SCIENCE TEACHERS ASSOCIATION OF NIGERIA (STAN)

RETRAINING PROGRAMME FOR STEM TEACHERS

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STAN TEACHERS RETRAINING PROGRAMME FOR AGRICULTURE (PRIMARY)

COURSE TITLES & CODES (Modules)	COURSE UNITS	Course Contents/Descriptions
STAN AGS 101: Meaning of Agriculture and Historical Development of Agriculture (Module 1)	Unit 1: Benefits of Agriculture	Meaning of Agriculture; Plants and their uses uses; Names of common plants; Parts of a flowering plant
	Unit 2: Crops and crop production	Classifications of crops; Crop production processes; Materials need to raise crops; how to raise crops generally;
	Unit 3 Crop pests and Diseases	Common pests and diseases of crop plants,; Prevention and control of pest and diseases;
	Unit 4: Cultural Practices for growing crops	Definition/meaning of cultural practices such as pre-planting operation, planting and post planting operations; Procedures for the planting operations
	Unit 5: Weeds	Definition/meaning of weeds, effect on crop yield and control measures; importance of weeds to farmers and environments
STAN AGS 102 Farm Animals and Their Uses (Module 2)	Unit 1: Animal Husbandry	Meaning of livestock with examples; How to raise livestock; General requirements for livestock production; specific needs of animals for growth; classification of Animals
	Unit 2: Pest and Diseases of farm Animals	Various pests and diseases of farm animals; Methods of prevention and control of animal pests and diseases;
	Unit 3: Preservation & management	Strategies for preserving various farm produce (plant & animal); Basic requirements for Agricultural production (factors of production)

STAN AGS 103 **Land and its Uses** (module 3)	Unit 1: Meaning and Classification of Land	Meaning of land and types of land; Meaning and classification of soil: clay, sandy and loamy; Uses/importance of soil;
	Unit 2: Soil Fertility and soil formation	Meaning of soil fertility; Procedures for enriching the soil – manuring, mulching, crop rotation and bush fallowing; Causes of loss of soil fertility; Meaning of compost and preparation of compost; Soil formation (agents, and processes of soil formation); Physical properties of soil
STAN AGS 104 **Sun, Air, Water and their uses** (module 4)	Unit 1: The sun and its uses	Nature of the sun; How to feel the sun; Uses of the sun (solar energy)
	Unit 2; Air and its uses	Nature of air; Uses of air; Effects of air pollution; Methods of controlling air pollution
	Unit 3: Water and its uses	Composition of water; Types of water; Sources of water; Uses of water; Danger of unclean water; Effects of flooding on human beings and the environment
STAN AGS 105 **Food** (Module 5)	Unit 1: Meaning and types of food	Meaning of food and examples of local food; Examples of food eaten by animals: grasses, cassava peals and leaves, yam peals, plantain peals, remnants of fish or meat, insects, earthworm e.t.c
	Unit 2: Classes of food	Energy giving food with example; Body building foods with examples, Fruits and vegetables; Oily/fatty foods with examples; Spices and stimulants; Beverages; Balanced diet. Animal food (meat, fish, egg, milk)
STAN AGS 106 **Food Processing and Preservation** (Module 6)	Unit 1: Food Processing	Meaning of food processing; importance of food processing; examples of processed food
	Unit 2: Food preservation	Meaning of farm produce preservation; Importance of farm produce preservation; Methods of farm produce preservation (sun drying, smoking, frying, refrigeration, canning, bottling etc)

STAN AGS 107 **Simple Farm Tools** (Module 7)	Unit 1: Meaning and types	Meaning and examples of simple farm tools; Crop farm tools (spade, shovel, matchet, pick axe, rake, wheel barrow e.t.c); Animal farm tools (fishing nets, traps, hooks and line, baskets, watering trough, feeding trough etc).
	Unit 2: Maintenance of farm tools	Maintenance and care of the tools through good storage, clean and dry, apply oil where necessary, sharpening blunt edges; damages that may occur to farm tools and preventive measures
	Unit 3: Farm Records	Definition of simple farm records; Importance of farm records; Types and uses of farm records; Computer aided farm records and benefits

STAN TEACHERS RETRAINING PROGRAMME FOR AGRICULTURE (JUNIOR SECONDARY)

COURSE TITLES & CODES (Modules)	COURSE UNITS	Course Contents/Descriptions
STAN AGS 201: Importance and forms of Agriculture (Module 1)	Unit 1: Meaning and historical development of Agriculture	Broad concepts and meaning of Agriculture; historical development of Agriculture.
	Unit 2: Importance and Forms of Agriculture	Role of Agriculture in national development; Crop farming; Livestock farming; Horticulture
	Unit 3: Some Agricultural enterprises	Apiculture; Snailry; Poultry faming; Pigry; Aquaculture
STAN AGS 202: Crop Plants: Classes and Uses (Module 2)	Unit 1: Meaning and classification	Definition, description and examples of crop plants; Classification of crop plants based on number of cotyledons, Life span and uses
	Unit 2: Modes of Propagation	Meaning of crop propagation; methods of crop propagation; Advantages and disadvantages of the methods of propagation.
STAN AGS 203: Crop Diseases and Pests (Module 3)	Unit 1: Crop Diseases	Definition of disease causing organisms; Crop plant pathogen/disease causing organisms; group of disease causing organisms;
	Unit 2: Symptoms and Control Measures	Basic symptoms of crop diseases; Modes of transmission and effects on crop yields; Prevention and control measures of crop diseases
	Unit 3: Crop Pests	Definition/meaning of crop pests with examples; Classification of crop pests with examples; Description of damage and effects on crop yield; Prevention and control of crop pests

STAN AGS 204: **Weeds** (Module 4)	Unit 1: Definition & Classification	Meaning of weeds with examples; Description of the adaptive structures of weeds; classifications of weeds; characteristics of weeds
	Unit 2: Uses & Weed Control	Uses of weeds; Methods of weed control; damages to crop plants; Effects of chemicals used in weed control on vegetation, environment and water
STAN AGS 205 **Classes and Uses of Farm Animals** (Module 5)	Unit 1: Forms and uses	Definition/meaning of farm animals; Basic characteristics of farm animals; Uses of farm animals
	Unit 2: Farm Animal Husbandry	Definition/meaning of animal husbandry; Management required in animal husbandry;
	Unit 3: Farm Animal Parasites & Diseases	Definition and distinction between farm animal parasites and diseases; Classification of farm animal parasites and diseases; effects of parasites and diseases on animals and methods of controls of pests and diseases of farm animals
	Unit 4 : Farm Structures & Machines	Sitting and layout of farm structures; Farm machines (types, structures and functions); Building and maintenance of farm machines
STAN AGS 206: **Farming and Cropping Systems** (Module 5)	Unit 1: Meaning and Types of farming systems	Meaning and types of farming systems; meaning and types of cropping systems; advantages and disadvantages of each of the cropping systems.
	Unit 2: Cultural Practices	Pre planting and planting operations; Post planting operations and harvesting; Post harvest operations and storage; types of storage structures; Advantages and disadvantages of the types of storage structures
STAN AGS 207 **Feeds and Feeding** (Module 7)	Unit 1: Definitions and types of feed and feeding	Definitions of feed and feeding; Types of feed stuff; Uses of the various types of feed stuff
	Unit 2: Feed tools and Feed Production	Meaning and types of feed tools; Maintenance and management of feeding tools; compoundment/production of feed stuff

STAN AGS 208 **Soil Fertility and Management** (Module 8)	Unit 1: Nature & Maintenance of soil	Definition of soil and soil fertility; Composition and properties of soil; Ways of maintaining soil fertility
	Unit 2: Soil Conservation	Definition and importance of soil conservation; Factors affecting soil conservation; effects of soil conservation; Forests: their uses and effects of forest on environment.
STAN AGS 209 **Economic Empowerment Through Agriculture** (Module 9)	Unit 1: Empowerment through Agriculture	Ways of economic empowerment through Agriculture; Marketing of Agricultural products; Methods of preserving Agricultural products; Channels of distribution of Agricultural products and export promotion
	Unit 2: Cooperative Societies	Cooperative societies in Agriculture and objectives of cooperative societies; importance and management of Agricultural cooperatives; Qualities of a good cooperative member; Agriculture in stock exchange

STAN TEACHERS RETRAINING PROGRAMME FOR AGRICULTURE (Senior Secondary)

COURSE TITLES & CODES (Modules)	COURSE UNITS	Course Contents/Descriptions
STAN AGS 301: Basic Concepts (Module 1)	**Unit 1**: Problems of Agricultural Development	Problem created by inadequate land, basic amenities, water, electricity and healthcare delivery, transportation, storage and processing facilities, Low level of Agricultural education and extension, inadequate tools and machinery, farm input; Possible solution to these identified problems
	Unit 2: Agricultural Laws and reform	Land ownership and tenure system in Nigeria; Land use act of Nigeria; Role of government in Agricultural production (loan, credit, subsidy, settlement schemes, operation feed the nation, green revolution etc)
STAN AGS 302: Crop Production	**Unit 1**: Husbandry of selected crops	Methods of propagation; climate and soil requirements; Land preparation, planting dates, seed rate, spacing, sowing depth and nursery requirements; Manuring and fertilizer requirements and application: Harvesting, Processing and storage of selected crops

(Module 2)	**Unit 2:** Disease of crops	Diseases of major crops such as cereal (smut, Rice blast), Legumes (Cercospora leaf spot, Rosette), Beverage (Cocoa black pod, Coffee leaf rust), Tuber (Cassava mosaic virus, bacterial leaf blight), Fibre (black arm, bacterial blight), vegetable (root-knot of tomato or okra, cotton twister), Stored produce (moulds). Description of symptoms of the identified diseases; Economic importance of the diseases; Prevention and control measures (cultural methods, biological methods, chemical methods)
	Unit 3: Pest of crops	Important insect pests of major crops Legumes (Pod borer, Aphids, sucking bugs, Leaf beetle), Beverage (Cocoa myrids); Tubers (Yam beetle, Cassava mealybug, Green epidermite, Varigated grasshopper); Fibre (Cotton stainer, boll worm); Fruits and vegetables (thrips, grasshoppers, leaf roller, leaf beetle, scale insect); Stored produce (grain weevil, bean beetle); Other important pests like birds, rodents. Economic importance of each selected pests, prevention and control (cultural, biological and chemical methods)
	Unit 4: Pasture and forage crops	Morphology of common grasses and legume species of Nigeria pastures; Types of pastures; Factors affecting productivity, establishment and management
	Unit 5: Forest Management	Forest regulations; Selective exploration; deforestation; Regeneration; Afforestation; Taungya system
	Unit 6: Crop Improvement	Meaning and aims of crop improvement; Mendelian laws; Processes of crop improvement (introduction, selection, breeding).
	Unit 1: Anatomy and Physiology	The digestive system of monogastric and ruminants; the circulation system; the reproductive system; Respiratory system; Nervous system

STAN AGS 303 **Animal Production** (Module 3)	**Unit 2**: Reproduction	Oestrus cycle with emphasis on heat period; Mating in farm animal; Gestation period; Parturition; Lactation and Colostrum; Describe the process egg formation in poultry; State the role of hormones in reproduction.
	Unit 3: Livestock Management	Housing; Feeding; Hygiene; Finishing
	Unit 4: Animal Nutrition	Nutrition sources and functions of Carbohydrate, protein, fats, minerals, vitamins, water; Types of ration; Balanced ration; Malnutrition
	Unit 5: Range Management and Improvement	Importance of rangeland to livestock; Characteristics of rangeland; Methods of rangeland improvement – controlled stocking, rotational grazing, use of fertilizers, introduction of legumes, and reseeding etc
	Unit 6: Animal Health Management	Susceptibility and resistance to diseases; Predisposing factors (health status of the animals, environment, nutrition); Symptoms, effects and mode of transmission of selected diseases; e.g. - Viral foot and mouth diseases (Rinderpest, Newcastle diseases), Bacteria (Anthrax brucellosis; Tuberculosis); Ecto and endo-parasites life cycle and mode of transmission; Fungal (scabies, ring worm); Protozoa (trypanosomiasis, coccidiosis); Methods of prevention – quarantine, inoculation, vaccination, hygiene, breeding.
	Unit 7: Fish farming and Fishery regulation	Establishment and maintenance of fish ponds; Fishery regulations
	Unit 8: Animal Improvement	Aims and meaning of animal improvement; Methods of animal improvement (introduction, selection, breeding – inbreeding, line breeding and cross breeding); Artificial insemination – as an instrument in breeding

STAN AGS 304 Agricultural Ecology and Systems (Module 4)	**Unit 1**: Land and its uses	Uses of land for Agriculture, forestry, and wildlife; Factors affecting land availability for Agricultural purposes (alternative uses of land for building, industries and roads, soil type and soil topography)
STAN AGS 305 Agricultural Engineering (Module 5)	**Unit 1**: Sources of farm power	Sources of farm power (Human, Animals, mechanical, electrical, solar, wind, water); Advantages and disadvantages of each of the types.
	Unit 2: Problems and prospect of mechanization	Broad definition of mechanization; Advantages and disadvantages of mechanization, limitations of mechanization; prospects of mechanization in Nigeria
	Unit 3: Farm Machinery	Types of farm machinery; common farm machinery – Tractors, bulldozer, Sheller, Dryers, incubators, milking machine etc.; Tractor –coupled implements – Ploughs, harrows, Ridgers, Planters and Harvesters, Sprayers etc
	Unit 4: Surveying and Planning of farm stead	Importance of farm surveying and planning; Common survey equipment; principles of farm stead outlay
STAN AGS 306 Agricultural Economics and Extension (Module 6)	Unit **1**: Factors of Production	Factors of production (land, labour, capital, management); Functions of farm managers
	Unit 2: Agricultural Financing	Sources of farm financing (Agric banks, commercial banks, cooperative societies, money tenders, individuals, saving and thrift society, self financing, Government). Implications of farm credit e.g. interest rate
	Unit 3: Basic Economic Principles	Laws of diminishing return; interrelationship of demand and supply as it affects price and profits.
	Unit 4: Farm accounts	Entries, Sales and Purchases; Profit and loss accounts

	Unit 5: Marketing Agricultural Produce	Meaning and importance of marketing; Marketing agents (Marketing Board, Cooperative societies, middlemen, producers)
	Unit 6: Agricultural Extension	Agricultural extension as a teaching and learning process; Agricultural extension programmes; Diffusion of new ideas and techniques (innovations) to farmers

STAN TEACHERS RETRAINING PROGRAMME FOR BASIC SCIENCE & TECHNOLOGY (PRIMARY)

COURSE CODES & TITLES	COURSE UNITS	COURSE CONTENTS/COURSE DESCRIPTION
STAN BST 101: Exploring Your Surrounding, Weather and Changes in the Environment (Module One)	Unit 1: Methods in Science	Importance of Science. Methods in science - Field trips, Inquiry, Demonstration.
	Unit 2: Weather	Meaning of weather. Classification and instruments of measurement.
	Unit 3: Environmental Changes	Meaning of environmental change. Pollution – types, causes, effects and method of control. Waste and waste disposal. Recycling and dangers of poor disposal of waste. Environmental quality and human activities. Erosion – causes effects and control measures.
STAN BST 102 Soil, Rocks and Minerals (Module Two)	Unit 1: Soil	Meaning and types of soil. Constituents of soil. Importance of soil.
	Unit 2: Rocks	Meaning of rocks. Types of rocks. Constituents of rocks. Rock formation and weathering. Uses of rocks
	Unit 3: Minerals	Meaning and examples of minerals. Uses of minerals.
STAN BST 103 Air, Water, Acids, Bases and Soap (Module Three)	Unit 1: Air and Water	The meaning and existence of air and water. Air in motion and floatation. Constituents of air and water. Uses of air and water
	Unit 2: Acid, Bases and Soap	Common acids and bases. Acids and bases and their reactions. Saponification as a process of making soap. Types of soap and their uses.
STAN BST 104: Plant and Animals (Module Four)	Unit 1: Plants	Plant types and characteristics. Parts of a plant. Growing of plants and changes in plants. Improving crop yields. Diseases of crop plants and their economic importance.
	Unit 2: Animals	Animal types and characteristics. Parts of the human body. Functions of the parts. Feeding, blood circulation, skeletal system, senses. Changes in animal. Reproduction and responsible parenthood.

STAN BST 105 Technology (Module Five)	Unit 1: Meaning and Importance of Technology	Definition and meaning of technology. Importance of technology in national development
	Unit 2: Types of technologies	Identification of specific technologies e.g. Information and communication technology, Building and construction technology etc. Identification and use of building materials. Maintenance, doormat making and woodwork hand tools.
STAN BST 106 Simple Machines And Safety (Module Six)	Unit 1: Types & uses of simple machines	Definition/meaning of simple machines. Specific types and uses of simple machines.
	Unit 2: Safety Precautions	Meaning of safety. Cause and prevention of accidents. Safety precautions. Content of first aid box and their uses.
STAN BST 107 Food and Drugs (Module Seven)	Unit 1: Food	Definition/Meaning of food. Types, classes and uses of food. Food nutrients, deficiencies and their symptoms.
	Unit 2: Drugs	Meaning and Definition of drugs. Types of drugs (synthetic and naturally occurring drugs). Normal and excessive use of drugs and their effects. Harmful substances
STAN BST 108 Measurement & Energy (Module Eight)	Unit 1: Measurements	Fundamental quantities and units; measurements of lengths (metre rule, calipers, micrometer screw gauge); measurement of mass and weight; measurement of volume.
	Unit 2: Energy	Forms of energy. Energy conversion. Basic electricity. Magnetism.

STAN TEACHERS RETRAINING PROGRAMME FOR BASIC SCIENCE (JUNIOR SECONDARY)

COURSE CODES & TITLES	COURSE UNITS	COURSE CONTENTS/DESCRIPTION
STAN BSC 201: You as a Living Thing Module One)	Unit 1: Characteristics of living things	Characteristics shown by all living things. Discovery and identification of things in the school compound. Identification of all living things. Characteristics of plants and animals. Structure of plant and animal cells. Characteristics in activities of cell structure and food production which differentiate plants from animals
	Unit 2: The human body and Human being as intelligent animal	Identification of the main parts of the body and the main systems of the body from charts e.g. digestive, respiratory, circulatory, excretory etc. Human intelligence, shown by his organizational and problem solving skills. Examination of his hand – designed to use tools.
	Unit 3: Feeding	Food items and their sources; Grouping of foods; Discussing and grouping them by their scientific names; teeth and their care
	Unit 4: Movement	Main bones of the skeletal system. Major functions of the skeletal systems. Muscles, joints and movement. Body movement as machine.
	Unit 5: Excretory System	Excretion and need for it. Excretory organs and their functions. Excretory products
	Unit 6: Respiratory System	Respiration as release of energy. Mechanism and parts involved in breathing. Breathing and outside pressure: high altitude, deep in the sea. Problems connected with breathing e.g. asthma
	Unit 7: Circulatory System	Compound of blood and their functions. Blood vessels. The heart, simple structure and functioning. Blood defect or diseases.
	Unit 8: Digestive System and Food Storage	Parts of the digestive system, from mouth to anus. Simple food tests. Digestion at various points. Absorption of food. Action of enzymes on food. What happens to absorbed food? Storage of excess carbohydrate and fats. The liver destroys excess protein.

	Unit 9: Nervous Systems and Sense organs	The CNS (Central Nervous System) as centre of sensitivity; the brain, spinal cord. Stimuli go via nerves. Simple reflex actions and examples. Sense organs: eye, ear, nose, tongue, and skin. Types of eye defects and their correction with glasses/lenses
	Unit 10: Reproductive System and Health	Definition of reproduction. Main parts of the reproductive system. Reproduction and family tree. The human reproductive cycle. Changes that accompany puberty in boys and girls. Health and maintenance. Need of health in growth. Keeping fit through good exercises, good diet, and good hygiene. Drug abuse.
STAN BSC 202: You and Your Home (Module Two)	Unit 1: Health of the family	Strategies for improving personal cleanliness. Polluted water in the home (identification of polluted water, awareness of hazards of polluted water and methods of purification of polluted water). Polluted air in the home (causes, awareness of danger and prevention of pollution of air). Dirty environments around the home (identification of dirty environment, prevention against having dirty environment).
	Unit 2: Growth and Development	Factors that affect growth and development (food, diseases, heredity). Cultivation and harvesting of crops.
	Unit 3: Energy and Appliances in the home – Forms of Energy	Use of energy in the home e.g. walking, doing household work and playing, cooking, seeing, operating appliances. Energy sources ((i). natural sources – food, sun, wood, coal, natural gas, oils and fats. (ii). Manufactured sources e.g. batteries, generators, and electricity from the mains (iii). Petroleum products e.g. Kerosene). Forms of energy: Heat, electricity, light etc. Appliances in the home (differentiation of traditional and modern appliances). Conversion of energy in the home: (i). chemical energy to heat and light (burning firewood or candle); (ii).Electric energy to heat, light, sound, mechanical energy.

	Unit 4: Continuity of the family	Identification of the members of the nuclear family and extended family. Identification of the physical resemblances and differences in the nuclear and extended family e.g. 6th finger, height, baldness, fatness etc. Identification of dominant and recessive traits of these resemblances as they appear/disappear in three successive generations.
	Unit 5: Care of the Child	Medical care (immunization against common diseases, Regular reading according to medical directives, awareness that each child is an individual with unique physical, mental and psychomotor skill). Socialization of the child – the direct responsibility of the parents in discipline and learning of cultural norms.
STAN BSC 203 Living Components of the Environment (Module Three)	Unit 1: Classification of matter	Characteristics of living things: cellular composition, locomotion, feeding, excretion, irritability, growth, reproduction. Classification of matter into living matter and non living matter
	Unit 2: Grouping of Organisms	Comparison of plants and animals using the characteristics of living thing.
	Unit 3: Activities of living things	Locomotion and movement (types of movement, methods of locomotion, different locomotory organs, passive movement); Feeding (functions of food, Autotrophism and Heterotrophism, Herbivores, carnivores and omnivores); Excretion (Need for excretion, waste products, organs responsible for excretion); Respiration (need for respiration, organs responsible for respiration); Irritability (Needs for irritability, sense organs, Responses shown by some organisms to external stimuli e.g. taxism, tropisms); Growth and development (factors which influence growth, Germination of seeds). Reproduction (Types of reproduction, Fertilization, life history of mosquito or housefly and flowering plants
	Unit 4: Ecology	Biotic and abiotic factors of the environment. Transfer of energy from the nonliving to the living world by green plants. Food chains and food webs, tropic levels. Population and population density. Community. Interactions among living things and between living and non-living things. Water cycle; Carbon cycle and Nitrogen cycle.

STAN BSC 204: Non-Living Components of the Environment I (Module Four)	Unit 1: Observation and classification of non-living things	Observing samples of non-living things. Limitation of our senses. Use of devices to aid our senses. Criteria for classification – colour, smell, shape, texture, taste etc. Classification into solid, liquid and gases.
	Unit 2: Measurements	Need for a standard measurement. Measuring devices – metre rule, a balance, a clock, a thermometer, a measuring cylinder. Measurement of length, mass, time, temperature and of volume.
	Unit 3: State of Matter	Solid, liquid and gases - water as an example. Particulate theory of matter. Use of particulate theory of matter to explain evaporation, boiling, melting, compressibility, pressure, cloud formation, water cycle, expansion. Physical change. Chemical change
	Unit 4: Air and Water	Pressure of air in our environment. Composition of air. Properties of air – has weight, exerts pressure, is compressible, is a mixture, moves (i.e. wind). Sources of water. Purifications of water – sedimentation, filtration, distillation. Uses of water. Burning of substance in the air. Proportion of air used. Laboratory preparation of oxygen
	Unit 5: Man and Space	The earth, sun and moon. Climate and seasons. Solar system. Stars.
	Unit 6: Elements, Compounds and Mixture	Elements, Compounds and mixtures. Methods of separating mixtures - decantation, filtration, distillation, evaporation, sieving, chromatography, sublimation etc.
	Unit 7: Hydrogen	Preparation, properties and use of hydrogen. Water as products of hydrogen and oxygen (synthesis of water from dry hydrogen and oxygen; electrolysis of water to give hydrogen and oxygen).
	Unit 8: Rusting	Rusting in nature. Conditions necessary for rusting. Rusting compared with burning and respiration.

	Unit 9: Energy	Concept of energy. Sun as primary source of energy. Forms of energy. Heat energy – temperature, effects of heat. Ways of producing heat. Light energy. Pinhole camera, eclipse, reflection of light, refraction of light. Colour – prism and production. Absorption of light by coloured objects.
	Unit 10: Measurement	Measurement of density, force, pressure. Mass and weight.
STAN BSC 205: Non-Living Components of the Environment II (Module Five)	Unit 1: Chemical Symbols, Formulae and Equations	Atoms and molecules. Chemical symbols of elements. Formulae of compounds. Simple equations
	Unit 2: Atomic Structure	Concept of electrons, neutrons and protons. Simple atomic model
	Unit 3: Metal and Non-metal	Characteristics of metals and non-metals. Extraction of tin from its ore. Extraction of iron from its ore. Steel manufacture. Uses of metals.
	Unit 4: Activity Series	Action of water on metals (sodium, Calcium, Magnesium, iron, copper etc). Action of diluted mineral acids on metals (calcium, magnesium, iron, lead, copper).
	Unit 5: Acids, Bases and Salts	Acids in nature. Tests for acids and bases. Neutralization. Preparation of simple salts.
	Unit 6: Energy conversion and transfer	Chemical energy to electric energy – the simple cell. Conductors and insulators. Electrical energy – simple electric circuits. Heat energy – good and bad conductors, conduction, convection, radiation. Sound energy – mechanism of transferring sound. Vibration, echoes, noise, music. Inter-conversion of energy as seen from various machines or mechanical se up such as in hydroelectricity and steam engine, bicycle, telephone, accumulators, diesel engine, motors.
	Unit 7: Kinetic Theory	Simple qualitative aspects of the kinetic theory – its assumption and its use in explaining some phenomena e.g. evaporation, boiling, pressure
	Man in Space	Space travel. Gravitational pull
	Unit 1: Science related occupation	Examples and work descriptions of farming, fishing, carpentry, engineering, medicine etc.

STAN BSC 206 Saving Your Energy (Module Six)	Unit 2: Tools (machines) for work and their maintenance	Examples and descriptions of some basic tools used by farmers, fishermen, carpenters, auto mechanics, auto electricians, medical doctors, nurses etc. comparison of traditional and modern mechanically and electrically powered tools. Types of machine – the lever, inclined plane, pulley, screw, and wedge. Importance of regular maintenance of machines. Need for reducing friction in machines. Use of grease, oil, ball bearing to reduce friction.
	Unit 3: Force	Concept of force. Types of force – contact force (push, pull, friction, force field e.g. gravitational, electric, magnetic). Balanced and unbalanced forces. Friction in use, advantages of friction especially its use in walking. Effects of force
	Unit 4: Work and Energy	Concept of work and energy. Human and non-human means of doing work. Mechanical advantage, efficiency of machines, energy unavailable for desired work. Potential to kinetic energy as a example in human means of doing work. Electricity to mechanical and mechanical to heat energy as examples in non-human means of doing work.
STAN BSC 207: Controlling the Environment (Module Seven)	Unit 1; Environmental Sanitation	Community disposal of refuse in villages and towns. The balance of nature in the villages. Compost
	Unit 2: Sewage	Sewage: outdoor latrines, flush toilets – necessity for water system.
	Unit 3: Disease Vectors	Disease vectors. Life cycle of mosquito. Water drainage. Insecticides. Oil spreading/sparing. Life cycle of housefly. Flies as germ carriers. River blindness and sleeping sickness.
	Unit 4: Preventive Medicine (clean water & Immunization)	Cholera. Diarrhea. Typhoid. Pipe-borne water. Water treatment processes. Vaccination. Inoculation. The conquering of small pox in Nigeria.
	Unit 5; Maintaining Balance in the Environment and wild Life Conservation	Factors that control population growth. Effects of limited and unlimited growth. Mans activity are reducing wildlife. Wildlife role in balanced environment relates to the wellbeing of other organisms and man. Wildlife reserves in Nigeria.

	Unit 6: Air and Water Pollution	Kinds of air pollution and their effects. Pollutants from the home. Pollutants from industry and Agriculture. Effects and control of air pollution. Effects and control of water pollution.
	Unit 7: Erosion and Flooding	Causes and prevention of erosion. Causes of flooding. Drainage patterns. Prevention of flooding
	Unit 8: Oil Spillage and burning of natural gas	The effects of oil spillage and burning of natural gas on the environment.
	Unit 9: Our Disappearing forests	Human activities and roles in disappearing forests in West Africa. Encroaching deserts. Replanting our forests
	Unit 10: Controlling the Weather	Simple conditions of weather – temperature, humidity, barometric pressure, kinds of clouds, precipitation, haze, visibility, storm, lightening, and thunder. Weather maps – wind direction, isobars etc

STAN TEACHERS RETRAINING PROGRAMME FOR BIOLOGY

COURSE TITLES & CODES (Modules)	COURSE UNITS	Course Contents/Descriptions
STAN BIO 301 Biology and Living Things (Module 1)	Unit 1: Biology as inquiry	Knowledge of the nature and role of enquiry in nature, Process or method of science (e.g. observation, measuring), usefulness of science
	Unit 2: Living Things and Non living things	Characteristics of living things, differences between plants and animals, classifications and examples of living and non living things,
	Unit 3: Organizations of life	Levels of organizations of life - Cell (Euglena, Paramecium), Tissue (hydra), Organ (onion bulb), system (bird, man)
STAN BIO 302 Microorganisms (Module 2)	Unit 1: Micro-organisms around us	Micro-organisms in air and water (groups of micro-organisms: bacteria, viruses, some algae, protozoa and some fungi), identification of micro-organisms in air, water soil, food and our body, carriers of micro-organisms and their locations.
	Unit 2: Micro-organisms in action	Locations of micro-organisms in carriers, growth of micro-organisms, beneficial and harmful effects, ways in which disease causing organisms spread and are transmitted.
	Unit 3: Towards Better Health	Control of harmful micro-organisms, vectors (definition, ways of controlling vectors, Pupils health (maintenance of good health and ways in which community can assist)
STAN BIO 303: Relevance of Biology to Agriculture (Module 3)	Unit 1: Classifications of plants	Biological classifications (e.g. Algae, Spermatophytes), Agricultural classifications (e.g. fibres, latex), Classification based on life cycle (e.g. annuals, perennials)
	Unit 2: Effects of Agricultural Activities on ecological systems	Effects of bush clearing/burning, tillage, fertilizers and herbicide application, effects of different types of farming on ecological systems.
	Unit 3: Pests and Diseases of Agricultural Importance	Knowledge of pests (types, life cycles and controls), Diseases (types, control)

	Unit 4: Food production & storage	Ways of improving crop yield, causes of wastage, methods of preserving and storing food, population growth and food supply, effects of food shortage
STAN BIO 304 The Cell (Module 4)	Unit 1: Nature of the Cell	Cell as a living Unit, forms in which cells exist (as independent organism, as a filament, as a colony). Cells as part of living organisms, cell structure (the cell theory, structure and functions of cell components, differences and similarities between plant and animal cells
	Unit 2: The Cell and its Environment	Diffusion (definition, process, significance), Osmosis (diffusion of water through membrane, diffusion through a semi-permeable membrane, haemolysis, plasmolysis, osmometer with living materials, biological significance of osmosis.)
	Unit 3: Feeding	Definition and types, micronutrients and macro nutrients
STAN BIO 305: Properties and functions of the cell (Module 5)	Unit 1: Cellular Respiration	Definition of cellular respiration, aerobic respiration (catabolism); Creb's cycle, Anaerobic respiration, energy release during respiration
	Unit 2: Anabolism	Usefulness of food, autotrophism (photosynthesis & chemosynthesis), Heterotrophism, role of enzymes
	Unit 3: Excretion	Excretion organelles in living cells, waste products of metabolic activities in living cells, forms in which waste products are excreted.
	Unit 4: Growth	Basis of Growth – Cell division (mitosis) Enlargement and Differentiation, regulation of growth by hormones
	Unit 5: Irritability & Movement	Irritability as basic characteristic of protoplasm, types of responses, environmental factors evolve response, movement - cyclosis, organelles for movement, growth movement as regulated by auxin
	Unit 6: Reproduction	Forms of reproduction - asexual, (fission, budding, vegetative propagation), sexual (conjugation, fusion of male and female gamete), meiosis, structure and functions of male and female gonads.

STAN BIO 306: Biological Systems in Animals & Plants (I) (Module 6)	Unit 1: Skeletal and Supporting systems	Biological significance, forms (ossicles, bones or cartilage), types of skeleton, bones of the vertebral column, different types of supporting tissues in plants, development and arrangement of structural components, main features of supporting tissues, mechanism of support (hardness & rigidity, flexibility and resilience). Uses of fibres for the plants. Functions of skeleton in animals, functions of supporting tissues in plants.
	Unit 2: Digestive System	Alimentary tracts (types, parts of alimentary canals and functions, modification of parts to effect their digestive functions), feeding habits (categories and mechanisms,) Modifications in organisms to reflect feeding habits (filter feeding, fluid feeding, feeding adaptations in insects, saprophytic and parasitic feeding), feeding in protozoa, hydra & mammals
	Unit 3: Transport System	Need for transportation and why it is necessary in large organisms (use A/V ratio for illustration), materials for transportation, structure of arteries, veins, capillaries, vascular bundles, media of transportation Fluid as medium of transportation: structure and functions of blood, cytoplasm in small organisms, cell sap or latex in moss plants, closed and open circulation), mechanism of transportation in unicellular organisms, multicellular organisms, higher animals and higher plants.
	Unit 4: Respiratory System	Types of respiratory systems (body surface, gills, tracheal system, lungs), Mechanism of respiration in higher animals, lower animals and plants.
	Unit 5: Excretory System	Contractile vacuoles in some unicellular organisms, flame cells in flat worms, malpighan tubules in insects, kidney in vertebrates, stomata and lenticels in plants, excretory mechanisms in earthworm, insects and mammals
STAN BIO 307:	Unit 1: Reproductive systems	Reproductive systems in fish, reptiles, birds and mammal (structures and functions). Reproductive systems in plants (structure and functions)
	Unit 2: Reproductive Behaviours	Courtship behaviours in animals (paring, displays, territoriality, migration associated with breeding), pollination in plants (types, features of self and cross pollinated flowers, agents of pollination)

Biological Systems in Animals & Plants (II) (Module 7)	Unit 3: Development of new organisms	Stages in development of toad, metamorphosis in insects (life histories of housefly and cockroach) progress of development of zygote in flowering plants, germination of seeds, factors that affect development of organisms (food, water, temperature etc) adaptive features in developing animals, oviparity and viviparity. Fruits (structure, types, dispersal of seeds and fruits)
	Unit 4: Regulation of Internal Environments	The kidney (function, diseases), Liver (function and Diseases) Hormones (types, functions and effects of over secretion), Plant hormones (location, types). Modern applications of auxin in Agriculture. The Skin (structure and functions of mammalian skin),
	Unit 5: Nervous coordination	The CNS (components, forms and functions) Peripheral nervous systems (types, structures and functions) Reflex and voluntary actions, conditioned reflexes
	Unit 6: Sense Organs	Sensation of the skin (skin as sense organ and sensory nerves associated with the skin), organ of smell, organ of taste (areas associated with different tastes on the tongue) , organ of sight (structure and functions of the eye, Eye defects and their corrections) , organ of hearing (structure of the ear and its functions, care of the mammalian ear)
STAN BIO 308: ECOLOGY (Module 8)	Unit 1: Aquatic Habitat	The marine habitat (characteristics, main zones, distribution of organisms in the habitat, determination of physical factors e.g. temperature, pH, wind etc), Estuarine Habitat (characteristics, types, distribution of plants and animals, adaptive features of plants and animals), Freshwater habitat (characteristics, types, distribution of plants and animals, adaptive features of plants and animals),
	Unit 2: Terrestrial Habitat	Marsh (characteristics, formation, types, plants and animals that live in marshes and adaptive features), Forests (characteristics, strata, distribution of plants and animals in forests and their adaptive features), Grassland (characteristics, types, distribution of plants and animals and adaptations of grassland communities), Arid lands ((characteristics, types, distribution of plants and animals and adaptations of grassland communities)

	Unit 3: Ecology of Populations	Succession (meaning, types and features), population and population density, overcrowding, effects of overcrowding and adaptation to avoid overcrowding, food shortages, and balance in nature.
STAN BIO 309: Variability, Heredity and Evolution (Module 9)	Unit 1: Variations	Morphological variations, Physiological variations, Applications of variations (e.g. crime detection, blood transfusions and determination of paternity)
	Unit 2: Adaptation for Survival	Competition, intra and inter species competition, relationships between competition and succession, structural adaptation (to obtain food, protect and defend, secure mates for reproduction, regulate body temperature conserve water e.t.c) adaptive colouration in plant and animals, behavioural adaptations (behaviour of organism as a member of a group, social animals).
	Unit 3: Evolution	Theories of evolution as explanation of variation in organisms (Larmack's theory, Darwin's theory), modern evolutionary theories; evidence from genetic (DNA) studies
	Unit 4: Genetics	Transmission and expression of characters in organisms (hereditary variations, characters that can be transmitted, how characters get transmitted, how characters behave from generation to generation, Mendel's work on genetics). Chromosome, basis of inheritance (location, structure, role in and process of transmission of hereditary characters from parents to offspring) probability in genetics, Applications of the principles of heredity in Agriculture and medicine

STAN TEACHERS RETRAINING PROGRAMME FOR CHEMISTRY

COURSE TITLES & CODES (Modules)	COURSE UNITS	Course Contents/Descriptions
STAN CHE 301 Nature of matter and Separation Techniques (Module 1)	Unit 1: Nature of Matter	Matter; Properties of matter; types of change; elements, mixture and compounds.
	Unit 2: Separation Techniques	Separation techniques (filtration, evaporation and decantation; Crystallization and re-crystallization; Distillation and fractional distillation; Precipitation; Chromatography
STAN CHE 302 Particulate Nature of Matter (Module 2)	Unit 1: Nature of Atom	The concept of atom; Dalton's atomic theory and its modifications; the modern atomic theory; The constituents of the atom (proton, neutron and electron); Arrangements of electron around the nucleus; Atomic number, mass number and Isotopes; Relative mass of atom based on ^{12}C
	Unit 2: Symbols, Formulae and equations	Chemical symbols; Empirical and molecular formulas; Laws of conservation of matter; Laws of constant composition; Laws of multiple proportion; Chemical equations
	Unit 3: The Periodic Table	Features of the Periodic Table; periodic law; families of elements; the column; properties change – the rows or period; Ionization potential

	Unit 4: Wave/ Particulate nature of matter	Orbital and electronic structure of atom – Electronic structure of atom; nature of light (light as a wave motion, light as a form of energy, the simplest spectrum hydrogen); Quantum Mechanics (historical, orbital and principal quantum number, shapes of s and p orbital); Arrangements of electrons in the energy levels; main levels, sub-levels, electron spin)
	Unit 5: Nuclear Chemistry	Identifications of radioactive elements; Distinguish between: α, β, and δ rays
STAN CHE 303 Chemical Combination & Chemical Reactions I (Module 3)	Unit 1: Electron Configuration	Electron configuration of atom and the periodic table; illustration of electrovalency and covalency
	Unit 2: Bonding	Overview of bonding; Types of bonds (electrovalency, covalency, coordinate covalency, hydrogen bond, metallic bond)
	Unit 3: Mass – Volume Relationships	Stoichemistry of reactions; Mole ratios and mass relationships; Calculations; Determination of Stoichemistry of solutions; Volumetric Analysis
STAN CHE 304 Chemical Combination & Chemical Reactions II (Module 4)	Unit 1: Electrolysis	Electrolysis; Effects of electrolysis on matter; Ionic theory; Ionic theory; Electrolytes and non electrolytes; Preferential discharge of ion during electrolysis; Electrolysis of some common electrolytes; Laws of electrolysis; Uses of electrolytes; Electrode potential; the e.m.f of a cell; Electrochemical cells
	Unit 2: Chemical Reactions	Types of chemical resections; rates of chemical reactions; Collision Theory; Factors affecting rates of chemical reactions; Characteristics of catalysts; Order of reaction

	Unit 3: Energy and Chemical Reaction	Free Energy Change ΔG; Equilibrium in chemical reactions; Le Chatelier's principles; Equilibrium constant; Change in free energy
STAN CHE 305 **Gaseous State and Laws** (Module 5)	Unit 1: Properties and relationships	Properties matter in gaseous state and their relationships with matter in the solid and liquid state; conversion to other states
	Unit 2: Theories and Laws	The Kinetic theory and its application to gaseous postulate only; Gas Laws (Boyle's law, Charles Law' General Gas law, Gay Lussac's Law Avogadro's Law, Graham's Law); Molar volume of gases; Avogadro number and the mole concept; calculations based on the gas laws
STAN CHE 306 **Acid, Bases and Salts** (Module 6)	Unit 1: Identification, and uses	Characteristics; preparations; uses of acids, bases and salts
	Unit 2: Types and Properties	Common acids and bases; Relative acidity and alkalinity (PH) value; Deliquescent, efflorescent and hygroscopic substances, salt; Water of crystallization
STAN CHE 307 **Carbon and its compounds, Hydrocarbons and crude oil** (Module 7)	Unit 1: Carbons and its compounds	Allotropes (types, structure and properties, combustion of allotropes); Coal (Types, industrial distillation and uses of coal); Coke (gasification and uses, synthetic gas, manufacture and carbon use); Carbon dioxide and Carbon monoxide); Trioxocarbonate (IV) acid, Trioxocarbonate (IV) salt; preparation of sodium hydroxide; the Carbon cycle
	Unit 2: Hydrocarbon and Crude oil	Hydrocarbon and its main classes, petroleum as the main source of hydrocarbon; crude oil; Cracking and reforming; Octane number/rating

STAN CHE 308 **Industrial Chemistry** (Module 8)	Unit 1: Raw materials in industrial Chemistry	Overview of chemical industries, various raw materials in use by specific industries and their products
	Unit 2: Divisions of the Chemical industries	Divisions of chemical industries – Heavy chemicals, fine chemicals, fertilizers, plastics, metallurgy, pharmaceutical, glass, ceramics, paints, cement, soap and detergent. Detailed procedures
STAN CHE 309A **Metals and their compounds** (Module 9)	Unit 1: Introduction to metals and their compounds	Reactivities of , Principles of metal extraction; The alkali metals; The alkali earth metals (Extraction and properties); Aluminum family (compound of aluminum, extraction of aluminum); Tin (extraction and uses);
	Unit 2: Other metals and their compounds	Metals of the first transition series (oxidation states, complex formation); Copper; (extraction and uses); Iron (extraction and uses); rusting of iron and methods of prevention; Reactivities of metals.
STAN CHE 309B **ORGANIC CHEMISTRY** (Module 10)	Unit 1: Determination of structure	Historical introduction Identification of organic compounds; identification of the functional groups
	Unit 2: Chemistry of organic compounds	Alkanoic acid and alkanotes; Amides; fats and oil and their uses; Aldehydes and ketones; Amines, Amides, Amino acids; Carbohydrates

STAN TEACHERS RETRAINING PROGRAMME FOR COMPUTER STUDIES (PRIMARY)

COURSE TITLES & CODES (MODULES)	COURSE UNITS	COURSE CONTENT/DESCRIPTIONS
STAN CPS 101: **BASIC COMPUTER CONCEPT AND OPERATIONS** (Module 1)	**Unit 1:** Description of a computer and Evolution of computer	Meaning of a computer; Types of a computer; importance of computers; parts of computers (system units, monitors, keyboard, mouse, printers, speakers) Stages in the evolution of computers.
	Unit 2: Basic Operations	System startup; booting of computers (cold and warm booting); System shutdown; word processing (basic guides in word processing e.g uses of word processor, loading and exiting, saving and retrieving files etc)
	Unit 3: Data and Information	Meaning and sources of data and information; Examples of data and information; Qualities of good information.
	Unit 4: Input and Output devices	Meaning of input and output devices. Examples of input devices (keyboard. Mouse, scanners); Examples of output devices (monitors, printers, speakers)
STAN CPS 102: **Computer Hardware and Software Systems** (Module 2)	**Unit 1**: Computer hardware	Meaning of computer hardware, relationships between hardware and software; hardware components (arithmetic and logic unit, control unit, memory, output devices, external storage devices)
	Unit 2: Computer software	Definition of software; Types and examples of software (system software – operating system, application software – word processing, spreadsheet, graphics etc)
	Unit 3: Computer Storage Systems	Units of storage of computers and their values; conversion from one unit to the other; differences between units of storage (kilobytes, megabytes and gigabytes)
	Unit 1: Programming languages	Meaning and identification of computer programs; definition of programming language; examples of computer programming language

STAN CPS 103: **Application Package** (Module 3)		(e.g LOGO, BASIC etc)
	Unit 2: Application Packages	Meaning of application packages; types of application packages; examples of packages (e.g. Graphic package, Spreadsheet package, etc)
STAN CPS 104: **Computer Aided Learning and Computer Managed Instruction** (Module 4)	**Unit 1:** Computer Aided Learning	Meaning of computer aided learning; Examples of computer aided learning programs (tutorials; programmed revision software); importance of computer aided learning; disadvantages of computer aided learning.
	Unit 2: Computer Managed Instruction	Meaning of computer managed instruction; Examples of computer managed and computer assisted instructions (programmed instructional software); importance of computer managed instruction; disadvantages of computer managed instruction
	Unit 4: Window games	Meaning of window games, Types of window games; Mathematical window games; Applications of window games in teaching and learning (practical examples with solitaires, Dominos etc are required)
STAN CPS 105: **Introduction to Networking and Internet** (Module 5)	**Unit 1**: ICT and its gadgets	Meaning of ICT (information and communication Technology); Identification of ICT gadgets (computers, telephone, cellular networks Television radio, internet etc); Advantages and disadvantages of ICT;
	Unit 2: Networking	Meaning of networking; network as a resource sharing facility; network groups
	Unit 3: Internet	Definition of internet; Internet browsers; e-mail services (examples of e-mail addresses, procedure for creating accounts); Benefits and abuses of internet

STAN CPS 106: **Computer and Society** (Module 6)	**Unit 1**: Computer Ethics	Ways of taking care of computer room/laboratory; rules and regulations of computer laboratory; Responsible use of computers and internets. Computer misuse and data security
	Unit 2: Computer in Education and Health	Uses of computers in education; Applications of computers in diverse fields of life e.g. health, Agriculture etc
	Unit 3: Safety Measures	Necessary safety measures to be taken when using computers e.g. sitting posture, anti-glare protectors, illumination of the room, keeping liquid away from computers and power source etc.
	Unit 4: Human Issues	Computer professionals; Computer professional bodies (Nigerian Computer Society (NCS), Institute of Management and Information Systems (IMIS); Computer Professional Registration Council of Nigeria (CPRN); Information Technology Association of Nigeria (ITAN); Nigerian Internet Group (NIG)
	Unit 5: Computer Viruses	Meaning of computer Viruses; Types of computer viruses (Boot sector virus, execution file virus etc); Examples of computer viruses (Trojan horse etc); Harmful effects of computer viruses; control of computer viruses.

STAN TEACHERS RETRAINING PROGRAMME FOR COMPUTER STUDIES (SECONDARY)

Course Titles & Codes (Modules)	Course Units	Course Content/Descriptions
STAN CPS 201: Information Age (Module 1)	**Unit 1**: Technology of different information age	Different ages - Stone age; Iron age (hoe and cutlass); Middle age (feather pen and ink); Industrial age (machine); Electronic age (computers and internet).
	Unit 2: Data and Information	Meaning, sources and examples of (i). Data (ii) information; Qualities of good information (accurate, meaningful, comprehensive, relevant, timely, suitable)
	Unit 3: Information Transmission	Ancient method of information transmission (oral, beating drums, fire lighting, town crying, whistling, drawing diagrams, making representations); Modern methods of information transmission (prints, telephone, telex, radio, television, fax, satellite, internet, GSM); Classification of means of transmitting information (electronic and non-electronic); Modes of receiving information (Audio; Visual; Audio-visual)
	Unit 4: Information Evolution	Evolution of information and communication technology - invention of printing; invention of radio and television; invention of computers; linking up of computers and communication technology (ICT)
	Unit 5: Data Processing	Definitions of data processing; Data processing cycle (data gathering, data collation, input stage, processing stage, storage stage, output stage); Importance of the computer as a tool for processing data (increased accuracy, efficient storage facilities, fast access to information; handles repetitive tasks)
	Unit 6: Historical development of computers	Early counting devices (fingers, stones, sticks, pebbles, cowries etc); Mechanical counting and calculating devices (Abacus, slide rule etc); Electro-mechanical counting devices (John Napier bone; Blair Pascal machine, Gotfried Leibniz machine, Joseph Jacquard loom, Charles Babbage analytical machine, Philip Emeagwali); Electronic counting devices and modern computers (Herman Hollerith punch cards, John Von Neumann Machine, modern machines); Generations of computers (1^{st}, 2^{nd}, 3^{rd}, 4^{th}, and 5^{th} generations)

STAN CPS 202: Basic Computer Operations and concepts I (Module 2)	**Unit 1**: Basic Computer concepts	Definition of computer; Description of a computer as input-process –output (IPO) system; Parts of a computer system (system unit, monitor (VDU), keyboard, mouse, printers, speakers); input devices (keyboard, mouse, scanner, light pen etc); Output devices (monitor (VDU), printer, speaker etc); System unit (central processing unit, memory unit).
	Unit 2: Input and output Devices	Functions of input devices (functions of the keyboard, mouse etc); functions of output device (functions of monitor, printers etc)
	Unit 3: System Unit	Functions of the central processing unit (Arithmetic and logic unit – ALU, control unit); Main memory
	Unit 4: Fundamental computer operations	System startup (cold booting, warm booting); System shutdown
	Unit 5: Word Processing	Definition of word processing; Uses of word processor; Examples of word processor; Loading and exiting word processor; creating, saving and retrieving files
STAN CPS 203: Basic Computer Operations and concepts II (Module 3)	**Unit 1**: Classifications of computers	Classifications of computers by generation (1^{st}, 2^{nd}, 3^{rd}, 4^{th}, and 5^{th}); Classifications of computers by types (analog, Digital, Hybrid); Classifications of computers by size (microcomputer, minicomputer, mainframe, supercomputer); Classifications of computers by degree of versatility (general purpose, special purpose).
	Unit 2: The computer system	The concept of computer system; Components of computer system – hardware components (Arithmetic and Logic Unit, control unit, memory, output devices, external storage device); Software components (system software, application software); People-ware components (computer professionals, computer users)
	Unit 3: Computer software	Definition of software; Types and examples of software (system software – operating system, application software – word processing, spreadsheet, graphics etc)
	Unit 4: Operating Systems	Definition of an Operating System (OS); Examples of operating system (DOS, Windows, Linux, Unix); Functions of operating system (resource allocation, system monitoring, utilities)
	Unit 5: Number bases	Number bases – decimal, binary, octal, hexadecimal.

	Unit 6: Units of Storage in computer	Units of storage – Bit, Nibble, Byte, Word
STAN CPS 204: Computer Problem Solving Skills (Module 4)	**Unit 1**: Programming Language	Meaning of computer program; computer programming language (meaning, examples – logo, BASIC etc)
	Unit 2: BASIC	Meaning of BASIC language; BASIC character set; Key basic statements (line number, Remark -REM, Assignments – LET, INPUT, DATA, Output statements, print, program terminator (END, STOP); simple BASIC statements.
STAN CPS 205: Computer Application Packages (Module 5)	**Unit 1**: Graphic Packages I	Meaning of graphic packages; Examples of graphic packages (paint, Corel draw, instant artist, Harvard graphics, photo shops, logo graphic etc); Features (toolbar, menu bar, printable area, colour palette
	Unit 2: Graphic Packages II	The Paint - Paint environment; Paint tools and their functions
	Unit 3: Database	Definition of database; database terminologies (fields, records, file, database, key etc); Forms of database (flat file, hierarchical, relational); Forms of database
	Unit 4: Spreadsheet packages	Examples of spreadsheet package (excel, LOTUS 1 2 3, STATVIEW, SPSS etc); Uses of spreadsheet packages (preparation of daily sales, budget, examination results, data analysis); Spreadsheet features and terminologies (Row, Column, Cell, Worksheet, Chart, Data range etc); Loading and exiting spreadsheet packages.
	Unit 5: Worksheets	Starting worksheets (data entry, editing, saving, retrieving worksheets); Formatting worksheets (text, cell, column, naming etc); Calculations (addition, average, counting, multiplication, division etc); Printing of worksheets
	Unit 6: Graphs	Creating graphs (line graphs, histograms, pie-chart, legends etc); Editing graphs; formatting graphs (line graph, histograms, pie-chart, legends)

STAN CPS 206: Information and Communication Technology I (Module 6)	**Unit 1**: ICT Application in everyday life	Meaning of ICT; Examples (computers, telephones, cellular networks, satellite, television, internet); Uses of ICT (communication, timing and control, information processing management); ICT and society.
	Unit 2: ICT as a transformational tool	Benefits of ICT (timely, better and cheaper, speed of transaction and processes, causes human being to interact with each other in new ways, distance becomes irrelevance in business, innovative ways of interaction); Disadvantages of ICT (job loss, threatens other areas/fields of human endeavours etc).
	Unit 3: ICT gadgets	The GSM; Fax machine; Telephone etc
STAN CPS 207: Information and Communication Technology II (Module 7)	**Unit 1**: Internet	Definitions of internet; e-mail addresses, worldwide web www; Internet browser (Microsoft internet explorer, netscape, mozilla); creating e-mail account; samples of e-mail addresses; Benefits of internet (information exchanges, e-learning, e-entertainment, faster & cheaper); Abuses of internet (fraud, pornography); Internet environment; Uses of the internet (sending e-mails, chatting, network groups)
	Unit 2: Internet search engine	Examples of search engine (google.com, mama.com, ask.com, yahoo.com); Uses of search engine
	Unit 3: Digital Divide	Concept of digital divide; features of old economy (time consuming, labour based, mechanical, constrained by space, time and distance etc); features of new economy (digital, time, space and distance is irrelevant, technology driven, knowledge based etc); limitations of the old economy; benefits of new economy (low capital to start business, creates new jobs).

STAN CPS 208: Computer Ethics and Human Issues (Module 8)	**Unit 1**: Computer ethics	Computer room management ethics (maintaining dust free environment, appropriate ventilation, appropriate lighting system, setting computer); Laboratory rules and regulations (arrange chairs and tables in a comfortable manner, arrange computers and their peripherals in orderly manner); Responsible use of computers and internet (avoiding liquid dropping on computers, using dust cover, protection from power problem, unplugging the system when not in use for long, check your e-mail regularly, give prompt and polite response to mails); Areas of misuse of computers (invasion of privacy, computer virus, fraud, stealing, pornography, cyber war, piracy of software, plagiarism)
	Unit 2: Safety Measures	Review of safety measures such as the sitting posture, using the anti-glare protector, positioning of the monitor base, illuminating the computer room.
	Unit 3: Computer Professionals	Computer professionals (Computer manager, System analyst, Programmers, Computer educators, Computer engineers and technicians, Operators). Qualities of good computer professionals; Computer professional bodies (Nigeria Computer Society NCS, Institute of Management Information System IMIS, Computer Professional Registration Council of Nigeria CPRN, Information Technology Association of Nigeria ITAN, Nigerian Internet Group NIG)
	Unit 4: Computer viruses	Meaning of computer virus; Types of computer virus (Boot sector, executable file virus, Attack on document); Examples of viruses (Trojan horse, Sleeper, Logic bomb, Alabama virus, Christmas virus etc); Sources of viruses (infected diskette, infected C-D- ROMS, e-mails, internet downloads, illegal duplication of software etc); Virus warning signs (slowing down of response time, presence of tiny dots, wandering across the screen, corruption of system setup instructions, appearance of strange characters); virus detection/ Antivirus (Norton Anti-virus, McAfee virus scan, Dr Solomon's Tool Kit, PC Penicillin, Avast etc)

STAN TEACHERS RETRAINING PROGRAMME FOR ENVIRONMENTAL EDUCATION

COURSE CODES & TITLES	COURSE UNITS	COURSE CONTENTS/DESCRIPTION
STAN ENV 401: Components of The Environment (Module One)	Unit 1: Definition and Identification of components of the Environment	Meaning and definitions of Atmosphere, Hydrosphere, Lithosphere, Biosphere, Stratosphere. Examples of these components and constituents.
	Unit 2: Abiotic Components	Meaning and Identification of the abiotic components Physiographic factors e.g. sunlight, wind, humidity etc.
	Unit 3: Biotic Components	Definition and meaning of the biotic components of the environment. The producers. The consumers. Decomposers, Feeding relationships in the ecosystem
	Unit 4: Biogeochemical Cycle	Definition and meaning of biogeochemical cycle. The carbon Cycle. Water Cycle. Nitrogen Cycle. Oxygen Cycle. Sulphur Cycle. Phosphorus cycle etc.
	Unit 5: Interactions between different components of the environment	Definition and meaning of interaction in nature. Examples of interactions - Parasitism, Symbiotism, Commensalisms, Predation, Decomposer,
STAN ENV 402 Biodiversity (Module Two)	Unit 1: Meaning Biodiversity	Meaning and importance of biodiversity. Classification of living things – features and characteristics. Activities that lead to biodiversity loss – Poaching, Pollution, destruction of habitat, Agricultural practices, Urbanization, cultural practices, oil spillage.
	Unit 2: Biodiversity Conservation	Meaning of biodiversity conservation. Effects of biodiversity loss. Strategies for biodiversity conservation – policies and legislation, international co-operation, use of modern Agricultural practices.

	Unit 3: Agencies/Organizations in Biodiversity Conservation	List of Agencies and organization involved in biodiversity conservation e.g. WWF, NCF, NESREA, NOSDRA. National Park Service (NPS), Corporate bodies and NGOs
STAN ENV 403 Conservation of Natural Resources (Module Three)	Unit 1: Definition and Types of Natural Resources	Operational definitions of the following terms: Conservation, Preservation, Protection, Sustainable development and Natural resources. Types of Natural resources (renewable and non renewable resources). Lists of renewable resources (forest resources, air, wildlife, water, sunlight) and non renewable resources (mineral resources such as coal, crude oil, tin, metallic deposits)
	Unit 2: Depletion and Conservation of Natural Resources	Activities that lead to depletion of natural resources (deforestation, desertification, mining, Agricultural activities, oil exploration). Conservation strategies – policies and legislations, cultural practices.
	Unit 3: Agencies and Organization for natural Resource Conservation	List of agencies and their functions in conservation practices. Such agencies include WWF, NCF, NESREA, National Park Service, Corporate bodies, NGOs etc.
STAN ENV 404: Energy Resources and Environment (Module Four)	Unit 1: Basic Concepts	Definition/Meaning of Energy, Energy resources, development and Environment. Relationships between environment and development.
	Unit 2: Types of Energy Resources	Renewable energy resources – types, sources, usage and methods of conservation. Non-renewable Energy resources - Types, sources, usage and methods of conservation
STAN ENV 405 Pollution and	Unit 1: Meaning and Types of Pollution	Definitions of pollutions and wastes. Identification of types of pollution e.g. air pollution, noise pollution, soil pollution, water pollution, thermal pollution, radioactive pollution, etc.

Waste Management (Module Five)	Unit 2: Air and Noise Pollution	Meaning of air pollution. Sources of air pollution. Effects of air pollution. Prevention and control measure. Gaseous waste management – stopping gas flaring. Meaning and sources of noise pollution. Effects of noise pollution. Prevention and control of noise pollution.
	Unit 3: Land/Soil and Water Pollution	Sources of land/soil pollution. Effects of land/soil pollution. Prevention and control of land/soil pollution. Solid waste management. Meaning of Water pollution. Sources of water pollution. Effects of water pollution. Prevention and control measures. Liquid waste management – sewage treatment/recycling
	Unit 4: Thermal and Radioactive Pollution	Meaning and Sources of thermal pollution. Effects of thermal pollution. Prevention and control of thermal pollution. Meaning and sources of radioactive pollution. Effects of radioactive pollution. Prevention and control of radioactive pollution.
	Unit 5: Recycling of Waste	Principles of recycling wastes. Methods of recycling wastes, Technologies used in recycling wastes. Uses of some recycled products in the Nigerian economy
STAN ENV 406 Environmental Health and Safety (Module Six)	Unit 1: Basic Concepts	Definition/Meaning of environmental health, safety and hazards. Sources of environmental health hazards and problems.
	Unit 2: Types of Environmental Hazards and Diseases	Types of environmental hazards – accidents (work place & domestic), natural disaster, man- made hazards,. Meaning and types of diseases (communicable and non-communicable diseases. Causes. Effects and prevention of the diseases.
	Unit 3: Pollution and Health	Water pollution and health, Land/soil pollution and health. Air pollution and health. Food contamination and poisoning.

	Unit 4: Environmental Safety measures, Policies/Legislation and impact assessment	Environmental safety measures. Policies and legislation. Regulatory agencies and organization (Ministry of environment, Ministry of Health, NEMA, NESREA, WHO, UNICEF, Red Cross etc. Meaning of environmental impact assessment. Reasons for EIA, Methods/procedures for EIA.
STAN ENV 407 Population and Environment (Module Seven)	Unit 1: Population and Population growth	Basic concepts of population, development and environment. Meaning of population growth. Factors affecting population growth. Effect of population growth on the environment.
	Unit 2: Demography	Meaning of demography. Importance of demography. Demographic strategies – determination of total population, determination of birth rate, determination of death rate. Migration. Policies and demography.
	Unit 3; Population Control	Family planning, Poverty eradication; Disease control. Immigration control. National policy on population
STAN ENV 408 Climate Change (Module Eight)	Unit 1: Basic concepts	Definitions of climate, climate change and Environment. Nature of climate change. Causes of climate change
	Unit 2: Global warming and Ozone depletion	Meaning and causes of global warming. Features and effects of global warming. Prevention/control measures. Ozone depletion. Causes of ozone depletion. Features and effects of ozone depletion. Prevention and control.
	Unit 3: Acid rain	Meaning of Acid rain. Causes and features of acid rain. Effects, prevention and control of acid rain.
	Unit 4: Global consequences of climate change	Global Consequences of climate change. Emphasis should be on flooding, erosion, heat waves, wildfire, desertification, food shortages sand diseases.
	Unit 5: Measuring Weather Conditions	Instrument and procedures for measuring rainfall, wind direction and velocity, intensity of sun. Humidity, Temperature, Pressure, Turbidity etc

STAN TEACHERS RETRAINING PROGRAMME FOR HOME ECONOMICS (PRIMARY)

COURSE CODES & TITLES	COURSE UNITS	COURSE CONTENTS/DESCRIPTION
STAN HEC 101: Grooming and House care (Module One)	Unit 1: The Human Body and its care	Parts of the human body and their functions. Daily care of the body – hands, feet, mouth, tongue, nose, etc. Effects of right choice, and use of body caring substances on personal appearance.
	Unit 2: Personal Belongings	Meaning and types of personal belongings. Choice, use and care of personal belongings. Factors influencing choice of personal belongings. e.g. money, sex, age, like and dislike, weather condition. Effect of right choice, use and care on personal belonging. Storage of personal belonging.
STAN HEC 102 Home and House Care (Module Two)	Unit: 1: The Home and Home Furnishing	Meaning and types of home. Meaning and types of house. Various functional rooms in a house e.g. sitting room, bedroom. Home furnishing: bed, tables, chairs, radio etc.
	Unit 2: House Care	Uses and cares of various rooms in the house. General cleaning of different functional areas of the house. e.g. cubwebbing, sweeping. Daily cleaning of the sitting room, dinning, bedroom, toilets etc. Daily and weekly cleaning of the main kitchen and food store.
STAN HEC 103 Food and Nutrition (Module Three)	Unit 1: Food and Feeding	Meaning of food and food groups. Functional classification of food. Food in the locality and food for health. Good feeding habits.
	Unit 2: Snacks and Meals	Meaning and importance of Snacks and fruit drinks. Differences between snacks and main meals. Special dishes and drinks. Meal services and entertainments.
	Unit 3: Food Preparation and Preservation	Common methods of cooking simple food and snacks. Simple food preservation and storage. Methods of food preservation and storage.

STAN HEC 104: Healthy Living and Home Accidents (Module Four)	Unit 1: Exercises, Rest and Sleep	Meaning and types of exercises. Meaning and types of rest and sleep. Differences between rest and sleep.
	Unit 2: Care of the body	Care of the skin (bathing), Care of hands, feet and hair. Care of the mouth and teeth and personal health rules. Eating good food.
	Unit 3: Safety in the Home	Harmful substances that could be taken into the body. Meaning and causes of home accidents. Types of home accidents e.g. fall, burns, suffocation, and poisoning. Safety precautions in the home.
STAN HEC 105 Clothing and Needle Craft (Module Five)	Unit 1: Clothing	Meaning of clothing. Personal clothing. Care and uses of clothes. Clothes for different occasions.
	Unit 2: Sewing and Sewing Tools	Simple sewing tools and equipment and their specific uses. Simple sewing, and knitting. Basic and decorative stitches. .
	Unit 3: Clothing Construction and Needle crafts	Simple clothing construction processes. Maintenance of clothing. Practical on income yielding crafts – armrest, mat, apron etc. Simple relevant clothing article practical.
STAN HEC 106 The Kitchen, Cleaning Agents and Household Pests (Module Six)	Unit 1: Kitchen Hygiene	Meaning and importance of Kitchen hygiene. Maintaining kitchen hygiene. Cleaning of various surfaces in the kitchen.
	Unit 2: Household Pests	Meaning and types of household pests. Effects of household pest in the home. Prevention and control of household pest in the home.
	Unit 3: Cleaning Agents	Meaning and types of cleaning agents. Home made polish and cleaning agents. Uses of home made polish and cleaning agents. Preparation of home made polish and cleaning agents.
STAN HEC 107 Consumer Education (Module Seven)	Unit 1: Buying & wise spending	Meaning of wise buying and spending. Advantages of wise spending and buying.
	Unit 2: Sources & Management of Family Income	Major sources of family income. Principles of needs and wants. Meaning, types and differences between needs and wants. Effective management of family income
STAN HEC 108	Unit 1: Introduction to Maturity	Meaning of puberty and maturity. Changes in body during puberty and maturity. Signs of puberty.

Growth and development (Module Eight)	Unit 2: Puberty and Menstrual Cycle	Meaning of menstruation and mistral cycles. Implication of menstrual cycle. Menstrual hygiene.
	Unit 3: Boy/Girl relationships.	Meaning and types of boy/girl relationships. Basic guides on boy/girl relationships. Risks associated with unguided boy/girl relationships.

STAN TEACHERS RETRAINING PROGRAMME FOR HOME ECONOMICS (JUNIOR SECONDARY)

COURSE CODES & TITLES	COURSE UNITS	COURSE CONTENTS/DESCRIPTION
STAN HEC 201: Home Economics and the Society (Module One)	Unit 1: Introduction to Home Economics	Meaning of home economics. Areas of Home Economics. Importance of home economics. Home Economics and national development
	Unit 2: Introduction to textile study and material Development	Introduction to textile study. Home Economics and material development.
	Unit 3: Entrepreneurship in home Economics	Career opportunities in Home Economics. Specific business projects in home economics.
STAN HEC 202 Good Grooming (Module Two)	Unit 1: The Human Body	Parts of the human body. Functions of the various parts of the body.
	Unit 2: Posture & Exercise	Meaning, Importance and guidelines for maintaining good posture. Meaning and type of exercises. Importance of exercises.
	Unit 3: Fatigue, Rest & Sleep	Meaning and causes of fatigue. Differences between rest and sleep. Importance of rest and sleep.
	Unit 4: Cosmetics & Deodorants	Meaning and types of cosmetics. Importance of cosmetics. Uses of cosmetics and deodorants.
	Unit 5: Puberty & Adolescence	Meaning of puberty. Signs of puberty. Body changes in male and female. Meaning and characteristics of adolescence. Challenges of adolescence.
	Unit 6: Personal Hygiene	Meaning of personal hygiene. Importance of personal hygiene. Prevention of skin infection and body odour.
	Unit 7: Sexuality and Sexually transmitted Diseases.	Meaning, sources and utilization of sexually related information. Sexually transmitted diseases (STDs) and HIV/AIDS

STAN HEC 203 **Family Living** (Module Three)	Unit 1: The Family	The meaning of family. Composition of the family. Types of family. Roles of each family member
	Unit 2: Marriage and Marriage Systems	Meaning of marriage. Meaning of courtship practices. Marriage system and procedures in Nigeria.
	Unit 3: Pregnancy, Childcare & Development	Pregnancy and childbirth: signs, Antenatal, post-natal care and preparation. Childcare practices and stages of child development. Factors that influence child development. Common childhood ailments.
	Unit 4: Family Budget	Meaning and importance of family budgets. Factors to consider in making family budgets.
	Unit 5: Family Conflict	Meaning and types of family conflicts and crisis. Causes of family conflict and crisis. Impact of conflict and crisis on the family.
	Unit 6: Family values, and Human Rights	The meaning of family value. Impact of family value in life style. Human rights and violation. Rights of the child, women etc.
STAN HEC 204: **Managing the Home** (Module Four)	Unit 1: The Home	Meaning and differences between home and house.
	Unit 2: The Family House	Meaning of family house. Housing the family. Functional areas of the family house. Maintenance of the family house.
	Unit 3: Entertainment in the home	Meaning of entertainment. Importance of entertainment in the home. Preparation for entertainment.
	Unit 4: Family Needs and Resources	Meaning and nature of family needs and resources.
	Unit 5: Decision Making	Nature of decisions in the family and approaches for decision making
STAN HEC 205 **Clothing** (Module Five)	Unit 1: Concept of Family Clothing.	Meaning of family clothing and household linen. Managing family clothing and household linen.
	Unit 2: Sewing tools and Processes	Simple sewing tools and equipment. The sewing machine. Sewing processes (simple stitches and seams). Seams and seam finishes.

	Unit 3: Elements of Designs and Care of fabrics	Basic elements of designs and basic pattern drafting. Figure types and body measurement. Edge finishing. Classes and properties of fibres. Identification and uses of fabrics. Care of fabrics.
STAN HEC 206 Home Economics Project (Module Six)	Unit 1: Cosmetics	Meaning and types of cosmetics. Materials and tools for cosmetic production. Cosmetic production (pomade and cream).
	Unit 2: Household Crafts	Meaning of household craft, Tools and materials for making of crafts items. Making of craft items e.g. needle-work, bag and aprons etc.
	Unit 3: Fibre and Fabrics	Manufacture of fabric Fibre and fabric identification methods. Uses of fabrics.
	Unit 4: Garment Construction	Garment construction processes. Facings hemming, opening (fastening) practical. Practical on garment construction.
STAN HEC 207 Feeding the Family (Module Seven)	Unit 1: Food and food Preservation	Scientific study of food nutrient. Buying, preserving and storage of food. Effects of heat on food. (Moist and dry heat). Buying, Preservation and storage of food.
	Unit 2: Meal Planning and Food Preparation	Meaning of Meal Planning. Considerations in meal planning. Food preparation methods. Food preparation practical.
	Unit 2: Kitchen Equipment & Utensils	Meaning of kitchen equipment and utensils. Types of kitchen equipment and utensils. Specific uses of kitchen equipment and utensils.
	Unit 3: Healthy Feeding	Meaning of healthy feeding. Healthy feeding habits. Functions of good feeding. Good feeding habits.
	Unit 1: Introduction to Food Nutrient	Meaning of food and food nutrients. Types, sources and functions of nutrient to the body

STAN HEC 208 **Food and Nutrition** (Module Eight)	Unit 2: Nutrient Deficiency	Major Nutrient deficiencies. Symptoms of the various deficiencies. Prevention and treatment of nutrient deficiencies.
	Unit 3: Food Hygiene	Meaning and importance of food hygiene. Guidelines for food hygiene.
	Unit 4: Food Preparation	Meaning and importance of food preparation. Practical on preparation of simple food drinks. Practical on preparation of simple meals. Use of cooking methods.

STAN TEACHERS RETRAINING PROGRAMME FOR HOME ECONOMICS (SENIOR SECONDARY)

COURSE CODES & TITLES	COURSE UNITS	COURSE CONTENTS/DESCRIPTION
STAN HEC 301: Principles of Home Management (Module One)	Unit 1: Basic Concepts	Meaning, Importance and steps in home management.
	Unit 2: Decision Making	Meaning of decision making in home management. Importance of decision making in home management. Types of and steps in decision making
	Unit 3: Motivation for Home management	Meaning of motivations for home management. Types: values, needs, goals and standard.
	Unit 4: Family Resources & Time/Resource Management	Meaning, Importance, characteristics and classification of family resources. Meaning, advantages and guidelines for time and energy management. Work Simplification. Ways of achieving work simplification.
	Unit 5: Creativity and Entrepreneurship	Development of creative problem solving and entrepreneurship. Relationships between creativity and entrepreneurship.
	Unit 6: Wealth creation and capital Market	Meaning, types and advantages of wealth creation. Capital market investment
STAN HEC 302 Family Living I (Module Two)	Unit 1: Family Living and Family Life cycle	Meaning, types and functions of the family. The family life cycle.
	Unit 2: Family relationships	Family relationships, crises and family values. Meaning, components and roles of communication in the family. Types and causes and resolution of conflict in the family.
	Unit 3 Human & Social Skill Development.	Meaning and types of human and social skills. Importance and ways of developing human and social skills. Human rights.

STAN HEC 303 Family Living II (Module Three)	Unit 1: Sexually transmitted infections/Diseases	Meaning and types of sexually transmitted infections/diseases. Causes, symptoms, prevention and treatment of the STDs.
	Unit 2: Courtship and marriage	Meaning of courtship and marriage. Precautions in Courtship. Boy/Girl relationships.
	Unit 3: Family Planning, Pregnancy and Childbirth	Meaning of family planning. Procedures for family planning. Stages of pregnancy and childbirth. Basic cares at pregnancy and after birth.
	Unit 4: Parenting, Child development and Home healthcare	Meaning of parenting, child development and home health care. Stages of child development. Approaches to home healthcare.
STAN HEC 304: Feeding the Family I (Module Four)	Unit 1: Food Nutrients and Nutritional Needs	Meaning and types of food nutrients. Functions and sources of food nutrients. Nutritional needs of the family members and different groups of people. Scientific study of food nutrients.
	Unit 2: Meal Planning	Meaning of meal planning and balanced diet. Factors influencing meal planning.
	Unit 3: Cooking Equipment terms and Techniques	Cooking equipment, Utensils and tableware. Selection, use and maintenance of cooking equipment and utensils. Cooking terms and techniques. Guidelines for using various techniques and preparations of any simple dish.
STAN HEC 305 Feeding the Family II (Module Five)	Unit 1: Food Storage and Preservation	Principles of food storage and preservation. Methods of food storage and preservation. Flour and flour mixtures. Effects of heat on nutrients
	Unit 2: Kitchen Plan & Table setting	Kitchen plan, hygiene, safety, kitchen equipment and utensils. Table setting and meal service
	Unit 3: Food purchasing & Entertainment	Principles and guides on Food purchasing. Entertainment (methods/procedures and basic guides.

STAN HEC 306 **Housing the Family** (Module Six)	Unit 1: The family House	Importance, types and functional areas. Choosing family house. Setting up a home.
	Unit 2: Interior decoration and maintenance	Meaning and importance of interior decoration. Maintenance and care of the home. Cleaning equipment, tools and cleaning agents. Simple home maintenance and repairs. Sanitation in the home
	Unit 3: Utilities and Safety Measure in the home	Types of utilities and likely risk associated in the use. Safety precautions.
STAN HEC 307 **Consumer Education** (Module Seven)	Unit 1: The consumer and Principles of consumer education	Meaning and importance of consumer. Consumer agents. Principles of consumer education.
	Unit 2: Consumer rights, Information and Legislation	Rights and responsibilities of the consumer. Meaning and forms of consumer information. Consumer legislation.
	Unit 3: Consumer agents, Purchasing and management	Meaning and types of consumer agents. Environmentally friendly consumption. Wise purchasing practices. Market survey and prevention of waste in the home.
STAN HEC 308 **Clothing the family** (Module Eight)	Unit 1: Meaning, Types and functions of clothing	Meaning of Clothing. Types and functions of clothing. Factors that influence type of clothing. Types of household linen.
	Unit 2: Textile/fabric construction and wardrobe planning	Types and origin of textiles and fabrics. Characteristics and construction methods. Functions, guidelines and steps involved in planning a wardrobe.
	Unit 3: Laundry equipment, Tools and Processes	Classification, uses, Guidelines for utilization and care of laundry equipment. Laundry processes and agents. Reasons for laundry. Steps/Guidelines for laundry work. Laundry of specific items
	Unit 4: Sewing and Storage	Sewing processes and designs. Renovation and repairs of family clothing and household linen. Storage of clothing and household linen. Storage of specific articles e.g. shoes, dresses etc.

STAN TEACHERS RETRAINING PROGRAMME FOR PRIMARY MATHEMATICS

COURSE CODES & TITLES	COURSE UNITS	COURSE CONTENTS/DESCRIPTION
STAN MAT 101: Number and Numeration (Module One)	Unit 1: Number and Numeration I	Whole numbers. Fractions. Demography. Ratio and proportions and percentages. Sorting and classification of objects leading to the ideas of numbers. Identifying numbers. Writing numbers. Ordering numbers. Recognizing the symbol '0'. Recognize 10 as a group. Use place value and identify fractions using concrete objects
	Unit 2: Number and Numeration II	Counting of large numbers. Finding LCM and HCF of numbers. Reading, writing and comparing population of big cities. Working on ratios and proportions thereby finding the ratio of family size and resources as well as express the ratio of prevalence of HIV/AIDS between two sexes in town or country.
STAN MAT 102 Basic Operations (Module Two)	Unit 1: Basic Operations I	Addition and subtraction of whole numbers and fractions using practical approach. Finding missing number in a given statement. Addition and subtraction of numbers with or without renaming. Use of fraction boards in teaching addition and subtraction of fraction. Word problems including quantitative reasoning. Solve problems requiring quantitative reasoning involving addition and subtraction of whole numbers, fractions, and decimals. Multiplication and division of whole numbers, fractions and decimals. Solution of quantitative aptitude problems involving multiplication and division of whole numbers, fractions and decimals. Calculation of squares and square roots of numbers

	Unit 2: Basic Operations II	Using concrete materials to teach LCM and HCF. Estimation. Indices. Ratio and percentages. Ratio and population issues; and order of operations. Demonstration of understanding of the content of LCM and HCF, estimation, indices, ratio and percentages. Ratio and population issues and order of operations as well as prepare and present a model lesson on each of the contents by the trainee teachers.
STAN MAT 103 Measurement (Module Three)	Unit 1: Measurement I	Modern techniques of teaching money, length, capacity, weight, time and area
	Unit 2: Measurement II	Methods of teaching perimeter, volume, structure of the earth, temperature and speeds
STAN MAT 104 Practical & Descriptive Geometry (Module Three)	Unit 1: Practical & Descriptive Geometry I	Modern techniques of teaching three dimensional shapes, two dimensional shapes/plan figures, symmetry, angles, height and distances.
	Unit 2: Practical & Descriptive Geometry II	Polygons and scale drawings. Use of locally available materials in the environment in teaching these topics and linking mathematics to real life thereby changing the attitude of learners towards the study of mathematics.
STAN MAT 105 Everyday Statistics (Module Four)	Unit 1: Everyday Statistics	Basic concepts and applications of statistics. Single numbers. Groupings and group descriptions. Concept and applications of pictograms; bar graphs;
	Unit 2: Everyday Statistics	Data collection and presentation; measures of central tendency of a sample or. Population. Measures of dispersion.
STAN MAT 106 Algebraic Processes (Module Five)	Unit 1: Algebraic Processes I	Defining open sentences as a mathematical statement that has equality sign and a missing quantity that requires any of the four arithmetic operations – addition, subtraction, multiplication, and division. Solving quantitative aptitude problems
	Unit 1: Algebraic Processes II	Using letters to represent boxes in open sentences and resolve to find the number represented by the letter. Preparation of concrete materials for use in teaching solution of problems represented as open sentences.

STAN TEACHERS RETRAINING PROGRAMME FOR JUNIOR SECONDARY MATHEMATICS

COURSE CODES & TITLES	COURSE UNITS	COURSE CONTENTS/DESCRIPTION
STAN MAT 201: Number and Numeration (Module One)	Unit 1: Number and numeration I	An indigenous system of special relevance locally; The Roman system; The abacus as a calculating machine: Brief history of the spread of the Hindu-Arabic system; Revision exercises in addition, subtraction, division and multiplication; Place value, diagnostic tests; word problems. The law of equivalence of common fractions; Basic processes applied to decimal fractions. Relation between percentages, common and decimal fractions. Addition and subtraction of positive and negative integers. Use of number line. Range of cost of various articles. Dimensions, capacity, mass of every day articles, local distances, personal statistics of people. Obtaining approximate values for calculation involving the four basic arithmetic processes. Rounding numbers to the nearest 1, 10, 100, and 1000 as appropriate.
	Unit 2: Number and numeration II	Large numbers – one million and above. Large\numbers in standard form. Primes (not exceeding 200) factors; Perfect squares; Common multiples and factors; Square roots by factor method; Rules of divisibility. Fractions, ratio, decimals (terminating and recurring) and percentages. Household arithmetic including budgeting, savings, rents, taxes, install mental buying etc. Commercial arithmetic including profit and loss, interest, discount, commission etc. small decimal fractions. Standard form of numbers less than one. Place value; Approximation; Problems using the basic operations involving money, population, export, and import. Ready reckoners –their construction and use. Square and squawroot tables; Various tables, charts, records and schedules. Multiplication and division of directed numbers. Multiplicative inverse and identity

	Unit 3: Number and numeration III	Binary counting system. The punched card I = yes, 0 = no, intersection presented as 'yes yes'. Complement presented as 'no'. The interpretation of word problems into numerical expressions and equations using brackets and fractions. The concept of inverse proportion. Study of applications such as speed, productivity, consumption, and reciprocal. Compound interest. Non rational numbers. Decimal places and significant figures. Problems in Mensuration involving volume, area of land, distances consumer arithmetic, games and athletics timing etc.
STAN MAT 202 **Algebraic Processes** (Module Two)	Unit 1: Algebraic Processes I	Open sentences; Use of letters to represent numbers. Basic operations applied to terms, which involve symbols. Collecting involving the same symbols and collecting numbers. Use of brackets. Order of operations. Simple equations in one variable. Use of equality signs in sentences. Substitution of values to show whether statements are true or false. Solution of equation of the form $4t + 3 = 15$, where there is just one unknown.
	Unit 2: Algebraic Processes II	Expansion of algebraic expressions. Factorizing. Basic operations applied to algebraic fractions with monomial denominators. Harder exercises on simple equations. Word problems involving simple algebraic fractions. Linear equation in one variable. Solution to linear equation in one variable. Coordinate plane – axes, ordered pairs. Linear equations in two variables; compilation of tables; linear graphs from practical situations.

	Unit 3: Algebraic Processes III	Factorization of expressions of the form a2 – b^2, 3a– cb–3b+ac, $a^2 \neq 2ab+b^2$ Solution of equation involving fractions $\frac{1}{a+2}=\frac{3}{a-3}$. Graphical treatment of simultaneous linear equations. Simultaneous linear equations of the form $x+3y=5$; $2x+y=7$. Direct variation: $y=kX$ Inverse variation $y=K/x$ Partial variation $y=kX+c$ Joint variation $y=\frac{kc}{x}$ Change of subject of formulae.
STAN MAT 203 Geometry and Mensuration (Module Three)	Unit 1: Geometry & Mensuration I	Basic properties of cube, cuboids, pyramid, cylinder, sphere, cone and triangular prism e.g. faces, vertices, edges. Properties of: Rectangle, square, isosceles triangle, equilateral triangle and circles. Perimeters of irregular and regular polygons, squares, rectangles, trapezia, parallelograms and circles. Areas of irregular and regular shapes, including squares, rectangles, parallelograms, trapezia and circles. Volumes iof cubes, cuboids, right triangular prism. Constructing parallel and perpendicular lines. Measuring angles. Angle sum of a triangle. Construction of triangles
	Unit 2: Geometry & Mensuration II	Parallelograms, rhombus, kite and circle bringing out their properties. Angle sum of a convex polygon. Combination of plane shapes to produce design. Scale drawing. Calculation from scale drawings using ratio and proportion. Angles of elevation and depression. Bearings. Scale drawing of the position of objects and buildings etc. Pythagoras's rule. Surface area of cylinder and cones. Volume of cylinder and cone. Rough estimates of everyday common sizes, quantities, capacity etc.

	Unit 3: Geometry & Mensuration III	Views, plans and sketches of cube, cone, cuboid, cylinder, sphere. Similar shapes (triangles, squares, cubes and cuboids. Enlargement and scale factor. Use of scale factor to calculate lengths, areas and volumes in practical problems. The sine, cosine and tangent of an acute angle. Uses of similar right angled triangles. Areas of triangles, parallelograms, trapezia and circles. Bisection of a line segment. Bisection of an angle. Construction of angles of size 90^{o}, 60^{o}, 45^{0}, 30^{o}. Copying a given angle
STAN MAT 204: Everyday Statistics (Module Four)	Unit 1: Everyday Statistics I	Discussion on purpose statistics can serve. Need for collecting data for prediction purposes. Need for collecting data for analysis purpose; Collection of data. Numerical presentation in any order. Ordered presentation of data in lists or table. Pictorial presentation of data using pictogram, bar chart or line graph. Frequency tables, pictograms, bar charts and pie charts. Identification of mode and median in a set of data. Calculation of mean.
	Unit 2: Everyday Statistics II	Discussion on occurrence of chance in everyday life. Practically determining the probability of certain events.

STAN TEACHERS RETRAINING PROGRAMME FOR SENIOR SECONDARY MATHEMATICS

COURSE CODES & TITLES	COURSE UNITS	COURSE CONTENTS/DESCRIPTION
STAN MAT 301: Number and Numeration (Module One)	Unit 1: Number and numeration I	Revision of standard form as a shorthand notation. Laws of indices. Relationships between indices and logarithm. Graph of $y=10x$ Use of graph for multiplication and division. Base 10 logarithm tables and anti logarithm tables. Calculation involving multiplication, division, powers and square roots. Idea of set, universal set, finite and infinite sets, empty sets and subset. Idea and notation for union. Intersection and complement of sets. Disjoint set. Venn diagrams as diagrammatic representation of sets. Solution of practical problems involving classification, using venn diagrams.
	Unit 2: Number and numeration II	Percentage error. More problems on A.P and G.P. Determination of n^{th} term of a given sequence.
	Unit 3: Number and numeration III	Application of the basic rules of Logarithms.. Use of logarithm tables in problems on compound interest, investment and annuities etc.
STAN MAT 302: Algebraic Processes (Module Two)	Unit 1: Algebraic Processes I	Revision of factorization of quadratics. Solution of quadratic equation using $ab=0\Rightarrow a=0$ or b = 0. Construction of quadratic equation with given roots. Drawing quadratic graphs. Obtaining roots from graphs.
	Unit 2: Algebraic Processes II	Quadratic expressions as the sum of the square of a linear expression and a constant. Solution of equation by completing the square. Deducing formula from completion of squares. Graphical solution of a pair of equations of the form $=aX^2+bX+c$ and $Y=mx+k$. Use of quadratic graph to solve related equation e.g. graphy of $Y=X^2+5X+6$ to solve $X^2 \mp 5X +4 = 0$. Drawing of a tangent to a curve. Use of tangent to determine gradient. Linear inequalities in one variable. Graph in linear inequalities in two variables.

	Unit 3: Algebraic Processes III	Applications of solution of linear and quadratic equations in practical problems
STAN MAT 303: MENSURATION (Module Three)	Unit 1: Mensuration I	Length of arcs of circles. Perimeter of sectors and segments. Areas of sectors and segments of a circle. Rotation between the sector of a circle and the surface area of a cone. Surface area of cube, cuboid, and cone
	Unit 2: Mensuration II	The surface area of volume of a sphere. The earth as a sphere. Calculations of distances on the surface of the earth.
STAN MAT 304: PLANE GEOMETRY (Module Four)	Unit 1: Plane Geometry I	Construction of an angle equal to a given angle. 4 – sided plane figures given certain conditions. Locus of moving points including equidistant from 2 lines or 2 points, and constant distance from a point. Deductive proofs of an angle sum of a triangle. Areas of triangles between angles based on the axiom that the sum of **angles** on a straight line is 180^o. Angles on parallel lines, angles on a polygon, congruent triangles, properties of a parallelogram, intercept theorems
	Unit 1: Plane Geometry II	Deductive proofs of: (i). the angle which an arc substends at the centre is twice the angle it sustends at the circumference. (ii). Angles of the same segment are equal Riders on the Euclidean geometry of the circle.
STAN MAT 305 Trigonometry (Module Five)	Unit 1: Trigonometry I	Trigonometric ratios of 30^o, 45^o, and 60^o. Application to simple problems. Trigonometric ratios related to the unit circle. Graphs of sine and cosine for 0o, $\leq X \leq 360^0$
	Unit 1: Trigonometry II	Angles of elevation, depression, and bearings involving calculation of lengths and angles. Graphs of sine and cosine between 0^0 to 360^0.
STAN MAT 306	Unit 1: Statistics I	Collection, tabulation and presentation of data. Frequency tables. Rectangular graphs, pie charts, bar charts, frequency polygons, line graphs. Reading and drawing simple inferences from graphs. Use of standard deviation in practical problems.

Statistics (Module Six)	Unit 1: Statistics II	Probability. Throwing of die or coin. Theoretical probability as a limiting value of experimental probability as the number of trial becomes large. Determination of probability of mutually exclusive events in the same population.
	Unit 1: Statistics III	Presentation of grouped data using histograms. Interpretation of data in histograms. Using cumulative frequency graph to estimate the percentiles (including median). Calculation of mean deviation and standard mean deviation.

STAN TEACHERS RETRAINING PROGRAMME FOR PHYSICAL & HEALTH EDUCATION (PRIMARY)

COURSE CODES & TITLES	COURSE UNITS	COURSE CONTENTS/DESCRIPTION
STAN PHE 101: Locomotor, Nonlocomotor and Fundamental Rhythmic Activities (Module One)	Unit 1: Fundamentals	Fundamentals/ techniques of walking, running, leaping, skipping, crawling and climbing, bending of body parts, stretching of the body trunk in all directions. Turning and shaking of the body parts.
	Unit 2: Pushing/pulling Exercises	Pushing exercise e.g. Duck fight, pulling exercises e.g. tug of war. Description of other exercises involving pushing or pulling and the rules of the games.
	Unit 3: Movement	Activity – movement made by people e.g. soldiers, hunters, farmers etc. Movement made by animals e.g. duck, horse, camel, monkey, elephant, kangaroos. Movement made by machines e.g. cars, aeroplane, train etc. Movement made by dancers, Demonstrate these movement in normal school activities e.g. make sound and move like a motorcycle.
STAN PHE 102: Athletics (Track and Field Events) (Module Two)	Unit 1: Short, Middle distance and Long Races	50m dash; 75m dash. Relay racing (meaning and examples). 4 X 100m relay, 100m dash, 200m and 4 X 200m relay. Middle distance races. Meaning and examples i.e. 400m, 800m, and 1,500m. Long distance races – 4 X 400m, 3000m, 5000m, 10,000m, Marathon. Emphasis should be on techniques, speed, starting, arm action and finish.
	Unit 2: Hurdles	100m hurdles; 110m, 400m. Skills, starting, position, approach to the first hurdle, clearing the hurdle, landing.
	Unit 3: Jump	Long and high jump. Basic skills e.g. approach run, take-off, clearing the bar, bending and follow-through.
	Unit 4: Pole Vault	Skills of pole vaults e.g. the grip, run-up, pole carrying, flight, push up and bar clearance sector
	Unit 5: Discus, Short Put & Javelin	Basic skills in & Short put discuss such as grip, stance, swing, release, follow-though, the sector. Javelin skills. Javelin sector

STAN PHE 103 **Games and Sports** (Module Three)	Unit 1: Indigenous Games and Sports	Rats and Rabbits. Fire on the mountain. Description of types, skills and rules in indigenous games and sports. Students should be involved in identification of indigenous games in their locality.
	Unit 2: Football (Soccer)	Activity – kicking, stopping, dribbling, heading, passing, shooting, chesting, throw-in, trapping. The history of football in Nigeria. Rules and regulations. Football officials and their duties. Court dimensions
	Unit 3: Basketball	Activity – Bouncing, throwing, catching, passing and dribbling. Defencing and offencing. Shooting, guard, forward etc. the history of the game in Nigeria. Rules and regulations. Officials and their activities. Court dimensions.
	Unit 4: Volleyball	Activity/skills – volleying, digging. History of volleyball in Nigeria. Rules and regulations. Officials and their activities. Court dimensions
	Unit 5: Table Tennis	Activity – The grip and serving, fore hand and backhand drives. Rules and regulations. Officials and their activities. Measurement of Table Tennis table.
	Unit 6: Hockey	Skills and techniques used in hockey. E.g. grip, hitting, passing, dribbling, etc. The history of hockey in Nigeria. Facilities and equipment e.g. the sticks, field etc. Rules and regulations. Officials and their duties.
	Unit 7: Handball	Skills in Handball – throwing, dribbling, tackling, shooting, goalkeeping. Rules and regulations. Officials and their duties. Court measurement & their markings.
	Unit 8: Swimming	Safe hints e.g. shower before and after swimming, don't swim immediately after meal. Skills in swimming e.g. entry into the water, ducking, breath holding etc. Types of strokes – front crawl, breaststroke, back stroke, butterfly stroke.
	Unit 9: Wresting	History of wrestling and types of wrestling i.e. traditional and modern wrestling; importance of wrestling; skills and techniques of wrestling

	Unit 10: Karate and Taekwando	History of Karate. Its importance. Basic skills for karate. Rules and regulations. The history of Taekwando. Its importance. Rules and regulations
STAN PHE 104: First Aid and Safety Education (Module Four)	Unit 1: General Causes of Accidents & Safety Precautions	Causes of accidents such as unsafe environment, carelessness, emotional factors, lack of skill, fatigue, use of alcohol Safety precautions such as warm up activities preceding each event, giving adequate instructions, putting on correct wears. Observing rules and regulations
	Unit 2: First Aid	Meaning of first aid. Objectives of first aid and content of first aid box. Uses of the items of first aid box. Common injuries during physical activities e.g. bleeding, wound, sprain, strain, dislocation, fracture. Qualities of a first aider. Principles of first aid treatment. First ais treatment of burns and fracture. Meaning of burns. Agents of burn e.g. physical, chemical, and electrical. Meaning of fracture; types of fracture.
	Unit 3: Safety Education.	Definition and meaning of safety education. Objectives of safety education. Aims of safety. Scope of safety education e.g. safety in schools, field, swimming pools, home, kitchen, living rooms, bedroom, bathroom etc.
	Unit 4: Agencies for Accident Control	Federal Road Safety Corps; Fire Services; VIOs; Police; Armed forces etc.
STAN PHE 105 Gymnastics and Physical Fitness (Module Five)	Unit 1: Gymnastics	Meaning. Floor activities, slow and fast movement e.g. forward and backward roll, Cart wheel. Gymnastic activities with apparatus – for swimming; vaulting; somersaulting; climbing; stunt activities e.g. bent knee, crab walk, dog run, duck walk, frog jump etc. backward jump, balance stand. Stunt activities with partner – wheel barrow, rock the boat, one hand wrestle. Tumbling stunts – backward roll, head stand, hand stand etc.

	Unit 2: Physical Fitness	Definition/Meaning of physical fitness. Components of physical fitness. Activities include push-ups, squatting position, bent knees, sit-ups, sit and reach, agility run, arm circling, treadmills, bear hug Importance of physical fitness – the value of being physically fit (personal benefits, social benefits and economic benefits). Measuring physical fitness components – muscular endurance (pull-ups); cardiovascular endurance (12 minutes run, walk, bench steps); Strength (press ups, sit-ups); Speed (50m dash); Agility (10m shuttle run)); Flexibility (Toe touch); Balance (Beam walk) etc.
STAN PHE 106 Introduction to Directions, Exploration of Environments and Recreation (Module Six)	Unit 1: The Four Cardinal Points	Identification of the four cardinal points – the North, South, East and West. Importance of cardinal points to physical education teachers e.g. sitting and construction of 400m track
	Unit 2: Living and non living components of the environment	Identification of the living and nonliving components within our surroundings. The importance of living things to mankind within the environment.
	Unit 3: Recreation	Definition/Meaning of recreation. Types of recreational activities. Importance of recreational activities to mankind within the environment.
	Unit 4: Camping	Definition/Meaning of camping. Camping activities e.g. sharing responsibilities; recording of events; self evaluation;. The objectives of camping.
STAN PHE 107 Personal, School and Community Health (Module Seven)	Unit 1: General Body Cleanliness	Bathing/care of the skin. Care of the teeth using toothbrush and paste, chewing stick. Cutting of nails. Hair maintenance. Foot wears.
	Unit 2: Rest and Sleep	Ways to rest. Best condition for sleeping – bed/mat. Bedroom, ventilated room. Importance of resting. Factors affecting sleep.
	Unit 3: Parts of the body	Different parts of the body – Head eyes, nose, mouth, arms, chest, stomach, legs. Functions of different parts of the body.
	Unit 4: Environmental Health	Ways of purifying water through filtration, boiling, use of chemical, sieving, air pollution, noise pollution etc.

	Unit 5: Systems of the body	Respiratory; circulatory; digestive; muscular; skeletal. Function of each of the system.
	Unit 6: Community, Mental & Social Health	Meaning and importance of community health. Community efforts in health promotion. Examples of efforts - provision of pipe borne water, electricity, provision of awareness of ways for minimizing agents of killer diseases. Provisions of avenues for waste disposal. Meaning and Importance of waste disposal. Reasons for proper waste disposal. Diseases and their precautions. Mental and social heath. Meaning of oneself getting along with others. Benefits of making good friends
	Unit 7: School Environment	Meaning of school environment. Reasons for keeping the school environment healthy. Methods/Ways of keeping the school environment clean.
STAN PHE 108 Food, Nutrition & Health (Module Eight)	Unit 1: Nutrition and Diet	Meaning of nutrition. Importance of adequate diet. Effects of inadequate diet on the family. Mineral nutrients
	Unit 2: Food and Food Nutrients	Classes of food (carbohydrate, protein, fats & oil,). Preparation and preservation of food. Food spoilage. Meaning of food nutrients. Importance of food nutrients in the body e.g. building, repair, energy giving, protection against diseases. Sources of food nutrients.
	Unit 3: Family Size & Nutrition.	Meaning of family size and effects on nutrition. Cases and symptoms of malnutrition

STAN TEACHERS RETRAINING PROGRAMME FOR PHYSICAL AND HEALTH EDUCATION (JUNIOR SECONDARY)

COURSE CODES & TITLES	COURSE UNITS	COURSE CONTENTS/DESCRIPTION
STAN PHE 201: Athletics (Track and Field Events) (Module One)	Unit 1: Field Events	Pole Vault. Skills – grip, pole carrying, run-up, take-off, hang, swing-up, and turn push up and clearance. Run way and landing area.
	Unit 2: Throws	Throws (Discus, Shot-Put, Javelin). Basic skills, grip, stance, throw, release, follow through. The sector and throwing area.
	Unit 3: Track events	Long distance techniques and skills in starting, running, arm action, finishing or starting 3000m, 5000m, 10,000m, marathon. Relay races – Techniques, skill of take off, acceleration, smooth visual and non-visual exchange of baton. Exchange zone
	Unit 4: Combined Events	Pentathlon and Decathlon. Listing of various events under decathlon and pentathlon. Duration of each event. Scoring
	Unit 5: Facilities and Equipment	Facilities and equipment used for track and field events. Rules and regulations. Officiating in track and field events. Construction of tracks. Conditioning programme in track and field. Organizing intramural and extramural athletic activities.
STAN PHE 202 Personal, School and Community	Unit 1: Determination of Health Status	Characteristics of a healthy person. Components of school health programme. Heredity, Environment, Life style. Ability to work without being easily fatigued.
	Unit 2: Sewage and refuse disposal	Environmental pollution. Meaning of sewage and refuse. Method of sewage disposal (open dump, water system). Method of refuse disposal (open dump, Incineration)

Health. First Aid and Safety Education (Module Two)	Unit 3: Family Life Education	Meaning and types of families. Duties of family members. Puberty in boys and girls. Pre-marital sex and its consequences. Assertiveness and communication skills. Preparation for family life and marriage.
	Unit 4: Physical and Health Education Agencies & Career options	Sports promotion agencies in Nigeria. Sports associations. Nigerian Institute of Sports. Agencies and organization promoting heath education in Nigeria – NDLEA, Ministry of health, Road safety Corps, NAFDAC, UNESCO, UDAID, WHO, JICA, UNWEF. Career Opportunities in health Education.
	Unit 5: Sports Injuries and First aids	Common sports injuries. Meaning and importance of First Aid. Contents of first aid box and their uses. Principles of first aids treatment. Classifications of accidents. Preventing road traffic and home accidents.
	Unit 6: Aging and Death Education	Drug use, misuse and abuse. Ageing. Death and dying. Death education.
STAN PHE 203 Physical Fitness and Body Conditioning Programmes (Module Three)	Unit 1: Meaning and Components of Physical Fitness	Characteristics of a physically fit person. Fitness exercises
	Unit 2: Defects and Benefits of Physical Fitness Exercises	Posture and postural defects. Benefits of physical fitness exercises. Factors that influence physical fitness.
STAN PHE 204: Games Sports and Smimming	Unit 1: Ball Games	Volleyball and soccer. History, basic skills, application of rules and regulations governing the games. Officiating facilities and court description.
	Unit 2; Traditional Sports	Facilities, equipment, rules, techniques of traditional sports. Types of traditional sports.
	Unit 4: Racket Games	Tennis, Table tennis. Basic skills and techniques. Facilities and equipment.

(Module Four)	Unit 3: Aquatic Sports	Meaning and types. Facilities and equipment. Officials.
	Unit 5: Skills & Safety Measures in Aquatic Games	Basic skills in swimming. E.g. breast stroke, butterfly. Officiating. Safety measures in aquatic sports.
STAN PHE 205 Recreation, Dance, Leisure activities and Martial Arts (Module Five)	Unit 1: Meaning and Benefits and types of Recreation	Meaning, types and components of recreation. Leisure and rest. Benefits of recreation, leisure and rest. Computer games.
	Unit 2: Traditional and social Dance	Traditional and social dance or folk dance like Atiliogwu (ibo), Sharo (Fulani), Lango (Hausa). Regae, Disco. Dramatic and Creative rhythms
	Unit 3: Wrestling	History and development of traditional and modern wrestling. Importance of wrestling. Wrestling skills – offensive and defensive.
STAN PHE 206 Food, Nutrition and Health. (Module Six)	Unit 1: food	Meaning and classes of food. Different types of food. Importance of food to man (for energy, growth etc).
	Unit 2: Health and nutrition	Nutrition for special groups e.g. adolescents, athletes, sick, convalescents etc Diseases associated with nutritional deficiencies. And symptoms. Prevention of communicable diseases
STAN PHE 207 Historical Foundation, Issues and Challenges in Physical and Health Education (Module Seven)	Unit 1: Gender Participation in Sports	Definition of gender. Facts and fallacies of female participation in sports. Female genital mutilation (FGM) – meaning, types and health implication.
	Unit 2: Human Trafficking and Child Abuse	Meaning, consequences and solution. Health implications of human trafficking.
	Unit 3: Violence in Sports and Sports Laws	Causes of violence in sports. Ways of reducing or eradicating violence in sports. Sports laws e.g. tort, negligence, legal liability, assault in sports.

STAN PHE 208 Career Guidance in Health and Physical Education (Module Eight)	Unit 1: Specialists in physical & health Education	Definitions of career and branches of physical and health education. Qualifications and functions of specialists in physical and health education. . Functions of physical education specialists. Functions of specialists in health education and community development.
	Unit 2: Nigerian Sports Heroes and Professionals	Lists of Nigerian sports heroes and professionals. Their contributions to physical and health education

STAN TEACHERS RETRAINING PROGRAMME FOR PHYSICAL & HEALTH EDUCATION (SENIOR SECONDARY)

COURSE CODES & TITLES	COURSE UNITS	COURSE CONTENT/DESCRIPTION
STAN PHE 301: Foundation, History and Development of Physical Education (Module One)	Unit 1: Foundation of Physical Education	Principles and Philosophies of founding fathers like Dudly, Sergeant Wood, John Dewey etc. Changes in the concept of physical education. Physical education ideologies: Nationalism and patriotism in sports.
	Unit 2: History and development of Physical Education	History and development of physical education and sports in West Africa and Nigeria. History and development of traditional sports in West Africa. Modern Physical Education and sports in West Africa. Contributions of the pioneers of Physical Education in West Africa and Nigeria
STAN PHE 302 Recreation, National and International Sports Competition (Module Two)	Unit 1: Recreational activities	Definition and importance of recreational activities. Differences between work, rest, recreation, leisure and sports. Types of recreational activities – indoor and outdoors recreational activities.
	Unit 2: Competitive Sports	Intra mural and extra mural sports. Minor games and major games. Organization and administration of competition. Types of tournament e.g. single elimination, double elimination etc.
	Unit 3: National Competition and Sports festivals	National championship and sports festivals (organized by different sports association and Nigerian school sports federation. Institutional sports festivals e.g. NUGA, NICEGA, NIPOGA etc. International Sports - First all African Games, International Olympic committee, ISSF etc. Membership structure and functions of international sports governing bodies.

STAN PHE 303 Basic Human Anatomy and Physiology in Relation to Exercise (Module Three)	Unit 1: The Skeletal System	Main parts and function of the human skeleton.
	Unit 2: Nervous System	Parts, structures and functions
	Unit 3: The circulatory System	Parts, structures and functions
	Unit 4: Reproductive System	Parts, structures and functions
	Unit 5: Respiratory System	Parts, structures and functions
	Unit 6: Digestive System	Parts, structures and functions
	Unit 7: Endocrine System	Organs, functions and effects.
	Unit 8: The Human Systems and Exercise	Relationships of the various systems to exercise
STAN PHE 304: Basic Principles of First Aid and Safety Education (Module Four)	Unit 1: Sports Injuries and First aids	Identification of kinds of and explanation of possible causes, symptoms, treatment and preventive measures. Content of first aid box and their uses. Conditions and situations that require first aid e.g. fainting, drowning, shock etc. Principles of first aid and qualities of a good first aider. Artificial respiration – different types and their application.
	Unit 2: Safety Education	Definition of safety education. Needs for safety education in physical education. Types of accidents, their causes and prevention.
STAN PHE 305 Gymnastics and Swimming (Module Five)	Unit 1: Mat work	Headspring and Handspring combination – fly spring, forward roll, backward roll.
	Unit 2: Box Work	Astride Vault, through vault with emphasis on approach run, execution and landing techniques.
	Unit 3: Horizontal Bars	Cycling center and over, Chin Up, Mount and dismount
	Unit 4: Gymnastics and other Sports	Discussion of general educational gymnastics in relation to other sports.
	Unit 5: Traditional Sports	Definition & types of traditional sports. Safety precaution in carrying out the traditional sports. Traditional dances (Atiliogwu)

STAN PHE 306 Games and Traditional Sports (Module Six)	Unit 1: Games	**Ball games** (basketball, handball,). Specification of courts and pitches. Types of equipment used. Team formation and playing strategies. Racket games (Table tennis, Tennis. Specifications of courts, equipment used and regulations. Tactics and strategies for the games services in each game and officiating.
	Unit 2: Traditional sports	Historical development of sports in West Africa. Significance of traditional sports. Types of traditional sports e.g. Boat regatta, Dambe, Ebola, Sharo, Wrestling, Langa etc.
STAN PHE 307 Athletics (Track and Field Events) (Module seven)	Unit 1: Track events	Techniques in short distance races (spint) – Sprint Start – Bullet/bunch, medium and elongated. Middle distance races e.g (800 – 3000m). Phases of running and strategies. Rules and regulations. Long Distance Races – 5000m and above. Phases of running and strategies. Rules and regulations. Relay Races - Visual and non-visual types. Baton exchange and change over zone
	Unit 2: Hurdling Events	Hurdling events (high and low). Techniques and different distances
	Unit 3: Throwing Events	Short Put. Discus. Javelin. Hammer. Equipment, specification, techniques, rules and regulations.
	Unit 4: Jumps	High jump. Long jump. Triple jump and Pole vault. Equipment, specification, techniques, rules and regulations.

STAN PHE 308 Food, Nutrition and Personal Health (Module eight)	Unit 1: Meaning and classes of food	Meaning and classes of food. Sources of food. Importance of food to the body.
	Unit 2: Nutrition and deficiencies	Sources of food nutrients. Nutritional deficiency diseases.
	Unit 3: Personal Health & Hygiene	The importance of health in physical education. Qualities of good health Care of the body during and after sports. Care and storage of sports wears and costumes. The effects of bad and good sports wear on the body. Mental, emotional and social health

STAN TEACHERS RETRAINING PROGRAMME FOR PHYSICS

COURSE CODES & TITLES	COURSE UNITS	COURSE CONTENTS/DESCRIPTION
STAN PHY 301: Measurements (Module One)	Unit 1: Units and Measurements	Fundamental quantities and units; submultiples and multiple units; derived quantities and units; dimensions of physical quantities; measurements; measurements of lengths (metre rule, calipers, micrometer screw gauge); measurement of mass and weight; measurement of volume; degree of accuracy.
	Unit 2: Position, Distance Displacement and Time	Measurement of distance; concept of direction; distinction between distance and displacement; concept of time; ways of measuring time
	Unit 3: Vectors and scalars	Concept of scalars; concept of vectors; distinction between scalars and vectors; addition of vectors; resolution of vectors
STAN PHY 302 Interactions of Matter, Space and Time (Module Two)	Unit 1: Motion, Speed, Velocity and Acceleration	Concept of speed; concept of velocity, distance-time graph or displacement-time graph; instantaneous speed/velocity. Concept of acceleration; uniform acceleration ration; velocity-time graph; analysis of rectilinear motion. Speed as a scalar quantity; velocity and acceleration as vector quantities; concept of resultant velocity using vector representation; (v –t) graphs
	Unit 2: Equations of Uniformly Accelerated motion	Applications and interpretations of equations of motions in simple problems; graphical interceptions of uniform and non uniform motions

	Unit 3: forces Elastic properties of solid projectiles, simple harmonic motion	Concepts and definition of terms; Resultant and equilibrant forces; Parallel forces; Moment of a force (Toque); Center of gravity and equilibrium; Equilibrium of bodies in liquids; Concept of projectile; Simple problems involving range height and time of flight; Hooks' law, Young's modulus; Work done in springs and elastic springs; Definition of simple harmonic motion; Speed and acceleration of simple harmonic motion; Period, frequency, and amplitude of simple harmonic motion; Energy of simple harmonic motion; Forced vibration and resonance
	Unit 4: Work, Energy, Power and Machines	Concept of work energy and power; measurement of work, energy and power; work done in a force field; types of energy (mechanical) (a). Potential energy (b). Kinetic energy
STAN PHY 303 Conservation Principles (Module Three)	Unit 1: Linear Momentum	Momentum and impulse; Newton's law of motion; Conservation of Linear Momentum; Collisions; Inertia, Inertia mass and weight; Applications of the laws
	Unit 2: Mechanical energy, Heat Energy – temperature and measurements – Heat energy measurements	Concept of work as a measure of energy; quantitative treatment of mechanical energy; temperature and its measurements; pressure and temperature of gas; thermometers; absolute scale of temperature; molecular explanation of temperature; Heat energy measurements (specific and latent heats); applications of latent heat; evaporation, boiling and sublimation; relative humidity and dew point
	Unit 3: Gas laws, fluids at rest in motion	Measurement of gas pressure; barometer in practical use; Boyle's law and its application; Charles law and its application; General gas law
	Unit 4: Conservation of Energy	Conservation of mechanical energy, Applications of mechanical energy, Machines

STAN PHY 304: ***Light*** (Module Four)	Unit 1: Light waves	Sources of light; light and matter; transmission of light; Simple cameras and projectors
	Unit 2: Properties of light wave	Reflection; refraction; laws of refraction; laws of reflection
	Unit 3: Application of lenses and plane mirrors	Plane mirror surfaces; curved mirror surfaces; formation of images by plane mirrors and curved mirrors; applications. Solve problems on the microscopes; the telescopes
	Unit 4: Human eye	Structure of the eye; image formation; defects and use of lenses in correction of defects;
STAN PHY 305 **Waves** (Module Five)	Unit 1: Production & Propagation of waves	Production of mechanical waves; pulsating system; wave form; mechanical relationships among f, Λ, T, and V
	Unit 2: Types and properties of Waves	Liquid waves; transverse waves (classification based on mode of vibration and direction of propagation); reflection of waves (laws of reflection); Superposition of waves (two waves in same direction, two waves in opposite direction); refraction of waves (laws of refraction); interference of waves; diffractions of waves (sound and light); polarization of light (application in Polaroid only)
	Unit 3: Sound Waves and Applications	Sources of sound; Transmission of sound waves; noise and music; pitch loudness and quality; forced vibration; speed of sound in solid, liquid and air; Velocity of sound; Stationary waves
	Unit 4: Musical Instruments.	Wind instruments (clarinet, flute, saxophone and trumpet); String instruments (guitar, sonometer, piano); Percussion instrument (drum, bell, the talking drum); Echoes and their applications
	Unit 1: Charges, Description and properties of fields	

STAN PHY 306 Fields at Rest and in Motion (Module Six)	Unit 2: Gravitational, Electric fields	Gravitational forces between two masses; escape velocity; electric forces between point charges; concepts of electric fields, electric field intensity and electric potential; capacitance (definition, arrangement of capacitors in a circuit, energy stored in a charged capacitor) production of continuous charges; electric circuit series and parallel arrangement of cells and resistors; shunts and multipliers; resistivity and conductivity; principles of potentiometer; measurements of electric current, potential difference, resistance and e.m.f of cells; electric production through liquid and gases
	Unit 3: Magnetic and Electromagnetic fields	Concept of magnetic fields; magnetic field around (i) a permanent magnet, (ii). A current carrying conductor, (iii). A solenoid; Magnets (types and production); Applications of electromagnetic fields; Earth's magnetic field; magnetic force on a moving charge. Concept of Electromagnetic field; interactions between magnetic fields and currents; applications of electromagnetic fields (electric motor, moving coil galvanometer); electromagnetic induction (Faraday's law, Lenz's law, motor generator effect, generators, induction coil transformer and power transmission) Applications of electromagnetic field
	Unit 4: Simple A.C. Circuits	Alternating currents circuits (nomenclature in Ac circuits, peak and r.m.s values, series circuits containing resistance inductance and capacitance, reactance and impedance); Power in ab a.c circuit
	Unit 1: Particulate nature of matter	Structure of matter (evidence of particle nature, simple atomic structure); Molecules (their nature and sizes); States of Matter (solid, liquid and gases)

STAN PHY 307 **Energy Quantization and Duality of Matter** (Module Seven)	Unit 2: Models of Atoms	Concepts of atom; the Thomson, Rutherford, and Bohr's models of atom. The electron cloud model. Limitations of physical models
	Unit 3: Nucleus, Energy quantization	Radioactivity – natural and artificial (isotopes, radioactive elements, radioactive emission, half-life and decay constant, transformation of elements); Nuclear reactions (nuclear energy, nuclear power & atomic bomb, peaceful uses); Energy level in atoms, colour and light frequency, photoelectric effect, Einstein's equation and its expiations. X-ray (production, characteristics& properties, uses)
	Unit 3: Wave particle paradox	Electron diffraction; duality of matter, the uncertainty principles
STAN PHY 308 Physics in Technology (Module Eight)	Unit 1: Energy Production and transmission system	Methods of production and transmission, advantages and disadvantages of the methods
	Unit 2: Energy and society	Energy and technology growth/development.
	Unit 3: Rockets, Satellite, Niger-SAT, NICOM-SAT1	Description of the applications of physics in Rockets, Satellite, Niger-SAT, NICOM-SAT1 e.t.c

STAN TEACHERS RETRAINING PROGRAMME FOR TEACHER EDUCATION

COURSE CODES & TITLES	COURSE UNITS	COURSE CONTENTS/DESCRIPTION
STAN TEA 501: Nature of Science Teaching (Module One)	Unit 1: Concept and Philosophy of Science & Science Teaching	Concept and nature of science and science teaching. Philosophy and reasons for teaching science.
	Unit 2: The Science Teacher	Qualities of a good science teacher. Duties of the science teacher. Ethical issues in science teaching especially as it relates to the science teacher.
STAN TEA 502 Learning Theories and Their Application in Science Classrooms (Module Two)	Unit 1: Learning Theories Applicable to science teaching	The Ausubelian theory, Brunnerian theory, Piagetian theory, Gagne's theory, and theory of constructivism.
	Unit 2: Applications of the Theories in Science Teaching	Detailed applications of the Ausubelian theory, Brunnerian theory, Piagetian theory, Gagne's theory, and theory of constructivism in science teaching. Practical illustrations are required with respects to specific theory using a topic in science.
STAN TEA 503 Instructional Strategies for Science Teaching I (Module Three)	Unit 1: The Discussion Method	The nature and scope of discussion as instructional strategy. Application of discussion method as instructional medium in science teaching.
	Unit 2: Metacognition-based strategy	The nature and scope of the Metacognition-based strategies. Concepts and Vee mapping. Mini- teaching using these strategies.
STAN TEA 504: Instructional	Unit 1: Programmed Instruction	Origin and nature of programmed instruction. Facilities for programmed instruction. Development of programmed instruction for science teaching. Practical application of programmed instruction in the science classroom instruction.

Strategies for Science Teaching II (Module Four)	Unit 2: The Problem Solving Approach	Definition and nature of problem solving approach to science teaching. Practical application of problem solving strategies in science classroom instruction.
STAN TEA 505 Instructional Strategies for Science Teaching III (Module Five)	Unit 1; Play and Simulation	Origin and nature of play and simulation. Play and simulation as a strategy for science teaching. Practical demonstration of the application of play and simulation in teaching specific topics in science.
	Unit 2: Team Teaching	Definition and nature of team teaching. Team teaching as a medium for teaching science. Practical application of team teaching as instructional strategies in science teaching.
STAN TEA 506 Instructional Strategies for Science Teaching IV (Module Six)	Unit 1: The Project Method	Nature and scope of project method. Application as instructional strategy in science classroom/Mini teaching.
	Unit 2: Demonstration Method	Definition and nature of demonstration method. Demonstration as a medium for science teaching. Mini-teaching/Application of demonstration method in teaching specific topics in STM classrooms
STAN TEA 507 Instructional Methods in Cognate Science Subjects (Module Seven)	Unit 1: Instructional Methods for Teaching Individual Science Subjects	Identification of most appropriate instructional methods for teaching the various subjects with emphasis on the qualities of the method and nature of the course being taught.
	Unit 2: Problems and Prospects	Problems associated with applications of the various techniques in teaching specific subjects (subject compatibility). Advantages and disadvantages of the various methods with emphasis on specific subject area.
STAN TEA 508 Lesson Preparation and Evaluation of Learning Outcome (Module Eight)	Unit 1: Lesson Preparation	Lesson preparation and development of lesson notes. Features and guidelines for good lesson note writing in science classroom. Advantages of lesson notes and guides.
	Unit 2: Evaluation of Instruction	Nature and scope of evaluation. Methods of evaluation. Guidelines on test construction, administration and scoring. Uses of evaluation data.

STAN TEACHERS RETRAINING PROGRAMME FOR AUTO ELECTRICAL WORKS

COURSE CODES & TITLES	COURSE UNITS	*COURSE CONTENTS/DESCRIPTION*
STAN AEL 301 Battery (Module One)	Unit 1: Concept and Uses of Battery	Motor Battery and primary cell battery. Uses of motor battery. Inspection of motor battery and other batteries. Battery as a power source in soldering.
	Unit: 2: Types, Construction and Testing of Battery	Types of battery. Battery assembles in a vehicle. Different types of secondary cell. Similarities and differences between them. Battery construction processes. Specific gravity test of electrolyte. Cell voltage test. Polarity test
	Unit 3; Maintenance of Battery	Maintenance of batteries – electrolyte toping up needs, hydrometer reading and interpretation, overcharging symptoms, idle battery safe-keeping units
	Unit 4: Battery Charging	Battery charging processes – preliminaries, acid mixing, battery cleaning, battery connection. Charging mode. State of charge. Electrolyte testing. State of charge.
STAN AEL 302 Starting System (Module Two)	Unit 1; Purpose & Starter Circuit Diagram	Starter motor and its location in the engine component. The starter circuit component location. The sequential components of the unit.
	Unit 2: Dismantling and Assembling	Sequence, care and accuracy in dismantling and assembling. Brush and brush replacement. Overhauling. Coupling without undue torque and misalignment. Commutator soldering and repair. Trouble shooting – diagnosis and repair/restoration
STAN AEL 303 Ignition	Unit 1: Purpose of Ignition & Circuit Diagram	Purpose of the ignition system. Ignition system assembly in its position in a vehicle. Ignition circuit diagram – reading, drawing and labeling of ignition circuit.

(Module Three)	Unit 2: Spark Plug	Spark plugs and their location in a vehicle. Short and long reach plugs and their constructional differences. Uses of spark plugs. Replacement of spark plugs.
	Unit 3: Contact Breaker	Uses of contact breaker points. Removal, reconditioning and replacement of contact breaker points. Adjustment and gapping of contact breakers.
	Unit 4: Ignition Coil	Appreciation of the use of ignition coils. Construction of the coils. Operation of the coil.
STAN AEL 304 Charging Systems (Module Four)	Unit 1: Charging System and Charging Circuit Diagram	The charging system assembly as a sub-system in a motor vehicle. Graphical and pictorial representation of the charging circuit. Need for diagrammatic representation of the charging system. How to remove and fix the charging system
	Unit 2: Voltage Regulator	The voltage regulator. Construction and operation of the voltage regulator. Functions of the voltage regulator.
STAN AEL 305 Ignition and Charging (Module Five)	Unit 1: Engine Tuning	Reassurance of distributor condition. Distributor checks. Practical engine tuning procedure
	Unit 2: Ignition plug Check and Installation	Spark plug cleaning. Spark plug setting. Vehicle firing order
	Unit 3: Ignition Timing	Distributor position and adjustment.
	Unit 4: Brush and Bearing Replacement	Brush and bearing failure. Identification and replacement.
	Unit 5; Diode Testing, Repair/Replacement	Alternator corrective maintenance. Practical procedures.
STAN AEL 306 Lighting and Auxiliary Systems (Module Six)	Unit 1: Purpose of Lighting and Lighting Circuit Diagram	Need for lighting in motor vehicle. Obligatory lights in motor vehicle. Interpretation and drawing of light circuit diagram identification of the units that make up the circuit.
	Unit 2: Circuit protection and classification	Guarantee of circuit damage. Classification of circuits. Circuit connection nodes.
	Unit 3: Head Lamp Setting	Headlamp focusing and alignment.

	Unit 4: Auxiliary Circuit & Auxiliary Circuit Diagram	Concept of auxiliary system. Definition and uses. Units in the auxiliary system. Interpretation and drawing if auxiliary circuit diagram. Identification of the units that are classified as auxiliary.
	Unit 5: Troubleshooting	Causes and remedies of light fault from any part of the lighting circuit.
STAN AEL 307 Auxiliary units (Module seven)	Unit 1: Construction& Operation	Construction details of various auxiliary units. Operation of water temperature gauge and various auxiliary units.
	Unit 2: Troubleshooting and Repairs	Auxiliary unit fault diagnosis. Repair of various auxiliary units. Troubleshooting – causes and remedies from any side of auxiliary system

STAN TEACHERS RETRAINING PROGRAMME FOR AUTO MECHANICS

COURSE CODES & TITLES	COURSE Units	COURSE CONTENTS/DESCRIPTION
STAN AUM 301 Safety Maintenance (Module One)	Unit 1: Vehicle layout	Main component of a car body. Engine, Gearbox, clutches, chassis, rear axle, and connection to road wheels.
	Unit 2: Auto workshop;	Introduction to automobile workshops – repair, services, body work and machining. Need for maintenance. Differences between maintenance and repair.
	Unit 3: Safety maintenance in auto mobile workshop	Good safety habits. Safety while working. Understanding shop layout, location of safety devices and avoiding hazards.
	Unit 4: preventive maintenance;	Purpose of preventive maintenance, lubrication points. Maintenance schedules on time and mileage basis.
	Unit 5: Default diagnosis	System fault diagnosis. Use of diagnostic equipments – meters and testers.
	Unit 6: Lighting systems	Simple fault diagnosis. Lamp and fuse replacement. Headlamp alignment
	Unit 1: Causes of Accidents & Safety Devices	Main causes of accidents – vehicle defects, driver's errors, road conditions, and their combinations. Devices for preventing accidents. Devices for reducing injury in the event of accident. The highway code. Proper driving training. Defensive driving.
STAN AUM 302 Engine system & Maintenance	Unit 1: Main Components and Maintenance	The engine. Brakes. Steering. Light. Tyres. Suspension. Fuel system. Electrical system. Maintenance through lubrication services. Lubrication points. Engine tuning. Wheel bearing adjustment. Principles of four stroke cycles – ignition, compression, power and exhaust (petrol and Diesel). Basic principles of two stroke cycle – upward and downward strokes (petrol and Diesel).

(Module Two)	Unit 2: Cooling Systems	Conduction, convection and radiation. Low, normal and high temperature requirements. Effects of engine temperature on engine performance and failures. Engine knock. Apparatus of air-cooling system. Apparatus of water-cooling system. Layout of water and air-cooling systems. Advantages and disadvantages of the types of air and water-cooling systems.
	Unit 3: Crank Arrangement (Crankshaft configuration)	Crankshaft of 4 and 6 cylinders in-line engines. Crankshaft of v6 and v8 cylinder horizontally opposed engines. Crankshaft layout.
	Unit 4: Fuel, Exhaust and Firing order	Petrol and diesel. Properties of petrol and diesels. Functions of the exhaust system. The main components of the exhaust system. Effects of leak on the exhaust system. Functions and operations of ignition system. Factors that influence correct timing (spark plug gap, engine roam and load etc). Firing orders
	Unit 5: Lubrication and Greasing	Reasons for lubrication system. Types of gear and motor oil. Properties of engine oil and gear oil. Forms and types of lubrication systems. Uses of lubrication. Parts needing lubrication. Lubrication diagnosis and services to be carries out.
	Unit 6: Valve Operation Mechanism	Functions of valve operating mechanism. Main components of valve operating mechanism. Valve timing.
STAN AUM 303 Transmission and Braking systems I (Module Three)	Unit 1: System Layout	Functions of transmission system. Layout of the conventional transmission system. Location and function of oil seal.
	Unit 2: Clutching System	Main components of the simple plate friction housing, clutch disc, pressure plates, clutch bearing and release lever. Operation of the system as a whole. Functions of each of the main parts.
	Unit 3: Gear box	Simple layout of 3-speed gliding mesh gear box showing the main components. Operation of the gearbox and gear selection. Speedometer drive connection.

	Unit 4: Propeller Shaft, and Universal Joint and Rear axle assembly	Conventional universal joints. Constant velocity universal joint. Functions of the propeller shaft and the universal joint. Main components of the rear axle. Functions of the main components of rear axle.
	Unit 5: Ignition and Starting Systems	Types, layout and functions of the ignition system. Main components: battery, switches, contact point, coil, condenser, H T cable, spark plugs, module, ECU, distributor. Layout of mechanical and conventional system, electronic ignition and distributor les electronic system. Layout and functions of the starting system. Main components – battery, starter, switch, starter motor, and flywheel. Functions of the components above.
STAN AUM 304 Transmission and Braking systems II (Module Four)	Unit 1: Clutch Assembly	Main types of clutches. Mechanical and hydraulic operations. Simple calculations of friction, torque, and power.
	Unit 2: Gear box	Different types of gearbox. Gear selector linkages. Locking and interlocking devices. Gear ration. Relationship between engine speed, gear ratio and road speed.
	Unit 3: Road Wheels and Tyres	Functions of road wheel and tyres. Tyre inflation (pressure). Advantages of radial and cross ply tyres. Effects of air pressure on tyre (under and over inflation). Combination of radial and cross-ply tyres.
	Unit 4: Brake System	Functions and types of brake systems. Principles of operation of mechanical, hydraulic and servo assisted brake systems. Adjustment and bleeding. Simple braking torque and power calculation. Factors affecting braking efficiency

	Unit 5: The steering	Steering layout and main components. Patterns of operation types – reversible and irreversible. Steering geometry and angles. Factors affecting steering geometry. Effects of wear on steering. Importance of the steering angle. Power assisted steering. Functions of power assisted steering. Common steering faults and wheel alignment. Symptoms and remedies of steering faults. Need for wheel alignment. Equipment and procedure for wheel alignment. Detection and correction of wheel alignment.
	Unit 6: The Suspension System	Layout and functions of the suspension. Types of suspension – rigid beam and independent suspension. Main importance and their functions. Common faults.
STAN AUM 305 Electrical Systems (Module Five)	Unit 1: The Lighting System	Main components of exterior lighting system and their functions. Main components of interior lighting system and their functions. Simple circuit diagram of exterior and interior lighting system.
	Unit 2: Ignition System	The main components of computerized ignition system
	Unit 3: Auxiliary Circuit	Auxiliary circuit e.g. instrument panel, horn circuit. Layout of various auxiliary circuits.
	Unit 4: Battery Charging and Charging System	Purpose of lead-acid battery. Basic construction features of a battery. Chart on battery diagnosis. Charging guide.
	Unit 5: Remote Control	Principles of remote control. Basic components of remote control. Operating guide.
	Unit 6: Mechatronic Principles	Components of mechatronics. Operations of the mechatronic components. Reasons and benefits of mechatronics on motorcar.
STAN AUM 306 Auto Air-conditioning System (Module six)	Unit 1: Heating and ventilation system	Heating and ventilating. Functions of air conditioning. Main components of the system e.g. condenser, pipes etc.
	Unit 2: Electrical components	Main components- battery and compressor. Functions of the main components. Simple electrical circuit diagram of air conditioning system
	Unit 3: working fluid and its performance effects	Types, functions and properties of working fluid. Air condition fault diagnosis. Effects of air conditioning load on engine performance.

STAN TEACHERS RETRAINING PROGRAMME FOR BASIC ELECTRICITY

COURSE CODES & TITLES	COURSE UNITS	COURSE CONTENTS/DESCRIPTION
STAN BEL 301 **Basic Electricity Theory and Electrical/Electronic Components** (Module One)	Unit 1: Structure of Matter	Definition of matter. Conductors and insulators. Uses of conductors and Insulators
	Unit 2: Ohm's Law	Ohm's law and its application. Simple calculation of current, voltage and resistance. Verification of ohm's law.
	Unit 3: Electric Power	Concept of electric power. Relationships between power, current and voltage. Other formulae for finding power. Calculation of Electric power in circuits. Joules per Kilowatt-hour and watt-hour.
	Unit 4: Resistors, Capacitors and inductors	Circuit components. Identification of resistors. Electrical symbol of a resistor. Colour coding and its uses. Application of resistors. Types of capacitors and unit. Circuit symbol of capacitor. The application of capacitor. Colour coding of capacitor. Identification of inductors. Uses of inductors
STAN BEL 302 **Electrical Circuits and Electromagnetism** (Module Two)	Unit 1: Resistance, Capacitance and Inductance	Definition of resistance. Connections of resistors. Definitions of resistivity and conductivity. Experimental verification of resistivity and conductivity. Definition of capacitance. Connections of capacitors. Definitions of capacitive reactance and impendence. Definitions of inductance. Connections of inductors. Definitions of inductive reactance and impedance. Alternating current terminologies.
	Unit 2: Kerchhoff's Laws	Kerchhoff's current law. Kerchhoff's voltage law.
	Unit 3: Magnets	Origins of magnets. Properties of magnets, applications of magnets.

	Unit 4: Electromagnetism	Concept of electromagnetism. Faraday's law of electromagnetic. Lenz's law of electromagnetic induction. Applications of electromagnetism.
	Unit 5: Transformers	Classifications of transformers. Constructional features of transformers. Transformer efficiency. Transformer losses. Application of transformers.
STAN BEL 303 **Power Supplies and Electricity Generation/Transmission and Distribution** (Module Three)	Unit 1: Converters & Rectifiers	Power supply converter and inverters. Ac to DC. Rectification and filtration. Types of rectifier circuits. Verification of rectification process.
	Unit 2: Electricity Generation and Transmission	Concept of electricity generation. Types of generating stations. Advantages and disadvantages of various generating stations. Transmission of electricity. Methods of transmission of electricity. Functions of the main components of transmission system. Layout of transmission of electric power.
	Unit 3: Distribution of Electricity & Energy Conversion	Basic concept of electric distribution. Layout and main components. Functions of substations, transformers, distributors and feeders. Field trip to energy stations. Energy types, conversion and relationships between types.
STAN BEL 304 **Electrical Machines** (Module Four)	Unit 1: Direct Current generator	Principle of operation and main parts. Direction of induced emf. Calculation of generated voltage and output voltage. Direct current generator field system: types of direct current generator, method of connecting field current. Uses of Dc generators.

	Unit 2: A.C generators and AC motors	Concept/Principles of AC generator. Description of constructional feature of AC generators. Characteristics of AC generator. Applications of AC generator. Description of the working principles of AC motors. Types of AC motors. Description of the main features of AC motors. Domestic and industrial application of AC motors
	Unit 3: Basic features and Operations of Transformers	Features of a transformer. Classification of transformers. Working principles of transformers. Transformer efficiency. Methods of cooling transformers. Transformer losses. Applications of transformers.
STAN BEL 305 Electrical Measurements/Appliances, Digital Bases Electrical Circuit Wiring (Module Five)	Unit 1: Electrical Appliances and Measuring Instruments	Classes of electrical appliances. Electrical appliance maintenance. Electrical appliance fault troubleshooting and repairs. Electrical measuring instruments. Electrical measuring instrument errors. Number system - Number bases and Mathematical operations of number bases.
	Unit 2: Logic Gates	Meaning of logic gates and logic circuits. Symbol of logic gates. Applications of logic gates.
	Unit 3: Wiring	Types of wiring. Lighting points and switches. Preparation of cable ends for connection. Methods of terminating cables at accessories. Types of conduit materials. Conduit fittings. Conduit practical work. Trunking and ducting. Trunking and ducting fittings. Power socket outlet layout diagram. Tools and testing instruments. Use of tools and testing instruments. E.E E. regulations as applied to electrical wiring.
	Unit 4: Maintenance and Repair and installation test	General preventive maintenance. Faults and remedies. Types of installation test. Fault diagnosis in a completed installation. Importance of earthing accessories.

STAN TEACHERS RETRAINING PROGRAMME FOR ELECTRONICS

COURSE TITLES & CODES (Modules)	COURSE UNITS	COURSE CONTENTS/DESCRIPTION
STAN ELT 301: Electrical Quantities/Electronic Components & Circuits (Module One)	Unit 1: Electric Current,& Electric Power	Electric currents (structure of atom, conductors & insulators, direct and alternating currents and their sources) Current, voltage and resistance. Ohms law. Relationships between power, current and voltage. Electric power (simple calculation of current, voltage and resistance).
	Unit 2: Electric Circuits	Circuit components – resistors, capacitors and inductors. Symbols, signs and units. Colour coding and ratings of resistors. Electric Circuits – explanation of electric circuits, circuit boards, circuit arrangement. Simple calculations on circuit arrangement. Wiring of circuit arrangement
	Unit 3: Magnets and Magnetic fields	Definition of terms. Permanent and temporary magnets. Laws of attraction and repulsion. Applications of magnetism.
STAN ELT 302: Basic Electricity theory and Thermionic devices (Module Two)	Unit 1: Electromagnetism	Electromagnetism - explanation, applications, and principles of operation of transformers.
	Unit 2: Electron Emission	Electron emission (thermionic, photo, secondary &field emissions). Applications
	Unit 1: Semi Conductor	Semiconductors – concepts, material, doping, formation, forward and reverse biasing of diodes. . Semiconductor diodes – concepts, operational principles, types, diode rating, application of diodes,

STAN ELT 303: Semi-conductor Devices (Module Three)	Unit 2: Alternating Current Circuit	Construction of simple circuits. Concept of reactance. Resistor and inductor/resistor and inductor circuits. Capacitive reactance, inductive reactance, resonance frequency. Power in alternating current circuit – power and power triangle, power factor and its correction. Advantages and disadvantages of power factor correction. Calculation of power factor. Q-factor and bandwidth
	Unit 3: Transistors	Explanation of concepts. Biasing of transistors. Bipolar transistor circuits. Types of transistors. Application of transistors.
	Unit 4: Integrated Circuits & Microprocessors	Concept of integrated circuits. Advantages and disadvantages of integrated circuits. Applications of integrated circuits. Concepts of microprocessors. Explanations of microprocessor terms. Applications of microprocessors.
STAN ELT 304: Power Supply and Introduction to Communication System (Module Four)	Unit 1: Power Supply, Radio transmission and reception	Rectification and regulation of power supply. Principles of radio transmission and reception. Stages of radio receiver. (Am & FM). Comparison of Am and Fm receiver. Fault detection in radio receivers.
	Unit 2: Television Reception	Block diagram of stages of a TV receiver. Description of television reception procedure.
	Unit 3: Amplifiers	Concepts and principles of amplifiers. Classes of amplifiers. Applications of amplifiers.
	Unit 4: Feedback Circuits	Principles of feedback. Types of feedback amplifier. Concepts of oscillators and feedback. Types of oscillators.

	Unit 5: Satellite	Concept of satellite communication. Principles of transmission and reception system. Principles of operations of satellite receiver.
	Unit 6: Information and Communication Technology	Operations of telephone, operations of internet systems, operations GSM
STAN ELT 305: Measuring Instruments and tools, Transducers and Sensors (Module five)	Unit 1: Hand tools & Measuring Instruments	Hand tools (meaning, types and uses); Measuring tools (concept, classification and types);
	Unit 2: Transducers and sensors	Explanation of transducers and sensors. Principles of operation of transducers. Principles of operation of sensors. Types and uses of transducers. Type and uses of sensors. Acoustic transducers (types & applications)
STAN ELT 306 Digital Basics and Control System (Module six)	Unit 1: Number Systems	Different number system. Formation of different number system. Simple calculation in binary number. Conversion of number system..
	Unit 2: Logic Gates	Logic gates: - concepts of logic gates, types of logic gates and construction of truth table
	Unit 3: Control Circuit	Control Circuits (explanation of concepts; types of control circuits and principles of operation of control circuits.
	Unit 4: Servo Mechanism	Operations of servomechanism. Applications of servo mechanism
	Unit 5: Entrepreneurship in Electronics	Business opportunities in electronics, sources of fund, budgeting and management.

STAN TEACHERS RETRAINING PROGRAMME FOR FABRICATION AND WELDING

COURSE TITLES & CODES (Modules)	COURSE UNITS	COURSE CONTENTS/DESCRIPTION
STAN FAW 301 Workshop Standard and Practices (Module one)	Unit 1: Workshop Layout & Facilities	Description of a standard fabrication workshop. Description of a standard welding workshop List facilities and equipment for fabrication. List facilities and equipment for welding.
	Unit 2: Equipment Set-up	Set-up of equipment for fabrication. Set-up of equipment for welding. Identification of the parts and accessories of the equipment for fabrication. Assembly of equipment for fabrication e.g. grinding machine, cutting tools. Identification of the parts and accessories of the equipment for gas welding and arc welding. Assemblage of the equipment for welding - gas welding, arc welding.
	Unit 3: Accidents, Safety Facilities & Protective Wears	Concept of accidents and their causes. Types of accidents in the workshop e.g. fire, , explosion, sharp objects, hazardous gases, chemicals, slippery floor etc. rules and regulation to prevent accidents. Protective wears in the shop. First aid activities.
	Unit 4: Environmental Factors	Air pollution. Water pollution. Noise pollution. Standard welding codes
STAN FAW 302 Machine Tools and Maintenance (Module Two)	Unit 1: Job Holding Devices & Job Shaping Devices	Job holding devices for fabrication. Job holding devices for welding. Shaping devices for fabrication.
	Unit 2: Basic Instruments/Equipment and Processes	Lists of measuring instruments e.g. marking out tools, cutting tools. Measuring instrument and measuring processes. Gas (oxy-acetylene) welding equipment. Arc welding equipment. Gas preparation and usage. Job marking devices. Marking out simple shapes on sheet metals. Templates and mass production. Job cutting devices and job cutting processes
	Unit 3: Electrodes and Application	Types of electrodes. Gauges of electrodes. Applications of electrodes.

	Unit 4: Equipment Maintenance, Faults and Troubleshooting	Routine maintenance of gas welding equipment. Routine maintenance of arc welding equipment. Faults on welding and fabrication equipment. Troubleshooting on welding and fabrication equipment. Repairs of welding and fabrication equipment.
STAN FAW 303 Materials; Properties and Selection (Module Three)	Unit 1: Ferrous and non Ferrous Materials	Concept of ferrous and non-ferrous materials. Classification of ferrous and non-ferrous materials. Examples of ferrous materials: metal-sheet, cast iron etc. examples of non ferrous materials: Aluminum, copper etc.
	Unit 2: Material Properties and Application	Characteristics of materials – ductility; hardness; toughness; malleability; fusion; tenacity. Physical properties of metal – malleability, ductility, brittleness, toughness, elasticity, plasticity. Household metallic materials. Heavy-duty industrial materials.
	Unit 3: Sheet metals, Flat bars and Cylindrical Bars	Concept of sheet metals. Examples of sheet metals – aluminum, mild steel, brass. Gauges of sheet metal Flat bars: aluminum. Steels, cast iron etc. Standard size flat bars. Cylindrical bars: steels, aluminum. Standard sizes. Principles of selection of metals for job.
	Unit 4: Heat Treatment	Hardening; Normalizing; Annealing; Tempering; Case hardening
STAN FAW 304 Operations and Techniques	Unit 1: Types of Welding and Application	Gas welding. Arc welding. Applications of gas and arc welding. Principles of welding. Principles of fabrication. Description of gas and arc welding.

(Module Four)	Unit 2: Marking out and Joints	Classifications of marking out techniques in welding and fabrication. Templates – description of the nature of templates for fabricated assembles. Types of joints and applications in welding and fabrication.
	Unit 3: Welding Techniques and Application	Welding techniques and applications. Description of folding techniques in fabrication work. Importance of folding techniques in fabrication work. Job cutting techniques.
	Unit 4: Surface Preparation & Finishing	Description of surface preparation in welding and fabrication. Steps in surface preparation in welding. Steps in surface preparation in fabrication. Surface preparation methods - scrapping, filing etc. Surface finishing processes: painting; metal spraying; galvanizing etc.
STAN FAW 305 Forging Operations and Fasteners (Module Five)	Unit 1: Classification & Types of Fasteners	Concept of fasteners. Classification of fasteners – permanent and temporary fasteners. Types of fasteners: Rivets (types and uses. Riveting tools); Bolt and nut (Description of bolts and nut, types and uses).
	Unit 2: Forging and forging processes	Concept of forging. Forging tools. Uses of forging tools. Types of forging. Forging processes e.g. upsetting; drawing down; bending etc.
	Unit 3: Material selection and Treatment	Principles of selection of materials. Selection of materials for jobs. Heat treatment – hardening; normalizing; tempering, case hardening
STAN FAW 306 Surface & Environmental Factors	Unit 1: Welding Environment	Chemical environment. Flammable environment. Environmental effects on welded metals. Environmental effects on fabricated material. Welding in chemical or highly inflammable environment. Safety precautions for welding in chemical and inflammable environments.

(Module six)	Unit 2: Surface operations	Pre fabrication surface operation. Post fabrication surface operation. Pre welding surface operation. Post welding surface operation. Welding surface defects (causes and remedies)
	Unit 3: Welding Dissimilar Metals	Dissimilar metals that can be joined. Selection of types of currents for joining dissimilar metals. Selection of filter rods for dissimilar metals.
STAN FAW 307 Practical Works (Module Seven)	Unit 1: Shaping of Metals	Marking out of shapes: triangle, square, rectangle etc. Bending of sheet metals into objects like triangle, square, rectangles etc. Fabrication of ferrous metal into a required shape. Fabrication of non-ferrous metal into a required shape.
	Unit 2: Gas & Arc Welding	Gas welding of formed objects. Welding iron bars using arc welding. Welding iron bars using gas welding.
	Unit 3: Industrial Attachment	Trainee Teachers are exposed to practical experience in a welding and fabrication workshop.
STAN FAW 308 Business Entrepreneurship (Module Eight)	Unit 1: Entrepreneurship & Enterprises	Concept of entrepreneurship, employer and employee. Small-scale enterprises. Medium and large scale enterprises. Factors to be considered in setting up a workshop.
	Unit 2: Projects	Securing a project. Determination of cost of production and selling price of the fabricated products.

STAN TEACHERS RETRAINING PROGRAMME FOR METAL WORK

COURSE TITLES & CODES (Modules	COURSE UNITS	COURSE CONTENTS/DESCRIPTION
STAN MTW 301 Introduction to Metal Work, Safety Rules and Career Opportunities (Module One)	Unit 1: Introduction to Metal Work	Overview of metal work; Metal work career; Properties of metals; Types of metals; Uses of metals; methods of extraction; processes of smelting
	Unit 2: Workshop layout & Safety rules	General layout of workshop; sources of accidents; precautions in the workshop. Safety rules. Career opportunities in Metal work
STAN MTW 302 Metalwork hand tools & Machine Tools (Module Two)	Unit 1: Metal Work Hand Tools & Machine Tools	Classifications and types of tools and equipment; Measuring and marking out tools; Cutting and filing operations; Chiseling and scraping operations
	Unit 2: Maintenance of Tools	Meaning of tools maintenance. Types of maintenance. Procedures for maintenance of specified hand and machine tools.
STAN MTW 303 Metal Joining Processes (Module Three)	Unit 1: Types and Joining Operations	Temporary metal joining (Identification of common fasteners and their uses); Permanent Metal Joining (types of soldering, soldering materials, tools and equipment, brazing materials – tools and equipment; Brazing operation; Types of welding; Joint preparation for welding; Types of electrodes and their uses; Types of rivets and their uses
STAN MTW 304 Machine Tools and Processes (Module Four)	Unit 1: Drilling machines and processes	Drilling machines and processes of drilling (description, types, operations)
	Unit 2: Grinding Machines and processes	Grinding (description, setting up of grinding operation, processes and maintenance).

STAN MTW 305 **Sheet metal work** (Module Five)	Unit 1: Selection of material, Tools & Equipment	Types of sheet metals. Selection of sheet metal materials. Standard gauges of sheet metals. Tools and equipment for sheet metals. Specific uses of the tools and equipment.
	Unit 2: Pattern Development & Cutting	Methods of pattern development. Types of patterns. Layinout of patterns. Cutting out of patterns.
	Unit 3: Basic Fabrication Processes	Shapes to be fabricated. Bending operations. Raising and hallowing. Sinking. Expanding and contracting.
	Unit 4: Joints & Joining	Types of joints. Types of riveting. Self-tapping screw. Soft soldering.
STAN MTW 306 **Heat Treatment and Forging** (Module Six)	Unit 1: Heat Treatment	Importance of heat treatment (importance of annealing, normalizing, hardening, case hardening, tampering. Materials and equipment for heat treatment of metals. Heat treatment processes. Tempering colour and temperature ranges.
	Unit 2: Forging	Principles of forging. Definition of forging. Importance of forging. Types of forging. Forging tools and equipment. Sketching of common forging tools and equipment. Forging operations.
STAN MTW 307 **Designs in Metalwork & Finishing** (Module Seven)	Unit 1: Introduction to Design	Principles of design; Elements of Design; Materials, processes and operations
	Unit 2: Buffing and Polishing	Buffing and its uses. Types of buffing wheels. Types of buffing compounds. Polishing and its uses. Types of polishing abrasives. Polishing methods. Polishing operations

	Unit 3: Spot facing, Planishing & Colouring	Meaning of spot facing. Spot facing tools. Spot facing operation. Meaning of planishing, purpose of planishing, planishing operations. Meaning of colouring. Colouring materials. Colouring operations..
	Unit 4: Plating, Enameling and Pickling	Meaning and nature of plating. Materials for plating. Types of plating. Meaning of enameling. Types of enamels. Equipment for enameling. Method of enameling. Enameling operations. Meaning of pickling. Pickling materials. Pickling processes. Pickling operations.
STAN MTW 308 **Foundry Works, Computer Application and Entrepreneurship** **(Module Eight)**	Unit 1: Casting and Pattern making	Definition and importance of casting. Methods of casting. Types of casting equipment. Casting defects. Pattern making – Types of pattern, core making, processes..
	Unit 2: Computer Applications	Introduction to computer aided designs and manufacturing/machinery. Stages in computer aided designs. Computer design products.
	Entrepreneurship in Metal Work	Meaning of entrepreneurship. Entrepreneurship skill development. Setting up a small-scale workshop. Management of a small-scale workshop.

STAN TEACHERS RETRAINING PROGRAMME FOR WOOD WORK

COURSE TITLES & CODES (Modules	COURSE UNITS	COURSE CONTENTS/DESCRIPTION
STAN WWK 301 Safety Practice (Module One)	Unit 1: General Workshop Safety	Personal safety precautions. General workshop safety regulations. Safety devices. Safety precautions in carrying and using specific hand tools. General machine shop safety. Safety of electrical equipment. Prevention of mechanical faults. Safety in machine operation.
	Unit 2: Safety Devices/appliances & First Aid	Types of safety devices and appliances. Meaning of first aid. Contents of first aid box and their specific usage.
STAN WWK 302 Tools and Machines (Module Two)	Unit 1: Classification of tools and machines for woodwork	Hand tools (types, classification and uses); Special purpose and portable power hand tools (description of specific types and uses); Wood working machines (different types of saws, planners, mortise, lathe etc
	Unit 2: Precaution & Maintenance	Safety precautions during use of the tools and machines. Maintenance (reasons for maintenance, types of maintenance and procedures).
STAN WWK 303 Design and Construction I (Module Three)	Unit 1: West African Timbers in Common Use	List of common West African Timbers. Growth and structure of the timbers. Sources of the various timbers. Characteristics and specific uses of the various timber types.
	Unit 2: Timber Conversion	Meaning of timber conversion. Conversion methods. Characteristics of each conversion method. Common market sizes

	Unit 3: Seasoning of Timber & Timber defects	Meaning of timber seasoning. Reasons for seasoning. Methods of seasoning timber. Determination of moisture content (moisture method and laboratory method). Common timber defects.
	Unit 4: Timber preservation	Meaning of timber preservation. Reasons for preserving timber. Characteristics of a good timber preservative. Methods of applying timber preservatives.
STAN WWK 304 **Design and Construction II** (Module Four)	Unit 1: Timber Production & Preparation	Production of veneers and manufactured boards. Uses of veneers and manufactured boards. Structures, properties, advantages and disadvantages of man-made boards. Meaning of timber preparation. Tools used in timber preparation. Safety precautions
	Unit 2: Woodwork Joint, Wood Finishes and Finishing	Wood joints: types, classification and uses. Sketching of woodwork joints. Tools and machines. Construction of joints. Assembling of joints. Wood finishes: types, uses and properties. Tools, equipment and materials for application of finishes. Processes involved. Preparation of timber surfaces for application of finishes.
	Unit 3: Wood Abrasives	Meaning of abrasives. Production of abrasives from local materials. Abrasive grades available in local markets. Correct selection and use of wood abrasives.
	Unit 4: Wood Adhesives and Wood Fittings	Adhesives – types, classification, characteristics and uses. Selection and use of adhesives. Preparation of adhesives. Gluing terms. Wood fittings – hinges, lock, wood screws, nails, catches, bolts, handles etc.

	Unit 5: Managing wood work production system	Production planning. Material procurement. Estimation and costing. Sourcing for fund. Financing. Division of labour. Customer relation and salesmanship.
STAN WWK 305 **Design and Construction III** (Module Five)	Unit 1: Non wood Materials	Glass. Plastics. Rubber. Ceramics. Metal etc. characteristics and uses in wood work designs and construction. Advantages and disadvantages.
	Unit 2: Veneering	Core. Back. Cross band and face veneer. Methods of producing veneers. Veneering tools and materials. Veneering processes.
	Unit 3: Wood Bending	Wood bending devices – male and female formers. Methods of wood bending – solid bend, kerfing.
	Unit 4: Design & Drawing	Concept of design. Design factors, fundamental and processes. Basic draftsmanship skills. Working drawing. Cutting list and bill of materials. Preliminary freehand sketch of design of furniture items. Preparation of working drawings.
STAN WWK 306 **Upholstery and Decorative Wood Working** (Module Six)	Unit 1: Upholstery tools and Materials	Types and uses of upholstery tools and materials. Properties of upholstery materials. Sketching of upholstery tools. Types of upholstery platforms. Padding. Covering materials and techniques. Upholstery processes.
	Unit 2: Wood turning, wood Carving and Sculpture	Parts of the lathe machine and the uses. Wood turning tools – (uses and sketches). Wood turning processes and operations. Characteristics of wood suitable for carving and sculpture. Calving and sculpture techniques/processes.

	Unit 3: Surface decoration & wood Shaping	Description of types of surface decoration. Techniques of surface decoration. Tools and materials for surface decoration. Types of wood shapes (rounding, mounding, barreling, chamfering, tapering).
STAN WWK 307 **Entrepreneurship Woodworking** (Module Seven)	Unit 1: Case studies of entrepreneurship Woodworking	**Merchandizing enterprises** – timber, logs, manufactured boards, fittings, finishes, tools, machines etc. **Service enterprise** – interior furnishing, wall and floor paneling **Production enterprise** – upholstery work, wood turning, furniture making etc.
	Unit 2: Mass Production	Concepts and principles of mass production. Definitions of terms related to mass production. E.g. templates, fixtures, jigs, division of labour, production line, production team, quality controller, prototypes, trial run etc.
	Unit 3: Quality Control	Definition of quality control. Purpose and methods e.g. Go-no-go gauge, observation etc.
	Unit 4: Estimating and Costing	Estimating and costing (mensuration and preparation of cutting list and bill of materials)