

NEW

1. DEGREE OPTION: Bachelor of Agricultural Technology (Forestry & Wood Technology) [B. Agric. Tech. (Forestry & Wood Technology)]

2. PROGRAMME PHILOSOPHY

The Department has been established to give prominence to sound scientific training and provide the much required impetus for rapid technological and industrial development in Forestry and Wood Technology. Forestry education in the past emphasised forest planting and management, while little attention was given to the important area of harvesting and utilization. By virtue of our mission, the programmes of the Department are therefore designed to give students the required academic and practical background in areas of afforestation, inventory, harvesting and utilization of forest resources. It also emphasises special areas of social and environmental forestry, pulp and paper technology, forest growth modelling and yield prediction, wood waste utilization, and development of agroforestry practices to meet the increasing food and wood requirements of the country. In addition, the Department expects to provide high-level manpower that will be self-reliant in processing the forest resources.

3. OBJECTIVES

The objectives of the programme are to:

- (a) provide education in the science and technology of forestry resources management and utilization;
- (b) provide opportunities for result-oriented research in forestry and wood technology, relevant to the country's needs in general and local needs in particular;
- (c) disseminate to the public the results of research and facilitate the practical application of these results;
- (d) collaborate with Federal and State Governments, parastatals, institutes and other organizations in the areas of research into forestry and wood utilization;
- (e) work in cooperation with the other departments within the University in order to achieve its set goals; and
- (vi) get involved in sustainable production of trees, food crops, and non-timber forest products.

4. ADMISSION REQUIREMENTS

(a) **UME**

Candidates seeking admission into the five-year programme in Forestry and Wood Technology must possess at least five credits in WASC, SSCE, GCE (Ordinary Level), NECO at not more than two sittings in Chemistry, Biology or Agricultural Science, Mathematics, Physics and English Language. In addition, applicants must obtain an acceptable pass in University Matriculation Examination (UME).

UME Subjects: The U.M.E. subjects are English Language, Chemistry, Biology or Agricultural Science, Mathematics or Statistics and Physics.

(b) **Direct Entry**

For admission by direct entry (into second year of the programme), candidates must possess in addition to (a) above any of the following requirements:

- i) National Diploma (ND with upper credit) or equivalent, or Higher National Diploma (HND) with lower credit in Forestry or Agriculture from recognised institutions.

- ii) GCE Advanced Level at one sitting in at least two of the following subjects: Physics, Chemistry and Biology with a minimum of 6 (six) points.
- iii) Holders of National Certificate of Education with Agric double major and at credit pass level.

5. DURATION OF THE PROGRAMME

The programme is normally for a duration of five (5) academic sessions for UME candidates and four (4) academic sessions for direct entry candidates. A student should under normal circumstances spend five academic sessions to obtain the bachelor degree. However, if the student fails to graduate within the normal number of sessions, he/she will not be allowed to exceed a total of 7 academic sessions.

6. REQUIREMENTS FOR GRADUATION

To be eligible for the award of B. Agric Tech (Forestry & Wood Technology) degree students must have:

- a. passed all core courses prescribed by the Department, as well as the University and School required courses and any elective recommended by the Department for specialisation;
- b. accumulated a total of 207 credit units for the five year programme or 164 credit units for the direct entry programme and obtained a CGPA of not less than 1.00; and
- c. successfully completed all field practicals, Industrial Work Experience Scheme and an undergraduate project based on supervised research.

7. COURSE OUTLINES

The list of courses is tabulated on semester basis for each level. The courses are classified as compulsory (C), required (R), or elective (E). The weekly contact hours for each course are also categorized into lectures (L), tutorials (T) and practicals (P).

100 LEVEL

1ST SEMESTER

Course Title	Course Code	L	T	P	Units
General Chemistry (C)	CHE 101	2	1	3	4
Use of English (R)	GNS 101	1	1	-	2
Elementary Mathematics I (C)	MTS 101	2	1	-	3
Engineering Drawing (R)	MEE 101	-	-	6	3
General Physics (C)	PHY 101	2	1	0	3
General Physics III (C)	PHY 103	2	0	0	2
General Physics Lab I (C)	PHY 107	-	-	3	1
General Biology I (C)	BIO 101	2	1	3	4
Information Retrieval (R)	GNS 103	1	-	-	1
TOTAL					23

2ND SEMESTER

Course Title	Course Code	L	T	P	Units
General Biology II (C)	BIO 102	2	1	3	4
General Chemistry II (C)	CHE 102	2	1	3	4
Use of English II (C)	GNS 102	2	-	-	2
Philosophy and Logic (R)	GNS 106	2	-	-	2
Elementary Mathematics II (C)	MTS 102	2	1	-	3
Workshop Practice (R)	MEE 102	-	-	6	2
General Physics Lab II (C)	PHY 102	2	1	-	3
TOTAL					20

200 LEVEL
1ST SEMESTER

Course Title	Course Code	L	T	P	Units
Introduction to Animal Production and Health (C)	APH 201	1	-	3	2
General Agriculture (Theory) (C)	CSP 201	1	-	-	1
Principles of Farmshop (C)	AGE 201	2	-	3	3
Organic Chemistry I (C)	CHE 203	2	-	3	3
Fundamentals of Biochemistry (C)	BCH 201	3	-	-	3
Climatology & Biogeography (C)	CSP 203	3	-	-	3
Principles of Food Science and Technology (C)	FST 201	1	-	3	2
Introduction to Fisheries and Aquaculture (C)	FAT 201	1	-	3	2
Introduction to Ecotourism and Wildlife Management (C)	EWM 201	1	-	3	2
Total					21

2ND SEMESTER

Course Title	Course Code	L	T	P	Units
Anatomy and Physiology of Farm Animals (C)	APH 202	2	-	3	3
Basic Soil Science (C)	CRP 202	1	-	3	2
Botany of Economic Crops (C)	CRP 204	1	-	3	2
General Agriculture (Practical) (C)	CRP 210	-	-	6	2
Principles of Economics (C)	GNS 202	3	-	-	3
Agricultural Statistics and Field Experimentation (C)	AEE 202	2	-	3	3
Introduction to Forest Resources Management and Agroforestry (C)	FWT 202	2	-	3	3
Introduction to Use of Computers in Natural Resources (C)	FWT 204	2	1	3	2
Total					20

FWT 290: STUDENTS' WORK EXPERIENCE PROGRAMME I (SWEP) - 8 WEEKS (4 UNITS)

400 LEVEL

1ST Semester

Course Title	Course Code	L	T	P	Units
Forest Inventory (C)	FWT 401	2	-	3	3
Wood Harvesting and Transportation (C)	FWT 403	1	-	3	2
Pulping and Bleaching Technology (C)	FWT 405	1	-	3	2
Biometrics (C)	FWT 409	2	1	-	3
Furniture Design and Production (C)	FWT 415	2	-	3	2
Agroforestry Systems (C)	FWT 417	1	-	3	2
Application of Geographic Information Systems in Forestry (C)	FWT 421	1	-	3	2
Multiple Land Use (C)	FWT 423	1	-	3	2
ELECTIVES					3
Total					21

Electives

EWM 401 Biodiversity Conservation , Ecology and Management (E)

2 - 3 3

2ND Semester and Long Vacation

[STUDENTS' INDUSTRIAL WORK EXPERIENCE SCHEME (SIWES)]

COURSE TITLE	Course Code	L	T	P	U
Industry-based Supervisor's Assessment (C)	FWT 402	-	-	-	4
FUTA Supervisor's Assessment (C)	FWT 404	-	-	-	4
Students' Report and Seminar (C)	FWT 406	-	-	-	4
Total					12

**500 LEVEL
1ST SEMESTER**

Course Title	Course Code	NEW			Units
		L	T	P	
Forest Policy, Law and Administration (C)	FWT 501	2	1	-	3
Engineering Properties of Wood (C)	FWT 503	2	-	3	3
Forest Engineering (C)	FWT 505	1	-	3	2
Paper Making Technology (C)	FWT 509	1	-	3	2
Environmental Impact Assessment of Forestry Projects (C)	FWT 511	1	-	3	2
Forest Protection (C)	FWT 515	1	-	3	2
Finished Wood Products (C)	FWT 519	1	-	3	2
Forest Research Methods and Scientific Writing (C)	FWT 521	1	-	3	2
Final Year Student's Project (C)	FWT 599	-	-	18	6
ELECTIVES					3
Total					27

Electives

FWT 517 Forest Genetics and Tree Breeding (E)	1	-	3	2
FWT 513 Forest Biometrics (E)	1	-	3	2
EWM 509 Range Management Techniques (E)	2	-	3	3
AEE 503 Rural Development and Adoption of Improved Technology (E)	2	1	-	3

2ND SEMESTER

Course Title	Course Code	L	T	P	Units
Student's Seminar	FWT 500	-	2	-	2
Forest Economics and Management	FWT 502	2	-	3	3
Forest Products Marketing	FWT 506	1	-	3	2
Wood Adhesives and Fasteners	FWT 510	1	-	3	2
Social and Environmental Forestry	FWT 512	1	-	3	2
Forest Reserve and Park Management	FWT 514	1	-	3	2
Forestry Extension and Rural Sociology	FWT 516	1	-	3	2
Concept of Agribusiness	AEE 508	1	-	3	2
ELECTIVES					3
Total					20

Electives

FWT 504 Wood Structures	2	-	3	3
EWM 502 Impact of Ecotourism on Ecosystem	2	-	3	3

Course Synopses

FWT 202: Introduction of Forest Resources Management and Agroforestry (3 units)

Renewable natural resources, availability, distribution and potential, important indigenous trees, classification, morphology and distribution of important trees. Forest reserves in Nigeria. Silviculture; afforestation; characteristics of major timber and uses. Deforestation, land degradation and land-use problems in the tropics; the concept of agroforestry; historic developments and socio-economic rationale of agroforestry; agroforestry systems and practices; classification of agroforestry systems; multidisciplinary approach to land- use; sustainability and adaptability criteria; biological and economic considerations; diagnosis of agroforestry - related land-use problems; forest law and tenure issues.

FWT 204: Introduction to Use of Computers in Natural Resources (2 Units)

Introduction to computer hardware components and their functions; Operating systems and application packages such as Microsoft Office; File management – opening and saving files, creating folders and sub-folders, searching for and retrieving saved files; Working with the mouse and keyboard; Use of computer software for word processing; Use of spreadsheets; Preparation of PowerPoint presentations; introduction to desktop publishing and use of the Internet.

FWT 303: Forest Survey (2 units)

Procedures in ground survey and ground survey instruments. Chain surveying (open and close traversing) and triangulation. Obstacles in chain survey, how to overcome them and sources of errors. Compass survey: function, limitations and use during survey exercise and sources of errors. Plotting around survey maps, plans and methods of area calculations. Lettering and conventional signs. Levelling and contours. Plane tabling. The theodolite: uses in tacheometry and Forest road alignment.

FWT 305: Principles of Silviculture (3 units)

Introduction to the problems of raising tree crops. Application of ecological principles for establishment and maintenance of forest. Plantation and nursery practices. Seed technology. Photosynthesis: Factors affecting photosynthesis; Phases in and distribution of photosynthates. Water uptake and loss in a tree. Accumulation of nitrogen and nitrogen cycling in forest ecosystem. Plantation establishment: choice of species, species and provenance trials, tree crop production practices, and manipulation of natural forest. Major forest types in the tropics and silvicultural management system.

FWT 306: Forest Plantation Establishment and Technology (3 units)

Nursery Technology: Nursery site selection and preparation. Tending operations in the nursery, Nursery beds and sowing methods, Types of potting mixture. Types of nursery stocks: merits and demerits of each, Preparation and transportation of nursery stocks. Nursery care.

Plantation Technology: Site preparation, ground preparation and Planting operations. Espacement and pegging, Silvicultural techniques for plantation forest (weeding, thinning, pruning, etc). Species selection for afforestation programmes (factors to be considered), Provenance trials, Pre-germination test.

FWT 308: Forest Mensuration (3 units)

Fundamentals of resource inventory and mensuration. Theory of tree measurements: diameter, height, back thickness, taper and form, and tree volume estimation. Stand volume estimation and volume equations. Tree measurement's Instruments. Concepts of

growth: increment of trees and stands. Stand table projection; volume tables; yield tables; growth and yield equations/modelling. Concept of stand structure: stand density and stocking. Site quality assessment and site index. Tree biomass estimation.

FWT 309: Basic Properties of Wood (3 units)

Sources and types of wood. Macroscopic and microscopic characteristics of wood, including Cell-wall ultra-structure. Mechanism of wood formation. Normal variability and growth defects in wood. Wood structure: relation to physical and mechanical properties and uses of wood, wood-water relations, density, porosity, fluid flow, and wood response to force systems. Natural durability. Identification of principal commercial timber species.

FWT 310: Principles of Forest Economics (2 Units)

Definition of forest goods and services. Application of economic principles to forest resources. Decision making in single and multiple resource use of forestry. Concept of production functions (Input and output relationships). Resources in forestry production: land, labour, capital and management resources. Problems of resources. Concepts and methods of forestry production projects: introduction, appraisal, analysis and implementation.

FWT 311: Wood Chemistry (2 units)

Chemical composition of wood: elemental and molecular. Structure of wood primary components: Cellulose, hemicellulose, lignin and wood extractives: (classes and effect on wood and wood utilization). Determination of wood primary components. Physical and chemical reactions of wood. Wood chemical derivative: hydroxymethyl cellulose, acetate, xanthate, and nitrate. Introduction to the chemistry of wood conversion to pulp and paper.

FWT 312: Wood based Panel Products (3 units)

Definitions of wood based panel products. Importance of wood based-panel production. Wood-based panel manufacturing: plywood, particleboard and fibreboard (raw materials and manufacturing processes; properties and uses). Other variants: Plywood (blockboard, laminboard and battenboard); particleboard (cement-bonded particleboard); fibreboard (hardboard, softboard).

FWT 313: Plant Production and Quarantine (2 units)

Principles and effectiveness of plant quarantine; Quarantine regulations and the drawbacks; Pest/pathogen detection techniques; Methods of salvaging infested materials; Examination of pest/pathogen risks; principles of plant introduction and tree improvement; seed certification; utilisation of gene resources.

FWT 314: Sawmilling (2 units)

Theory of cutting. Machining processes. Equipment in sawmilling e.g. band saws, circular saws, turning lathe, spindle moulder, planing machine etc. Types of product and yield. Plant and yard layout. Material handling. Dust extraction from wood industries. Pollution control measures. Saw doctoring techniques. Types of saw teeth.

FWT 316: Wood Seasoning and Preservation (2 units)

Biodeteriorating agents (e.g. fungi, insect such as termites, pinhole borers, powder post beetles, carpenter ants, etc.); Photo-degradation; Air and kiln seasoning of wood. Drying schedules, drying defects and methods of preservation. Other methods of preserving wood: structured design, non-pressure vacuum, vacuum pressure and preservatives.

FWT 318: Ecological Assessment of Nigeria's Vegetation types (2 units)

Field trips to various ecological zones in Nigeria for assessment of biodiversity, plant

species composition and physiognomy. The course is a practical course and students are expected to collect specimens from each vegetation zone, prepare photo gallery to show the characteristics of each zone and submit field reports at the end of the trips.

FWT 320: Forest Soils (2 units)

Understanding of soil dynamics and influence on forest composition. Physical properties of forest soil. Soils and forest growth (tree growth rate and vigour). Features of forest soils: soil physics, chemistry, or organism and water movement. Forest nursery management. Determination and maintenance of forest soil fertility with reference to tropical conditions. Value of forest as soil conservation agents. Mycorrhizae and their importance to forest trees.

FWT 322: Computer Applications in Forestry and Wood Technology (2 Units)

Application of computers to forestry projects; scheduling forestry operations; User needs analysis; designing forest information systems; working with databases; introduction to customised software for forest management planning (e.g. PROGNOSIS, VMDY *etc.*), Open source software of use in forestry and wood technology.

FWT 324: Introduction to Remote Sensing (2 units)

Basics of remote sensing;; Importance of remote sensing in forestry; Remote sensing systems; Electromagnetic spectrum; Aerial Photography: uses of aerial photography, aerial camera and films, stereoscopy, photogrammetry (measurements from aerial photographs), aerial photo-interpretation, mapping from aerial photographs; Aerial and Satellite sensor imageries: microwave sensing, thermal infra-red sensing, Landsat multi-spectral application of remote sensing.

FWT 401: Forest Inventory (3 units)

The basics of forest inventory; planning of forest inventory. Inventory sampling design; sampling techniques in forestry inventory; field trip to conduct forest inventory of a selected forest area; camp set up and field crew organisation; forest measurement procedures; field data compilation; inventory data processing; inventory reports.

FWT 402, FWT 404, FWT 406 Students' Industrial Work Experience Scheme (SIWES) (4 units each totalling 12 units)

Students are attached to forestry organisations and wood industries, research stations, and other relevant places, with a view to making the students develop more skills in their various disciplines, and providing additional opportunities for students to learn how to write field reports. Students are supervised during the training period and shall be expected to keep log books and other records designed for the purpose of monitoring their performance.

FWT 403: Wood Harvesting and Transportation (2 units)

Methods of harvesting. Terrain and its effects on harvesting. Equipment for harvesting. Age and maturity determination in forest trees. Felling, logging and skidding. Timber truck loading. Log transportation by road. Log transportation by water.

FWT 405: Pulping and Bleaching Technology (2 units)

Raw materials for pulp production. Waste paper recycling. Conversion of wood to mechanical and chemical pulps. Kraft, sulphite and semichemical pulping processes. Chemical recovery systems. Bleaching of mechanical and chemical pulps.

FWT 409. Biometrics (3 units)

Review of biometrical concepts in agriculture; planning of experiment; analysis of variance;

transformation of data; experimental designs such as completely randomized design, Latin square, missing values, multiple comparisons, nested designs, factorial experiments, split-plot and split-split-plot designs; analysis of data from qualitative variables; application of correlation and regression analyses in agricultural experiments.

FWT 421: Multiple Land Use (2 Units)

Basic concepts: land, land characteristics and qualities. Land capability classification. Land improvement. Integrated land use for forestry, wildlife, fisheries and agricultural purposes. Forest laws and land tenure. Factors influencing land-use patterns (population pressure, land tenure, watershed protection, infrastructures, etc.).

FWT 415: Furniture Design and Production (2 units)

Classification of furniture products, principle of furniture design, raw materials in furniture production, production conditions and interchangeability (Dimensions, deviations, tolerance, classes of precision). Operation sequence, machines and formation of component parts, assembly of furniture parts, furniture-finishing processes.

FWT 417: Agroforestry Systems (2 Units).

The traditional agroforestry production systems, slash and burn, old fallow system. Review of some modern agroforestry system such as Taungya, Alley cropping, Agrisilvopastoral etc. Agroforestry tree species: Design and evaluation of agroforestry systems. Adoption of agroforestry systems.

FWT 421: Application of Geographic Information Systems in Forestry (2 units)

Concept of Geographic Information Systems (GIS) and review of different application areas of GIS; hardware and software; raster and vector-based GIS systems; creating and editing spatial data; working on geospatial projects, adding and editing themes and attribute tables; querying data; creating land use and vegetation maps; map projections; image analysis and interpretation.

FWT 500: Seminar (2 units)

Instruction on the preparation, presentation and discussion of critical reviews of topics important to Forestry and Wood Technology. Students will be assigned to supervisors who will guide them through the process. The course will culminate in seminars to be presented by each student on the chosen topic.

FWT 501: Forest Policy, Law and Administration (3 units)

Meaning, importance and general contents of forest policy. Implementation of forest policy. Components of forest law: law of procedure, law of evidence and criminal law. Compounding criminal offence under forest law. Contract. Legal aspects of forest protection. Meaning and importance of forest administration. Forest organogram: Significance of lateral and vertical relationships, delegation of authority and the effects on forest resource management. Forestry commission.

FWT 502: Forest Economics and Management (3 units)

Classification and characteristics of natural resources. Issues in resource policies and economics. Role of economists in allocating use of natural resources. Natural resources and economic development. Supply, demand and pricing of forest resources. Cost-benefit analysis of natural resources. Objectives and relevance of economics in forest management. Economic considerations in timber management: determination of optimum rotation, sustained yield concept and yield regulation. Concept of multiple use in forest management.

FWT 503: Engineering Properties of Wood (3 units)

Structural models of wood. The effect of orthotropic nature of wood on its physical and mechanical properties. Concept of stress and strain. Elastic constants of wood. Strength properties of wood: bending strength – Modulus of Rupture (MOR) and Modulus of Elasticity (MOE), compression parallel and perpendicular to grain. Methods of determining strength properties of wood. Factors affecting strength properties of wood: specific gravity, moisture content and temperature. Allowable stresses in wood. Application of Harkinson's formula in estimating strength of wood at an angle to the grain. Rheology of wood: creep and relaxation. Shear stress and strain. Duration of load. Fatigue. Nature of wood as fuel. Combustion characteristics of wood and factors affecting heating value of wood.

FWT 504: Wood Structures (3 units)

Basic theory of structures including considerations of elastic and non-elastic deformation. General requirements for structural designs. Standard dimensions of structural timbers. Grade stresses, grouping of timber species. Design of wooden beams, columns, trusses and timber superstructures (bridges, buildings and water front structures).

FWT 505: Forest Engineering (2 units)

Application of engineering principles to forestry operations including nursery, reforestation, harvesting, road layout, log transportation and milling. Design, construction, drainage and maintenance of forest roads, bridges, dams and buildings. Construction equipment. Principle of transportation engineering.

FWT 506: Forest Products Marketing (2 units)

Feasibility studies on new forest products manufacturing industries: raw material supply, markets, transportation and labour supply. Minor forest product industry e.g., charcoal production. Development, promotion and end use pattern of forest products. Quality standards and quality control of wood-based products. Marketing of wood products. Housing and ware-house hygiene.

FWT 599: Final Year Student's Project (6 Units)

Supervised study of an identified problem requiring both oral and written presentations. Students must attend tutorials on research techniques and scientific writing as well as all oral presentations relating to students' projects in the school. In addition students will prepare and present project proposal, execute the approved proposal and submit a project report to the Department. The report shall be defended during oral examination which shall be conducted in the presence of the External Examiner.

FWT 509: Paper Making Technology (2 units)

Introduction to paper manufacturing. Paper industry overview. Raw materials used for paper production. Fundamental steps in paper production. Stock preparation: beating/refining, consistency control, sizing and sizing agents. Effect of sizing agents on paper properties. Application of dyes – coloured pigments, soluble dyes, acid, basic and direct dyes. Paper formation: head box, Fourdrinier wire section, felting at pre-dryer section, dryer section, calendar stack. Quality control. Physical and mechanical properties of paper; grammage, cobb size, tearing, bursting, folding endurance, abrasion resistance, scuff resistance, rigidity, stiffness, tensile and opacity of paper. Paper products: industrial paper, writing/printing paper, paper board, corrugated container and box board. Printing and types of printing process.

FWT 510: Wood Adhesives and Fasteners (2 Units)

Development of wood adhesives. Advantages and disadvantages of adhesive bonding. Principles of adhesion and composition of adhesives. Selection of adhesives for bonding.

Basic bonding process. Glued joints: butt, scarf and finger joints. Types of mechanical fasteners: nails, bolts, screws, split ring and tooth plate connectors. Loads slip characteristics of mechanically fastened joints. Specifications on the types of connections in wood structures.

FWT 511: Environmental Impact Assessment of Forestry Projects (2 Units)

Characteristics of forestry projects. Environmental issues and impacts. Assessment methodology and mitigation measures. Preparation of environmental management plans. Preparation and evaluation of environmental impact assessment reports. Case studies of selected forestry and forestry-related projects for assessment of their environmental impacts.

FWT 512: Social and Environmental Forestry (2 Units)

Forestry and community development. Social benefits of forestry: income and employment generation. Ecological functions of forests and wooded areas: shelterbelts, sand dune fixation, control of erosion, soil conservation, land reclamation, micro-climate and hydrology. Rural forestry policies; institutional and technical constraints.

FWT 513: Forest Biometrics (2 Units)

Application of basic biometrical techniques to problems in forestry and wood technology. Processing of data for management purposes. Selected topics in applied statistics, e.g. multiple regression and frequency distribution models, use of common statistical packages for forestry data analysis; interpretation of results of statistical analysis.

FWT 514: Forest Reserves and Parks (3 Units)

Concepts, principles and policies influencing the development of forest reserves, plantations and parks, with special reference to Nigeria. Establishment, management and working plan for forest reserves, plantations and parks.

FWT 515: Forest Protection (2 Units)

Importance of forest entomology. Pest: classification, economic pests and pest control. Insect collection and preservation. Forest pathology, with special reference to important diseases, e.g. root rot. Fire: combustion and the triangle; breaking the fire triangle; heat transfer; fire fighting methods and tools.

FWT 516: Forestry Extension and Rural Sociology (2 Units)

Important basic philosophies and institutional setting of forestry extension. Basic concepts and principles in rural sociology: importance of rural communities and institutions; social stratification; social processes; social changes; leadership (roles; functions and development). The extension agents and the rural community. Communication techniques and strategies or change, with special reference to extension teaching methods and aids in forestry.

FWT 517: Forest Genetics and Tree Breeding (2 Units)

Definitions: forest genetics and tree breeding. Problems peculiar to forest genetics. Quantitative genetics in tree improvement. Principles underlying choice of species. Utilization of gene resources without breeding: seed zones, seed production areas and production seed orchards. Seed registration and certification. Utilization of gene resources by breeding. Selection of tree species with desirable characteristics. Propagation of selected materials and progeny trials. Artificial hybridization; mutation breeding and inbreeding. Conservation of gene plasm.

FWT 519: Finished Wood Products (2 units)

Classification of finished products of wood, windows and door frames; prefabricated wood

houses, boxes and drums, sporting articles technical articles (pencils, match splints, musical instruments). Technology of finished wood products.

FWT 521 Forest Research Methods and Scientific Writing (2 units)

Types of research in forestry. Planning research and conducting research activities. Information resources for research. Research proposal writing. Task scheduling and preparation of work plans. Budget preparation for proposed projects. Types of research reports and report writing process. Proof-reading and editing of research reports.