle, sheep, pig, poultry and rabbits and their appraisal. Antenortem inspection slaughtering techniques and past mortem inspection. Dressing methods and equipment. Cut removal and production of sausage casings. Carcass quality and yield grading. Primal and retail cuts of the different species of animals. Whole meat processing curing, smoking, drying and refrigeration. Communited meat processing ground meat, corned beef, and sausages. Processing of offal's–trips, leg, skin. Egg quality assessment candling, laugh's unit and egg shell thickness. Milk quality assessment–milk fat, total solids, non-fat solids, flavours, and storage.

ANS 408 – Animal Science Project (1 unit) Rain Semester

CPP 401 – Processing and Storage of Plant Produce (1 unit) Harmattan Semester Harvesting of all types of crops. Threshing and cleaning of cereal, legume and vegetable crops. Rubber tapping. Processing of oil palm, and cacao. Gari production. Preservation of maize, cowpea, and coffee beans storage equipment, poly bags, jute bags, earthen pots, metal containers, silos. Moisture content determination, fumigation, monitoring of pest in storage houses.

CPP 402 – Management of Tree Crops (1 unit) Rain Semester
Lay out of tree crops, transplanting, fertilizer application for the first three years, weed control, inter-planting with arable crops, use of nature crops, wind break, pruning, plantation hygiene. Pest and disease control harvesting.

CPP 403–Arable Crop Management (1 unit) Harmattan Semester
Land preparation, Field lay-out, weed control by hand and by peroxide timing, supplying, fertilizer application, insect and disease control.

CPP 404–Plant Propagation (1 unit) Rain Semester
Rapid multiplication techniques for yam, plantain, cassava, pineapple and other asexually propagated crops. Seed multiplication. Hybrid seed production.

CPP 405–Greenhouse Operations (1 unit) Harmattan Semester
Soil sterilization, pesticide formulation, Pesticide application, and equipment calibration. Green house tools, green house maintenance.

CPP 406–Nursery Practices and Vegetable Production (1 unit) Rain Semester Site location, Nursery Practices for permanent crops and for vegetable crops, budding, grafting, preparation for transplanting. Pest and disease control in the Nursery.

CPP 407–Field Plot Techniques (3unit) Harmattan Semester
Layout of field experiments, sampling techniques in survey, design of experiments, data analysis, separation of means. Measure of association, trend analysis.

CPP 408–Report Writing in Plant Science (1 unit) Rain Semester.

AXD 401 On-Farm Demonstration (1 unit) Harmattan Semester
How to set up demonstration plots. Skills and knowledge to be imparted in Animal Sciences, Plant and Soil Science. How to

communicate with farmers.

AXD 402–Extension Records (1 unit) Rain Semester
Records to be kept by extension workers. Preparation and Presentation of Extension on packages.

AXD 403–Training and Visit Extension (1 unit) Harmattan Semester
Visits to Farmers and their fields by students to advise and teach farmers recommendations on relevant agricultural technology with the use of audio visual aids. Students will visit farmers, interview them and answer questions on their recommendations. Visit Fortnightly.

AXD 405–Workshop Practice and Tractor Driving (1 unit) Harmattan Semester Tractor Driving. Identification of farm implements and Tractor parts. Maintenance of tractors and farm machineries. Simple workshop practices such as welding, soldering, Tractor operation.

AXD 406–Project in Extension Education (1 unit) Rain Semester Planning and Implementation of Extension Project

AXD 408–Report Writing in Agric Extension (1 unit) Rain Semester SLM 401-Soil Fertility and Plant Nutrition (2 units) Harmattan.
Identification of soil sampling equipment. Soil sampling for fertility evaluation. Plant sampling techniques for identification and characterization of nutrient deficiency symptoms. Fertilizer Use: method, time and rate of application.

SLM 402-Land Use Planning (Pedology) (1 unit) Rain.
Appraisal of physical setting of the environment based on Land Use study. Soil sampling and routine analysis to emphasize pathological information. Location of, construction of, and sampling from profile pit.

SLM 403-Soil and Water Management (1 unit) Harmattan
Land preparation techniques for soil conservation and soil-water management. Soil sampling techniques for moisture content and bulk density determination. Assessment of erosion damages to soils, causative factors and control of soil erosion through land preparation and other soil management practices. Field characterization of soil physical properties. Participation in field runoff, plot construction and erosion measurements.

SLM 408-Report Writing in Soil Science (1 unit)
Literature search and literature citation. Project writing in Soil Science. Writing of Journal articles and scientific report. Use of statistics in explanation of results.

YEAR 5 COURSES
CPP 501-Genetics and Crop Improvement (3 units) Harmattan Semester
The origin, organization and transfer of biological variations. The chemical basis of heredity. Introduction to population and quantitative genetics. Introduction: Definition of Genetics; Achievements of crop improvement; History of Mendelism, Basic terminology in Genetics, Mitosis and Meiosis, Mendelian Inheritance, Quantitative inheritance, Polyploidy, Mutation, Genetic basis of breeding self-pollinating crops, Genetics basis of breeding cross-pollinating crops, Interspecific hybridization, Breeding for Stress resistance (Abiotic and Biotic) and Introduction to molecular genetics

CPP 502-Crop Physiology (3 units) Rain Semester
Study of the functioning of plants, its significance in agriculture, and the manipulation of these functions by man to attain maximum crop productivity. Roles of light, water and temperature in plant performance. Flowering, fruiting and ripening, seed dormancy and seed germination. Mineral nutrition, photosynthesis and dry matter accumulation. Respiration, nitrogen metabolism including legume root nodule physiology. Plant growth substances and their potential

uses in agriculture. Plant productivity under environmental stress conditions.

CPP 503-Applied Entomology (3 units) Harmattan Semester
Origin of pest situations. Ecological basis for insect pest control. Bionomics, distribution and control of major insects of economic importance. Principles of integrated insect pest management.

CPP 505-Introductory Plant Biochemistry (3 units) Harmattan Semester
Buffer and Ph. The cell and its organelles; enzyme structure; Classification and synthesis of carbohydrates, Classification and synthesis of lipids, Classification and synthesis of amino acids and proteins, nucleic acids and nucleoproteins, High energy compounds, glycolysis, Krebs cycle.

CPP 506-Plant Disease Control (3 units) Rain Semester
Fundamental and practical aspects of important crop plants. Cultural, biological, and chemical control of plant disease. Fundamentals of plant resistance to disease. Quantitative and regulatory measures against introduction and spread of plant pathogens.

CPP 507-Horticulture (3 units) Harmattan Semester
State of the Horticulture industry in Nigeria. Economic importance of horticulture. Survey of tropical and sub-tropical crops, their distribution, production and potential sources of germplasm. Nursery practices. Studies on the preparation, establishment, management, harvesting and post-harvest handling of horticultural crops. Dry season vegetable production.

CPP 508-Seed Production and Certification (3 units) Rain Semester
Production processing, certification and distribution of improved seeds. CPP 509-Pasture Crop Production (3 units) Harmattan Semester Principles of grassland industry. Botany, adaptation,

production and management of indigenous and introduction pasture and forage plants. Grass- legume mixtures; utilization and maintenance of permanent and temporary pastures. Field trips.

CPP 510-Principles of Weed Control (3 units) Rain Semester
Biology and ecology of weeds. Losses due to weeds. Principles and practices of weed control. Basis for herbicidal selectivity.

CPP 512-Plant Breeding Methods (3 units) Rain Semester
Principles and techniques involved in breeding and maintaining crop varieties. The application of basic principles and concepts of qualitative and quantitative genetics to the improvement of crop plants. Different plant breeding methodologies relative to the mode of reproduction of crop plants. Application of modern tools, biotechnology in particular, in the breeding of crop plants.

CPP 513 – Research Methods in Crop Production and Protection I (Theoretical) (2 units) Harmattan Semester
Research methodology. Principles of field experimentation; experimental layout; measurements and data collection; making inferences from results. Elements of instrumentation. Introduction to Research Methods in Crop Production and Protection; Entomology, Seed Science, Mycology, Virology, Weed Science, Biotechnology and Research Methods in Farming System.

CPP 514-Research Methods in Plant Science II (Project) (4 units) Rain Semester
Research methodology. Principles of field experimentation; experimental layout; measurements and data collection; making inferences from results. Elements of instrumentation. Seminar presentations, project execution and thesis write-up.

AEC 501–Farm Management (2 units) Harmattan Semester
Role of economic principles in farm management; value, problem, and methods of collecting farm management information; farm record and accounting; farm business and enterprise analysis; farm

planning and organization; getting started in farming; farm budgeting; decision-making under imperfect knowledge; capital, investment and principles of farm project evaluation.

AEC 503–Statistics and Biometrics (3 units) Harmattan Semester
Introduction to statistics methods; analysis of variance, regression analysis of covariance; elementary design of experiments.

AEC 505–Problems of Agricultural Development in Nigeria (2 units) HarmattanSemester
Problems of agricultural development and planning; agricultural technology, economic institutions and population ensure; consumption, saving, and capital formation, principles of economic development; economic change and development, the experience and prospects of economic development; current theories and policies.

AGE 504–Principles of Farm Machinery (3 units) Rain Semester
Functional requirements, basic principles and operation of both traditional andmodern agricultural tools and farm machinery for production, handling, and processing of crops of the farm; fundamental considerations which influence the design and manufacture of agricultural machines.

AGE 506–Farm Power (3 units) Rain Semester
Basic thermodynamics, engine cycles, electrical machines, transmissions and hydraulic system, hitching, weight transfer and direction, engineering properties of agricultural materials, elementary structural analysis.

AGE 553–Agricultural Engineering II (3 units) Rain Semester
Principles of crop processing and storage crop processing machinery; livestock and machinery housing; materials of construction; agricultural surveying; soil and water conservation; farm electrification and farm electric motors.

3.0 POSTGRADUATE PROGRAMME

3.1 Introduction

In addition to the main objectives of Postgraduate studies in the University, the Department of Crop Production and Protection aims at providing specialized in-depth academic, research and practical training opportunities for graduate students, which will prepare them to fill teaching, research and administrative positions in the public and private sectors in Nigeria as well as in the international job market.

3.2 Degree Awarded

The Department offers the following Degree Programmes in the following areas of specialization:

(a) M.Sc., M.Phil., or Ph.D. Crop Production and Protection (CPP) with specialization in Farming Systems, Physiology of Crops, Plant Nutrition, Horticulture, and Weed Science.

(b) M.Sc., M.Phil., or Ph.D. Crop Production and Protection (Entomology) with specialization in Insecticide Toxicology, Insect Ecology, Insect Physiology, Insect Pathology, and Biocontrol of the Insect Pests.

(c) M.Sc., M.Phil., or Ph.D. Crop Production and Protection (Plant Breeding) with specialization in Conservation of Plant Genetic Resources and Crop Improvement through Breeding and Genetics.

(d) M.Sc., M.Phil., or Ph.D. Crop Production and Protection (Plant Pathology) with specialization in Applied Mycology, Virology, Nematology and Phytobacteriology.

(e) M.Sc., M.Phil., or Ph.D. Seed Science with specialization in Seed Production, Seed Technology; Seed Health, Seed Biology.

3.3 General Requirements

The entry requirements for admission to the M.Sc. and M.Phil. Programmes are as stipulated in the Postgraduate School Regulations. The degree must be in Agriculture, Biological Sciences or Chemistry. The entry requirements for admission to the

Ph.D. Programme are those stipulated in the Regulations.

v. General Departmental Requirements/Admission Requirements

In addition to the general requirements, candidates must show evidence that they have successfully completed courses in the following areas during their B.Sc. degree programme to be allowed to undertake the advanced work required for the M.Sc., M.Phil., or Ph.D. degrees.

(i) Plant Breeding and Genetics
(ii) Plant Physiology
(iii) Agronomy
(iv) Plant Pathology
(v) Entomology

Where candidates are deficient in any of the above courses or their equivalent, such candidates may be required to audit these courses during the first two semesters of their enrolment for the M.Sc. degree.

3.5 Coursework

Candidates shall be required to complete at least 24 units of coursework (including CPP 813, CPP 814 and CPP 898) for the Masters degree chosen from the following courses or other approved University courses with the permission of the candidate's supervisor. For Ph.D., candidates shall be required to complete at least 36 units of coursework (including CPP 999).

CPP 801	Crop Ecology and Agroclimatology	3
CPP 802	Seed Biology	3
CPP 803	Seed Technology	4
CPP 804	Crop Physiology	3
CPP 805	Mineral Nutrition of Plants	3
CPP 806	Growth Analysis	3
CPP 807	Seed Storage and Management	2
CPP 808	Advanced Crop Production	3
CPP 809	Microclimatology	3
CPP 810	Seed Analysis, Testing and Certification	3

CPP 811	Horticultural Methods	3
CPP 812	Postharvest Physiology	3
CPP 813	Statistical Methods	4
CPP 814	Designs and Analysis of Experiments	3
CPP 816	Biometrical Genetic Theory	3
CPP 917	Biometrical Methods I	3
CPP 918	Biometrical Methods II	3
CPP 919	Cytogenetics in Plant Breeding	3
CPP 920	Population Structure	3
CPP 921	Advanced Plant Breeding	3
CPP 824	Stored Products Entomology	3
CPP 826	Veterinary and Medical Entomology	3
CPP 827	Insect Ecology	3
CPP 828	Insect Taxonomy	3
CPP 829	Insect Morphology	3
CPP 830	Insect Physiology	3
CPP 831	Biological Control of Insect Pests	3
CPP 832	Insect Pathology	3
CPP 833	Integrated Pest Management	3
CPP 834	Insect Toxicology	3
CPP 835	Advanced Taxonomy of Insects	3
CPP 836	Taxonomy and Biology of Immature Insects	3
CPP 838	Stored Products Entomology	3
CPP 940	Research Techniques in Entomology	3
CPP 841	Host-parasite Interaction	3
CPP 842	Diseases of Tropical Crops	3
CPP 843	Nematology	3
CPP 844	Plant Virology	3
CPP 845	Principles of Plant Disease Control	3
CPP 846	Epiphytology	3
CPP 847	Research Techniques in Plant Pathology	3
CPP 848	Phytobacteriology	3
CPP 849	Seed Pathology	3
CPP 851	Advanced Weed Science	3
CPP 852	Metabolisms and Action of Herbicides	3
CPP 997	Special Problems	3
CPP 898	Plant Science Seminar (M.Sc. and M.Phil.)	1
CPP 999	Research Seminar (Ph.D)	1

Where a candidate with Master's degree of another University recognized by this University is registered for a Ph.D. degree, he may be given credit for any of the courses provided he can show evidence that he has satisfactorily completed their equivalent.

3.6 Course Examination

(a) An M.Sc. or M.Phil. Student shall have completed a minimum of 24 units before taking his/her final oral examination.

(b) A Ph.D. student who has completed the minimum course requirements and had his/her research project well under way shall be required to take a qualifying examination in accordance with the regulation guiding Postgraduate studies. This examination shall be taken at least 12 months before the final oral examination (thesis defense).

vi. A Ph.D. student shall have completed a minimum of 36 units of course work before taking his final oral examination.

(c) Thesis

(i) A dissertation based on analysis of data of a research carried out in the department or approved library research written according to standards prescribed by the Postgraduate College, shall be presented by the candidate for M.Sc. (Crop Production and Protection). The dissertation shall include a review of pertinent literature, materials and methods, results and discussion of the research work or analysis of data carried out by the candidate.

(ii) A thesis based on original research work and written according to standards prescribed by the PG courses shall be presented by the candidate for M.Sc. The thesis shall include a review of pertinent literature, method and materials, results and discussion of the experimental work carried out by the candidates.

(iii) A thesis based on original research and on a title and research plan approved by the P.G. College shall be

presented by the candidate for Ph.D.

(iv) Each dissertation or thesis shall be examined by an oral examination of the subject matter of the thesis or dissertation and overall knowledge of the field of study. For each M.Sc. and Ph.D. candidate, the panel of examiners shall be constituted according to the regulations of the PG College.

3.7 Staff for Graduate Programme

	Name of Staff/Qualification	Status	Specialization
1.	**Opabode J.T.,** B. Agric., M.Phil.,Ph.D	Head of Dept./ Professor	Plant Physiology /Biotechnology
2.	**Akingbohungbe A. E.,** B.Sc., M.S., Ph.D	Emeritus Professor	Entomology/Insect Taxonomy
3.	**Ajayi S. A.,** B. Agric., M.Phil.,Dr. Sc. Agr.	Professor	Seed Science & Technology
4.	**Adekunle O.K.,** B.Sc., M.Sc., Ph.D	Professor	Plant Pathology /Nematology
5	**Salami A.O. (Mrs.),** B.Sc. Ed.,M.Sc., Ph.D	Professor	Plant Pathology/ Mycology/Soil Microbiology
6.	**Adebooye O. C.,** B. Agric.,M.Phil., Ph.D	Professor	Plant Physiology
7.	**Amujoyegbe B. J.,** B. Agric.,M.Sc., M.Phil., Ph.D	Professor	FarmingSystems
	Sosan M.B., B. Agric., M.Phil., Ph.D	Professor	Entomology/ Insecticide Toxicology
8.	**Odu B. O.,** B. Agric., M.Sc., Ph.D	Professor	Plant Pathology /Virology
10.	**Soyelu O.J.,** B. Agric., M.Phil., Ph.D	Professor	Entomology/Insect Physiology
11.	**Oluwaranti A. (Mrs.),** B. Agric.,M.Sc., Ph.D	Professor	Plant Breeding /Genetics
12.	**Akinwale R.,** B. Agric., M.Sc., Ph.D	Reader	Plant Breeding/ Genetics/Biometry
13.	**Awosanmi F.E.,** B. Tech., M.Phil.,Ph.D	Senior Lecturer	Seed Science & Technology
14.	**Oladejo A.S.,** B. Agric., M.Phil.,Ph.D	Senior Lecturer	Plant Breeding /Genetics
15.	**Udah O.,** B. Agric., M.Phil., Ph.D	Lecturer I	Insect Taxonomy
16.	**Alagbo O. O.,** B. Agric., M.Phil.,Ph.D	Lecturer I	Weed Science

3.8 Course Syllabus

CPP 801- Crop Ecology and Agroclimatology: 2 + 2hr Climatic, edaphic, biotic, and geographical factors of the

environments and their relationships to crop distribution and production. (3 units)

CPP 802- Seed Biology 3hr
Morphological and development of reproduction organs. Seed and fruit development; physiology of reproduction and seed maturation. Seed reserve, storage, and viability. Ecology and agronomy of seed production in different crops. Seed Classification. (3 units).

CPP 803- Seed Technology: 3 + 3hr
Seed improvement organization, components of seed quality principles and practices of seed drying storage, cleaning and packaging. Principles of seed certification, testing, and legislation. Seed marketing. Biology and control of seed-borne pathogens and pests; microorganism and pest of stored seeds. Seed treatment and seed dressing. (Physical and biological principles involved in the conditioning and storage of seed and grain with emphasis used, operational procedures, management and economic considerations) (4 units).

CPP 804- Crop Physiology 2 + 3hrs
The Agricultural implication of various physiological processes plants, and how these processes can be manipulated for maximization of crop yield and quality. Topics discussed include photosynthesis, respiration, nitrogen metabolism (including protein synthesis), translocation, transpiration and water economy in plants, flowering (including photoperiodism), fruit set and fruit ripening, plant growth substances and the tolerance of plants to environmental stress. (3 units).

CPP 805- Mineral Nutrition of Plant: 2 + 3hrs
Historical aspects of Plant Nutrition. The soil as a source of plant nutrients. Physical and chemical processes involved in uptake and movement of ions in plants. Ion interactions the essential elements and their functions. Importance of mineral elements in plants for purposes other than satisfying plant growth requirements.

Physiological ecology. Mineral nutrition and breeding (3 units).

CPP 806- Growth Analysis 2 + 3hrs.
Kinetic of growth rate: theories and models. Components of growth rate: determination of primary valves; data analysis and transformation. Use and abuse of growth analysis. Allometry. Environmental regulationof the components of yield (3 units).

CPP 807- Seed Storage and Management 2 + 0hr
Seed production planning, hybrid seed production, seed and plant collection, germplasm maintenance (2 units).

CPP 808- Advanced Crop Production 3 + 0hr
Physiological origin of the crop yield. "Potential" versus "harvest" yield and the role of environmental factors. Management practices employed in the crop production. Farming systems-traditional and modern concepts. The contemporary models in cropping systems and research methodologies. (3 units).

CPP 809- Microclimatology: 3 + 0hr
Study of the climate near the ground in the relation to crop production. Topics include, radiation balance, heat balance, soil heat flux and soil temperatures wind and turbulent transport; Atmospheric humidity, transpiration, evaporation and evapotranspiration; carbon-dioxide balance and photosynthesis; improvement of water use efficiency; modification of the microclimate in the crop production. (3 units).

CPP 810- Seed Analysis, Testing and Certification: 3 + 3hr
Crop and weed seed identification, laboratory practices in seed analysis, special tests for seed quality, viability tests. Seed health test,field testing, Regulations governing seed production and making (4units).

CPP 811- Horticultural Methods: 2 + 3hr
The state of the horticultural industry in Nigeria. Technical and practical aspects of vegetable gardening, orchard development,

management and improvement in the tropics. Propagation, tree training, painting, fruit thinning, grafting and harvesting. Growth regulators and their application to horticulture. Review of recent methodologies in fruit research. Yield component analysis. (3 units).

CPP 812- Postharvest Physiology: 2 + 3hrs
The physiology of fruits and vegetables. Harvest indices. The concept of ripening. Physiological basis of storage technology. Changes during maturation, ripening and senescence. Pre and Postharvest factors affecting crop quality. Regulation of ripening and senescence. Storage, physiological disorder and their control. Principles of postharvest handling, distribution and utilization (3 units).

CPP 813- Statistical Methods: 3 + 3hr
Statistical notation, averages and standard deviations, normal distribution. T-distribution and confidence limits; statistical hypothesis and tests of significance; discrete data; liner correlation and regression; principles of experimental designs and the analysis of variance: the completely randomised design, the randomised complete block design and the Latin Square Design (4 units).

CPP 814- Designs and Analysis of Experiments: 3 + 0hr
Review of the analysis of variance and randomised complete block design; comparison of means; factorial experiments, orthogonal and trend comparison: split-plot design, nested design, incomplete block (lattice) designs; Analysis of covariance. Partial and multiple regression and corrections, matrices and regression. (3 units).

CPP 816- Biometrical Genetics: 2 + 3hr
Statistical concepts in quantitative genetics. Time application of statistical model to the design, analysis, and interpretation of quantitative breeding and genetics experiments; genetics and statistical implications of common selection procedures (3 units).

CPP 917- Biometrical Method 1: 3hrs
Matrices, least square estimates. Expected means squares commonly used designs in Plant and Animal Science (3 units).

CPP 918- Biometrical Method 11: 3hr
Mating designs, Diallele and partial diallele analysis. Generation means analysis. Use of computer programmes in analysis breeding experiments (3 units).

CPP 919- Cytogenetics in Plant Breeding: 2 + 3hr
Application of cytogenetics in plant breeding including the use of aneuploids, choromosome manipulation, inter-specific and intergeneric hybridization; including polyploidy, induced mutations, sterility mechanism, pollen and embryo culture (3 units).

CPP 920- Population Structure: 3hr
Selection, drift, and mutation in large and small populations. Inbreeding, assortative and dissortative mating. Population structure in random mating, self-pollinating and mixed mating systems (3 units).

CPP 921 – Advanced Plant Breeding: 3hr
Gene Action, Heritability, Inbreeding and Heterosis, Development and evaluation parental materials, Population Improvement, Genotype x Environment Interactions, Cultivar Development and Comprehensive Breeding Schemes, Plant Introduction and the Origin of Cultivated Crops, Conservation of Genetic Resources (3 units)

CPP 826- Veterinary and Medical Entomology: 2 + 3hr
Insects and other arthropod vectors of diseases of man and livestock; insects and other arthropods causing direct injury or annoyance to man and livestock control programme. Especially of tsetse fly and mosquito,tick and mites (3 units).

CPP 827- Insect Ecology: 2 + 4hr

The scope of ecology; physical and biotic components of the environment weather, food, other animal predation and parasitism: diapause and dispersal Population diversity, distribution, size, density, and factors limiting natural populations: Ecological genetics- polymorphism. Mimicry, speciation, isolation effects and genetic elasticity; theory of colonisation.

CPP 828- Insect Taxonomy: 2 + 4hr

The classification and phylogeny of insects, covering all the orders and main families of the class insect. Principles of systematics, classification of higher categories. Identification and discrimination of taxonomic characters; Zoological nomenclature, the principle of priority, the type-method and its significance, specific names, genetic and family names, names of orders and families. (3 units).

CPP 829- Insect Morphology: 2 + 3 hr

General external and internal morphology of insects. Organs and glandular systems. (3 units).

CPP 830- Insect Physiology: 2 + 3hr

Structure and functions of the insect integuments; differentiation and moulting. Insect growth and development; biochemistry of insect metamorphosis. Insect reproduction; endocrinology of egg maturation. Fat body metabolism; regulation of intermediary metabolism; the insect flight mechanism. Respiration in insects. Insect circulatory system. Digestive enzymes and their roles in insect feeding; insect dietary requirements. Excretion and osmoregulation in insects. The insect nervous system. Behaviour and communication in insects. Diapause and insect photoperiodism. (3 units).

CPP 831- Biological Control of Insect Pest 2 + 3hr

History of biological control. Classification of factors causing

fluctuation in insect populations. Theories of natural control. Entomophagous insects. Importation, mass production, colonization and evaluation of entomophages. Microbial control. Role of birds, fishes, small mammals, and other agents. Biological control of plant pathogens and weeds. (3 units).

CPP 832- Insect Pathology: 2 + 3hrs.
History and principles of insect pathology Insect microbial associations particularly pathogenic (ranging from chance contamination to obligate pathogenicity). Proof of Koch's postulates. Quantitation of normal versus disease states from stand point of the entire association, the cellular, and subcellular levels. Microbial control of insects, past and present (3 units).

CPP 833- Integrated Pest Management: 2 + 0hr
History of pest control, pest status, and appreciation of pest situations. Economic injury levels and economic thresholds. Principles and philosophy of pest management with emphasis on ecological basis for integrated control. Pest assessment and pest management programmes for selected crops. methods of forecasting pest outbreaks (the 2hr weekly lectures to be supplemented by field trips to experimental and research stations). (2 units).

CPP 834- Insecticide Toxicology: 2 + 3hr
General principles of insect toxicology, historical development and chemistry of insecticides and acaricides. Physical and chemical properties and mode of action of insecticides. Analytical and bioassay methods for the detection and determination of insecticides. Selective toxicity and effect of insecticide on non-target organisms, safety precautions. (3units).

CPP 835- Advanced Taxonomy of Insects: 2 + 4hr
Detailed studies on biosystematics of selected orders after consultation with instructor. Largely by reading assignments, term papers, discussion and practical's involving, guided self-collection to be identified to different taxonomic levels as directed (3 units).

CPP 836- Taxonomy and Biology of Immature Insects: 2 + 6hr
Life history phenomena in insects. Classification of nymphs and larvae. Methods for collecting and preserving immature insects. Characters of immature and their value in taxonomic ranking. Morphology and biology of immature stages in selected groups of all major orders of insects. (4 units).

CPP 838- Stored Products Entomology: 2 + 3hr (3 units)
Biology and life cycle of insect pests of stored products, flour, seeds and dry fish. Control of stored product pests. Fumigation techniques.

CPP 940- Research Techniques in Entomology: 2 + 4hr
Different methods of collection and mounting insects including light traps, Berlesse funnel, suction traps etc. sampling techniques and methods of pest assessment and forecasting. Calculations for insecticide formulations and calibration of spraying equipment. Special methods. Used in monitoring insect population. (3 units).

CPP 841- Host Parasite Interactions 2 + 3hr
Origin and concept of parasitism. Defence mechanism of the host against pathogen. Physiology and biochemistry of plant pathogens as related to the production of toxins, enzymes, antibiotics, and proteins. Mechanism of variation in plant pathogens and nature of diseases resistance in Plants. (3 units).

CPP 842- Diseases of Tropical Crops: 2 + 3hrs
Major disease of economic crops in the tropics will be observed and studied in the field and in the laboratory. Students will diagnose selected diseases and will identify the causal agents of each disease using isolation, cultural and inoculation techniques. Lectures, discussions, and students' reports will consider important aspects of each disease and its control measures. (3 units) and in the laboratory. Students will diagnose selected diseases and will identify the causal agents of each disease using isolation, cultural,

and inoculation, techniques. (3 units).

CPP 843- Nematology 2 + 3hr.
Nematode anatomy, biology, host-parasite relations, taxonomy. Study of selected group including foliar, stem, root-knot, and cyst-nematodes and control principles Nematode interaction with bacterial, fungi and viruses in diseases development. (3 units).

CPP 844- Plant Virology: 2 + 3 hr
Properties of plant viruses and symptoms of virus diseases in plants. Techniques in the isolation, transmission, and identification of plant viruses. Virus replication and movements in the host plant. Economic importance and general control methods of virus diseases. Mycoplasma. (3 units).

CPP 845- Principles of Plant Diseases Control: 3 + 2hr
Basic concept of chemical and non-chemical methods of diseases control; formulation and mode of action copper, sulphur carbamate, mercury, Quinone and other groups of fungicides and antibiotic, cultural practices, quarantine regulations. Nature and type of resistance to fungi, bacteria, viruses, nematodes and parasitic higher plants. (3 units).

CPP 846- Epiphytology: 2 + 3hr
Detailed consideration of factors influencing incidence and severity of disease caused by fungi bacteria, viruses, nematodes; ecological factors as etiological agents and techniques for determining intensity of epiphytotic. Disease forecasting. (3 units).

CPP 847- Research Techniques in Plant Pathology: 2 + 4hr. Culture media, isolation of pathogens, production of inoculum inoculation techniques, control of environment, recording diseases data, specialized instrumentation histology, photography, communication, and publication. (3 units).

CPP 848- Phytobacteriology: 2 + 3hr
Cultural characteristics, morphology, physiological characteristics,

methods for isolation and culture; classification and methods of recognition of pathogenic microorganisms. Production and actions of toxins. A general survey of plant pathogenic bacteria. (3 units).

CPP 851- Advances Weed Science: 2 + 3hr
A study of major noxious aquatic and terrestrial weeds. Interactions of herbicides in plants in order to establish effective and efficient control practices. (3 units).

CPP 852- Metabolism and Action of Herbicides
A study of the characteristics and processes involved in the physiological action and metabolism of herbicides in plants and soils asrelated to selective weed control. (3 units)

CPP 897- Special problems
For any option, the study of special research aspects of particular interest to the student; but not included elsewhere in his course.
(3 units).

CPP 898- Plant Science Seminar 1 hr
Presentation and participation in discussion of selected topics based on assigned reading or research. (1 unit)

CPP 999- Advanced Plants Science Seminar
Presentation and participation in discussion of selected topics based on assigned reading or research for Ph.D. students. (1 unit).

SLM 800- Soil and Plant Analysis: 3+3 hr.
Soil and plant tissue sampling techniques, principles and methods of chemical analysis of soils, plants and fertilizer for available and total constituents: use of analytical instruments and techniques.
(4 units).

SLM 802- Soil Physics: 3 + 3 hr.
Effects of soil physical properties on plant growth and other use of methods for determining texture, structure, consistence, bulk density and soil temperature; soil water relationships specific

factors affecting infiltration, saturated flow, unsaturated flow; vapour transfer water content as a function of mature function, osmotic relationship in the soil solution; swelling pressure and evapotranspiration. (4 units)

SLM 804- Soil Microbiology and Biochemistry: 3 + 3hr.
Principles of soil biochemistry, specifically in relation to soil components as potential energy sources and electron acceptors and protoplasmic constituents; soil organic matter and factors affecting transformation in the soil; biochemistry of nutrient and toxic elementsin the soil with consideration of P. N and S cycles; minor toxic elements and pesticides; microbiology of water pollution; microbialecology. (4 units)

AGE 825- Storage Methods and Systems
Design of storage bins and silos. Other storage facilities, classes of pests, rodents and fungi that attack production. Pest/Product relationships. Methods of control (fumigants, insecticides), storage inspection method, quality control, losses etc. (3 units).

ZOO 808- Advanced Molecular Genetics: 2 + 0 + 3hr.
The cell division cycle, components of the chromosome; Nuclei Acids and proteins. Organizations of the genetic apparatus. The prokaryotic chromosome, variations in terms of size structure and composition. The Eukaryotic of DNA threads in Chromosome: distribution of DNA between and within chromosome. Hybridization between DNA and DNA; DNA and RNA. Respective sequences. DNA synthesis in Prokaryotes and Eukaryotes. Control of replication, Repair synthesis. DNA synthesis in vitro. RNA's and transfers RNA's protein Synthesis (Translation) control of Transcription and translation. Operon control circuits-positive and negative mutagenesis Recombination DNA's and genetic engineering.

3.9 Area of Active Research

Research Interests of Staff

(a) Plant Breeding and Genetics (Biotic and Abiotic Stresses Tolerance)
(b) Insecticides Toxicology
(c) Insect Physiology and Biochemistry
(d) Seed Science and Technology
(e) Mycology/Soil Microbiology
(f) Nematology
(g) Farming Systems
(h) Plant Physiology/Biotechnology
(i) Plant Virology

Professor J. T. Opabode
Acting Head of Department