



FEDERAL UNIVERSITY LOKOJA
DEPARTMENT OF BIOLOGY
B.Sc. (Hons) BIOLOGY

STUDENTS HANBOOK 2020/2021-2025/2026

FOREWORD

The student's handbook primarily provides information on studentship requirements in the Department of Biology and the Federal University Lokoja. It provides background information of how the Department began and where it is today, stating the Mission, Vision, Philosophy and Objects of the B. Sc. Biology programme of the Federal University, Lokoja. The handbook provides a list of the academic, technical and administrative staff, who are committed to actualizing the Mission, Vision, Philosophy and Objects so stated above. It outlines the admission requirements, registration and examination guidelines. The handbook also contains detailed description of the curriculum and career prospects for the B.Sc. Biology programme. The courses in the programmes are intensively delivered through lectures, practical sessions and field work, by the very competent and committed lecturers. The laboratories are stocked with state of the art equipment and experienced laboratory personnel, who complement the lecturers in practical exposition of the lectures. The handbook also provides a guide for students to calculate their grade points and monitor their academic performance, as they progress in the programme. The Student's Handbook is therefore an indispensable student's companion and students are encouraged to read this handbook alongside with the University Handbook, so that they could have a hitch free study in the Federal University, Lokoja.

Professor Adang Kombe Lucas
B. Sc. (Hons), M.Sc, Ph.D (ABU)
Head of Department

BACKGROUND INFORMATION ABOUT THE DEPARTMENT

The Department of Biology commenced the Department Biological Sciences, alongside with five other departments in the Faculty of Science, in February 2011 when the Federal University, Lokoja was established. The pioneer Head of the Department was Professor Patrick A. Audu, a position he held until end of November, 2014. Professor Hadi A. Suberu took over the leadership of the Head of Department between 2014 and January 2017. The baton of Head of Department was handed over to Professor Jacqueline Azumi Badaki, who ran the affairs of the Department between 2017 and 2019. In the 2019/2020 session, the Department of Biological Sciences was split into six Departments. The Department of Biology is one of the six departments born out of the splitting of the Department of Biological Sciences. Professor Jacqueline Azumi Badaki continued as the Head of Department of Biology until April, 2021, when she handed over to Professor Adang Kombe Lucas, the current Head of Department of Biology. The Department of Biology currently has nine academic staff, six technical staff and three administrative staff and strongly supported by staff from the Departments of Botany, Biochemistry, Biotechnology, Microbiology and Zoology, which all emerged from the splitting of the Department of Biological Sciences.

The departmental office is made up of two rooms in the left wing of the block of Departmental offices. It is hoped that the office would relocate to a more spacious venue as more physical structures are currently being constructed. The Department for now, has three laboratories stocked with the state-of-the-art equipment and experienced personnel. The Department also has a herbarium and museum which temporarily houses the albino rats in cages. A mini biological garden located behind the Faculty of Science building is temporarily used for teaching, experimental and research purposes pending when the Botanical and Zoological gardens located in the permanent site of the University is ready.

The Department presently has 88 students at 100 level, 187 at 200 level, 169 at 300 level and 109 at 400 level. The student population currently stands at five hundred and fifty-three (553).

Members of the academic staff have received both national and international grants including prestigious grants such as the World Health Organisation (WHO) grant for Tropical Diseases Research (TDR). Staff members and students of the Department are also actively involved in

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1.0 Introduction

Courses are tailored towards exposing students to appreciate the complexities of life, the environment and the relationships between organisms. Emphases are placed on the translation of application of the knowledge for enhancement of man's economy and survival. The Department has qualified and experienced lecturers employed for knowledge transfer. Our students are given broad based training of B.Sc. Biology. The undergraduate programmes are undertaken through lectures, practical sessions, seminars, term papers, project writing, field trips, Student Industrial Work Experience Scheme (SIWES), semester examinations, and any other modes as may be prescribed by National University Commission.

Break down of students in the Department

Sex	100 level	200 level	300 level	400 level	Total

Male	39	80	76	60	255
Female	51	108	93	88	340
Total	90	188	169	148	595

1.1 Mission

To establish and nurture a department that provides excellent teaching, research and community/consultancy services in the field of Biology for the enhancement of local, national and global ecologic-economic wellbeing of humanity.

1.2 Vision

A department that is vibrant through excellent teaching, research and mentoring.

1.3 Philosophy

The science of Biology in the Federal University Lokoja (FUL) is aimed at giving intensive education about life, living, structures, and as they relate with providing service and improving survival. Indeed, through the undergraduate programmes, FUL hopes to identify within the socio-economic and technological dynamics of the Nigerian society. Therefore, as much as possible, the curricula of the undergraduate programmes are synchronised to reflect appropriately the general developmental objectives of Nigeria. The programmes are designed in such a way that our graduates shall either be capable of self-employment or be relevant to technological and industrial establishments. The practical components of the programmes are of paramount importance in order that the philosophy, vision, mission and objectives of the undergraduate programmes in FUL shall be fulfilled.

2.0 Programme Objectives

In pursuit of the broad goal of producing self-reliant and productive young scientists of biological sciences, the following are the specific academic objectives of the undergraduate degree programmes of the department.

2.1 B.Sc. Biology Programme

- To train academically sound future researchers and intellectuals in especially in modern biology. Cell and Tissue culture, Genetics and Genetic Engineering, Cytology, Environmental and Biodiversity Conservation, and Cellular and Molecular Biology.
- To contribute to discoveries and innovations in these aspects of the biological sciences disciplines through research.
- To provide expert counsel and consultancy services to local, national and international organizations on issues relating to Biology.
- To instil qualities of self-confidence and self-reliance in graduates of the programme.

3.0 Admission Requirements

Prospective candidates of the Department of Biological Sciences must satisfy the minimum University and Faculty of Science requirements of *O-Level credit in Biology* and credits in four other subjects (*English, Chemistry, Physics and Mathematics*), obtained at the GCE 'O' level or SSCE (i.e. WAEC and NECO) at no more than two sittings. UTME subjects should be Biology, Chemistry, Mathematics/Physics. These shall be in addition to writing and passing competitively well the FUL PUTME.

For direct entry admission into the 200 level of study, a prospective candidate must satisfy the requirements stated above and in addition possess two or more *GCE A-Level papers (or its equivalent)*, which must include *Biology and Chemistry*.

4.0 University Calendar of Events

The University draws calendar of events which is regularly placed on the University website. Other useful pieces of information are also uploaded for students to take advantage of.

5.0 Registration Guidelines

Details of registration procedures are as contained in the University Students' Handbook. Students are expected to register courses online immediately after payment of school charges. Students who obtain clearance after being screened and duly paying charges shall be issued the list of the courses to be registered, online, by the departmental registration officer.

6.0 Deregistration of a Course or Courses

If for a good reason a student discovers that he/she cannot cope with a registered course, he/she can deregister (i.e. withdraw or cancel the registration) provided that this is done during the

“Add/Drop” period at the beginning of each semester. Beyond this period, it becomes mandatory to write the examination for that course, or be credited an ‘F’ grade.

7.0 Deferment of a Semester or Academic Session and Voluntary Withdrawal

A student may defer a semester or academic session on ground of ill health, financial difficulty, or other cogent factors that may impair academic activities. A student is considered to have voluntarily withdrawn from a programme of study if he/she, without permission, is absent (i.e. fails to register) for two consecutive semesters. However, if for any valid reason e.g. illness, a candidate cannot be present in any particular semester, an application for deferment of the semester must be submitted to the Faculty Board of Science through the Department.

8.0 Examinations and Continuous Assessments

Final examinations for courses are held at the end of each semester. The final examination constitutes 60% of the total score for a course while the Continuous Assessments (CA) in the form of tests, quizzes, practical work and other assignments account for 40% of the total score.

9.0 Examination Regulations

To qualify to be admitted to any of the semester examinations, a student must be duly registered for the course to be examined and must have fulfilled all other university requirements including payment of prescribed fees. *For a student to qualify to sit for a course final examination, he/she must satisfy 75% attendance in all classes, tutorials, and practical sessions pertaining to that course.* Conditions peculiar to the Department (e.g. completion of practical assignments or projects) may also need to be satisfied to qualify for semester examinations. For instance, for a student to be eligible to proceed on SIWES he/she must have earned 60 credit units at the end of 200 level (Second year).

9.1 University Rules for Conduct of Examinations

A student shall be at the examination venue at least 30 minutes before the advertised time of the examination. Each student is required to supply his/her own writing materials (pens, pencil, rulers etc). A student shall write his/her Registration Number (not name) distinctly at the top of the cover of every answer book or separate sheet of paper used.

No student will be admitted into an examination hall thirty (30) minutes after the start of the examination. A student may be permitted by an invigilator to leave the examination room during the course of the examination provided that:

No student leaves during the first hour or last 15 minutes of the examination;

The student hands over his scripts to the invigilator before leaving if he/she does not intend to return.

A student who leaves the examination hall shall not be readmitted unless throughout the period of absence he/she has been under the close observation of an invigilator.

A student shall bring his identity card and examination card and prominently display both on the desk. Each student must complete an attendance form which shall be collected by the invigilator of each examination. During an examination, no student shall speak to another student; except with the permission of the invigilator. Noise making and other forms of disturbance are absolutely forbidden and attract sanctions.

No student may take any book, printed paper or written document or unauthorized material into an examination hall, except as may be stated in the rubrics of an examination paper. A student must not during an examination directly or indirectly give assistance to any other student or permit any other student to copy from or otherwise use his/her papers or other examination materials. Similarly, a student must not directly accept assistance from any other student or use any other student's paper or other examination materials.

If any student is suspected or found to be infringing on any of the above provisions, or in any way cheating or disturbing the conduct of the examination, a report shall be forwarded to the Head of Department who shall in turn forward the report accompanied with valid evidences through the Dean to the Vice Chancellor. The Vice Chancellor shall request the University Examination Misconduct Committee to investigate and recommend appropriate sanctions.

The use of scrap paper is not permitted. All rough work must be done in the answer booklets and crossed out neatly, or in supplementary answer books, which must be submitted to the invigilator. Except for the printed question paper (if permitted), a student may not remove from the examination hall or mutilate any paper or other material supplied for the examination. At the end of the time allotted for examination, each student shall stop writing when instructed to do so, and shall properly gather his/her script together, for submission to the invigilator.

The use of mobile or cell phones shall not be allowed in any examination room. Students shall be screened for irregularities before admission into an examination hall/venue.

Students are advised to read the Federal University Lokoja Students' Handbook for more on rules for the conduct of the University Examinations.

10.0 STAFF OF THE DEPARTMENT

10.1 Academic Staff

S/ N	Full Name	Position/Rank	Qualification	Area of Specialization
1.	Kombe Lucas ADANG	HOD/Professor	BSc., Zoology ABU Zaria (1995), MSc. Zoology ABU Zaria (1999), PhD Zoology / ABU Zaria (2007)	Avian Parasitology/Wildlife Conservation/Field Ornithology
2.	Dauda TANKO	Postgraduate Coordinator/ Professor	BSc, Zoology ABU Zaria (2000), MSc, Zoology ABU Zaria (2005), PhD Zoology ABU Zaria (2012).	Wildlife Mgt, Environmental Conservation, Ornithology and General Ecology
3.	Emmanuel Adujo AWULU	Lecturer II	BSc. Biology ABU Zaria (2006), MSc Biology ABU Zaria (2013).	Environmental Biology
4.	Rosemary PATRICK	Assistant Lect.	BSc Biology ABU Zaria (2011). MSc. Zoology Uni Ilorin (2015)	Hydrobiology and Fisheries
5.	Babangida Jolly KACHI	Assistant Lect.	BSc Biology ABU Zaria (2008). MSc. Ecology and Environmental Biology Uni Ibadan (2015)	Ecology and Environmental Biology
6.	Abidina ABBA	Assistant Lect.	BSc Biology Umaru Musa Yar'adua Uni. Kastina (2010) MSc. Applied Biology Bayaro Uni Kano (2015)	Environmental Biology
7.	Nawaf ABUBAKAR	Assistant Lect.	BSc Biology UDUS (2011), MSc Biology UDUS (2016)	Environmental Biology
8.	Blessing ADEJOH	Assistant Lect.	BSc Biology FUL (2016), MSc Cranfield Uni. UK (2019)	Land Reclamation and Restoration Ecology
9.	Deborah EGILA	Graduate Assistant Professor	BSc Biology FUL (2016)	Plant Biology & Ecology
10.	Prof. Emmanuel Nwabunwanne OGBODO	Graduate Assistant Professor	BSc MSc PhD	Ecology Agriculture

10.2 Technical Staff

S / N	Full Name	Position/Rank	Qualification	Area of Specialization
1	Umoru Emmanuel Adukwu ALIYU	Principal Technologist	PGDM, SLT/HND Microbiology/Virology (2004)	Microbiology/ Virology
2	Anataku Muhammed SANNI	Technologist I	ND/SLT Kogi State Poly (2009) HND Env'tal Biology Kogi State Poly (2014)	Environmental Biology
3	Hajara LAWAN	Technologist I	B.Sc. Biology GSU (2014) PGDE NOUN (2018) PGD Env'tal & Conserv. Biology (2021)	Environmental Biology
4	Johnson ODUH	Laboratory Assistant	N.C.E Agric. Education (2011)	
5	Divine Favour ZAKARI	Laboratory Attendant	S.S.C.E (2007)	
6	Ibrahim ABUBAKAR	Laboratory Attendant	S.S.C.E (2006)	

10.3 Administrative Staff

1.	Mohammed Baba MAHMUD	Senior Executive Officer	ND Public Administration (2005)	
2.	Mariam O. ISA	Senior Executive Officer		
3.	Emmanuel M. OFFOR	Administrative Assistant		
4.	Stella Aturu OMOLAIYE	Senior Computer Operator	BSc Geo Planning (2006), MSc Environmental Resource Planning (2013)	

11.0 Core and Elective Courses

Core courses are prescribed courses that must be registered and passed in order to fulfil part of the requirements for graduation. They are arranged on semesterly bases, usually along with elective courses out of which students make choice(s); according to availability, and student's ability, provided the maximum allowable units are not exceeded. Any failed course should be registered in the following session. Students are at liberty to drop an elective that is failed provided it is not made compulsory by the Department.

Elective Courses must be taken as seriously as the core courses. This is because at the point of graduation at least 20% (about 24 credit units) of a student's Total Earned Credit Units (TECU) must comprise elective courses. The Restricted Elective Courses shall make up 15% while the unrestricted Elective Courses make up 5%. Students are strongly advised to seek the counsel of their Academic Advisers before choosing and registering for unrestricted elective courses.

12.0 Course Codes and Credit Units

For convenience, all courses are identified by course codes. A course code has two components:

- A three-letter code (in capital letters) derived from the name of the programme of study, and
- A three-digit number whose last digit is odd or even (but usually not zero), and whose first digit denotes the level of study.

A course code with an odd number as its last digit denotes a 1st semester course and that with an even number as its last digit denotes a 2nd semester course. For example:

BIO 101 is a 100 level Biology Course offered in the 1st Semester.

BIO 202 is a 200 level Biology Course offered in the 2nd Semester.

If a course has zero (0) as its last digit, it indicates that the course runs through the first and second semester, e.g. BIO 400, the final year Research Orientation and Project.

Courses are weighted in credit units. The number of credit units for a course depends on the contact hours allocated, and ranges from 1 (one) credit unit to six (6) credit units. The more the credit units carried by a course, the more efforts and time is spent on the course, and otherwise the effect on the Grade Point Average (GPA) and Cumulative Grade Point Average (CGPA) may be devastating. For instance, a one credit unit course requires just one contact hour in a week.

13.0 Grading

The grading system approved by the Senate of Federal University Lokoja is from A to E.

Earned Mark (%)	Grading/Point
70-100	A (5)
60-69	B (4)
50-59	C (3)
45-49	D (2)
40-44	E (1)
0-39	F (0)

14.0 Classification of Degrees

Classification of degrees is based on the Cumulative Grade Point Average (CGPA)

CGPA	Class of degree
4.50-5.00	First class
3.50-4.49	Second class (Upper Division)
2.40-3.49	Second class (Lower Division)
1.50-2.39	Third class
1.00-1.49	Pass
Below 1.00	Fail

15.0 Calculation of GPA and CGPA

Weighted Grade Point (WGP)

This is the product of the grade point and the number of credit units carried by a course, i.e.

$$\text{WGP} = \text{GP} \times \text{Credit Units of the course.}$$

Grade Point Average (GPA)

This is the total WGP from all courses offered divided by the total credit units registered by a student in a given semester, i.e.,

$$\text{GPA} = (\text{Total WGP scored in a semester}) / (\text{Total credit units registered in that semester}).$$

Cumulative Grade Point Average (CGPA)

This is total WGP from all the semester of the study so far, divided by total credit units registered so far, i.e.

$$\text{CGPA} = (\text{Total WGP scored so far}) / (\text{Total credit units registered so far}).$$

At any stage in a student's programme, the CGPA is a measure of the student's current academic standing.

Registered Credit Units (RCU)

This is the sum of the credit units of the various courses registered by the students during a semester.

Earned Credit Units (ECU)

This is the sum of the credit units of all the courses passed by the student during a semester's examinations.

Total Registered Credit Units (TRCU)

This is the sum of the credit units of all the courses registered by the student from the first year of study to the end of the particular semester under consideration.

Total Earned Credit Units (TECU)

This is the sum of the credit units of all the courses passed by the student from the first year of study to the end of the particular semester under consideration.

Consider the following hypothetical scores obtained by a 100 level student of the Department during his/her first semester of study.

Registered courses	Credit units	Earned Mark (%)	Letter Grade	Grade Point	Weighted Grade Point
BIO111	2	50	C	3	6
BIO 113	2	60	B	4	8
GST103	2	47	D	2	4
MTH 103	2	70	A	5	10
CHM 101	2	63	B	4	8
PHY 161	1	59	C	3	3
CHM 121	2	65	B	4	8
PHY 131	2	40	E	1	2
CSC 101	2	38	F	0	0
GEO 103	2	56	C	3	6

Total	19				55
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The GPA is calculated thus:

$$\text{GPA} = (6+8+4+10+8+3+8+2+0+6) \div (19); \text{ i.e., } 55 \div 19 = 2.89$$

Because this is the student's first semester of study, his/her GPA will be the same as the CGPA.

N.B: This student will have to carry over the following courses into future semesters: GST 101, GST 107, and CHM 191. This is because they are Core Courses, and he/she was supposed to take them during that semester but failed to do so. If this student had sought academic counselling during registration, he/she would probably have been advised to take these Core Courses. Note also that although CSC101 was failed, it will not be carried over because it is an Elective Course (see sec. 12.0 for further explanation of the various categories of courses).

Assume that this particular candidate registered 18 credit units in the 2nd semester, and earned (passed) 14 credit units with a total WGP of 42; then the GPA for the second semester is calculated thus:

$$\text{The GPA (2nd semester)} = (42 \div 18) = 2.33$$

The CGPA is calculated thus:

$$\text{CGPA} = (55+42) \div (19+18) = 2.62$$

Also note that the following for this candidate:

$$\text{RCU (1st semester)} = 19$$

$$\text{ECU (1st semester)} = 17$$

$$\text{RCU (2nd semester)} = 18$$

$$\text{ECU (2nd semester)} = 14$$

$$\text{TRCU at the end of the 2nd semester} = 19 + 18 = 37$$

$$\text{TECU at the end of the 2nd semester} = 17 + 14 = 31$$

16.0 IMPORTANT SENATE DECISIONS:

16.1 Dropping a course after 'F' grade and graduating with 'F' grade in an elective course

- All core courses must be passed irrespective of the number of attempts.
- 70% of the credits earned must be core courses, 30% for electives and this should include GST courses.
- All of these must be done at the end of the semester and at the end of the session.

16.2 What constitutes promotion to the next level?

- For purpose of documentation, students shall move along with their cohorts.
- Beginning from 2014/2015 academic session, the University will adopt 1.5 CGPA or 1.00 as the case may be, as the minimum requirement for good academic standing.
- The grading systems shall be as follow:

0-39=F=0

0 – 44 = F = 0 4 0-44=E=1

45 – 49 = D = 2 45-49=D=2

50 – 59 = C = 3 50-59=C=3

60 – 69 = B = 4 60-69=B=4

70 and above = A = 5 70 and above=A=5

As the case may be, depending on the stream of students

16.3 Where to credit carry-over courses

- Carry-over courses should be credited at the level in which it was passed.

16.4 Number of times a course can be attempted

- A student can continue to retake a course so long as the programme permits.

16.5 Retaking passed courses

- Subject to the approval of the Departmental Board of Examiners, students who wish to improve on their grades may be allowed to do so in a maximum of two attempts per course, for two courses only.

16.6 Probation and Withdrawal

- A student whose CGPA is lower than 1.5 or 1.00 at the end of a session will be placed on probation.
- A student whose CGPA is lower than 1.5 or 1.00 for two consecutive sessions will be required to withdraw from the programme.

Withdrawal from a programme of study is prescribed by the Faculty Board of Examiners for a student whose CGPA remains below the minimum tolerable level. The Senate of the University usually ratifies this recommendation.

Withdrawal from a programme may also be prescribed on grounds of absence. A student who fails to register for two consecutive semesters is deemed to have voluntarily withdrawn from his/her programme of study.

16.7 Third class degree

- The University shall adopt the NUC Benchmark of 1.5 CGPA beginning from 2014/15 academic session
- The above dispensation shall apply to student admitted in the 2014/15 academic session.
- This shall also apply to any spill over student.

16.8 What qualifies a student for Industrial Work Experience Scheme (SIWES)

- For a student to proceed on SIWES, such student must have earned a total of sixty (60) credit units for UTME entrants and thirty (30) credit units for direct entry students.

16.9 Deferment

Deferment can be sought on the following grounds:

- Admission related issues: such application shall pass through the Registrar to Senate after payment of all fees
- Ill-health
- Emotional distress
- Other special circumstances
 - i) Deferment can be granted to a student on medical grounds, emotional distress or other special circumstances. Such applications shall pass through the Departmental and Faculty Boards to Senate for consideration
 - ii) Deferment shall be for a session except on health grounds when the University shall ask for a review. The total period of deferment on health grounds shall not exceed a maximum of two sessions.
 - iii) The period of deferment shall not count in the total number of years required for graduation in a programme.

17.0 Categories of Punishments for Examination Misconduct as Approved by the University Senate

A. Offences by Students

(i). Expulsion from the University:

The following offences shall carry the punishment of expulsion from the University:

Impersonation at Examinations: This may involve the exchange of examination numbers or names or answer sheets or the intentional use of someone else's examination number (i.e. Registration number).

Introduction of relevant foreign materials and cheat notes into the Examination hall
exchange of relevant foreign materials or verbal information in the examination hall which
may involve:

The exchange of question papers containing relevant jotting and materials, or

Collaboration/copying from each other

Exchange of answer scripts.

Theft or removal of examination scripts or other materials.

Destruction of examination scripts or other materials with fire or other mean.

Copying from cheat notes.

Consulting cheat notes in the Examination Halls.

Facilitating or abetting cheating

Failure or refusal by a student to appear before the exam regulations and irregularities
Committee (ERIC) a second time, when there is evidence that he/she received the letter of
the invitation.

(ii) Rustication for one year.

The following offences shall carry the punishment of rustication for one session.

Non-submission or incomplete submission of answer scripts.

Introduction of foreign materials to the Examination hall.

Non-appearance before the Senate's Exam Regulations and Irregularities Committee (i.e.
ERIC) if there is evidence of invitation.

A student who has been warned once for examination misconduct shall be rusticated for one
academic semester if he/she is found guilty of repeating an offence for which the punishment is
warning.

(iii) Written warning:

The following offences shall attract a written warning

Speaking/conversation during examination

Writing on question papers (unless asked to answer questions in the question paper).

**18.0 Misdemeanours not related to Examinations for which a Student may Face a
Disciplinary Panel**

Tampering with notices on notice-boards.

Wilful destruction, defacing or stealing of department/university property.

Any activity (e.g. cultism, fighting, hooliganism, contravening the university's "Dress Code" etc) that is capable of causing a breach of the peace and order in the Department, College or University.

19.0 Transfers

The course credit system occasionally permits interdepartmental and interfaculty transfer. For this to happen, the candidate must meet the admission and other requirements of the intended department or college. Departments hardly ever accept students on probation. Student planning to transfer to other units of the University are advised to discuss their plans with their Academic Advisers.

20.0 Curricula for the Degree Programme of the Department

The department offers undergraduate degree programme; in B.Sc. Biology. The table below outlines the curricula for the programme.

CORE AND ELECTIVE COURSES AT ALL LEVELS

100 LEVEL FIRST SEMESTER COURSES (B.Sc BIOLOGY)

S/N	COURSE CODE	COURSE TITLE	CREDIT UNIT	STATUS	PRE-REQUISITES
1.	GST 101	Communication in English and use of Library	2	Core	-
2.	GST 103	Nigerian Peoples and Culture	2	Core	-
3.	GST 107	Philosophy, Logic and Human Existence	2	Core	-
4.	BOT 101	Plant Biology	2	Core	Credit in 'O'L Biology
5.	ZOO 101	Animal Biology	2	Core	Credit in 'O'L Biology
6.	CHM 161	Experimental Chemistry I	1	Core	Credit in 'O'L Chemistry
7.	CHM 113	Introductory Physical Chemistry	3	Core	Credit in 'O'L Chemistry

8.	PHY 161	General Physics Practical I	1	Core	Credit in 'O'L Physics
9.	PHY 131	Heat and Properties of Matter	2	Core	Credit in 'O'L Physics
10.	MTH 111	Elementary Mathematics I	3	Core	Credit in 'O'L Maths
11.			20		Sub Total
12.	GEO 103	Man's Physical Environment I	1	Elective	Credit in O'L Geography
13.	PHY 111	Mechanics	2	Elective	Credit in 'O'L Physics
14.	CSC 101	Introduction to Computer Science	2	Elective	

Students are at liberty to register maximum of 4 credit units of electives or minimum of 2 credit units of electives

100 LEVEL SECOND SEMESTER COURSES (B.Sc BIOLOGY)

S/N	COURSE CODE	COURSE TITLE	CREDIT UNIT	STATUS	PRE-REQUISITES
1.	GST 102	Communication in English	2	Core	-
2.	GST 104	Communication in French/Arabic	1	Core	-
3.	GST 110	History and Philosophy of Science	1	Core	-
4.	EDS102	Introductory Entrepreneurship	2	Core	-
5.	BIO 102	Introductory Ecology	2	Core	Credit in 'O'L Biology
6.	BTC 104	Cytology, Genetics and Evolution	2	Core	Credit in 'O'L Biology
7.	CHM 134	Introductory Organic Chemistry	3	Core	Credit in 'O'L Chemistry
8.	CHM 124	Introductory Inorganic Chemistry	3	Core	Credit in 'O'L Chemistry
9.	CHM 162	Experimental Chemistry II	1	Core	Credit in 'O'L Chemistry

10.	STA 112	Probability Theory	3	Core	Credit in 'O'L Mathematics
11.	PHY 122	Electricity and Magnetism	2	Core	Credit in 'O'L Physics
12.			22		Sub Total
13.	GEO 102	Man, Location and Resources	2	Elective	Credit in O'L Geography
14.	GEO 106	Introductory Environmental Science	2	Elective	Credit in O'L Geography
15.	MCB 112	Introduction to Microbiology	2	Elective	Credit in O'L Biology
16.	BOT 102	Introductory Plant Diversity	2	Elective	Credit in O'L Biology
17.	BOT 104	Flowering Plants, forms and Functions	2	Elective	Credit in O'L Biology
18.	BTC 102	Introductory Biotechnology I	2	Elective	
19.	MTH108	Introduction to Fuzzy Ste Theory	2	Elective	

Students are at liberty to register maximum of 4 credit units of electives or minimum of 2 credit units of electives

MINIMUM REGISTERED CREDIT UNITS

Departmental Cores = 33

General Courses = 09

Electives = 04

Total 44

200 LEVEL FIRST SEMESTER COURSES (B.Sc BIOLOGY)

S/N	COURSE CODE	COURSE TITLE	CREDIT UNIT	STATUS	PRE-REQUISITES
1.	GST205	Environmental Health	1	Core	
2.	BIO201	General Ecology	2	Core	BIO 102
3.	BIO203	Biological Techniques	2	Core	
4.	BIO205	Biological Nomenclature and Taxonomy	2	Core	
5.	BOT201	Cryptogramic Botany	2	Core	
6.	ZOO201	Invertebrata	2	Core	ZOO101
7.	BOT203	Medicinal Plants	2	Core	
8.	BCH251	Chemistry of Biomolecules	3	Core	-
9.			16		Sub Total
10.	ZOO 203	Endocrinology	2	Elective	
11.	BOT 205	Horticulture	2	Elective	

12.	GEO 203	Introduction to Geomorphology and Soil	2	Elective	GEO 103
13.	CHM 221	Basic Inorganic Chemistry	3	Elective	CHM124
14.	BTC203	Introduction to Biotechnology II	2	Elective	BTC102
15.	STA 211	Probability and Discrete Probability Distribution	3	Elective	

Students are at liberty to register maximum of 4 credit units of electives or minimum of 2 credit units of electives

200 LEVEL SECOND SEMESTER COURSES (B.Sc BIOLOGY)

S/N	COURSE CODE	COURSE TITLE	CREDIT UNIT	REMARKS	PRE-REQUISITES
1.	GST202	Peace and Conflict Resolution	2	Core	
2.	EDS204	Enterprise Creation and Development	2	Core	
3.	BIO202	General Physiology	2	Core	
4.	BTC 214	General Genetics	2	Core	
5.	BIO204	Hydrobiology	2	Core	

6.	BOT 202	Spermatophyta	2	Core	BOT 101
7.	BCH252	Metabolism of macromolecules	3	Core	
8.	ZOO202/ ZOO232	Vertebrata	2	Core	
9.			17		Sub Total
10.	GEO204	Introduction to Climate and Biogeography	2	Elective	
11.	CHM 232	Basic Organic Chemistry	3	Elective	CHM 134
12.	CHM 224	Structure and Bonding	2	Elective	
13.	MCB220	Microbial Ecology	2	Elective	
14.	BOT 204	Morphology of Pteridophytes and Gymnosperms	2	Elective	
15.	BTC 204	Introduction to tissue culture and Biomass propagation	2	Elective	
16.	BTC 212	Introductory Developmental Biology	2	Elective	BTC 104

Students are at liberty to register maximum of 4 credit units of electives or minimum of 2 credit units of electives

MINIMUM REGISTERED CREDIT UNITS

Departmental Cores = 28

General Courses = 05

Electives = 04

Total 37

300 LEVEL FIRST SEMESTER COURSES (B.Sc BIOLOGY)

S/N	COURSE CODE	COURSE TITLE	CREDIT UNIT	STATUS	PRE-REQUISITES
1.	EDS303	Entrepreneurial Mentorship	2	Core	
2.	BIO 301	Field Course I	1	Core	300 Level Standing
3.	BIO 303	Biogeography and Soil Biology	2	Core	BIO 201
4.	BTC 313	Microbial and Molecular Genetics	3	Core	BTC 214

5.	BIO 305	Biostatistics and Research Methodology	2	Core	
6.	ZOO311	Comparative Animal Histology and Embryology	2	Core	
7.	BOT307	Plant Physiology I	2	Core	BIO 202
8.	ZOO305	Arthropoda Diversity	2	Core	ZOO 202
9.	ZOO 309	Mollusca	2	Core	ZOO 202
			18		Sub Total
10.	BOT303	Algaeology	2	Elective	BOT101, BIO 203
11.	BOT305	Mycology	3	Elective	BOT 101, BOT 203
12.	MCB 303	Introduction to Immunology	2	Elective	
13.	BTC309	Biodegradation and Bio-deterioration	3	Elective	
14.	MCB 311	Virology	2	Elective	

Students are at liberty to register maximum of 6 credit units of electives

300 LEVEL SECOND SEMESTER COURSES (B.Sc BIOLOGY)

S/N	COURSE CODE	COURSE TITLE	CREDIT UNIT	STATUS	PRE-REQUISITES
1.	BIO 300	Students Industrial Work Experience Scheme (SIWES)	6	Core	Must have earned up to 60 at the end 2 nd semester 200 level

MINIMUM REGISTERED CREDIT UNITS

 Departmental Cores = 24 Units

General Courses = -----

Electives = 6 Units

 Total 30 Units

400 LEVEL FIRST SEMESTER COURSES (B.Sc BIOLOGY)

S/N	COURSE CODE	COURSE TITLE	CREDIT UNIT	STATUS	PRE-REQUISITES
1.	GST 401	Entrepreneurship	2	Core	GST 204
2.	BIO 401	Field Course II	2	Core	BIO 301
3.	BIO 403	Population Biology and Evolution	3	Core	BIO201

4.	BTC 415	Plant and Animal Cytology	3	Core	BTC214
5.	BIO 405	Nigerian Flora and Fauna	2	Core	BIO301, BIO 303
6.	ZOO405	Wildlife Ecology and Conservation	2	Core	
7.	BOT409	Comparative Plant Anatomy	3	Core	
8.	ZOO 407	Comparative Animal Anatomy and Physiology	3	Core	BIO 202
			20		Sub Total
9.	BOT 411	Plant Physiology II	3	Elective	BOT 307
10.	ZOO431/ ZOO 401	Applied Entomology	3	Elective	ZOO 305
11.	BTC409	Bioinformatics	2	Elective	
12.	MCB 421	Environmental Microbiology	2	Elective	MCB 219

Students are at liberty to register a maximum of 4 and a minimum of 2 credit units of elective

400 LEVEL SECOND SEMESTER COURSES (B.Sc BIOLOGY)

S/N	COURSE CODE	COURSE TITLE	CREDIT UNIT	STATUS	PRE-REQUISITES
1.	BIO400	Research Project	6	Core	
2.	BIO402	Principles of Plant and Animal Breeding	3	Core	BTC 313
3.	BIO404	Conservation and Development of Natural Resources	2	Core	BIO 301
4.	ZOO402	Principles of Fisheries Management	2	Core	BIO 204
5.	BOT406	Angiospermae	2	Core	
6.	BIO406	Special Options	2	Core	
7.	ZOO408	Animal Behaviour	2	Core	BIO 201
8.	BIO408	General Practical	2	Core	
			21		Sub Total
9.	BOT402	Plant Pathology	2	Elective	BOT 202
10.	BTC 404	Environmental Biotechnology	2	Elective	
11.	ZOO 412	Introduction to Ethnozoology	2	Elective	
12.	BOT 404	Economic Botany	2	Elective	BOT 202, BOT 301

Students are at liberty to register a maximum of 4 and a minimum of 2 credit units of electives

MINIMUM REGISTERED COURSE UNITS

Departmental Cores = 39

General Courses = 02

Electives = 04

Total 45

MINIMUM REQUIREMENTS FOR GRADUATION

i. UTME

STATUS	100LEVEL	200LEVEL	300LEVEL	400LEVEL	TOTAL
General Courses	09	05	00	02	16
Core Courses	33	28	24	39	124
Elective Courses	04	04	06	04	18
Total	46	37	30	45	158

ii. Direct Entry

STATUS	200LEVEL	300LEVEL	400LEVEL	TOTAL
General Courses	14	00	02	16
Core Courses	28	24	39	91
Elective Courses	04	06	04	14
Total	37	30	45	121

22.0 COURSE DESCRIPTION

1. BIO 102 – Introductory Ecology (2 credit units).

Basic biological concepts, theories and principles of ecology, concept of community and ecosystem, energy flow in the ecosystem, trophic levels and biogeochemical cycles, types of habitats, simple treatment of interactions between organisms (symbiosis), pollution and explanation of pollution terms; sanitation and sewage treatment, conservation needs and methods of conserving natural resources, soil and its components, effects of humans on the environment.

2. BIO 201 - General Ecology (2 credit units).

Relationships between individuals or groups within a species, and between individuals or groups of different species (symbiosis), some aspects of applied ecology e.g. biological control, game and rangeland management, population dynamics: growth survivorship

curves, life tables, age structure, carrying capacity and environmental resistance; the ecology of humans: resources, pollution, population.

3. BIO 202 - General Physiology (2 credit units).

Physical and chemical processes in animals and plants, principles of physiological adaptation. General characteristics of enzymes; nutrition, digestion and absorption in animals; biological oxidation; composition, structure, properties and functions of proteins, lipids, carbohydrates and nucleic acids. Biosynthesis: photosynthesis and protein synthesis.

4. BIOL 203 - Biological techniques (2 credit units).

Handling and care of microscopes, hand lens. Preparation and staining of microscope slides, photometry, calorimetry, chromatography, conductimetry. Animal care, housing feeding etc. Handling laboratory animals, Animal preparation for dissection. Ethics in animal experiments. Basic microbiological sterile techniques.

5. BIO 204 – Hydrobiology (2 credit units).

Principles of aquatic biology with particular reference to limnology, the physical properties of water and their biological significance, thermal stratification of lakes; waves and currents and their effects on the substratum, dissolved oxygen and carbon dioxide and inorganic ions in freshwater, the carbonate-bicarbonate system and pH, eutrophic and oligotrophic lakes, the chemical composition of African lake waters, freshwater communities, factors influencing the distribution and productivity of aquatic macrophytes, phytoplankton, benthic algae, zooplankton in freshwater, the marine, brackish water/estuarine communities and chemical factors, colonization and succession in aquatic ecosystems, adaptations and inter-relationships.

6. BIO 205 - Biological Nomenclature and Taxonomy (2 credit units).

Historical background, pre-Linnean, and Darwinian, taxonomic hierarchies; species concept, categories below species, and categories above species; biological nomenclature, new systematics; numerical and biochemical taxonomy, construction and use of keys and other identification methods.

7. BIO 300 - Students Industrial Work Experience (SIWES 6 credit units)

For the purpose of having real life, hands on practical experiences during an unbroken period of six months, a student is attached to a biology-related organization (e.g., research institute, botanical or zoological garden, or other establishments) where a sound knowledge of Biology, Botany, or Zoology is a requirement for performance of routine duties. He student is assessed on the basis of a written and bound report on the SIWES, and an oral presentation of the report at a departmental seminar, in addition to supervising them during the attachment.

8. BIO 301- The field course BIO 311 is a compulsory 1CU course for 300 level students of the Department of Biology. The students are taken on a local field to local habitats

Biology-related institutes, industries, factories etc within the locality, 20 km radius of Lokoja.

9. BIO 303 - Biogeography and Soil Biology (2 credits).

Distribution of world flora, floristic regions of the world and zoogeographic regions of the world; comparison of tropical and temperate flora, dispersal and colonization of land by plants and animals; island biogeography; relationships between vegetation, soil types and climate; relationships between plant distribution and world fauna.

Classification and characteristics of soils, soil analysis, plant and soil water relationships. Soil sampling techniques in local habits; Adaptations of organisms to subterranean life

10. BIO 305 Biostatistics and research methodology (2 credit units).

Variability in biological data: continuous and discontinuous variables; Statistical sampling procedure – observations and problems of estimation; Estimation and test of hypothesis. Representation and summarization of biological data; Frequency distribution; Measures of central tendency and dispersion; Probability theory; Normal, binomial and Poisson distribution; t-test, F-test and chi-squared test; Analysis of variance (ANOVA) and covariance; Principles of experimental design; Correlation; linear and curvilinear regression; Transformation.

11. BIO 400 - Research orientation and Project (6 credit units).

Each final year students is required to carry out an original research project under the supervision of an academic staff member. Findings from the research must be presented by the student at a departmental seminar. A thesis (based on research) must be prepared as a properly bound document, and submitted by the student for internal evaluation by the department, and an external evaluation during a *viva voce* conducted by an External Examiner (a seasoned scholar in Biology, Botany or zoology, depending on the student's field of research).

12. BIO 401 - Field Course (2 credit units)

Field trips are conducted to fulfil the requirements of field ecology, hydrobiology, entomology, plant soil relations, etc. The trips include visits to game and forest reserves and National Parks, Research Institutions of pure and applied biology, seashores and human-made lakes, etc.

13. BIO 402 - Principles of Plant and Animal Breeding (3 credit units).

Importance of plant and animals breeding, cytogenetical principles of breeding, heterosis, inbreeding consequences, incompatibility mechanisms, sterility, breeding methods, disease and pest resistance and their inheritance, major farm and domestic plants and animals and breeding practices used to sustain the desired qualities in them.

14. BIO 403 - Population Biology and Evolution (3 credit units).

Biological characteristics of a species; Hardy-Weinberg theory on population, Natural selection, variations, species isolation mechanisms (including their breakdown which results in hybridization); adaptation. The origin of life; origin of species, and adaptive radiation. Evolution of selected groups of plants and animals, including humans.

15. BIO 404 - Conservation and Development of Renewable Natural Resources (2 credit units)

Conservation versus preservation. Deforestation and its attendant problems; Afforestation and reforestation, principles, problems and prospects of forestry conservation. Desertification and its control. World outlook on conservation: (Biodiversity conservation: international biodiversity conventions and treaties); Nigerian laws as applicable to natural

resources management, management and utilization of forest resources; plant genetic resources in breeding: seed preservation, preservation of endangered species, viability and health. Important food crops and domestic animals and their wild relatives; Captive breeding of threatened flora and fauna in botanical and zoological gardens; Wildlife parks and arboreta: field gene banks. Safe movement of germplasm. Basic Principles of Natural Resources Economics and Natural Resources Valuation Methods.

16. BIO 405 - Nigerian Fauna and Flora (2 credits)

Field identification and recognition of Nigerian plants and animals; Plant and animal indicators of Nigerian biomes (i.e., association of habitats with specific plants and animals); identification of plants through preserved herbarium specimens, identification of animals through signs left by them; e.g footprints, trails, runways and museum specimens, Life history strategies of selected Nigerian plants and animals; Nigeria's protected area system.

17. BIO 406 - Special Options (in Specialized Areas; 2 credits).

Students are required to take 2 credits of directed studies in any one of the areas listed below. Availability of each option depends on the availability of staff on ground, which specializes in that area.

Examples of options that may be offered include:

- | | |
|--------------------------------------|-----------------------------------|
| a) Environmental pollution | b) Biological control methods |
| c) Gene bank conservation techniques | d) Biotechnology |
| e) Radiation Biology | f) Silviculture and afforestation |
| g) Horticulture & Landscape Ecology | h) Plant tissue culture |
| i) Weed Biology | j) Pest Control |
| k) Public Health | l) Human Genetics |
| m) Aquaculture | n) Introductory Field Ornithology |
| o) Mammalogy | p) Herpetology |
| q) Apiculture | r) Serological Techniques |

18. BIO 408-General Practical (2 credits)

Identification and drawing of plant and animal specimens. Identification of slides in histology. Conduct of simple experiments on food tests. Examination and identification of various stages of mitotic cell division under the microscope. Construction of simple food chain and food webs among organisms etc. Test of general practical skills in Biology, Botany and Zoology.