UNIVERSITY ADDRESSES

University Postal Address:	**Ladoke Akintola University of Technology P. M. B. 4000, Ogbomoso Oyo State, Nigeria**
Telephone	**08067624977**
Telex	**LAUTECH, Ogbomoso, Nigeria**
Website	**www.lautech.edu.ng**
Liason Office	**15, Ojo Ibadan Avenue Ibadan, Oyo State Bodija, Ibadan Oyo State**
Telephone	**02-8100629 02-8101277**
University Campus Liason Office	**College of Health Sciences P.M. B. 4400, Isale Osun, Osogbo, Osun State, Nigeria**

PRE-DEGREE SCIENCE PROGRAMME HAND BOOK

2009 / 2010 SESSION

LADOKE AKINTOLA UNIVERSTY OF TECHNOLOGY, OGBOMOSO.

MESSAGE FROM THE CHAIRMAN, BOARD OF PRE-DEGREE SCIENCE PROGRAMME

On behalf of the Vice-Chancellor, Senate and Board of Pre-Degree Science Programme, I welcome you all to Great Ladoke Akintola University of Technology, Ogbomoso.

The Pre-Degree Science Programme was proposed by the University Senate in May, 1994. This was in response to the need for a refresher course to programme to prepare secondary school leavers for their first year and subsequent years of study in the University. In 1995, this programme opened with the first set of students totaling seven hundred and ninety-two (792) and has since witnessed steady increase over the years. For instance in 2007 alone, three thousand, two hundred ninety-eight (3,298) students enrolled for this programme. Hence, you should count yourself lucky to be part of the programme this year.

The aim of the Pre-Degree programme is to provide opportunity of University Education for applicants who could not be admitted to the University through UME. The programme is highly intensive and spans over a period of eight months, during which students are tutored in Biology, Chemistry, English Language, Mathematics and Physics. To achieve this, The Board has appointed experienced and dedicated set of instructors for each of the courses. It is therefore imperative for you as students to cooperate with your instructors in order to share from their wealth of experience. Furthermore, the various curricula for the courses have just been reviewed and your set will be the first to go through the revised edition. You are therefore advised to be very hardworking and diligent for successful outing in the programme.

ENVIRONMENTAL SCIEN CES	B. Tech. (Architecture) B. Tech. (Fine & Applied Arts) B. Tech. (Urban &Regional Planning)
PUREAND APPLIED SCIENCES	B. Tech. (Pure & Applied Biology) B. Tech. (Pure & Applied Chemistry) B. Tech. (Pure & Applied Mathematics) B. Tech. (Pure & Applied Physics) B. Tech. (Earth Sciences) B. Tech. (Science Laboratory Technology)

ADDMISSION INTO UNDERGRADUATE PROGRAMME

Towards the end of the programme, each student will be requested to make a choice of two degree programmes he/she may wish to pursue on completion of the Pre-Degree Science Programme. The placement is based on a student satisfying the requirements set by the Board of Pre-Degree Science Programme and the College/Faculties/Department he/she may wish to be considered for namely:

(i) The pass mark for each subject should be a minimum of 50%

(ii) Any student who score less than 50% in more than one subject may be admitted into the regular degree programme of the University.

(iii) The College, Faculties and Departments, having observed (i) ï (ii) above, can also set their own additional requirements for admission.

investigation. The Security Unit is headed by an Assistant Chief Security Officer. A Security man could be identified in a uniform and a beret cap worn on the head with cap badge which is the University emblem. A black waist belt and black shoe complete the Uniform.

LIST OF DEGREE PROGRAMMES AVAILABLE IN THE UNIVERSITY

The following degree courses are available to successful Pre-Degree Science Students:

COLLEGE/FACULTIES	DEGREE PROGRAMME
COLLEGE OF HEALTH SCIENCE	M.B.B.S. B. Tech Nursing B. Tech. Physiology B. Tech. Biochemistry B. Tech. Anatomy B. Tech. Medical Laboratory Science
AGRICULTURAL SCIENCE	B. Agric. (Animal Nutrition and Extension) B. Agric. (Animal Production & Health) B. Agric. (Agric.Economics & Extension B. Agric (Agriculture Economics) B. Agric(Crops Production and Soil Science B.Agric(Crop and Environmental Protection)
ENGINEERING & TECHNOLOGY	B. Tech. (Chemical Engineering) B. Tech. (Civil Engineering) B. Tech. (Computer Science and Engineering) B. Tech. (Electrical & Electronic Engineering) B. Tech (Mechanical Engineering) B. Tech. (Food Science and Engineering) B. Tech. {Accounting) B. Tech. (Transport management) B .Tech (Agricultural Engineering

To those of you with excellent results at SSCE, this is also an opportunity to re-ascertain your academic ability. It is important to bring to your notice that placement into the undergraduate programmes of The University depends on your performances at the end of PDS final examination. Students should therefore realize that they are not yet undergraduates of this University and that they have to work hard in order to become one.

All lectures and other activities of the programme are held within the 1500 Lecture Theatre and PDS complex. The former was completed in 2005 and was declared opened in May 2008 by their excellences Otunba (Dr.) Adebayo Alao-Akala and Prince (Dr) Olagunsoye Oyinlola, the Executive Governors of Oyo and Osun States respectively. The PDS complex has office spaces, reading rooms, a library and audio-visual facilities. I hereby appeal to you all to make good use of these facilities.

LAUTECH is a non-residential institution, students are therefore expected to arrange for their accommodation in town and maintain healthy relationship with their neighbours. You are strongly advised to shun all immoral activities like cultism and examination malpractices as these may jeopardize your future. Pre-Degree students are not yet members of the student union and are there fore should not partake in any of their activities. You are also advised to put God first in all your academic endeavours. If you are in doubt about any of the PDS activities, you should feel free to approach the office of the Chairman for proper guidance and counseling.

Once again, I welcome you all and wish you a successful academic programme in LAUTECH.

Prof. L. A. Sunmonu
Chairman,
Board of Pre-Degree Science Programme

THE PRINCIPAL OFFICERS OF THE UNIVERSITY

THE VICE-CHANCELLOR

Prof. Babatunde Benjamin Adeleke

(B. Sc., M. Sc., Ph. D., C. CHEM., FCSN, MNES.)

THE ACTING REGISTRAR

Rev. O. O. Ojo

(B. A. M. Sc., DIP. IN THEOLOGY)

THE BURSAR

Mr. E. A. Alagbe

(B. Sc. M.B.A.., FCA)

UNIVERSITY LIBRARIAN

Mr. G. Adio

(B. Sc., MLS.)

CODE OF CONDUCT FOR STUDENTS

Pre-Degree Science students as well as other students in the University in general are expected to pay due respect and obedience to the Vice-Chancellor, the Officers and Lecturers in the University, the Pre-Degree Science Programme Board and Instructors.

Each student is expected to be orderly at all times and never to be found acting in a manner likely to bring the University and the programme into disrepute. He/She should refrain from acts of violence, destruction to the Universityôs properties and from joining secret cults.

Pre-Degree Science students are not undergraduate students of the University and, therefore, cannot join the LAUTECH Student Union. Any student who violates any of the set regulations shall be appropriately disciplined.

CAMPUS SECURITY

With increasing crime waves all over the country, even at the best of times, it has not been possible for The Nigerian Police, with its limited manpower resources, to provide all the security for life and property required by corporate communities like Ladoke Akintola University of Technology, Ogbomoso.

To supplement the effort of the Police, a University Security Unit was created as far back as the inception of the University. The Security Unit is charged with the responsibility of the enforcement of all University bye-laws and regulations in addition to protection of lives and properties on the campus.

As a routine, all incidents such as crimes, disturbances, accident, fire out-break, etc. are first reported to the Security Unit, which deals with such reports or direct appropriate cases to the Police for

the University Health Centre, any form of ailment instead of resorting to quacks, unqualified drug peddlers and unqualified health personnel. All medical problems for students and staff are treated with utmost medical confidentiality. Students are again advised to be free and confidently disclose their ailments to our experienced and competent medical personnel who are always willing to counsel and offer their best professional services. Students should please note that the first port of call for any ailment is the University Health Centre.

Any medical report from outside the University Health Centre will not be recognized unless authenticated by the University Director of Medical Services. Free medical services to all students and staff are available in the University Health Centre only and within available resources.

THE UNIVERSITY LIBRARY

The University Library in conjunction with the Board of the Pre-Degree Science Programme operates special library services involving loan and reference services to Pre-Degree Science students. every registered Pre-Degree Science student is eligible to register with the Library and may be permitted to borrow books and use the Pre-Degree Science reading rooms. Pre-Degree Science students who register in the library are issued two borrowing tickets which are valid for the period of the programme.

ACCOMMODATION FACILITIES IN OGBOMOSO

Ladoke Akintola University of Technology is primarily non-residential for students and staff. Therefore, each student is expected to arrange for his/her own accommodation preferably in Ogbomoso.

PROVOST/DEANS OF FACULTIES

1. **Provost, College of Health Sciences**
   Prof. O. G. Opadijo

2. **Dean, Postgraduate School**
   Prof. M. A. Osundina

3. **Dean, Faculty of Agricultural Sciences**
   Prof. A. B. Ogunwale

4. **Dean, Faculty of Basic Medical Sciences**
   Prof, A. H. Fagbami

5. **Dean, Faculty of Clinical Sciences**
   Prof. G. A. Oyedeji

6. **Ag. Dean, Faculty of Engineering and Technology**
   Dr. A. A. Adegbola

7. **Dean, Faculty of Environmental Sciences**
   Prof. N. B. Tanimowo

8. **Dean, Faculty of Pure and Applied Sciences**
   Prof. O. O. Fawole

9. **Dean, Student Affairs**
   Prof. G. O. Oyediran

MEMBERS OF BOARD OF PRE-DEGREE SCIENCE PROGRAMME 2009/2010

1.	Prof. L. A. Sunmonu	-	Chairman, BPDSP
2	Rev. O. O. Ojo	-	Ag. Registrar
3.	Mr. E. A. Alagbe	-	Bursar
4.	Mr. G. Adio	-	Librarian
5.	Prof. O. O. Fawole	-	Dean, FPAS
6.	Dr. A. A. Adegbola	-	Ag. Dean, FET
7.	Prof. N. B. Tanimowo	-	Dean, FES
8.	Prof. H. A. Fagbami	-	Dean, FBMS
9.	Prof. G. O. Oyediran	-	Dean, Student Affairs
10.	Mr. A. O. Olowookere	-	Director Audit
11.	Prof. A. B. Ogunwale	-	Dean, FAGS
12.	Prof. M. O. Akanbi	-	Senate Rep.
13.	Dr. A. A. Akingbade	-	Vice-Chancellor Nominee
14.	Dr. S. O. Adewoye	-	FPAS Rep.
15.	Prof. T. Ebijuwa	-	Head, GNS
16.	Dr. A. T. J. Ogunkunle	-	Ag. Head, P/A Biology

THE UNIVERSITY HEALTH CENTRE (U H C)

The World Health Organization (WHO) defines Health as a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity.

The University Health Centre (UHC) was established to achieve in more practical terms, the aims and objectives of the World Health Organisation. Here, it pursues vigorously, both preventive and curative aspect of medicine by offering students and staff, wide range of health services e.g. admission facilities, backed by adequate doctors, nursing and paramedical care, pharmaceutical services, well-equipped medical laboratory, with wide range of medical laboratory services, public health services for both preventive and curative back up, immunization and child health facilities, ante-natal and post-natal care, family planning any counseling services, etc.

The University Health Centre is open for medical services 24 hours for seven days in a week, including week-end and public holidays. Staff and their dependants and students are attended to by Doctors. Medical consultation starts from 8.00a.m till 11.30a.m while students consulting hours start from 11.00a.m till 2.00p.m. Despite this, emergency cases are also attended to at any time of the day.

Students are strongly advised to undergo mandatory medical test at the University Health Centre during which they will obtain a medical registration card which will be taken to the Health Centre as identification before they can enjoy medical services, especially in emergency situations. The medical registration card is as equally important as the Identity Card; students are advised to always take it with them.

Students are strongly advised to make use of comprehensive health services provided in the University Health Centre and beware of self-medication and drug abuse. They should report immediately to

of meaning and the roles of meaning in human communication; Types of meaning such as denotative, connotative, collocative, affective, reflexive and thematic meanings.

6. **Comprehension and Summary writing:** The nature and types of comprehension passages; Rudimentaries of reading and understanding comprehension passages: Topic sentence, sentence structures, deductive and inductive reasonings etc. Summary writing: processes of summarizing; Qualities of a good summary; sentence and paragraph summaries etc.

7. **Mechanics of Good Written English:** The roles of mechanics such as the full stop; comma; the hyphen, colon, apostrophe, question mark etc. in good written english.

8. **Concord in English:** Meaning and various rules of concord In the use of english.

17.	Dr. A. O. Awodugba	-	Ag. Head, P/A Physics
18.	Dr (Mrs.) M. A. Oladipo	-	Ag. Head, P/A Chemistry
19.	Dr. A. O. Adesanya	-	Ag. Head, P/A Mathematics
20.	Dr. A. Adeyeye	-	Ag. Head, SLT
21.	Dr. O. M. Oni	-	Director ICT
22.	Dr. M. A. Adabanija	-	Ag. Head, Earth Science
23.	Mrs. O. A. Akinyode	-	Secretary, BPDSP

PRE-DEGREE SCIENCE ROGRAMME STAFF

MR. AJIBOYE E.O
MRS. AJIBADE R.O
MR. AJIBOYE E.O
MRS. AJIBADE R.O
MRS. OYEDELE S.O
MRS. ADELEKE S.B
MR. OPADELE R.A
MR . OYEBAMIJI J.A
MR. OLADOKUN B.O
MRS. OJO E.O
MR. OLADELE G.O
MR. AJALA G.O
MR. OLOYEDE. A
MR. OSUNPAYIMO D
MR. OGUNLADE R.O
MR. SIJUADE. A

LIST OF INSTRUCTORS FOR 2009 PRE-DECREE SCIENCE PROGRAMME

DEPARTMENMT OF PURE AND APPLIED BIOLOGY

Dr. A. T. J. Ogunkunle	Prof. J. K. Oloke	Dr. A. J. Akintola
Dr. (.Mrs) A. O. Adebiyi	Dr. S. O. Adewoye	Mr. O. O. Adelowo
Mr. O. O. Ajala	Mr. M. A. Azeez	Miss. A. A. Ayandele

DEPARTMENMT OF PURE AND APPLIED CHEMISTRY

Dr. (Mrs) M. A. Oladipo	Prof. A. A. Olajire.	Prof. O.O.P. Faboya
Dr. F .E. Adelowo	Dr. O.O.E. Onawumi	Dr. B. Semire
Mrs T. I. Edewor	Dr. Adedosu T. A.	Mr. A. A. Giwa

DEPARTMENMT OF GNS

Prof. T. Ebijuwa	Dr. S. A. Aladeyomi	Mr. T. A. Adejumo
Mr. A. G. Oyekola	Mr. K. K. Olaniyan	Miss. C. S. Olagunju
Mr. A. B. Adeniji	Mr. A. O. Osunbade	Mr. O.P. Oni

DEPARTMENMT OF PURE AND APPLIED MATHEMATICS

Dr. A. O. Adesanya	Prof. R. O. Ayeni	Dr. (Mrs) Akinpelu
Dr. M. O. Alabi	Dr (Mrs) T.O. Oluyo	Dr. A.T. Oladipo
Dr. D .B .Adekanbi	Dr. A.W. Ogunsola	Mr. O. A. Ajala

DEPARTMENMT OF PURE AND APPLIED PHYSICS

Dr. A. O. Awodugba	Mr. J. O. Ajayi	Dr. G. R. Fajinmi
Mr. D.B. Amuda	Dr. O. M. Oni	Dr. M. A. Adabanija
Mr. G. A. Alagbe	Mr. Y. K. Sanusi	Mr. G.. A. Isola

USE OF ENGLISH PRE-DEGREE COURSE (GNS 001)

1. **Word class:** Lexical items such as Nouns, Pronouns, Verbs, Adverbs Adjectives, Preposition, Conjunctions and Interjections. The roles of determinants such as articles, possessives, demonstratives etc. in English usage are to be emphasized.

2. **Word formation in English:** Word formation processes such as Affixation, Prefixation, Suffixation; Clipping, Abbronymy, Neologism/Coinage, Back formation, and Idiomaticity are to be discussed with copious examples.

3. **Sentence parts, Types and structures:** The groups of words such as phrases, clauses and sentences are to be discussed with emphasis on their meanings, structures, types and functions in english usage.

4. **Paragraph Development:** Meaning, structure, and types of paragraph. Topic sentences in paragraph development, Qualities of a good paragraph; Methods of using details to develop paragraphs.

5. **Meaning in English:** Emphasis to be placed on the meanings

12. DIRECT CURRENT

i.	Current Electricity	ii.	Electric circuits
iii.	Ohmôs law	iv.	Principle of Electrical Measurement

13. SIMPLE A. C. CIRCUIT AND ELECTROMAGNETIC INDUCTION

i.	Introduction	ii.	A.C. circuit
iii.	Resonance in a. c.	iv.	Electromagnetic induction

14. ATOMIC AND NUCLEAR PHYSICS

i.	Particle nature of matter	ii.	Wave particle paradox
iii.	Radioactivity	iv.	Nuclear energy

15. MODERN PHYSICS

i.	Energy Spectral	ii.	The photoelectric effect
iii.	X-Ray production		

16. ELECTRONICS

i	Semiconductors	ii	The junction diode
iii	Bipolar junction transistor		

HISTORICAL BACKGROUND

Ladoke Akintola University of Technology, Ogbomoso (known at inception as Oyo State University of Technology, Ogbomoso) came into being on the 23rd April, 1990 when the then Military Governor of Oyo State, Lt. Colonel Sasaenia Adedeji Oresanya signed the edict establishing the University. That event came as a culmination of years of planning and persistent request for a State University by the People of the then Oyo State (now Oyo and Osun States). The Federal Military Government acceded to the stateôs request on the 13th March, 1990.

On the 2nd May, 1990, the Military Governor of Oyo State announced the appointment of Professor Olusegun Ladimeji Oke, FAS, a distinguished Chemist as the first Vice-Chancellor of the University while the names of the Pro-Chancellor, Late Professor Ojetunji Aboyade and other members of the first Governing Council were announced on the 28th May, 1990. In January, 1991, the name of the Late Bashoru M. K. O. Abiola was announced as the Universityôs first Chancellor.

The first academic session began on the 19th October, 1990 with a total of 436 candidates offered admission into various courses in the four foundation Faculties of Agricultural Sciences, Engineering and Technology, Environmental Sciences and Pure and Applied Sciences. Establishment of the College of Health Sciences was postponed for a year and it took off in October, 1991.

A study of the academic performance of Secondary School Leavers during the first year in this University showed that there was a need for a refresher course which would prepare Senior Secondary School leavers for their first year and subsequent years of study in the University. The Pre-Degree Science Programme was proposed by the Senate of this University in May, 1994 to serve this need. The proprietor-states approved the programme for reasons which include that:

i. It would provide opportunity for the indigenes of Oyo and Osun States who might otherwise be unable to secure admission into the university because of inadequacies regarding their óOô Level qualifications.
ii. It would assist the university in attracting adequate number of candidates whose quality the university can ascertain since they are to pass through intramural training and testing of the university.
iii. Such a programme would be self-sustaining and would generate the much needed funds for this University.

The programme is administered by the Board of Pre-Degree Science Programme which determines curricula, the admission criteria, the calendar for the programme examinations and, approval and release of results.

For 1995 programme alone, close to two thousand applicants obtained application forms. About one thousand were offered admission while seven hundred and ninety-two were eventually registered.

The programme was for a semester and the students were given tutorial, test and examination in the Use of English, Biology, Chemistry, Mathematics and Physics. The academic standard of the programme approaches closely the Universityôs 100-Level standard. The students were taught by very senior academic staff available in each of the teaching Departments.

At the end of the 1995 programme, close to 700 students were admitted into the undergraduate programmes, the break-down of which is given below:

Faculty of Agricultural Sciences	-	98
Faculty of Environmental Sciences	-	75
Faculty of Engineering and Technology	-	293
Faculty of Pure and Applied Sciences		253
College of Health Sciences	-	27

iii. Viscous flow-viscosity

6. STATICS

i. Equilibrium of forces ii. Equilibrant of forces
iii. Parallelogram of forces iv. Condition of static equilibrium

7. PROPERTIES OF MATTER

i. Elasticity (Young, Shear and Bulk Moduli)
ii. Crystal structure iii. Pressure
iv. Density v. Archimedes principle of floatation
vi. Surface tension

8. HEAT AND THERMODYNAMICS

i. Temperature and Thermometers
ii. Heat Energy
ii. Molecular theory and Heat transfer
iv. Equation of state ï Ideal Gas Laws
v. Thermal Expansion vi. Thermodynamics

9. MECHANICAL OSCILLATIONS AND WAVES

i. Oscillations ii. Simple harmonic motion (SHM)
iii. Waves (Progressive and stationary)
iv. Characteristics of waves v. Sound

10. OPTICS

i. Photometry ii. Geometrical Optics
iii. Optical Instruments iv. Eye defects

11. ELECTROSTATICS

i. Static Electricity
ii. Coulombôs law and Electric Field Intensity
iii. Capacitors

PHYSICS PRE-DEGREE COURSE (PHY 001)

The whole syllabus has been rearranged to reflect the correct groupings of the contents while additional topics like the parallelogram of forces, equilibrant of forces, relative velocity, rotational kinematics, shear and bulk moduli, fluid dynamics (equation of continuity, Bernouliôs equation and applications) and viscosity have been included.

1. MEASUREMENTS, UNITS AND DIMENSIONS

i. Measurements, units and conversion of units
ii. Dimensions of physical quantities
iii. Dimensional analysis

2. VECTOR

i. Scalar and vector quantities, definitions
ii. Addition and subtraction of vectors
iii. Multiplication of vectors

3. KINEMATIC

i. Kinematics in one dimension
ii. Motion along a straight line
iii. Motion of free-fall
iv. Relative velocity
v. Kinematics in two-dimensions (Projectile motion)
vi. Rotational kinematics

4. DYNAMICS

i. Newtonôs Laws of Motion
ii. Newtonôs Laws of Universal Gravitation
iii. Friction iv. Impulse and Momentum
v. Collision vi. Work, Energy and Power

5. FLUID DYNAMICS

i. Equation of continuity
ii. Bernouliôs Equation and Application

The distribution according to state of origin of those admitted is as follows:

Oyo State	-	325	(45%)
Osun State	-	293	(41%)
Others	-	100	(14%)

The programme is 100% self-supporting. The income from the programme was used to pay the programme Instructors, and to provide abundant supplies of stationery and teaching material for use by the teaching Departments and the Pre-Degree Science Programme Office. The fund generated from the programme was utilized in the construction of the Pre-Degree Science Programme complex. It comprises of two large lecture Halls, each with seating capacity of over three hundred and sixty, two large reading rooms each with capacity to seat three hundred students, two large book / journal rooms and a block of spacious offices to house the academic and administrative staff of the programme. There is clear evidence that the products of the programme do perform excellently at the 100-Level and subsequent levels of their programmes in the University.

ADMISSION REQUIREMENTS

Admission into the Pre-Degree Science Programme will normally require a minimum of five credits (at two sittings) at SSCE, GCE, NECO, and NABTEB ordinary level in Biology, Chemistry, English Language, Mathematics and Physics.

STRUCTURE OF THE PRE-DEGREE SCIENCE PROGRAMME

(A) AVAILABLE COURSES OFFERED FOR THE PRE-DEGREE SCIENCE PROGRAMME

The Pre-Degree Science Programme, run by LAUTECH, will for now offer remedial course in the five required subjects for admission into her programme viz: English Language, Biology, Chemistry, Mathematics and Physics.

The Pre-Degree Science Programme is an intensive programme and each course attracts 5 contact sessions per week to be divided between lectures and tutorials. Course content of each subject is thoroughly described in this handbook.

(B) EVALUATION OF PRE-DEGREE SCIENCE PROGRAMME

i. Each subject of the Pre-Degree Science Programme will be evaluated through continuous assessment, tests, quizzes, reports and other assignments during the period. There will be final examination to round up the programme.

ii. Total attainable marks of 100 will be computed from the Continuous Assessment (CA) and final examination. Percentage allotted to CA will be determined and announced by the subject instructors.

iii. All assignments, tests, quizzes, reports and the final examination are weighted and compulsory. Absence by candidates from participating in any of these is at the candidateôs risk. Make-ups in any of the above may not be entertained because of the intensity of the programme and time constraint.

	product. The differential coefficient of quotient. The differential coefficient of function of a function. Differential coefficient of inverse functions.
13. **Integral Calculus**	Introduction. Integrations of basic functions including Polynomials. Integration by part. Some examples of evaluation of definite integrals and calculation of areas.
14. **Complex Numbers**	Introduction to Complex numbers. Basic operations on Complex numbers. Complex numbers in polar coordinates. Roots of complex numbers.
15. **Sets**	Introduction. Basic operations on set theory. Venn diagram and its applications.
16. **Logic**	Introduction. Operations on Logic.
17. **Binary Operations**	Introduction. Identity, Inverse operations
18. **Series and Sequence**	Introduction. Arithmetic and Geometric progression. Some basic operations on Arithmetic and Geometric progression.

6. **Inequalities**	Introduction and notations. Solution of inequality Equations. The number line.
7. **Elementary Trigonometry Functions.**	Quadrant and angles. Basic Trigonometric Ratios. Applications of trigonometric ratios to angles of elevation and depression. Sine and Cosine formula. Application to solution of Triangles.
8. **Partial Fractions**	Basic operations on partial fractions. Applications of Partial fractions to Binomial expansion.
9. **Probability**	Meaning of Probability and its applications. Basic operations on Permutation and Combination
10. **Statistics**	Introduction. Calculation of mean from both group and ungrouped data. Median, Mode of set of distribution from both grouped and ungrouped data. Variance and Standard Deviation. Cumulative frequency curve, percentile and histogram
11. **Matrices**	Introduction. Operations on Matrices. Some basic application to solving System of Equations using Crammerôs rule.
12. **Differential Calculus**	Introduction. The gradient of a graph. The differential coefficient on X^n. Differential coefficient of Trigonometric functions. The differential coefficient of sum. The differential coefficient of

ADMISSION OF STUDENTS INTO THE UNIVERSITY

Admission of Students into the University through Pre-Degree Science Programme

i. Admission to 100 Level is on the basis of good performance at the Pre-Degree Science programme final examination.
ii. In addition, candidates must have at least five credit passes in relevant subjects at the SSCE / GCE óOô level / NECO, GCE / NECO óOô level or its equivalent in order to qualify for admission into any of the Faculties. For this purpose, a combination of credit passes at óOô level in five subjects at not more than two sitting is acceptable.
iii. Candidates are also required to fulfill such Faculty and Department entry requirements as may be prescribed from time-to-time.

IDENTITY CARD

Each registered student of the Pre-Degree Science Programme, upon payment of a prescribed fee, is issued with an official Student Identity Card valid for the programme. Students may be required at anytime to identify themselves upon request by authorized University officials acting in the performance of their duties.

Some University Facilities are opened to only students who are able to show valid identity card. Students are required therefore to take very good care of their identity card and be ready to produce them at any time on demand.

Special Information on the Identity Cards

a. No student will be allowed into examination hall without the identity card;
b. The identity card is a security document and students are advised to keep it securely against loss or theft;

c. Students are advised to report loss or theft of their identity cards to the security unit or Pre-Degree Science Programme Unit without any delay.

EXAMINATION REGULATIONS

1. Students must be conscious of the times assigned to their papers and must be ready to be admitted into the examination hall thirty (30) minutes before the time the examination is due to start. Students shall not, in any circumstance, enter the examination hall later than thirty minutes after the time appointed for the commencement of the examination. Students arriving later than thirty minutes after the examination has started shall be admitted only at the discretion of the Chief Invigilator. Students should refrain from studying in halls and lecture rooms earmarked for examinations.
2. Students are expected to complete examination attendance register before the commencement of the examination.
3. Students should not leave the examination hall during the first hour of the examination; outside this period, candidates, with the permission of the invigilator, may leave the room temporarily only if accompanied by an attendant.
4. Students must display their Identity Cards on the desk during each examination.
5. The invigilator may search students before they are allowed into the examination Hall;
6. Students must bring their own writing materials to the examination hall but they are not allowed to bring any other book or paper. Students are warned in their own interest to ensure that anything that can implicate them such as lecture notes, text-books, bags, handset and electronic gadgets are not brought into examination hall.
7. While the examination is in progress, communication between candidates is strictly forbidden, and any candidate found to be involved in any examination malpractice will be invited to appear before the Examination Malpractices Panel.

MATHEMATICS PRE-DEGREE COURSE (MTH001)

TOPICS	CONTENT
1. **Indices and Logarithms**.	Principle of indices. Positive integral indices. Fractional, zero and negative indices. Logarithms, Common Logarithms. Equations in which the unknown occurs as an index. Applications of indices and Logarithms to solving equations.
2. **Number Base System**	Denary, Binary and Octal number system. Conversion of numbers from one base to the other. Decimals number base system.
3. **Variation**	Direct, inverse and joint variation
4. **Co-ordinate Geometry**	Equations of straight lines, tangent and normal. The angle between straight lines. Perpendicular distance of a given point from a line. Equations of line passing through the Intersection of two given lines, Equations of circles. Equation of tangent of circle. Solution of Triangles.
5. **Equations**	Linear, Quadratic, Cubic equations and method of solution. System of Linear Equations. Various methods solving quadratic equations. Properties of the roots of Quadratic Equations.

(i)	Biology of Heredity:	Variation (morphological, physiological) and its application (crime detection, blood transfusion, determination of paternity etc). Heritable and non-heritable variations; Mendelôs experiments, Mendelian traits and Mendelian laws. Process of transmission of hereditary characters from parents to offspring: chromosomes as the basis of heredity, probability in genetics. Application of the principles of heredity in Agriculture, Medicines, Marriage counseling etc.
(ii)	Evolution	Adaptation for survival: Factors that bring about competition: intra and inter-specific competition; structural adaptations for obtaining food, protection/defence, securing mates for reproduction, regulating temperature and loss of water; behavioural adaptations in social animals. Adaptations and evolution. Theories of evolution ï Lamarckôs and Darwinôs theories. Brief account of evidence for evolution.

8. Silence must be observed in the examination hall. The only permissible way of attracting the attention of the invigilator is by the candidate raising up his/her hand.
9. All rough work must be done on the answer script and crossed neatly through, thereafter.
10. Students are advised in their own interest, to write legibly and to avoid using faint ink. The answer to each question must be started on a fresh page of the answer script.
11. Students are to submit their answer scripts to the invigilators before leaving the examination hall.
12. Any student found to be involved in any examination malpractice will be invited to appear before the Examination Malpractices Panel and may subsequently be expelled from the programme

PROCEDURE FOR INVESTIGATING ALLEGED EXAMINATION MISCONDUCT

1. Whenever a student is caught for any examination offence, the case shall be reported to the Invigilator/Supervisor in the Hall immediately.
2. The invigilator shall fill the necessary form reporting the case of examination misconduct and the student shall be made to write a statement on his/her involvement. Thereafter, the student shall be allowed to continue with the examination.
3. The Invigilator/Supervisor shall then report formally to the Chairman of the board.
3. The student will then be invited to appear before the Examination Malpractices Panel to defend himself / herself verbally.
4. The Examination Malpractices Panel shall read the offence(s) alleged to have been committed by the student and allow him/her to defend himself / herself in the light of his / her statement, which he / she had earlier on submitted.
5. The reports and recommendation of Examination Malpractices Panel shall be forwarded to the Board for consideration and approval.

EXAMINATION OFFENCES AND SANCTIONS

The offences and sanctions to be imposed are as follows:

S/NO	OFFENCE	SANCTION
1	Examination Leakage	Student ï Expulsion Staff - Dismissal
2	Illegal possession of answer script by students	Expulsion
3	Examination script with more than one handwriting	Expulsion
4	Staff-complicity in multiple Handwriting	Expulsion
5	Possession of illegal materials relating to examination inside the examination venue	Expulsion
6	Involvement of mercenary in writing examination	Expulsion of all parties concerned
7	Impersonation	Expulsion of all parties concerned
8	Studentsô assault on invigilator	Expulsion
9	Harassment of co-students for not cooperation in malpractice	Expulsion
10	Falsification of identity i.e. Names and Matriculation Number, etc. by culprit	Expulsion
11	Giraffing	Expulsion
12	Exchange of scripts	Expulsion of all parties involved
13	Refusal to submit examination answer script	Expulsion
14	Falsification of official documents such as examination card, school receipt, identity card, course registration form etc.	Expulsion

		biotic and abiotic. The biotic component (plants, Animals, microbes). Introductory microbiology. Ecological components: environment, biosphere, lithosphere, hydrosphere, atmosphere, habitat, niche, population biotic community
(ii)	Ecological factors	Physical factors, edaphic factors, food chains, food webs and trophic levels. Energy flow and biogeochemical cycles (water, Nitrogen, carbon etc); the role of microorganism. Ecological succession and climax community.
(iii)	Habitats	Aquatic, marine etc.
(b)	Ecological management:	Associations within the community (symbiosis, predation, parasitism etc). Adaptation to environmental factors and population regulation. Pollution of the environment and control: Effects on biotic and abiotic systems and the method of control. The role of micro-organisms in pollution and pollution control. Sanitation and sewage disposal. Conservation of natural resources (water, soil, minerals, forests and wild life).
(c)	Introductory Genetics and Evolution	

		lenticels) and mechanisms of gaseous exchange in plants.
(c)	Irritability in Plants:	Stimuli and types of responses: tropism, taxis nastic and sleep movements. Hormonal co-ordination in plants ï Auxins; tropism Growth: General features, regions of fastest growth in (root and shoot tips). Basis of growth ï cell division (mitosis), enlargement and differentiation. The influence of growth hormones; growth curvatures (i.e. tropisms); types of tropism; seed germination.
(d)	Transport in Plants:	Needs for transportation: increase in size and complexity. Materials for transportation ï excretory products (water, carbon (iv) oxide, oxygen, tannins, acids, resins, gum, mucilage, alkaloids and anthocyanin), gases, manufactured food, nutrients and hormones. Absorption and transportation of soil water. Mechanism of water and food transport: transpiration pull, roof pressure; active transport in plants.
5.	**ECOLOGY, GENETICS AND EVOLUTION**	
(a)	Basic Ecological Concepts:	
(i)	Ecosystem	Components of the ecosystem:

Interpersonal Relationship

(a) A student shall not engage in any act that can constitute an offence under the law of the country.
(b) A student shall not constitute a threat to the life of other students. Physical combat will attract expulsion.
(c) A student shall not be rude to the University Principal Officers and other authorized officials.
(d) A student shall not be a member of any proscribed organization
(e) A student shall not engage in sexual harassment
(f) A student shall not molest, intimidate or harass any University staff.
(g) Immodest dressing by any student will attract disciplinary sanctions and such student (male or female) could be asked to leave the lecture room or University function.
(h) Offenders shall face the Studentsô Disciplinary Committee, depending on the seriousness of the misconduct

Class Attendance

(a) Students are required to attend lectures promptly and well-dressed
(b) Students shall be admitted into a lecture not later than ten (10) minutes after the lecture might have started.
(c) Student must comport themselves well in the class. There should be no noise and movements once the lecture starts.
(d) No electronic gadget that can make noise or disturb the teaching or practical activities within the University shall be tolerated.

Movement around the University

(a) The lawns should be respected. There should be no movement across the lawns
(b) All litters must be dropped at appropriate waste dumps
(c) Students should ease themselves at places designated for the purpose.

(d) Student who possesses the means of vehicular transport shall obey all existing traffic rules and regulations of the nation, respect the right of the pedestrians and conduct themselves in orderly manner without undue noise making. In addition, such vehicle and / or motorcycles should be registered with the University Security Unit.

(e) Eating and drinking must be done at appropriate official designated places.

(f) Loitering in and around the University premises after 12 Midnight and before 6.00a.m shall not be tolerated. (Students are, however encourage to make use of library facilities and lecture theatres / halls in preparation for examinations).

(g) There shall be no religious gathering, posters or any other religiously motivated action in or around the lecture halls, offices and laboratories except in places officially designated for religious activities and with an official approval of the School Authority

(h) There shall be no soliciting for alms within the vicinities of academic activities

Relationship with Staff

(a) Students should not act in a manner that compromises their self integrity and honour

(b) Students shall obey the academic instructions of the staff in polite and respectful manner.

(c) They should be neat and well-dressed when meeting with any other University official

(d) There should be no noise making in or around the offices, lecture halls and rooms, Health Centre and Library.

		functioning of the kidney (water and salt content of the blood, environmental temperature etc)
4	**PHYSIOLOGY OF PLANTS**	
(a)	Nutrition	Autotrophic ï photosynthetic and chemosynthetic autotrophs. Photosynthesis: outline of the process: light and dark reaction; materials and conditions necessary for photosynthesis. Evidence of photosynthesis. Mineral requirement of plants: soil and atmosphere as sources of mineral elements. The macro and micro-nutrients: effects of mineral deficiencies. The difference between food produced by plants and mineral elements.
(b)	Respiration:	Outline of the process and its significance. Cell (tissue) respiration: the role of oxygen in the liberation of energy for the activities of the living organisms. Aerobic respiration, anaerobic respiration, yeast fermentation and energy release. Outline of the chemical processes involved in glycolysis and Krebsôs cycle. The role of ATP. Energy balance sheet Fundamental similarities in the respiration of plants and animals. Special features of respiration (i.e. stomata and

e	Co-ordination and Control:	Importance of co-ordination and control. Differences between nervous and hormonal control.
(i)	Nervous co-ordination	The components, structure and function of the central nervous system, the brain and spinal cord. Peripheral nervous system ï somatic Ns, Autonomic NS; Mechanism of transmission of impulses. Structure, function and classification of neuron; the reflex arc, reflex and voluntary action compared; coordinated reflexes.
(ii)	Hormonal Co-ordination	Animal hormones. Sites of secretion, functions and effects of over and under secretion. The role of thyroxin in the metamorphosis of toad.
(iii)	Sense Organs:	The skin; sensations such as touch, pressure, cold and heat, organs of smell, tastes, sight and hearing. Mechanism of smelling, tasting, seeing and hearing. Association between organs of taste and smell. Eye and ear defects and their corrections.
F	Homeostasis (Regulation of Internal Environment):	The skin and regulation of body temperature. Osmo-regulation and maintenance of acid-base balance. The role of the kidney in regulating water and salt content of the blood. The conditions that affect the

CURRICULUM AND COURSE CONTENTS

CHEMISTRY PRE-DEGREE COURSE (CHM-001)

Physical

Statistical treatment of data (introductory) Particulate/wave nature of matter: Kinetic theory of matter (gases only) Gas laws: laws of chemical combination; Atomic structure; Chemical Bonding; Acids Bases and Salt (Definitions) and Calculations of ph, buffer solution etc.
Thermo-chemistry; Electrolysis; Rates of Chemical reaction; Chemical reaction; Chemical equilibrium.

Organic

Historical survey of the development and importance of organic chemistry. Nomenclature and classes of organic compounds. Qualitative and quantitative analysis of organic compounds. Hydrocarbons: Saturated and Unsaturated; Alkanols, Alkanals, Alkanones, Alkanoic acids, polymeric halides; carbohydrates.

Inorganic

Non-metals and their compounds. Laboratory and industrial preparations and their properties. Metals and their compounds ï Extraction from their ores; Alloys; Chemistry of Groups I ï VIII; Chemistry in industry and society. Pollution and pollution control.

BIOLOGY PRE-DEGREE COURSE (BIO-001)

Preamble: The revised curriculum for Biology 001 is designed to upgrade the knowledge of Biology of Senior Secondary School Certificates students undergoing Pre-Degree programme at LAUTECH in order to prepare them for first year undergraduate studies in Biology

The syllabus is divided into five sections:

1. Diversity of Plants
2. Diversity of Animals
3. Structure and Physiology of Animals
4. Physiology of Plants
5. Ecology, Genetics and Evolution

S/N	CONTENTS	NOTES
1. a (i) (ii) (iii) b	**DIVERSITY OF PLANTS** Introduction to taxonomy; Systems of Classification; Major divisions of plant kingdom	Structure, characteristics and life histories of plants, from Bacteria to Fungi, Algae, Lichens, Bryophytes, Pteridophytes and Spermatophytes. Evolutionary trend in plants as shown by a study of the characteristics of these groups should be emphasized. The study should illustrate the trend from simple to complex structural organizations From aquatic to terrestrial habitats using selected

		functions. Functions of the liver in the general metabolism.
b	Tissues and Systems in Mammals and their functions.	
(i)	Skeletal and supporting system	The skeleton bones and vertebral column: Biological significance types of skeleton (exoskeleton, endoskeleton). Mechanism of support in animals; functions of the skeleton (protection, support, locomotion, respiratory movement).
(ii)	Transport system in mammals	Need for transportation; surface area/volume ratio: substances having to move greater distances e.t.c. Composition and functions of blood and lymph; materials for transportation and their sources; form in which they are transported and where they are transported to.
c.	Respiration in Animals	Respiratory system: The gills and the lungs. Mechanism of gaseous exchange in fish, toad and mammals. Respiratory movements in these animals should be stressed.
d.	The Mammalian Excretory system and Mechanism:	Structure of the kidney, the lung and the skin. Structure of kidney in relation to filtration and reabsorption. The excretory function of the liver. Excretory products: significance of excretion.

		system in vertebrates.
(iii)	Respiratory system	Body surface (protozoa), cutaneous, gills (Amphibians and fish). Trachea (insects), lungs (adult stage of amphibians, reptiles e.t.c.
(iv)	Excretory systems and Mechanism	Contractile vacuole flame cells, malpighian tubules, kidney. Excretory products and mechanism in earthworm and insects in relation to that of a named mammal (a brief account).
	PHYSIOLOGY OF ANIMALS (FORM & FUNCTION)	
(a)	Animal Nutrition	
(i)	Food substances: classes	Carbohydrates, proteins, fats and oils, vitamins, mineral salts and water as components of diet. The concept of balanced diet and its importance. Food tests, digestive enzymes; classes, characteristics and functions. Digestion, Absorption and Assimilation
(ii)	The structure of tooth: types, their functions.	The relationship between dentition and diet as illustrated by a named omnivore, herbivore and carnivore.
(iii)	Modes of nutrition	Heterotrophic:- (holozoic, parasitic, symbiotic and saprophytic). The alimentary system of a named mammal. Modification of parts for their

		examples.
(i) (ii)	**Morphology and Anatomy of plants (flowering plants)** External morphology, Internal structure and functions of the root, stem, leaf and flower	Different types of supporting tissues in plants e.g. turgid parenchyma, collenchyma, xylem (wood) and selerenhyma; and their functions (strength, rigidity, flexibility, resilience etc). Pollination and fertilization; products of sexual reproduction in angiosperms (i.e. fruits and seeds); their classification, structure and dispersal: i.e. Simple (dry dehiscent, dry indehiscent and succulent), aggregate and multiple. The internal structure of a drupe, a berry, a caryopsis, a bean seed and a castor oil seed.
2. a. (i)	**DIVERSITY OF ANIMALS** Cell structure (ultrastructure	The cell as a living unit. Cells:- Functions of cell components. Variety of cells and forms in which living cells exist i.e. single and free living (e. g. Amoeba, Paramecium), colony (e.g. volvox); filament (e.g. Spirogyra), Cell as part of a living organism (e.g. check cell). Cell and its environment: physical and biophysical processes diffusion, osmosis, plasmolysis etc; their significance and the factors which affect cell activities in its

		environment. Properties and functions of living cells. Cell division and cell growth ï mitosis and meiosis.
b (i) (ii) (iii) (iv)	**Levels of organization in Animals** Cell: in single celled animals e.g Amoeba, Paramecium Tissue: in certain lower animals e.g Hydra, Sponges Organ: as components of higher animals e.gheart, lung e.t.c. System: in mammals e.g.reproductive, Transport, skeletal e.t.c.	These and other examples should be used to illustrate the differentiation and specialization in animals. The significance of different levels of organization including volume/surface area ratio should be mentioned.
c	**Evolutionary trends in Animals shown by a study of the characteristics of the following groups.**	Familiarity with the principal features as indicated against each group is required, rather than detailed knowledge of the systematic or of particular examples. The study should illustrate the trend from simple to complex structural organizations and from aquatic to terrestrial habitats. Advantages and disadvantages of complexity of organization in higher animals.
(i)	Protozoa	Characteristics, including habitat and examples to corroborate evolutionary position.

(ii)	Coelenterates	General characteristics; classification, structure and mode of life of selected examples.
(iii)	Platyhelminthes	General characteristics; classification, mode of life and economic importance of selected example.
(iv)	Nematoda	General characteristics; economic importance and mode of life of a selected examples
(v)	Annelida	General characteristics: mode of life; economic importance
(vi)	Arthropoda	General characteristics; classification with examples: Economic importance.
(vii)	Mollusca	General characteristics; Economic importance.
(viii)	Echinodermata	General characteristics; mode of life of a selected examples.
(ix)	Vertebrata	General characteristics; classification with examples i.e Pisces, Amphibians; Reptilia, Aves and Mammals.
d.	**Comparative structure and function of the Animal kingdom**	
(i)	Nutrition	Alimentary system of different animals e.g. earthworm, cockroach. Modification of parts for their functions, feeding habits
(ii)	Mechanismn of transportation of materials	Protoplasmic streaming, pumping of blood in higher animals, open circulatory systems in invertebrates, closed