

100 Level First Semester

Course Code	Course Title	Units	Status	LH	PH
GST 111	Communication in English	2	C	15	45
COS 111	Introduction to Computer Science	3	C	30	45
MTH 111	Elementary Mathematics I	2	C	30	-
STA 111	Descriptive Statistics	3	C	45	-
STA 112	Probability 1	3	C	45	-
NSUK-STA 113	Introduction to Project planning and network Analysis	2	E	15	45
NSUK-STA 114	Introduction to Applied Operation Research	2	E	15	45
	Total	17			

100 Level Second Semester

GST 121	Nigerian Peoples and Culture	2	C	30	
MTH 121	Elementary Mathematics II	2	C	30	-
STA 121	Statistical Inference I	3	C	45	-
STA 122	Statistical Computing I	3	C	15	90
NSUK-STA 123	Industrial Statistics	2	E	15	45
NSUK-STA 124	Introduction to statistical consulting, collaboration and interdisciplinary statistical Analysis	2	E	15	45
NSUK-STA 125	Basic Methods of Demography and Population Processes	2	E	15	45
	Total	16			

Course Contents and Learning Outcomes

100 level

GST 111: Communication in English

(2units C: LH 30)

Learning Outcomes

At the end of this course, students should be able to:

1. identify possible sound patterns in English language.
2. list notable language skills.
3. classify word formation processes.
4. construct simple and fairly complex sentences in English.
5. apply logical and critical reasoning skills for meaningful presentations.
6. demonstrate an appreciable level of the art of public speaking and listening; and 7. write simple and technical reports.

Course Contents

Sound patterns in English language (vowels and consonants, phonetics and phonology). English word classes (lexical and grammatical words, definitions, forms, functions, usages, collocations). Sentence in English (types: structural and functional, simple and complex); grammar and usage (tense, mood, modality and concord, aspects of language use in everyday life). Logical and critical thinking and reasoning methods (logic and syllogism, inductive and deductive argument and reasoning methods, analogy, generalisation and explanations); ethical considerations; copyright rules and infringements; writing activities: (pre-writing, writing, post writing, editing and proofreading; brainstorming, outlining, Paragraphing, types of writing, summary, essays, letter, curriculum vitae, report writing, note making etc. mechanics of writing). Comprehension Strategies: (reading and types of reading, comprehension Skills, 3RsQ); information and communication technology in modern language learning. Language skills for effective communication. Major word formation processes. Writing and reading comprehension strategies. Logical and critical reasoning for meaningful presentations. Art of public speaking and listening; report writing.

GST 112: Nigerian Peoples and Culture

(2 units C: LH 30)

Learning Outcomes

At the end of the course, students should be able to:

1. analyse the historical foundation of the Nigerian culture and arts in pre-colonial times;
2. list and identify the major linguistic groups in Nigeria;
3. explain the gradual evolution of Nigeria as a political unit;
4. analyse the concepts of Trade, Economic and Self-reliance status of the Nigerian peoples towards national development;
5. enumerate the challenges of the Nigerian State towards Nation building;
6. analyse the role of the Judiciary in upholding people's fundamental rights;
7. identify acceptable norms and values of the major ethnic groups in Nigeria; and
8. list and suggest possible solutions to identifiable Nigerian environmental, moral and value problems.

Course Contents

Nigerian history, culture and art up to 1800 (yoruba, hausa and igbo peoples and culture. Peoples and culture of the ethnic minority groups). Nigeria under colonial rule (advent of colonial rule in Nigeria. Colonial administration of Nigeria). Evolution of Nigeria as a political unit (amalgamation of Nigeria in 1914; formation of political parties in Nigeria; Nationalist movement and struggle for independence). Nigeria and challenges of nation building (military intervention

in Nigerian politics; Nigerian Civil War). Concept of trade and economics of self-reliance (indigenous trade and market system; indigenous apprenticeship system among Nigeria people; trade, skill acquisition and selfreliance). Social justices and national development (law definition and classification. judiciary and fundamental rights; individual, norms and values (basic Nigeria norms and values, patterns of citizenship acquisition; citizenship and civic responsibilities; indigenous languages, usage and development; negative attitudes and conducts. cultism, kidnapping and other related social vices). Re-orientation, moral and national values (The 3R's – reconstruction, rehabilitation and re-orientation; re-orientation strategies: operation feed the nation (OFN); green revolution, Austerity Measures, War Against Indiscipline (WAI), War Against Indiscipline and corruption (WAIC), Mass Mobilization for self-reliance, social justice and economic recovery (MAMSER), national orientation agency (NOA); current socio-political and cultural developments in Nigeria.

COS 111: Introduction to Computing Sciences

(3 Units C: LH 30; PH 45)

Learning Outcomes

At the end of the course, students should be able to:

1. explain basic components of computers and other computing devices;
2. describe the various applications of computers;
3. explain information processing and its roles in the society;
4. describe the Internet, its various applications and its impact;
5. explain the different areas of the computing discipline and its specializations; and
6. demonstrate practical skills on using computers and the internet.

Course Contents

Brief history of computing. Description of the basic components of a computer/computing device. Input/Output devices and peripherals. Hardware, software and human ware. Diverse and growing computer/digital applications. Information processing and its roles in society. The Internet, its applications and its impact on the world today. The different areas/programs of the computing discipline. The job specializations for computing professionals. The future of computing.

Lab Work: Practical demonstration of the basic parts of a computer. Illustration of different operating systems of different computing devices including desktops, laptops, tablets, smart boards and smart phones. Demonstration of commonly used applications such as word processors, spreadsheets, presentation software and graphics. Illustration of input and output devices including printers, scanners, projectors and smartboards. Practical demonstration of the Internet and its various applications. Illustration of browsers and search engines. How to access online resources.

MTH 111: Elementary Mathematics I (Algebra and Trigonometry) (2 Units C: LH 30)

Learning Outcomes

At the end of the course, students should be able to:

1. explain basic definition of set, subsets, union, intersection, complements and use of Venn diagrams;
2. solve quadratic equations;
3. solve trigonometric functions;
4. identify various types of numbers; and
5. solve some problems using binomial theorem.

Course Contents

Elementary set theory, subsets, union, intersection, complements, Venn diagrams. Real numbers, integers, rational and irrational numbers, mathematical induction, real sequences and series, theory of quadratic equations, binomial theorem. Complex numbers, algebra of complex numbers, the Argand diagram. De-Moivre's theorem, nth roots of unity. Circular measure, trigonometric functions of angles of any magnitude, addition and factor formulae.

MTH 121: Elementary Mathematics II (Calculus)

(2 Units C: LH 30)

Learning Outcomes

At the end of the course, students should be able to:

1. identify the types of rules in differentiation and integration;
2. describe the meaning of function of a real variable, graphs, limits and continuity; and
3. solve some applications of definite integrals in areas and volumes.

Course Contents

Function of a real variable, graphs, limits and idea of continuity. The derivative as limit of rate of change. Techniques of differentiation. Extreme curve sketching. Integration as an inverse of differentiation. Methods of integration. Definite integrals. Application to areas, volumes.

STA 111: Descriptive Statistics

(3 Units C: LH 45)

Learning Outcomes

At the end of the course, students should be able to:

1. explain the basic concepts of descriptive statistics;
2. present data in graphs and charts;
3. differentiate between measures of location, dispersion and partition;
4. describe the basic concepts of Skewness and Kurtosis as well as their utility function in a given data set;
5. differentiate rates from ratio and how they are use; and
6. compute the different types of index number from a given data set and interpret the output.

Course Contents

Statistical data. Types, sources and methods of collection. Presentation of data. Tables chart and graph. Errors and approximations. Frequency and cumulative distributions. Measures of location, partition, dispersion, skewness and Kurtosis. Rates, ratios and index numbers.

STA 112: Probability 1**(3 Units C: LH 45)****Learning Outcomes**

At the end of the course, students should be able to:

1. explain the differences between permutation and combination;
2. explain the concept of random variables and relate it to probability and distribution functions;
3. describe the basic distribution functions; and 4. explain the concept exploratory data analysis.

Course Contents

Permutation and combination. Concepts and principles of probability. Random variables. Probability and distribution functions. Basic distributions: Binomial, geometric, Poisson, normal and sampling distributions; exploratory data analysis.

STA 121: Statistical Inference I**(3 Units C: LH 45)****Learning Outcome**

At the end of the course, students should be able to:

1. differentiate population from sample as well as point from interval estimate;
2. test for hypothesis concerning population mean and proportions for large and small samples;
3. compute regression and obtain the fitted line. Likewise, the computation for correlation coefficient well understood; and
4. describe the fundamentals of time series analysis.

Course Contents

Population and samples. Random sampling distributions. Estimation (point and interval) and tests of hypotheses concerning population mean and proportion (one and two large sample cases). Regression and correlation. Elementary time series analysis.

STA 122: Statistical Computing I**(3 Units C: LH 15; PH 90)****Learning Outcomes**

At the end of the course, students should be able to:

1. explain the fundamentals of computer;
2. acquire knowledge of the applications and use of computers and calculators in relation to computing the measures of locations and dispersions;
3. explain the organizations of computations to access, transform, explore, analyse data and produce results; and
4. demonstrate the use of Microsoft excel and the installation of the analysis tool pack.

Course Contents

Introduction to computer: structure, type, uses and applications; computations (using computers and calculators), involving topics in STA111 and 121; organizations of computations to access, transform, explore, analyze data and produce results. Concepts and vocabulary of statistical computing. Microsoft excel and specifically the installation and the utility function of the analysis tool pack.

NSUK-STA 113: Introduction to Project Planning and Network Analysis (2CU, Elective, LH 15, PH 45)

Learning Outcomes

By the end of the course, successful students should be able to:

1. describe a project life cycle, and can skillfully map each stage in the cycle
2. identify the resources needed for each stage, including involved stakeholders, tools and supplementary materials
3. describe the time needed to successfully complete a project, considering factors such as task dependencies and task lengths
4. provide internal stakeholders with information regarding project costs by considering factors such as estimated cost, variances and profits
5. develop a project scope while considering factors such as customer requirements and internal/external goals
6. estimate cost, schedule, list of deliverables and delivery dates.
7. estimate resource for planning projects.

Course Content

Project Planning Management. Monitoring and Evaluation. Project Planning. Project Controlling and Project Control Systems. Seven Principles of Planning By John C. Maxwell. Four Types of Planning for Sustainable Business Success. The Planning Process - An Obvious Non-negotiable to Long-term Success. Role, Responsibilities and Skills. The Project Management Roles. Project Planning and Implementation. Responsibilities of the Project Manager. Management Skills. Monitoring and Evaluation. Project Planning Management, Monitoring And Evaluation. The Cost of Capital Theory. Time Value of Money. Capital Budgeting. Portfolio Management. Discounted Cash Flow Criteria. Planning and decision marking. Forecasting. Scheduling. Production control.

NSUK-STA 114: Introduction to Applied Operations Research (2CU, Elective, LH 15, PH 45)

Learning Outcomes

By the end of the course, successful students should be able to:

1. Define optimization.
2. describe production and logistics planning through a broad range of examples,
3. build models to specific production and logistics problems,
4. analyze and evaluate the solution from a production and logistics problem,
5. utilize operations research techniques in optimizing production and logistics problems,
6. produce mathematical formulations of production and logistics problems and
7. Use optimization software.

Course Content

Introduction to operation research. Linear programming (LP). LP and allocation of resources. Graphical LP solution. Simplex algorithm and Duality. Sensitivity analysis. Transportation and assignment problems. Decision making and analysis. Nonlinear programming. Goal programming formulation. Goal programming algorithms. **Queuing Theory**. Critical Path Method (CPM). Project Evaluation & Review Technique (PERT) method. Sequencing methods. First Come First

Served (FCFS). Shortest Processing Time (SPC). Earliest Due Date (EDD). Use of optimization software.

NSUK-STA 123: Industrial Statistics (2CU, Elective, LH 15, PH 45)

Learning Outcomes

By the end of the course, successful students should

1. Describe the historical of industrial statistics
2. Explain the concept of variability.
3. Enumerate four sources of variability
4. List at least two characteristics of quality
5. Explain two control chart for attribute.
6. List at least three control chart for variables.
7. List four characteristics of control chart.
8. Enumerate area of inspection in industry.
9. Explain the importance of operating characteristics curve in process control.
10. Describe cause and effect analysis.
11. Explain the roles of process capability.

Course Contents

Definitions and history of industrial statistics and statistical quality control. Concept of variability. Sources and causes of variation. Quality and its characteristics. Control chart for attribute. Control chart for variable. Runs Chart. Cumulative sum chart. Sampling inspection for attribute. Sampling inspection for variable. Continuous sampling plan. Acceptance sampling plan. Operating Characteristics (OC) Curve. Causes and effect analysis. Pareto Analysis. Process capability. Product capability.

NSUK-STA 124: Introduction to statistical consulting, collaboration and interdisciplinary statistical Analysis (2CU, Elective, LH 15, PH 45)

Learning Outcomes

By the end of the course, successful students should

1. Describe the concept of statistical consulting
2. List three skills of a good statistical consultant
3. List at least four principles of statistical collaboration
4. explain the ASCCR framework for effective statistical collaboration
5. explain the TEAM-R framework for effective statistical collaboration
6. list the principles of POWER structure in statistical collaborating meeting
7. Apply the principles of statistical collaboration to solve local problem in the university community
8. Explain at least three roles for effective communication in statistical collaboration
9. list at least three advantages of open source software.
10. Explain the capabilities of R in computing for statistical consultant
11. Explain the capabilities of python in computing for statistical consultant.
12. describe at least two advantages of ODK as a means of data collection over the manual method

Course Contents

Introduction to Statistical consulting. Skills needed to be a good consultant. Strategies used by effective statistical consultant. Statistical collaboration. Principles of Statistical collaboration. The concept of interdisciplinary statistical Analysis. The ASCCR framework. The TEAM-R framework. The POWER structure for effective collaboration meeting. The role of effective

communication in statistical collaboration. Statistical mentorship. Open source software and its benefits. Overview of R statistical software. Data visualization and manipulation with R. Overview of python statistical software. Data visualization and manipulation with python. Overview of ODK. Designing and validating an ODK form.

NSUK-STA 125: Basic Methods of Demography and Population Processes(2CU, Elective, LH 15, PH 45)

Learning Outcomes

By the end of the course, successful students should

1. Describe the historical background of Demography
2. List three principles of demography
3. Enumerate four data sources for demographic analysis
4. Identify and explain the concept of population dynamics
5. Explain the concept of vital registration
6. List at least four components of life table calculation
7. Describe measures for fertility and mortality rates.
8. Explain the concept of migration.
9. Describe population projection and forecasting to real life data.

Course Contents

Definitions and history of Demography. Concept of demography. Introduction to principle of demography. Demographic sample survey. Demographic transition. Overview of methods in demography. Population dynamics. Indices of population. Census. Vital registration. Life table calculation. Lee-Carter modelling. Fertility rate. Mortality rate. Migration. Population projection and forecasting. Reproductive rates. Standardization. Application of demography R package to real life data.