COLLEGE OF VOCATIONAL SCIENCE AND TECHNOLOGY OF NIGERIA

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NATIONAL INNOVATIVE DIPLOMA

SYLLABUS

COLLEGE OF VOCATIONAL SCIENCE AND TECHNOLOGY OF NIGERIA

NATIONAL INNOVATIVE DIPLOMA

ACADEMIC SYLLABUS

MEANING OF SYLLABUS

Syllabus is a programme of study or a list of the subject taught in school like maths, handwriting, history, geography, civic and moral instruction etc. It is a list of subjects to be studied by the learners.

Syllabus represents programme of study at the level for which it is designed. It represents aspects of accumulated human experience. Syllabus is not curriculum; it's only a segment or part of the curriculum. It might be a course of study. Formally, a syllabus was regarded as a curriculum; it is a traditional orientation and lost its popularity with curriculum workers. It is a course of study more than a curriculum it is a table of content, it looks like the STATUS plan.

STATUS PLANNING

STATUS planning is a projected plan for carrying out learning activities and also the provision of student's activities. In the Unit plan the course is divided into small workable sections which include related topics or theme (i.e. the topic you teach are related). The contents are closely related. The Unit plan will last for four to six weeks. A Unit plan that last for one week is not a Unit plan. A Unit plan has a central theme or concern.

CHARACTERISTICS OF A UNIT PLAN

(1) **ENTERING BEHAVIOUR:**

Unit plan is like a lesson plan one of the characteristics of the Unit plan is Entering Behaviour. You should know something about the background of the students as well as the individual student that will affect the plan. This is because you want to know their capabilities and you should know their background whether he knows the background of his community before that of

his local government. You should know the level of their understanding. In attention span, you are not supposed to teach more than 30 minutes. Entering behaviour is usually identity in the Unit plan.

(2) **THE OBJECTIVE OF THE UNIT PLAN:**

Unit plan last from 4 – 6 weeks, its objective is general in outline and when it is spelled out it becomes specific objectives.

(3) **CONTENT:**

In the content, the plan should be clearly indicated and those things indicated are what is required in the course, it includes principles, skills, attitude, situations (i.e. the content of the Unit).

(4) **THE METHOD AND THE ACTIVITIES:**

The method and activities

i. May involve a demonstration
ii. It may involves experiments
iii. It may be a discussion class or discussion situation
iv. It may involve film viewing or project

(5) **MATERIALS:**

What are the materials needed in the Unit plan? When you studied the content, the content will indicate the materials needed for the lesson e.g. In history lesson of exploration of the Nigeria, map is needed. The material for the content may be in form of the reading material, laboratory apparatus, charts etc.

(6) **EVALUATION**

The Unit plan needed to be evaluated. Why do you want to evaluate it? This is to identify the weakness or strength of the student. To test the grasp on the lesson

taught. To know how far they have understood the lesson taught. Evaluation may be a test, a take home exam, a final exam, a quiz in the class etc.

SOURCE UNIT

The links between the curriculum process and the teaching/learning situation are the classroom work Units and source Units from which they derive or which are derived from them.

Little time needs to be spent on the source or resource Units. It is enough to say that volumes of source are collections of possible problems, materials and activities which may be used in planning classroom work Units, either around subject cores or with reference to any of the general organizational categories listed earlier.

Source Units are concerned with the characteristics of experiences suitable for meeting needs with problems, basic concepts and ideas involved in the appropriate subject matter, and with possible –learning outcomes which may be expected to eventuate. They indicate a variety of procedures which are useful in planning and developing a Unit and make suggestion about suitable individual and group activities as well as evaluation of outcomes.

They provide suitable reference materials for students and teachers, suggestions about equipment and aids of various kinds and parts to related Units. They are prepared by teachers for teachers and because much of the materials included has been used and found to be valued, these Units are rich and practical reservoir of activities, techniques and plans of organization.

CLASS WORK UNIT

The basic educational Unit is the classroom work Unit, which is often the pilot Unit, from which source or resource Units are developed. Though, the major concern at the level classroom work Unit is with the members of a particular class or group, it does not follow that work Units necessarily remain specific to a class. Their close relationship to source Units means that while teachers and curriculum consultants, are setting outlines to work Unit for particular children, they are also outlining an educational sequence which may well be of use to other teachers in this or that schools, areas or systems who are seeking to attain the same goals. One way of setting up source Units is to combine successful work Units.

THE SOURCE UNIT

This may be defined as a work Unit for a particular educational stage, which indicate broad lines of approach to specific proximate goals. Within Units, it offers alternatives in experience.

Content and organization of materials and these alternatives indicate useful, but different means for attaining goals. Source Units offer guidelines to the development of individual work Units for particular groups.

NATIONAL INNOVATIVE DIPLOMA AND HIGHER NATIONAL INNOVATIVE DIPLOMA PROGRAMMES

As part of its objectives CVST is involved in training young school leavers and low skilled. Ordinarily like equipping them with the requisite skills and knowledge towards Diploma examinations, practice and the enhancement of entrepreneurial capacity.

PROGRAMME DURATION

These Programmes are run basically on full-time (Monday – Friday) and also accommodate part-time basis usually during the weekends as follows:

Fridays:- 3.00p.m – 7.00p.m

Saturdays: 8.00a.m – 7.00p.m

Sundays: 12.00noon – 7.00p.m

Both the National Innovative Diploma and Higher National Innovative Diploma last for four (4) Semesters. i.e. 2 Academic Sessions, each.

GRADING AND CLASSIFICATION

The course grading adopts the cumulative grade point average CGPA system, the scoring system is by percentage and the marks obtained in examinations are graded as follows:-

70% and above	A	5 points
60% to 69%	B	4 points
50% to 59%	C	3 points
45% to 49%	D	2 points
40% to 44%	E	1 points
0% to 39%	F	0 point

Whereas the overall grading after CGPA has been computed is:

CGPA	**GRADE**
4.50 and above	Distinction
3.50 to 4.49	Upper Credits
2.49 to 3.49	Lower Credit
1.50 to 2.39	Pass
0.00 to 1.49	Fail

ACADEMIC CALENDAR

The Rain (first) Semester shall run between July and December, while the Harmarttan (second) Semester shall run between January and June, making a full academic

session. Whereas, students convocation/Matriculation shall hold every July, the matriculation ceremony shall be slated as at when due.

CODE OF CONDUCT FOR ALL STUDENTS

The responsibility to create a congenial atmosphere for the smooth development of skills and acquisition of requisite knowledge is that of the CVST through its partners. To this effect:

a. The College of Vocational Science and Technology of Nigeria expects the students to comport themselves decently and responsibly in public.
b. No student shall insult, assault, or engage anyone in physical combat at the lecture centers, and in public places.
c. The possession and/or consumption of any dangerous drugs are prohibited at any of the lecture centers, any student found contravening this regulation shall be summarily dismissed.

The Rights of students enrolled for any programme in collaboration with the College of Vocational Science and Technology of Nigeria includes:

i. The right to receive tuition in the courses for which due payment and registration have been made.
ii. The right to be examined in accordance with the approved rules and regulations governing the award of certificates.
iii. The right to be heard in accordance with the rules governing the fundamental right of freedom of speech and natural justice. However, this right ceases to exist if the proper channel of communication is not followed, that is, student to the center coordinator, before channeling same if not satisfied to the Registry of College of Vocational Science and Technology of Nigeria.

It is however the obligation of each student to:

i. Observe the rules and regulations governing academic programme such as payment of fees as at when due, registration for courses as well as for examinations at the appropriate time.

ii. Respect and obey constituted authorities.

iii. Abstain from involving in anything whatsoever that can bring the name of the College of Vocational Science and Technology of Nigeria into disrepute or cause embarrassments to its and its partners authorities.

ADMISSION REQUIREMENTS

Any candidate seeking admission into the ordinary diploma must obtain a minimum of three (3) credit passes at the S.S.C.E/G.C.E/N.E.C.O 'O' level in relevant subjects and compulsory credit passes in English Language and Mathematics before the award of the diploma certificate. Any candidate seeking admission into the higher diploma must obtain a minimum of three (3) credit passes at the S.S.C.E/G.C.E/N.E.C.O 'O' Level in relevant subjects and compulsory credit passes in English Language and Mathematics, with a diploma certificate from any University, or Ordinary National Diploma certificate from any recognized Polytechnic, or National Certificate of Education from any recognized College of Education or any other similar qualifications.

No candidate will however be allowed to combine more than two results for the purpose of admission.

REGULATIONS GOVERNING COURSES LEADING TO THE AWARD OF NATIONAL INNOVATIVE DIPLOMA AND HIGHER NATIONAL INNOVATIVE DIPLOMA

1. A programme of study shall be provided leading to an ordinary diploma or higher diploma in such discipline or options available as the College of Vocational Science and Technology of Nigeria may from time to time recommend.

2. A course system in two semester The Rain (first) Semester shall run between July and December, while the Harmarttan (second) Semester shall run between January and June, making a full academic session.
3. Courses shall be evaluated in terms course Units. A course Unit is defined as one lecture/tutorial contact hour per week, or a one three hour practical/demonstration class per week throughout a semester or an equivalent amount of other assigned duty or practical experience or any combination of these.
4. No course shall be made up of or have fractions of Units, neither shall any course have up to six Units except the final year project which shall only be applicable to Higher National Innovative Diploma.
5. The following standard terminologies shall be used for the different categories of courses:

(a) Compulsory (c); courses which a student must take and pass;

(b) Required (R); courses which a student must take;

(c) Elective (E); courses which a student can take in order to make up the required additional Units for the award certificate;

(d) Pre-requisite (p); courses whose knowledge is essential prior to taking another specified course;

(e) Concurrent (N); specified courses

6. Students shall be advised by their respective coordinators to register for and pass all compulsory and required courses. Students may also choose from the prescribed elective courses or from any other, provided the maximum number of Units for the semester is not exceeded.
7. Students shall normally be required to register for not less than 18 and not more than 24 Units in each semester. Students shall however not normally be permitted to register for more than 36 Units in any one academic session.
8. All courses taught during each semester shall be examined at the end of that semester and candidates will be credited with the number of course Units

assigned to the course for which they have passed the examinations. The pass mark for a course shall be 40%.

9. All courses shall be examined by continuous assessment through assignments and/or periodic tests, the marks obtainable through which shall not constitute more than 30% of the total marks for the course.
10. A student who fails to obtain 10 Units at the end of the first semester, 20 Units at the end of the first session shall be required to withdraw from the programme.
11. National Innovative Diploma or Higher National Innovative Diploma shall be categorized as Distinction, Upper Credit, Lower Credit, Pass and Fail.
12. The Cumulative Grade Point Average (CGPA) system shall be used for the determination of the student's general performance from semester to semester and the final grade of National Innovative Diploma or Higher National Innovative Diploma. In order to obtain the Grade Point Average of a candidate, the approximate index (Grade point) assigned to each range of numerical marks is multiplied by the Units of the course and the product is added up for all courses. The total is divided by the total number of Units of the courses. However, in the determination of the final grade, only courses prescribed for graduation are relevant. For the computation of the results, all the courses offered by the student during the programme shall be taken into consideration, with the cumulative result derived from the average of the previous and the current (semesters) results.
14. The number of course Units required for the award of National Innovative Diploma or Higher National Innovative Diploma shall be 72 Units.

COLLEGE OF VOCATIONAL SCIENCE AND TECHNOLOGY SCHOOLS AND DEPARTMENTS

1. School of Vocational Science & Technology

i. Dept. of Networking and System Security
ii. Dept. of Computer Hardware Engineering

iii. Dept. of Electrical and Electronic Engineering
iv. Dept. of Construction Technology
v. Dept. of Engine and Mechanical Devices
vi. Dept. of Community Health Science
vii. Dept. of Agricultural Science
viii. Dept. of Marine Engineering Technology
ix. Dept. of Welding and Fabrication
x. Dept. of Petroleum Geoscience
xi. Dept. of Computer Software Engineering

2. School of Vocational Hospitality & Tourism

i. Dept. of Catering and Hotel Management
ii. Dept. of Tourism, Transport and Logistics

3. School of Business Vocation and Entrepreneurship

i. Dept. of Business Management
ii. Dept. of Textile and Fashion Design
iii. Dept. of Sport Management and Administration (PROPOSED)
iv. Dept. of Book keeping and Accounting
v. Dept. of Banking Operations
vi. Dept. of Cosmetology and Beauty Therapy

4. School of Vocational Information and Communication Technology

i. Dept. of Public Relations and Advertising
ii. Dept. of Journalism
iii. Dept. of Multimedia Technology
iv. Dept. of Arabic and Islamic Science
v. Dept. of Performing and Media Arts
vi. Dept. of Film and TV Production

5. School of Vocational Safety and Security

i. Dept. of Criminology

ii. Dept. of Security Management & Technology

NATIONAL INNOVATIVE DIPLOMA

GENERAL COURSES

GNS 1O1 USE OF ENGLISH:

The words, structure of lexical verbs, uses of modal Auxiliary, verbs and grammatical functions/ structure of clauses and phrases, homonyms, synonyms and antonyms : Types of Communication (verbal and non-verbal; written and oral, their uses, advantages and limitations in business); principles of effective communication in business; factors influencing and barriers to effective communication; the nature of language in communication, means of communications (formal and informal); The sentence (elements, structure, types, clarity, correctness, concord; Tenses; Present (simple, progressive, perfect), Past (simple, progressive, perfect), Past participle; The Paragraph: Nature, Unity, Cohesion, Emphasis, Completeness (Introductory, Transitional, Concluding); The Essay; Expository, Narrative, Descriptive, Argumentative, Summary.

GNS 102 INTRODUCTION TO SATISTICS:

The definition and types of statistics; Sources and Methods of Data collection, Presentation and Tabulation of Data (Tabulation, Types of Tables, Presentation of AZ Table, Ratios and Percentages, Diagrams, Charts and Graphs); Frequency Distribution (Classification of Data, Histogram, Frequency Polygon, Cumulative Frequency); Measures of Central Tendencies (Average, Mode, Median, Mean, Quartile); Measures of Dispersion (Range, Mean Deviation, Standard Deviation, Analysis of Variation, co-efficient of variation); Normal Distribution/Skewed Distribution, Simple Significance Tests.

GNS 103 INTRODUCTION TO PSYCHOLOGY

Origins of modern psychology (the Structuralists, the psychoanalysts, the gestaltists, the behaviourists, the humanistic approach); Psychology in Nigeria; Contribution of psychology to national development in Nigeria; definition and scope of psychology; Psychology as a science, research method in Psychology, motivation and basic concepts of motivation, motivation in organization, human development, learning process, social psychology, leadership (position power and personal power), theories of leadership.

GNS 104 COMPUTER APPRECIATION

Computer structure, machine language, assembly language, addressing techniques, micro file I/O, assembler segmentation and linkage, assembler construction, interactive routine

GNS 105 CITIZENSHIP

Definition and meaning of government, basic concepts of government, types and characteristics of government, organs of government, types of constitutions, the principles of separation of power, delegated legislation, the rule of law, the duties, rights and obligations of citizen, party system, pressure group, electoral system.

GNS 106 INTRODUCTION TO PHILOSOPHY:

The subject matter and definition of philosophy; methods and value of philosophy; branches of philosophy (epistemology, ethics, aesthetics, logic); logical reasoning (the nature of arguments, inference, reasoning), types of arguments (deductive and inductive); evaluation of arguments (truth, validity and soundness); logic, fallacies and syllogisms; introduction to formal logic.

GNS 107 BUSINESS MATHEMATICS:

Concept of sets (operation e.g. union, intersection, difference, complements, number of elements in the union of sets, venn diagrams); application of set theory to solve business related problems, functional relationships (definition of functions, types of functions e.g. linear, quadratic, exponential and their solutions including graphical treatment; applications involving cost, revenue and profit functions; Break-even analysis (determination of break-even points in quantity and value, significance of breakeven point); Matrix Algebra (meaning of matrix, types of matrices, basic operations with matrices, meaning and determination of determinants, transpose of a matrix, inverse of a matrix limited to 3 by 3 square matrix); application of matrices to solving business related problems; Sequence and series (Arithmetic and Geometric progressions); Simple and Compound Interests; Annuities; Calculus.

GNS 108 TECHNICAL DRAWING

- Know the use and care of different drawing instruments, equipment and materials used in technical drawing.
- Understand the essentials in graphical communication.
- Know the Construction of simple geometric figures and shapes.
- Know the construction of Isometric and obloquies projects
- Know the principles of orthographic projections
- Understand the intersections of regular solids.

GNS 109 GENERAL METAL WORK

- Understand the basic principles and processes of heat treatment of metal in the workshop;
- Produce simple engineering components by forging; and
- Understand the basic principles and techniques of gas and metal arc welding and apply them in fabricating simple metal components.
- For practical competence, students will be able to achieve the following at the end of the module:
- Carry out heat treatment of metal in the workshop;

- Produce simple engineering components by forging; and
- Carry out gas/arc welding and apply them in fabricating simple engineering components.

GNS 111 MECHANICAL SCIENCE

- Understand workshop safety rules and its application in a machine shop
- Know the physical properties, manufacturing processes and applications of ferrous and non-ferrous metals in common use
- Understand the selection and use of common measuring. Marking out, cutting and striking tools
- Understand the working principles of a drilling machine, use it to drill and ream holes on metals and other engineering materials
- Understand the applications of various types of screw threads, rivet and cut screw thread by hand.
- Understand the ISO system of tolerances and fits and its application in engineering production.
- Produce simple Engineering components on the work bench.
- Understand the essential features and working principles of the centre lathe and use it to carry out basic operations such as plain turning, stepped turning, facing taper turning, chamfering, and under-cutting.

GNS 112 INDUSTRIAL SAFTY

Control of substances hazardous to health, protective clothing, washing facilities, disposal of waste material segregation of wastes, precautions against fire, fire emergency measures, Hoses, water and sand buckets, fire blankets, fire extinguishers, foam type, soda-acid type, carbon dioxide type, storage of chemical, first Aid box facility, Hazard labels, checks on nacked wires, protective gagets for (eyes, nose, ears, head)

GNS 113 INTRODUCTION TO ECONOMICS

The concept and tools of economic analysis, micro economic analysis, the theories of consumer behaviour, Theory of Cost, National Income Accounting, Money and Banking, Public Finance and General Price level

GNS 114 BUSINESS LAW

Definition of Nigerian law; services of Nigerian law, Classification of Nigerian courts, Definition of contract: Offer, acceptance, consideration, intention to create legal relationships, capacity to contract, terms of contract, exemption clauses, illegal contracts, privity of contract, discharge of contract, damages, specific performances, precision, quantion, merit, extinction of right of action.

GNS 115 FUNDAMENTAL OF MARKETING

Definition of marketing, evolution of marketing, the marketing environment and its element and adaptation; market research/marketing research hypothesis, the product; meaning of product, innovation, new products development, product mix policies and strategies, brands packaging and other product features; price determination and pricing objectives, method of setting prices, pricing policies and strategies, the retail market and retailing institution, the wholesale market and wholesaling middleman, channel management, physical distribution management, the promotional programme management of personal selling, meaning of advertising, effects/relevance of advertising to products, etc, public relations, publicity and sales promotion.

GNS 201 COMMUNICATION SKILLS

- Understand the rudiments of communication.
- Understand the rules of grammar.
- Know how to write good essay.
- Understand the difference between denotative and connotative uses of words.
- Understand the techniques of comprehension and summary writing.
- Appreciating Literature in English.

GNS 202 ENTREPRENEURSHIP

- Understand the basic concepts of entrepreneurship
- Understand the historical perspective of entrepreneurship development
- Know how to plan a business enterprise/project.
- Know how to operate simple stock keeping records
- Know how to prepare and operate cash flow on spreadsheets
- Understand employment issues
- Understand the Nigerian Legal System
- Comprehend the nature of contract and tort
- Understand Agency and Partnership
- Understand Financial Management
- Know how to prepare simple accounts.
- Know simple cost preparation
- Know product and job costing
- Understand the Laws relating to formation of Companies of Companies
- Comprehend Labour and Industrial Law
- Understand Copyright and patent laws
- Comprehend the nature of sale of goods

GNS 204 WORKSHOP PRACTICES

- Know workshop safety rules and regulations and understand the meaning and the purpose of workshop
- Know how to use and maintain various bench tools.
- Demonstrate skills in the use of simple measuring and testing instruments.
- Know and demonstrate skills in drilling operations
- Know and demonstrate skills in tapping and metal joining operations
- Know the various wood working tools and operations
- Demonstrate skills in reaming operations
- Understand the importance of heat processes
- Know the properties and functions of steel tools

- Understand the various metal cutting processes of metals observing safety precautions
- Know various types of lathes and their functions
- Understand the features, functions and uses of milling machines
- Understand the features and functions of shaping machines
- Understand the features and functions of a grinding machine.

GNS 205 RESEARCH METHODOLOGY:

Types of research; Sampling and sampling techniques; Scales of measurement in a scientific research; Quantity of research; Data collection; steps in questionnaire development; Organization and presentation of research work; Data Analysis and interpretation; Hypothesis formulation and testing.

BIOLOGY

BIO 101 INTRODUCTION TO BIOLOGY

The Science of Life- Characteristics of living and non-living things, Distinction between plants and animals. The Cell as the basic Unit of meiosis. Tissues and organs – sensory organs (structure, function and care) Unicellular organisms – simple plants & animal their characteristic features e.g. Amoeba, Euglena, Bacteria, Fungi, Yeast, etc. Multi-cellular Animals – Humans physiology and study of different systems, e.g. Alimentary canals, digestive system, Respiratory. life history and economic importance of (mosquito, cockroach, housefly, termite, butterfly) structure, characteristics and adaptations of environment of (bony, fish, toad, lizard, bird, small mammal)

BIO 1O2 REPRODUCTION

Sexual and asexual reproduction, vegetative reproduction, mammalian reproductive organs and fertilization (a general outline of the development, nutrition, and respiration of mammalian embryo, birth and parental care), meaning of growth, germination of seed, fertilization and the development of fruits, heredity, sex determination and sex-linked.

BIO 105 DISEASES AND PREVENTION

Control of malaria, bilharzia, river blindness etc. The causative organisms, mode of transmission, symptoms, treatment and cure, control and prevention of the following diseases: poliomyelitis, cholera, tuberculosis, venereal diseases (gonorrhea and syphilis) and tinia (ringworm)

BIO 106 ECOLOGY

ORGANISMS and their environment (habit, population, community and eco-system), factors affecting the distribution of organisms – abiotic and biotic, the interaction of plants and animals with one another and with their environment, natural habits (An aquatic habitat, a terrestrial habitat, an arboreal habits, man and his environment, pollution (air, water and land and methods of control)

BIO 107 HEREDITARY AND VARIATION

The importance of chromosomes, mendelian inheritance (concept of dominant and recessive characters) genotype and phenotype, inheritance of a single pair of contrasting characteristics up to the second filial generation, variation (the simple observations on men-measurement of lengths, heights and weights) sex-link characters (baldness, haemophilia and colour blindness).

CHEMISTRY

CHM 101 INTRODUCTION TO CHEMISTRY

Separation of mixtures and purification of chemical substances (pure substance-elements and compounds), chemical and physical changes, separation process-evaporation simple and frictional distillation, sublimation, filtration, crystallization, precipitation and chromatography. Chemical combination-stoichiometry- Dalton's atomic theory, law of definite and multiple proportions, Law of conservation of matter, Gay Lussac's law, Avogadro's law, chemical formulae, chemical equations and their uses,

relative atomic mass bases on $^{12}C = 12$, the mole concepts and avogadro's constant. Gas law's –Boyle, Charles, Graham gas laws, molar volume, atomicity of gases.

CHM 102 KINETIC THEORY OF MATTER

Application of the theory to the nature and the diffusion of gases. Limitation of the theory in respect of the condensed state (solids and liquids)

CHM 103 ATOMIC STRUCTURE AND BONDING

The concepts of atoms and molecules, atomic structure, electronic configuration, atomic number, mass number and isotopes. The periodic table and periodicity of elements, presentation of the periodic table with a view to recognizing families of elements e.g. alkai metals halogens, the rare gases and transition elements. Chemical bonding, electrovalency and covalency, concepts of electronegativity, ionization, energy and electron affinity.

CHM 104 ENVIRONMENTAL POLLUTION

Air pollution, water pollution, Pollution by oil, waste disposal.

CHM 105 SOLUBILITY

Saturated and super-saturated solutions, solubility curves and simple deductions from solubility products. Solvent for fats, oils and plants and the use of such solvents for the removal of stains, suspensions and colloids.

CHM 106 ACIDS, BASES AND SALTS

General characteristics and properties of acids, bases and salts. Acid/base indicators, basicity of acids, normal salts, acidic salts and double salts. Qualitative comparison of the conductance of molar solutions of string and weak acids and bases. PH as a scale for acidity and alkalinity. Acid/bases titrations.

CHM 107 ELECTROLYSIS

Electrolytes and non-electrolytes, simple study of electrolysis, electrolysis of acidified water (dilute H_2S0_4) and of simple salt solution e.g. copper (II) chloride selective discharge of ions. Electrolysis of copper (II) tetraoxosurphate (IV) solution using copper, platinum or carbon electrodes, the uses of electrolysis. Relation between current, ionic charge and mass (or volume) of substance liberated electrodes.

CHM 108 ENERGY CHANGES

Energy changes accompanying physical and chemical changes, simple measurements and calculations involving heat of reaction and heat of solution. Activation energy, electrochemical cells, redox series (k, Ca Na, Mg, N, Zn, Fe, Pb, H, Cu, Hg, Au). Redox reaction, half-cell reactions, electrode potentials. Corrosion as an electrolytic process and cathodic protection of metals.

CHM 109 NON-METALS AND THEIR COMPOUNDS

Hydrogen (commercial production, laboratory preparation, properties and uses). Chlorine (laboratory preparation, industrial preparation by electrolysis of brine, properties and uses. Uses of bleaching power and sodium oxochlorate (I) hydrochloric acid properties. Chloride, oxygen and sulphur (Oxygen, laboratory preparation, properties and uses, commercial production from liquid air, oxides-acidic, basic, amphoteric, and neutral. Ozone as an allotrope.

CHM 110 CHEMICAL EQUILIBRIUM

Equilibria in chemistry- reversible reactions and factors governing the equilibrium position. Dynamic equilibrium. Le Chatelier's principle.

CHM 111 ORGANIC CHEMISTRY

- Understand the classification of organic compounds
- Understand Bonding Reactions and Application of Aliphatic Hydrocarbons
- Know the chemical properties, preparations and uses of monosubstituted aliphatic

- Understand general methods of petroleum refining

PHYSICS

PHY 101 INTRODUCTION TO PHYSICS

Measurements and units length, mass, time, fundamental and derivative units, limitations of experimental measurements. Scalars and Vectors. Motion-types of motion, linear motion, newton's law of motion, motion in a circle. Equilibrium-equilibrium of a particle, principle of moments. Work, energy and power. Friction, simple machines, elasticity.

PHY 102 ELECTROSTATICS

Existence of positive and negative charges in matter. Charging a body by friction and by induction. Electric forces, electric field and electric potential. Electroscopes, electric discharge and lighting conductors.

PHY 103 MAGNETIC AND MAGNETIC FIELDS

Permanent magnet. Magnetic properties of iron and steel. Magnetic field due to a permanent magnet. Magnetic field around a current carrying straight conductor, circular wire, and a solenoid. Properties of earth's magnetic field. North and south poles. Angles of dip and declination; variations of field intensity over the earth's surface. Application to navigation.

PHY 104 ELECTRIC CELLS

Simple voltaic cell and its defects. Cell in series and paracell. Daniel cells in series lec lauche cell (wet and dry), lead-acid accumulator and Nickel-iron (NIFE) accumulator.

PHY 105 ELECTROMAGNETIC INDUCTION

Laws of electromagnetic induction. Factors affecting induced e.m.f Lenz's law as an illustration of the principles on conservation of energy. A.C generator (alternator) and d.c generator. Transmission of electrical energy-transformer. The induction coil.

PHY 106 ELEMENTARY MODERN PHYSICS

Elementary structure of the atom. Thermioni emission, photo-electric emission. Application-diode, photocell and cathode ray (TV) tubes. Simple method of x-ray production. Elementary radioactivity, stable and unstable nuclei.

PHY 108 THERMODYNAMICS

Know the concept of temperature and the principles of empirical thermometry.

Understand thermal energy

Determine specific heat capacities of substances.

Understand heat transfer

Understand work transfer

Know the first law of thermodynamics as a statement of the principles of conservation of energy

MATHEMATICS

MAT 101 NUMBER THEORY

Basic arithmetic operations. Decimals and approximations. Ratio, percentage, proportions and averages. Indices, logarithm, surds and integers. Real numbers (square roots, the real number system), rational numbers (adding and subtracting like fractions, adding and subtracting unlike fractions, multiplying fractions, properties of rational numbers).

MAT 103 BASIC GENERAL MATHEMATICS

Basic operations; S I system; Development of numbers system, large and small numbers, Factor and multiples, fractions and percentages, solids, properties, plane

shape perimeter and area, solid: volume, statistics, purpose and data collection, data presentation, simple equations, construction: parallel and perpendicular lines;
Statistics: average, estimation and approximation, base two arithmetic, probability theory, matrices and determinant, permutation and combinations, indices, logarithm and surds, trigonometry, measure of central tendency, partition and dispersion, fibroaci sequence.

MAT 104 AREA AND VOLUME

Area of circles; Three-dimension figures; surface area of prisms; surface area of cylinders; volume of pyramids and cone; precision and significant digits.

MAT 105 ENGINEERING MATHEMATICS

Partial differentiation; multiple integral; differential equations; determinants and matrices; vectors; complex numbers; functions of complex variation; integral transforms; calculus of variations; tensor analysis; Z-transform; infinite series; Gamma, Beta Functions; Differentiation under the integral sign; Chebyshev Polynomials; Fuzzy Sets; Hankel Transform; Hilbert Transform; Empirical Laws and Curve Fitting (method of least squares); Linear Programming.

MAT 106 TRIGONOMETRY AND ANALYTICAL GEOMETRY

- Understand the manipulation of trigonometric equations
- Understand the concept of mensuration and its application to engineering problems
- Understand the concept of analytical geometry and their applications
- Understand the concept of parabola and related shapes.

MAT 107 CALCULUS

- Understand the basic concepts of differential calculus and their application in solving engineering problems.

- Know integration as the reverse of differentiation and its application to engineering problems
- Understand first order homogenous linear ordinary equations with constant coefficients as applied to simple engineering problems
- Understand the basic concepts of partial differentiation and apply same to engineering problems

MAT 108 LOGIC AND LINEAR ALGEBRA

- Understand the basic rules of mathematical logic and their application to mathematical proofs.
- Know permutation and combination
- Know binomial theorem
- Know matrices and determinants

MAT 109 INTRODUCTION TO STATISTICS

- Understand statistics and all that it stands for
- Understand the different methods of data collection and their limitations.
- Know the different forms of data presentation
- Understand the use and the importance of some measures of central tendency in summarizing data
- Understand the use and importance of measures of dispersion in summarizing data
- Know the different types of random variables
- Understand the basic principles of probability
- Understand some basic probability distributions and be able to identify each distribution
- Understand the principles of correlation of two variables and the regression of one variable

SCHOOL OF VOCATIONAL HOSPITALITY & TOURISM

Dept. of Tourism Transport and Logistics

NATIONAL INNOVATIVE DIPLOMA I			
COURSE CODE	**DEPARTMENTAL COURSES**	**STATUS**	**UNIT**
TTL 101	Fundamentals of Transport	C	3
TTL 102	Transport Economics	C	3
TTL 103	Economic Geography	C	3
TTL 104	Commercial Practice	C	3
TTL 105	Courier & Freighting	C	3
TTL 106	Logistical Operation	C	3
TTL 107	Transport Survey Techniques	C	3
NATIONAL INNOVATIVE DIPLOMA II			
COURSE CODE	**DEPARTMENTAL COURSES**	**STATUS**	**UNIT**
TTL 208	Transport Operation	C	3
TTL 209	Transport Planning	C	3
TTL 210	Physical Distribution Planning	C	3
TTL 211	Logistical Management	C	3
TTL 212	Transport Insurance	C	3
TTL 213	Transport Finance	C	3
TTL 214	Transport Management	C	3
TTL 215	Project	C	3

NATIONAL INNOVATIVE DIPLOMA I			
COURSE CODE	**FIRST SEMESTER COURSES**	**STATUS**	**UNIT**
GNS 101	Use of English	C	2
GNS 105	Citizenship	C	2
GNS 104	Computer Appreciation	C	2
TTL 101	Fundamentals of Transport	C	3
TTL 102	Transport Economics	C	3
TTL 103	Economic Geography	C	3
BUS 101	Introduction to Management	C	2
BUS 104	Business Finance	C	3
NATIONAL INNOVATIVE DIPLOMA I			
COURSE CODE	**SECOND SEMESTER COURSES**	**STATUS**	**UNIT**
GNS 103	Introduction to Psychology	C	2
GNS 112	Industrial Safety	C	2
GNS 107	Business Mathematics	C	2
BUS 107	Business Statistics	C	3
TTL 104	Commercial Practice	C	3
TTL 105	Logistical Operation	C	3

TTL 106	Transport Survey Techniques	C	3

NATIONAL INNOVATIVE DIPLOMA II			
COURSE CODE	**FIRST SEMESTER COURSES**	**STATUS**	**UNIT**
GNS 204	Research Methodology	C	2
GNS 105	Citizenship	C	2
TTL 208	Transport Operation	C	3
GNS 201	Communication Skills	C	2
GNS 202	Entrepreneurship	C	2
TTL 209	Transport Planning	C	3
TTL 210	Physical Distribution Planning	C	3
BUS 213	Organizational Theory and Behaviour	C	3
NATIONAL INNOVATIVE DIPLOMA II			
COURSE CODE	**SECOND SEMESTER COURSES**	**STATUS**	**UNIT**
BUS 215	Company Law	C	2
BUS 217	Business Communication	C	2
BUS 216	Financial Management	C	2
TTL 211	Logistical Management	C	3
TTL 212	Transport Insurance	C	3
TTL 213	Transport Finance	C	3
TTL 214	Transport Management	C	3
TTL 215	Project	C	6

DETAILED COURSE CONTENT

TTL 101 FUNDAMENTALS OF TRANSPORT:

The function of transport and it's basic components; characteristics of transport; Government intervention in transport; Trade organization, Management and administration; The transport system; Commercial policies; Transport Finance; History of Nigerian transport Industries; Current developments in Transport;; Load line zones;; land sea interface; transportation land use and its conflicts; importance of transport as a critical factor in the distribution of industrial activities - primary, secondary and tertiary activities; Transport facilities and the economy of developing countries.

TTL 102 TRANSPORT ECONOMICS:

The nature of transport economics; The allocation of resources and asset utilization; pricing policies; The Economics of shipping and Air transport; Investment Appraisal and

policies; Training of common transport policy in regional economic community; The economic significance of government policies in regard to current and future transport development; transport supply and demand; transport pricing, taxes, subsidies and transport satisfaction.

TTL 103 ECONOMIC GEOGRAPHY:

Meaning and context of Economic Geography, space distance and spatial interaction; Geography of economic development; Agricultural Location Theories and concepts; industrial location; Marketing functions, and central policy system; Models of transport development; Transport and economic, development, in supranational framework; Concept of physical distribution management; Relationship: between material management, Physical Distribution Management and logistical management; Marking and parking of cargo, Classification of cargoes; Constituent of freight rates; Factors influencing formulation of freight; Export Documentation procedures; Cargo insurance-Processing of export order.

TTL 104 COMMERCIAL PRACTICE;

Definition, its relevance, advantages of exchange, commercial occupations, the formation of a contract, the essential of a contract; Considerations in a contract; Intention to create legal relation, Mistakes, Duress and undue influence; Trade- home and foreign trade; retail and Wholesale trade; The business organization Business Capital, type of capital; Documentation used in foreign trade; Method of payment in international trade; The role of Banks, in International trade; Letter of Credit; documentary collection, collection service to both importer and exporter; Custom entry-free good, dutiable good; export orders arid Bills of lading; Transport: Sea, air and Canal and road; importance of transport; Forms of transport system; Common carriers, kinds of :common carriers; Responsibility of common carrier; Insurance, types of Insurance, Insurable interest, Marine Insurance; Finance; The mechanism of exchange; The money market - Freight) exchange stock exchange.

TTL 105 LOGISTICAL OPERATIONS:

Ware-housing and distribution management, system of incoming goods, security, protected storage and accessibility for out flow delivery; ware-housing technology, mechanized order, picking system and computerized stock control system; mail and courier services, modes of collection, transport and delivery, handling and distribution of goods, freight forwarding service, documentation, insurance, customs and clearance.

TTL 106 TRANSPORT SURVEY TECHNIQUES:

Theory and practice of transport survey research and planning; sampling and questionnaire construction; Inter viewing; consent analysis; machine-tabular analysis of data; field work; data collection and organization; types of traffic survey; traffic volume counts; Parking count; estimation of traffic delays and speeds by moving car and observer methods; pedestrian traffic counts and crossing delays; origins – destination surveys, accident survey.

TTL 208 TRANSPORT OPERATION:

Public transport in the global context, role of private enterprises in public transportation, operation and administration of public transportation in developed and developing countries, operation and administration of public transport and problem of public transport in developing countries, safety measures in public transport, development of mass transit programme in Nigeria, operation and management of mass transit programme in Nigeria.

TTL 209 TRANSPORT PLANNING:

Highway network, classification and finance, highway codes and their effects on standard operation, analysis of the various types of services operated, application and evaluation of management techniques used in freight transport, analysis of cost of operation and cost control, vehicle motive power and equipment, the various designs and types of vehicles in use and their technology.

TTL 210 PHYSICAL DISTRIBUTION PLANNING:

Introduction to logistical management with reference to the planning, organization and co-ordination of National flow and storage throughout the process of production to the consumer, basic understanding of warehousing and destination management system for incoming goods, security and protected storage and accessibility for out-flow delivery, mail and public courier services, management and operational modes of collection, transport and delivery, automated handling and distribution, overview of freight forwarding services and discussion on arrangement of import and export, documentation, insurance, customs clearance and localized services.

TTL 211 LOGISTICAL MANAGEMENT:

Material and distribution management, outing and fleet management, marking and packing, international transport modes, export documentation and procedures, cargo insurance, insurance organization, logistical insurance – brokers; liability in logistical operation, valuing, insurance ad risks; problems in liability settlement, international logistical activities, fleet organizations, fleet financing, demand and supply problems, depreciation, equilibrium, costing, pricing and externalities

TTL 212 TRANSPORT INSURANCE;

Principles and General Application of Insurance in the transport industry, spreading the risk, insurable interest, subrogation, effective transport insurance by land, sea and air, fire insurance, life assurance, marine insurance, accident insurance, goods in transit insurance, travellers' baggage, holiday travel insurance.

TTL 213 TRANSPORT FINANCE;

Book keeping, accounting knowledge, companies acts and other statutes, limited liability companies and shares; capital structure and source of finance, finance of transport undertakings, credit control, interpretation of accounts and balance sheet, problems concerning working capital, analysis of the final account, calculation and use of business and finance, methods of raising capital, loan and the rights attaching

thereto; leasing hiring and other financial arrangements, the balance sheet and principal accounts.

TTL 214 TRANSPORT MANAGEMENT

Functions of, management; principles and meaning of management; organization of transport Units; management of transport for - profit maximization; business and commercial consideration; public service levels,; social and welfare consideration; Environmental land – use and pollution control; Quality of life – enjoyment and leisure; Human resources management; Personnel management- Manpower planning, Recruitment and selection, Education and training, Contract, and condition of service, Safety and welfare, Industrial relations; Management aids Techniques and other tools; Management by objectives; Operational research-, The use of computers in management.