DEPARTMENT OF INTEGRATED SCIENCE (BSc. Ed.)

List of Courses	Course Codes	Course Titles	Course Outline	Units	References
1.	IED 231	Foundations in Biological Science I	Living and non-living things, plants and other living things. Nutrition: sources of metabolites, inorganic nutrition. Active and passive uptake, organic nutrition. Enzymes: Properties, composition, types, mechanism of action. Photosynthesis. Animal nutrition: nutrient requirement, methods of obtaining food, Treatment of food, classes of food. Feeding Mechanism Respiration. General organization of the Angiosperm: Variations in the structure of roots, stems, leaves, inflorescence flowers and fruits.	3	Scheiner, S. (2014). Foundations of Biology.Creative Commons. Raven, P. H. (2013). *Biology*. New York, NY : McGraw-Hill.
2.	IED 233	Issues and Curriculum of Integrated Science	The evolution of Integrated science in Nigeria. The concept of science. Characteristics of Unified Science Educator. Integrated science curriculum design and changes. Attitudes towards science. Scientific literacy. Approaches to Teaching Integrated Science. Psychological theories and their applications to Integrated Teaching. The art of scientific investigation, preparation experimentation, chance, hypothesis, imagination, intuition. The social responsibility of the scientist	2	Oludipe, D. (2011). Developing Nigerian integrated science curriculum. *Journal of Social Science and Environmental Management*. 2. 134-145. Michael E.B.,

					David J. M. & Michael C.S. (2009). Integrated Science: New Approaches to Education. 10.1007/978-0-387-84853-2.
3.	IED 235	Algebraic Structures I	Set theory and operations on sets. Relations and Equivalence relations. Mappings and types. Related theorems on mappings. Groups and subgroups, semi groups and monoid, properties of group	3	David. J. (2017). Introduction to Modern Algebra. Retrieved from https://mathcs.clarku.edu/~djoyce/ma225/algebra.pdf
4.	IED 331	General Chemistry I	The Electronic configuration of atoms- S.P.D and orbital i.e the S-block elements Group 1 – Alkali Metals, P – Block Elements Group iii, D-Block Elements – General Prosperities, f-Block Elements the Lanthanides series. - General properties of the Elements, the period tables of elements, groups and periods, ionization, Energy, electron affinity, ionization potential, electro negativity, atomic radius. - Bonding and structure: attainment of a stable configuration, types of bonding ionic bonds, covalent, co-ordinate bonds, double and triple bonds, metallic bonds, double and metallic structures. Hydrogen bonds. Van-der Waals Forces	3	Bruce, A.A. &Patricia, E. (2011). General Chemistry: Principles, Patterns, and Applications. OpenStax CNX. (2018, August 1). OpenStax, Chemistry. Retrieved from http://cnx.org/contents/85abf193-2bd2-4908-8563-

			- Energy levels: quantum numbers, promotion and excitation of electrons Acids, Bases and Salt: Arthenius		90b8a7ac8df6
5.	IED 333	Mathematics Analysis	Calculus: Partial differentiation, total derivative, implicit functions, changes of variables. Maximum and Minimum functions. Lagrangian Multiplier Complex Numbers: Argand diagram, Polar representation of complex numbers, De'Moivre's theorem. The nth root of complex numbers, Exponential representation. Numerical Methods: Newton – Raphson's iterative method. Trapezoidal rule, Simpson's rule, Method of the least square approximation. Lagrangian formula of interpolation	3	Malik, S.C. & Savita, A. (1992). Mathematical Analysis. Rassias, J. M., &Tricomi, F. G. (1985). *Mathematical analysis*. Leipzig: B.G. Teubner.
6.	IED 337	Experimental Chemistry for Secondary	The course is designed to demonstrate the empirical nature of Chemistry and to illustrate the principles covered in lecture courses of IED 331 and to prepare students to handle secondary school practicals. Topics include Acide – Base – Titrations, Oxidation – Reduction Titrations, Qualitative Analysis – Tests for anions Like Cl^-, NO^{-}_3, SO^{2-}_4, CO^{2-}_3 l^-, Br^-, Cl^-, Also test for cations like Ca^{2+}, Mg^{2+}, Zn^{2+}, $2Pb^{2+}$, Al^+, Cu, Ag etc. Experiments on Rates of Reactions. Experiments on Water of Crystallization	1	Bodner, G.M. &Pardue, L. (1989). Chemistry: An Experimental Science. Retrieved from https://doi.org/10.1021/ed066pA279.2
7.	IED 335	General Biology I	The course includes plant taxonomy and animal systematic taxonomy and its significance. Taxonomic characters Plant identification and Nomenclature. Description of selected angiosperm families. Some dicotyledonous families.	3	Paul, D. & Ralph, G. (2015). General Biology. Retrieved from https://upload.wik

			Sterculianceae, malvaceae, leguminous plants. Solanaceae and Compositae. A brief survey of monocot plants: Pteridophytes and Gymnosperms. Principles of Animal systematic. Outline of Principles of Animal Systematic classification: Coelomates and Chordate		imedia.org/wikipedia/commons/4/40/GeneralBiology.pdf
8.	IED 401	Education Research Project		2	In Paulsen, M. B. (2016). *Higher education: Handbook of theory and research*. Cohen, L., Manion, L., & Morrison, K. (2018). *Research methods in education*.
9.	IED 431	Electro Physics	Generation of charges and electric current. Electrostatics – Columb's law, force, work, energy and electric field. Conservation of charge and charge distribution. Gauss' Law and Gaussian surface. The electric potential and dipole moment. Magnetism – Maxwell's laws of electromagnetism, their physical interpretations and applications. Magnetic properties and characteristics of magnet. Magnetic induction due to straight long wire, circle, a ring of charge, semi circle etc. Lorentz force. Solenoid, Fraraday's law of induction and lenz's law. Diamagnetism and Ferromagnetisms	3	Steve, W.E.(2017). Electromagnetics. Virginia, Vn: Virginia Tech Libraries. Retrieved from https://open.umn.edu/opentextbooks/textbooks/electromagnetics-vol-1

10.	IED 433	General Biology II	The course is an introduction to the principles of genetic and evaluation. The subject matter of genetics, types of variation, the nucleus carry hereditary factors. Sexual and asexual reproduction, alternations of generations. Mitosis and Meiosis. Character and character states. Mendelian inheritance. Gene interaction. Sex-determination, sex-link age, pedigres. Molecular basis of heredity, Gene and genetic code. The concept of evolution. Historical perspectives, evidences of evolution. Theories of evolution, evolutionary mechanisms, sources of variations, Mutations, genetic recombination, changes in chromosome form and number. Reproductive isolation, hydridization, migration, chance, speciation	3	Willy, C. (2015). Human Biology. Retrieved from https://cnx.org/contents/5ZI71dr1@3.2:KwEToVnw@5/Preface Paul, D. & Ralph, G. (2015). General Biology. Retrieved from https://upload.wikimedia.org/wikipedia/commons/4/40/GeneralBiology.pdf
11.	IED 435	Experimental Physics for Secondary	This course is designed to demonstrate the principles covered in IED 431 and fatter part of IED 334, Prisms (rectangular and triangular prisms) to measure incidence and reflection of light. Laws of refraction. Magnetism: demonstration and its properties. A.C. and D.C. circuits using resistor and capacitance. Moving coil ammeter and galvanometer. Connections made in series and parallel	1	Wilson, H.A. (1915). Experimental physics, a textbook of mechanics, heat, sound and light. Cambridge: University press. Alexander, J. (1978). Physics for Engineering

					Technology. New Jersey: Wiley Oyeleye, M.O et al. (2003). Experimental Physics for Tertiary Institution I. Ibadan: All Gold publisher.
12.	IED 455	Marriage and Education			Lee, E. E. (1978). *Marriage and families*. New York: J. Messner.