



CONCEPTS UNIVERSITY COLLEGE LONDON

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COURSE DESCRIPTION ON MEDICAL LABORATORY (FIVE YEARS PROGRAMM) FIRST SEMSTER YEAR ONE

CHE 101: GENERAL CHEMISTRY I (3) UNITS

Survey of organic Chemistry classes of organic compounds: Homologous Series Functional groups: purification of organic compounds: Stereochemistry: structure of organic compounds, Saturated and unsaturated hydrocarbons: Alcohols, ketones etc. Comparison of phenols, amines, aromatic amines etc.

PHY 101: GENERAL PHYSICS I (3) UNITS

Definition, Unit and Dimension, Scalar and Vector quantities, Kinematics of Particles, Rigid bodies, Newton's law of motion, Forces, Vectorial representation, Motion of rigid bodies, Power, Energy, Angular momentum of rotating rigid bodies, work, energy, conservation of energy and momentum, Kepler's laws of planetary motion, center of mass, motion in a vertical circle, Friction simple harmonic motion and gravitation, Elasticity, Hooke's Law, Pressure in fluids, Archimedes Principle, Surface Tension, damped and Forced Vibration.

BIO 101: GENERAL BIOLOGY (3) UNITS

STUDY ONE: LIFE OF A CELL

A view of the cell, the discovery of the cell and the history of the cell theory



STUDY TWO

CELL STRUCTURE AND ORGANISATION OF CELLULAR ORGANELLES

Parts of a cell, the cell wall, the Proto Plasm, vacuoles, mitochondria and centrosome

STUDY THREE

NUCLEUS: Nucleolus, Lysosomes, Endoplasmic reticulum, ribosomes, golgi bodies apparatus

STUDY FOUR

BASIC TYPES OF CELL; Prokaryotic cell and Eukaryotic cell, Plastids, tissues, organs

STUDY FIVE

SYSTEM

Differences between plants and animals cell similarities in plant and animal cells, cell illustration and function, nature of matter and states of matter

STUDY SIX

CELL DIVISION: Mitosis, meiosis

MAT 101: GENERAL MATHEMATICS I (3) UNITS

General mathematics set theory, subsets, union, intersection, complements, Venn diagrams, Real numbers, integers, rational and irrational numbers. Mathematics induction, real sequences and series, theory of quadratic equations, Binomial theorem, complex numbers, algebra of complex numbers, the Argand diagram. De Moivre's, n th roots of unity. Circular measure, trigonometric functions of angles of any magnitude, addition and factor formulae.



BIO 111: PRACTICAL GENERAL BIOLOGY (1) UNIT

CHE 141: GENERAL CHEMISTRY LAB. I (1) UNIT

Volumetric or Quantitative analysis. Volumetric analysis/ Titration. Acid – Base. Neutralisation. Relative formula mass. Indicators and end – point.

PHY 151: GENERAL PHYSICS LAB. (1) UNIT

GST 101: USE OF ENGLISH (2) UNITS

GOAL OF COURSE

Being a practice oriented course, GST 101 is designed to accomplish the following objectives:

1. Instill communicative confidence in students
2. Enable the students acquire competence in the technical aspects of the English language.
3. Help the students build a repertoire of rules, which govern sentence construction, word-choice, writing reading, speaking and idiomatic as well as stylistic usage.
4. Train the students to appreciate literary works written in English.

Course History

GST 101 is an aspect of the Use of English course in the category of course in the mandatory General Studies programme prescribed for undergraduates in the 1989 NUC approved minimum academic standards for all Nigerian Universities. The NUC minimum academic standards assigns 4 credit units to the Use of English which is achieved by splitting the course into two GST 101 and GST 102 of 2 credit units each mounted respectively, in the first and second semesters. The Use of English is also expected to be



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mandatory taught in Polytechnics or similar tertiary institutions as prescribed in the 1990 NBTE General studies course specification.



Course Structure

The course GST 101 is structured and expected to be taught as follows:

Unit	Theme	Content of Theme
1.	Introduction:	Introduction, relevance of course, estimate as remedial English.
2.	The Sentence:	Structure, Kinds of sentences (declaratory, interrogatory, exclamatory, imperative), sentence combining to form complex, compound and complex-compound ones sentences, fragments.
3.	Lexis:	The structure of English words (simple, complex, nature of affixes (morphemes) kinds of meaning (denotative, connotative, synonyms etc) idioms, pre-supposition.
4.	Essay 1:	Aspects of the essay (content organization, expression, mechanics), the narrative Essay – purpose, nature, parts.
5.	Reading:	Reading Comprehension, Techniques, readiness, problems, practices.
6.	Note-Taking:	Listening Comprehension, attention, noting major points, summarizing, paragraphing, abbreviating, underlining or other emphatic techniques.



7. Letter writing: Formal and informal letters, formal features, of letters; the differences.
8. Punctuation: Meaning and uses of punctuation marks including comma, full-stop, semi-colon, quotation marks etc.
9. Speech: The meaning and importance of speech, consonants and vowels, proper pronunciation, habits, intonation, pitch, assimilation, speech delivery (Written and oral).
10. Revision: Summary revision and examination.

Course Approach

1. Instruction in the course shall be by lectures supplemented with tutorials. Assignments and projects shall be given from time to time and shall account for 20 percent of the final evaluation of the achievements of the course objectives.
2. Regular students attendance at lectures and tutorials is compulsory. A list of registered students in the course shall be maintained and roll call carried out from time to time.
3. Students are expected to make their notes during lectures and supplement with private study of recommended textbooks reference books periodicals and other reading materials as may be directed from time to time by the lecturer(s).
4. Course evaluation will be either essay questions or objectives questions or combination both or the semi-essay/semi objective type of question.



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GST 105: HISTORY AND PHILOSOPHY OF SCIENCE (2) UNITS

Goal of Course

The overall aim of the course, GST 103 Philosophy and Logic is to train students to reason clearly and logically; to cultivate a critical attitude of mind and to be unassuming.



Course Objectives:

It is expected that at the end of the course the student will be able to:

1. Understand and apply the law of thought and principles corrects reasoning.
2. Free their minds from bias and look at things objectively.
3. Cultivate a critical, reflective and inquiring mind.
4. Understand the need for the application of the intellect to both theoretical and practical issues of life to escape avoidable unpleasant consequences of cordlessly spoken or written word or thoughtless actions.

Course History:

Philosophy and logic is one of the courses in the mandatory General Studies programmes for undergraduates prescribed in the 1989 NUC approved minimum academic standards for all Nigerian Universities. In the NUC academic standards being made reference to, Philosophy and logic is assigned 2 credit units under the course number GST 103. All undergraduates must pass the course to qualify for a first degree in any of the Nigerian Universities.

Course Structure

Philosophy and logic is in two sections (A & B). Section A comprises Philosophy while section B is made up of Logic. Both sections are caught concurrently throughout the duration of the course. The details of the themes and contents covered in each section of the course and the order of their delivery are as follows:

SECTION A: PHILOSOPHY

Unit	Theme	Content of Theme
1.	Introduction	the concept: Philosophy”, its origin and



- Etymology; relation with wisdom, popular philosophical conception; philosophy and wisdom.
2. The Nature of Philosophy; Popular conception of Philosophy, of philosophical enquiring; aims of Philosophy.
 3. Philosophy as a Science Science of first principles, Science of Sciences.
 4. Philosophy and thinking Popular conception of thinking the nature of philosophical thinking, the implications of philosophical thinking.
 5. Division of Philosophy Speculative/theoretical philosophy; Historical general and particular history of philosophy and philosophy of history; systematic-metaphysics and epistemology; practical axiology and criteriology; axio-logy-ethnics and aesthetics; criteriology-logic and philosophies
 6. Main issues: Problems of reality versus appearance materialism, monism, Dualism, Pluralism, Positivism, etc; the problems of truth-realistic, idealisms, dogmatists, skpetists, and acclectist perspectives; the problem of rationalists, empiricist,



- intellectualists perspectives the problem of values.
7. Usefulness of Philosophy In daily life As an intellectual exercise; as a guide on matters of morally, aesthetics, religion and education; and in social, political and economic behaviour etc.
8. Revision: Summary, revision and examination.

SECTION B: LOGIC

Unit	Theme	Content of Theme
1.	Introduction	meaning, object and divisions of Logic as a science and an art.
2.	The law of thought	The laws of contradiction, identity and excluded middle. The operations of the mind; Simple appreciation, judgment and reasoning.
3.	Arguments and Proposition:	Deductive and inductive arguments, concepts, terms and propositions.
4,	Syllogism:	The character and types of syllogism, categorical, hypothetical and disjunctive syllogisms.
5.	Fallacies:	Fallacies of relevance and ambiguity, truth and validity.
6.	Revision:	Summary, revision and examination.

Course Approach



1. Instructive in the course shall be by lectures supplemented with tutorials. Assignments and projects shall be given from time to time and shall account for 20 per cent of the final evaluation of the achievement of the course objectives.
2. Regular students attendance at lectures and tutorials is compulsory. A list of registered students in the course shall be maintained and roll calls carried out from time to time.
3. Students are expected to make their notes during lectures and supplement with private study of recommended textbooks, periodicals and other reading materials as may be directed from time to time by lecturer(s).
4. Course evaluation will be by either essay question or objective question or a combination of both or semi-essay , semi-objective questions.

GST 105: HISTORY AND PHILOSOPHY OF SCIENCE (2) UNITS

Goal of Course

The goal of the course GST 104 is to educate students about science; its origin, uses and abuses and its impacts on man and the environment.

Course Objectives:

Being guided by the notion that man, nature and the environment are the central focus in science and the logic that for man ti live in harmony with nature and the environment he needs to understand science; the course is designed to enable students to:



1. Understand the historical aspects of the development of science and its Philosophy.
2. Know the scientific method.
3. Understand the origin of life including the origin of man and the cosmic influences of man.
4. Appreciate the consequences of man's activity on the physical environment especially with respect to pollution of environment, chemical waste and radio chemical hazards.
5. Understand the role that science and technology could play in the services of man and the future of society.

Course History

The course GST 104: History and Philosophy of Science is one of the mandatory General Courses prescribed in the 1999 NUC approved minimum academic standard for all Nigerian Universities. The NUC minimum academic standards assigns 2 credit units to the course under the course number GST 102. Undergraduates are required to pass the course to qualify for a university degree.

Course Structure

The GST 104 is structured and to be taught on a thematic basis as indicated below.

Unit	Theme	Content of Theme
1.	Introduction:	Introduction, relevance of course and Scope of History and Philosophy of Science.
2.	Historical aspects of the development	Definition of science difference science disciplines; definition of philosophy. The relationship between science and



- of science,
science and
- philosophy Contributions of the Egyptian
Greeks and Romans to the growth and
Philosophy development of
science and Philosophy. Overview of
some scientific inventions and their roles
in the growth of modern science. Early
notions, myths and beliefs about
diseases, including the controversy
surrounding the origin of HIV.AIDS.
3. The Scientific
methodology: Definition of the scientific methodology,
History aspects of the development of
scientific methodology. Different
processes of the scientific methodology
with emphasis on observation,
experimentation, trial and error,
statistical and sampling techniques.
Different steps of the scientific
methodology.
4. Man's origin,
nature and
cosmic
environment: Definition of life including definition and
nature of man. Theories of the origin of
life including the origin of man. The
continuity of life including an overview of
early thoughts and events that bore
modern genetics, organic evolution,
evolution and embryology; Definition of
environment, types of cosmic influence
in man.



5. Environmental effects of chemical, plastics, textile waste etc: Definition of environmental pollution; origin and causes of environmental pollution. Consequences of environmental pollution with emphasis on environmental effects of metal, organics compounds etc.
6. Chemical and radio- chemical definition of chemical and radio- chemical hazards. Causes and consequences of chemical and radio-chemical hazards.
7. Man and his energy resources; the renewable and non-renewable resources: Definition of energy. Different forms of energy. Sources of energy. Types and uses of renewable energy resources with emphasis on minerals and fossil fuel resources. Types of energy reserves (Fuel wood, and natural gas, coals, nuclear power).
8. Science and Technology in The society and Service of man: definition of science and technology. The relationship between science and technology. Historical philosophical basis for the development of science and technology (including the early man's struggle for survival). The applications of science and technology in the society and service of man- with emphasis on entertainment and recreation, medicine, welfare etc. the implication if biological



- research in medicine (including experiments, vaccine production) and agriculture plant breeding etc) spare travel and space explorations, etc.
9. Agriculture: Agriculture goals, means and limitations.
And resources The Environment.
Allocation: - the living environment
- the physical environment
- the economic and social environment.
Living aquatic resources present status of exploration and future challenges.
10. Revision: Summary, revision and examination.

Course Approach

1. Instruction in the course shall be by lectures supplemented with tutorials. Assignments and projects may be given from time to time and may account for 20 percent of the final evaluation of the achievement of the courses.
2. Regular students' attendance at lectures and tutorials is compulsory. A list of registered students in the course shall be maintained and roll calls carried out from time to time.
3. Students are expected to make their notes during lectures and supplement with private study or recommended textbooks, reference books, periodicals and other reading materials as may be directed from time to time by the lecturer(s).



4. Course evaluation will be either essay question or objective questions or semi-essay/semi-objective type questions.

GST 101: NIGERIAN PEOPLES AND CULTURE (2) UNITS

Historical Evolution of Nigeria

Archaeological Discoveries in Nigeria and their Role in Nigerian culture.

- A. The concept of Archaeology
- B. Archaeological sites and Historical reconstruction in Nigeria
- C. Some Archaeological sites in Nigeria
 - 1. Igbo-Ukwu sites
 - 2. Benin Excavations

ARCHAEOLOGY DISCOVERIES

Usama site

The City walls

The Nok culture

The importance of Nok culture in Historical reconstruction

The Ife site

Diama site

CULTURAL EXPRESSION IN NIGERIA – MUSIC

- A. Meaning of music
- B. Music as a universal language
- C. Music as a language of the soul
- D. Characteristics of a musical sound
 - i. Pitch (ii) Volume or Intensity (iii) Quality or Timbre (iv) Duration.



CULTURAL EXPRESSION IN NIGERIA HISTORICAL TRENDS OF MUSIC:

- (i) Music culture
- (ii) Types of contemporary music

(A) Art music (B) Secular music (C) Concept Music
(D) Traditional instrumental music

IMPROVISED MUSIC

POPULAR MUSIC

WIDHOOD IN NIGERIA

DEPORABLE TREATMENT USUALLY METHOD OUT TO WIDHOOD

Kogi State, Adamawa State, Kwara State, Benue state, Lagos State, Ondo State, Edo State, Anambra State, Cross River state River State

FACTORS ENCOURAGING OBNOXIOUS WIDHOOD PRACTICES

1. Involvement of the sisters of the dead one
2. Illiteracy
3. Religion
4. Customs/Traditions
5. Mall Chauvinism

MEASURES FOR CURBING THE OBNOXIOUS WIDOWHOOD PRACTICES

1. Education (2) Constitutional Provisions (3) Publications
(4) Churches (5) Cultural Revival



THE NIGERIAN PERCEPTION OF HIS WORLD

Socio-Political environment in Nigeria

State of the Nation

1. Political murders
2. Crisis of Insecurity
3. Political Elections
4. Political Insurrection in the states

INTERNATIONAL TRADE AND ELEMENT OF INCOME ACCOUNTING

- a. Reasons for International Trade
- b. Balance of Payment
- c. Protection in International Trade
- d. National income Accounting

SECOND SEMESTER YEAR ONE

CHE 102: GENERAL CHEMISTRY II (3) UNITS

Introduction, the Alkanes, Homologous, General Molecular formula, Isomerism, Nomenclature, Functional groups, Saturated and unsaturated compounds, un-saturated hydrocarbons, Stereochemistry, Geometric Isomerism, Petroleum, Fractional distillation of petroleum, Adiabatic and Diathermal boundaries, state variables, Equilibrium.

CHE 102: GENERAL PHYSICS II (3) UNITS

TEMPERATURE AND HEAT

Concepts of heat. Temperature. Measurement of Temperature. Clinical thermometer. Heat capacity. Specific Heat. Latent Heat



Calorimetry. Gas Laws; Kinetic Theory of gases, Thermal energy, Isothermal and Adiabatic Changes. Conduction, Convection; Radiation.

PART TWO

SOUND

Sound Waves; Intensity, pitch and quality of sound. Propagation of sound in Solids, liquids and gases. Doppler effect. The Ear.

PART THREE

LIGHT

Reflection and Refraction of light, Plane and Spherical Mirrors, Thin lenses; Optical Instruments. The Eye, Defects of vision and Their Corrections. Wave Nature of Light, Interference, and Diffraction. Velocity of Light

BIO 102: GENERAL BIOLOGY II (3) UNITS

MAT 102: GENERAL MATHEMATICS (3) UNITS

General mathematics set theory, subsets, union, intersection, complements, venn diagrams, Real numbers, integers, rational and irrational numbers. Mathematics induction, real sequences and series, theory of quadratic equations, Binomial theorem, complex numbers, algebra of complex numbers, the Argand diagram. De-moivre's, nth roots of unity. Circular measure, trigonometric functions of angles of any magnitude, addition and factor formulae.

BIO 112: PRACTICAL BIOLOGY II (1) UNIT

CHE 142: GENERAL CHEMISTRY LAB. II (1) UNIT

PHY 152: GENERAL PHYSICS LAB. (1) UNIT

USE OF ENGLISH II (2) UNITS



GST 102 is intended to consolidate the competence in the Use of English acquired by students who offered GST 101 and also train the students in the Use of Library. Particularly emphasized in the application of acquired skills to written communication and gaining skills in information acquisition.

Course Objectives

The course shall accomplish the following objectives:

1. Expose students to various writing techniques with a move intensive practice on composition, letter/report writing and essay techniques culminating in the term paper.
2. Train the students in speech practices, literary forms and literary criticism.
3. Expose the students in speech, literary forms and literary criticism.

Course History:

GST 102 is the second segment of the Use of English course prescribed in the 1989 NUC approved minimum academic standards for Nigerian Universities. It is also prescribed as mandatory course in the 1990 NBTE. General Studies course specifications for Polytechnics and similar tertiary institutions.

Course Structure

GST 102 is structured and expected to run as indicated below:

Unit	Theme	Content
1.	General Introduction	Review of previous programme; overview of present course; essay content organization etc.
2.	Argumentative	features of the argument; syllogism,



- essay: inductive and deductive logic; pitfalls to avoid (e.g. fallacy of premise, middle term and conclusive, over-generalisation etc); organizing the essay in four paragraphs (introduction, reputation of opposing views, presentation of main points, conclusion); examples of argumentative essays; possible essay.
3. Descriptive essay: To be viewed as scientific writing, use (e.g. to give objective accounts, difficulties (e. g choice of appropriate vocabulary etc), organization of paragraphs each with a theme paragraph unit.
4. Expository essay: Purpose (explanation of concepts), uses for abstract and philosophical writing organization emphasizing them and unit or logic.
5. Report essay: Writing minutes of meetings and reports practice in reported speech and passive voice coding or numbering of minutes.
6. Language and literature: What is fiction? Literary forms using a least 2 different novels to explain character, plot, theme lesson (if any language forms).
7. Language And literature: Continues as in 6 above as need be.



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| 8. | The term paper: | Nature and use, choosing a topic; organization, notes and bibliography. Actual term paper based on novels read or other relevant theme. |
| 9. | Acquisition of information: | Use of library, library services and organization; library stock; catalogue; classification, reference sources. |
| 10. | Acquisition of information: | Use of reference and index cards, reference and bibliography |
| 11. | Speech practice: | Differences between phonetic and normal Orthography; practice in difficult phoneiness. |
| 12. | Speech practice: | Oval delivery and practice; speech writing and delivery. |
| 13. | Revision: | Summary, revision, submission of term paper and exams. |

Course Approach

1. Introduction course shall be by lectures supplemented with tutorials. Assignments and projects shall be given from time to time and shall account for 20 percent of the final evaluation of the achievement of the course objectives.
2. Regular students attendance at lectures and tutorials is compulsory. A list of registered students in the course shall be maintained and roll calls carried out from time to time.
3. Students are expected to make their notes during lectures and supplement with private study of recommended text books,



reference books, periodicals and other reading materials as may be directed from time to time by the lecturer(s).

4. Course valuation shall be by either essay questions or objectives questions or objectives questions or combination of both or semi-essay semi-objective type questions.

Unit	Theme	Content of Theme
1.	General Introduction:	Review of previous programme; overview of present course; essay content organization etc.
2.	Argumentative essay:	Features of the argument; syllogism, inductive and deductive logic; pitfalls to avoid (e. g fallacy of premise, middle term and conclusion, over-generalisation etc); organizing the essay in four paragraphs (introduction, reputation of opposing views presentation of main points, conclusion); examples of argumentative essays; possible essay.
3.	Descriptive essay:	To be viewed as scientific writing; use (e. g to give objective accounts), difficulties (e. g choice of appropriate vocabulary etc), organisation of paragraphs each with a theme; paragraph unit.
4.	Expository essay:	Purpose (explanation of concepts), uses for abstract and philosophical writing



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| | organization emphasizing them and unit or logic. |
| 5. Report writing: | Writing minutes of meetings and reports practice in both reported speech and passive voice, coding or numbering of minutes. |
| 6. Language and literature: | What is fictions? Literary forms using at least 2 different novels to explain character, plot, theme lesson (if say language forms). |
| 7. Language and literature: | Continues as in 6 above as need be. |
| 8. The term paper: | Nature and use, choosing a topic; organization, notes and bibliography. Actual term paper based on novels read or other relevant theme. |
| 9. Acquisition of information: | Use of library, library services and organization, library stock; catalogue; classification, reference sources. |
| 10. Acquisition of information: | Use reference and index cards, reference and bibliography. |
| 11. Speech practice: | Differences between phonetic and normal orthography; practice in difficult phoniness. |
| 12. Speech practice: | Oral delivery and practice; speech writing and delivery. |
| 13. Revision: | Summary, revision, submission of term |



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paper and exams.



Course Approach

1. Instruction: a course shall be by lectures supplemented with tutorial. Assignments and projects shall be given from time to time and shall account for 20 percent of the final evaluation of the achievement of the course objectives.
2. Regular students attendance at lectures and tutorials is compulsory. A list of registered students in the course shall be maintained and roll calls carried out from time to time.
3. Students are expected to make their notes during lectures and supplement with private study of recommended text books, reference books, periodicals and other reading materials as may be directed from time to time by the lecture(s).
4. Course valuation shall be by either essay questions or objectives questions or combination of both or semi-essay semi-objectives type questions.

GST 103: ENTERPRENURAL DEVELOPMENT (2) UNITS

Entrepreneurial theories interpersonal characters and behavioural traits of entrepreneurs. Financial aspects of entrepreneurs. Financial aspects of entrepreneurship in which business success is most commonly reflected. External aspects of entrepreneurship. Legal forms of Business. Sources of Funds, Planning the business. Purchasing and Supply. Insurance and entrepreneurship. Feasibility Studies. Time management. Stress and Burnout. Budgeting, Team Building. Conflicts and Conflict resolution. Project evaluation. In addition to the lectures, experts may be invited from inside and outside the University system to deliver talks from time to time.



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GST 105: CITIZENSHIP EDUCATION (2) UNITS

Goal of course

The goal of the course is to teach and make students know the provisions of the Constitution of the Federal Republic of Nigeria with a special emphasis on the workings of the federal system of Government; the right privilege and obligations of citizens and the fundamental objectives and directive principles of state Policy of Nigeria.

Course Objectives

It is expected that students after completion of the lectures in the course should be able to:

1. Understand the Constitution of Nigeria.
2. Understand the Federal System of government of Nigeria.
3. Know the Constitutional rights and obligations of Nigerian Citizens.
4. Understand citizenship.
5. Know the fundamental objectives and directive principles of state Policy of Nigeria.

Course History

GST 105 and its supplement GST 106, together, replace GST 202 (Nigerian Peoples and Culture) which use to be taught in universities in accordance with the 1989 NUC approved minimum academic standard for all Nigerian universities. Both GST 105 and GST 106 also replace GNS 16) (Contemporary Social Problems and Outline History of Nigeria) previously taught in Polytechnics as provided in the 1990 National Board for Technical Education (NBTE) general Studies course specifications. GST 105 and GST 106 were



prescribed as mandatory General studies courses in all Nigerian universities, Polytechnics and Colleges of Education from the 1992/93 Session and endorsed by the NUC, NBTE and the national Commission on Colleges of education (NCCE). This was sequel to the directive in 1991 by the Federal Government of Nigeria (during the General Ibrahim Babangida administration) that citizenship education should be mandatorily taught as part of the General Studies programme in tertiary education institutions in Nigeria.

This directive for the introduction of Citizenship Education in the general studies curricula of tertiary institutions was informed by the perceived national need to expose all students to the practical issues in good governance, good health and national development so as to enhance the citizens capacity for appropriate political, social and moral behaviours needed to foster order, democracy and progress in the Nigerian society

By so doing it is hoped that the way will be paved for the overall achievement of the five national objectives of the Nigerian state as stated in the Section National Development Plan, and endorsed as the necessary foundation for any national policy on education. The National objectives are the building of:

1. A free and democratic society.
2. A just and egalitarian society.
3. A united, strong and self-reliant nation.
4. A great and dynamic economy.
5. A land of bright and full opportunities for all

Course Structure

GST 105 is structure and expected to be delivered as follows:



Unit	Theme	Content of Theme
1.	Introduction:	Meaning, philosophy and scope of Citizenship Education I.
2.	Nigerian Constitution:	Definition and functions of constitutions and their effectiveness; historical development of constitutions in Nigeria with emphasis on their landmarks, merits and demerits; the provisions of the 1979 constitution; supremacy of the Nigeria constitution; the concept of “rule of law”.
3.	The Federal system of Nigeria:	Meaning and function of government; Forms of government – unitary, federal, confederal – with emphasis on their distinguishing features; the evolution, structure and basis of the federal system of government in Nigeria – local, state and federal and their relationships; sources of revenue and revenue allocation formula in operation in Nigeria.
4.	Nigerian citizenship:	Meaning, significance and benefits of citizenship; types of citizenship and their merits and demerits, mode of acquiring Nigerian citizenship; avoidance of dual citizenship and deprivation of



citizenship, duties of Nigerian citizen.

5. Rights and obligations of Nigerian citizens:

Fundamental rights as provided for in the Nigerian constitution viz. right to life; right to dignity of human person; right to eradicate corrupt practices; right to personal liberty, right to fair hearing, right to private and family life; right to freedom of thought; conscience and religion; right to peaceful assembly and association; right to freedom of movement; right to medical consultation; right to freedom of discrimination, right to acquire and own property anywhere in the federation; restriction on and derogation from fundamental right; government's protection from and enforcement of fundamental right.

6. Fundamental objectives and directive principles of state policy Nigeria

Fundamental obligations of government towards the people, political, economic, social, educational and foreign policy objectives of Nigeria; directive principles of State Policy on the environment, culture, mass media, national ethnics and values; assessment of the fundamental objectives and directive principles of state policy by government and people of Nigeria, commended improvements on the provision, conformity, observance and application of the fundamental objectives and directive principles of state policy.



7. Revision: Summary, revisions and examination.

Course Approach

1. Instruction in the course shall be by lectures supplemented with tutorials. Assignments and projects shall be given from time to time and shall account for 20 percent of the final evaluation of the achievement of the course objectives.
2. Regular students' attendance at lectures and tutorials is compulsory. A list of registered students in the course shall be maintained and roll calls carried out from time to time.
3. Students are expected to make their notes during lectures and supplement with private study of recommended text-books, reference books and periodicals and other reading materials as may be directed from time to time by the lecturer(s).
4. Course evaluation shall be by either essay questions or objectives questions or a combination of both or the semi-essay/semi-objective question type.

GST 207: HUMANITIES (2) UNITS

STUDY I

HUMANITIES, REGION AND DEVELOPMENT –DR S.C CHUTA –

Definition of the subject matter

- ❖ An ancient civilization.
- ❖ The middle Ages.
- ❖ Medieval Scholarsticism.
- ❖ The Renaissance
- ❖ Humanism and scientific Revolution

STUDY II



“MAN KNOW THYSELF” (MAN: Nature and Progress)

- Chukwadozie Charles . N.

General introduction of the topic – Throughout history man has made tremendous efforts to know himself, understand nature, tap, organize and manipulate the force around him and within himself with the aim of self-actualization and general progress.

Characteristics of Man as an Animal

- i) Biological nature of man
- ii) Rationality
- iii) Auto-Transcendence
- iv) Home-Faber-man a tool-wielding being
- v) Man-a social being
- vi) Man-a cultural being
- vii) Historicity
- viii) Home Volens: Man a being gifted with freedom
- ix) Man: An end in Himself
- x) Man: An Aesthetic being
- xi) The contemporary man and his Estrangement.



STUDY III

Logic and civilization – By Obiora Anichebe – Introduction – Man originally weed in the state of nature, no society, no state and no government. He was bereft of ideas of communal wrong and was at the mercy of the vagaries of nature. This was man in his primitive nature. Later, however, man began to for societies so as to reap the fruits of gregarious life and overcome the deficiencies of living in the state of nature.

- Definition, scope and importance of logic
- Brief History of logic
- Terminiologies in logic

(a) Proposition (b) Conclusion (c) Premises (d) Syllogism
(e) Argument (f) Validity (g) Truth (h) Axioms (i) Inference

- Deductive and inductive Argument
- Fallacy

Types of Fallacies

- 1). Argumentum and Ignorantium
- 2). Argumentum and Baculum (appeal to force)
- 3). Argumentum and Hominem
- 4). Genetic fallacy
- 5). The quoque (you are another)
- 6). Argumentum and verecundiam (appeal to authority)
- 7). Argument and miseriodiam (appeal to pity)
- 8). Argumentum and populum (appeal to the people)
- 9). Fallacy of false cause (Non-causa Procausa)
- 10). Fallacy of Accident



- 11). Fallacy of converse Accident (Hasty Generalization)
 - 12). Ignoratio Elench (irrelevant conclusion)
 - 13). Petitio principii (Bagging the question)
 - 14). Fallacy of complex questions
 - 15). Fallacies of ambiguity (double meaning) (a) Equivocation
(b) Amphiboly (c) Account
 - 16). Fallacy of Decision
- Logic as the propeller of civilization

FIRST SEMESTER YEAR TWO

PHY 201: GENERAL PRIN. OF PHYSIOLOGY BLOOD COMPONENTS (2) UNITS

A study of the body organs and systems and their reaction to different exercises programmes. Short and long range effects of exercises on human beings. Application of physiological principles to the development of physical activities and other skills of the body.

ANA 201: GROSS ANATOMY I (2) UNITS

Posterior abdominal wall, Pelvic cavity walls and diaphragm. Pelvic viscera. Perineum; boundaries and sub divisions, peripheral pouches. External genitalia.

MLS 201: INTRO. TO MEDICAL LAB. (2) UNITS



General introduction to medical laboratory subjects, namely; Clinical chemistry/Chemical Pathology, Haematology/Blood Group Serology, Medical Microbiology/Parasitology, Histopathology and Immunology. Specimen collection, reception and registration, storage and disposal of samples, Specimen bottles – preparation, uses, storage and care. Microscopy and microtomy, use and care of microscopes, Sterilization – principles and techniques. Glassware – care and maintenance. Refrigeration – principles, uses and care. Handling of laboratory animals.

PHS 203: MUSCLES NERVES AND AUTONOMIC (2) UNITS
STA 203: STATISTIC FOR AGRIC AND BIOLOGY (2) UNITS

MLS 211: BASIC BIOCHEMISTRY (2) UNITS

Solutions, Osmotic pressure, Acids and bases, pH and buffers, chemical kinetics.

ANA 221: HISTOCHEMISTRY PRACTICAL (2) UNITS

Historical background. Importance of histochemistry. Basic equipment used. Techniques for carbohydrate, Protein, lipids, acid, alkaline and enzyme studies.

GST 201: USE OF ENGLISH III (2) UNITS

GST 201 is intended to consolidate the competence in the Use of English acquired by students who offered GST 101 and also train the students in the Use of Library. Particularly emphasized in the



application of acquired skills to written communication and gaining skills in information acquisition.

Course Objectives

The course shall accomplish the following objectives:

1. Expose students to various writing techniques with a move intensive practice on composition, letter/report writing and essay techniques culminating in the term paper.
2. Train the students in speech practices, literary forms and literary criticism.
3. Expose the students in speech, literary forms and literary criticism.

Course History:

GST 102 is the second segment of the Use of English course prescribed in the 1989 NUC approved minimum academic standards for Nigerian Universities. It is also prescribed as mandatory course in the 1990 NBTE. General Studies course specifications for Polytechnics and similar tertiary institutions.

Course Structure

GST 102 is structured and expected to run as indicated below:

Unit	Theme	Content
1.	General Introduction	Review of previous programme; overview of present course; essay content organization etc.
2.	Argumentative essay:	features of the argument; syllogism, inductive and deductive logic; pitfalls to avoid (e.g fallacy of premise, middle term and conclusive, over-generalisation etc);



- organizing the essay in four paragraphs (introduction, reputation of opposing views, presentation of main points, conclusion); examples of argumentative essays; possible essay.
3. Descriptive essay: To be viewed as scientific writing, use (e.g. to give objective accounts, difficulties (e. g choice of appropriate vocabulary etc), organization of paragraphs each with a theme paragraph unit.
 4. Expository essay: Purpose (explanation of concepts), uses for abstract and philosophical writing organization emphasizing them and unit or logic.
 5. Report essay: Writing minutes of meetings and reports practice in reported speech and passive voice coding or numbering of minutes.
 6. Language and literature: What is fiction? Literary forms using a least 2 different novels to explain character, plot, theme lesson (if any language forms).
 7. Language And literature: Continues as in 6 above as need be.
 8. The term paper: Nature and use, choosing a topic;



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| | organization, notes and bibliography. Actual term paper based on novels read or other relevant theme. |
| 9. Acquisition of information: | Use of library, library services and organization; library stock; catalogue; classification, reference sources. |
| 10. Acquisition of information: | Use of reference and index cards, reference and bibliography |
| 11. Speech practice: | Differences between phonetic and normal Orthography; practice in difficult phoneiness. |
| 12. Speech practice: | Oval delivery and practice; speech writing and delivery. |
| 13. Revision: | Summary, revision, submission of term paper and exams. |

Course Approach

1. Introduction course shall be by lectures supplemented with tutorials. Assignments and projects shall be given from time to time and shall account for 20 percent of the final evaluation of the achievement of the course objectives.
2. Regular students attendance at lectures and tutorials is compulsory. A list of registered students in the course shall be maintained and roll calls carried out from time to time.
3. Students are expected to make their notes during lectures and supplement with private study of recommended text books,



reference books, periodicals and other reading materials as may be directed from time to time by the lecturer(s).

4. Course valuation shall be by either essay questions or objectives questions or objectives questions or combination of both or semi-essay semi-objective type questions.

Unit	Theme	Content of Theme
1.	General Introduction:	Review of previous programme; overview of present course; essay content organization etc.
2.	Argumentative essay:	Features of the argument; syllogism, inductive and deductive logic; pitfalls to avoid (e. g fallacy of premise, middle term and conclusion, over-generalisation etc); organizing the essay in four paragraphs (introduction, reputation of opposing views presentation of main points, conclusion); examples of argumentative essays; possible essay.
3.	Descriptive essay:	To be viewed as scientific writing; use (e. g to give objective accounts), difficulties (e. g choice of appropriate vocabulary etc), organisation of paragraphs each with a theme; paragraph unit.
4.	Expository essay:	Purpose (explanation of concepts), uses for abstract and philosophical writing



- | | |
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| | organization emphasizing them and unit or logic. |
| 5. Report writing: | Writing minutes of meetings and reports practice in both reported speech and passive voice, coding or numbering of minutes. |
| 6. Language and literature: | What is fictions? Literary forms using at least 2 different novels to explain character, plot, theme lesson (if say language forms). |
| 7. Language and literature: | Continues as in 6 above as need be. |
| 8. The term paper: | Nature and use, choosing a topic; organization, notes and bibliography. Actual term paper based on novels read or other relevant theme. |
| 9. Acquisition of information: | Use of library, library services and organization, library stock; catalogue; classification, reference sources. |
| 10. Acquisition of information: | Use reference and index cards, reference and bibliography. |
| 11. Speech practice: | Differences between phonetic and normal orthography; practice in difficult phoniness. |
| 12. Speech practice: | Oral delivery and practice; speech writing and delivery. |
| 13. Revision: | Summary, revision, submission of term |



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paper and exams.



Course Approach

1. Instruction: a course shall be by lectures supplemented with tutorial. Assignments and projects shall be given from time to time and shall account for 20 percent of the final evaluation of the achievement of the course objectives.
2. Regular students attendance at lectures and tutorials is compulsory. A list of registered students in the course shall be maintained and roll calls carried out from time to time.
3. Students are expected to make their notes during lectures and supplement with private study of recommended text books, reference books, periodicals and other reading materials as may be directed from time to time by the lecture(s).
4. Course valuation shall be by either essay questions or objectives questions or combination of both or semi-essay semi-objectives type questions.

GST 205: CITIZENSHIP EDUCATION II (2) UNITS

Goal of Course

The course is set out to teach and foster in the minds of students the knowledge of Nigerian political institutions and structures; democratic principles and attitudes; nationalism and patriotism; discipline and good environmental habits.

Course Objectives

The course is designed to enable students accomplish the following:

1. Understand the workings of government political parties elections.



2. Demonstrate knowledge of the arms of government and the conditions for their efficient functioning.
3. Understand constituted authority, and its role in the organization of society and the need for subjection to authority.
4. Understand national identity and its expression through symbols, heroic and patriotic acts and the bestowment of national honours and merit awards.
5. Know and appreciate the importance of national ethnics and discipline in national life.
6. Understand the need for and the ways of environmental protection and the activities of environmental protection agencies at federal, state and local levels.

Course History

As stated earlier the two courses on Citizenship Education – GST 105 and GST 107 found their way into the General Studies curriculum in tertiary education institutions in Nigeria from the 1992/93 academic session based on a directive from the federal government in 1991 to the effect that Citizenship Education should be mandatorily taught to all tertiary students in Nigeria for the effective mobilization of the students to achieve the broad national development objectives of Nigeria.

Course Structure

The course is structured and programmed to be taught as indicated below:

Unit	Theme	Content of Theme
1.	Introduction	Overview of the philosophy and scope of Citizenship Education II.
2.	Government,	Need for government, attributes of



- political parties and elections: government; electoral system, role and importance of civil service, Political parties, interest groups, public opinions and propaganda in elections, need for free and fair election.
3. Arms of government: Functions of the various arms of government legislature, executive and judiciary at Federal, State and Local Government levels; relationship among the three arms of government; principles of “Separation of power” and “Checks and Balance” in government; Independence of Judiciary” election/appointment and removal of the government; Code of conduct for Public officers, accountability of public functionaries, the mass media as an eye on government and its performance so far.
4. Constituted Authority: meaning of constituted authority; types of constituted authority and their differences; meaning of bureaucracy, its characteristics, advantages; forms of delegated authority in modern state; distinction between power and authority; forms and effects of abuse of power and remedies of power; “leadership” and



- “follower ship” and the role of leaders and followers in nation building; qualities of good leaders and good followers
5. National identity: Need for the ways of preserving national identity; role and significance of national symbols; contributions of selected heroes and heroines towards the development of Nigeria; various culture groups in Nigeria and the need to preserve Nigeria’s indigenous cultures; cultural diversity and national integration/nation building.
6. National ethics and discipline in national life: Explanation of the need for national ethnics; relating to various aspects of national ethics to national development; causes and consequences of indiscipline in the nation; methods used by public agencies in the control of indiscipline; need to maintain the right attitude towards public property.
7. Environmental Protection: Concept of environment; components of the Nigerian environment on human development; ways of reducing over exploitation of the environment; different forms, causes and effects of population in the environment; different methods used for the conservation of the environment;



importance and international conservation agencies.

8. Revision: Summary, revision and examination.

Course Approach

1. Instruction in the course shall be by lectures supplemented with tutorials. Assignment and projects shall be given from time to time and shall account for 20 percent of the evaluation of the achievement of the objectives.
2. Regular students' attendance at lectures and tutorials is compulsory. A list of registered students in the course shall be maintained and roll calls carried out from time to time.
3. Students are expected to make their notes during lectures and supplement with private study of recommended text books, reference books, periodicals and other reading materials as may be directed from time to time by the lecture(s).
4. Course valuation shall be by either essay questions or objectives questions or combination of both or semi-essay semi-objectives type questions.

GST 206: ENTREPRENEURIAL DEVELOPMENT (2) UNITS

Entrepreneurial theories interpersonal characters and behavioural traits of entrepreneurs. Financial aspects of entrepreneurs. Financial aspects of entrepreneurship in which business success is most commonly reflected. External aspects of entrepreneurship. Legal forms of Business. Sources of Funds, Planning the business. Purchasing and Supply. Insurance and entrepreneurship. Feasibility Studies. Time management. Stress and Burnout. Budgeting, Team



Building. Conflicts and Conflict resolution. Project evaluation. In addition to the lectures, experts may be invited from inside and outside the University system to deliver talks from time to time.

GST 207: HUMANTIES I (2) UNITS

STUDY I

HUMANITIES, REGION AND DEVELOPMENT –DR S.C CHUTA –

Definition of the subject matter

- ❖ An ancient civilization.
- ❖ The middle Ages.
- ❖ Medieval Scholarsticism.
- ❖ The Renaissance
- ❖ Humanism and scientific Revolution

STUDY II

“MAN KNOW THYSELF” (MAN: Nature and Progress)

- Chukwadozie Charles . N.

General introduction of the topic – Throughout history man has made tremendous efforts to know himself, understand nature, tap, organize and manipulate the force around him and within himself with the aim of self-actualization and general progress.

Characteristics of Man as an Animal

- xii) Biological nature of man
- xiii) Rationality
- xiv) Auto-Transcendence
- xv) Home-Faber-man a tool-wielding being



- xvi) Man-a social being
- xvii) Man-a cultural being
- xviii) Historicity
- xix) Home Volens: Man a being gifted with freedom
- xx) Man: An end in Himself
- xxi) Man: An Aesthetic being
- xxii) The contemporary man and his Estrangement.

STUDY III

Logic and civilization – By Obiora Anichebe – Introduction – Man originally weeded in the state of nature, no society, no state and no government. He was bereft of ideas of communal wrong and was at the mercy of the vagaries of nature. This was man in his primitive nature. Later, however, man began to form societies so as to reap the fruits of gregarious life and overcome the deficiencies of living in the state of nature.

- Definition, scope and importance of logic
 - Brief History of logic
 - Terminologies in logic
- (b) Proposition (b) Conclusion (c) Premises (d) Syllogism
(e) Argument (f) Validity (g) Truth (h) Axioms (i) Inference
- Deductive and inductive Argument
 - Fallacy

Types of Fallacies

- 1). Argumentum and Ignorantium
- 2). Argumentum and Baculum (appeal to force)
- 3). Argumentum and Hominem



- 4). Genetic fallacy
- 5). The quoque (you are Another)
- 6). Argumentum and verecundiam (appeal to authority)
- 7). Argument and miseriodiam (appeal to pity)
- 8). Argumentum and populum (appeal to the people)
- 9). Fallacy of false cause (Non-causa Procausa)
- 10). Fallacy of Accident
- 11). Fallacy of converse Accident (Hasty Generalization)
- 12). Ignoratio Elench (irrelevant conclusion)

- 13). Petitio principii (Bagging the question

- 14). Fallacy of complex questions

- 15). Fallacies of ambiguity (double meaning) (a) Equivocation
(b) Amphiboly (c) Account

- 16). Fallacy of Decision

- Logic as the propeller of civilization

SECOND SEMESTER YEAR TWO

ANA 202: GROSS ANATOMY II (2) UNITS

Inguinal region, Gluteal region, front and back of the thigh, poputeal region, flexor and extensor compartment of the leg., the foot and its arches. Blood supply and innervation of the lower limb. Joint of the lower limb.



CPM 202: INTRO. TO COMPUTER (2) UNITS

History and development of Computer technology. The why and How of computers. Computer types, Analog, Digital, and Hybrid, Central preparation equipment. Key punch, sorter, etc. Data transmission, nature, speed and detection. Data capture and design. The programming process. Problem definition, flow charting and decision table.

MLS 202: SOME ASPECT OF GENETICS IN MEDICINE (3) UNITS

STA 204: STATISTICS FOR AGRIC AND BIOLOGY SC II (2) UNITS

MLS 212: BASIC BIOCHEMISTRY II (2) UNITS

Solutions, Osmotic pressure, Acids and bases, pH and buffers, chemical kinetics.

CHE 244: EXPERIMENTAL ANALYTICAL CHEMISTRY (1) UNIT

CHE 252: ANALYTICAL CHEMISTRY (2) UNITS

Theory of errors, statistical treatment of data. Theory of sampling, chemical methods of analysis, including volumetric, gravimetric and physico-chemical methods. Aqueous solutions, introduction to separation methods of analysis.

MLS 252: BASIC MICROBIOLOGY I (3) UNITS

Solutions, Osmotic pressure, Acids and bases, pH and buffers, chemical kinetics.



FIRST SEMESTER YEAR THREE

MLS 301: LABORATORY POSTING I (2) UNIT

Students are posted to medical laboratories for on-the-job training under the supervision of qualified medical laboratory scientists for at least 3 days weekly for the entire semester and the whole of the long vacation and scored log book record are kept for each students per posting.

MLS 303: PRACTICAL EXERCISE I (1) UNIT

Clinical Chemistry: Titrations and volumetric analysis. Determination of bicarbonate in plasma. Percentage purity of carbonate. Determination of the composition of mixture of salts, soecific gravity. Urinary – urobilinogen, biliruben, myoglobin, cysteine, protein. Bence-Jones protein, blood, reducing substances, ketone bodies. Spectroscopy of plasma and urine and CSF analysis.

Haematology/BGS: Blood films, blood cell count and Hb estimation. Absolute values, Osmotic fragility, antiserum titration, antibody screening and donor screening. Secretor status. Med. Microbiology/Parasitology: microbiology films and staining techniques – gram stain, Ziehl Ncelsen stain, capsule and negative staining procedures. Wet preparation, motility test. Media preparation and culture plate reading. Recognition of different types of haemolysis, and sensitivity testing. Use of autoclave. Wet mount for identfication of trophozoites, cysts of different protozoa and helminthes in stool samples. Thick films for malaria, microfilaria and



trypanosome parasites. Staining techniques – Giemsa, Wright, Fields and Leishmann stains. Concentration techniques for stool and sputum for ova and cysts.

Urine microscopy.

Histopathology: Preparation of fixatives, removal of formulin pigments, testing of end point of decalcification using chemicals. General tissue staining by Hematoxylin/Eosin stains. Demonstration of elastic and collagen fibres. Prussian blue (Perls) reaction for iron in tissues. Gram and ZN staining methods. Use of automatic tissue processor and microtome

MLS 311: CLINICAL CHEMISTRY (3) UNITS

Traditional and S.I. units in clinical chemistry; reference values. Gastric function tests, agents for gastric stimulation. Ward procedures and laboratory investigations of gastric secretion. Intestinal tests; digestion and absorption, causes of malabsorption. Laboratory investigation of malabsorption. Renal function tests, functions of the kidney. Measurement of renal plasma flow, glomerular filtration rate – creatinine clearance, concentration and dilution tests; urinary acidification test, urinespecific gravity/osmolality, dye excretion test. Water and electrolyte metabolism. Acid/base balance; and causes of acidosis and alkalosis – blood buffers. Transport of blood gases; assessment of acid/base status. Lipids – definition and types of lipids. Formulation of free fatty acids, ketone bodies and lactate. Measurement of plasma lipids and lipoproteins, plasma proteins and physiological functions-factors affecting synthesis and catabolism.



Method for determining total protein in serum. Acarbohydrate metabolism blood glucose homeostasis, hyperglycemia-diabetes mellitus-its causes and investigation.

MLS 321: MEDICAL LAB. HEAMTOLOGY (3) UNITS

Origin development and functions of blood cells, synthesis and breakdown of haemoglobin. Methods of haemoglobin estimation. Method of cell counting. Absolute values, introduction to homeostatus. Principle and mode of action of common anticoagulants. Principle and components of haematological stains. Simple test used in blood coagulation. Blood films – normal and abnormal. Practical classes.

MLS 331: MEDICAL LAB. (3) UNITS

General introduction to medical laboratory subjects, namely; Clinical chemistry/Chemical Pathology, Haematology/Blood Group Serology, Medical Microbiology/Parasitology, Histopathology and Immunology. Specimen collection, reception and registration, storage and disposal of samples, Specimen bottles – preparation, uses, storage and care. Microscopy and microtomy, use and care of microscopes, Sterilization – principles and techniques. Glassware – care and maintenance. Refrigeration – principles, uses and care. Handling of laboratory animals.

MLS 313: HORMONES AND LAB. INVESTIGATION OF REPRODUCTIVE ENDOCRINE DEFECT (3) UNITS

MLS 351: BASIC MICROBIOLOGY (3) UNITS



Scope of microbiology, historical approach etc. Classification and non-enclosure of micro-organisms. Introduction to the microbial world; introduction to bacteriology, mycology virology and phraseology (the protozoans).

Bacteriology: The general properties of bacterial structure, growth and reproduction. Requirements and methods including serology.

Viruses: General properties, structures and biology of viruses. Classification – various methods, reproduction, resistance, pathology and purification of viruses. Propagation of viruses. Immunity and diagnosis of viral interactions and identification.

Fungi: Morphology, groups and classification. Types of lesion and types of mycoses. Growth requirements. Characteristics and general features of fungi and their diseases. Identification and demonstration in the laboratory.

SECOND SEMESTER YEAR THREE

CMP 302: COMPUTER APPLICATION (3) UNITS

Aim: It is assumed the student has taken an introductory course in Computers. The student should be able to interact with a computer by means of programming in BASIC and be able to operate a Computer by using the DIDK Operation System. The student will also be able to understand a simple Spreadsheet as the means of presenting financial statements and other Quantitative means of presenting reports and rendering returns.

a) Review of the introduction exercises and topics.



- b). Definition of BASIC programming.
 - 1.1 Language Processor Interpreters, Assemblers and Compilers
 - 1.2 Line numbers, Statements, Assignment Statements.
 - 1.3 Statements that predefine data and data storage.
 - 1.4 reserved words in BASIB memory variables and variable names. Comments and Remarks in BASIC.
- 2. Data types - Definition
 - 2.1 Variables of various data types
 - 2.2 String variable and characters
 - 2.3 Boolean variable and Operations or Operations in BASIC
 - 2.4 Files, program files and data files
 - 2.5 Control statements – GOTO etc.
 - 2.6 PRINT Statement, INPUT Statement, READ Statements, Data Statements.
 - 2.7 Built-in Functions, Defined functions, Random Numbers.
- 3. Control Structures
 - FOR – NEXT Statements
 - IF – ELSE – THEN Statements
 - GOTO, IF – THEN
 - Boolean expressions – equal, Less than, Greater than, NOT equal etc.
 - Loops of various types, Nested Loops
 - Alphanumeric values Subroutines
 - Arrays and subscripts
 - 4.0 Electronic, Spreadsheets – Definition
 - Uses of Spreadsheets



Principles and Concepts of Spreadsheets

Facilities offered by the Spreadsheets

Examples of Spreadsheets.

5.0 Disk Operating system

Definition

Commands and Mode of Operation

Software – Hardware features.

MLS 302: LABORATORY POSTING (2) UNITS

Students are posted to the various laboratories for on-the-job bench training in the different analytical techniques used in the departments. Students will participate in the routine operation of the laboratory. Third logbook records per bench are kept for each student per posting.



MLS 304: PRACTICAL EXERCISE II (1) UNIT

Clinical Chemistry: Titrations and volumetric analysis. Determination of bicarbonate in plasma. Percentage purity of carbonate. Determination of the composition of mixture of salts, specific gravity. Urinary – urobilinogen, bilirubin, myoglobin, cysteine, protein. Bence-Jones protein, blood, reducing substances, ketone bodies. Spectroscopy of plasma and urine and CSF analysis.

Haematology/BGS: Blood films, blood cell count and Hb estimation. Absolute values, Osmotic fragility, antiserum titration, antibody screening and donor screening. Secretor status. Med. Microbiology/Parasitology: microbiology films and staining techniques – gram stain, Ziehl Nelsen stain, capsule and negative staining procedures. Wet preparation, motility test. Media preparation and culture plate reading. Recognition of different types of haemolysis, and sensitivity testing. Use of autoclave. Wet mount for identification of trophozoites, cysts of different protozoa and helminthes in stool samples. Thick films for malaria, microfilaria and trypanosome parasites. Staining techniques – Giemsa, Wright, Fields and Leishmann stains. Concentration techniques for stool and sputum for ova and cysts.

Urine microscopy.

Histopathology: Preparation of fixatives, removal of formolin pigments, testing of end point of decalcification using chemicals. General tissue staining by Hematoxylin/Eosin stains.



Demonstration of elastic and collagen fibres. Prussian blue (Perls) reaction for iron in tissues. Gram and ZN staining methods. Use of automatic tissue processor and microtome

MLS 306: BASIC PHARMACOLOGY AND TOXICOLOGY (2) UNITS

MLS 315: CLINICAL CHEMISTRY II (2) UNITS

MLS 322: BLOOD GROUP SEROLOGY II (2) UNITS

Blood groups, other blood groups e.g. MNS, Duffy, Kell, Kidd. Grouping techniques and antibody screening, clinical significance, secretor status. Antenatal serology – screening and titration (Quantitation). Compatibility procedures – different methods, Advantages and disadvantages. Blood transfusion reactions – causes and types;

Investigation and risks attendant in blood transfusion reaction – diseases, anaphylactic haemolytic and allergic reactions. VDRL. Compatibility – advantages and disadvantages.

MLS 332: MEDICAL LAB. HISTOPATHOLOGY (2) UNITS

Principles of histochemical methods. DNA demonstration by Feulgen techniques. Silver impregnation methods. Genes and genetic code. Tissue culture technique, chromosome analysis. Autoradiography – definition and principle. Organization of a medical museum – techniques e.g. Dawson's method, principle of photography, macro photography, preparation of specimens for macro photography. Cytological normal cells. Histology of tissues. Atypical and malignant cells. Collection of cytological smears and processing and screening.



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Principle of general pathology, systemic pathology, gastrointestinal tract, urogenital and cutaneous. Principle of electron microscopy and materials for electron microscopy. Respiratory nephropathy associated with infestations and infections. Embalming techniques and demonstrations.



MLS 342: BASIC IMMUNOLOGY (2) UNITS

The historical background of immunology. Classification of immunity. Development and structure of cells in the immune system. Cellular interaction in the expression and regulation of immunity.

MLS 352: MEDICAL LAB. MICROBIOLOGY (2) UNITS

Media preparation. Pure culture technique, Isolation identification and growth of microorganisms. Selective media and differential staining techniques. Operation of specialized equipment for microbial studies.

FIRST SEMESTER YEAR FOUR

MLS 401: LABORATORY TITLE III (2) UNITS

MLS 403: PRACTICAL POSTING III (1) UNIT

Students are posted to the various laboratories for on-the-job bench training in the different analytical techniques used in the departments. Students will participate in the routine operation of the laboratory. Third logbook records per bench are kept for each student per posting.

MLS 411: BIOMEDICAL INSTRUMENTATION (3) UNITS

Instrument aspects of qualitative and quantitative analysis – theory and practice of some common analytical techniques: colorimetry, spectrofluorimetry, flame photometry, conductometry, polarography, coulometry etc. Osmometry, reflectometry, Turbidometry, pH measurement by ion specific electrodes. Separation techniques



including electrophoresis, chromatography, dialysis, solvent extraction centrifugation, ultra centrifugation and immunoelectrophoretic techniques and immunoassays. The practice of some common analytical techniques including tissue processing, microscopy and other basic microbiological equipment. Principles and working of haematological equipment other applied techniques in the medical laboratory with emphasis on general medical laboratory instrumentation.

MLS 421: MEDICAL LAB. HEAMTOLOGY II (4) UNITS

Identification of blood parasites. The spleen and splenomegaly syndromes. Drugs, chemicals, and blood. Blood in infancy, childhood and pregnancy. Heredity and blood disorders. Blood in microbial infections. Anaemia in community, classification, mechanism and investigations in immunohaematological disorders – autoimmune haemolytic anaemia, thrombocytopenia, leucopenia, system and disseminated lupus erythromatosus, rheumatoid arthritis, etc. Myelomatosis and other paraproteinaemia.

MLS 431: MEDICAL LAB. HISTOPATHTOLOGY (4) UNITS

Principles of histochemical methods. DNA demonstration by Feulgen techniques. Silver impregnation methods. Genes and genetic code. Tissue culture technique, chromosome analysis. Autoradiography – definition and principle. Organization of a medical museum – techniques e.g. Dawson's method, principle of photography, macro photography, preparation of specimens for macro photography. Cytological normal cells. Histology of tissues. Atypical and malignant



cells. Collection of cytological smears and processing and screening. Principle of general pathology, systemic pathology, gastrointestinal tract, urogenital and cutaneous. Principle of electron microscopy and materials for electron microscopy. Respiratory nephropathy associated with infestations and infections. Embalming techniques and demonstrations.

MLS 451: MEDICAL LAB. MICROBIOLOGY II (4) UNITS

Media preparation. Pure culture technique, Isolation identification and growth of microorganisms. Selective media and differential staining techniques. Operation of specialized equipment for microbial studies.

SECOND SEMESTER YEAR FOUR

MLS 402: LABORATORY POSTING (3) UNITS

Students are posted to the various laboratories for on-the-job bench training in the different analytical techniques used in the departments. Students will participate in the routine operation of the laboratory. Third logbook records per bench are kept for each student per posting.

MLS 404: PRACTICAL EXERCISE II (1) UNIT

Clinical Chemistry: Titrations and volumetric analysis. Determination of bicarbonate in plasma. Percentage purity of carbonate. Determination of the composition of mixture of salts, soecific gravity. Urinary – urobilinogen, biliruben, myoglobin, cysteine,



protein. Bence-Jones protein, blood, reducing substances, ketone bodies. Spectroscopy of plasma and urine and CSF analysis.

Haematology/BGS: Blood films, blood cell count and Hb estimation. Absolute values, Osmotic fragility, antiserum titration, antibody screening and donor screening. Secretor status. Med.

Microbiology/Parasitology: microbiology films and staining techniques – gram stain, Ziehl Ncelsen stain, capsule and negative staining procedures. Wet preparation, motility test. Media preparation and culture plate reading. Recognition of different types of haemolysis, and sensitivity testing. Use of autoclave. Wet mount for identification of trophozoites, cysts of different protozoa and helminthes in stool samples. Thick films for malaria, microfilaria and trypanosome parasites. Staining techniques – Giemsa, Wright, Fields and Leishmann stains. Concentration techniques for stool and sputum for ova and cysts.

Urine microscopy.

Histopathology: Preparation of fixatives, removal of formulin pigments, testing of end point of decalcification using chemicals. General tissue staining by Hematoxylin/Eosin stains. Demonstration of elastic and collagen fibres. Prussian blue (Perls) reaction for iron in tissues. Gram and ZN staining methods. Use of automatic tissue processor and microtone

MLS 412: CLINICAL CHEMISTRY III (3) UNITS

MLS 422: BLOOD GROUP SEROLOGY II (2) UNITS



Leucocyte and platelet antigens and antibodies. National blood transfusion service. Preparation of commercial quantities of polyclonal antisera. Principles, uses, and techniques of producing monoclonal antibodies. Types of blood substitutes and preservation. WHO standard in BGS. Quality assurance in BGS. Red cell membrane structure in relation to blood group antigen locations.

MLS 406: HOSPITAL MANAGEMENT (3) UNITS

Principles and functions of management, Staff/Management relations. Stock control, record keeping. Management and administrative practices. Ecology of administration. Inventory and reagent quality control and budgeting. Medico-legal aspects of medical laboratory sciences. Professional ethics and laboratory planning. Theory and practice of quality control – setting up quality control, various methods of quality control; factors affecting quality of control.

MLS 408: RESEARCH METHODOLOGY (2) UNITS

Introduction to research methodology. Collection of literature review articles. Protein definition, sampling technique, experimental designs of medical public health studies. Questionnaire design and collection, analysis, interpretation and utilization of research findings. The role of research in health and social welfare. The need for institutional and governmentalethical clearance for some research projects. Art of scholarly publications and instructional design.

MLS 442: IMMUNOLOGY IMMUNOCHEMISTRY (3) UNITS



Immunoglobulins – structure and function. Gene organization and assembly. Mediators of cellular immunity. Phagocytic cells. Chemotaxis and effector function of macrophages and granulocytes. The complement system. Laboratory methods of detection of antigens and antibodies. Autoimmunity, tissue and graft rejections, immunotolerance, self and non-self. Histocompatibility, transplantation, tumor immunology – Hypersensitivity etc.

MLS 452: MEDICAL PARASITOLOGY ENTROLOGY (3) UNITS

FIRST SEMESTER YEAR FIVE

MLS 501: LABORATORY V (3) UNITS

Review of body system, systematic review of relevant instruments/equipment normally encountered in physiology experiments, Handling of laboratory animals

MLS 505: GENERAL LAB. PRACTICE (4) UNITS

Students are posted to the various laboratories for on-the-job bench training in the different analytical techniques used in the departments. Students will participate in the routine operation of the laboratory. Third logbook records per bench are kept for each student per posting.

MLS 591: SEMINAR (2) UNITS

Presentation of papers by each student on approved topic to a departmental colloquium. This seminar course is intended to train students in the oral presentation of specific papers and make them to



be critically aware of the current literature. Each presentation will be for about 10 – 20 minutes followed by general discussion.

MLS 511: CLINICAL CHEMISTRY

MLS 521: HEATOLOGY AND BLOOD TRANSFUSION SC (4) UNITS

MLS 531: MEDICAL LAB. HISTOPATHOLOGY (4) UNITS

Principles of histochemical methods. DNA demonstration by Feulgen techniques. Silver impregnation methods. Genes and genetic code. Tissue culture technique, chromosome analysis. Autoradiography – definition and principle. Organization of a medical museum – techniques e.g. Dawson's method, principle of photography, macro photography, preparation of specimens for macro photography. Cytological normal cells. Histology of tissues. Atypical and malignant cells. Collection of cytological smears and processing and screening. Principle of general pathology, systemic pathology, gastrointestinal tract, urogenital and cutaneous. Principle of electron microscopy and materials for electron microscopy. Respiratory nephropathy associated with infestations and infections. Embalming techniques and demonstrations.

MLS 541: MEDICAL LAB IMMUNOLOGY (4) UNITS



MLS 551: MEDICAL LAB. MICROBIOLOGY (4) UNITS

Media preparation. Pure culture technique, Isolation identification and growth of microorganisms. Selective media and differential staining techniques. Operation of specialized equipment for microbial studies.

SECOND SEMESTER YEAR FIVE

MLS 502: LABORATORY POSTING VI (3) UNITS

Students are posted to the various laboratories for on-the-job bench training in the different analytical techniques used in the departments. Students will participate in the routine operation of the laboratory. Third logbook records per bench are kept for each student per posting.

MLS 504: PRACTICAL EXERCISE V (1) UNIT

Clinical Chemistry: Titrations and volumetric analysis. Determination of bicarbonate in plasma. Percentage purity of carbonate. Determination of the composition of mixture of salts, soecific gravity. Urinary – urobilinogen, biliruben, myoglobin, cysteine, protein. Bence-Jones protein, blood, reducing substances, ketone bodies. Spectroscopy of plasma and urine and CSF analysis.

Haematology/BGS: Blood films, blood cell count and Hb estimation. Absolute values, Osmotic fragility, antiserum titration, antibody screening and donor screening. Secretor status. Med. Microbiology/Parasitology: microbiology films and staining techniques – gram stain, Ziehl Ncelsen stain, capsule and negative



staining procedures. Wet preparation, motility test. Media preparation and culture plate reading. Recognition of different types of haemolysis, and sensitivity testing. Use of autoclave. Wet mount for identification of trophozoites, cysts of different protozoa and helminthes in stool samples. Thick films for malaria, microfilaria and trypanosome parasites. Staining techniques – Giemsa, Wright, Fields and Leishmann stains. Concentration techniques for stool and sputum for ova and cysts.

Urine microscopy.

Histopathology: Preparation of fixatives, removal of formulin pigments, testing of end point of decalcification using chemicals. General tissue staining by Hematoxylin/Eosin stains. Demonstration of elastic and collagen fibres. Prussian blue (Perls) reaction for iron in tissues. Gram and ZN staining methods. Use of automatic tissue processor and microtone

MLS 592: RESEARCH PROJECT (6) UNITS

A supervised research project on an approved topic to be undertaken by each student for partial fulfillment of the B. MLS degree requirements. Assessment of the project would be by both defense and grading of the project content.

IN ADDITION TO THE ABOVE MENTIONED COURSE STUDENT MUST CHOOSE TWO COURSES OF 4 UNITS EACH FROM THE FOLLOWING

MLS 512: CHEMICAL CHEMISTRY (4) UNITS



MLS 513: HEAMATOLOGY AND BLOOD TRANSFUSION SC (4) UNITS

MLS 514: MEDICAL LAB. HISTOPATHOLOGY (4) UNITS

Principles of histochemical methods. DNA demonstration by Feulgen techniques. Silver impregnation methods. Genes and genetic code. Tissue culture technique, chromosome analysis. Autoradiography – definition and principle. Organization of a medical museum – techniques e.g. Dawson's method, principle of photography, macro photography, preparation of specimens for macro photography. Cytological normal cells. Histology of tissues. Atypical and malignant cells. Collection of cytological smears and processing and screening. Principle of general pathology, systemic pathology, gastrointestinal tract, urogenital and cutaneous. Principle of electron microscopy and materials for electron microscopy. Respiratory nephropathy associated with infestations and infections. Embalming techniques and demonstrations.

MLS 515: MEDICAL LAB. IMMUNOLOGY (4) UNITS

MLS 516: MEDICAL LAB. MICROBIOLOGY (4) UNITS

Media preparation. Pure culture technique, Isolation identification and growth of microorganisms. Selective media and differential staining techniques. Operation of specialized equipment for microbial studies.