



NATIONAL BOARD FOR TECHNICAL EDUCATION

PLOT B BIDA ROAD, P.M.B. 2239, KADUNA, NIGERIA

NATIONAL DIPLOMA

IN

WILDLIFE AND ECOTOURISM MANAGEMENT

CURRICULUM AND COURSE SPECIFICATIONS

JUNE, 2026

PREFACE

The transformation of Nigeria's agricultural sector remains central to the nation's aspirations for sustainable economic growth, food security, job creation, industrial development, and poverty reduction. As agriculture continues to evolve in response to technological advancements, climate change, emerging global market demands, and the need for increased productivity across agricultural value chains, it has become imperative to ensure that curricula in Nigerian tertiary institutions remain relevant, responsive, and aligned with contemporary industry requirements. It is against this backdrop that we embarked on the comprehensive review and modernization of Agricultural curricula for Nigerian tertiary institutions. The review process was designed to address identified skills gaps, integrate emerging technologies and innovations, strengthen entrepreneurship and employability competencies, promote climate-smart agriculture, and align training programmes with the industry expectations and global best practices. The successful execution of this important project was made possible through the invaluable support and commitment of key stakeholders. I wish to express profound appreciation to the Honourable Minister of Education for providing the policy direction and leadership that facilitated this initiative. I also extend sincere gratitude to the Honourable Minister of Agriculture and Food Security and the Honourable Minister of Livestock Development for their unwavering support, technical contributions, and commitment to strengthening agricultural education and workforce development in Nigeria. Special appreciation goes to the Tertiary Education Trust Fund (TETFund) for providing the special intervention grant that enabled the conduct of nationwide skills gap analyses and supported the series of national curriculum review and development workshops. The findings from the skills gap studies provided critical evidence and industry insights that guided the review process and ensured that the curricula reflect current and future workforce requirements within the agricultural sector.

I also acknowledge with gratitude the immense contributions of the Sector Skills Council for Agriculture, whose expertise and industry perspectives greatly enriched the curriculum development process. Equally commendable are the efforts of members of the Implementation Committee, resource persons, industry experts, professional bodies, French Embassy in Nigeria, regulatory agencies, academic institutions, employers, development partners, and other stakeholders who devoted their time, knowledge, and experience to the various workshops and technical sessions. The revised curricula represent a collective national effort to produce graduates equipped with relevant knowledge, practical skills, digital competencies, entrepreneurial capabilities, and professional attitudes required to drive innovation and productivity across Nigeria's agronomy, forestry, fisheries and livestock sectors. It is my expectation that Institutions offering these programmes will faithfully implement the curricula and continue to collaborate with industry to ensure sustained relevance and quality. I commend all stakeholders for their dedication and contributions to this landmark achievement and look forward to the successful implementation of these curricula for the benefit of our dear nation.

Professor Idris M. Bugaje, FNSE
Chairman, Implementation Committee
EXECUTIVE SECRETARY
National Board for Technical Education (NBTE), Kaduna

ACKNOWLEDGEMENT

The National Board for Technical Education (NBTE) expresses its profound appreciation to all individuals and organizations whose invaluable support, expertise, and commitment made the successful review and modernization of the Agricultural Education curricula for Nigerian tertiary institutions possible. Our sincere gratitude goes to the Honourable Minister of Education for providing the policy direction and leadership that made this national initiative possible. We also appreciate the Honourable Minister of Agriculture and Food Security and the Honourable Minister of Livestock Development for their technical guidance, collaboration, and unwavering commitment to strengthening agricultural education and workforce development in Nigeria. The Board is particularly grateful to the Tertiary Education Trust Fund (TETFund) for providing the special intervention grant that funded the nationwide skills gap analyses, stakeholder engagements, curriculum review exercises, validation meetings, and development workshops. The evidence generated through these studies provided a solid foundation for developing curricula that are relevant, industry-driven, and responsive to national and global agricultural priorities.

Special appreciation is extended to the members of the agriculture sector, curriculum specialists, resource persons, academic experts, professional bodies, regulatory agencies, employers, industry practitioners, development partners, and representatives of public and private sector organizations who participated actively in the skills gap studies, technical sessions, validation exercises, and curriculum development workshops. Their diverse expertise and practical insights greatly enriched the quality and relevance of the curricula. We further appreciate the support of the French Embassy in Nigeria and other development partners for their collaboration in promoting excellence and innovation in technical and vocational education within the agricultural sector. Finally, NBTE expresses its gratitude to all tertiary institutions, researchers, facilitators, rapporteurs, technical staff, and administrative personnel whose commitment and hard work contributed to the successful completion of this important national assignment. The Board acknowledges that this achievement is the result of a collective effort and remains confident that the effective implementation of these curricula will contribute significantly to producing competent, innovative, and entrepreneurial graduates capable of advancing sustainable agricultural development, food security, and economic prosperity in Nigeria.

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GENERAL INFORMATION

1.0 PROGRAMME NOMENCLATURE

National Diploma (ND) in Wildlife and Ecotourism Management.

2.0 PROGRAMME GOAL

The National Diploma in Wildlife and Ecotourism Management programme is designed to produce competent middle-level manpower equipped with practical skills, technical knowledge, and professional competencies in wildlife conservation, biodiversity management, ecotourism development, environmental sustainability, park management, and natural resource conservation using modern, sustainable and technology-driven practices.

3.0 OBJECTIVES OF THE PROGRAMME

On completion of the programme, the diplomates should be able to:

- i. Carry out wildlife conservation and habitat management activities effectively;
- ii. Apply sustainable ecotourism principles and environmentally friendly practices;
- iii. Conduct wildlife identification, monitoring, census and field survey activities;
- iv. Apply biodiversity conservation and natural resource management techniques;
- v. Participate in park planning, wildlife protection and anti-poaching activities;
- vi. Carry out environmental education and conservation awareness Programmes;
- vii. Apply tourism management, hospitality and visitor management practices;
- viii. Collect, maintain and interpret wildlife and ecotourism data for decision-making;
- ix. Apply digital tools, GIS and ICT in wildlife and ecotourism management;
- x. Demonstrate practical competencies for employment and self-reliance in wildlife and ecotourism enterprises.

4.0 ENTRY REQUIREMENTS

The minimum entry requirements into the ND Wildlife and Ecotourism Management programme are:

- i. Four (4) O'Level credits in relevant subjects including English Language, Mathematics, Biology or Agricultural Science, and one other relevant subject in not more than two sittings. A pass in English Language is mandatory;
- ii. Evidence of registration with JAMB.

5.0 STRUCTURE/DURATION OF THE PROGRAMME

The National Diploma in Wildlife and Ecotourism Management programme is structured to last for two (2) years (four semesters) of classroom work, laboratory practicals, field studies and workshop practices.

Each semester shall consist of 17 weeks made up as follows:

- 15 contact weeks of teaching (lectures, practicals and fieldwork);
- 2 weeks for registration and examinations.

6.0 CURRICULUM

The ND Wildlife and Ecotourism Management programme consists of four main components:

- a. General Studies/General Education Courses
- b. Foundation Courses
- c. Professional Courses
- d. Students' Industrial Work Experience Scheme (SIWES)

7. STAFFING REQUIREMENTS

7.1 Core Teaching Staff

A minimum of four (4) core teaching staff who should possess at least HND or B.Sc. in Wildlife Management, Forestry, Ecotourism, Environmental Science or related disciplines.

7.2 Technical Staff

i. Technologist

A technologist is a senior technical staff responsible for supervising practical and laboratory activities in the department. The technologist operates, manages, and maintains laboratory and field equipment, assists lecturers during practical sessions, and supports research and field studies in wildlife and ecotourism. There has to be a relevant Technologist attached to each training facility.

ii. Technician

A technician assists in carrying out technical and practical operations within the department. The technician helps in preparing equipment and materials for practical classes, maintaining tools and facilities, and supporting students and lecturers during laboratory and field activities. There has to be a relevant Technician attached to each training facility.

iii. Field Assistant

A field assistant supports outdoor and field operations such as wildlife surveys, conservation activities, habitat monitoring, camping exercises, and data collection. The field assistant also helps in handling field equipment and ensuring smooth coordination of field trips and excursions.

7.3 Headship of the Department (HOD)

The Head of Department shall possess at least an HND or first degree, and a Master's degree in Wildlife Management, Forestry, Ecotourism or related field and should not be below the rank of Senior Lecturer and must be registered with the relevant professional body and must have a minimum of (12 years) experience in both academic and industry.

7.4 CAREER OPPORTUNITIES

Diplomates of ND Wildlife and Ecotourism Management can work as:

- Wildlife Officers;
- Park Rangers;
- Ecotourism Officers;
- Conservation Assistants;

- Tour Guides;
- Zoo Assistants;
- Environmental Educators;
- Forestry and Wildlife Technicians;
- Research Assistants;
- Museum and Park Attendants

8.0 CERTIFICATION

A diplomate of this programme shall be awarded National Diploma (ND) in Wildlife and Ecotourism Management.

9.0 CONDITIONS FOR THE AWARD OF ND

Institutions offering accredited programmes will award the National Diploma to candidates who successfully completed the programme after passing prescribed coursework, examinations, diploma project and the Students Industrial Work Experience Scheme (SIWES). Such candidates should have completed a minimum of between 136 and 145 semester credit units depending on the programme.

Grading of Courses: Courses shall be graded as follows:

MARKS RANGE	LETTER GRADE	WEIGHTING
75% and above	A	4.00
70% – 74%	AB	3.50
65% – 69%	B	3.25
60% – 64%	BC	3.00
55% – 59%	C	2.75
50% – 54%	CD	2.50
45% – 49%	D	2.25
40% – 44%	E	2.00
Below 40%	F	0.0

9.2 Classification of Diplomas:

Diploma Certificates shall be awarded based on the following classifications:

CGPA	CLASS OF DIPLOMA
CGPA 3.50 and above	Distinction
CGPA 3.00-3.49	Upper Credit

CGPA 2.50-2.99	Lower Credit
CGPA 2.00-2.49	Pass

10.0 ACCREDITATION

The National Diploma (ND) in Wildlife and Ecotourism Management programme shall be accredited by NBTE before the diplomates can be awarded the diploma certificate. Details about the process of accrediting a programme for the award of the ND are available from the Executive Secretary, National Board for Technical Education (NBTE), Plot 'B', Bida Road, P.M.B. 2239, Kaduna, Nigeria.

11.0 LOGBOOK

A personal logbook for each course is to be kept by the students. It shall contain all the recordings of the day-to-day, weekly and semester practical works/activities from day one to the end of the programme. This is to be checked, marked appropriately and endorsed by all lecturers concerned at the end of every week.

12.0 FINAL YEAR PROJECTS

Final year students are expected to carry out project work, either on individual or group basis (not more than 2 per group). The project topics should as much as possible be related to the programme and serve as useful tools for further Research and /or Development. Projects should be properly supervised, and their reports well presented. The Institution should develop formats for presenting and grading projects. The formats should be adopted as applied to each stakeholder.

13.0 GUIDANCE NOTES FOR TEACHERS OF THE PROGRAMME:

13.1 The new curriculum is drawn in unit courses. This is in keeping with the provisions of the National Policy on Education which stresses the need to introduce the semester credit units which will enable a student, who so wishes, to transfer the units already completed in an institution of similar standard from which he/she is transferring.

13.2 In designing the units, the principle of the modular system by product has been adopted, thus making each of the professional modules, when completed provides the student with technician operative skills, which can be used for employment purposes.

13.3 As the success of the credit unit system depends on the articulation of programmes between the institution and industry, the Curriculum content has been written in behavioural objectives, so that the expected performance of the student is clear to all students who successfully completed some of the courses or the diplomates of the programme. There is a slight departure in the presentation of the performance-based curriculum which requires the conditions under which the performance is expected to be carried out and the criteria for the acceptable levels of performance. It is a deliberate attempt to further involve the staff of the department teaching the programme to write their own curriculum stating the conditions existing in their institution under which the performance can take place and follow that with the criteria for determining an acceptable level of performance. Departmental

submission on the final curriculum may be vetted by the Academic Board of the institution. Our aim is to continue to see to it that a solid internal Evaluation system exists in each institution for ensuring minimum standard and quality of education in the programmes offered throughout the polytechnic system.

13.4 The teaching of theory and practical work should, as much as possible, be integrated. Practical exercises, especially those in professional courses and laboratory work should not be taught in isolation from the theory.

14.0 GUIDELINES ON SIWES PROGRAMME

For the smooth operation of the SIWES, the following guidelines shall apply:

14.1 Responsibility for placement of Students.

Institution offering the ND programme shall arrange to place the students in relevant industries. By the end of second semester of the first academic session, six copies of the master list showing where each student has been placed shall be submitted to the Executive Secretary, NBTE, who shall, in turn authenticate the list and forward it to the Industrial Training Fund, Jos. The Placement Officer should discuss and agree with the various industries on the following:

- i. A task inventory of what the student is expected to experience during the period of attachment. It may be wise to adopt the one already approved for each field by the industry-based supervisor.
- ii. The evaluation of the student by the industry-based supervisor and the institution-based supervisor.
- iii. The final grading of the student during the period of attachment should be weighted more on the evaluation by industry-based supervisor.

14.2 Evaluation of Student during the SIWES

In the evaluation of the student, cognisance should be taken of the following items:

- i. Punctuality
- ii. Attendance
- iii. General attitude to work
- iv. Routine report of weekly activities in the logbook
- v. Respect for authority
- vi. Interest in the field/technical area
- vii. Technical competence as a potential technician in his field.

14.3 Grading of SIWES

To ensure uniformity of grading scales, the institution should ensure that the uniform grading of students work agreed to by all TVET Institutions is adopted.

14.4 The Institution based Supervisor

The institution-based supervisor should initial the log book during each visit. This will enable him to check and determine to what extent the objectives of the scheme are being met and to assist students having any problems regarding the specific tasks given to them by their industry-based supervisor.

14.5 Frequency of visit

Institutions should ensure that students placed on the attachment are visited within one month of their placement. Other visits shall be arranged so that:

- i. There is another visit six weeks after the first visit; and
- ii. A final visit in the last month of the attachment.

14.6 Stipend for Students in SIWES

The rate of stipend payable shall be determined from time to time by the Federal Government after due consultation with the Federal Ministry of Education, the Industrial Training Fund and the NBTE.

14.7 SIWES as a component of the Curriculum

The completion of SIWES is important in the final determination of whether the student is successful in the programme or not. Failure in the SIWES is an indication that the student has not shown sufficient interest in the field or has no potential to become a skilled technician in his field. The SIWES should be graded on a *fail* or *pass* basis. Where a student has satisfied all other requirements but failed SIWES, she/he may only be allowed to repeat another four months SIWES at his own expense.

15.0 GUIDELINES ON MANDATORY SKILLS QUALIFICATIONS (MSQ)

Please, see the Guidelines for the Implementation of MSQ in Polytechnics in Nigeria, available on NBTE website (web.nbte.gov.ng/downloads).

CURRICULUM TABLE**YEAR I - SEMESTER I**

S/N	COURSE CODE	COURSE TITLE	L	T	P	CH	CU
1.	GNS 101	Use of English I	2	0	0	2	2
2.	GNS 111	Citizenship Education I	2	0	0	2	2
3.	COM 111	Introduction to Computing	2	0	2	4	4
4.	AGR 101	Introduction to Agriculture	1	0	2	3	3
5.	FET 114	Introduction to Forestry	1	0	1	2	2
6.	MSQ 111	Mandatory Skills Qualification	1	0	1	2	2
7.	WEM 111	Introduction to Wildlife and Ecotourism Management	1	0	2	3	3
8.	WEM 112	General Ecology and Environment	1	0	2	3	3
9.	WEM 113	Morphology, Anatomy and Physiology of Living Things	1	0	2	3	3
10.	WEM 114	Plant Taxonomy and Identification	1	0	3	4	4
11.	WEM 115	Natural History of Wildlife	1	0	3	4	4
12.	WEM 116	Introduction to Conservation Law and Governance	1	0	2	3	3
TOTAL			15	0	20	35	35

YEAR I - SEMESTER II

S/N	COURSE CODE	COURSE TITLE	L	T	P	CH	CU
1.	GNS 102	Communication in English I	2	0	0	2	2
2.	GNS 121	Citizenship Education II	2	0	0	2	2
3.	ENT 126	Introduction to Entrepreneurship I	2	0	1	3	3
4.	AGT 125	Agro climatology	1	0	2	3	3
5.	WEM 121	Wildlife Ecology	1	0	3	4	4
6.	WEM 122	Climate Change and Wildlife Adaptation	1	0	2	3	3
7.	WEM 123	Animal Taxonomy	1	0	3	4	4
8.	WEM 124	Ethnobotany	1	0	2	3	3
9.	WEM 125	Wildlife Field Practice I	0	0	3	3	3
10.	WEM 126	Geography of Tourism and Ecotourism	1	0	2	3	3
11.	WEM 127	Biostatistics for Wild Life Science	1	0	2	3	3
12.	WEM 128	Introduction to GIS and Spatial Data	1	0	2	3	3
TOTAL			14	0	2	36	36

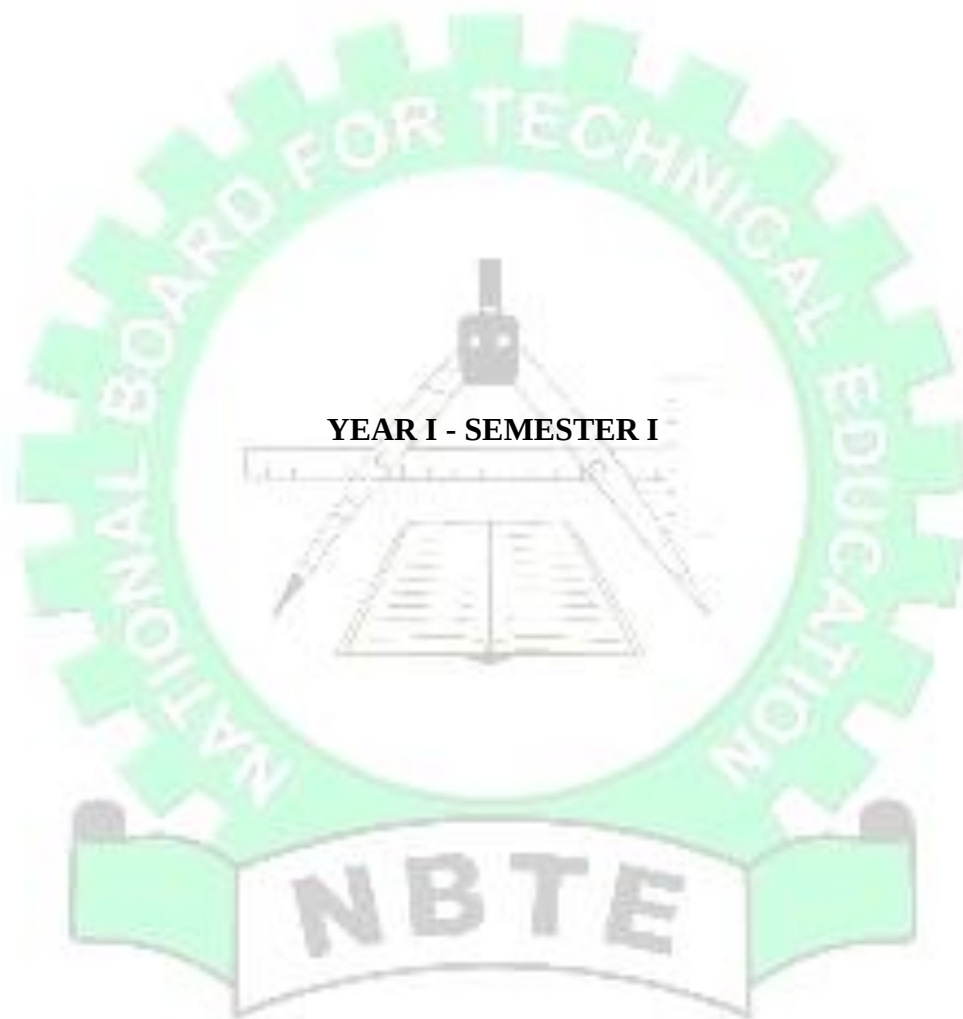
YEAR II - SEMESTER I

S/N	COURSE CODE	COURSE TITLE	L	T	P	CH	CU
1.	GNS 201	Use of English II	2	0	0	2	2
2.	ENT 216	Introduction to Entrepreneurship II	2	0	1	3	3
3.	AGR 201	Research Methods and Experimental Design	1	0	1	2	2
4.	WEM 211	Wildlife Habitat Protection	1	0	2	3	3
5.	WEM 212	Range and Habitat Management	1	0	2	3	3
6.	WEM 213	Ornithology and Bird Identification	1	0	3	4	4
7.	WEM 214	Introduction to Wildlife Diseases and Health	1	0	2	3	3
8.	WEM 215	Wildlife Management Techniques	1	0	3	4	4
9.	WEM 216	Rural Sociology and Community-Based Conservation	1	0	1	2	2
10.	WEM 217	Wildlife and Ecotourism Extension	1	0	2	3	3
11.	WEM 218	Wildlife Field Practice II	0	0	3	3	3
12.	WEM 219	Students Industrial Work Experience (SIWES)	0	0	4	4	4
TOTAL			12	0	24	36	36

YEAR II SEMESTER II

S/N	COURSE CODE	COURSE TITLE	L	T	P	CH	CU
1.	GNS 202	Communication in English II	2	0	0	2	2
2.	WEM 221	Park Planning and Interpretation	1	0	3	4	4
3.	WEM 222	Zoo, Museum and Visitor Centre Management	1	0	2	3	3
4.	WEM 223	Sustainable Non-Timber Forest Product Harvesting and Value Addition	1	0	2	3	3
5.	WEM 224	Game Farming and Wildlife Domestication	1	0	3	4	4
6.	WEM 225	Apiculture and Pollinator Conservation	1	0	2	3	3
7.	WEM 226	Introduction to Conservation Genetics and Forensic studies	1	0	2	3	3
8.	WEM 227	Application of Drone and Remote Sensing to Wildlife Management	1	0	2	3	3
9.	WEM 229	Project	0	0	4	4	4
TOTAL			9	0	20	29	29

L = Lectures (hours/week) P = Practical (hours/week) T = Tutorial (hours/week) CH = Contact Hours (hours/week) CU = Credit Units



INTRODUCTION TO WILDLIFE AND ECOTOURISM MANAGEMENT

PROGRAMME: NATIONAL DIPLOMA (ND) WILDLIFE AND ECOTOURISM MANAGEMENT		
COURSE TITLE: INTRODUCTION TO WILDLIFE AND ECOTOURISM MANAGEMENT	COURSE CODE: WEM 111	CONTACT HOURS: 3 HOURS/WEEK
	CREDIT UNIT: 3	THEORETICAL: 1 HOUR/WEEK
YEAR: I SEMESTER: I	PRE-REQUISITE:	PRACTICAL: 2 HOURS/WEEK
GOAL: This course is designed to equip students with knowledge and skills in wildlife management and ecotourism, covering basic concepts, institutions, career pathways, and the role of the technician in conservation enterprises.		
GENERAL OBJECTIVES: On completion of this course, the students should be able to: 1.0 Understand the scope and concepts of wildlife management; 2.0 Understand ecotourism principles and Nigerian destinations; 3.0 Know the institutions and stakeholders in conservation; 4.0 Understand career pathways in wildlife and ecotourism; 5.0 Know contemporary issues in wildlife and ecotourism.		

PROGRAMME: NATIONAL DIPLOMA (ND) WILDLIFE AND ECOTOURISM MANAGEMENT						
COURSE TITLE: INTRODUCTION TO WILDLIFE AND ECOTOURISM MANAGEMENT			COURSE CODE: WEM 111		CONTACT HOURS: 3 HOURS/WEEK	
			CREDIT UNIT: 3		THEORETICAL: 1 HOUR/WEEK	
YEAR: I SEMESTER: I			PRE-REQUISITE:		PRACTICAL: 2 HOURS/WEEK	
COURSE SPECIFICATION: THEORETICAL AND PRACTICAL						
GOAL: This course is designed to equip students with knowledge and skills in wildlife management and ecotourism, covering basic concepts, institutions, career pathways, and the role of the technician in conservation enterprises.						
GENERAL OBJECTIVE 1.0: Understand the scope and concepts of wildlife management						
THEORETICAL CONTENT				PRACTICAL CONTENT		
Week	Specific Learning Outcome	Teacher's Activities	Resources	Specific Learning Outcome	Teacher's Activities	Resources
1-3	1.1 Define wildlife, fauna, flora, conservation, management, utilization 1.2 Distinguish in-situ and ex-situ conservation 1.3 Explain the history of wildlife management in Nigeria 1.4 List key Nigerian wildlife (mammals, birds, reptiles, fish) 1.5 Describe simple wild life management	• Explain wildlife, fauna, flora, conservation, management, utilization • Distinguish in-situ and ex-situ conservation • Discuss the history of wildlife management in Nigeria • Outline key Nigerian wildlife (mammals, birds, reptiles, fish) • Discuss simple wild life management	Wildlife textbooks, photographs of Nigerian wildlife, LCD projector	• Identify common wildlife species and their characteristics • Carry out habitat assessment methods • Use traps, GPS, camera traps, and monitoring tools • Carry out field trips to zoo.	Guide students to: • Identify common wildlife species and their characteristics • Carry out habitat assessment methods • Use traps, GPS, camera traps, and monitoring tools • Carry out field trips to zoo.	Wildlife charts, field guide books, specimen samples, pictures, binoculars GPS device, camera traps, measuring tape, protective clothing Maps and notebook

	equipment.	equipment.				
GENERAL OBJECTIVE 2.0: Understand ecotourism principles and Nigerian destinations						
4-6	2.1 Define ecotourism 2.2 List 7 principles of ecotourism. 2.3 Outline Nigerian ecotourism destinations: Yankari, Cross River, Obudu, Okomu, Old Oyo, etc. 2.4 Differentiate ecotourism from mass tourism.	• Explain ecotourism • Highlight 7 principles of ecotourism. • Discuss Nigerian destinations: Yankari, Cross River, Obudu, Okomu, Old Oyo, etc. • Differentiate ecotourism from mass tourism	Ecotourism textbooks, photographs of destinations, LCD projector	• Identify major ecotourism destinations in Nigeria • Conduct educational visits to parks and tourist centres • Write observation report on activities and facilities at ecotourism sites • Prepare simple ecotourism plans and itineraries • Create visual content on methods of promoting ecotourism destinations	Guide students to: • Identify major ecotourism destinations in Nigeria • Conduct educational visits to parks and tourist centres • Write observation report on activities and facilities at ecotourism sites • Prepare simple ecotourism plans and itineraries • Create visual content on methods of promoting ecotourism destinations	Maps of Nigeria, tourism brochures, photographs, internet resources National parks, wildlife reserves, notebooks, cameras Planning templates, Posters, social media tools, brochures, multimedia materials
GENERAL OBJECTIVE 3.0: Know the institutions and stakeholders in conservation						
7-9	3.1 Describe Nigerian National Park Service 3.2 Outline NESREA, FMENV, FDF, State forestry departments 3.3 List key NGOs (NCF, WCS, A.P. Leventis, BirdLife) 3.4 Highlight the roles	• Explain Nigerian National Park Service • Highlight NESREA, FMENV, FDF, State forestry departments • Explain key NGOs (NCF, WCS, A.P. Leventis, BirdLife) • Highlight the roles of international bodies	Government documents, NGO websites, LCD projector	• Identify major conservation institutions and agencies involved in wildlife and environmental protection • Write observation report on the operations of	Guide students to: • Identify major conservation institutions and agencies involved in wildlife and environmental protection • Write observation report on the operations of conservation institutions	Charts, textbooks, internet resources, organizational brochures, Wildlife parks, conservation offices, notebooks, cameras,

	of international bodies (IUCN, UNEP, CITES, CBD)	(IUCN, UNEP, CITES, CBD)		conservation institutions • Participate in conservation awareness and advocacy programmes	• Participate in conservation awareness and advocacy programmes	Posters, flyers, public address system, banners
GENERAL OBJECTIVE 4.0: Understand career pathways in wildlife and ecotourism						
10-12	4.1 List careers opportunities: ranger, technician, tour guide, naturalist, eco-lodge operator. 4.2 Describe further education (HND, B.Sc., professional certifications). 4.3 Discuss employer expectations and competencies. 4.4 Explain CV develop, application and interview foundations.	• Outline careers opportunities: ranger, technician, tour guide, naturalist, eco-lodge operator. • Explain further education (HND, B.Sc., professional certifications). • Describe employer expectations and competencies. • Discuss CV develop, application and interview foundations.	Career guides, sample CVs, LCD projector	• Carry out visits to parks, zoos, and tourism destinations • Write observation report on duties of professionals in wildlife and ecotourism industries. • Write observation report on practical operations in wildlife parks and tourism centers.	Guide students to: • Visit parks, zoos, and tourism destinations • Write observation report on duties of professionals in wildlife and ecotourism industries. • Write observation report on practical operations in wildlife parks and tourism centers.	Guest speakers, videos, multimedia presentations, report written, National parks, museums, wildlife reserves, notebooks
GENERAL OBJECTIVE 5.0: Know contemporary issues in Wildlife and Ecotourism						
13-15	5.1 Describe climate change impacts on wildlife. 5.2 Describe biodiversity loss drivers.	• Describe climate change impacts on wildlife. • Describe biodiversity loss drivers.	IPCC summaries, biodiversity reports, illegal trade case studies,	• Investigate causes and effects of biodiversity loss in different habitats • Conduct simple surveys on human	Guide students to: • Investigate causes and effects of biodiversity loss in different habitats • Conduct simple surveys on human activities	Field guides, specimen samples, biodiversity charts, Questionnaires,

	5.3 Outline illegal wildlife trade in Nigeria (pangolin, elephant, parrot). 5.4 Describe the role of technicians in addressing these issues	• Outline illegal wildlife trade in Nigeria (pangolin, elephant, parrot). • Describe the role of technicians in addressing these issues	LCD projector	activities affecting wildlife resources • Apply basic mitigation and conservation strategies	affecting wildlife resources • Apply basic mitigation and conservation strategies	notebooks, cameras, GPS devices, Seedlings, hand tools, conservation manuals
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COURSE ASSESSMENT:

Course work:	10%
Test/Assignments:	10%
Practical:	40%
Examination:	40%
Total:	100%



GENERAL ECOLOGY AND ENVIRONMENT

PROGRAMME: NATIONAL DIPLOMA (ND) WILDLIFE AND ECOTOURISM MANAGEMENT		
COURSE TITLE: GENERAL ECOLOGY AND ENVIRONMENT	COURSE CODE: WEM 112	CONTACT HOURS: 3 HOURS/WEEK
	CREDIT UNIT: 3	THEORETICAL: 1 HOUR/WEEK
YEAR: I SEMESTER: I	PRE-REQUISITE:	PRACTICAL: 2 HOURS/WEEK
GOAL: This course is designed to equip students with knowledge and skills in general ecology, ecosystem dynamics, and environmental processes relevant to wildlife and ecotourism management.		
GENERAL OBJECTIVES: On completion of this course, the students should be able to: 1.0 Understand basic ecological concepts: ecosystem, habitat, and niche; 2.0 Understand energy flow and food webs; 3.0 Understand biogeochemical cycles; 4.0 Understand Nigerian biomes and ecosystems; 5.0 Understand environmental degradation and pollution.		

PROGRAMME: NATIONAL DIPLOMA (ND) WILDLIFE AND ECOTOURISM MANAGEMENT						
COURSE TITLE: GENERAL ECOLOGY AND ENVIRONMENT			COURSE CODE: WEM 112		CONTACT HOURS: 3 HOURS/WEEK	
			CREDIT UNIT: 3		THEORETICAL: 1 HOUR/WEEK	
YEAR: I SEMESTER: I			PRE-REQUISITE:		PRACTICAL: 2 HOURS/WEEK	
COURSE SPECIFICATION: THEORETICAL AND PRACTICAL						
GOAL: This course is designed to equip students with knowledge and skills in general ecology, ecosystem dynamics, and environmental processes relevant to wildlife and ecotourism management.						
GENERAL OBJECTIVE 1.0: Understand basic ecological concepts: ecosystem, habitat, and niche						
THEORETICAL CONTENT				PRACTICAL CONTENT		
Week	Specific Learning Outcome	Teacher's Activities	Resources	Specific Learning Outcome	Teacher's Activities	Resources
1-3	1.1 Define ecology, environment, ecosystem, and biosphere. 1.2 Describe abiotic and biotic components. 1.3 Define habitat, niche, fundamental and realized niche. 1.4 Explain hierarchy of organization: population, community, and ecosystem.	• Explain ecology, environment, ecosystem, and biosphere. • Describe abiotic and biotic components. • Discuss habitat, niche, fundamental and realized niche. • Explain hierarchy of organization: population, community, and ecosystem.	Ecology textbooks, charts, LCD projector	• Conduct a field exercise to identify abiotic and biotic factors	Guide students to: • Conduct a field exercise to identify abiotic and biotic factors	Notebooks, GPS, sample sites
GENERAL OBJECTIVE 2.0: Understand energy flow and food webs						
4-6	2.1 Define producers,	•Explain producers,	Ecology	• Construct a food	Guide students to:	Drawing

	consumers, decomposers. 2.2 Describe trophic levels and the 10% energy rule. 2.3 Explain food chains and food webs. 2.4 Describe ecological pyramids (numbers, biomass, energy).	consumers, decomposers. • Explain trophic levels and the 10% energy rule. • Discuss food chains and food webs. • Explain ecological pyramids (numbers, biomass, energy).	textbooks, food web diagrams, LCD projector	web for a local ecosystem • Apply ecological pyramids (numbers, biomass, energy).	• Construct a food web for a local ecosystem • Apply ecological pyramids (numbers, biomass, energy).	materials, field observation data
GENERAL OBJECTIVE 3.0: Understand biogeochemical cycles						
7-9	3.1 Describe water cycle and precipitation patterns. 3.2 Explain carbon cycle (link to climate change). 3.3 Describe nitrogen cycle. 3.4 Explain phosphorus cycle.	• Discuss water cycle and precipitation patterns. • Describe carbon cycle (link to climate change). • Explain nitrogen cycle. • Describe phosphorus cycle.	Biogeochemistry textbooks, cycle diagrams, LCD projector	• Draw the diagram of each of the biogeochemical cycles • Identify the human impacts on the biogeochemical cycles.	Guide students to: • Draw the diagram of each of each of the biogeochemical cycles • Identify the human impacts on the biogeochemical cycles.	Drawing materials, reference diagrams.
GENERAL OBJECTIVE 4.0: Understand Nigerian biomes and ecosystems						
10-12	4.1 Describe Nigerian vegetation zones (Sahel, Sudan, Guinea savanna, rainforest, mangrove). 4.2 List wildlife	• Explain Nigerian vegetation zones (Sahel, Sudan, Guinea savanna, rainforest, mangrove). • Outline wildlife	Vegetation zone maps, ecosystem photos, LCD projector.	• Map local ecosystem.	Guide students to: • Map local ecosystem.	Maps, GPS, field forms Documentari es etc.

	associated with each zone. 4.3 Describe freshwater ecosystems (rivers, lakes). 4.4 Explain coastal and marine ecosystems.	associated with each zone. • Explain freshwater ecosystems (rivers, lakes). • Discuss coastal and marine ecosystems.				
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GENERAL OBJECTIVE 5.0: Understand environmental degradation and pollution

13-15	5.1 Define pollution types: air, water, soil, noise. 5.2 Describe deforestation and desertification. 5.3 Explain climate change as a driver of degradation. 5.4 Outline mitigation and restoration approaches.	• Explain pollution types: air, water, soil, noise. • Explain deforestation and desertification. • Describe climate change as a driver of degradation. • Highlight mitigation and restoration approaches.	Environmental textbooks, case studies, LCD projector	• Conduct an environmental impact survey at a local site.	Guide students to: • Conduct an environmental impact survey at a local site.	Survey forms, sample sites.
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COURSE ASSESSMENT:

Course work:	10%
Test/Assignments:	10%
Practical:	40%
Examination:	40%
Total:	100%

MORPHOLOGY, ANATOMY AND PHYSIOLOGY OF LIVING THINGS

PROGRAMME: NATIONAL DIPLOMA (ND) WILDLIFE AND ECOTOURISM MANAGEMENT		
COURSE TITLE: MORPHOLOGY, ANATOMY AND PHYSIOLOGY OF LIVING THINGS	COURSE CODE: WEM 113	CONTACT HOURS: 3 HOURS/WEEK
	CREDIT UNIT: 3	THEORETICAL: 1 HOUR/WEEK
YEAR: I SEMESTER: I	PRE-REQUISITE:	PRACTICAL: 2 HOURS/WEEK
GOAL: This course is designed to equip students with knowledge and skills of cell biology, tissue organization, organ systems, and basic physiology in plants and animals.		
GENERAL OBJECTIVES: On completion of this course, the students should be able to: 1.0 Understand cell structure and organization; 2.0 Understand tissues in plants and animals; 3.0 Understand plant morphology and basic physiology; 4.0 Understand animal anatomy and basic physiology; 5.0 Understand biodiversity and adaptation.		

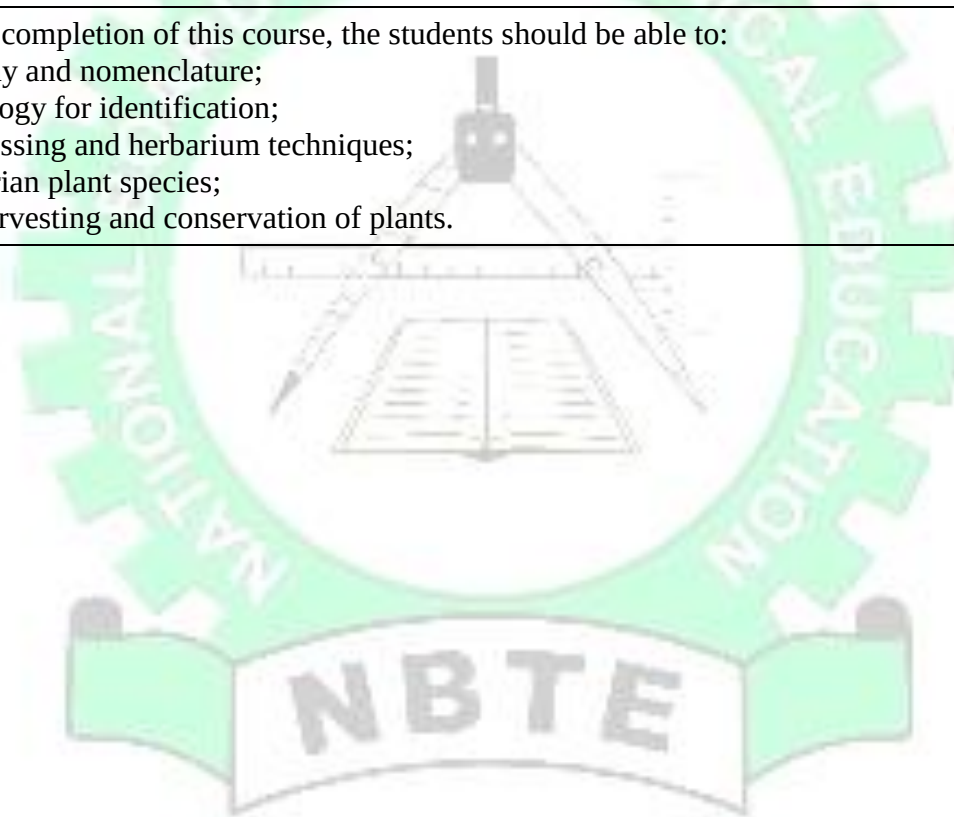
PROGRAMME: NATIONAL DIPLOMA (ND) WILDLIFE AND ECOTOURISM MANAGEMENT						
COURSE TITLE: MORPHOLOGY, ANATOMY AND PHYSIOLOGY OF LIVING THINGS			COURSE CODE: WEM 113		CONTACT HOURS: 3 HOURS/WEEK	
			CREDIT UNIT: 3		THEORETICAL: 1 HOUR/WEEK	
YEAR: I SEMESTER: I			PRE-REQUISITE:		PRACTICAL: 2 HOURS/WEEK	
COURSE SPECIFICATION: THEORETICAL AND PRACTICAL						
GOAL: This course is designed to equip students with knowledge and skills of cell biology, tissue organisation, organ systems, and basic physiology in plants and animals.						
GENERAL OBJECTIVE 1.0: Understand cell structure and organization						
THEORETICAL CONTENT				PRACTICAL CONTENT		
Week	Specific Learning Outcome	Teacher's Activities	Resources	Specific Learning Outcome	Teacher's Activities	Resources
1-3	1.1 Describe plant and animal cell structure. 1.2 Explain cell organelles (nucleus, chloroplast, mitochondria, vacuole). 1.3 Distinguish between prokaryotic and eukaryotic cells. 1.4 Describe cell division (mitosis, meiosis)	• Explain plant and animal cell structure. • Describe cell organelles (nucleus, chloroplast, mitochondria, vacuole). • Distinguish between prokaryotic and eukaryotic cells. • Discuss cell division (mitosis, meiosis)	Cell biology textbooks, cell diagrams, LCD projector	• Examine plant and animal cells under microscope • Identify cell organelles	Guide students to: • Examine plant and animal cells under microscope • Identify cell organelles	Microscopes, prepared slides (onion epidermis, cheek cells), fresh specimens
GENERAL OBJECTIVE 2.0: Understand tissues in plants and animals						

4-6	2.1 Explain plant tissues: meristematic, permanent (parenchyma, collenchyma, sclerenchyma). 2.2 Describe animal tissues: epithelial, connective, muscular, nervous etc. 2.3 Explain tissue organization into organs. 2.4 Outline tissues under microscope.	- Describe plant tissues: meristematic, permanent (parenchyma, collenchyma, sclerenchyma). - Discuss animal tissues: epithelial, connective, muscular, nervous etc. - Explain tissue organization into organs. - Describe tissues under microscope.	Histology textbooks, tissue charts, LCD projector.	Examine prepared tissue slides under microscope.	Guide students to: Examine prepared tissue slides under microscope.	Microscopes, prepared tissue slides.
GENERAL OBJECTIVE 3.0: Understand plant morphology and basic physiology						
7-9	3.1 Describe root, stem, leaf, flower, fruit morphology. 3.2 Explain photosynthesis. 3.3 Describe the basics of respiration. 3.4 Explain water and mineral uptake.	- Explain root, stem, leaf, flower, fruit morphology. - Describe photosynthesis. - Describe the basics of respiration. - Discuss water and mineral uptake.	Botany textbooks, plant specimens, LCD projector.	- Dissect plant organs. - Demonstrate photosynthesis (starch test on leaves).	Guide students to: - Dissect plant organs. - Demonstrate photosynthesis (starch test on leaves).	Fresh plant specimens, dissecting kits, iodine, alcohol, water bath.
GENERAL OBJECTIVE 4.0: Understand animal anatomy and basic physiology						
10-12	4.1 Describe vertebrate anatomy. 4.2 Distinguish between the anatomy of	- Describe vertebrate anatomy: - Discuss the different between the anatomy of	Zoology textbooks, anatomical charts, LCD projector.	Dissect a fish or chicken to identify organ systems.	Guide students to: Dissect a fish or chicken to identify organ systems.	Fresh fish/chicken specimens, dissection kits, gloves.

	mammals, birds, reptiles, amphibians, and fish. 4.3 Describe basic homeostasis. 4.4 Explain adaptations to different environments	mammals, birds, reptiles, amphibians, and fish. • Explain basic homeostasis. • Discuss adaptations to different environments				
GENERAL OBJECTIVE 5.0: Understand biodiversity and adaptation						
13-15	5.1 Define species, biodiversity, adaptation, and evolution. 5.2 Describe convergent and divergent evolution. 5.3 Explain adaptations in Nigerian wildlife. 5.4 Describe extinction and conservation implications.	• Explain species, biodiversity, adaptation, and evolution. • Discuss convergent and divergent evolution. • Describe adaptations in Nigerian wildlife. • Explain extinction and conservation implications.	Evolution textbooks, photographs of adaptations, LCD projector	• Identify adaptations in field-collected specimens	Guide students to: • Identify adaptations in field-collected specimens	Field specimens, photographs, hand lenses
COURSE ASSESSMENT: Course work: 10% Test/Assignments: 10% Practical: 40% Examination: 40% Total: 100%						

PLANT TAXONOMY AND IDENTIFICATION

PROGRAMME: NATIONAL DIPLOMA (ND) WILDLIFE AND ECOTOURISM MANAGEMENT		
COURSE TITLE: PLANT TAXONOMY AND IDENTIFICATION	COURSE CODE: WEM 114	CONTACT HOURS: 4 HOURS/WEEK
	CREDIT UNIT: 4	THEORETICAL: 1 HOUR/WEEK
YEAR: I SEMESTER: I	PRE-REQUISITE:	PRACTICAL: 3 HOURS/WEEK
GOAL: This course is designed to equip students with knowledge and skills in plant taxonomy, classification, and field identification skills required for wildlife habitat assessment and ethnobotanical work.		
GENERAL OBJECTIVES: On completion of this course, the students should be able to: 1.0 Understand plant taxonomy and nomenclature; 2.0 Understand plant morphology for identification; 3.0 Understand collection, pressing and herbarium techniques; 4.0 Know the important Nigerian plant species; 5.0 Understand sustainable harvesting and conservation of plants.		



PROGRAMME: NATIONAL DIPLOMA (ND) WILDLIFE AND ECOTOURISM MANAGEMENT						
COURSE TITLE: PLANT TAXONOMY AND IDENTIFICATION			COURSE CODE: WEM 114		CONTACT HOURS: 4 HOURS/WEEK	
			CREDIT UNIT: 4		THEORETICAL: 1 HOUR/WEEK	
YEAR: I SEMESTER: I			PRE-REQUISITE:		PRACTICAL: 3 HOURS/WEEK	
COURSE SPECIFICATION: THEORETICAL AND PRACTICAL						
GOAL: This course is designed to equip students with knowledge and skills in plant taxonomy, classification, and field identification skills required for wildlife habitat assessment and ethnobotanical work.						
GENERAL OBJECTIVE 1.0: Understand plant taxonomy and nomenclature						
THEORETICAL CONTENT				PRACTICAL CONTENT		
Week	Specific Learning Outcome	Teacher's Activities	Resources	Specific Learning Outcome	Teacher's Activities	Resources
1-3	1.1 Define taxonomy, classification, nomenclature, taxonomic hierarchy, etc 1.2 Explain binomial nomenclature (Linnaean system). 1.3 Describe taxonomic hierarchy: kingdom to species. 1.4 Discuss families relevant to Nigerian flora (Fabaceae, Poaceae, Moraceae).	• Explain taxonomy, classification, nomenclature, taxonomic hierarchy, etc • Discuss binomial nomenclature (Linnaean system). • Discuss taxonomic hierarchy: kingdom to species. • Describe families relevant to Nigerian flora (Fabaceae, Poaceae, Moraceae).	Taxonomy textbooks, Flora of West Tropical Africa, LCD projector.	• Classify plant specimens to family level. • Apply binomial nomenclature (Linnaean system)	Guide students to: • Classify plant specimens to family level. • Apply binomial nomenclature (Linnaean system)	Plant specimens, identification keys, hand lenses
GENERAL OBJECTIVE 2.0: Understand plant morphology for identification						
4-6	2.1 Describe leaf morphology.	• Explain leaf morphology.	Identification manuals,	• Identify 20 plant specimens	• Identify 20 plant specimens	Plant specimens,

	2.2 Explain stem morphology and bark patterns. 2.3 Outline flower and fruit characters. 2.4 List dichotomous keys.	• Describe stem morphology and bark patterns. • Outline flower and fruit characters. • State dichotomous keys.	dichotomous keys, LCD projector	• Use dichotomous keys.	• Use dichotomous keys	keys, hand lenses.
GENERAL OBJECTIVE 3.0: Understand collection, pressing and herbarium techniques						
7-9	3.1 Describe field collection of plant specimens. 3.2 Explain plant pressing and drying. 3.3 Explain mounting, labelling and accessioning. 3.4 Describe digital herbaria and DNA barcoding.	• Explain field collection of plant specimens. • Explain plant pressing and drying. • Explain mounting, labelling and accessioning. • Describe digital herbaria and DNA barcoding.	Herbarium manuals, sample herbarium sheets, LCD projector.	• Collect 10 specimens • Press 10 specimens • Mount 10 specimens and label them. • Apply plant pressing and drying. • Apply mounting, labelling and accessioning.	Guide students to: • Collect 10 specimens • Press 10 specimens • Mount 10 specimens and label them. • Apply plant pressing and drying. • Apply mounting, labelling and accessioning.	Plant presses, mounting paper, glue, labels, GPS.
GENERAL OBJECTIVE 4.0: Know the important Nigerian plant species						
10-12	4.1 Explain important Nigerian species (timber, NTFP, medicinal, ornamental). 4.2 Describe wildlife forage species (grasses, browse).	• Explain important Nigerian species (timber, NTFP, medicinal, ornamental). • Discuss wildlife forage species (grasses, browse).	Species profiles, photographs, IUCN summary, LCD projector.	• Field identification of 20 priority species.	Guide students to: • Field identification of 20 priority species.	Field guides, GPS, cameras, transport.

	4.3 Explain invasive species (Eichhornia, Mimosa pigra, Chromolaena) 4.4 Explain IUCN Red List for plant.	• Discuss invasive species (Eichhornia, Mimosa pigra, Chromolaena) • Discuss IUCN Red List for plant.				
GENERAL OBJECTIVE 5.0: Understand sustainable harvesting and conservation of plants						
13-15	5.1 Define NTFPs (medicinal plants, resins, fruits, mushrooms). 5.2 Describe sustainable yield principles. 5.3 Distinguish between in-situ and ex-situ plant conservation. 5.4 Explain foundations of seed banks and botanical gardens.	• Explain NTFPs (medicinal plants, resins, fruits, mushrooms). • Discuss sustainable yield principles. • Distinguish between in-situ and ex-situ plant conservation. • Discuss foundations of seed banks and botanical gardens.	NTFP textbooks, seed bank documents, LCD projector.	• Establish a small medicinal-plant garden with 10 priority species. • Apply foundations of seed banks and botanical gardens.	Guide students to: • Establish a small medicinal-plant garden with 10 priority species. • Apply foundations of seed banks and botanical gardens.	Garden plot, seedlings, gardening tools.
COURSE ASSESSMENT: Course work: 10% Test/Assignments: 10% Practical: 40% Examination: 40% Total: 100%						

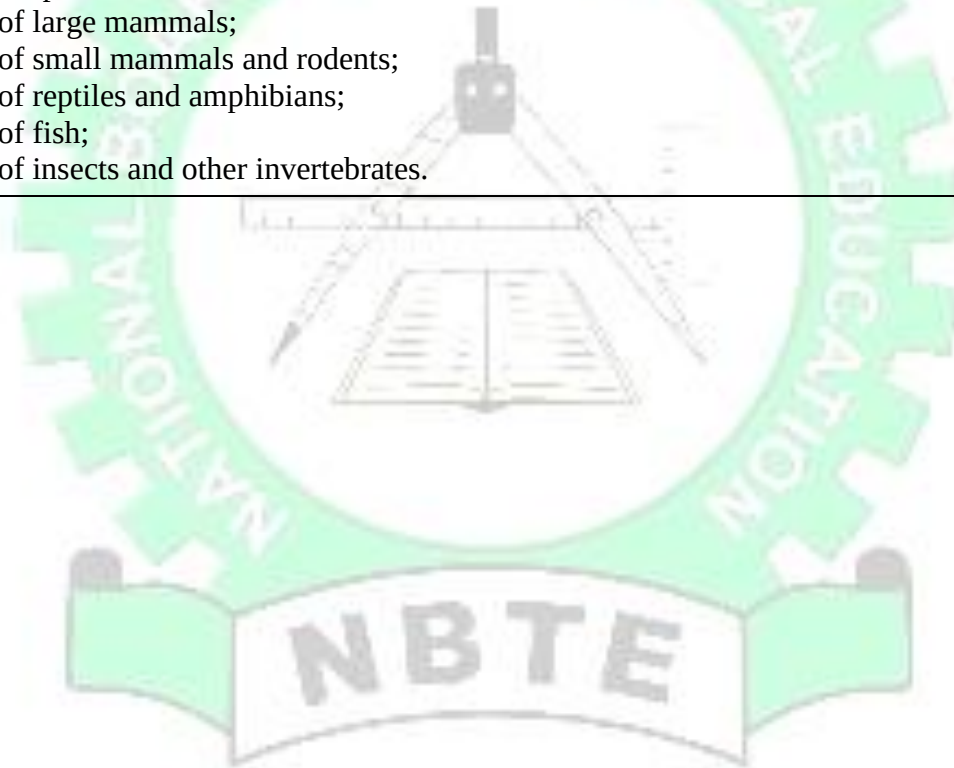
NATURAL HISTORY OF WILDLIFE**PROGRAMME: NATIONAL DIPLOMA (ND) WILDLIFE AND ECOTOURISM MANAGEMENT**

COURSE TITLE: NATURAL HISTORY OF WILDLIFE	COURSE CODE: WEM 115	CONTACT HOURS: 4 HOURS/WEEK
	CREDIT UNIT: 4	THEORETICAL: 1 HOUR/WEEK
YEAR: I SEMESTER: I	PRE-REQUISITE:	PRACTICAL: 3 HOURS/WEEK

GOAL: This course is designed to equip students with knowledge and skills on comprehensive natural history of Nigerian wildlife covering all major groups with emphasis on field identification, ecology, and conservation.

GENERAL OBJECTIVES: On completion of this course, the students should be able to:

- 1.0 Understand natural history of large mammals;
- 2.0 Understand natural history of small mammals and rodents;
- 3.0 Understand natural history of reptiles and amphibians;
- 4.0 Understand natural history of fish;
- 5.0 Understand natural history of insects and other invertebrates.



PROGRAMME: NATIONAL DIPLOMA (ND) WILDLIFE AND ECOTOURISM MANAGEMENT						
COURSE TITLE: NATURAL HISTORY OF WILDLIFE			COURSE CODE: WEM 115		CONTACT HOURS: 4 HOURS/WEEK	
			CREDIT UNIT: 4		THEORETICAL: 1 HOUR/WEEK	
YEAR: I SEMESTER: I			PRE-REQUISITE:		PRACTICAL: 3 HOURS/WEEK	
COURSE SPECIFICATION: THEORETICAL AND PRACTICAL						
GOAL: This course is designed to equip students with knowledge and skills on comprehensive natural history of Nigerian wildlife covering all major groups with emphasis on field identification, ecology, and conservation.						
GENERAL OBJECTIVE 1.0: Understand natural history of large mammals						
THEORETICAL CONTENT				PRACTICAL CONTENT		
Week	Specific Learning Outcome	Teacher's Activities	Resources	Specific Learning Outcome	Teacher's Activities	Resources
1-3	1.1 Describe African elephant: ecology, behaviour, conservation. 1.2 Describe lion, leopard, hyena. 1.3 Describe antelopes (kob, hartebeest, duiker, bushbuck). 1.4 Describe primates (chimpanzee, drill, monkeys).	• Explain African elephant: ecology, behaviour, conservation. • Discuss lion, leopard, hyena. • Discuss antelopes (kob, hartebeest, duiker, bushbuck). • Explain primates (chimpanzee, drill, monkeys).	Field guides of mammals of Africa, photographs, LCD projector.	• Identify mammal tracks and signs.	Guide students to: • Identify mammal tracks and signs.	Track guides, Plaster casts, GPS, zoological gardens, wildlife parks.
GENERAL OBJECTIVE 2.0: Understand natural history of small mammals and rodents						
4-6	2.1 Describe canerat, porcupine, hare. 2.2 Explain pangolin	• Describe canerat, porcupine, hare. • Discuss pangolin	Field guides to small mammals, photographs,	• Set live traps for small mammals (mark-release).	• Guide students to: • Set live traps for small mammals (mark-	Live traps, marking materials, field

	(Manis spp.) as critically endangered species. 2.3 Describe bats and their roles. 2.4 Describe shrews, mice and rats.	(Manis spp.) as critically endangered species. • Explain bats and their roles. • Describe shrews, mice and rats.	LCD projector.		release).	forms.
GENERAL OBJECTIVE 3.0: Understand natural history of reptiles and amphibians						
7-9	3.1 Outline different types of snakes (African python, cobras, vipers etc). 3.2 Differentiate between monitor lizard and agama. 3.3 Explain Nile and dwarf crocodiles. 3.4 Differentiate between frogs, toads, salamanders.	• Discuss different types of snakes (African python, cobras, vipers etc). • Differentiate between monitor lizard and agama. • Discuss Nile and dwarf crocodiles. • Differentiate between frogs, toads, salamanders.	Reptile guides, amphibian guides, LCD projector.	• Conduct herpetological survey.	Guide students to: • Conduct herpetological survey.	Snake catcher, gloves, GPS, safety kits.
GENERAL OBJECTIVE 4.0: Understand natural history of fish						
10-12	4.1 Explain Nigerian freshwater fish (catfish, tilapia, electric fish). 4.2 Outline coastal and marine fish. 4.3 Describe fisheries and food security. 4.4 Explain fish	• Explain Nigerian freshwater fish (catfish, tilapia, electric fish). • Outline coastal and marine fish. • Describe fisheries and food security.	Fish guides, fisheries textbooks, LCD projector.	• Conduct fish sampling at a local water body.	Guide students to: • Conduct fish sampling at a local water body.	Fishing gear, sample containers, GPS.

	inventory methods.	• Discuss fish inventory methods				
GENERAL OBJECTIVE 5.0: Understand natural history of insects and other invertebrates						
13-15	5.1 Explain butterflies (Papilionidae, Lycaenidae). 5.2 Outline bees and other pollinators. 5.3 Explain termites and ants. 5.4 Outline snails and other Mollusca.	• Explain butterflies (Papilionidae, Lycaenidae). • Outline bees and other pollinators. • Explain termites and ants. • Outline snails and other Mollusca.	Field guides of Insects and other invertebrate, photographs, LCD projector.	• Conduct invertebrate survey using sweep nets and traps.	Guide students to: • Conduct invertebrate survey using sweep nets and traps.	Sweep nets, pitfall traps, hand lenses, identification guides.
COURSE ASSESSMENT: Course work: 10% Test/Assignments: 10% Practical: 40% Examination: 40% Total: 100%						

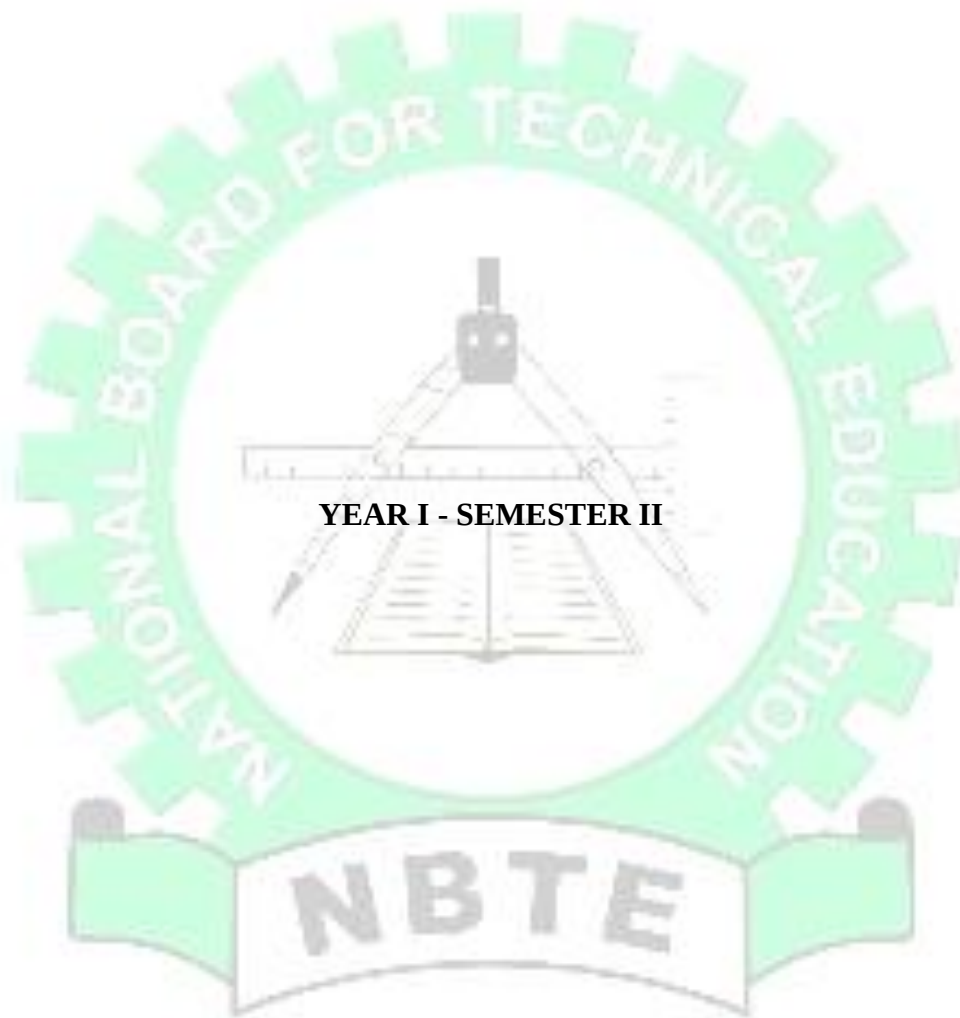
INTRODUCTION TO CONSERVATION LAW AND GOVERNANCE

PROGRAMME: NATIONAL DIPLOMA (ND) WILDLIFE AND ECOTOURISM MANAGEMENT		
COURSE TITLE: INTRODUCTION TO CONSERVATION LAW AND GOVERNANCE	COURSE CODE: WEM 116	CONTACT HOURS: 3 HOURS/WEEK
	CREDIT UNIT: 3	THEORETICAL: 1 HOUR/WEEK
YEAR: I SEMESTER: I	PRE-REQUISITE:	PRACTICAL: 2 HOURS/WEEK
GOAL: This course is designed to equip students with knowledge and skills to Nigerian wildlife laws, key international conventions and foundational governance concepts including community rights and Free, Prior Informed Consent.		
GENERAL OBJECTIVES: On completion of this course, the students should be able to: 1.0 Understand Nigerian wildlife laws, policy and Administration; 2.0 Understand Convention on International Trade in Endangered Species (CITES) and trade regulation; 3.0 Understand Convention on Biological Diversity (CBD) and biodiversity targets; 4.0 Understand Free, Prior and Informed Consent (FPIC), community rights, land tenure and benefit-sharing; 5.0 Understand enforcement and prosecution.		

PROGRAMME: NATIONAL DIPLOMA (ND) WILDLIFE AND ECOTOURISM MANAGEMENT						
COURSE TITLE: INTRODUCTION TO CONSERVATION LAW AND GOVERNANCE			COURSE CODE: WEM 116	CONTACT HOURS: 3 HOURS/WEEK		
			CREDIT UNIT: 3	THEORETICAL: 1 HOUR/WEEK		
YEAR: I SEMESTER: I			PRE-REQUISITE:	PRACTICAL: 2 HOURS/WEEK		
COURSE SPECIFICATION: THEORETICAL AND PRACTICAL						
GOAL: This course is designed to equip students with knowledge and skills to Nigerian wildlife laws, key international conventions and foundational governance concepts including community rights and Free, Prior Informed Consent.						
GENERAL OBJECTIVE 1.0: Understand Nigerian wildlife laws, policy and Administration						
THEORETICAL CONTENT				PRACTICAL CONTENT		
Week	Specific Learning Outcome	Teacher's Activities	Resources	Specific Learning Outcome	Teacher's Activities	Resources
1-3	1.1 Describe Endangered Species Act 2016. 1.2 Describe NESREA Act and FMENV powers. 1.3 Describe National Park Service Act. 1.4 Explain State forestry laws.	• Discuss Endangered Species Act 2016. • Explain NESREA Act and FMENV powers. • Explain National Park Service Act. • Describe State forestry laws.	Nigerian law collections, ESA 2016 booklet, LCD projector.	• Match hypothetical wildlife crimes to applicable laws.	Guide students to: • Match hypothetical wildlife crimes to applicable laws.	Nigerian law extracts, case scenarios.
GENERAL OBJECTIVE 2.0: Understand Convention on International Trade in Endangered Species (CITES) and trade regulation						
4-6	2.1 Define CITES and its three Appendices. 2.2 Explain Nigerian	• Discuss CITES and its three Appendices. • Explain Nigerian	CITES document, LCD projector.	• Identify CITES. • Appendix listings for Nigerian species.	Guide students to: • Identify CITES. • Appendix listings	CITES Appendix lists, computers with internet.

	CITES species. 2.3 Describe CITES permits. 2.4 Describe CITES authorities in Nigeria.	CITES species. - Describe CITES permits. - Explain CITES authorities in Nigeria.			for Nigerian species.	
GENERAL OBJECTIVE 3.0: Understand Convention on Biological Diversity (CBD) and biodiversity targets						
7-9	3.1 Explain the CBD objectives. 3.2 Explain Kunming-Montreal GBF targets. 3.3 Describe Nagoya Protocol on ABS. 3.4 Describe Nigerian NBSAP.	- Discuss the CBD objectives. - Describe Kunming-Montreal GBF targets. - Explain Nagoya Protocol on ABS. - Discuss Nigerian NBSAP.	UNCED documents, CBD documents, GBF documents, LCD projector.			
GENERAL OBJECTIVE 4.0: Understand Free, Prior and Informed Consent (FPIC), community rights, land tenure and benefit-sharing						
10-12	4.1 Define FPIC (free, prior, informed, consent) and UNDRIP. 4.2 Describe community forest rights and customary land tenure documentation. 4.3 Describe benefit-sharing models from ecotourism (revenue share,	4.1 Explain FPIC (free, prior, informed, consent) and UNDRIP. 4.2 Discuss community forest rights and customary land tenure documentation. 4.3 Explain benefit-sharing models from ecotourism (revenue share,	FPIC manuals, UNDRIP, land tenure documentation guides, benefit-sharing case studies, LCD projector.	- Conduct mock FPIC consultation with multi-stakeholder role play (government, operator, community). - Draft a simple benefit-sharing agreement for a hypothetical ecotourism project.	Guide students to: - Conduct mock FPIC consultation with multi-stakeholder role play (government, operator, community). - Draft a simple benefit-sharing agreement for a hypothetical ecotourism project	FPIC scripts, consent forms, benefit-sharing agreement template, role-play scenarios.

	employment, equity, royalties). 4.4 Describe agreement facilitation between government, private operators and communities.	employment, equity, royalties). • Describe agreement facilitation between government, private operators and communities.				
GENERAL OBJECTIVE 5.0: Understand enforcement and prosecution						
13-15	5.1 Outline enforcement agencies (Forest/wildlife department, NESREA, Customs, Police, NSCDC etc). 5.2 Describe evidence collection basics. 5.3 Explain chain-of-custody documentation. 5.4 Describe reporting wildlife crime.	• Discuss enforcement agencies (Forest/wildlife department, NESREA, Customs, Police, NSCDC etc). • Explain evidence collection basics. • Describe chain-of-custody documentation. • Explain reporting wildlife crime.	ESA 2016, NPS Act, LCD projector, marker board.	• Set up a mock wildlife crime scene with evidence collection.	Guide students to: • Set up mock crime scene, supervise the process.	Mock crime scene, evidence kits, chain-of-custody forms.
COURSE ASSESSMENT: Course work: 10% Test/Assignments: 10% Practical: 40% Examination: 40% Total: 100%						



YEAR I - SEMESTER II

WILDLIFE ECOLOGY

PROGRAMME: NATIONAL DIPLOMA (ND) WILDLIFE AND ECOTOURISM MANAGEMENT		
COURSE TITLE: WILDLIFE ECOLOGY	COURSE CODE: WEM 121	CONTACT HOURS: 4 HOURS/WEEK
	CREDIT UNIT: 4	THEORETICAL: 1 HOUR/WEEK
YEAR: I SEMESTER: II	PRE-REQUISITE:	PRACTICAL: 3 HOURS/WEEK
GOAL: This course is designed to equip students with knowledge and skills in wildlife ecology including population dynamics, habitat-species relationships, community ecology, and conservation ecology principles.		
GENERAL OBJECTIVES: On completion of this course, the students should be able to: 1.0 Understand wildlife ecology concepts; 2.0 Understand wildlife population dynamics; 3.0 Understand habitat and niche; 4.0 Understand community ecology; 5.0 Understand biodiversity management: corridors, invasive, and ecosystem services.		

PROGRAMME: NATIONAL DIPLOMA (ND) WILDLIFE AND ECOTOURISM MANAGEMENT						
COURSE TITLE: WILDLIFE ECOLOGY			COURSE CODE: WEM 121		CONTACT HOURS: 4 HOURS/WEEK	
			CREDIT UNIT: 4		THEORETICAL: 1 HOUR/WEEK	
YEAR: I SEMESTER: II			PRE-REQUISITE:		PRACTICAL: 3 HOURS/WEEK	
COURSE SPECIFICATION: THEORETICAL AND PRACTICAL						
GOAL: This course is designed to equip students with knowledge and skills in wildlife ecology including population dynamics, habitat-species relationships, community ecology, and conservation ecology principles.						
GENERAL OBJECTIVE 1.0: Understand wildlife ecology concepts						
THEORETICAL CONTENT				PRACTICAL CONTENT		
Week	Specific Learning Outcome	Teacher's Activities	Resources	Specific Learning Outcome	Teacher's Activities	Resources
1-3	1.1 Define wildlife ecology, ecosystem, biometer. 1.2 Describe biotic and abiotic factors affecting wildlife. 1.3 Explain limiting factors. 1.4 Describe ecological succession.	• Explain wildlife ecology, ecosystem, biometer. • Describe biotic and abiotic factors affecting wildlife. • Explain limiting factors. • Describe ecological succession.	Wildlife ecology textbooks, charts, LCD projector.	• Conduct field observation of habitat factors. • Apply ecological succession.	Guide students to: • Conduct field observation of habitat factors. • Apply ecological succession.	Field forms, GPS, sample sites.
GENERAL OBJECTIVE 2.0: Understand wildlife population dynamics						
4-6	2.1 Define population, density, dispersion. 2.2 Explain natality, mortality, growth.	• Discuss population, density, dispersion. • Describe natality, mortality, growth.	Population ecology textbooks, growth curves,	• Conduct mark-recapture exercise on a sample population.	Guide students to: • Conduct mark-recapture exercise on a sample population.	Mark-recapture kit (beans, jars), calculator.

	2.3 Describe exponential and logistic growth.	• Explain exponential and logistic growth.	LCD projector.	• Apply carrying capacity concept.	• Apply carrying capacity concept.	
GENERAL OBJECTIVE 3.0: Understand habitat and niche						
7-9	3.1 Define habitat, microhabitat, niche. 3.2 Describe habitat selection. 3.3 Explain resource partitioning. 3.4 Describe habitat fragmentation impacts	• Explain habitat, microhabitat, niche. • Describe habitat selection. • Discuss resource partitioning. • Discuss habitat fragmentation impacts	Habitat ecology textbooks, photos, LCD projector.	• Map habitat types in a sample reserve.	• Map habitat types in a sample reserve.	Maps, GPS, field forms.
GENERAL OBJECTIVE 4.0: Understand community ecology						
10-12	4.1 Define community, biodiversity, succession. 4.2 Describe predation, competition, mutualism. 4.4 Explain keystone species and ecosystem engineers.	• Explain community, biodiversity, succession. • Discuss predation, competition, mutualism. • Discuss keystone species and ecosystem engineers.	Community ecology textbooks, sample data, LCD projector	• Calculate Shannon index for sample plots. • Apply species diversity indices (Shannon, Simpson).	Guide students to: • Calculate Shannon index for sample plots. • Apply species diversity indices (Shannon, Simpson).	Sample data sheets, calculators.
GENERAL OBJECTIVE 5.0: Understand biodiversity management: corridors, invasives, ecosystem services						
13-15	5.1 Explain IUCN Red 5.2 List categories and species richness assessment methods. 5.3 Outline wildlife	• Explain IUCN Red • Outline categories and species richness assessment methods. • Explain wildlife corridors	Conservation ecology textbooks, IUCN documents, MA reports, invasive species guides,	• Apply IUCN Red List criteria to one local species. • Map a potential wildlife corridor	Guide students to: • Apply IUCN Red List criteria to one local species. • Map a potential wildlife corridor	IUCN templates, GIS software, invasive species ID guides, ecosystem service

	corridors 5.4 Explain landscape connectivity foundations. 5.5 Describe invasive species monitoring and control (Eichhornia, Mimosa pigra, Chromolaena). 5.6 Explain ecosystem service valuation foundations (provisioning, regulating, cultural, supporting).	• Discuss landscape connectivity foundations. • Explain invasive species monitoring and control (Eichhornia, Mimosa pigra, Chromolaena). • Discuss ecosystem service valuation foundations (provisioning, regulating, cultural, supporting).	LCD projector.	between two Nigerian protected areas. • Survey invasive plants in a sample area. • Invent ecosystem services for a local site.	between two Nigerian protected areas. • Survey invasive plants in a sample area. • Invent ecosystem services for a local site.	inventory templates.
COURSE ASSESSMENT: Course work: 10% Test/Assignments: 10% Practical: 40% Examination: 40% Total: 100%						

CLIMATE CHANGE AND WILDLIFE ADAPTATION

PROGRAMME: NATIONAL DIPLOMA (ND) WILDLIFE AND ECOTOURISM MANAGEMENT		
COURSE TITLE: CLIMATE CHANGE AND WILDLIFE ADAPTATION	COURSE CODE: WEM 122	CONTACT HOURS: 3 HOURS/WEEK
	CREDIT UNIT: 3	THEORETICAL: 1 HOUR/WEEK
YEAR: I SEMESTER: II	PRE-REQUISITE:	PRACTICAL: 2 HOURS/WEEK
GOAL: This course is designed to equip students with knowledge and skills to climate change science, its impacts on Nigerian wildlife habitats, the concepts of carbon sequestration, REDD+ and climate adaptation.		
GENERAL OBJECTIVES: On completion of this course, the students should be able to: 1.0 Understand climate change basics; 2.0 Understand climate impacts on wildlife habitats; 3.0 Understand forest and carbon sequestration; 4.0 Understand REDD+ and carbon markets; 5.0 Understand wildlife-climate adaptation.		

PROGRAMME: NATIONAL DIPLOMA (ND) WILDLIFE AND ECOTOURISM MANAGEMENT						
COURSE TITLE: CLIMATE CHANGE AND WILDLIFE ADAPTATION		COURSE CODE: WEM 122		CONTACT HOURS: 3 HOURS/WEEK		
		CREDIT UNIT: 3		THEORETICAL: 1 HOUR/WEEK		
YEAR: I SEMESTER: II		PRE-REQUISITE:		PRACTICAL: 2 HOURS/WEEK		
COURSE SPECIFICATION: THEORETICAL AND PRACTICAL						
GOAL: This course is designed to equip students with knowledge and skills to climate change science, its impacts on Nigerian wildlife habitats, the concepts of carbon sequestration, REDD+ and climate adaptation.						
GENERAL OBJECTIVE 1.0: Understand climate change basics						
1-3	1.1 Define weather variables and climate change concepts. 1.2 Outline key atmospheric greenhouse gases (CO ₂ , CH ₄ , N ₂ O). 1.3 Distinguish between natural and anthropogenic drivers of climate variability. 1.4 Describe the institutional architecture of the international climate regime IPCC and UNFCCC framework.	• Explain basic concept of climate. • Explain key greenhouse gases: CO₂, CH₄, N₂O, with emphasis on sources, sinks, atmospheric lifetimes, and Global Warming Potential. • Discuss causes of climate variability. • Discuss the Institutional Framework of Global Climate Governance IPCC/UNFCCC.	Core Textbooks in climate science, IPCC Assessment Reports, UNFCCC Official Documents.	• Plot Nigerian surface temperature trends using data from the Nigerian Meteorological Agency (NIMET).	Guide Students to: • Plot Nigerian surface temperature trends using data from the Nigerian Meteorological Agency (NIMET).	NIMET data, graph paper or Excel, Scientific Calculators, Plotting Materials, Instructional Guides.

GENERAL OBJECTIVE 2.0: Understand Climate Impacts on Wildlife Habitats						
4-6	2.1 Define range shift in wildlife. 2.2 Describe desertification processes and Sahel encroachment in Nigeria. 2.3 Explain sea-level rise impacts on the Niger Delta wildlife. 2.4 Describe phonological shifts in wildlife biology.	• Explain range shift in wildlife. • Discuss desertification processes and Sahel encroachment in Nigeria. • Describe sea-level rise impacts on the Niger Delta wildlife. • Explain phonological shifts in wildlife biology.	Climate impact studies, maps of Nigerian climate zones, LCD projector, Reports.	• Map climate-vulnerable wildlife habitats in Nigeria • Carry out data Acquisition and Preparation, Geospatial Analysis and Mapping.	Guide students to: • Map climate-vulnerable wildlife habitats in Nigeria • Carryout data Acquisition and Preparation, Geospatial Analysis and Mapping.	Maps, GIS or printed materials, sample data, Geospatial Analysis Software and Tools.
GENERAL OBJECTIVE 3.0: Understand forest and carbon sequestration						
7-9	3.1 Define carbon sequestration. 3.2 Describe four carbon pools (above-ground, below-ground, soil, litter). 3.3 Explain field methods for tree biomass estimation. 3.4 Describe the role of forests in climate change.	• Explain carbon sequestration. • Explain carbon pools. • Describe field methods for tree biomass estimation.. • Discuss forest role in carbon sequestration.	Textbooks, Marker board, Allometric tables, LCD projector.	• Measure trees DBH • Estimate above-ground biomass using simple equation.	Guide students to: • Measure trees DBH • Estimate above-ground biomass using simple equation.	DBH tapes, calculators, allometric tables, range finder, altimeter, etc
GENERAL OBJECTIVE 4.0: Understand REDD+ and carbon markets						

10-12	4.1 Define REDD+ activities 4.2 Describe Nigeria REDD+ Programme (Cross River state pilot project) 4.3 Explain voluntary carbon market concepts. 4.4 Describe forest-carbon co-benefits.	• Explain REDD+ activities • Discuss Nigeria REDD+ Programme (Cross River state pilot project) • Discuss voluntary carbon market concepts. • Describe forest-carbon co-benefits.	REDD+ documents, Nigerian R-PP, LCD projector, Marker board.	• Identify trees for carbon benefits.	Guide students to: • Identify trees for carbon benefits.	Measuring tape, clinometer, secateur, digital scale, GPS, Soil auger, analytical balance, grinder, bomb calorimeter, muffle furnace, desicator, kjeldahl analyser, fiber analyser, terrestrial laser scanner, drone, moisture meter.
GENERAL OBJECTIVE 5.0: Understand wildlife-climate adaptation						
13-15	5.1 Define adaptation and resilience in ecological systems. 5.2 Describe ecosystem-based adaptation. 5.3 Explain wildlife corridors and refugia. 5.5 Describe NBS in relation to wildlife conservation and climate adaptation	• Explain adaptation and resilience in ecological systems. • Describe ecosystem-based adaptation. • Discuss wildlife corridors and refugia. • Discuss NBS in relation to wildlife conservation and climate adaptation	Textbooks, IUCN reports, LCD projector, Marker board, charts, case studies	• Identify adaptation options for a specific reserve. • Apply foundational adaptation planning.	Guide students to: • Identify adaptation options for a specific reserve. • Apply foundational adaptation planning.	Sample reserve data, worksheets, climate report, conservation manuals and videos
COURSE ASSESSMENT: Course work: 10%						

Test/Assignments:	10%
Practical:	40%
Examination:	40%
Total:	100%



ANIMAL TAXONOMY

PROGRAMME: NATIONAL DIPLOMA (ND) WILDLIFE AND ECOTOURISM MANAGEMENT		
COURSE TITLE: ANIMAL TAXONOMY	COURSE CODE: WEM 123	CONTACT HOURS: 4 HOURS/WEEK
	CREDIT UNIT: 4	THEORETICAL: 1 HOUR/WEEK
YEAR: I SEMESTER: II	PRE-REQUISITE:	PRACTICAL: 3 HOURS/WEEK
GOAL: This course is designed to equip students with knowledge and skills of animal taxonomy and field identification skills for vertebrate and invertebrates.		
GENERAL OBJECTIVES: On completion of this course, the students should be able to: 1.0 Understand animal taxonomy and classification; 2.0 Understand identification of mammals; 3.0 Understand identification of birds, reptiles, amphibians; 4.0 Understand identification of fish and invertebrates; 5.0 Understand collection, preservation of specimen in museum.		

PROGRAMME: NATIONAL DIPLOMA (ND) WILDLIFE AND ECOTOURISM MANAGEMENT						
COURSE TITLE: INTRODUCTION TO ANIMAL TAXONOMY			COURSE CODE: WEM 123		CONTACT HOURS: 4 HOURS/WEEK	
			CREDIT UNIT: 4		THEORETICAL: 1 HOUR/WEEK	
YEAR: I SEMESTER: II			PRE-REQUISITE:		PRACTICAL: 3 HOURS/WEEK	
COURSE SPECIFICATION: THEORETICAL AND PRACTICAL						
GOAL: This course is designed to equip students with knowledge and skills of animal taxonomy and field identification skills for vertebrate and invertebrates.						
GENERAL OBJECTIVE 1.0: Understand animal taxonomy and classification						
THEORETICAL CONTENT				PRACTICAL CONTENT		
Week	Specific Learning Outcome	Teacher's Activities	Resources	Specific Learning Outcome	Teacher's Activities	Resources
1-3	1.1 Describe principles of biological taxonomy and binomial nomenclature to animal classification. 1.2 Explain the phylogenetic organization of major animal phyla. 1.3 Describe the classes vertebrate. 1.4 Explain IUCN Red List for animals.	- Describe principles of biological taxonomy and binomial nomenclature to animal classification. - Explain the phylogenetic organization of major animal phyla. - Describe the classes vertebrate. - Explain IUCN Red List for animals.	Marker board, animal taxonomy textbooks, photo guides, LCD projector and zoology text books	- Arrange animal specimens based on taxonomic classification - Use the IUCN Red List for animals.	Guide students to: - Arrange animal specimens based on taxonomic classification - Use the IUCN Red List for animals..	Specimens, photographs, classification keys, field guide
GENERAL OBJECTIVE 2.0: Understand identification of mammals						
4-6	2.1 Explain taxonomic features of	Explain taxonomic features of	Marker board, mammals of	Identify major mammals from	Guide students to: Identify major	Photographs, museum

	primates. 2.2 Describe taxonomic features of ungulates. 2.3 Explain taxonomic features of carnivores. 2.4 Explain taxonomic features of small mammals.	primates. • Discuss taxonomic features of ungulates. • Discuss taxonomic features of carnivores. • Explain taxonomic features of small mammals.	Africa atlas, photo guides, LCD projector	photographs and specimen.	mammals from photographs and specimen	specimen.
GENERAL OBJECTIVE 3.0: Understand identification of birds, reptiles, amphibians						
7-9	3.1 Explain bird identification. 3.2 Explain reptiles' identification features. 3.3 Explain amphibians' identification. 3.4 Explain the use of binoculars.	• Explain bird identification. • Describe reptiles' identification features. • Discuss amphibians' identification. • Explain the use of binoculars	Field guides, LCD projector.	• Identify species using binoculars and field guides.	Guide students to: • Identify species using binoculars and field guides.	Binoculars, field guides, field record book.
GENERAL OBJECTIVE 4.0: Understand identification of fish and invertebrates						
10-12	4.1 Discuss fish identification features. 4.2 Explain invertebrate identification features. 4.3 Describe invertebrate bioindicators. 4.4 Explain field	• Discuss fish identification features. • Discuss invertebrate identification features. • Discuss invertebrate bioindicators.	Fish guides, invertebrate textbooks, LCD projector.	• Identify specimens across these groups. • Conduct macroinvertebrate sampling in a stream/river.	Guide students to: • Identify specimens across these groups. • Conduct macroinvertebrate sampling in a stream/river.	Specimens, hand lens, sampling kits, preservatives.

	collection ethics.	• Explain field collection ethics.				
GENERAL OBJECTIVE 5.0: Understand collection, preservation of specimen in museum						
13-15	5.1 Describe ethical and regulatory frameworks for animal specimen collection. 5.2 Describe standard preservation techniques for specimens. 5.3 Outline method of taxidermy and mounting. 5.4 Explain museum accessioning	• Discuss ethical and regulatory frameworks for animal specimen collection. • Explain standard preservation techniques for specimens. • Explain method of taxidermy and mounting. • Describe museum accessioning	Marker board, preservation manuals, museum catalogues, LCD projector.	• Preserve small specimens.	Guide students to: • Preserve small specimens.	Preservation kits, dissection kits, specimens.
COURSE ASSESSMENT: Course work: 10% Test/Assignments: 10% Practical: 40% Examination: 40% Total: 100%						

ETHNOBOTANY

PROGRAMME: NATIONAL DIPLOMA (ND) WILDLIFE AND ECOTOURISM MANAGEMENT		
COURSE TITLE: ETHNOBOTANY	COURSE CODE: WEM 124	CONTACT HOURS: 3 HOURS/WEEK
	CREDIT UNIT: 3	THEORETICAL: 1 HOUR/WEEK
YEAR: I SEMESTER: II	PRE-REQUISITE:	PRACTICAL: 2 HOURS/WEEK
GOAL: This course is designed to equip students with knowledge and skills to traditional plant knowledge, the cultural and economic benefit of Nigerian plants.		
GENERAL OBJECTIVES: On completion of this course, the students should be able to: 1.0 Understand ethnobotany and traditional knowledge; 2.0 Understand medicinal plants of Nigeria; 3.0 Understand food and fibre plants; 4.0 Understand sustainable harvesting and value addition; 5.0 Understand conservation of medicinal and useful plants.		

PROGRAMME: NATIONAL DIPLOMA (ND) WILDLIFE AND ECOTOURISM MANAGEMENT						
COURSE TITLE: ETHNOBOTANY			COURSE CODE: WEM 124		CONTACT HOURS: 3 HOURS/WEEK	
			CREDIT UNIT: 3		THEORETICAL: 1 HOUR/WEEK	
YEAR: I SEMESTER: II			PRE-REQUISITE:		PRACTICAL: 2 HOURS/WEEK	
COURSE SPECIFICATION: THEORETICAL AND PRACTICAL						
GOAL: This course is designed to equip students with knowledge and skills to traditional plant knowledge, the cultural and economic benefit of Nigerian plants.						
GENERAL OBJECTIVE 1.0: Understand ethnobotany and indigenous knowledge						
THEORETICAL CONTENT				PRACTICAL CONTENT		
Week	Specific Learning Outcome	Teacher's Activities	Resources	Specific Learning Outcome	Teacher's Activities	Resources
1-3	1.1 Define ethnobotany, ethnomedicine and ethnopharmacology. 1.2 Describe indigenous knowledge systems. 1.3 Explain the intellectual property rights for indigenous communities. 1.4 Describe FPIC and Nagoya Protocol	• Explain ethnobotany, ethnomedicine and ethnopharmacology. • Discuss indigenous knowledge systems. • Explain the intellectual property rights for indigenous communities. • Describe FPIC and Nagoya Protocol	Ethnobotany textbooks, FPIC documents, LCD projector and marker board	• Conduct interview with a local herbalist using FPIC process.	Guide students to: • Conduct interview with a local herbalist using FPIC process.	FPIC consent forms, voice recorders, notebooks
GENERAL OBJECTIVE 2.0: Understand medicinal plants of Nigeria						
4-6	2.1 List major medicinal plants and their uses. 2.2 Describe bioactive compounds.	• Discuss medicinal plants. • Explain bioactive compounds in medicinal plants.	Medicinal plant atlases, NIPRD documents, LCD projector.	• Document medicinal plants species in a local area.	Guide students to: • Document medicinal plants species in a local area.	Field guides, GPS, cameras, notebooks.

	2.3 Describe standard methods for herbal preparation and extraction. 2.4 Explain safety, dosage, and toxicity profiles of medicinal plant products.	• Discuss preparations and extraction method. • Discuss safety dosage, and toxicity profiles.				
GENERAL OBJECTIVE 3.0: Understand food and fibre plants						
7-9	3.1 Explain food plants. 3.2 Explain fibre plants. 3.3 Describe wild food plants and food security. 3.4 Explain post-harvest handling techniques.	• Discuss food plants. • Explain fibre plants. • Discuss wild food plants and food security. • Explain post-harvest handling techniques.	Marker board, food plant guides, fibre textbooks, LCD projector.	• Document major food and fibre plants.	Guide students to: • Document major food and fibre plants.	Field guides, cameras, notebooks, GPS.
GENERAL OBJECTIVE 4.0: Understand sustainable harvesting and value addition						
10-12	4.1 Define sustainable harvesting. 4.2 Explain rotational harvesting and quotas. 4.3 Describe basic value addition (cleaning, drying, packaging). 4.4 Describe niche markets for ethical products.	• Explain sustainable harvesting. • Describe rotational harvesting and quotas. • Discuss basic value addition (cleaning, drying, packaging). • Explain niche markets for ethical products.	Marker board, harvesting guides, value addition manuals, LCD projector.	• Package a value added specific NTFP (e.g., shea butter, hibiscus tea).	Guide students to: • Package a value added specific NTFP (e.g., shea butter, hibiscus tea).	Processing equipment, packaging materials.

GENERAL OBJECTIVE 5.0: Understand conservation of medicinal and useful plants

13-15	5.1 Explain in-situ and ex-situ conservation of plants. 5.2 Describe seed banks and botanical gardens. 5.3 Explain IUCN Red 5.4 List criteria to medicinal plants identification. 5.5 Describe bioprospecting and benefit-sharing.	• Describe in-situ and ex-situ conservation of plants. • Explain seed banks and botanical gardens. • Discuss IUCN Red • Outline criteria to medicinal plants identification. • Explain bioprospecting and benefit-sharing.	Conservation textbooks, IUCN guidelines, LCD projector.	• Apply IUCN Red List to one local medicinal plant.	Guide students to: • Apply IUCN Red List to one local medicinal plant.	IUCN templates, sample plant data.
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COURSE ASSESSMENT:

Course work: 10%

Test/Assignments: 10%

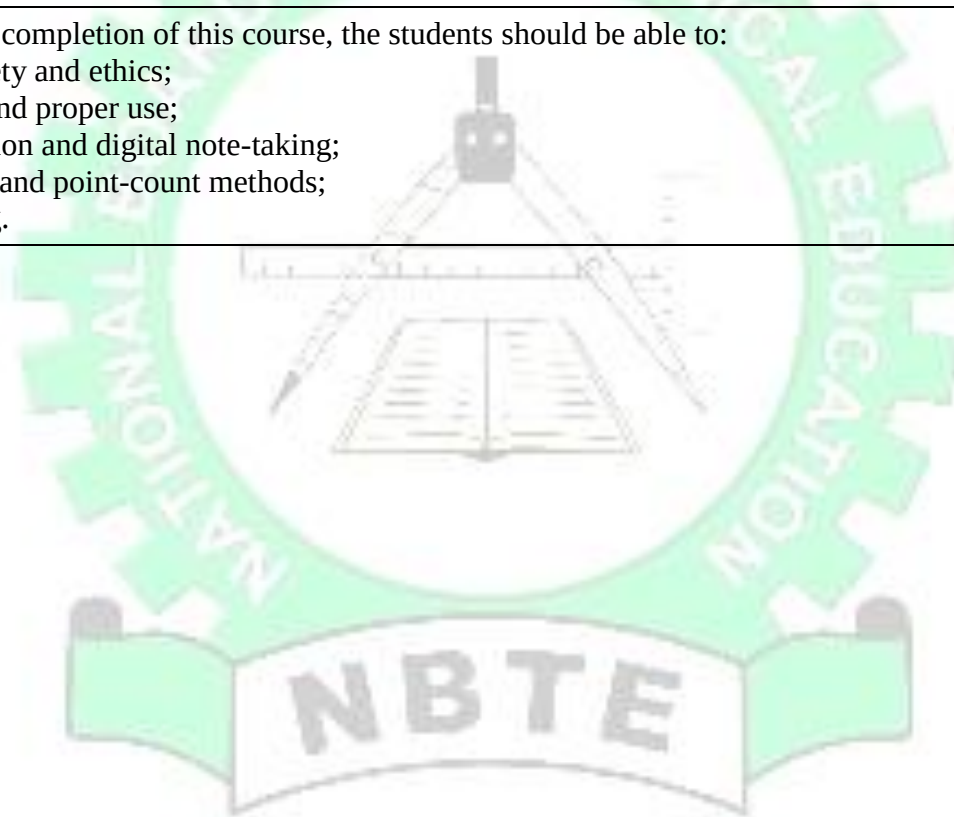
Practical: 40%

Examination: 40%

Total: 100%

WILDLIFE FIELD PRACTICE I

PROGRAMME: NATIONAL DIPLOMA (ND) WILDLIFE AND ECOTOURISM MANAGEMENT		
COURSE TITLE: WILDLIFE FIELD PRACTICE I	COURSE CODE: WEM 125	CONTACT HOURS: 3 HOURS/WEEK
	CREDIT UNIT: 3	THEORETICAL: 0
YEAR: I SEMESTER: I	PRE-REQUISITE:	PRACTICAL: 3 HOURS/WEEK
GOAL: This course is designed to equip students with skills on field practice course exposing students to wildlife observation, basic survey techniques, fieldwork safety, and use of standard field equipment.		
GENERAL OBJECTIVES: On completion of this course, the students should be able to: 1.0 Understand fieldwork safety and ethics; 2.0 Identify field equipment and proper use; 3.0 Understand field observation and digital note-taking; 4.0 Understand basic transect and point-count methods; 5.0 Understand field reporting.		



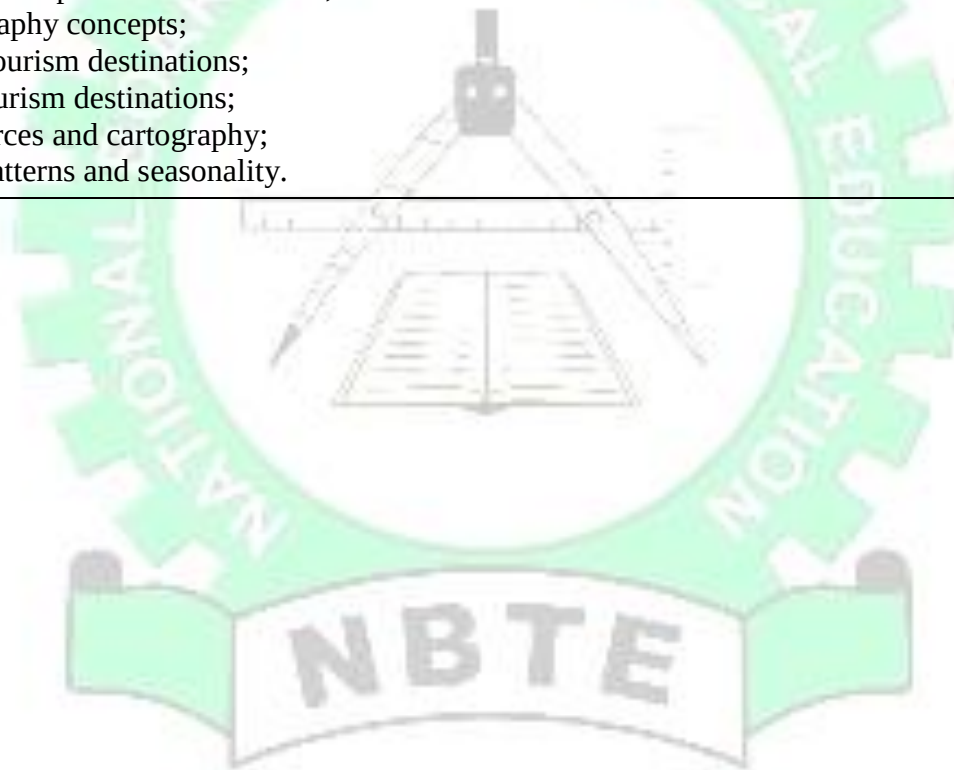
PROGRAMME: NATIONAL DIPLOMA (ND) WILDLIFE AND ECOTOURISM MANAGEMENT						
COURSE TITLE: WILDLIFE FIELD PRACTICE I			COURSE CODE: WEM 125		CONTACT HOURS: 3 HOURS/WEEK	
			CREDIT UNIT: 3		THEORETICAL: 0	
YEAR: I SEMESTER: I			PRE-REQUISITE:		PRACTICAL: 3 HOURS/WEEK	
COURSE SPECIFICATION: THEORETICAL AND PRACTICAL						
GOAL: This course is designed to equip students with skills on field practice course exposing students to wildlife observation, basic survey techniques, fieldwork safety, and use of standard field equipment.						
GENERAL OBJECTIVE 1.0: Understand fieldwork safety and ethics						
THEORETICAL CONTENT				PRACTICAL CONTENT		
Week	Specific Learning Outcome	Teacher's Activities	Resources	Specific Learning Outcome	Teacher's Activities	Resources
1-3				- Identify field hazards: animals, plants, weather, terrain. - Apply PPE selection and use. - Apply first-aid basics for fieldwork. - Apply ethics: minimal disturbance, non-collection rules.	Guide students to: - Identify field hazards: animals, plants, weather, terrain. - Apply PPE selection and use. - Apply first-aid basics for fieldwork. - Apply ethics: minimal disturbance, non-collection rules.	PPE kits, first-aid kit, mock scenarios.
GENERAL OBJECTIVE 2.0: Identify field equipment and proper use						
4-6				Use binoculars	Use binoculars (8x42,	Binoculars, GPS

				(8x42, 10x42) and spotting scopes. • Use GPS units (handheld and smartphone-based). • Use compass and map for navigation. • Use camera for wildlife photography.	10x42) and spotting scopes. • Use GPS units (handheld and smartphone-based). • Use compass and map for navigation. • Use camera for wildlife photography.	units, compasses, maps, cameras.
GENERAL OBJECTIVE 3.0: Understand field observation and digital note-taking						
7-9				• Maintain a field journal (date, time, location, observations). • Apply systematic observation methods. • Sketch wildlife/plants in field notebooks. • Use digital field journals (iNaturalist, eBird).	Guide students to: • Maintain a field journal (date, time, location, observations). • Apply systematic observation methods. • Sketch wildlife/plants in field notebooks. • Use digital field journals (iNaturalist, eBird).	Field notebooks, smartphones, sketching pencils.
GENERAL OBJECTIVE 4.0: Understand basic transect and point-count methods						
10-12				• Set up a 100m	Guide students to:	Tape measures,

				line transect with markers. • Walk transect at standard pace • Record sightings. • Conduct 10-minute point counts at fixed stations. • Tabulate field data in Excel.	• Set up a 100m line transect with markers. • Walk transect at standard pace • Record sightings. • Conduct 10-minute point counts at fixed stations. • Tabulate field data in Excel.	GPS, range finders, data sheets, computers with Excel.
GENERAL OBJECTIVE 5.0: Understand field reporting						
13-15				• Write structured field reports • Apply digital data entry standards • Backup data securely • Present findings using charts and photographs.	Guide students to: • Write structured field reports • Apply digital data entry standards • Backup data securely • Present findings using charts and photographs.	Computers with Excel and Word, presentation software
COURSE ASSESSMENT Course Assessment (Practical Based):10% Practical: 50% Examination (Practical Based): 40% Total: 100%						

GEOGRAPHY OF TOURISM AND ECO-DESTINATIONS

PROGRAMME: NATIONAL DIPLOMA (ND) WILDLIFE AND ECOTOURISM MANAGEMENT		
COURSE TITLE: GEOGRAPHY OF TOURISM AND ECO-DESTINATIONS	COURSE CODE: WEM 126	CONTACT HOURS: 3 HOURS/WEEK
	CREDIT UNIT: 3	THEORETICAL: 1 HOUR/WEEK
YEAR: I SEMESTER: II	PRE-REQUISITE:	PRACTICAL: 2 HOURS/WEEK
GOAL: This course is designed to equip students with knowledge and skills to explores tourism geography, locating Nigerian and African ecotourism destinations, climate and seasonal patterns relevant to tourism, and visitor flow patterns.		
GENERAL OBJECTIVES: On completion of this course, the students should be able to: 1.0 Understand tourism geography concepts; 2.0 Understand Nigerian ecotourism destinations; 3.0 Understand African ecotourism destinations; 4.0 Understand tourism resources and cartography; 5.0 Understand visitor flow patterns and seasonality.		



PROGRAMME: NATIONAL DIPLOMA (ND) WILDLIFE AND ECOTOURISM MANAGEMENT						
COURSE TITLE: GEOGRAPHY OF TOURISM AND ECO-DESTINATIONS			COURSE CODE: WEM 126		CONTACT HOURS: 3 HOURS/WEEK	
			CREDIT UNIT: 3		THEORETICAL: 1 HOUR/WEEK	
YEAR: I SEMESTER: II			PRE-REQUISITE:		PRACTICAL: 2 HOURS/WEEK	
COURSE SPECIFICATION: THEORETICAL AND PRACTICAL						
GOAL: This course is designed to equip students with knowledge and skills to explore tourism geography, locating Nigerian and African ecotourism destinations, climate and seasonal patterns relevant to tourism, and visitor flow patterns.						
GENERAL OBJECTIVE 1.0: Understand tourism geography concepts						
THEORETICAL CONTENT				PRACTICAL CONTENT		
Week	Specific Learning Outcome	Teacher's Activities	Resources	Specific Learning Outcome	Teacher's Activities	Resources
1-3	1.1 Define tourism, tourist, destination, attraction. 1.2 Distinguish domestic, regional, international tourism. 1.3 List geographic factors influencing tourism. 1.4 Describe climate and tourism seasonality.	• Explain tourism, tourist, destination, attraction. • Distinguish domestic, regional, international tourism. • Outline geographic factors influencing tourism. • Describe climate and tourism seasonality.	Tourism geography textbooks, maps, LCD projector, marker board.	• Map tourism flow patterns to Nigeria. • Create infographics to describe domestic, regional and international tourism	Guide students to: • Map tourism flow patterns to Nigeria.	Maps, sample tourism data.
GENERAL OBJECTIVE 2.0: Understand Nigerian ecotourism destinations						
4-6	2.1 Explain Nigeria Game Reserves. 2.2 Describe Nigeria National Parks. 2.3 Outline other resort	• Describe Nigeria Game Reserves. • Explain Nigeria National Parks.	Destination profiles, photographs, LCD projector, marker board.	• Develop a destination profile for one Nigerian site.	• Develop a destination profile for one Nigerian site.	Profile templates, internet access.

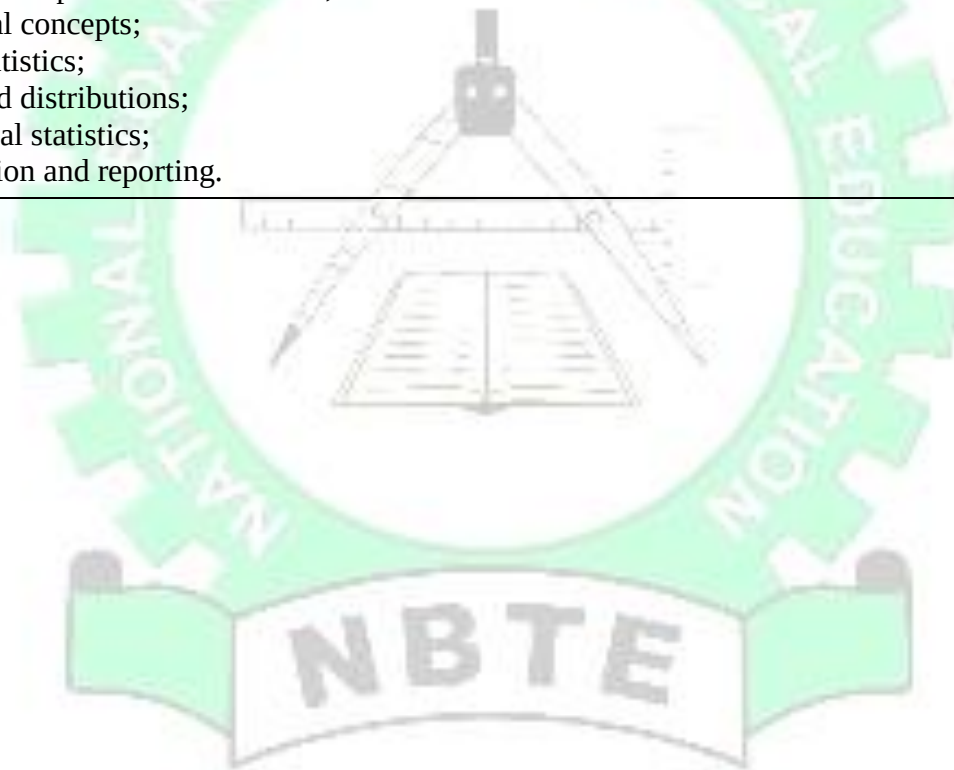
	and recreation destinations. 2.4 Explain Tourist experiences.	- Highlight other resort and recreation destinations. - Explain Tourist experiences.				
GENERAL OBJECTIVE 3.0: Understand African ecotourism destinations						
7-9	3.1 Explain african parks. 3.2 Describe their unique features. 3.3 Explain tourism economic potential.	- Discuss african parks. - Explain their unique features. - Discuss tourism economic potential.	African destination guides, photographs, LCD projector.	Develop presentation slides to compare African destinations with Nigerian destination.	Guide students to: Compare African destinations with Nigerian destination.	Comparison templates.
GENERAL OBJECTIVE 4.0: Understand tourism resources and cartography						
10-12	4.1 Define tourism resources 4.2 Describe tourism mapping using GIS basics 4.3 Explain the use of atlases 4.4 Explain the use of digital maps	- Discuss tourism resources. - Explain GIS mapping using GIS basics. - Explain the use of atlases - Explain the use of digital maps	Text on forest and wildlife resources management, GIS and Cartography, GIS software, LCD projector, marker board.	- Map tourism resources for one local area - Use tourism atlases and guidebooks - Use digital mapping	- Map tourism resources for one local area - Use tourism atlases and guidebooks - Use digital mapping	Computers with internet, smartphones.
GENERAL OBJECTIVE 5.0: Understand visitor flow patterns and seasonality						
13-15	5.1 Describe visitor's arrival data. 5.2 Describe concepts of high, low and shoulder seasons 5.3 Explain visitor management and capacity	- Explain visitor's arrival data. - Describe concepts of high, low and shoulder seasons - Discuss visitor management and capacity	Tourism statistics, NTDC data, LCD projector	Plot visitor flow for one Nigerian destination	Guide students to: Plot visitor flow for one Nigerian destination	Sample visitor data, graph paper or Excel

	5.4 Describe climate impacts on tourism seasons	capacity • Explain climate impacts on tourism seasons				
COURSE ASSESSMENT: Course work: 10% Test/Assignments: 10% Practical: 40% Examination: 40% Total: 100%						



BIOSTATISTICS FOR WILDLIFE SCIENCE

PROGRAMME: NATIONAL DIPLOMA (ND) WILDLIFE AND ECOTOURISM MANAGEMENT		
COURSE TITLE: BIOSTATISTICS FOR WILDLIFE SCIENCE	COURSE CODE: WEM 127	CONTACT HOURS: 3 HOURS/WEEK
	CREDIT UNIT: 3	THEORETICAL: 1 HOUR/WEEK
YEAR: I SEMESTER: II	PRE-REQUISITE:	PRACTICAL: 2 HOURS/WEEK
GOAL: This course is designed to equip students with knowledge and skills for wildlife data collection, summary, and basic inference, using Excel and free statistical software.		
GENERAL OBJECTIVES: On completion of this course, the students should be able to: 1.0 Understand basic statistical concepts; 2.0 Understand descriptive statistics; 3.0 Understand probability and distributions; 4.0 Understand basic inferential statistics; 5.0 Understand data presentation and reporting.		



PROGRAMME: NATIONAL DIPLOMA (ND) WILDLIFE AND ECOTOURISM MANAGEMENT						
COURSE TITLE: BIOSTATISTICS FOR WILDLIFE SCIENCE			COURSE CODE: WEM 127		CONTACT HOURS: 3 HOURS/WEEK	
			CREDIT UNIT: 3		THEORETICAL: 1 HOUR/WEEK	
YEAR: I SEMESTER: II			PRE-REQUISITE:		PRACTICAL: 2 HOURS/WEEK	
COURSE SPECIFICATION: THEORETICAL AND PRACTICAL						
GOAL: This course is designed to equip students with knowledge and skills for wildlife data collection, summary, and basic inference, using Excel and free statistical software.						
GENERAL OBJECTIVE 1.0: Understand basic statistical concepts						
THEORETICAL CONTENT				PRACTICAL CONTENT		
Week	Specific Learning Outcome	Teacher's Activities	Resources	Specific Learning Outcome	Teacher's Activities	Resources
1-3	1.1 Define population, sample, variable, parameter, statistic. 1.2 Distinguish between discrete and continuous variables. 1.3 Distinguish nominal, ordinal, interval, ratio scales. 1.4 Explain random and purposive sampling.	• Explain population, sample, variable, parameter, statistic. • Distinguish between discrete and continuous variables. • Distinguish nominal, ordinal, interval, ratio scales. • Discuss random and purposive sampling.	Biostatistics textbooks, sample datasets, LCD projector.	• Identify variables in wildlife datasets.	Guide students to: • Identify variables in wildlife datasets.	Sample datasets, computers.
GENERAL OBJECTIVE 2.0: Understand descriptive statistics						
4-6	2.1 Explain mean, median, mode. 2.2 Describe range, variance, standard deviation.	• Discuss mean, median, mode. • Explain range, variance, standard deviation.	Biostatistics textbooks, sample datasets, LCD projector, marker board.	• Compute summary statistics for sample wildlife data. • Plot histograms	Guide students to: • Compute summary statistics for sample wildlife data. • Plot histograms and	Computers with Excel, sample datasets.

	2.3 Explain frequency distributions. 2.4 Explain histograms and box-plots.	- Describe frequency distributions. - Explain histograms and box-plots.		and box-plots in Excel.	box-plots in Excel.	
GENERAL OBJECTIVE 3.0: Understand probability and distributions						
7-9	3.1 Define probability, sample space, event. 3.2 Explain probability rules. 3.3 Describe normal distribution. 3.4 Explain z-scores.	- Explain probability, sample space, event. - Discuss probability rules. - Explain normal distribution. - Describe z-scores.	Biostatistics textbooks, sample data, LCD projector.	Compute probabilities for wildlife sampling scenarios.	Guide students to: Compute probabilities for wildlife sampling scenarios.	Calculators, sample datasets.
GENERAL OBJECTIVE 4.0: Understand basic inferential statistics						
10-12	4.1 Define hypothesis testing, p-value. 4.2 Explain chi-square test. 4.3 Explain t-test (one-sample, two-sample). 4.4 Describe correlation.	- Explain hypothesis testing. - Discuss chi-square. - Explain t-test. - Discuss correlation.	Biostatistics textbooks, sample datasets, LCD projector, marker board.	Run t-test and chi-square on wildlife data.	Guide students to: Run t-test and chi-square on wildlife data.	Computers with Excel, sample datasets.
GENERAL OBJECTIVE 5.0: Understand data presentation and reporting						
13-15	5.1 Explain visualization 5.2 Describe infographics for wildlife data. 5.3 Describe reporting standards. 5.4 Explain the ethics in data reporting.	- Describe visualization - Describe infographics for wildlife data. - Describe reporting standards. - Explain the ethics in data reporting.	Research method textbooks, sample reports, LCD projector	Create an infographic from wildlife datasets.	Guide students to: Create an infographic from wildlife datasets.	Computers with Canva or similar tools.

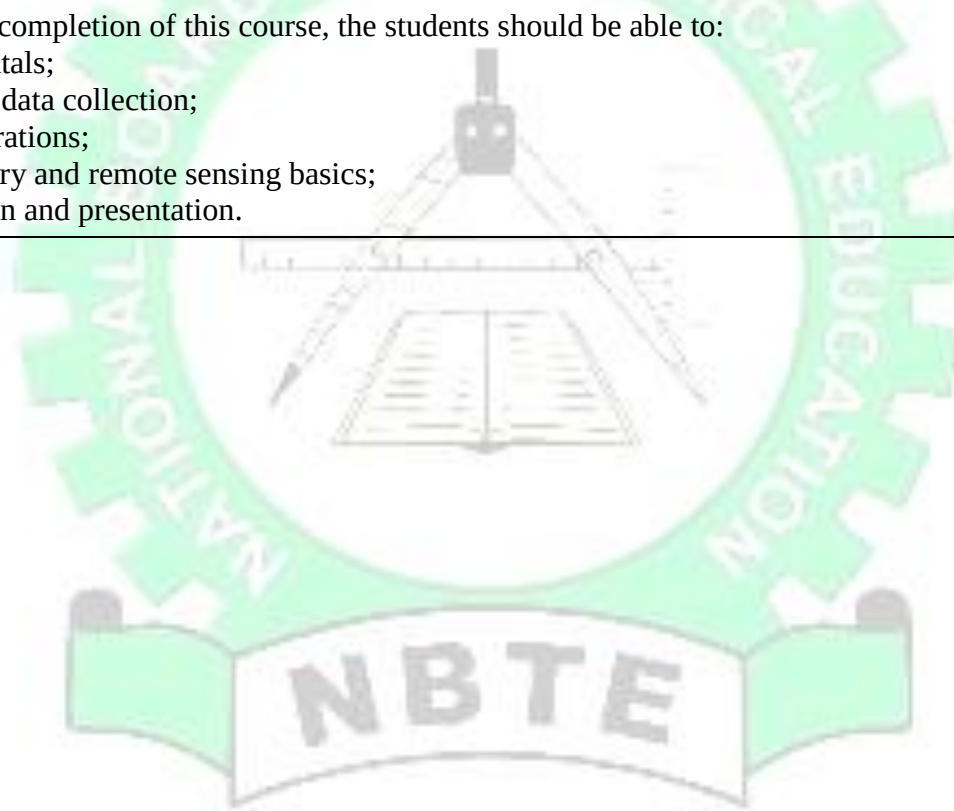
COURSE ASSESSMENT:

Course work:	10%
Test/Assignments:	10%
Practical:	40%
Examination:	40%
Total:	100%



INTRODUCTION TO GIS AND SPATIAL DATA

PROGRAMME: NATIONAL DIPLOMA (ND) WILDLIFE AND ECOTOURISM MANAGEMENT		
COURSE TITLE: INTRODUCTION TO GIS AND SPATIAL DATA	COURSE CODE: WEM 128	CONTACT HOURS: 3 HOURS/WEEK
	CREDIT UNIT: 3	THEORETICAL: 1 HOUR/WEEK
YEAR: I SEMESTER: II	PRE-REQUISITE:	PRACTICAL: 2 HOURS/WEEK
GOAL: This course is designed to equip students with knowledge and skills in Geographic Information Systems (GIS), GPS, and spatial data analysis using free open-source tools (QGIS).		
GENERAL OBJECTIVES: On completion of this course, the students should be able to: 1.0 Understand GIS fundamentals; 2.0 Understand GPS and field data collection; 3.0 Understand basic GIS operations; 4.0 Understand satellite imagery and remote sensing basics; 5.0 Understand map production and presentation.		



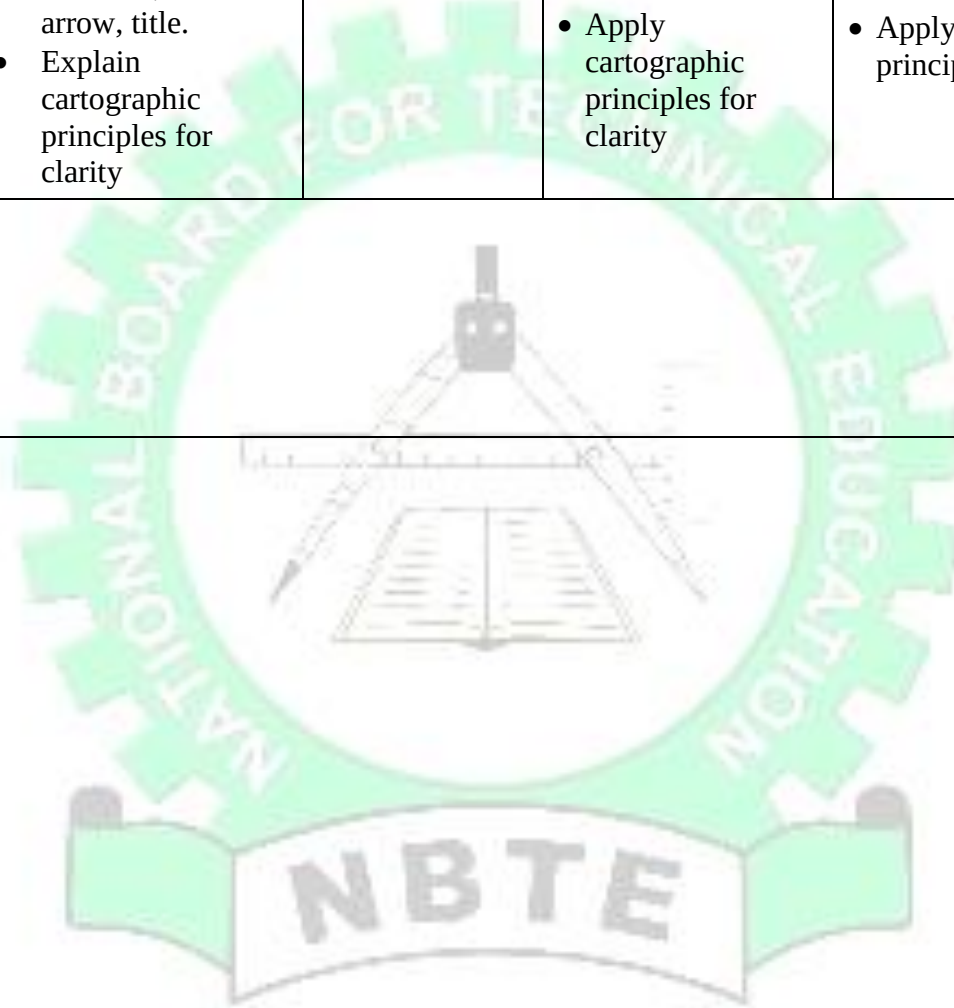
PROGRAMME: NATIONAL DIPLOMA (ND) WILDLIFE AND ECOTOURISM MANAGEMENT						
COURSE TITLE: INTRODUCTION TO GIS AND SPATIAL DATA			COURSE CODE: WEM 128		CONTACT HOURS: 3 HOURS/WEEK	
			CREDIT UNIT: 3		THEORETICAL: 1 HOUR/WEEK	
YEAR: I SEMESTER: II			PRE-REQUISITE:		PRACTICAL: 2 HOURS/WEEK	
COURSE SPECIFICATION: THEORETICAL AND PRACTICAL						
GOAL: This course is designed to equip students with knowledge and skills in Geographic Information Systems (GIS), GPS, and spatial data analysis using free open-source tools (QGIS).						
GENERAL OBJECTIVE 1.0: Understand GIS fundamentals						
THEORETICAL CONTENT				PRACTICAL CONTENT		
Week	Specific Learning Outcome	Teacher's Activities	Resources	Specific Learning Outcome	Teacher's Activities	Resources
1-3	1.1 Define GIS, GPS, remote sensing. 1.2 Distinguish vector vs raster data. 1.3 Explain coordinate reference systems (WGS84, UTM). 1.4 Describe GIS applications in wildlife management.	- Explain GIS, GPS, remote sensing. - Distinguish vector vs raster data. - Explain coordinate reference systems (WGS84, UTM). - Discuss GIS applications in wildlife management.	GIS textbooks, sample shapefiles, LCD projector.	- Install QGIS and explore the interface. - Load Nigerian PA shapefile and examine attributes.	Guide students to: - Install QGIS and explore the interface. - Load Nigerian PA shapefile and examine attributes.	Computers with QGIS, sample shapefiles.
GENERAL OBJECTIVE 2.0: Understand GPS and field data collection						
4-6	2.1 Describe GPS satellite system. 2.2 Explain GPS handheld unit basics. 2.3 Outline	- Describe GPS satellite system. - Explain GPS handheld unit basics. - Outline smartphone GPS apps.	GPS manuals, smartphone tutorials, LCD projector.	- Collect 20 waypoints and 1 track in a target area. - Download data and import into QGIS.	Guide students to: - Collect 20 waypoints and 1 track in a target area. - Download data and import into QGIS.	GPS units, smartphones, computers with QGIS, USB cables.

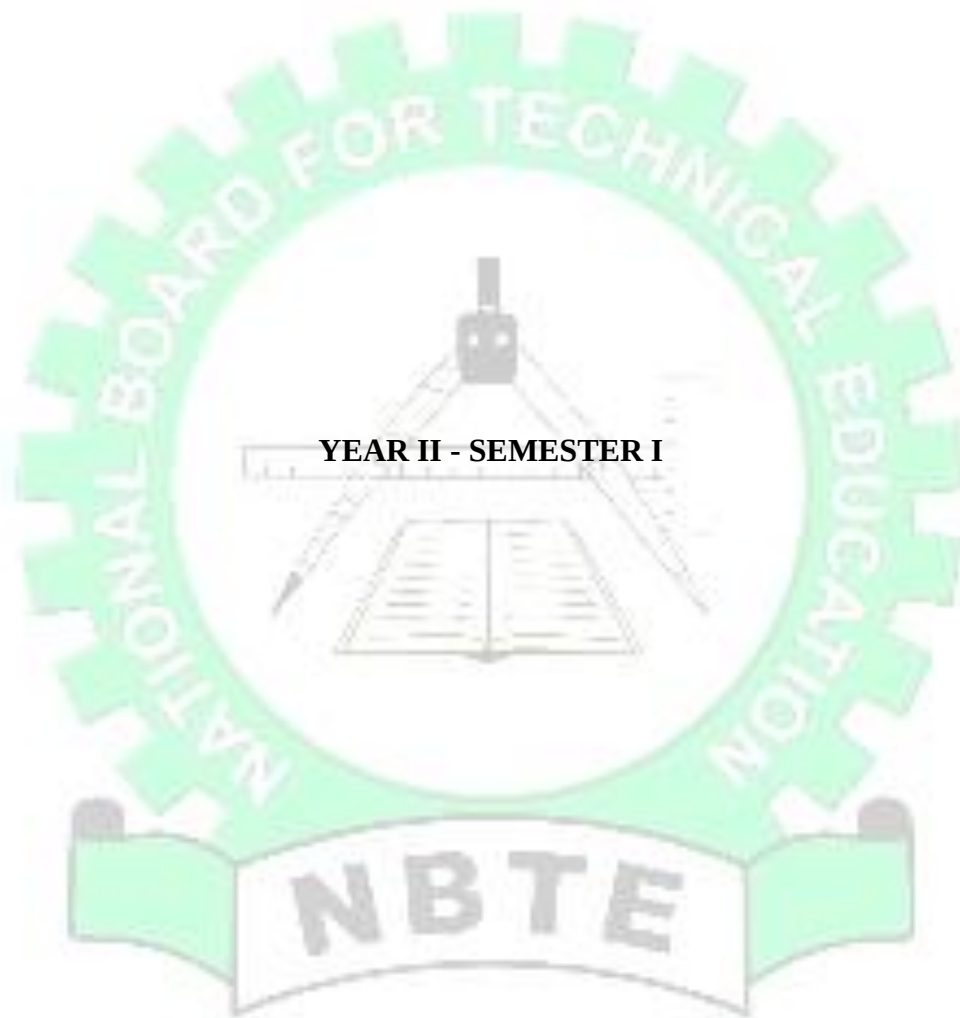
	smartphone GPS apps. 2.4 Describe field data collection (waypoints, tracks).	Describe field data collection (waypoints, tracks).		Apply field data collection	Apply field data collection	
GENERAL OBJECTIVE 3.0: Understand basic GIS operations						
7-9	3.1 Outline digitising features. 3.2 Explain attribute tables and queries. 3.3 Highlight buffer, clip, intersect tools. 3.4 Describe layer styling and labels.	- Outline digitising features. - Explain attribute tables and queries. - Highlight buffer, clip, intersect tools. - Describe layer styling and labels.	QGIS tutorials, sample data, LCD projector.	- Digitise 10 features in a sample area. - Use buffer, clip, intersect tools - Apply buffer and clip operations. - Style and label a map.	Guide students to: - Digitise 10 features in a sample area. - Use buffer, clip, intersect tools - Apply buffer and clip operations. - Style and label a map.	Computers with QGIS, sample imagery.
GENERAL OBJECTIVE 4.0: Understand satellite imagery and remote sensing basics						
10-12	4.1 Describe Landsat and Sentinel imagery. 4.2 Explain vegetation indices (NDVI introduction). 4.3 Outline Google Earth Pro for visualization. 4.4 Discuss change detection (introduction)	- Describe Landsat and Sentinel imagery. - Explain vegetation indices (NDVI introduction). 4.3 Outline Google Earth Pro for visualization. 4.4 Discuss change detection (introduction)	Remote sensing textbooks, USGS Earth Explorer guide, LCD projector.	- Download Sentinel-2 imagery for a target area. - Apply Google Earth Pro for visualization. - Visualize an area in Google Earth Pro showing change over time.	Guide students to: - Download Sentinel-2 imagery for a target area. - Apply Google Earth Pro for visualization. - Visualize an area in Google Earth Pro showing change over time.	Computers with internet, Google Earth Pro, QGIS.
GENERAL OBJECTIVE 5.0: Understand map production and presentation						
13-15	5.1 Explain map	Explain map	Cartography	Apply map	Guide students to:	Computers with

	composer in QGIS. 5.2 Outline map elements: legend, scale bar, north arrow, title. 5.3 Explain cartographic principles for clarity	- composer in QGIS. - Outline map elements: legend, scale bar, north arrow, title. - Explain cartographic principles for clarity	textbooks, sample maps, LCD projector.	- composer in QGIS. - Export maps as PDF or PNG. - Apply cartographic principles for clarity	- Apply map composer in QGIS. - Export maps as PDF or PNG. - Apply cartographic principles for clarity	QGIS, printers.
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COURSE ASSESSMENT:

Course work:	10%
Test/Assignments:	10%
Practical:	40%
Examination:	40%
Total:	100%





WILDLIFE HABITAT PROTECTION: FIRE, PEST MANAGEMENT AND SURVEILLANCE

PROGRAMME: NATIONAL DIPLOMA (ND) WILDLIFE AND ECOTOURISM MANAGEMENT		
COURSE TITLE: WILDLIFE HABITAT PROTECTION	COURSE CODE: WEM 211	CONTACT HOURS: 3 HOURS/WEEK
	CREDIT UNIT: 3	THEORETICAL: 1 HOUR/WEEK
YEAR: II SEMESTER: I	PRE-REQUISITE:	PRACTICAL: 2 HOURS/WEEK
GOAL: This course is designed to equip students with knowledge and skills on wildlife protection, fire prevention, pest/disease diagnosis, and modern surveillance using digital tools.		
GENERAL OBJECTIVES: On completion of this course, the students should be able to: 1.0 Understand fire ecology; 2.0 Understand integrated pest management; 3.0 Understand surveillance system; 4.0 Understand AI and remote sensing for habitat protection; 5.0 Understand emergency response and reporting.		

PROGRAMME: NATIONAL DIPLOMA (ND) WILDLIFE AND ECOTOURISM MANAGEMENT						
COURSE TITLE: WILDLIFE HABITAT PROTECTION			COURSE CODE: WEM 211		CONTACT HOURS: 3 HOURS/WEEK	
			CREDIT UNIT: 3		THEORETICAL: 1 HOUR/WEEK	
YEAR: II SEMESTER: I			PRE-REQUISITE:		PRACTICAL: 2 HOURS/WEEK	
COURSE SPECIFICATION: THEORETICAL AND PRACTICAL						
GOAL: This course is designed to equip students with knowledge and skills on wildlife protection, fire prevention, pest/disease diagnosis, and modern surveillance using digital tools.						
GENERAL OBJECTIVE 1.0: Understand fire ecology						
THEORETICAL CONTENT				PRACTICAL CONTENT		
Week	Specific Learning Outcome	Teacher's Activities	Resources	Specific Learning Outcome	Teacher's Activities	Resources
1-3	1.1 Define fire types (surface, crown, ground). 1.2 Describe the fire triangle. 1.3 Explain fire prevention methods (firebreaks, controlled burning). 1.4 Describe fire suppression and safety.	• Explain fire types (surface, crown, ground). • Discuss the fire triangle. • Discuss fire prevention methods (firebreaks, controlled burning). • Describe fire suppression and safety.	Fire ecology textbooks, FAO fire management guidelines, LCD projector.	• Conduct fire-risk assessment for a target area. • Demonstrate firebreak construction.	Guide students to: • Conduct fire-risk assessment for a target area. • Demonstrate firebreak construction.	Risk assessment forms, firefighting equipment, PPE.
GENERAL OBJECTIVE 2.0: Understand integrated pest management						
4-6	2.1 Define IPM, pest threshold.	• Explain IPM, pest threshold.	IPM manuals, pests sample,	• Identify pests or diseases in a field	Guide students to: • Identify	Sampling tools, microscopes, ID

	2.2 Describe Nigerian wildlife, pests and diseases. 2.3 Explain pest scouting and monitoring. 2.4 Describe biological control methods.	• Discuss Nigerian wildlife, pests and diseases. • Explain pest scouting and monitoring. • Describe biological control methods.	LCD projector.	site.	pests/diseases in a field site.	guides handlens, other magnifiers, sample bottle, preservatives.
GENERAL OBJECTIVE 3.0: Understand surveillance system						
7-9	3.1 Describe ranger patrol basics. 3.2 Describe the use of firearms in wildlife protection. 3.3 Describe SMART. 3.4 Explain Global Forest Watch (GFW) alerts. 3.5 Describe community informant networks.	• Explain patrols process basis. • Discuss the importance of firearms and ballistics. • Explain SMART. • Discuss GFW. • Discuss community informants network system.	SMART manuals, GFW tutorials, ballistic training guide, LCD projector.	• Subscribe to GFW alerts and analyse 30-day output for a target reserve. • Demonstrate firearms application.	Guide students to: • Subscribe to GFW alerts and analyse 30-day output for a target reserve. • Demonstrate firearms application.	Computers with internet, proto-gun, tranquilizers.
GENERAL OBJECTIVE 4.0: Understand AI and remote sensing for forest protection						
10-12	4.1 Explain AI importance in wildlife classification. 4.2 Explain Mega-detector. 4.3 Discuss acoustic detection. 4.4 Discuss thermal	• Explain AI importance in wildlife classification. • Explain Mega-detector. • Discuss acoustic detection. • Discuss thermal	AI textbooks, RFCx demos, LCD projector.	• Run Mega-Detector on sample camera-trap images.	Guide students to: • Run Mega-Detector on sample camera-trap images.	Computers with Python, sample images, acoustic detector.

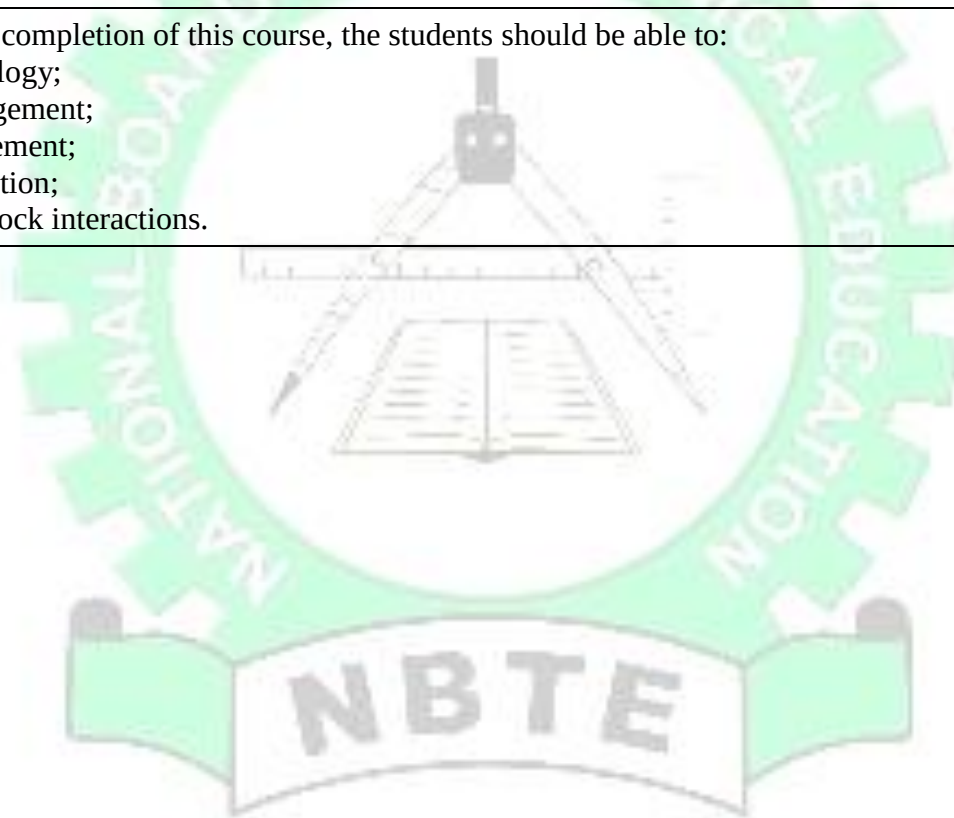
	imaging.	imaging.				
GENERAL OBJECTIVE 5.0: Understand emergency response and reporting						
13-15	5.1 Explain emergency response basics. 5.2 Describe the incident command system (ICS). 5.3 Explain inter-agency response. 5.4 Describe after-action reviews.	• Describe emergency response basics. • Explain the incident command system (ICS). • Discuss inter-agency response. • Discuss after-action reviews.	ERP templates, ICS guides, LCD projector.	• Run a tabletop fire response simulation.	Guide students to: • Run a tabletop fire response simulation.	Simulation cards, AAR templates.
COURSE ASSESSMENT: Course work: 10% Test/Assignments: 10% Practical: 40% Examination: 40% Total: 100%						

RANGE AND HABITAT MANAGEMENT**PROGRAMME: NATIONAL DIPLOMA (ND) WILDLIFE AND ECOTOURISM MANAGEMENT****COURSE TITLE: RANGE AND HABITAT MANAGEMENT****COURSE CODE: WEM 212****CONTACT HOURS: 3 HOURS/WEEK****CREDIT UNIT: 3****THEORETICAL: 1 HOUR/WEEK****YEAR: II SEMESTER: I****PRE-REQUISITE:****PRACTICAL: 2 HOURS/WEEK**

GOAL: This course is designed to equip students with knowledge and skills of rangeland ecology, grazing management, habitat improvement and restoration practices for wildlife reserves and silvopastoral systems.

GENERAL OBJECTIVES: On completion of this course, the students should be able to:

- 1.0 Understand rangeland ecology;
- 2.0 Understand grazing management;
- 3.0 Understand range improvement;
- 4.0 Understand habitat restoration;
- 5.0 Understand wildlife-livestock interactions.



PROGRAMME: NATIONAL DIPLOMA (ND) WILDLIFE AND ECOTOURISM MANAGEMENT						
COURSE TITLE: RANGE AND HABITAT MANAGEMENT			COURSE CODE: WEM 212		CONTACT HOURS: 3 HOURS/WEEK	
			CREDIT UNIT: 3		THEORETICAL: 1 HOUR/WEEK	
YEAR: II SEMESTER: I			PRE-REQUISITE:		PRACTICAL: 2 HOURS/WEEK	
COURSE SPECIFICATION: THEORETICAL AND PRACTICAL						
GOAL: This course is designed to equip students with knowledge and skills of rangeland ecology, grazing management, habitat improvement and restoration practices for wildlife reserves and silvopastoral systems.						
GENERAL OBJECTIVE 1.0: Understand rangeland ecology						
THEORETICAL CONTENT				PRACTICAL CONTENT		
Week	Specific Learning Outcome	Teacher's Activities	Resources	Specific Learning Outcome	Teacher's Activities	Resources
1-3	1.1 Define rangeland, range condition, range trend. 1.2 Describe Nigerian rangelands. 1.3 Explain range plant species. 1.4 Describe climate impacts on rangelands	• Explain rangeland concepts. • Discuss Nigerian rangelands. • Explain plant identification. • Discuss climate impact.	Range management textbooks, plant identification guides, LCD projector.	• Identify range plant species in field.	Guide students to: • Identify range plant species in field.	Plant identification guides, GPS, hand lenses.
GENERAL OBJECTIVE 2.0: Understand grazing management						
4-6	2.1 Define stocking density, carrying capacity. 2.2 Describe rotational grazing.	• Explain stocking density, carrying capacity. • Explain rotational grazing.	Grazing management textbooks, LCD projector.	• Calculate stocking density • Design rotation for a sample area.	Guide students to: • Calculate stocking density • Design rotation for a sample area.	Calculation worksheets, sample data Field.

	2.3 Differentiate between continuous and deferred grazing. 2.4 Describe silvo-pastoral systems.	- Differentiate between continuous and deferred grazing - Discuss silvo-pastoral.				
GENERAL OBJECTIVE 3.0: Understand range improvement						
7-9	3.1 Explain seeding and reseedling. 3.2 Discuss prescribe burning in rangeland. 3.3 Explain bush control. 3.4 Discuss water development and water conservation methods.	- Explain seeding and reseedling. - Discuss prescribe burning in rangeland. - Explain bush control. - Discuss water development and water conservation methods.	Range improvement textbooks, LCD projector.	- Develop a range improvement plan for a sample area. - Demonstrate seeding and reseedling.	Guide students to: - Develop a range improvement plan for a sample area. - Demonstrate seeding and reseedling.	Plan templates. Different rangeland seed species.
GENERAL OBJECTIVE 4.0: Understand habitat restoration						
10-12	4.1 Explain ecological restoration. 4.2 Explain advantages of indigenous species. 4.3 Describe bioengineering and erosion control. 4.4 Explain range monitoring process.	- Explain ecological restoration. - Describe advantages of indigenous species. - Discuss bioengineering and erosion control. - Discuss range monitoring process.	Ecology textbooks, SER manual, LCD projector.	Plant native species at a degraded site.	Guide students to: Plant native species at a degraded site.	Indigenous specie seedlings, planting tools, GPS.

GENERAL OBJECTIVE 5.0: Understand wildlife-livestock interactions

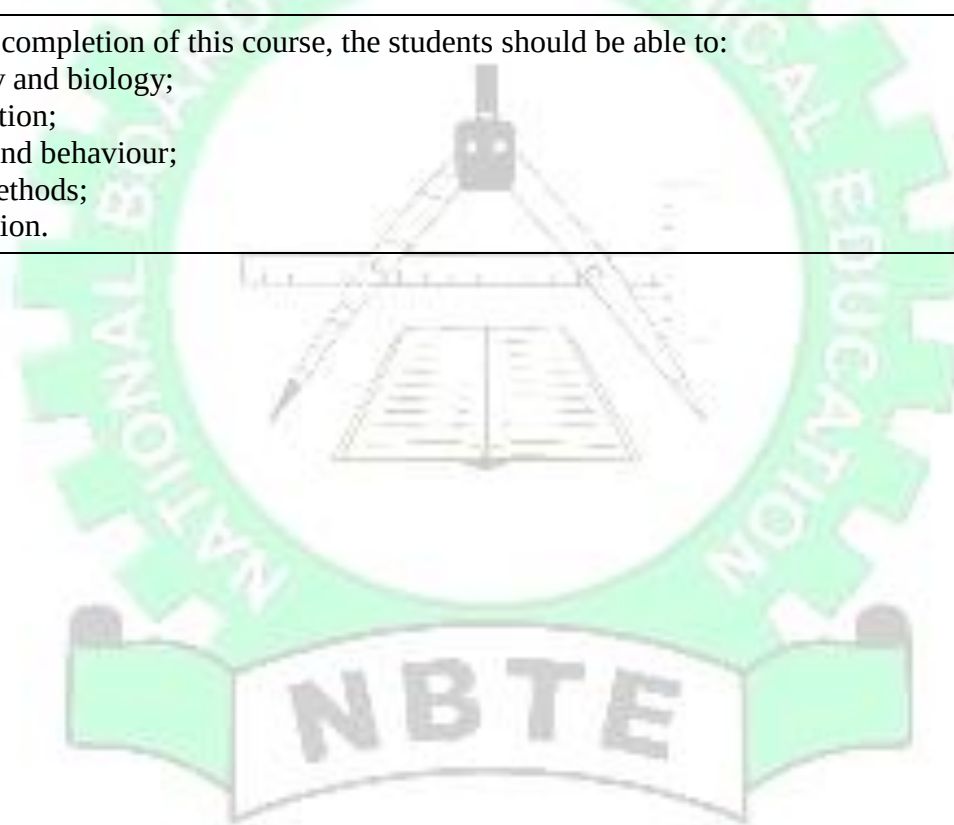
13-15	5.1 Define wildlife-livestock conflict. 5.2 Describe mitigation sites (corridors, fencing, deterrents). 5.3 Describe disease transmission risks. 5.4 Explain integrated land use planning.	• Explain wildlife-livestock conflict. • Discuss mitigation sites (corridors, fencing, deterrents). • Describe disease transmission risks. • Explain integrated land use planning.	Conflict management textbooks, LCD projector.	• Develop a conflict mitigation plan for a sample reserve.	Guide students to: • Develop a conflict mitigation plan for a sample reserve	Mitigation templates, sample data.
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COURSE ASSESSMENT:

Course work:	10%
Test/Assignments:	10%
Practical:	40%
Examination:	40%
Total:	100%

ORNITHOLOGY AND BIRD IDENTIFICATION

PROGRAMME: NATIONAL DIPLOMA (ND) WILDLIFE AND ECOTOURISM MANAGEMENT		
COURSE TITLE: ORNITHOLOGY AND BIRD IDENTIFICATION	COURSE CODE: WEM 213	CONTACT HOURS: 4 HOURS/WEEK
	CREDIT UNIT: 4	THEORETICAL: 1 HOUR/WEEK
YEAR: II SEMESTER: I	PRE-REQUISITE:	PRACTICAL: 3 HOURS/WEEK
GOAL: This course is designed to equip students with knowledge and skills of birds including taxonomy, identification, ecology, and digital tools for monitoring Nigerian species.		
GENERAL OBJECTIVES: On completion of this course, the students should be able to: 1.0 Understand bird taxonomy and biology; 2.0 Understand bird identification; 3.0 Understand bird ecology and behaviour; 4.0 Understand bird survey methods; 5.0 Understand bird conservation.		



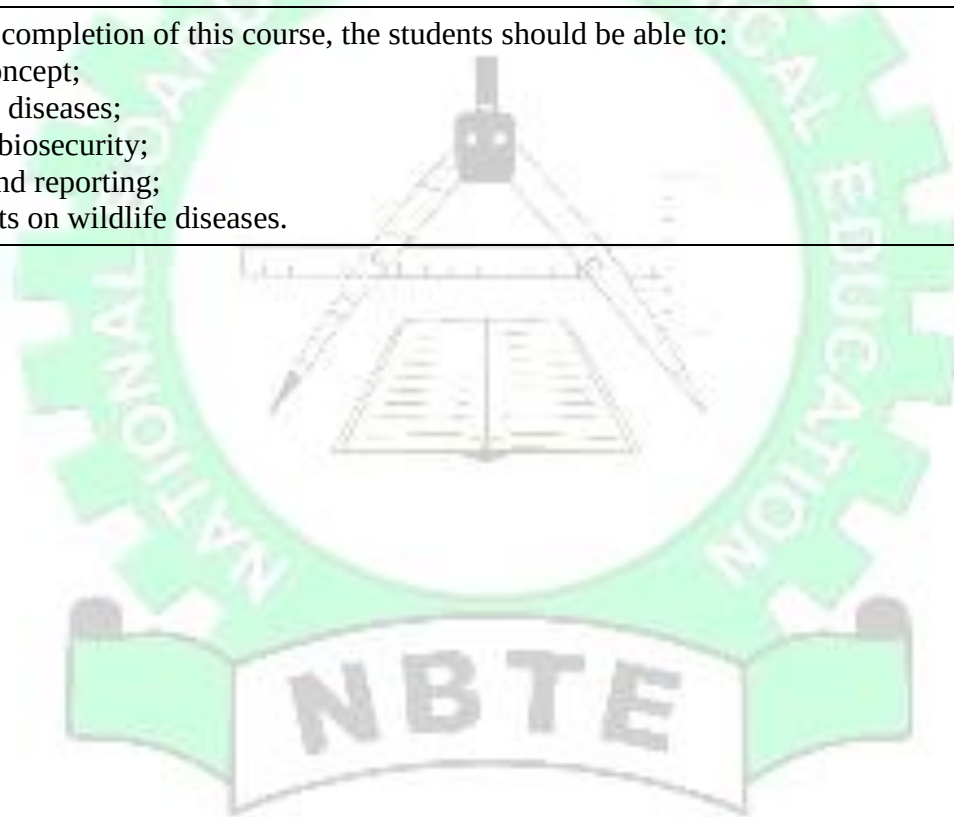
PROGRAMME: NATIONAL DIPLOMA (ND) WILDLIFE AND ECOTOURISM MANAGEMENT						
COURSE TITLE: ORNITHOLOGY AND BIRD IDENTIFICATION			COURSE CODE: WEM 213		CONTACT HOURS: 4 HOURS/WEEK	
			CREDIT UNIT: 4		THEORETICAL: 1 HOUR/WEEK	
YEAR: II SEMESTER: I			PRE-REQUISITE:		PRACTICAL: 3 HOURS/WEEK	
COURSE SPECIFICATION: THEORETICAL AND PRACTICAL						
GOAL: This course is designed to equip students with knowledge and skills of birds including taxonomy, identification, ecology, and digital tools for monitoring Nigerian species.						
GENERAL OBJECTIVE 1.0: Understand bird taxonomy and biology						
THEORETICAL CONTENT				PRACTICAL CONTENT		
Week	Specific Learning Outcome	Teacher's Activities	Resources	Specific Learning Outcome	Teacher's Activities	Resources
1-3	1.1 Describe bird anatomy and physiology. 1.2 Describe bird taxonomy (orders, families). 1.3 Explain bird evolution from dinosaurs. 1.4 Explain IOC and Clements taxonomies.	• Explain bird anatomy and physiology. • Discuss bird taxonomy (orders, families). • Discuss bird evolution from dinosaurs. • Explain IOC and Clements taxonomies.	Ornithology textbooks, LCD projector.	• Examine bird specimens (skeletons, study skins).	Guide students to: • Examine bird specimens (skeletons, study skins).	Bird specimens, hand lenses.
GENERAL OBJECTIVE 2.0: Understand bird identification						
4-6	2.1 Explain field marks as identification features.	• Explain field marks as identification features. • Discuss call	Birds of West Africa, eBird tutorials, LCD projector.	• Identify bird species over multiple sessions. • Use binoculars and	Guide students to: • Identify bird species over multiple sessions.	Binoculars, field guides, smartphones with

	2.2 Discuss call identification. 2.3 Explain binocular use. 2.4 Explain the advantages of digital tools in birds identification	identification. • Explain binocular use. • Discuss the advantages of digital tools in birds identification.		field guides. • Use digital tools e.g (Merlin, eBird) for bird identification.	• Use binoculars and field guides. • Use digital tools e.g (Merlin, eBird) for bird identification.	Merlin/eBird, notebook, pen.
GENERAL OBJECTIVE 3.0: Understand bird ecology and behaviour						
7-9	3.1 Describe feeding ecology and beak adaptations. 3.2 Explain breeding activities (nest, eggs, incubation, parental care). 3.3 Describe migration and movements. 3.4 Describe communication (song, display).	• Explain feeding ecology and beak adaptations. • Describe breeding activities (nest, eggs, incubation, parental care). • Discuss migration and movements. • Describe communication (song, display).	Bird ecology textbooks, LCD projector.	• Write observation report on bird behaviour at a target site.	Guide students to: • Write observation report on bird behaviour at a target site.	Binoculars, field forms, stopwatches.
GENERAL OBJECTIVE 4.0: Understand bird survey methods						
10-12	4.1 Describe point and transect counts. 4.2 Describe mist-netting and ringing. 4.3 Describe distance sampling. 4.4 Describe citizen-science platforms (eBird,	• Explain points and transect counts. • Explain mist-netting and ringing. • Discuss distance sampling. • Explain citizen science platforms.	Bird survey textbooks, LCD projector.	• Conduct point counts at different stations and submit to eBird. • Use BirdLasser to gather bird data.	Guide students to: • Conduct point counts at different stations and submit to eBird. • Use BirdLasser to gather bird data.	Field forms, smartphones with eBird, GPS.

	BirdLasser).					
GENERAL OBJECTIVE 5.0: Understand bird conservation						
13-15	5.1 Outline threatened Nigerian birds (e.g., Anambra waxbill, grey parrot, Ibadan malimbe). 5.2 Outline IBAs (Important Bird Areas) in Nigeria. 5.3 Describe International birds conservation framework such as BirdLife, RAMSAR Convention. 5.4 Describe climate impacts on birds.	• Explain threatened Nigerian birds (e.g., Anambra waxbill, grey parrot, Ibadan malimbe). • Outline IBAs (Important Bird Areas) in Nigeria. • Describe International birds conservation framework such as BirdLife, RAMSAR Convention. • Discuss climate impacts on birds.	Threatened bird guides eg CITES, IUCN red list, IOC database, BirdLife documents, LCD projector.	• Visit a Nigerian IBA sites • Conduct birds survey.	Guide students to: • Visit a Nigerian IBA sites • Conduct birds survey	Binoculars, field guides, range finder, telescope, GPS.
COURSE ASSESSMENT: Course work: 10% Test/Assignments: 10% Practical: 40% Examination: 40% Total: 100%						

INTRODUCTION TO WILDLIFE DISEASES AND HEALTH

PROGRAMME: NATIONAL DIPLOMA (ND) WILDLIFE AND ECOTOURISM MANAGEMENT		
COURSE TITLE: INTRODUCTION TO WILDLIFE DISEASES AND HEALTH	COURSE CODE: WEM 214	CONTACT HOURS: 3 HOURS/WEEK
	CREDIT UNIT: 3	THEORETICAL: 1 HOUR/WEEK
YEAR: II SEMESTER: I	PRE-REQUISITE:	PRACTICAL: 2 HOURS/WEEK
GOAL: This course is designed to equip students with knowledge and skills to wildlife diseases, zoonoses, biosecurity and one Health framework linking wildlife, human and ecosystem health.		
GENERAL OBJECTIVES: On completion of this course, the students should be able to: 1.0 Understand One Health concept; 2.0 Understand major wildlife diseases; 3.0 Understand zoonoses and biosecurity; 4.0 Understand surveillance and reporting; 5.0 Understand climate impacts on wildlife diseases.		



PROGRAMME: NATIONAL DIPLOMA (ND) WILDLIFE AND ECOTOURISM MANAGEMENT						
COURSE TITLE:INTRODUCTION TO WILDLIFE DISEASES AND HEALTH			COURSE CODE: WEM 214		CONTACT HOURS: 3 HOURS/WEEK	
			CREDIT UNIT: 3		THEORETICAL: 1 HOUR/WEEK	
YEAR: II SEMESTER: I			PRE-REQUISITE:		PRACTICAL: 2 HOURS/WEEK	
COURSE SPECIFICATION: THEORETICAL AND PRACTICAL						
GOAL: This course is designed to equip students with knowledge and skills to wildlife diseases, zoonoses, biosecurity and one Health framework linking wildlife, human and ecosystem health.						
GENERAL OBJECTIVE 1.0: Understand One Health concept						
THEORETICAL CONTENT				PRACTICAL CONTENT		
Week	Specific Learning Outcome	Teacher's Activities	Resources	Specific Learning Outcome	Teacher's Activities	Resources
1-3	1.1 Define One Health framework. 1.2 Describe host-pathogen-environment triad. 1.3 List pathogen types. 1.4 Describe wildlife disease ecology.	• Explain One Health concept. • Discuss host-pathogen-environment triad • Explain pathogens classification. • Discuss wildlife disease ecology.	Wildlife disease and management textbooks, WHO/OIE manuals, LCD projector.	• Construct One Health diagram.	Guide students to: • Construct One Health diagram.	Drawing materials.
GENERAL OBJECTIVE 2.0: Understand major wildlife diseases						
4-6	2.1 Describe avian influenza, Newcastle disease etc. 2.2 Explain Ebola, Marburg,	• Explainavian influenza, Newcastle disease etc. • 2.2 Describe Ebola, Marburg, monkeypox.	Human and animal health textbooks, OIE manuals, LCD projector.	• Examine prepared parasite slides under microscope.	Guide students to: • Examine prepared parasite slides under microscope.	Microscopes, parasite slides.

	monkeypox. 2.3 Describe anthrax, foot-and-mouth, rinderpest, CBPP, PPR etc. 2.4 Explain parasitic diseases (trypanosomiasis, schistosomiasis).	• Discuss anthrax, foot-and-mouth, rinderpest, CBPP, PPR etc. • Describe parasitic diseases (trypanosomiasis, schistosomiasis).				
GENERAL OBJECTIVE 3.0: Understand zoonoses and biosecurity						
7-9	3.1 Define zoonoses and anthroponoses. 3.2 Describe transmission routes. 3.3 Explain PPE and biosafety. 3.4 Describe bushmeat zoonotic risks.	• Explain zoonoses and anthroponoses. • Explain mode of transmission of zoonotic diseases. • Discuss PPE and biosafety. • Discuss bushmeat and zoonotic risks.	Zoonosis textbooks, biosafety manuals, LCD projector.	• Practice PPE donning/doffing drill.	Guide students to: • Practice PPE donning/doffing drill	PPE kits.
GENERAL OBJECTIVE 4.0: Understand surveillance and reporting						
10-12	4.1 Define active and passive surveillance. 4.2 List digital tools (EpiCollect, ProMED). 4.3 Describe outbreak reporting protocols. 4.4 Describe field investigation basics.	• Explain active and passive surveillance. • Outline digital tools (EpiCollect, ProMED). • Explain outbreak reporting protocols. • Discuss field investigation basics.	Surveillance textbooks, EpiCollect tutorials, LCD projector.	• Set up an EpiCollect form for wildlife mortality reporting.	Guide students to: • Set up an EpiCollect form for wildlife mortality reporting.	Computers with internet, EpiCollect access.

GENERAL OBJECTIVE 5.0: Understand climate impacts on wildlife diseases

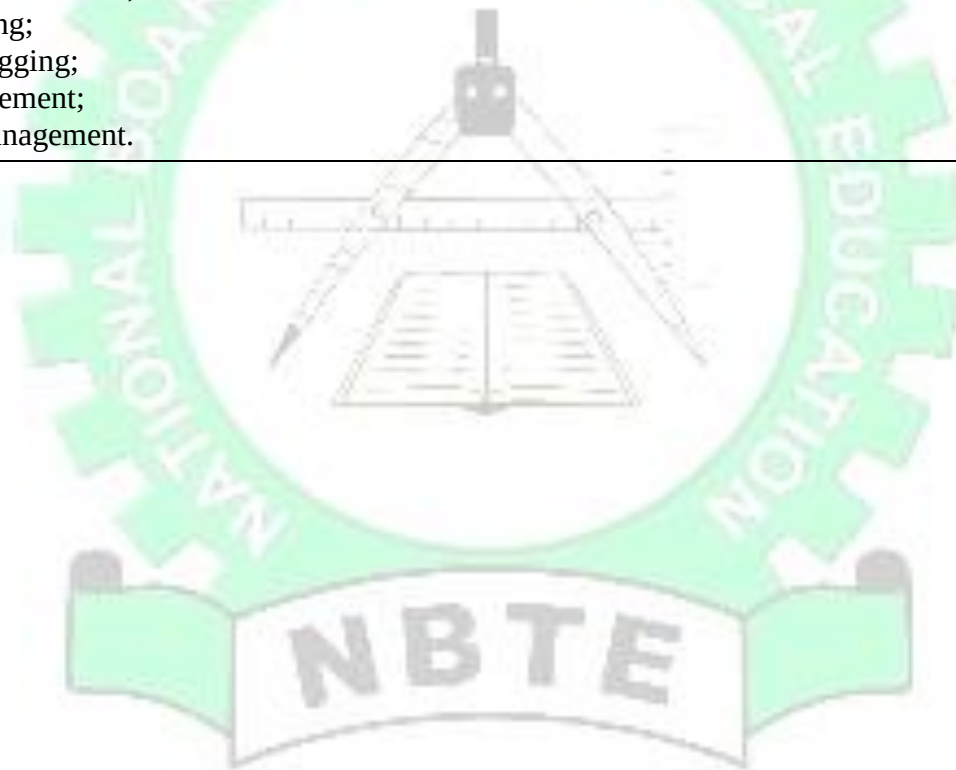
13-15	5.1 Describe climate-driven range expansion of vectors. 5.2 Explain emerging infectious diseases. 5.3 Explain heat-stress impacts on wildlife. 5.4 Describe adaptive disease management.	• Explain climate-driven range expansion of vectors. • Describe emerging infectious diseases. • Discuss heat-stress impacts on wildlife. • Explain adaptive disease management.	Climate-disease papers, IPCC chapters, LCD projector.	• Map projected vector ranges in Nigeria.	Guide students to: • Map projected vector ranges in Nigeria.	Computers with QGIS, vector data.
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COURSE ASSESSMENT:

Course work:	10%
Test/Assignments:	10%
Practical:	40%
Examination:	40%
Total:	100%

WILDLIFE MANAGEMENT TECHNIQUES

PROGRAMME: NATIONAL DIPLOMA (ND) WILDLIFE AND ECOTOURISM MANAGEMENT		
COURSE TITLE: WILDLIFE MANAGEMENT TECHNIQUES	COURSE CODE: WEM 215	CONTACT HOURS: 4 HOURS/WEEK
	CREDIT UNIT: 4	THEORETICAL: 1 HOUR/WEEK
YEAR: II SEMESTER: I	PRE-REQUISITE:	PRACTICAL: 3 HOURS/WEEK
GOAL: This course is designed to equip students with knowledge and skills of current and emerging wildlife management techniques.		
GENERAL OBJECTIVES: On completion of this course, the students should be able to: 1.0 Understand wildlife census methods; 2.0 Understand camera trapping; 3.0 Understand capture and tagging; 4.0 Understand habitat management; 5.0 Understand population management.		



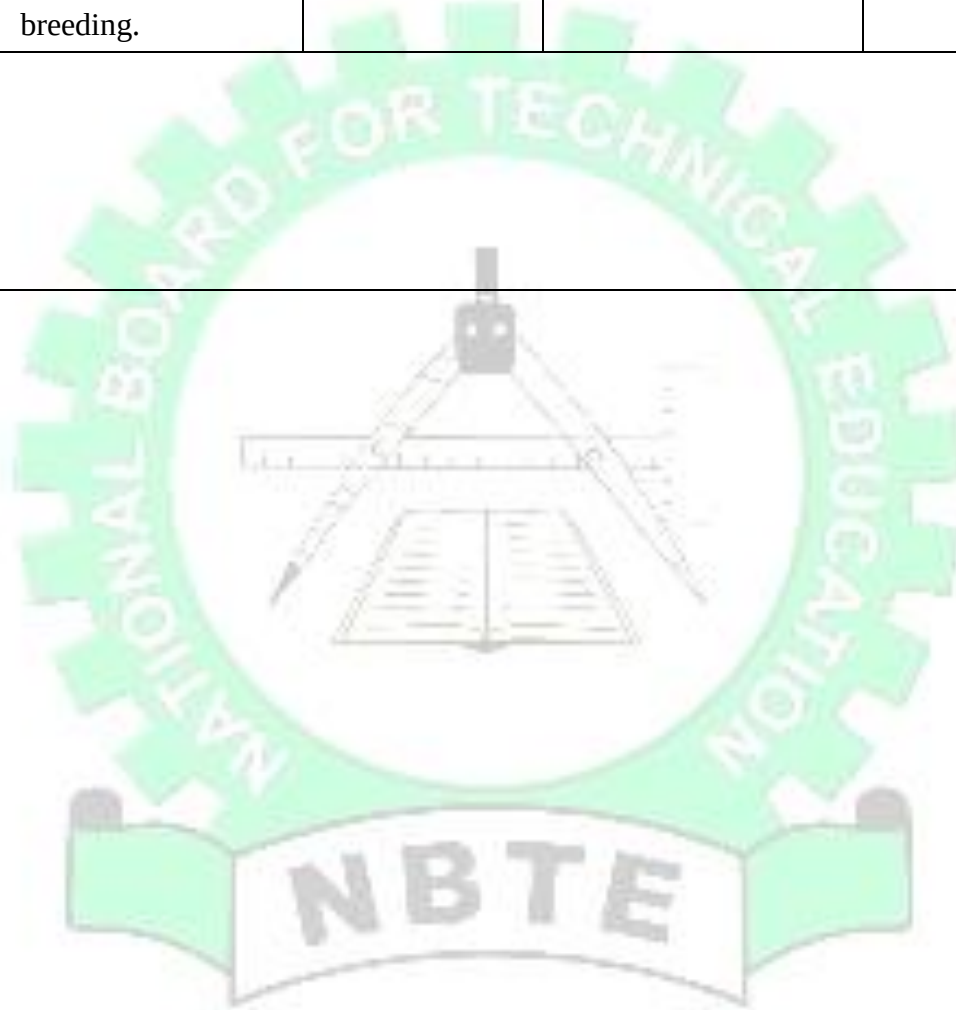
PROGRAMME: NATIONAL DIPLOMA (ND) WILDLIFE AND ECOTOURISM MANAGEMENT						
COURSE TITLE: WILDLIFE MANAGEMENT TECHNIQUES			COURSE CODE: WEM 215		CONTACT HOURS: 4 HOURS/WEEK	
			CREDIT UNIT: 4		THEORETICAL: 1 HOUR/WEEK	
YEAR: II SEMESTER: I			PRE-REQUISITE:		PRACTICAL: 3 HOURS/WEEK	
COURSE SPECIFICATION: THEORETICAL AND PRACTICAL						
GOAL: This course is designed to equip students with knowledge and skills of current and emerging wildlife management techniques.						
GENERAL OBJECTIVE 1.0: Understand wildlife census methods						
THEORETICAL CONTENT				PRACTICAL CONTENT		
Week	Specific Learning Outcome	Teacher's Activities	Resources	Specific Learning Outcome	Teacher's Activities	Resources
1-3	1.1 Explain total counts in open habitats. 1.2 Describe line transect distance sampling. 1.3 Describe point counts. 1.4 Explain capture-mark-recapture (Lincoln-Petersen)	• Describe total counts in open habitats. • Explain line transect distance sampling. • Describe point counts. • Discuss capture-mark-recapture (Lincoln-Petersen)	Wildlife management techniques textbooks, LCD projector	• Conduct line transect distance sampling • Run a Lincoln-Petersen mark-recapture exercise	Guide students to: • Conduct line transect distance sampling • Run a Lincoln-Petersen mark-recapture exercise	Range finders, GPS, mark-recapture kits
GENERAL OBJECTIVE 2.0: Understand camera trapping						
4-6	2.1 Explain camera-trap deployment. 2.2 Describe camera-trap parameters. 2.3 Explain photo-tagging using AI (MegaDetector).	• Describe camera-trap deployment. • Explain camera-trap parameters. • Describe photo-tagging using AI	Camera-trap manuals, LCD projector.	• Deploy 5 camera traps for 14 days • Process data.	Guide students to: • Deploy 5 camera traps for 14 days • Process data.	Camera traps, SD cards, computers.

	2.4 Describe data management	(MegaDetector). • Explain data management				
GENERAL OBJECTIVE 3.0: Understand capture and tagging						
7-9	3.1 Describe restraint techniques. 3.2 Explain ear tags, leg bands, microchips. 3.3 Describe VHF radio telemetry. 3.4 Explain GPS collars and satellite tags.	• Explain restraint techniques. • Explain ear tags, leg bands, microchips. • Discuss VHF radio telemetry. • Describe GPS collars and satellite tags.	Wildlife management textbooks, telemetry manuals, LCD projector.	• Practice radio-telemetry triangulation. • Demonstrate ear tags on teaching specimens.	Guide students to: • Practice radio-telemetry triangulation. • Demonstrate ear tags on teaching specimens.	VHF transmitters and receivers, ear tags, captive specimens.
GENERAL OBJECTIVE 4.0: Understand habitat management						
10-12	4.1 Describe habitat improvement (water, salt licks). 4.2 Explain control burning. 4.3 Describe invasive species control. 4.4 Explain habitat restoration.	• Discuss habitat improvement (water, salt licks). • Describe control burning. • Explain invasive species control. • Discuss habitat restoration.	Habitat management textbooks, LCD projector.	• Plan habitat improvement for a sample reserve.	Guide students to: • Plan habitat improvement for a sample reserve.	Plan templates.
GENERAL OBJECTIVE 5.0: Understand population management						
13-15	5.1 Describe population monitoring. 5.2 Describe harvest management and quotas. 5.3 Explain translocation and	• Discuss population monitoring. • Explain harvest management and quotas. • Discuss	Wildlife management textbooks, LCD projector.	• Carry out harvest, translocation and reintroduction.	Guide students to: • Carry out harvest, translocation and reintroduction.	Wildlife documentaries, wildlife simulation tapes, computer set.

	reintroduction. 5.4 Explain conservation breeding.	translocation and reintroduction. • Describe conservation breeding.				
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COURSE ASSESSMENT:

Course work:	10%
Test/Assignments:	10%
Practical:	40%
Examination:	40%
Total:	100%



RURAL SOCIOLOGY AND COMMUNITY-BASED CONSERVATION

PROGRAMME: NATIONAL DIPLOMA (ND) WILDLIFE AND ECOTOURISM MANAGEMENT		
COURSE TITLE: RURAL SOCIOLOGY AND COMMUNITY-BASED CONSERVATION	COURSE CODE: WEM 216	CONTACT HOURS: 2 HOURS/WEEK
	CREDIT UNIT: 2	THEORETICAL: 1 HOUR/WEEK
YEAR: II SEMESTER: I	PRE-REQUISITE:	PRACTICAL: 1 HOURS/WEEK
GOAL: This course is designed to equip students with knowledge and skills of rural sociology, community institutions, gender dynamics, and community-based conservation models for designing inclusive wildlife and ecotourism programmes.		
GENERAL OBJECTIVES: On completion of this course, the students should be able to: 1.0 Understand rural sociology concepts; 2.0 Understand community institutions; 3.0 Understand gender dynamics in conservation; 4.0 Understand community-based conservation models; 5.0 Understand human-wildlife conflict;		

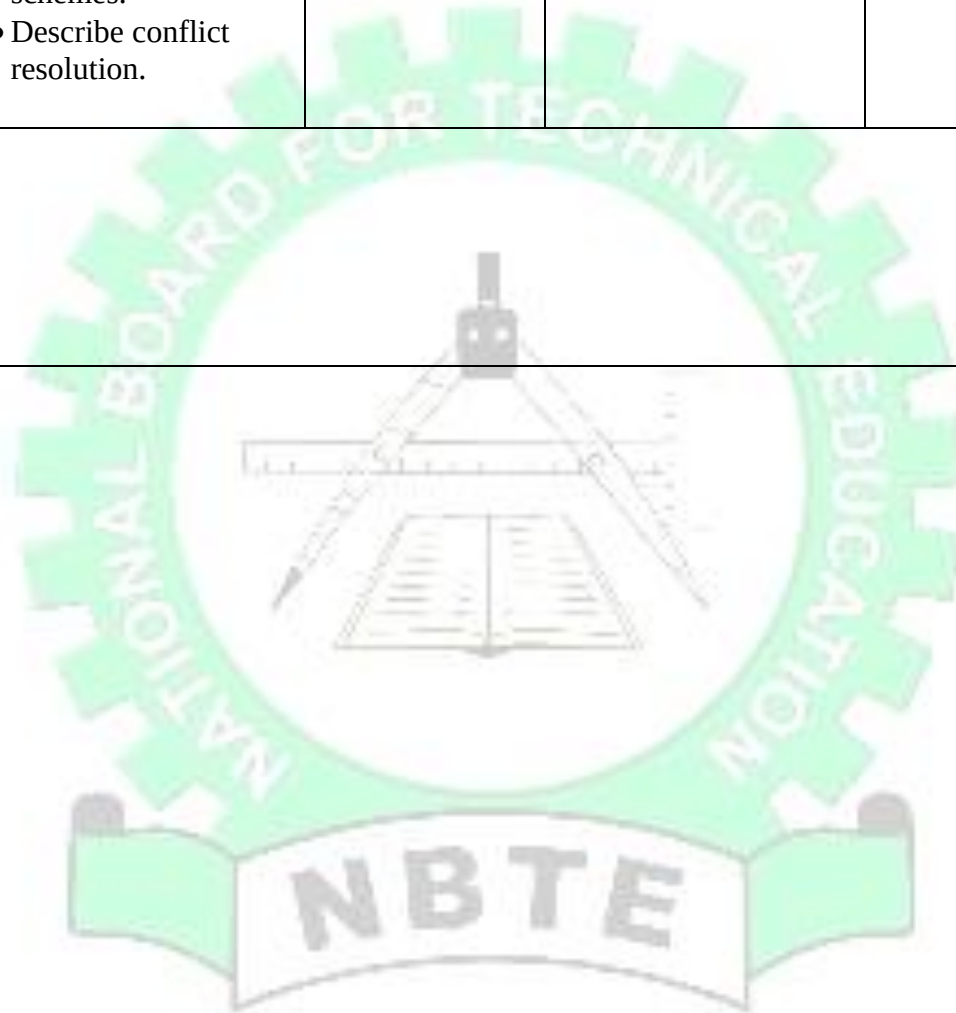
PROGRAMME: NATIONAL DIPLOMA (ND) WILDLIFE AND ECOTOURISM MANAGEMENT						
COURSE TITLE: RURAL SOCIOLOGY AND COMMUNITY-BASED CONSERVATION			COURSE CODE: WEM 216		CONTACT HOURS: 2 HOURS/WEEK	
			CREDIT UNIT: 2		THEORETICAL: 1 HOUR/WEEK	
YEAR: II SEMESTER: I			PRE-REQUISITE:		PRACTICAL: 1 HOUR/WEEK	
COURSE SPECIFICATION: THEORETICAL AND PRACTICAL						
GOAL: This course is designed to equip students with knowledge and skills of rural sociology, community institutions, gender dynamics, and community-based conservation models for designing inclusive wildlife and ecotourism programmes.						
GENERAL OBJECTIVE 1.0: Understand rural sociology concepts						
THEORETICAL CONTENT				PRACTICAL CONTENT		
Week	Specific Learning Outcome	Teacher's Activities	Resources	Specific Learning Outcome	Teacher's Activities	Resources
1-3	1.1 Define rural sociology, social structure. 1.2 Describe Nigerian ethnic groups. 1.3 Describe kinship, family, age-grades. 1.4 Explain sustainable rural livelihoods.	• Explain rural sociology, social structure. • Describe Nigerian ethnic groups. • Explain kinship, family, age-grades. • Describe sustainable rural livelihoods.	Rural sociology textbooks, LCD projector.	• Conduct a community profile exercise in a nearby rural community map livelihoods. • Identify ethnic groups, and document resource-use patterns.	Guide student to: • Conduct a community profile exercise in a nearby rural community map livelihoods, • Identify ethnic groups, and document resource-use patterns.	
GENERAL OBJECTIVE 2.0: Understand community institutions						
4-6	2.1 Describe traditional rulers and councils. 2.2 Explain CBOs, cooperatives, women's groups. 2.3 Explain customary	• Explain traditional rulers and councils. • Describe CBOs, cooperatives, women's groups. • Discuss customary law in conservation.	Governance textbooks, LCD projector.	• Visit a traditional ruler's council or CBO meeting • Document governance structures.	Guide student to: • Visit a traditional ruler's council or CBO meeting • Document governance structures.	

	law in conservation. 2.4 Describe FPIC and traditional decision-making.	Describe FPIC and traditional decision-making.				
GENERAL OBJECTIVE 3.0: Understand gender dynamics in conservation						
7-9	3.1 Define gender, sex, gender roles. 3.2 Explain gender analysis in resource use. 3.3 Describe women in wildlife conservation. 3.4 Explain gender mainstreaming.	- Explain gender, sex, gender roles. - Discuss gender analysis in resource use. - Explain women in wildlife conservation. - Explain gender mainstreaming.	Gender textbooks, LCD projector.	- Administer a gender analysis questionnaire in a rural household sample - Compute gender disaggregated data.	Guide student to: - Administer a gender analysis questionnaire in a rural household sample - Compute gender disaggregated data.	
GENERAL OBJECTIVE 4.0: Understand community-based conservation models						
10-12	4.1 Describe CBNRM, CAMPFIRE, Namibian conservancies. 4.2 Describe benefit-sharing. 4.3 Explain governance and accountability. 4.4 Describe Nigerian cases.	- Explain CBNRM, CAMPFIRE, Namibian conservancies. - Discuss benefit-sharing. - Discuss governance and accountability. 4.4 Describe Nigerian cases.	CBNRM textbooks, case studies, LCD projector.	Perform case study analysis of a Nigerian community-based conservation model (e.g., Yankari, Cross River buffer zone communities).	Guide student to: Conduct analysis of a Nigerian community-based conservation model (e.g., Yankari, Cross River buffer zone communities).	
GENERAL OBJECTIVE 5.0: Understand human-wildlife conflict (HWC)						
13-15	5.1 Define HWC and drivers. 5.2 Explain mitigation	- Explain HWC and drivers. - Discuss mitigation	HWC textbooks, IUCN HWC guidelines, LCD	Facilitate a mock human-wildlife conflict resolution	Guide student to: Facilitate a mock human-wildlife	

	(barriers, deterrents, compensation). 5.3 Explain insurance schemes. 5.4 Describe conflict resolution.	(barriers, deterrents, compensation). • Explain insurance schemes. • Describe conflict resolution.	projector.	dialogue using PRA tools.	conflict resolution dialogue using PRA tools.	
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COURSE ASSESSMENT:

Course work:	10%
Test/Assignments:	10%
Practical:	40%
Examination:	40%
Total:	100%



WILDLIFE AND ECOTOURISM EXTENSION

PROGRAMME: NATIONAL DIPLOMA (ND) WILDLIFE AND ECOTOURISM MANAGEMENT		
COURSE TITLE: WILDLIFE AND ECOTOURISM EXTENSION	COURSE CODE: WEM 217	CONTACT HOURS: 3 HOURS/WEEK
	CREDIT UNIT: 3	THEORETICAL: 1 HOUR/WEEK
YEAR: II SEMESTER: I	PRE-REQUISITE:	PRACTICAL: 2 HOURS/WEEK
GOAL: This course is designed to equip students with knowledge and skills in conservation extension, community engagement, and communication of wildlife and ecotourism information to diverse audiences.		
GENERAL OBJECTIVES: On completion of this course, the students should be able to: 1.0 Understand extension principles; 2.0 Know audience analysis; 3.0 Understand digital communication for extension; 4.0 Understand participatory methods; 5.0 Undertake monitoring and evaluation.		

PROGRAMME: NATIONAL DIPLOMA (ND) WILDLIFE AND ECOTOURISM MANAGEMENT						
COURSE TITLE: WILDLIFE AND ECOTOURISM EXTENSION			COURSE CODE: WEM 217		CONTACT HOURS: 3 HOURS/WEEK	
			CREDIT UNIT: 3		THEORETICAL: 1 HOUR/WEEK	
YEAR: II SEMESTER: I			PRE-REQUISITE:		PRACTICAL: 2 HOURS/WEEK	
COURSE SPECIFICATION: THEORETICAL AND PRACTICAL						
GOAL: This course is designed to equip students with knowledge and skills in conservation extension, community engagement, and communication of wildlife and ecotourism information to diverse audiences.						
GENERAL OBJECTIVE 1.0: Understand extension principles						
THEORETICAL CONTENT				PRACTICAL CONTENT		
Week	Specific Learning Outcome	Teacher's Activities	Resources	Specific Learning Outcome	Teacher's Activities	Resources
1-3	1.1 Define extension, education, communication. 1.2 Describe extension methods (individual, group, mass). 1.3 Explain adult-learning principles. 1.4 Describe FPIC in conservation extension.	• Explain extension, education, communication. • Describe extension methods (individual, group, mass). • Explain adult-learning principles. • Describe FPIC in conservation extension.	Extension textbooks, FPIC manuals, LCD projector.	• Conduct a community extension visit using FPIC consent.	Guide students to: • Conduct a community extension visit using FPIC consent.	FPIC consent forms, smart phone, camera, audio recorder, notebooks.
GENERAL OBJECTIVE 2.0: Know audience analysis						
4-6	2.1 Explain target audiences (farmers, students, tourists, communities).	• Describe target audiences (farmers, students, tourists, communities).	Extension textbooks, sample materials, LCD	• Develop personas for 3 audiences. • Plan proto outreach. • Demonstrate gender	Guide students to: • Develop personas for 3 audiences. • Plan proto outreach.	Persona, templates, Gender

	2.2 Describe audience segmentation. 2.3 Explain message adaptation to audience needs. 2.4 Explain gender-responsive extension.	• Explain audience segmentation. • Discuss message adaptation to audience needs. • Explain gender-responsive extension.	projector.	response in an outreach setting.	• Demonstrate gender response in an outreach setting.	inclusivity manual.
GENERAL OBJECTIVE 3.0: Understand digital communication for extension						
7-9	3.1 Explain social media (Facebook, WhatsApp, X, TikTok). 3.2 Explain content calendars. 3.3 Explain the use of Canva and Cap Cut for visual content. 3.4 Describe radio and community broadcasting.	• Explain social media (Facebook, WhatsApp, X, TikTok). • Explain content calendars. • Describe the use of Canva and Cap Cut for visual content. • Explain radio and community broadcasting.	Digital communication tutorials, Canva tutorials, LCD projector.	• Use social media (Facebook, WhatsApp, X, TikTok, etc.) for wildlife extension • Produce social-media posts • Develop content calendars. • Use Canva and Cap Cut for visual and video contents.	Guide students to: • Use social media (Facebook, WhatsApp, X, TikTok, etc.) • Produce social-media posts • Develop content calendars. • Use Canva and Cap Cut for visual and video contents	Computers with Canva, smartphones.
GENERAL OBJECTIVE 4.0: Understand participatory methods						
10-12	4.1 Explain participatory rural appraisal (PRA). 4.2 Explain transect walks and seasonal calendars. 4.3 Describe focus-group discussions (FGD). 4.4 Describe community	• Describe participatory rural appraisal (PRA). • Describe transect walks and seasonal calendars. • Discuss focus-group discussions (FGD). • Explain community mapping.	PRA toolkits, FGD guides, LCD projector.	• Use transect walks and seasonal calendars. • Conduct a transect walk and FGD with a local community.	Guide students to: • Use transect walks and seasonal calendars. • Conduct a transect walk and FGD with a local community.	Flip charts, audio recorders (with consent), FGD guide, camera.

	mapping.					
GENERAL OBJECTIVE 5.0: Undertake monitoring and evaluation						
13-15	5.1 Define MandE, indicators. 5.2 Describe KAB (Knowledge-Attitude-Behaviour) surveys. 5.3 Explain simple log frames.	• Discuss MandE, indicators. • Explain KAB (Knowledge-Attitude-Behaviour) surveys. • Describe simple log frames.	MandE manuals, LCD projector.	• Develop simple log frames. • Design a KAB survey for a chosen extension activity. • Report extension outcomes.	Guide students to: • Develop simple log frames. • Design a KAB survey for a chosen extension activity. Report extension outcomes.	Survey templates.
COURSE ASSESSMENT: Course work: 10% Test/Assignments: 10% Practical: 40% Examination: 40% Total: 100%						

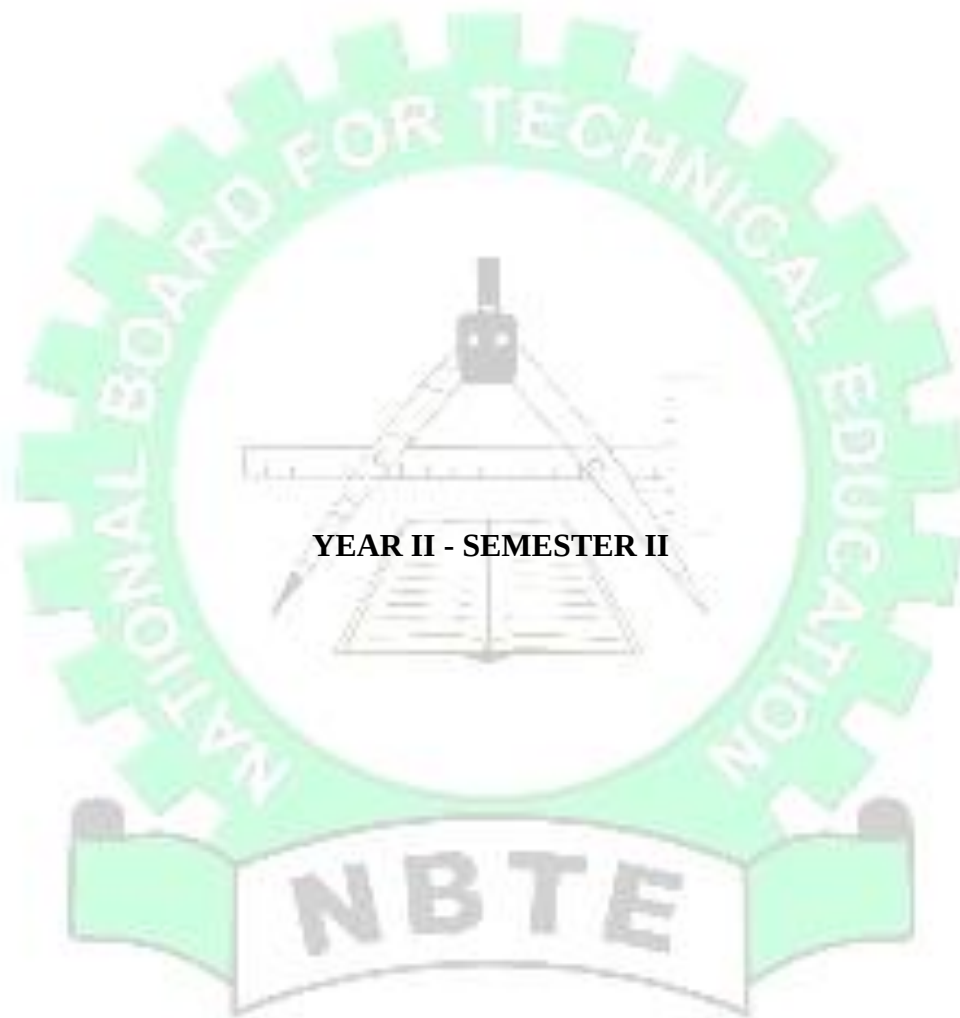
WILDLIFE FIELD PRACTICE II

PROGRAMME: NATIONAL DIPLOMA (ND) WILDLIFE AND ECOTOURISM MANAGEMENT		
COURSE TITLE: WILDLIFE FIELD PRACTICE II	COURSE CODE: WEM 218	CONTACT HOURS: 3 HOURS/WEEK
	CREDIT UNIT: 3	THEORETICAL: 0
YEAR: I SEMESTER: II	PRE-REQUISITE: WILD LIFE FIELD PRACTICE I	PRACTICAL: 3 HOURS/WEEK
GOAL: This course is designed to equip students with skills on field practice in survey methods, specimen collection, and basic data analysis.		
GENERAL OBJECTIVES: On completion of this course, the students should be able to: 1.0 Understand advanced field equipment; 2.0 Understand camera-trap deployment; 3.0 Understand acoustic monitoring; 4.0 Understand Forest inventory and habitat assessment for wildlife; 5.0 Understand data compilation and field reports.		

PROGRAMME: NATIONAL DIPLOMA (ND) WILDLIFE AND ECOTOURISM MANAGEMENT						
COURSE TITLE: WILDLIFE FIELD PRACTICE II			COURSE CODE: WEM 218		CONTACT HOURS: 3 HOURS/WEEK	
			CREDIT UNIT: 3		THEORETICAL: 0	
YEAR: I SEMESTER: II			PRE-REQUISITE: WILD LIFE FIELD PRACTICE I		PRACTICAL: 3 HOURS/WEEK	
COURSE SPECIFICATION: THEORETICAL AND PRACTICAL						
GOAL: This course is designed to equip students with skills on field practice in survey methods, specimen collection, and basic data analysis.						
GENERAL OBJECTIVE 1.0: Understand advanced field equipment						
THEORETICAL CONTENT				PRACTICAL CONTENT		
Week	Specific Learning Outcome	Teacher's Activities	Resources	Specific Learning Outcome	Teacher's Activities	Resources
1-3				• Use camera traps for wildlife monitoring. • Use AudioMoth / bioacoustic recorders. • Use telemetry receivers (basic). • Use range finders for distance estimation	Guide students to: • Use camera traps for wildlife monitoring. • Use AudioMoth / bioacoustic recorders. • Use telemetry receivers (basic). • Use range finders for distance estimation	Camera traps, AudioMoth devices, range finders.
GENERAL OBJECTIVE 2.0: Understand camera-trap deployment						
4-6				• Deploy camera traps in a target area for a number of days. • Set camera trap and trigger interval	Guide students to: • Deploy camera traps in a target area for a number of days. • Set camera trap and	Camera traps, SD cards, computers, GPS, notebook, digital photo album.

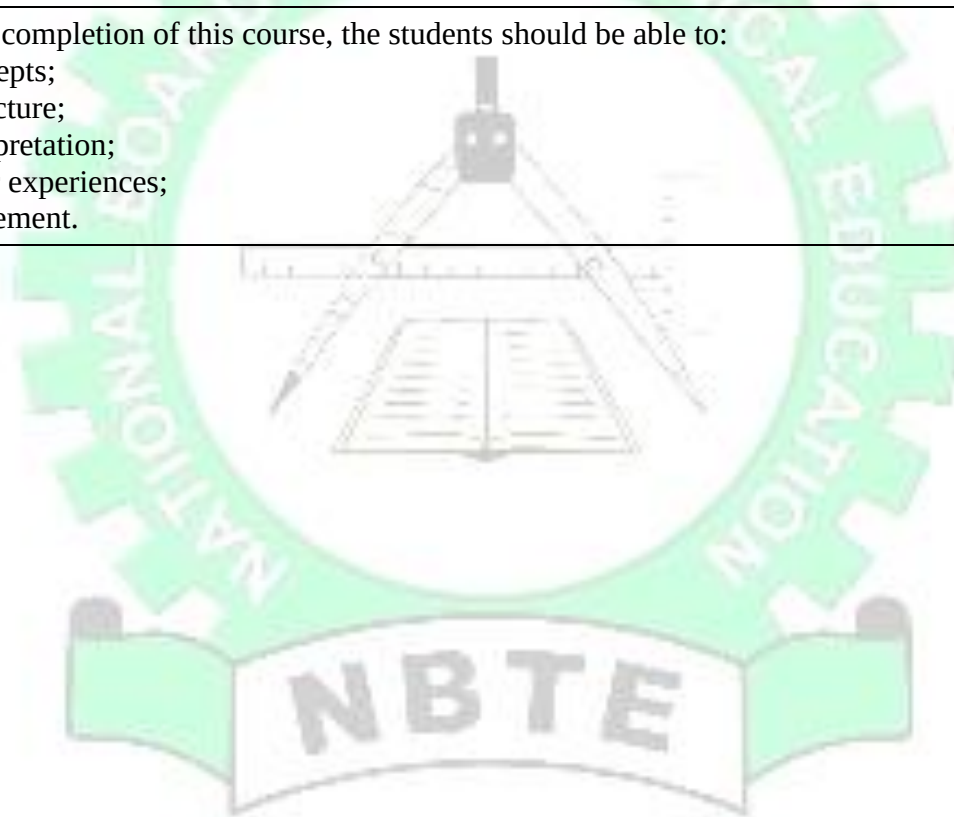
				parameters. • Retrieve cards • Download images. • Tag wildlife in images.	trigger interval parameters. • Retrieve cards • Download images. • Tag wildlife in images.	
GENERAL OBJECTIVE 3.0: Understand acoustic monitoring						
7-9				• Deploy AudioMoth for sizeable number of hour recordings. • Download recordings. • Identify wildlife calls (frogs, birds, mammals). • Tabulate findings.	Guide students to: • Deploy AudioMoth for sizeable number of hour recordings. • Download recordings. • Identify wildlife calls (frogs, birds, mammals). • Tabulate findings.	AudioMoth devices, headphones, computers, call libraries.
GENERAL OBJECTIVE 4.0: Understand Forest inventory and habitat assessment for wildlife						
10-12				• Establish a permanent sample plot (PSP) of 20m x 20m with GPS-marked corners and durable boundary markers. • Measure DBH at 1.3m and total height (clinometer) for all trees ≥ 10cm DBH. • Calculate basal area, volume • Stem density for the	Guide students to: • Establish a permanent sample plot (PSP) of 20m x 20m with GPS-marked corners and durable boundary markers. • Measure DBH at 1.3m and total height (clinometer) for all trees ≥ 10cm DBH. • Calculate basal area, volume	DBH tapes, clinometers, GPS, durable boundary markers (rebar/paint), scoring rubrics, calculators, plant ID guides.

				plot. • Conduct stand assessment for wildlife habitat quality (canopy cover, vertical structure, food/cover availability). • Count plant species • Score habitat quality indicators.	• Stem density for the plot. • Conduct stand assessment for wildlife habitat quality (canopy cover, vertical structure, food/cover availability). • Count plant species; score habitat quality indicators.	
GENERAL OBJECTIVE 5.0: Understand data compilation and field reports						
13-15				• Compile semester field data into spreadsheet. • Calculate basic statistics (mean, range, frequency). • Create simple charts and tables. • Submit field report.	Guide students to: • Compile semester field data into spreadsheet. • Calculate basic statistics (mean, range, frequency). • Create simple charts and tables. • Submit field report.	Computer with Excel, sample data, report templates.
COURSE ASSESSMENT Course Assessment (Practical Based):10% Practical: 50% Examination (Practical Based): 40% Total: 100%						



PARK PLANNING AND INTERPRETATION

PROGRAMME: NATIONAL DIPLOMA (ND) WILDLIFE AND ECOTOURISM MANAGEMENT		
COURSE TITLE: PARK PLANNING AND INTERPRETATION	COURSE CODE: WEM 221	CONTACT HOURS: 4 HOURS/WEEK
	CREDIT UNIT: 4	THEORETICAL: 1 HOUR/WEEK
YEAR: II SEMESTER: II	PRE-REQUISITE:	PRACTICAL: 3 HOURS/WEEK
GOAL: This course is designed to equip students with knowledge and skills in park planning, infrastructure design, and interpretation services for wildlife reserves and ecotourism destinations.		
GENERAL OBJECTIVES: On completion of this course, the students should be able to: 1.0 Know Park planning concepts; 2.0 Understand Park infrastructure; 3.0 Understand resource interpretation; 4.0 comprehend digital visitor experiences; 5.0 Understand visitor management.		



PROGRAMME: NATIONAL DIPLOMA (ND) WILDLIFE AND ECOTOURISM MANAGEMENT						
COURSE TITLE: PARK PLANNING AND INTERPRETATION			COURSE CODE: WEM 221		CONTACT HOURS: 4 HOURS/WEEK	
			CREDIT UNIT: 4		THEORETICAL: 1 HOUR/WEEK	
YEAR: II SEMESTER: II			PRE-REQUISITE:		PRACTICAL: 3 HOURS/WEEK	
COURSE SPECIFICATION: THEORETICAL AND PRACTICAL						
GOAL: This course is designed to equip students with knowledge and skills in park planning, infrastructure design, and interpretation services for wildlife reserves and ecotourism destinations.						
GENERAL OBJECTIVE 1.0: Know Park planning concepts						
THEORETICAL CONTENT				PRACTICAL CONTENT		
Week	Specific Learning Outcome	Teacher's Activities	Resources	Specific Learning Outcome	Teacher's Activities	Resources
1-3	1.1 Define Park planning, master plans, zoning. 1.2 Describe IUCN management categories. 1.3 Explain Nigerian PA system. 1.4 Describe participatory planning.	• Explain Park planning, master plans, zoning. • Discuss IUCN management categories. • Describe Nigerian PA system. • Explain participatory planning.	Park planning textbooks, IUCN guidelines, LCD projector.	• Develop a zoning plan for a sample reserve.	Guide student to; • Develop a zoning plan for a sample reserve	Zoning templates, sample reserves.
GENERAL OBJECTIVE 2.0: Understand park infrastructure						
4-6	2.1 Describe visitor centres. 2.2 Explain ranger posts and HQ. 2.3 Describe trail	• Explain visitor centres. • Describe ranger posts and HQ. • Describe trail design	Park interpretation textbooks, IMBA manuals, LCD projector.	• Plan a 2km low-impact trail with switchbacks and drainage.	Guide student to; • Plan a 2km low-impact trail with switchbacks and drainage.	Trail design templates, GPS.

	design (USDA, IMBA). 2.4 Describe water points and roads.	(USDA, IMBA). • Discuss water points and roads.				
GENERAL OBJECTIVE 3.0: Understand visitor interpretation						
7-9	3.1 Define heritage interpretation. 3.2 Explain Tilden 6 principles. 3.3 Describe interpretive signage. 3.4 Describe storytelling.	• Define heritage interpretation. • Explain Tilden 6 principles. • Discuss interpretive signage. • Explain storytelling.	Interpretation textbooks (Tilden, Beck-Cable), LCD projector.	• Design interpretive signs for a target site.	Guide students to; • Design interpretive signs for a target site.	Canva, design templates.
GENERAL OBJECTIVE 4.0: Comprehend digital visitor experiences						
10-12	4.1 Explain QR codes for self-guided tours. 4.2 Describe audio guides. 4.3 Describe AR/VR. 4.4 Outline mobile apps.	• Explain QR codes for self-guided tours. • Describe audio guides. • Describe AR/VR. • Outline mobile apps.	Digital tourism textbooks, LCD projector.	• Set up a QR-coded audio tour for a small site.	Guide student to; • Set up a QR-coded audio tour for a small site.	QR generators, audio recording tools.
GENERAL OBJECTIVE 5.0: Understand visitor management						
13-15	5.1 Describe visitor carrying capacity. 5.2 Highlight visitor flow management. 5.3 Describe visitor surveys. 5.4 Describe net Promoter Score.	• Describe visitor carrying capacity. • Highlight visitor flow management. • Describe visitor surveys. • Describe net Promoter Score.	Technical manual on visitors management, LCD projector.	• Compute visitor carrying capacity. • Conduct visitor satisfaction survey.	Guide student to: • Compute visitor carrying capacity. • Conduct visitor satisfaction survey.	Capacity worksheets, survey tools.

COURSE ASSESSMENT:

Course work:	10%
Test/Assignments:	10%
Practical:	40%
Examination:	40%
Total:	100%



ZOO, MUSEUM AND VISITOR CENTRE MANAGEMENT**PROGRAMME: NATIONAL DIPLOMA (ND) WILDLIFE AND ECOTOURISM MANAGEMENT**

COURSE TITLE: ZOO, MUSEUM AND VISITOR CENTRE MANAGEMENT	COURSE CODE: WEM 222	CONTACT HOURS: 3 HOURS/WEEK
	CREDIT UNIT: 3	THEORETICAL: 1 HOUR/WEEK
YEAR: II SEMESTER: II	PRE-REQUISITE:	PRACTICAL: 2 HOURS/WEEK

GOAL: This course is designed to equip students with knowledge and skills in zoological garden management, museum operations, visitor centre design, and animal welfare in captive settings.

GENERAL OBJECTIVES: On completion of this course, the students should be able to:

- 1.0 Understand zoo concepts and history;
- 2.0 Understand animal welfare in zoos;
- 3.0 Understand husbandry of zoo animal;
- 4.0 Understand museum and visitor centre operations;
- 5.0 Understand zoo and museum education.



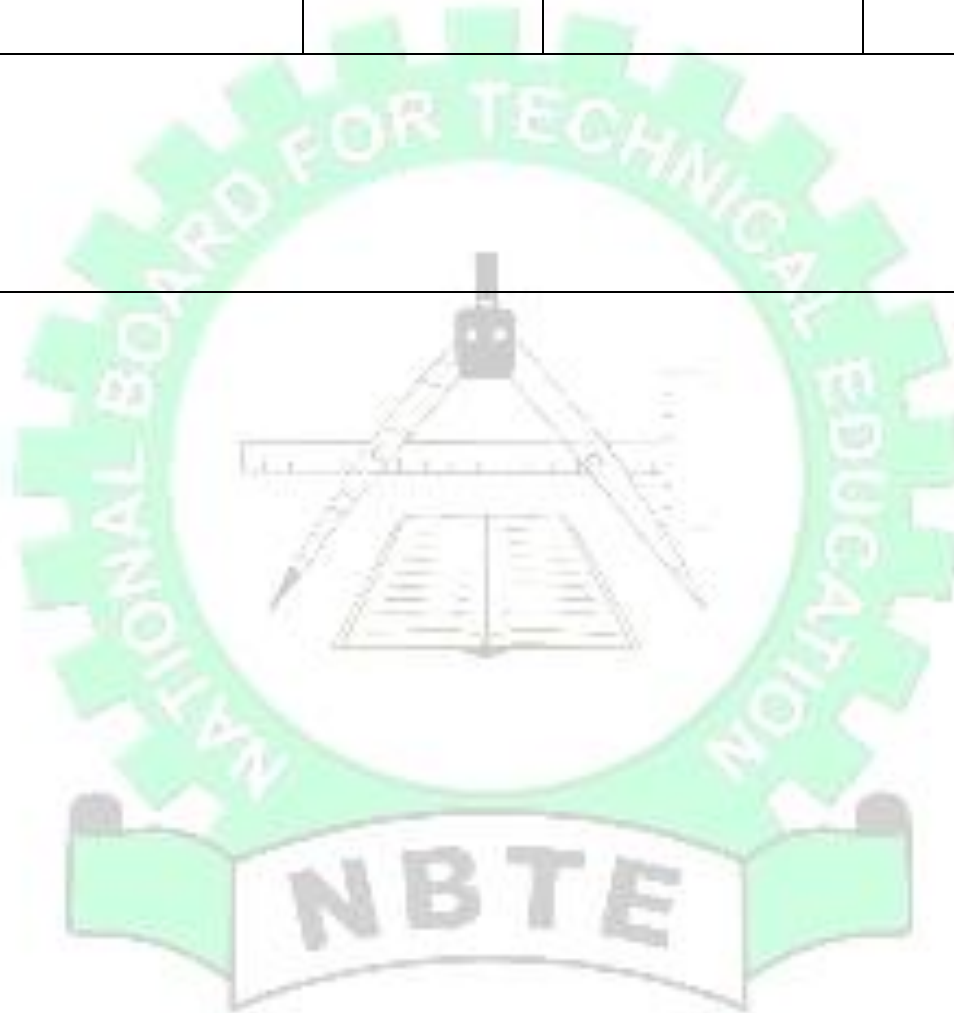
PROGRAMME: NATIONAL DIPLOMA (ND) WILDLIFE AND ECOTOURISM MANAGEMENT						
COURSE TITLE: ZOO, MUSEUM AND VISITOR CENTRE MANAGEMENT			COURSE CODE: WEM 222		CONTACT HOURS: 3 HOURS/WEEK	
			CREDIT UNIT: 3		THEORETICAL: 1 HOUR/WEEK	
YEAR: II SEMESTER: II			PRE-REQUISITE:		PRACTICAL: 2 HOURS/WEEK	
COURSE SPECIFICATION: THEORETICAL AND PRACTICAL						
GOAL: This course is designed to equip students with knowledge and skills in zoological garden management, museum operations, visitor centre design, and animal welfare in captive settings.						
GENERAL OBJECTIVE 1.0: Understand zoo concepts and history						
THEORETICAL CONTENT				PRACTICAL CONTENT		
Week	Specific Learning Outcome	Teacher's Activities	Resources	Specific Learning Outcome	Teacher's Activities	Resources
1-3	1.1 Define Zoo, aquarium, biological park, wildlife sanctuary. 1.2 Describe Zoo evolution. 1.3 Describe modern Zoo missions. 1.4 Explain BIAZA and AZA standards.	• Explain Zoo, aquarium, biological park, wildlife sanctuary. • Describe Zoo evolution. • Describe modern Zoo missions. • Explain BIAZA and AZA standards.	Zoo textbooks, BIAZA documents, LCD projector.	• Visit a Nigerian zoo • Assess the zoo against the standards.	Guide students to: • Visit a Nigerian zoo • Assess the zoo against the standards.	Note books for report, assessment forms.
GENERAL OBJECTIVE 2.0: Understand animal welfare in zoos						
4-6	2.1 Describe Five Freedoms. 2.2 Explain enclosures design.	• Explain Five Freedoms • Discuss enclosure design	Animal welfare textbooks, LCD projector.	• Audit one enclosure against welfare standards. • Design enrichment	Guide students to: • Audit one enclosure against welfare standards.	Audit checklists, enrichment templates.

	2.3 Describe environmental enrichment. 2.4 Explain stress assessment.	• Explain key aspects and types of enrichment • Discuss stress assessment.		for one species.	• Design enrichment for one species.	
GENERAL OBJECTIVE 3.0: Understand husbandry of zoo animals						
7-9	3.1 Describe nutrition for captive species. 3.2 Explain housing and hygiene. 3.3 Describe breeding management and studbooks. 3.4 Explain veterinary care basics	• Describe nutrition for captive species. • Explain housing and hygiene. • Explain breeding management and studbooks. • Describe veterinary care basics	Zoo management textbook, studbook manuals, LCD projector.	• Prepare daily feed ration for sample captive species.	Guide students to: • Prepare daily feed ration for sample captive species.	Feed ingredients, weighing scales, ration cards.
GENERAL OBJECTIVE 4.0: Understand museum and visitor's centre operations						
10-12	4.1 Describe museum functions. 4.2 Explain specimen accessioning. 4.3 Describe exhibition themes. 4.4 Explain lighting, climate, security.	• Describe museum functions. • Discuss specimen accessioning. • Explain exhibition themes. • Describe lighting, climate, security.	Museum management textbooks, AAM standards, LCD projector.	• Design an exhibit theme and storyline.	Guide student to: • Design an theme and storyline.	Exhibit storyboard templates.
GENERAL OBJECTIVE 5.0: Understand zoo and museum education						
13-15	5.1 Describe educational programmes. 5.2 Describe guided tours and demonstrations.	• Describe educational programmes. • Discuss guided tours and demonstrations. • Describe classroom resources.	Zoo education textbooks, LCD projector.	• Develop educational programme for school visitors.	Guide student to: • Develop educational programme for school visitors.	Programme templates.

	5.3 Explain classroom resources. 5.4 Describe school outreach programme.	•Discuss school outreach programme.				
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COURSE ASSESSMENT:

Course work:	10%
Test/Assignments:	10%
Practical:	40%
Examination:	40%
Total:	100%



SUSTAINABLE NON-TIMBER FOREST PRODUCTS (NTFP) HARVESTING AND VALUE ADDITION

PROGRAMME: NATIONAL DIPLOMA (ND) WILDLIFE AND ECOTOURISM MANAGEMENT		
COURSE TITLE: SUSTAINABLE NON-TIMBER FOREST PRODUCTS (NTFP) HARVESTING AND VALUE ADDITION	COURSE CODE: WEM 223	CONTACT HOURS: 3 HOURS/WEEK
	CREDIT UNIT: 3	THEORETICAL: 1 HOUR/WEEK
YEAR: II SEMESTER: II	PRE-REQUISITE:	PRACTICAL: 2 HOURS/WEEK
GOAL: This course is designed to equip students with knowledge and skills of sustainable harvesting, processing, value addition for non-timber forest products (NTFPs) supporting biodiversity conservation and rural livelihoods.		
GENERAL OBJECTIVES: On completion of this course, the students should be able to: 1.0 Understand NTFP categories and Nigerian priority products; 2.0 Understand sustainable harvesting; 3.0 Understand primary processing; 4.0 Understand secondary processing and value addition; 5.0 Understand marketing and value chains.		

PROGRAMME: NATIONAL DIPLOMA (ND) WILDLIFE AND ECOTOURISM MANAGEMENT						
COURSE TITLE: SUSTAINABLE NON-TIMBER FOREST PRODUCTS (NTFP) HARVESTING AND VALUE ADDITION			COURSE CODE: WEM 223		CONTACT HOURS: 3 HOURS/WEEK	
			CREDIT UNIT: 3		THEORETICAL: 1 HOUR/WEEK	
YEAR: II SEMESTER: II			PRE-REQUISITE:		PRACTICAL: 2 HOURS/WEEK	
COURSE SPECIFICATION: THEORETICAL AND PRACTICAL						
GOAL: This course is designed to equip students with knowledge and skills of sustainable harvesting, processing, value addition for non-timber forest products (NTFPs) supporting biodiversity conservation and rural livelihoods.						
GENERAL OBJECTIVE 1.0: Understand NTFP categories and Nigerian priority products						
THEORETICAL CONTENT				PRACTICAL CONTENT		
Week	Specific Learning Outcome	Teacher's Activities	Resources	Specific Learning Outcome	Teacher's Activities	Resources
1-3	1.1 Describe NTFPs (medicinal, food, fibre, resin). 1.2 Explain Nigerian NTFPs (shea, gum arabic, locust bean, honey, mushrooms). 1.3 Describe NTFP role in livelihoods. 1.4 Describe NTFP inventory.	- Describe NTFPs (medicinal, food, fibre, resin). - Explain Nigerian NTFPs (shea, gum arabic, locust bean, honey, mushrooms). - Describe NTFP role in livelihoods. - Describe NTFP inventory.	NTFP textbooks, FAO guides, LCD projector.	Invent NTFPs in a chosen forest area.	Guide students to: Invent NTFPs in a chosen forest area.	Inventory forms, GPS, identification guides.
GENERAL OBJECTIVE 2.0: Understand sustainable harvesting						
4-6	2.1 Define sustainable yield. 2.2 Describe rotational harvesting and quota.	- Explain sustainable yield. - Discuss rotational harvesting and quota.	Harvesting textbooks, FairWild, FSC, standards, LCD projector.	Conduct sustainable-yield assessment for a chosen NTFP.	Guide students to: Conduct sustainable-yield assessment for a chosen NTFP.	Yield assessment forms.

	2.3 Explain Reduced Impact Logging (RIL) basics. 2.4 Describe certification (FairWild, FSC, NTFP).	• Describe Reduced Impact Logging (RIL) basics. • Explain certification (FairWild, FSC, NTFP).				
GENERAL OBJECTIVE 3.0: Understand primary processing						
7-9	3.1 Explain cleaning, sorting, grading. 3.2 Describe drying methods. 3.3 Explain traditional preservation. 3.4 Describe quality control.	• Explain cleaning, sorting, grading. • Discuss drying methods. • Explain traditional preservation. • Discuss quality control.	Textbooks on NTFP management, LCD projector.	• Process a sample NTFP through primary stages. • Package one NTFP product	Guide students to: • Process a sample NTFP through primary stages.	Processing equipment, samples.
GENERAL OBJECTIVE 4.0: Understand secondary processing and value addition						
10-12	4.1 Describe extraction (oils, butters). 4.2 Describe distillation (essential oils). 4.3 Explain packaging and labelling. 4.4 Describe food safety (HACCP introduction).	• Explain extraction (oils, butters). • Discuss distillation (essential oils). • Discuss packaging and labelling. • Explain food safety (HACCP introduction).	Value addition textbooks, NAFDAC guidelines, LCD projector.	• Process and package one NTFP product (e.g., shea butter, hibiscus tea).	Guide students to: • Process and package one NTFP product (e.g., shea butter, hibiscus tea).	Processing equipment, packaging materials.
GENERAL OBJECTIVE 5.0: Understand marketing and value chains						
13-15	5.1 Describe value-chain mapping. 5.2 Describe domestic and export	• Explain value-chain mapping. • Discuss domestic and export markets.	Value chain textbooks, e-commerce tutorials, LCD	• Map a complete value chain for one NTFP.	Guide student to: • Map a complete value chain for one NTFP.	Value-chain templates.

	markets. 5.3 Explain digital marketing and e-commerce. 5.4 Describe pricing.	• Describe digital marketing and e-commerce. • Explain pricing.	projector.			
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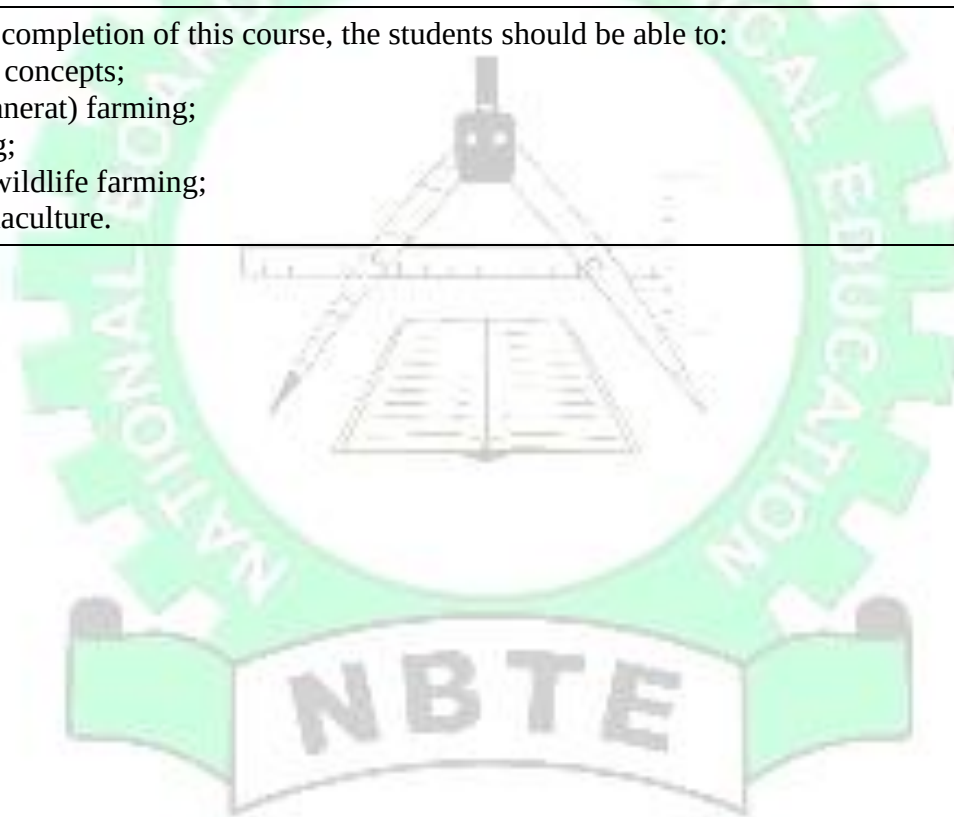
COURSE ASSESSMENT:

Course work:	10%
Test/Assignments:	10%
Practical:	40%
Examination:	40%
Total:	100%



GAME FARMING AND WILDLIFE DOMESTICATION

PROGRAMME: NATIONAL DIPLOMA (ND) WILDLIFE AND ECOTOURISM MANAGEMENT		
COURSE TITLE: GAME FARMING AND WILDLIFE DOMESTICATION	COURSE CODE: WEM 224	CONTACT HOURS: 4 HOURS/WEEK
	CREDIT UNIT: 4	THEORETICAL: 1 HOUR/WEEK
YEAR: II SEMESTER: II	PRE-REQUISITE:	PRACTICAL: 3 HOURS/WEEK
GOAL: This course is designed to equip students with knowledge and skills of wildlife farming including grasscutter, snail, guinea fowl, ostrich, snake, crocodile and antelope husbandry for sustainable enterprises.		
GENERAL OBJECTIVES: On completion of this course, the students should be able to: 1.0 Understand game farming concepts; 2.0 Understand grasscutter (canerat) farming; 3.0 Comprehend snail farming; 4.0 Understand poultry-style wildlife farming; 5.0 Know large-game and aquaculture.		



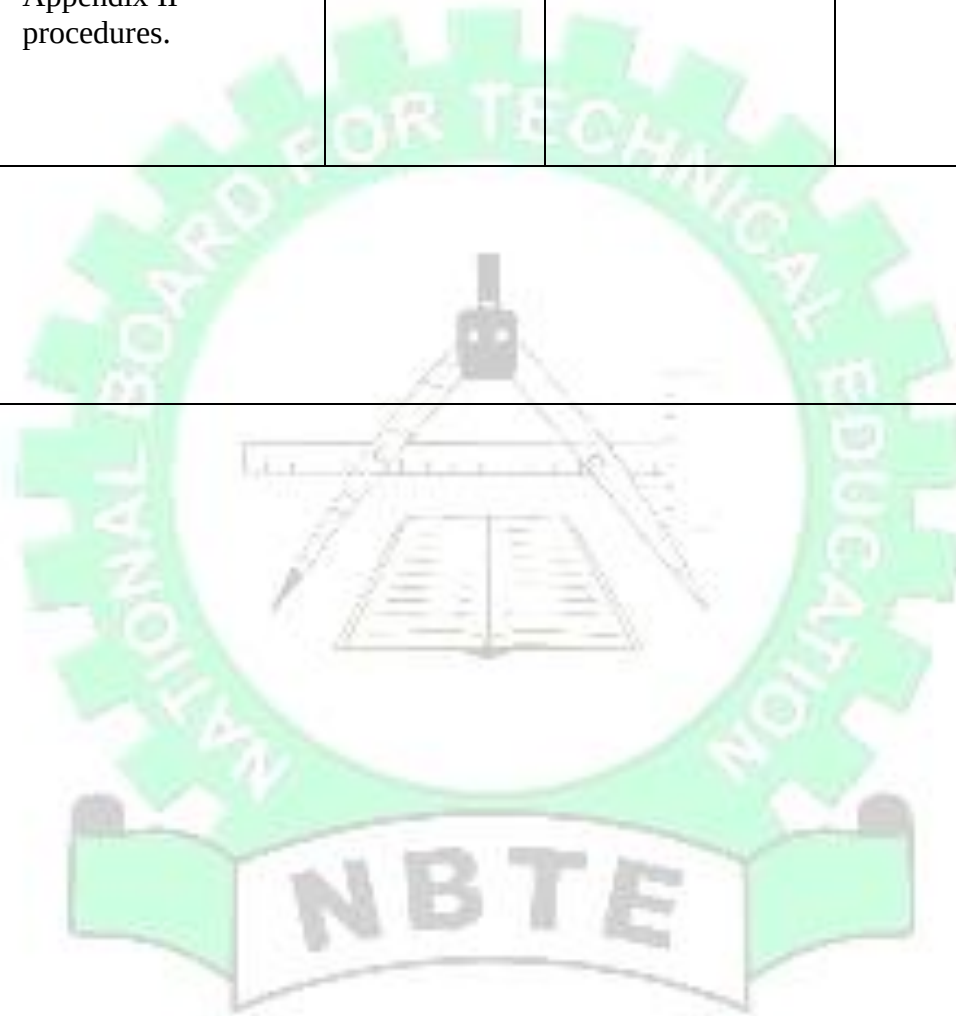
PROGRAMME: NATIONAL DIPLOMA (ND) WILDLIFE AND ECOTOURISM MANAGEMENT						
COURSE TITLE: GAME FARMING AND WILDLIFE DOMESTICATION			COURSE CODE: WEM 224		CONTACT HOURS: 4 HOURS/WEEK	
			CREDIT UNIT: 4		THEORETICAL: 1 HOUR/WEEK	
YEAR: II SEMESTER: II			PRE-REQUISITE:		PRACTICAL: 3 HOURS/WEEK	
COURSE SPECIFICATION: THEORETICAL AND PRACTICAL						
GOAL: This course is designed to equip students with knowledge and skills of wildlife farming including grasscutter, snail, guinea fowl, ostrich, snake, crocodile and antelope husbandry for sustainable enterprises.						
GENERAL OBJECTIVE 1.0: Understand game farming concepts						
THEORETICAL CONTENT				PRACTICAL CONTENT		
Week	Specific Learning Outcome	Teacher's Activities	Resources	Specific Learning Outcome	Teacher's Activities	Resources
1-3	1.1 Define game farm, ranch, sanctuary. 1.2 Describe extensive and intensive systems. 1.3 Explain the economics of game farming. 1.4 Describe legal framework in Nigeria.	• Explain game farm, ranch, sanctuary. • Describe extensive and intensive systems. • Discuss the economics of game farming. • Explain legal framework in Nigeria.	Game ranching and domestication, textbooks, animal husbandry manual, LCD projector.	• Visit a functioning game farm • Document operations in the game farm.	Guide student to: • Visit a functioning game farm • Document operations in the game farm.	Observation forms.
GENERAL OBJECTIVE 2.0: Understand grasscutter (canerat) farming						
4-6	2.1 Describe grasscutter biology. 2.2 Explain grasscutter pen structure. 2.3 Explain feeding and	• Explain grasscutter biology. • Describe grasscutter pen structure. • Explain feeding and	Grasscutter domestication manuals, LCD projector.	• Set up a grasscutter pen with breeding pairs • Manage a grasscutter pen	Guide student to: • Set up a grasscutter pen with breeding pairs • Manage a grasscutter pen with breeding pairs	Pens, breeding pair, feed, water, record sheets.

	breeding management. 2.4 Outline disease prevention mechanism.	breeding management. • Discuss disease prevention mechanism.		with breeding pairs		
GENERAL OBJECTIVE 3.0: Comprehend snail farming						
7-9	3.1 Describe snail biology (Achatina spp.) 3.2 Explain snail pen structure 3.3 Explain the feeds (coco Yam, paw-paw etc.) 3.4 Describe breeding and harvesting	• Explain snail biology (Achatina spp.) • 3.2 Describe snail pen structure • Discuss the feeds (coco Yam, paw-paw etc.) • Explain breeding and harvesting	Snail farming manuals, LCD projector	• Set up a snailery with breeding stocks • Monitor egg production	Guide student to: • Set up a snailery with breeding stocks • Monitor egg production	Snail pens, breeding stock, feed
GENERAL OBJECTIVE 4.0: Know poultry-style wildlife farming						
10-12	4.1 Describe Guinea fowl farming. 4.2 Explain ostrich farming basics. 4.3 Describe pigeon and quail husbandry. 4.4 Explain biosecurity and ND vaccination.	• Describe Guinea fowl farming. • Discuss ostrich farming basics. • Describe pigeon and quail husbandry. • Discuss biosecurity and ND vaccination.	Poultry/wildlife farming manuals, LCD projector.	• Brood sizeable guinea fowl keets to sub-adult • Record FCR and mortality	Guide student to: • Brood sizeable guinea fowl keets to sub-adult • Record FCR and mortality	Brooders, keets, feed, vaccines.
GENERAL OBJECTIVE 5.0: Understand large-game and aquaculture						
13-15	5.1 Describe antelope holding-pen design. 5.2 Describe crocodile	• Discuss antelope holding-pen design. • Explain crocodile and snake farming basics.	Husbandry manuals, CITES document,	• Visit antelope or crocodile farm • Document SOPs.	Guide student to: • Visit antelope or crocodile farm • Document SOPs.	Observation forms.

	and snake farming basics. 5.3 Explain aquaculture (catfish, tilapia). 5.4 Outline CITES Appendix II procedures.	• Discuss aquaculture (catfish, tilapia). • Explain CITES Appendix II procedures.	LCD projector.			
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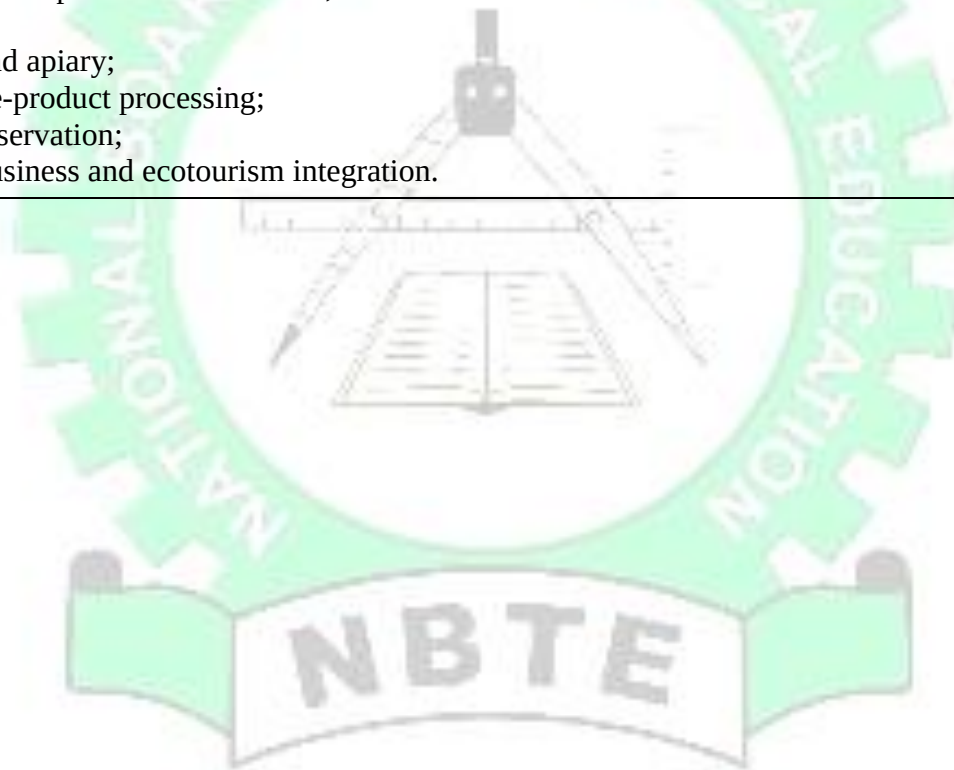
COURSE ASSESSMENT:

Course work:	10%
Test/Assignments:	10%
Practical:	40%
Examination:	40%
Total:	100%



APICULTURE AND POLLINATOR CONSERVATION

PROGRAMME: NATIONAL DIPLOMA (ND) WILDLIFE AND ECOTOURISM MANAGEMENT		
COURSE TITLE: APICULTURE AND POLLINATOR CONSERVATION	COURSE CODE: WEM 225	CONTACT HOURS: 3 HOURS/WEEK
	CREDIT UNIT: 3	THEORETICAL: 1 HOUR/WEEK
YEAR: II SEMESTER: II	PRE-REQUISITE:	PRACTICAL: 2 HOURS/WEEK
GOAL: This course is designed to equip students with knowledge and skills in apiculture and integration of bee enterprises into conservation goals.		
GENERAL OBJECTIVES: On completion of this course, the students should be able to: 1.0 Know bee biology; 2.0 Understand hive design and apiary; 3.0 Understand honey and bee-product processing; 4.0 Understand pollinator conservation; 5.0 Comprehend apiculture business and ecotourism integration.		



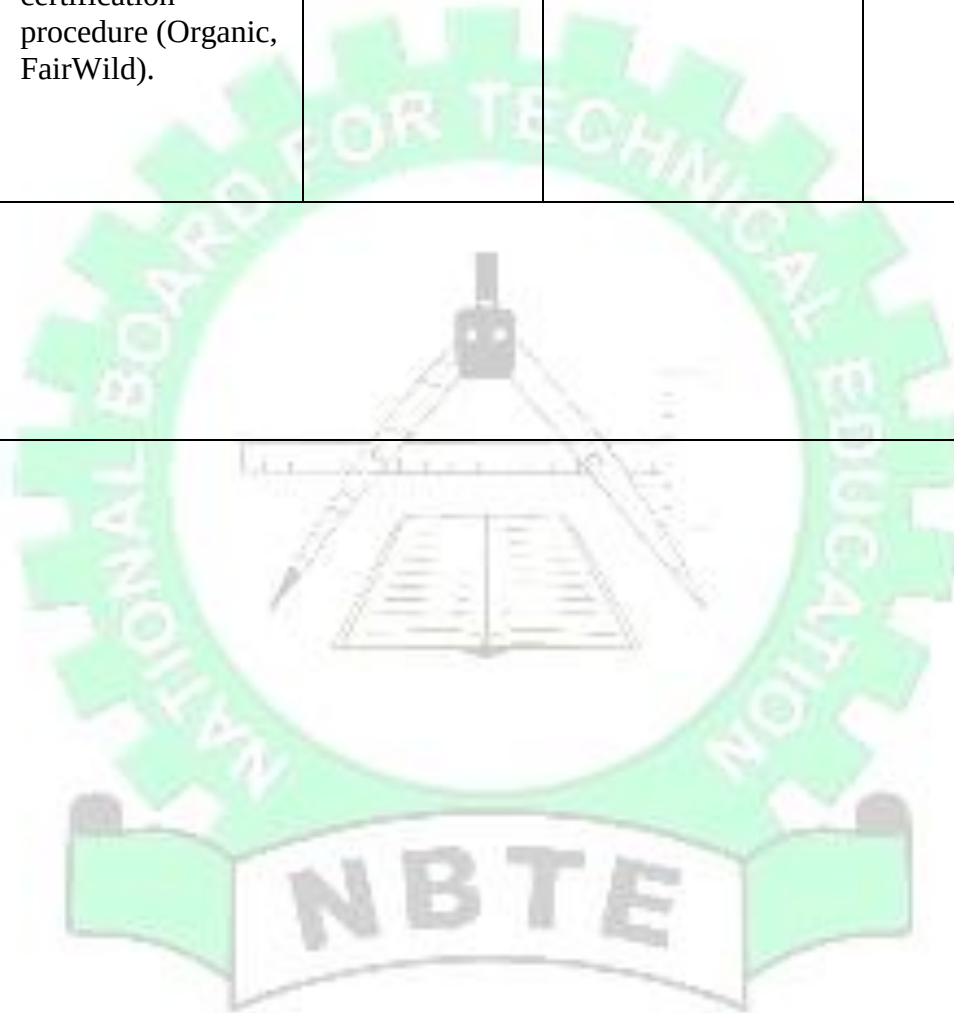
PROGRAMME: NATIONAL DIPLOMA (ND) WILDLIFE AND ECOTOURISM MANAGEMENT						
COURSE TITLE: APICULTURE AND POLLINATOR CONSERVATION			COURSE CODE: WEM 225		CONTACT HOURS: 3 HOURS/WEEK	
			CREDIT UNIT: 3		THEORETICAL: 1 HOUR/WEEK	
YEAR: II SEMESTER: II			PRE-REQUISITE:		PRACTICAL: 2 HOURS/WEEK	
COURSE SPECIFICATION: THEORETICAL AND PRACTICAL						
GOAL: This course is designed to equip students with knowledge and skills in apiculture and integration of bee enterprises into conservation goals.						
GENERAL OBJECTIVE 1.0: Know bee biology						
THEORETICAL CONTENT				PRACTICAL CONTENT		
Week	Specific Learning Outcome	Teacher's Activities	Resources	Specific Learning Outcome	Teacher's Activities	Resources
1-3	1.1 Describe honey bee biology and castes. 1.2 Describe life cycle and colony organization. 1.3 Highlight Nigerian bees including stingless bees. 1.4 Explain other pollinators.	• Explain honey bee biology and castes. • Describe life cycle and colony organization. • Outline Nigerian bees including stingless bees. • Describe other pollinators.	Apiculture textbooks, Apiculture hand book LCD projector.	• Identify bee castes from teaching specimens.	Guide students to: • Identify bee castes from teaching specimens.	Bee specimens, hand lenses.
GENERAL OBJECTIVE 2.0: Understand hive design and apiary						
4-6	2.1 Differentiate types of hive (Langstroth, Kenyan Top Bar). 2.2 Describe apiary	• Differentiate types of hive (Langstroth, Kenyan Top Bar). • Explain apiary site selection.	Beekeeping manuals, LCD projector.	• Set up Langstroth and Top Bar hives. • Conduct hive inspections.	Guide students to: • Set up Langstroth and Top Bar hives. • Conduct hive inspections.	Hives, smokers, bee suits, hive tools.

	site selection. 2.3 Explain colony management. 2.4 Describe disease and pest control.	• Discuss colony management. • 2.4 Describe disease and pest control.				
GENERAL OBJECTIVE 3.0: Understand honey and bee-product processing						
7-9	3.1 Describe honey extraction and filtration. 3.2 Know beeswax, propolis, royal jelly. 3.3 Describe HACCP and food safety. 3.4 Explain labelling and packaging.	• Describe honey extraction and filtration. • Discuss beeswax, propolis, royal jelly. • Explain HACCP and food safety. • Describe labelling and packaging.	Processing manuals, NAFDAC guidelines, LCD projector.	• Extract honey using centrifugal extractor. • Process beeswax into candles.	Guide students to: • Extract honey using centrifugal extractor. • Process beeswax into candles.	Extractors, filters, wax molds.
GENERAL OBJECTIVE 4.0: Understand pollinator conservation						
10-12	4.1 Outline pollinator decline drivers. 4.2 Describe IPBES Pollination Assessment. 4.3 Explain pollinator-friendly habitat creation. 4.4 Describe neonicotinoid risks	• Explain pollinator decline drivers. • Explain IPBES Pollination Assessment. • Discuss pollinator-friendly habitat creation. • Describe neonicotinoid risks	IPBES Pollination Assessment manuals, LCD projector.	• Design and establish pollinator-friendly garden.	Guide students to: • Design and establish pollinator-friendly garden.	Native flowering plants, garden tools.
GENERAL OBJECTIVE 5.0: Comprehend apiculture business and ecotourism integration						
13-15	5.1 Describe apiculture business models. 5.2 Explain value-chain analysis to	• Describe apiculture business models. • Discuss value-chain analysis to honey.	Apiculture business manuals, FairWild and	• Develop a business plan for apiculture enterprise.	Guide students to: • Develop a business plan for apiculture enterprise.	Plan templates.

	honey. 5.3 Describe bee-tourism and apitherapy. 5.4 Explain certification procedure (Organic, FairWild).	• Explain bee-tourism and apitherapy. • Describe certification procedure (Organic, FairWild).	IPBES document, LCD projector.			
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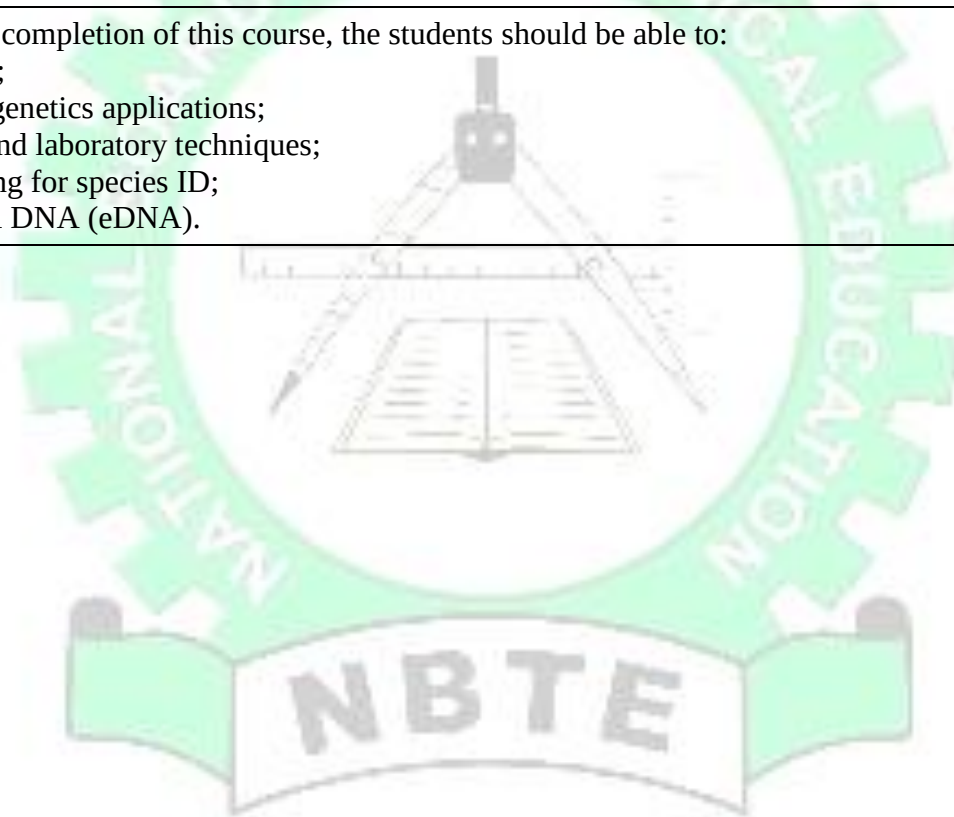
COURSE ASSESSMENT:

Course work:	10%
Test/Assignments:	10%
Practical:	40%
Examination:	40%
Total:	100%



INTRODUCTION TO CONSERVATION GENETICS AND FORENSIC STUDIES

PROGRAMME: NATIONAL DIPLOMA (ND) WILDLIFE AND ECOTOURISM MANAGEMENT		
COURSE TITLE: CONSERVATION GENETICS AND FORENSIC STUDIES	COURSE CODE: WEM 226	CONTACT HOURS: 3 HOURS/WEEK
	CREDIT UNIT: 3	THEORETICAL: 1 HOUR/WEEK
YEAR: II SEMESTER: II	PRE-REQUISITE:	PRACTICAL: 2 HOURS/WEEK
GOAL: This course is designed to equip students with knowledge and skills of conservation genetics, DNA-based species identification, and environmental DNA (eDNA) techniques for non-invasive wildlife monitoring.		
GENERAL OBJECTIVES: On completion of this course, the students should be able to: 1.0 Understand basic genetics; 2.0 Understand conservation genetics applications; 3.0 Understand DNA basics and laboratory techniques; 4.0 Understand DNA barcoding for species ID; 5.0 Understand environmental DNA (eDNA).		



PROGRAMME: NATIONAL DIPLOMA (ND) WILDLIFE AND ECOTOURISM MANAGEMENT						
COURSE TITLE: CONSERVATION GENETICS AND FORENSIC STUDIES			COURSE CODE: WEM 226		CONTACT HOURS: 3 HOURS/WEEK	
			CREDIT UNIT: 3		THEORETICAL: 1 HOUR/WEEK	
YEAR: II SEMESTER: II			PRE-REQUISITE:		PRACTICAL: 2 HOURS/WEEK	
COURSE SPECIFICATION: THEORETICAL AND PRACTICAL						
GOAL: This course is designed to equip students with knowledge and skills of conservation genetics, DNA-based species identification, and environmental DNA (eDNA) techniques for non-invasive wildlife monitoring.						
GENERAL OBJECTIVE 1.0: Understand basic genetics						
THEORETICAL CONTENT				PRACTICAL CONTENT		
Week	Specific Learning Outcome	Teacher's Activities	Resources	Specific Learning Outcome	Teacher's Activities	Resources
1-3	1.1 Define gene, allele, genotype, phenotype, heterozygosity. 1.2 Describe Mendelian inheritance. 1.3 Describe DNA structure and replication. 1.4 Describe genetic drift and inbreeding	- Explain gene, allele, genotype, phenotype, heterozygosity. - Describe Mendelian inheritance. - Discuss DNA structure and replication. - Discuss genetic drift and inbreeding	Genetics textbooks, LCD projector	- Solve simple Mendelian problems - Compute heterozygosity from sample data	Guide students to: - Solve simple Mendelian problems - Compute heterozygosity from sample data	Genetics worksheets, calculators
GENERAL OBJECTIVE 2.0: Understand conservation genetics applications						
4-6	2.1 Define conservation genetics.	- Explain conservation genetics. - Discuss minimum	Conservation genetics textbooks	Use population genetics simulation software (e.g.,	Guide students to: Use population genetics simulation	PopG, GenAlEx free tools

	2.2 Describe minimum viable populations. 2.3 Describe climate-resilient breeding. 2.4 Explain genetic considerations in reintroduction.	viable populations. • Explain climate-resilient breeding. • Describe genetic considerations in reintroduction.	(Frankham), LCD projector.	PopG, GenAlEx free tools) • Model inbreeding depression in a small wildlife population • Compute effective population size.	software (e.g., PopG, GenAlEx free tools) • Model inbreeding depression in a small wildlife population • Compute effective population size.	
GENERAL OBJECTIVE 3.0: Understand DNA basics and lab techniques						
7-9	3.1 Describe DNA extraction. 3.2 Describe Polymerase Chain Reaction (PCR). 3.3 Explain gel electrophoresis basics. 3.4 Describe DNA barcoding.	• Explain DNA extraction. • Discuss Polymerase Chain Reaction (PCR). • Discuss gel electrophoresis basics. • Explain DNA barcoding.	Molecular biology textbooks, kit manuals, LCD projector.	• Extract DNA from a small biological sample (hair/feather/leaf). • Run gel electrophoresis on teaching samples.	Guide students to: • Extract DNA from a small biological sample (hair/feather/leaf). • Run gel electrophoresis on teaching samples.	DNA extraction kits, electrophoresis kit, micropipettes, PPE.
GENERAL OBJECTIVE 4.0: Understand DNA barcoding for species ID						
10-12	4.1 Describe barcoding regions (COI, rbcL, matK, ITS). 4.2 Explain BOLD database. 4.3 Describe BLAST search. 4.4 Explain barcoding for trafficked-wildlife identification	• Discuss barcoding regions (COI, rbcL, matK, ITS). • Describe BOLD database. • Explain BLAST search. • Discuss barcoding for trafficked-wildlife identification	Barcoding papers, BOLD/NCBI tutorials, LCD projector.	• Run BLAST search with given barcode sequence • Identify species.	Guide students to: • Run BLAST search with given barcode sequence • Identify species.	Computers with internet, sample sequences.

GENERAL OBJECTIVE 5.0: Understand environmental DNA (eDNA)

13-15	5.1 Define eDNA and sources. 5.2 Describe water-eDNA sampling. 5.3 Explain qPCR and metabarcoding. 5.4 Describe eDNA for rare species detection.	• Discuss eDNA and sources. • Explain water-eDNA sampling. • Describe qPCR and metabarcoding. • Describe eDNA for rare species detection.	eDNA protocol manuals, LCD projector.	• Filter 1L pond/stream water following standard eDNA protocol.	Guide student to: • Filter 1L pond/stream water following standard eDNA protocol.	Sterile bottles, filters, preservatives.
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COURSE ASSESSMENT:

Course work:	10%
Test/Assignments:	10%
Practical:	40%
Examination:	40%
Total:	100%

APPLICATION OF DRONE AND REMOTE SENSING TO WILDLIFE MANAGEMENT

PROGRAMME: NATIONAL DIPLOMA (ND) WILDLIFE AND ECOTOURISM MANAGEMENT		
COURSE TITLE: APPLICATION OF DRONE AND REMOTE SENSING TO WILDLIFE MANAGEMENT	COURSE CODE: WEM 227	CONTACT HOURS: 3 HOURS/WEEK
	CREDIT UNIT: 3	THEORETICAL: 1 HOUR/WEEK
YEAR: II SEMESTER: II	PRE-REQUISITE:	PRACTICAL: 2 HOURS/WEEK
GOAL: This course is designed to equip students with knowledge and skills drone operations and remote sensing applications for wildlife monitoring, anti-poaching surveillance, and habitat assessment.		
GENERAL OBJECTIVES: On completion of this course, the students should be able to: 1.0 Know drone basics and regulations; 2.0 Understand mission planning; 3.0 Comprehend remote sensing fundamentals; 4.0 Understand image processing basics; 5.0 Understand drones for wildlife monitoring.		

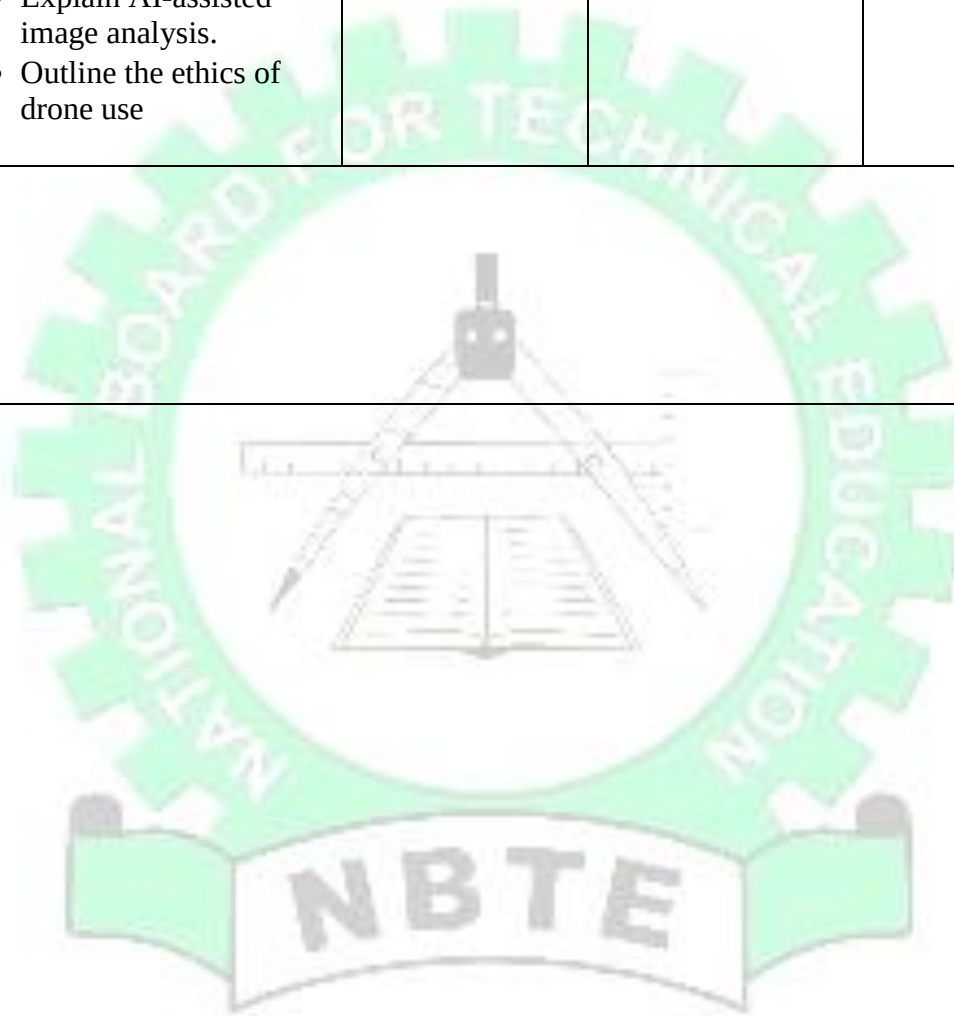
PROGRAMME: NATIONAL DIPLOMA (ND) WILDLIFE AND ECOTOURISM MANAGEMENT						
COURSE TITLE: APPLICATION OF DRONE AND REMOTE SENSING TO WILDLIFE MANAGEMENT			COURSE CODE: WEM 227		CONTACT HOURS: 3 HOURS/WEEK	
			CREDIT UNIT: 3		THEORETICAL: 1 HOUR/WEEK	
YEAR: II SEMESTER: II			PRE-REQUISITE:		PRACTICAL: 2 HOURS/WEEK	
COURSE SPECIFICATION: THEORETICAL AND PRACTICAL						
GOAL: This course is designed to equip students with knowledge and skills drone operations and remote sensing applications for wildlife monitoring, anti-poaching surveillance, and habitat assessment.						
GENERAL OBJECTIVE 1.0: Know drone basics and regulations						
THEORETICAL CONTENT				PRACTICAL CONTENT		
Week	Specific Learning Outcome	Teacher's Activities	Resources	Specific Learning Outcome	Teacher's Activities	Resources
1-3	1.1 Define unmanned aerial vehicle (UAV) multirotor, fixed-wing. 1.2 Describe drone components. 1.3 Explain NCAA regulations. 1.4 Describe pre-flight safety checks	• Explain unmanned aerial vehicle (UAV) multirotor, fixed-wing. • Discuss drone components. • Explain NCAA regulations. • Describe pre-flight safety checks	UAV manual, NCAA documents, LCD projector	• Identify components on a teaching drone. • Conduct pre-flight checks and basic flight.	Guide students to: • Identify components on a teaching drone. • Conduct pre-flight checks and basic flight.	Teaching drones, pre-flight checklists.
GENERAL OBJECTIVE 2.0: Understand mission planning						
4-6	2.1 Define waypoint, flight grid, overlap. 2.2 Outline mission-	• Explain waypoint, flight grid, overlap. • Outline mission-	Mission planning manuals, LCD projector.	• Plan a mapping mission for a sizeable test	Guide students to: • Plan a mapping mission for a	Mission-planning apps, sample areas.

	planning software. 2.3 Describe altitude planning. 2.4 Describe data backup.	planning software. • Describe altitude planning. • Explain data backup.		area. • Use mission-planning software.	sizeable test area. • Use mission-planning software.	
GENERAL OBJECTIVE 3.0: Comprehend remote sensing fundamentals						
7-9	3.1 Define remote sensing, electromagnetic spectrum. 3.2 Describe Landsat and Sentinel. 3.3 Explain vegetation indices (NDVI). 3.4 Explain Google Earth Pro.	• Explain remote sensing, electromagnetic spectrum. • Discuss Landsat and Sentinel. • Describe vegetation indices (NDVI). • Explain Google Earth Pro.	Remote sensing textbooks, LCD projector	• Visualize an area on Google Earth Pro showing change over time.	Guide students to: • Visualize an area on Google Earth Pro showing change over time.	Computers with internet and Google Earth Pro.
GENERAL OBJECTIVE 4.0: Understand image processing basics						
10-12	4.1 Describe orthomosaic, DSM. 4.2 Use WebODM (free) or trial Pix4D. 4.3 Describe ground control points (GCPs). 4.4 Explain accuracy assessment	Explain: photogrammetry • WebODM/Pix4D • GCPs • Accuracy assessment.	Remote sensing and photogrammetry textbooks, LCD projector	• Process drone imagery into an orthomosaic in WebODM	Guide students to: • Process drone imagery into an orthomosaic in WebODM	Computers with WebODM, drone imagery
GENERAL OBJECTIVE 5.0: Understand drones for wildlife monitoring						
13-15	5.1 Describe drones application for wildlife counts.	• Discuss drones application for wildlife counts.	Drone-wildlife papers, LCD projector.	• Run MegaDetector on sample	Guide students to: • Run Mega Detector on sample camera-	Computers with internet and relevant

	5.2 Describe thermal imaging for anti-poaching. 5.3 Describe AI-assisted image analysis. 5.4 Outline the ethics of drone use	• Explain thermal imaging for anti-poaching. • Explain AI-assisted image analysis. • Outline the ethics of drone use		camera-trap or drone imagery	trap or drone imagery	software, sample images.
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COURSE ASSESSMENT:

Course work:	10%
Test/Assignments:	10%
Practical:	40%
Examination:	40%
Total:	100%



LIST OF MINIMUM RESOURCES OR PHYSICAL FACILITIES**1. Wildlife Field Practice (Camping) Unit**

S/N	DESCRIPTION OF ITEM	QUANTITY
1.	Binoculars	150
2.	Spotting Scopes	50
3.	GPS Units	100
4.	Compasses	150
5.	Topographic Maps	100
6.	Range Finders	50
7.	Measuring Tapes	100
8.	Field Notebooks	100
9.	Clipboards	100
10.	PPE Kits	100 Sets
11.	First Aid Kits	20
12.	Camping Tents	50
13.	Sleeping Bags	100
14.	Walkie-Talkies	50
15.	Satellite Phones	10
16.	Power Banks	50
17.	Solar Charging Kits	20
18.	4WD Field Vehicle	4

2. Wildlife Ecology and Habitat Management Unit

S/N	DESCRIPTION OF ITEM	QUANTITY
1.	Quadrats	50
2.	Vegetation Sampling Frames	50
3.	Soil Augers	50
4.	Soil Moisture Meters	20
5.	Clinometers	20
6.	Forestry Calipers	50
7.	Increment Borers	50

8.	DBH Tapes	100
9.	Altimeters	50
10.	Tree Tagging Kits	100 Sets
11.	Survey Pegs	200
12.	Flagging Tapes	100 Rolls

3. Plant Taxonomy and Herbarium Unit

S/N	DESCRIPTION OF ITEM	QUANTITY
1.	Plant Presses	50
2.	Herbarium Cabinets	10
3.	Hand Lenses	100
4.	Plant Identification Keys	150
5.	Specimen Bottles	500
6.	Mounting Papers	500 Sheets
7.	Labels and Tags	500
8.	Seed Bank Storage Units	20
9.	Drying Racks	20
10.	Herbarium Room	1

4. Zoology, Anatomy and Wildlife Health Unit

S/N	DESCRIPTION OF ITEM	QUANTITY
1.	Compound Microscopes	50
2.	Prepared Slides	100
3.	Dissecting Kits	50
4.	Skeleton Models	20
5.	Anatomical Models	20
6.	Specimen Bottles	100
7.	Refrigerators	2
8.	Deep Freezers	2
9.	Incubators	2
10.	Autoclave	1
11.	Laboratory Fume Hood	1
12.	Wildlife Health Laboratory	1

5. Ornithology Unit

S/N	DESCRIPTION OF ITEM	QUANTITY
1.	Bird Field Guides	100
2.	Binoculars	150
3.	Spotting Scopes	50
4.	Bird Mist Nets	50
5.	GPS Units	50
6.	Cameras	20
7.	Camera Traps	10
8.	Bird Charts	200

6. Wildlife Survey and Monitoring Unit

S/N	DESCRIPTION OF ITEM	QUANTITY
1.	Camera Traps	10
2.	Cage Traps	10
3.	Sherman Traps	20
4.	Butterfly Nets	20
5.	Sweep Nets	20
6.	Aquatic Sampling Nets	10
7.	Fish Sampling Tubs	10
8.	GPS Units	10
9.	Digital Cameras	10
10.	Range Finders	5

7. Meteorological Station (Climate Change and Environmental Monitoring Unit)

S/N	DESCRIPTION OF ITEM	QUANTITY
1.	Weather Station	1
2.	Rain Gauges	5
3.	Thermometers	20
4.	Hygrometers	10
5.	Anemometers	5
6.	Lux Meters	5
7.	Soil Moisture Meters	5
8.	Portable Weather Meters	5

8. GIS, Remote Sensing and Drone Unit

S/N	DESCRIPTION OF ITEM	QUANTITY
1.	Desktop Computers	20
2.	GIS Workstations	10
3.	Drones (UAVs)	2
4.	Remote Sensing Software	10 Licences
5.	GIS Software	20 Licences
6.	Plotter Machine	1
7.	Printers	2
8.	Scanners	2
9.	Tablets	15
10.	Multimedia Projectors	3
11.	GIS Laboratory	1

9. Conservation Genetics and Forensic Science Unit

S/N	DESCRIPTION OF ITEM	QUANTITY
1.	Conservation Genetics Kit	1 Set
2.	Analytical Balance	1
3.	Refrigerators	1
4.	Deep Freezers	1
5.	Microscopes	5
6.	Preservation Tanks	5
7.	Laboratory Glassware	10 Sets

10. Apiculture and Pollinator Conservation Unit

S/N	DESCRIPTION OF ITEM	QUANTITY
1.	Beehives	10
2.	Bee Suits	10
3.	Honey Extractors	2
4.	Smokers	10
5.	Hive Tools	10
6.	Apiary Unit	1

11. Park Planning, Ecotourism and Interpretation Unit

S/N	DESCRIPTION OF ITEM	QUANTITY
1	Public Address Systems	2
2	Digital Cameras	10
3	Video Cameras	5
4	Projector Screens	3
5	Multimedia Projectors	3
6	Smart Interactive Board	1
7	Tourism Maps	30
8	Interpretation Centre	1

12. Zoo and Museum Management Unit

S/N	DESCRIPTION OF ITEM	QUANTITY
1.	Museum Display Cases	5
2.	Museum Cabinets	5
3.	Taxidermy Kits	5
4.	Wildlife Specimens	100
5.	Animal Handling Equipment	2 Sets
6.	Wildlife Museum	1
7.	Sanctuaries	1
8.	Animal domestication unit	1
9.	Game Reserve	1

13. Nursery, NTFP and Habitat Restoration Unit

S/N	DESCRIPTION OF ITEM	QUANTITY
1.	Seedling Trays	100
2.	Watering Cans	15
3.	Wheelbarrows	10
4.	Hoes	20
5.	Cutlasses	20
6.	Rakes	10

7.	Shovels	10
8.	Secateurs	20
9.	Nursery Shade Nets	5
10.	Plant Nursery Unit	1

14. Wildlife Protection, Fire and Pest Management Unit

S/N	DESCRIPTION OF ITEM	QUANTITY
1.	Fire Beaters	10
2.	Fire Extinguishers	20
3.	Firefighting trunks (four wheel drive)	1
4.	Water bowzers	1
5.	Knapsack Sprayers	10
6.	Brush Cutters	5
7.	Chainsaws	2
8.	Fire protection clothes (PPE Kits)	30 Sets
9.	Two-Way Radios	10

15. Ballistics and weaponry Unit

S/N	DESCRIPTION OF ITEM	QUANTITY
1	Guns, riffles, cartridges and targets	Different classes
2	License's personnel as technologist for the unit.	-

LIST OF WORKSHOP PARTICIPANTS

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