

**University of Ibadan**  
**Faculty of Technology**  
**Department of Agricultural and Environmental Engineering, University of Ibadan**  
**NUC CCMAS for 100 Level**

S/N	Course Code	Course Title	Course Content	Units	Status
1	GST 111	Communication in English	Sounds and sound patterns in English Language (vowels and consonants, phonetics and phonology); English word classes (lexical and grammatical words, definitions, forms, functions, usages, collocations); major word formation processes; the sentence in English (types: structural and functional); grammar and usage (tense, concord and modality). Reading and types of reading, comprehension skills, 3RsQ. Logical and critical thinking; reasoning methods (logic and syllogism, inductive and deductive argument, analogy, generalisation and explanations). Ethical considerations, copyright rules and infringements. Writing activities (pre-writing(brainstorming and outlining), writing (paragraphing, punctuation and expression), post- writing (editing and proofreading). Types of writing (summary, essays, letter, curriculum vitae, report writing, note-making). Mechanics of writing. Information and Communication Technology in modern language learning. Language skills for effective communication. The art of public speaking.	2	C
2	GST 112	Nigerian people and Culture	Nigerian history, culture and art up to 1800 (Yoruba, Hausa and Igbo peoples and cultures; peoples and cultures of the minority ethnic 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). Concepts of trade and economics of self-reliance (indigenous trade and market system; indigenous apprenticeship system among Nigerian peoples; trade, skill acquisition and self-reliance). Social justice and national development (definition and classification of law); Judiciary and fundamental rights. Individuals, norms and values (basic Nigerian 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 3Rs — Reconstruction, Rehabilitation and Re-orientation; re-orientation strategies: Operation Feed the Nation (OFN), Green Revolution, Austerity Measures, 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.	2	C
3	CHM 101	General Chemistry I	Atoms, molecules, elements and compounds, and chemical reactions. Modern electronic theory of atoms. Electronic configuration, periodicity and building up of the periodic table. Hybridisation and shapes of simple molecules. Valence forces; Structure of solids. Chemical equations and stoichiometry; chemical bonding and intermolecular forces, kinetic theory of matter. Elementary thermochemistry; rates of reaction, equilibrium and thermodynamics. Acids, bases and salts. Properties of gases. Redox reactions and introduction to electrochemistry. Radioactivity.	2	C

4	CHM 102	General Chemistry II	Historical survey of the development and importance of organic chemistry; fullerenes as fourth allotrope of carbon, uses as nanotubes, nanostructures, nanochemistry. Electronic theory in organic chemistry. Isolation and purification of organic compounds; determination of structures of organic compounds including qualitative and quantitative analysis in organic chemistry; nomenclature and functional group classes of organic compounds. Introductory reaction mechanism and kinetics. Stereochemistry. The chemistry of alkynes, alkenes, alkynes, alcohols, ethers, amines, alkyl halides, nitrites, aldehydes, ketones, carboxylic acids and derivatives. The chemistry of selected metals and non-metals. Comparative chemistry of group IA, IIA and IVA elements. Introduction to transition metal chemistry.	2	C
5	CHM 107	General Practical Chemistry I	Laboratory experiments designed to reflect topics presented in courses CHM 101 and CHM 102. These include acid-base titrations, qualitative analysis, redox reactions, gravimetric analysis, data analysis and presentation.	1	C
6	CHM 108	General Practical Chemistry II	Continuation of CHM 107. Additional laboratory experiments to include functional group analysis, quantitative analysis using volumetric methods.	1	C
7	MTH 101	Elementary Mathematics I	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.	2	C
8	MTH 102	Elementary Mathematics II	Functions of a real variable, graphs, limits and idea of continuity. The derivative, as limit of rate of change. Techniques of differentiation, maxima and minima. Extreme curve sketching, integration, definite integrals, reduction formulae, application to areas, volumes (including approximate integration: Trapezium and Simpson's rule).	2	C
9	PHY 101	General Physics I	Space and time; units and dimension, vectors and scalars, differentiation of vectors: displacement, velocity and acceleration; kinematics; Newton's laws of motion (inertial frames, impulse, force and action at a distance, momentum conservation); relative motion; application of Newtonian mechanics; equations of motion; conservation principles in physics, conservative forces, conservation of linear momentum, kinetic energy and work, potential energy, system of particles, centre of mass; rotational motion; torque, vector product, moment, rotation of coordinate axes and angular momentum. Polar coordinates; conservation of angular momentum; circular motion; moments of inertia, gyroscopes and precession; gravitation: Newton's law of gravitation, Kepler's laws of planetary motion, gravitational potential energy, escape velocity, satellites motion and orbits.	2	C
10	PHY 103	General Physics II	Heat and temperature, temperature scales; gas laws; general gas equation; thermal conductivity; first Law of thermodynamics; heat, work and internal energy, reversibility; thermodynamic processes; adiabatic, isothermal, isobaric; second law of thermodynamics; heat engines and entropy, Zero's law of thermodynamics; kinetic theory of gases; molecular collisions and mean free path; elasticity; Hooke's law, Young's shear and bulk moduli; hydrostatics; pressure, buoyancy, Archimedes' principles; Bernoulli's equation and incompressible fluid flow; surface tension; adhesion, cohesion, viscosity, capillarity, drops and bubbles.	2	C

11	PHY 107	General Practical Physics I	This introductory course emphasizes quantitative measurements. Experimental techniques. The treatment of measurement errors. Graphical analysis. The experiments include studies of meters, the oscilloscope, mechanical systems, electrical and mechanical resonant systems, light, heat, viscosity, etc. (covered in PHY 101, 102, 103 and PHY 104). However, emphasis should be placed on the basic physical techniques for observation, measurements, data collection, analysis, and deduction.	1	C
12	PHY 108	General Practical Physics II	This practical course is a continuation of PHY 107 and is intended to be taught during the second semester of the 100 level to cover the practical aspect of the theoretical courses that have been covered with emphasis on quantitative measurements, the treatment of measurement errors, and graphical analysis. However, emphasis should be placed on the basic physical techniques for observation, measurements, data collection, analysis and deduction.	1	C
13	GET 101	Engineer in Society	History, evolution and philosophy of science. engineering and technology. The engineering profession — engineering family (engineers, technologists, technicians and craftsmen), professional bodies and societies. Engineers' code of conduct and ethics, and engineering literacy. Sustainable development goals (SDGs), innovation, infrastructures and nation building - economy, politics, business. Safety and risk analysis in engineering practice. Engineering competency skills — curriculum overview, technical, soft and digital skills. Guest seminars and invited lectures from different engineering professional associations.	1	C
14	GET 102	Engineering Graphics and Solid Modelling I	Introduction to design thinking and engineering graphics. First and third angle orthogonal projections. Isometric projections; sectioning, conventional practices, conic sections and development. Freehand and guided sketching — pictorial and orthographic. Visualisation and solid modelling in design, prototyping and product-making. User interfaces in concrete terms. Design, drawing, animation, rendering and simulation workspaces. Sketching of 3D objects. Viewports and sectioning to shop drawings in orthographic projections and perspectives. Automated viewports. Sheet metal and surface modelling. Material selection and rendering. This course will use latest professional design tools such as fusion 360, solid works, solid edge or equivalent.	2	C
17	ABE 102	Intro. to Agric. & Biosystems Engineering	Philosophy and evolution of agricultural and biosystems engineering. The role of Agricultural and Biosystems Engineers in the society and human development. The relationship between agricultural and biosystems engineering and the other engineering disciplines. Significance of agricultural and biosystems engineering. Introduction to agricultural and Biosystems engineering: farm power and machinery engineering; soil and water engineering; crop processing and storage engineering; farm structures and environment engineering; biosystems engineering. ABE and sustainable development. The global development goals (SDGs). Climate change impacts on agriculture, adaptation and mitigation measures; Climate smart agriculture. Career opportunities in agricultural and biosystems engineering.	2	C

15	MAT 141	Analytic Geometry and Mechanics	Equations of lines and planes; conic sections circles parabola; hyperbola, ellipse. Vectors in R <sup>2</sup> , R <sup>3</sup> , scalar product, vector product, triple products. Applications to Geometry. (The vector approach should be used where possible in what follows). The notions of displacement, speed, velocity and acceleration of a particle. Newton's law of motion and applications to simple problems. Work, power and energy. Application to the principle of conservation of energy to motion of particles and those involving elastic strings and springs. Conical pendulum. Simple Harmonic Motion. Resultant of any number of forces acting on a particle, reduction of coplanar forces acting on a rigid body to a force and a couple. Equilibrium of coplanar forces, parallel forces, couples Laws of friction. Applications of the principle of moments. Moment of inertia of simple bodies.	2	R
16	TME 111	Basic Engineering Drawing	Introduction to the relationship between engineering drawing as a means of communication and engineering practice. National and international standards and conventions in engineering practice. Introduction to free-hand sketching; exercises on common tools with emphasis on showing working edges and surfaces clearly. Drawing as a means of communication with the workshop staff. Introduction to design, influence of shapes and sizes of tools on the detailed design of engineering components and parts. Influence of other engineering considerations e.g. fillets and stress reduction, on the detailed design of components.	2	R
17	STA 114	General Statistics I	Descriptive statistics; basic probability concepts; binomial, normal, student's t; geometric and exponential distribution, sampling distributions; and hypothesis testing; estimation and confidence intervals for one and two means and proportions; contingency tables and chi-square distributions; regression and ANOVA. Implementation of statistical methods using computer packages with applications in biological and agricultural sciences, engineering and medical sciences, social and educational studies. Use and applications of software packages such as Excel, SPSS and R.	2	R
<b>Total Units</b>				<b>31</b>	

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**Dr. M. O. Omobowale**  
**Head of Department**