Science Teachers Association of Nigeria

57TH ANNUAL CONFERENCE

15 - 20 August, 2016

THEME

Communication Technologies and STEM Education

VENUE

Government College, Ado Ekiti, Ekiti State

ARRIVAL DATE

Monday, 15 August,2016

DEPARTURE DATE

Saturday, 20 August,2016

CONFERENCE THEME
Communication Technologies and STEM Education

SUB-THEMES
a) Emerging communication technologies for STEM Education
b) Teacher training for classroom communication technologies
c) Instructional designs and emerging communication technologies
d) Policy issues

CALL FOR PAPERS
In addition to the sub-themes, delegates may also make presentations at the following subject panels: Agricultural Science, Basic Science, Basic Science & Technology, Biology, Chemistry, Computer Studies, Environmental Education, Gender and STM Education, Home Economics, Information & Communications Technology, Mathematics, Physical & Health Education, Physics, Science-Technology-Society, Teacher Education, and Technology Education, STAN will also mount Subject Panel Modular workshops at the conference.

Important

The Association plans to produce the 'Conference Proceedings' in printed form for distribution during the conference. Consequently, all paper presenters are to prepare their papers in time and subject them to peer review (to enhance possibility of selection). The paper should be computer-processed using 12 point type for the text/subheadings and 14 point type for headings. All headings and sub-headings should be in bold prints.

Papers must be submitted directly at the STAN website, www.stanonline.org, using the following steps:

* Click on " Conference paper Submission" on the right hand column
* Fill in the following information
    1. Title of Paper
    2. Abstract (Copy and Paste)
    3. Author's Institution
    4. E-mail
    5. File Upload

* On your computer where your conference paper is saved (in MS Word format); write the name of the file without space.

For instance if your conference paper is titled "Reforms in STEM Education" before uploading it, please change it to "Reforms-in-STEM_Education" or ReformsinSTEMEducation". This is to enable the Editor-in-Chief download your file easily.

*Click on "BROWSE" button and a Common Dialog Box will open where you can search for your file and Load it by clicking on "OPEN" button on the Common Dialog Box.

*Check that all required information has been supplied, and then you can click on the "SUBMIT" button. This means your conference paper has been submitted to the Editor-in-Chief.

To guard against a situation where papers are not presented at the Conference due to absenteeism, it is now mandatory for prospective presenters to demonstrate their readiness to attend the Conference at the time of submitting papers for processing.

To this end, every prospective presenter has to remit the conference registration fee of N7,300 (seven thousand three hundred naira only) to STAN before paper submission. All presenters and non-presenters are to remit conference fees via the STAN website as described below:

1. Register as a member on the website www.stanonline.org by completing an online membership form and uploading your passport-sized photograph. The photograph should be taken in a standard studio such as Phototek. This is done once and for all. A member ID will be generated for you. Please keep your Member ID. (If you have earlier completed the form, skip this step).
2. Login onto the Registered Member area with your Member ID, Surname & Password
3. Click on "Make New Payment" to make new payment
4. Click on the particular item which you want to make payment for
5. Enter year which you are paying for, in case of "Annual Subscription" or "Annual Conference"
6. Choose a Payment Option:
   Option (a) Debit Card
   Option (b) In-Branch

7. Irrespective of the option selected in 6 above:
   (i) An Online invoice will be generated for you.
   (ii) Print out the Invoice and keep it.
   (iii) Transaction ID will be generated for you. Keep it for future reference

If you have selected Debit Card Payment Option, follow these steps for payment:

1. Click on "Pay Now With Debit Card"
2. Enter your Debit Card's PIN and Expiry Date
3. An E-Receipt will be generated for you once your payment is confirmed. Print out the E-Receipt and keep.
4. Log out

If you selected In-Branch Payment Option, follow these steps:

1. Logout from the Members' area

2. Go to any of the following Banks with the computer generated invoice and make payment (Transaction ID, Membership ID & Surname should be extracted from the invoice):
    - First Bank of Nigeria Plc
    - Guaranty Trust Bank Plc
    - United Bank for Africa Plc

3. Once you pay at a designated bank, the Bank will generate Confirmation ID and Receipt No (Teller No) for you.

4. Go back to the Website and Login with your Member ID, Surname & Password

5. Click on "Complete Payment" in order to complete your payment

6. Enter your Transaction ID, Receipt No (Teller No)and Confirmation No.
7. A Confirmation Invoice will be generated for you
8. Click on "Submit" to complete the payment

9. E-Receipt will be generated for you once your payment is confirmed. Print out the E-Receipt and keep it.
10. Logout

NOTES

1. This scheme has taken off. Accordingly, all members are strongly advised not to make payments directly into STAN Bank Accounts as was the case before except in a few cases where the STAN Headquarters will so advise.

2. Payments have to be made individually as each member will have a record in the data base.

3. Where in difficulty, please call 0708 274 3110 or 0805 196 9227.

However, while presenters must pay before 15 April, 2016, other members are at liberty to make such payments at any convenient time before the conference.

Caution

Authors whose articles are accepted and published in the conference proceedings who fail to personally present their papers at the conference will be **BARRED** from publishing articles in STAN publications and membership of STAN National Committees for three consecutive years.

Summary

Remit conference registration fee and submit conference paper all through the STAN website before Friday, **15** April, 201**6**. Call **0708 274 3110** or **0805 196 9227** for assistance where necessary.

HOTEL TARIFF IN ADO EKITI

S/N	NAME & ADDRESS OF HOTEL	CLASS OF ROOMS	NUMBER	RATE (₦)
1	Pledge Guest House Fiyinfoluwa Street, Opposite School of Nursing, Ado Ekiti	Standard room Executive	6 1	8,000.00 12,000.00
2.	Royal Castle Guest House Km 2, Iyin road, Ado Ekiti 08033957780	Double Suite A Suite B	8 1 1	16,000.00 18,000.00 16,000.00
3	Fem Guest House Adebayo Street, behind Owolabi Beer distributor, Ado Ekiti 08037010417 08030203381, 08030203094	Main Deluxe Single Room Ordinary double	14	15,000.00 8,000.00 10,000.00
4	Crown Bix hotel Km 4, Iworoko Road, Ado Ekiti 08066505104	Single Double Standard Double Deluxe Suite	4 6 4 6 1	10,000.00 12,000.00
5	God's Grace Guest House Km 5 Iworoko Road, Ado Ekiti 08064296171	Standard V.I.P Annexes	18	8,000.00 18,000.00 6,000.00
6	Olujoda Inter Hotel Plot 10-12 Solape Estate, Ikere Road, Ado EKiti 08033882523	Standard Executive Suite	18 4	10,000.00 15,000.00
7	Red Rose Hotel Behind Olujoda Hotel Ikere Road, Ado Ekiti 08030656797	Single Standard double Double room Executive double	1 5 5 4	8,000.00 10,000.00 12,000.00 15,000.00
8	Dave Hotel Km 4, Iworoko Road, Ado Ekiti 08069348959	Executive Royal room Deluxe Princess	28	15,000.00
9	De Paradise Hotel Km 3 Iworoko Rd, Petim Estate, Ado Ekiti 08028268217	Classic Standard Executive Ambassador Royal Suite Family Suite	26	10,000.00
10	Delink Hotel Km 3 Iworoko Rd, Petim Estate, Ado Ekiti 08030836599	Single Single Studio Executive Double Room Double+ AC Executive	3 3 2 6 2 8	7,000.00 8,000.00 10,000.00
11	Park View Hotel Afao road, Tinuola Max Road, Ado Ekiti 08030836599	Standard Standard Double Executive Double	5 10 4	8,000.00 12,000.00 15,000.00
12	K. Galaxy Hotel 48 Okebola Ajilosun, Ado Ekiti 0803437293	Double ordinary Double (A/C)	6 6	7,000.00 10,000.00

S/N	NAME & ADDRESS OF HOTEL	CLASS OF ROOMS	NUMBER	RATE (₦)
13	Dick Hotel Ajilosun Street(Bangboye) Road, Ado Ekiti 0806489946	Standard Room	10	8,000.00
14	Ifelodun Inter Hotel 215 Ikere Road, Ado Ekiti 08066694630	Double Suite	31 2	 12,000.00
15	Ibilola Hotel Km 4, Ikere road, Ado Ekiti 08035135893	Double Suite	7 5	12,000.00 9,000.00
16	Pope john Paul II Pastoral centre, Ado Ikere Road, Ado Ekiti 08077108640	Chalets Executive Standard single beds Single room Single room(A/C) Ordinary single B Bed rooms Dormitory	3 9 37 7 8 10 29	 Negotiable
17	Benaiah Hotel Iyin Road, Adjacent Nigerian Police Force, Command Headquarters, Ado Ekiti 07031819050	Deluxe rooms Classic rooms		12,000.00 15,000.00
18	Liz- Vic Hotel Afao Road, Ado Ekiti 07036322157	Single with fan Double with fan	3 3	2,500.00 3,800.00
19	Abuad Inn Along Ijan Road, Ado- Ekiti	Executive Rd; Royal Suite Single Suite Double	5 5 10 10	10,000.00 15,000.00 25,000.00 35,000.00
20	D Jewel Hotel Iyin Rd, Ado- Ekiti	Standard Superior Executive	5 9 3	10,000.00 16,500.00 21,000.00

Hostel Accommodation N1,500

DEADLINES

15 April, 2016: Deadline for submission of conference papers

17 June, 2016: Deadline for submission of Branch reports by State Chairs

8 July, 2016: Deadline for entries for STAN President's Award and Branch of the Year Award

15 July, 2016: Deadline for receipt of intention to contest for the following positions: President, National Treasurer, Publicity Secretary, and Science Fair Co-ordinator

SPECIAL WORKSHOPS

The Science Teachers Association of Nigeria (STAN) will mount the following workshops at the Annual Conference:

AGRICULTURAL SCIENCE

COURSE TITLES & CODES (Modules)	COURSE UNITS	COURSE CONTENTS/DESCRIPTIONS
STAN AGS 105 Food (Module 5) **(PRIMARY)**	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 205 Classes and Uses of Farm Animals (Module 5) **(JUNIOR SECONDARY)**	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 306 Agricultural Economics and Extension (Module 6) **(SENIOR SECONDARY)**	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

BASIC SCIENCE

COURSE CODES & TITLES	COURSE UNITS	COURSE CONTENTS/DESCRIPTION
STAN BSC 205: Non-Living Components of the Environment II (Module Five) **(JUNIOR SECONDARY)**	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
	Unit 8: Man in Space	Space travel. Gravitational pull

BASIC SCIENCE AND TECHNOLOGY

COURSE CODES & TITLES	COURSE UNITS	COURSE CONTENTS/DESCRIPTION
STAN BST 104: Plant and Animals (Module Four) (PRIMARY)	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.

BIOLOGY

COURSE CODES & TITLES	COURSE UNITS	COURSE CONTENTS/DESCRIPTION
STAN BIO 303: Relevance of Biology to Agriculture (Module 3) (SENIOR SECONDARY)	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

CHEMISTRY

COURSE CODES & TITLES	COURSE UNITS	COURSE CONTENTS/DESCRIPTION
STAN CHE 302 **Particulate Nature of Matter** (Module 2) **(SENIOR SECONDARY)**	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

COMPUTER STUDIES

COURSE CODES & TITLES	COURSE UNITS	COURSE CONTENTS/DESCRIPTION
STAN CPS 104: **Computer Aided Learning and Computer Managed Instruction** (Module 4) **(PRIMARY)**	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 202: **Basic Computer Operations and Concepts I** (Module 2) **(SECONDARY)**	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

HOME ECONOMICS

COURSE CODES & TITLES	COURSE UNITS	COURSE CONTENTS/DESCRIPTION
STAN HEC 104: Healthy Living and Home Accidents (Module Four) (PRIMARY)	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. falls, burns, suffocation, and poisoning. Safety precautions in the home.

STAN HEC 204: Managing the Home (Module Four) **(JUNIOR SECONDARY)**	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 304: Feeding the Family I (Module Four) **(SENIOR SECONDARY)**	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 table wares. Selection, use and maintenance of cooking equipment and utensils. Cooking terms and techniques. Guidelines for using various techniques and preparations of any simple dish.

MATHEMATICS

COURSE CODES & TITLES	COURSE UNITS	COURSE CONTENTS/DESCRIPTION
STAN MAT 106 Algebraic Processes (Module Six) (PRIMARY)	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 2: 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 MAT 202 Algebraic Processes (Module Two) (JUNIOR SECONDARY)	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 $a2-b^2$, $3a-cb-3b+ac$, $a^2+2ab+b^2$ 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 306 Statistics (Module Six) (SENIOR SECONDARY)	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.
	Unit 2: 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 3: 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.

PHYSICAL AND HEALTH EDUCATION

COURSE CODES & TITLES	COURSE UNITS	COURSE CONTENTS/DESCRIPTION
STAN PHE 104: **First Aid and Safety Education** (Module Four) **(PRIMARY)**	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 aid 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 204: **Games Sports and Swimming** (Module Four) **(JUNIOR SECONDARY)**	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.
	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 304: **Basic Principles of First Aid and Safety Education** (Module Four) **(SENIOR SECONDARY)**	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.

PHYSICS

COURSE CODES & TITLES	COURSE UNITS	COURSE CONTENTS/DESCRIPTION
STAN PHY 304: Light (Module Four) (SENIOR SECONDARY)	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;

TECHNOLOGY EDUCATION

COURSE CODES & TITLES	COURSE UNITS	COURSE CONTENTS/DESCRIPTION
STAN AEL 305 Ignition and Charging (Module Five) (SENIOR SECONDARY)	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.

COURSE CODES & TITLES	COURSE UNITS	COURSE CONTENTS/DESCRIPTION
STAN AUM 306 **Auto Air-conditioning System** (Module six) **(SENIOR SECONDARY)**	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 BEL 301 **Basic Electricity Theory and Electrical/Electronic Components** (Module One) **(SENIOR SECONDARY)**	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.
STAN ELT 306 **Digital Basics and Control System** (Module six) **(SENIOR SECONDARY)**	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.
	Unit 1: Number Systems	Different number system. Formation of different number system. Simple calculation in binary number. Conversion of number system..
STAN FAW 304 **Operations and Techniques** (Module Four) **(SENIOR SECONDARY)**	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.
	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 MTW 304 **Machine Tools and Processes** (Module Four) **(SENIOR SECONDARY)**	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 WWK 305 **Design and Construction III** (Module Five) **(SENIOR SECONDARY)**	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.

Provisional Conference Programme

Saturday 13 August 2016 Principal Officers arrive
Sunday 14 August 2016 Pre-Conference Planning Committee Meeting
Pre-Conference Press Release
Monday 15 August 2016 Members of the Executive Board Arrive

9.00am Conference Registration Begins
4.00pm Executive Board Meeting
8.00pm Dinner

Tuesday 16 August, 2016
9.00am Conference Registration Continues
9.00am Courtesy call on Governor
2.00pm Lunch
3.00pm Review of WAEC and NECO Chief Examiners' Reports
4.30pm **Opening Ceremony**
- National Anthem
- Introduction of Dignitaries
- Address of Welcome by Head of Institution
- STAN President's Address
- Short Cultural Show
- Goodwill Messages
- Address by the Minister of Education
- Address by Executive Governor and Declaration of Conference Open
- Vote of Thanks by the Conference Chair
- Group Photographs
- Opening of Science Fair and Exhibition by the Executive Governor

8.00pm Dinner

Wednesday 17 August, 2016
8.00-11.00am Educational Visits
9.00-10.30am Plenary Session 1: Keynote Address
9.00-6.00pm Science Project/Quiz
10.30-11.00am Visits to Exhibitions Stands
11.00-11.30am Break
11.30-1.00pm Special Lecture
1.00-2.00pm Launching of New STAN Publications
2.00-3.00pm Lunch
3.00-4.00pm **Subject Panel Meetings (Paper Presentation)**
- Basic Science
- Home Economics
- ICT
- Workshops

4.00-4.30pm Break
4.30-6.00pm **Board of Fellows Meeting**
Subject Panel Meetings (Paper Presentation)
- Environmental Education
- Gender & STME
- Science-Technology-Society
- Teacher Education

Special Lecture
Workshops

Thursday 18 August, 2016
8.00-11.30am Educational Visits
9.00-11.00am **Subject Panel Meetings (Paper Presentation)**
- Agricultural Science
- Biology
- Chemistry
- Mathematics
- Physics
- Physical & Health Education
- Special Lecture
- Workshops

11.00-11.30am Break
11.30-1.30pm Memorial Lecture
Workshops
2.00-3.00pm Lunch
3.00-4.00pm **Subject Panel Meetings-(Business)**
- Environmental Education
- Gender and STME
- Teacher Education
- Basic Science
- Science-Technology-Society
- Basic Science & Technology
- Home Economics
- ICT

4.00-4.30pm Break
4.30-6.30pm **Symposium**
Special Meetings
Workshops
Subject Panel Meetings - (Business)
- Agricultural Science
- Biology
- Chemistry
- Mathematics
- Physics
- Technology Education
- Physical & Health Education

6.30-8.00pm **Governing Council Meeting**
8.00pm Dinner

Friday 19 August, 2016
8.00-11.30am Educational Visits
9.00-11.30am Contributed Papers to the Sub-themes
Meeting of Subject Panel Officers with Curriculum Development Co-ordinator;
Science Fair Co-ordinators' Meeting
Editorial Board Meeting
11.30-12.00noon Break
1.00-3.00pm Annual General Meeting
4.00-6.00pm Science Quiz Finals
6.00-7.00pm Awards
- Science Projects & Quiz Prizes
- Mamman Wasagu Award
- Eunice Okeke Award
- Ivowi Award for Best Conference Paper
- STAN-Napoleon Bryant Award
- State Branch of the Year Award
- DSSE Award
- Honorary FSTAN Award
- FSTAN Award

8.00-1.00pm Annual Dinner

Saturday 20 August, 2016
6.00-8.00am Departure of Delegates
2.30-4.00pm Post Conference Planning Committee Meeting

Notice of 57th Annual General Meeting

Date: Friday **19** August, 2016

Time: 1.00pm

Venue: Government College, Ado Ekiti, Ekiti State

Election: President, National Treasurer, Publicity Secretary and Science Fair Co-ordinator

*Special Items on the Conference Programme

a. STAN Science Projects/Quiz Competitions
The National theme for projects is "Portable Water Management".There will also be competitions in the free choice category. Oral and written presentations (3 copies) will be required. In the quiz competitions, questions will cover up to the SSII Curriculum in Agricultural Science, Biology, Chemistry, Computer Studies, Home Economics, Mathematics (General/ Further), Physical and Health Education, Physics, and Technology. SSIII students are not to participate in the competitions. Each State is to present a maximum of 4 students - 2 for quiz and 2 for project.

b. Primary Science Projects/Quiz Competitions
These competitions will take place among primary school pupils who should please be fully supported to the conference by State Universal Basic Education Boards. Each State is to present a maximum of four pupils (two for quiz, and two for projects).

c. STAN Fellowship Award
Professor Okechukwu S. Abonyi, Mr. Mohammed D. Dung, Professor Mangut Mankilik, Dr. Chinwe R. Nwagbo, Dr. Patrick J. Uko, and Dr. John O. Ukonu will receive the FSTAN Award on Friday 19 August, 2016. Don't miss the session.

d. Branch of the Year Award
This Award will be made to the best five branches of STAN in 2016. The ceremony is scheduled for Friday 19 August, 2016 at 6.30p.m. Please be there.

e. Mamman Wasagu Award
This Award will be made to the state with the highest membership registration in 2016 on Friday 19 August, 2016 at 6.00p.m.

f. Eunice Okeke Award
This Award will be made to the state with the highest conference registration in 2016 on Friday19 August, 2016 at 6.00p.m.

g. Uduogie Ivowi Award for the Best Conference Paper
This Award will be made to the 2016 recipient on Friday 19 August, 2016 at 6.00p.m.

h.. STAN-Napoleon Bryant Award
This Award will be made to the best science teacher in 2016 and the best senior secondary student in the quiz competition. All Branch Chairs are expected to submit entries on or before 8 July 2016.

i. Members' Exhibition and Poster Session
There will be opportunity for science teachers to exhibit teaching materials and posters which they have personally made.

57th Annual Conference Charges

Annual Conference Registration	= N7,300.=
Dinner (Mandatory for members of Governing Council)*	= N5,000 .=
Feeding at Conference Venue (18 meals)**	= N2,700.=
Total	**=N15,000.=**

* This is payable at the conference venue only

** Please don't pay this into STAN account. Participants are to keep it for their feeding.

Why you should attend this Conference

* Because the conference theme focuses on "Communication Technologies and STEM Education"

* Because it is a forum for exchange of views among STEM teachers from Nigeria and many overseas countries.

DRESS CODE AT ANNUAL DINNER

Ladies: Black suit with white blouse/any all-white national dress

Gentlemen: Black lounge suit with white shirt and black bow tie/Any all-white national dress

For further information, please contact:

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OR

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Conference Secretary
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0806 699 1834

Pastor Olumide F. Akinrotun
Conference Chair
College of Education, Ikere, Ekiti State
0803 392 9292

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