

HAVILLA UNIVERSITY NDE, IKOM
CROSS RIVER STATE, NIGERIA

FACULTY OF COMPUTING AND SCIENCES
BIOLOGICAL SCIENCES



B.Sc. BIOTECHNOLOGY
STUDENT HANDBOOK

TABLE OF CONTENT

SECTION I

1.0 Preamble	v
1.1 Introduction to Havilla university	v
1.2 Vision	vi
1.3 Mission	vi
1.4 Philosophy	vi
1.5 Objectives	vii
2.0 General admission requirement	xii
3.0 Grading system	xiv
4.0 Conditions for probation and withdrawal	xiv
5.0 Graduation Requirement	xvii
6.0 General code of conduct	xvii

SECTION II

7.0 Department of Biological sciences (B.sc. Biotechnology)	1
7.1 Philosophy, Aims and Objectives of the Degree Programme	1
7.2 Admission and Graduation Requirement	1
7.3 Learning Outcomes	2
7.3.1 Attainment Levels	2
7.3.2 SIWES Eligibility Criteria	2
8.0 Curriculum for B.sc. (hons.) In Biotechnology	3
9.0 Direct entry programmes for Biotechnology	12
10.0 Course Description	26

HAVILLA UNIVERSITY NDE, IKOM

Student Handbook

1.0 Preamble

The Student Handbook is the official statement of rules and regulations guiding student conduct in Havilla University. All items contained in this book are in effect at the date of publication in September 2021. All rules, regulations, and policies are subject to change through the appropriate faculties, departments, units, offices, and legislative bodies empowered by the University Senate, the Vice Chancellor, and the Board of Trustees of Havilla University. Any change in the items contained in the Student Handbook will be published in the appropriate departmental media. All students are responsible for acquainting themselves with the contents of the Student Handbook. If questions arise, do not hesitate to call the Dean, Student Affairs' Office for clarification and/or assistance.

1.1 Introduction to Havilla University

It has always been the dream and aspiration of the owners of Steadyflow International Limited to nurture, train and produce dedicated and committed young men and women who shall become the curators, architects and transformers of society. This dream has been inspired by the personal experiences of the owners and the impact education has made in their lives. It is also inspired by the need to give something back to society as recompense and recognition for the benefits and blessings that they have received from their communities, societies and Nigeria in general. The Chancellor of Havilla University has identified education as the single most important tool for the emancipation of the individual and for the transformation of society.

The intent of Steadyflow International, the Proprietor of Havilla University, has also manifested in its engagement in the betterment of the lives of the less-privileged in society. To further actualize the dream, the Proprietor established the Steadyflow Nursery and Primary School, Abuja in 2001, the Steadyflow International High School, Abuja in 2007 and the Steadyflow College of Education, Akparabong, Ikom in 2012. The good intentions of the Proprietor of Havilla University and the successes recorded in the provision of education at the nursery, primary, secondary, and tertiary levels have fueled the drive that led to the establishment of Havilla University as a centre of academic excellence.

On November 6, 2021, the Unveiling Ceremony of Havilla University took place under the Chairmanship of Sen. Kanu Agabi, SAN, GCON, ably represented by Sen. Victor Ndoma-Egba, SAN. During the occasion, The

Chairman, Board of Trustees, Prof. Florence Banku Obi, represented by the Deputy Vice-Chancellor (Administration) of University of Calabar, performed the Investiture ceremony of the Pioneer Vice Chancellor of Havilla University, Prof. Samuel Tita Wara. Also on that occasion, the Representative of the Chairman of the occasion laid a foundation stone for the Proposed, Sen. Kanu Agabi Faculty of Law.

Two others were duly honoured by the Chancellor of the University, the Administrative Block was renamed the Sen. Victor Ndoma-Egba Senate Building while the Female Hostel Complex was renamed, Prof. Florence Banku Obi Hall. The final event of the Unveiling Ceremony was the celebration of the retirement of Mrs. Blessing A. O. Tangban, a Board Member of the Proprietor, Director of Education at the Steadyflow Group of Schools and wife of the Chancellor. Mrs. Tangban who went on voluntary retirement from the Petroleum Equalization Fund Management Board after twenty years of service, launched her maiden book, "The Memoirs of an African Village Girl". Proceeds from the Book Launch were used to establish a Foundation for the Education of the Indigent Child at Havilla University.

1.2 Vision

The vision of Havilla University is 'to be a leading University recognized, nationally and internationally, for promoting innovations in teaching, research and public service through its academic programmes'.

1.3 Mission

The mission of the Havilla University is 'to transform the lives of its students and staff and empower them with knowledge, skills and values to enable them excel in their fields, achieve successes and transform their societies'.

1.4 Philosophy

The philosophy of the Havilla University is guided by a five-point agenda that focuses on the impact of the University on its staff and students and the world at large. These cardinal points are:

- i. **Knowledge creation** — this is rooted in the philosophy that knowledge is power. It holds the belief that learning illuminates the mind and also brightens the paths of human beings to progressive self-discovery, leading to innovative contribution to development. Knowing that

ignorance is darkness and darkness leads to poverty of mind, Havilla University provides an atmosphere of academic liberty for in-depth discovery of mind and purpose;

- ii. **Student-centered** — this provides wide opportunities, resources and facilities to enhance students' learning in academic, moral and community activities. This way, an avenue that prepares young people to be intellectually sound, morally balanced and professionally proficient is instituted in Havilla University;
- iii. **Community-participatory** — this is to promote participatory management on the understanding that all stakeholders have contributory roles in the achievement of the goals and objectives of Havilla University;
- iv. **Balancing Stability and Change** — with relevance to the rapidly changing social and technological revolutions of the 21st Century, the Havilla University creates a balance in retaining positive values while it strives to reverse the depth of poverty and place relevance on the institution of entrepreneurial education, job creation and value re-orientation; and
- v. **Global Relevance** — this ensures that the learning, teaching and community services shall embrace international perspectives and the impact of globalization, while acting locally to meet societal needs. This is built on excellence on the academic and research programmes of Havilla University.

1.5 Objectives

The law establishing Havilla University has outlined its objectives aimed at meeting its vision and mission. The objectives of Havilla University are to:

- i. Encourage the advancement of learning and to hold out to all persons without distinction of race, creed, sex or political conviction the opportunity of acquiring a higher and liberal education;
- ii. Provide sources of instruction and other facilities for the pursuit of learning in all its branches, and to make those facilities available on proper terms to such persons as are equipped to benefit from them;
- iii. Encourage and promote scholarship and conduct research in all fields of learning and human endeavour;
- iv. Evolve academic programmes to suit the changing social and economic needs of society through continuous review of curricular and developments of new programmes through programme structural flexibility to respond to societal and technological changes;

- v. Create and expand access and opportunities for education, attract and retain quality students, researchers, and teachers, thereby assisting in developing human capital and mitigating the brain drain currently afflicting Nigeria;
- vi. Appreciate and stimulate interest in African and other regional cultural heritage and relating its activities to the social and economic needs of the people of Nigeria and the world;
- vii. Carry out basic and applied research leading to the domestication and application of new technology to the Nigerian context through collaborative linkages with other academic and research institutions in Africa and the rest of the world;
- viii. Establish a centre for entrepreneurial studies to stimulate job creation and innovative abilities in students from onset of their studies, in such a way that graduates shall be resourceful, self-reliant and job creators; and
- ix. Undertake other activities appropriate for teaching, research and community service as expected of a university of high standard.

Steadyflow International Limited

Proprietor

Board Of Trustees of Havilla University

Prof. Florence B. Obi	Chairman
Hon. Jones A. O. Tangban	Member
Dr. Pius Tabi Tawo	Member
Barr. Christopher Agara	Member
Ms. Blessing Ayuk Tangban	Member
Barr. Tawo E. Tawo, SAN	Member
Pastor Olugbenga Olufisayo	Member
Dr. Antor Odu Ndep	Secretary

Hon. Jones Ayuk Ojong Tangban

Chancellor

Principal Officers

Prof. Samuel Tita Wara	Vice Chancellor
TBD	Deputy Vice Chancellor (Academic)
TBD	Deputy Vice Chancellor (Administration)
TBD	Registrar
TBD	Librarian
TBD	Bursar

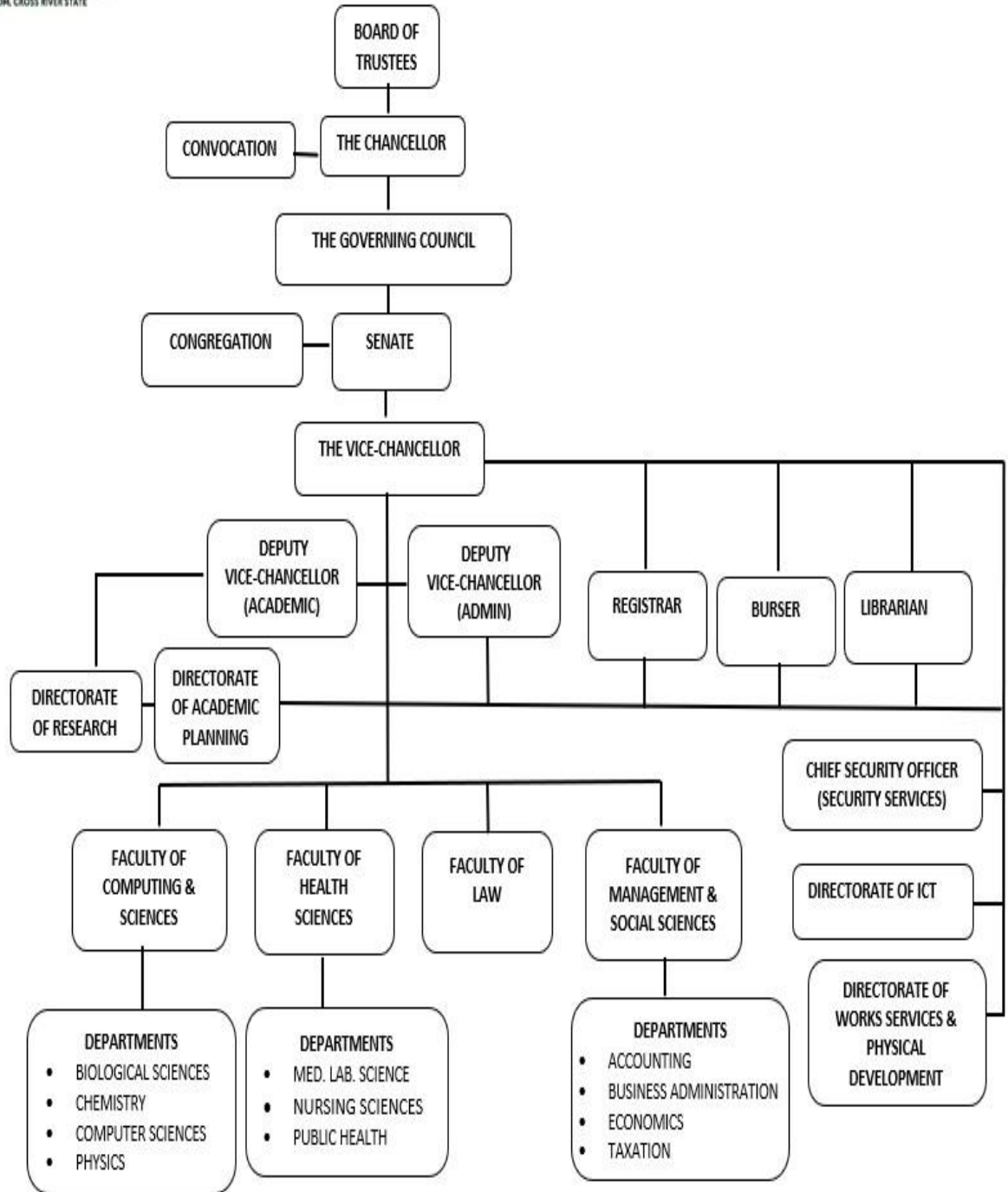
Other Officers

Dr. Antor Odu Ndep	Director of Academic Planning
Dr. Helen Uzezi Wara	Director of Admissions, Student Affairs & Establishment
TBD	Director of Physical Planning

ORGANOGRAM OF HAVILLA UNIVERSITY



INSTITUTIONAL ORGANOGRAM



1.6 List of Current academic staff

FAULTY OF COMPUTING AND SCIENCES

DEPARTMENT OF BIOLOGY

S/N	NAME OF ACADEMIC STAFF	DISCIPLINE	QUALIFICATION (specify)	RANK	POSITION
	Cecilia James Sunday	Genetics & Biotechnology	PhD. MSc. BSc	Lecturer II	Lecturer

DEPARTMENT OF CHEMISTRY

S/N	NAME OF STAFF	DISCIPLINE	QUALIFICATION	RANK	POSITION
	Barizomdu Tina Pii	Analytical/Environmental Chemistry	PhD. MSc. BSc	Lecturer II	Lecturer
	Uche Emmanuel Nwachi	Biochemistry/Medical Biochemistry	PhD. MSc. BSc	Lecturer I	Lecturer

DEPARTMENT OF COMPUTER SCIENCES

S/N	NAME OF STAFF	DISCIPLINE	QUALIFICATION	RANK	POSITION
	Iwara Kommomo	Computer Science	MSc., BSc.	Assistant Lecturer	Lecturer
	Nsor Emmanuel Nsor	Computer Science	BSc.	Technologist I	Technologist

DEPARTMENT OF MATHEMATICS

S/N	NAME OF STAFF	DISCIPLINE	QUALIFICATION	RANK	POSITION
	Samuel Tita Wara	Electrical Electronics Engineering	Ph.D., MSc., BSc.	Professor	Lecturer
	Raphael Owan Asu	Statistics	MSc. BSc.	Assistant Lecturer	Lecturer

DEPARTMENT OF PHYSICS

S/N	NAME OF STAFF	DISCIPLINE	QUALIFICATION	RANK	POSITION
	Samuel Tita Wara	Electrical Electronics Engineering	Ph.D. MSc. BSc.	Professor	Lecturer
	Anthony Ibe Ekene	Physics	MSc	Assistant Lecturer	Lecturer

FACTY OF HEALTH SCIENCES

DEPARTMENT OF MEDICAL LAB SCIENCE

S/N	NAME OF STAFF	DISCIPLINE	QUALIFICATION	RANK	POSITION
1	Antor Ndep	Public Health	B.Sc., MPH, DrPH	Senior Lecturer	Lecturer

DEPARTMENT OF NURSING SCIENCES					
S/N					
1	Antor Ndep	Public Health	B.Sc., MPH, DrPH	Senior Lecturer	Lecturer
DEPARTMENT OF PUBLIC HEALTH					
1	Antor Ndep	Public Health	B.Sc., MPH, DrPH	Senior Lecturer	Lecturer
FACULTY OF MANANGEMENT AND SOCIAL SCIENCES					
DEPARTMENT OF ACCOUNTING					
1	Mr. Kondo Augustine Kondo	Account Staff	MSC. BSc.	Account Officer 1	Accountant
DEPARTMENT OF BUSINESS ADMINISTRATION					
1	Antor Ndep	Public Health	B.Sc., MPH, DrPH	Senior Lecturer	Lecturer
2	Dr. Helen U. Wara	Business Administrations	B.Sc., MBA, M.Sc., PhD	Lecturer II	Lecturer
DEPARTMENT OF ECONOMICS					
1	Mr. Amechi E. Igharo	Economics	Dip. PA., B.Sc., M.Sc.	Assistant Lecturer	Lecturer
GENERAL STUDIES UNIT					
S/N	NAME OF STAFF	DISCIPLINE	QUALIFICATION	RANK	POSITION
1	Peter Augustine Silas	Linguistics	PhD., MSc. BSc	Lecturer II	Lecturer
2	Benson Efegadi Egugozie	French in International Relations	Ph.D., MSc., BSc.	Lecturer II	Lecturer
CORPERS					
S/N	NAME OF STAFF	DISCIPLINE	QUALIFICATION	RANK	POSITION
1	Efosa Prosper Osarumwense	Science Laboratory Technology (Physiology & Pharmacology)	BSc.		
<hr/> <p>8 Page</p>					

2	Madonna Chinecherem Ezeoke	Parasitology & Entomocology	BSc.		
3	Kim Danladi	Buiding Technology	HND		
4	Mabel Ngwoke	Pure and Industrial chemistry	BSc.		
5	Morowooluwa Dami Omowonuola	Economics	BSc.		
5	Nnebedum Glory	Mechanical Engineering	BSc.		
7	Deborah Ayomide Babarinde	Biochemistry	BSc.		
8	Fidelis Ndubuisi Asu	Accounting	BSc.		

BURSARY

S/N	NAME OF STAFF	DISCIPLINE	QUALIFICATION	RANK	POSITION
	Mr. Kondo Augustine Kondo	Account Staff	MSC. BSc.	Account Officer 1	Accountant

SECURITY OFFICERS

S/N	NAME OF STAFF	DISCIPLINE	QUALIFICATION (specify)	RANK	POSITION
1	Mr. Shagari Mohammed				Security officer
2	Mr. Donald Moses				
3	Mr. Kingsley Nsing Akonjom				

S/N	NAME OF STAFF	DISCIPLINE	QUALIFICATION (specify)	RANK	POSITION
1	Millicient Ajam		O'level		Cleaner
2	Mrs. Mary Ndoma		O'level		Cleaner
3	Maureen Ibangha Basse		O'level		Cleaner
4	Alice Ukwudi Ibanye		O'level		Cleaner

VEGETATION CONTROL

S/N	NAME OF STAFF	DISCIPLINE	QUALIFICATION (specify)	RANK	POSITION
	Enyani Nsed Ekara				Gardener

2.0 General Admission Requirements

Admission into Havilla University is open to candidates with the requisite qualifications and subject to written and/or oral examination as the University may determine. All applicants for admission into the University must be at least 16 years of age. Admission into Havilla University is open to all irrespective of Religion, Ethnic Group, Gender, Creed, and Disability.

A general overview of the admission requirements are as follows:

- For admission to 100 Level (via UTME), candidates must: obtain five (5) credits at SSCE (or equivalent) in relevant subjects at not more than 2 sittings including credit passes in English and Mathematics; and attain acceptable points in UTME in relevant subjects.
- For admission by direct entry (200 Level), candidates must, in addition to having five (5) SSCE credits, obtain at least two (2) A' level (or its equivalent) passes in relevant subjects, or possess ND with credit passes, or possess a good first degree in another field as the case may be.
- Credit passes in English Language and Mathematics are compulsory for admission into all courses.
- Those who meet the requirements for admission shall be subjected to a screening interview to be conducted by the University.

2.1 Grading system

In evaluating the course work done by a student, a five-point grading system is adopted

Percentage Mark	Letter Grade	Grade Point	Description
70% - 100%	A	5	Excellent
60% - 69%	B	4	Very Good
50% - 59%	C	3	Good
45% - 49%	D	2	Fair

40% - 44%	E	1	Pass
0% - 39%	F	0	Fail

2.1.1 Grade Point (GP)

Each grade has points attached to it. Since Havilla University runs a five point grading system, A is five points, B is four points, C is three points etc. see table above.

2.1.2 Credit Points (CP)

This is obtained by multiplying grade points obtained in each registered course by their respective credit units in a semester/session. If a student scored an A in Chemistry which is a 3-credit course, the Credit points obtained are $5 \times 3 = 15$.

2.1.3 Grade Point Average (GPA)

For each semester, the students' sum total credit points divided by total number of credit units from courses registered for that semester gives the Grade Point Average (GPA). The GPA is for one session only. By the end of the session, all Year One (100 Level) students normally get a GPA at the end of the first semester.

2.1.4 Cumulative Grade Point Average (CGPA)

This is the up-to-date mean of the grade point average (GPA) earned by the student in a programme of study. This is obtained by multiplying the GPA by the respective credit units for all the semesters, adding these and dividing the total sum by the total number of credit units for all courses registered by the student. For 100 Level students, CGPA can only be calculated by the end of the session (end of two semesters).

Note: 'NR' represents an incomplete result, and it is not use it for calculating CGPA.

2.1.5 How to Calculate GPA and CGPA

COURSE	CREDIT UNIT (X)	GRADE SCORE AND GRADE POINT (W)	TOTAL CREDIT POINTS (XW)	GPA = $\frac{\sum XW}{\sum X}$
GSS 101	2	B = 4	8	65/18 =3.61
MTH 111	3	A = 5	15	
PHY 101	3	B = 4	12	
BIO 101	3	C = 3	9	
CHM 101	3	A = 5	15	
PUH 101	2	D = 2	4	
GSS 131	2	E = 1	2	
TOTAL	$\sum X = 18$		$\sum XW = 65$	

3.0 CONDITIONS FOR PROBATION AND WITHDRAWAL

❖ Probation conditions

Probation is a status granted to any student whose academic performance fall below the acceptable standard. There are two conditions that could place a student on probation status:

- i. Any student whose GPA or CGPA is **below 1.50 (1.00 – 1.49) OR**
- ii. Any student who has **15 credit units** of failed courses irrespective of CGPA at the end of an academic year earns a period of Probation for one session.

Students who are on Probation are expected to take **only the failed probation courses**. At the end of the probation year, a student may continue in the programme of study provided his/her CGPA is up to 1.50 or more. Otherwise, the student will be advised to change programme or withdraw from the University.

❖ Withdrawal conditions

A student whose GPA or CGPA drops below 1.00 (i.e., 0.01 – 0.99) or has more than 15 credit units of failed courses irrespective of CGPA will be withdrawn from the University.

Expected Duration of the Programme

A student will not be allowed to exceed an additional 50 per cent of the duration of the programme if he fails to graduate within the minimum number of years.

(a) UME -Four years.

(b) Direct Entry -Three years

A student will not be allowed to exceed an additional 50% of the duration of the programme if he fails to graduate within the minimum number of years.

Title of Degrees to be Awarded

The title of the degree shall be Bachelor of Science “B.Sc”.

- ❖ Accounting; B. Sc (Accounting)
- ❖ Business Administration; B. Sc (Human Resource Management)

4.0 GRADUATION REQUIREMENT

The minimum number of credit units for the award of a degree is 120 units, including Department and Faculty requirements. A student shall therefore qualify for the award of a degree when he has met the conditions. The minimum credit load per semester is 15 credit units. For the purpose of calculating a student’s cumulative GPA(CGPA) in order to determine the class of Degree to be awarded, grades obtained in ALL the courses whether compulsory or optional and whether passed or failed will be included in the computation. Even when a student repeats the same course once or more before passing it or substitutes another course for a failed optional course, grades scored at each and all attempts shall be included in the computation of the GPA. Pre - requisite courses must be taken and passed before a particular course at a higher level.

4.1 Classification of B.Sc. Degree

Below is the classification of degree results for graduation.

Cumulative Grade Point Average (CGPA)	Class of Degree
4.50 - 5.0	First Class (Hons)
3.50 - 4.49	Second Class (Hons) Upper Division
2.40 - 3.49	Second Class (Hons) Lower Division
1.50 - 2.39	Third Class (Hons)
0.99 – 1.49	Fail

**** Please note that there is no PASS class of degree**

DETAILED DESCRIPTION OF GENERAL STUDIES COURSES

FIRST SEMESTER

s/n	Course Code	Course Title	Credit Units
100 LEVEL			
1	GST 111	Communications in English I	2
2	GST 121	Use of Library, Study Skills & Information Communication Technology (ICT)	2
3	GST 131	Nigerian Peoples & Culture	2
200 LEVEL			
1	GST 211	History & Philosophy of Science	2
300 LEVEL			
2	GST 311	Introduction to Entrepreneurial Skills	2

SECOND SEMESTER

s/n	Course Code	Course Title	Credit Units
100 LEVEL			
1	GST 112	Logic Philosophy & Human Existence	2
2	GST 122	Communication in English II	2
3	GST 132	Communication in French	2
200 LEVEL			
1	GST 212	Peace Studies & Conflict Resolution	2
2	GST 222	Introduction to Entrepreneurial Studies	2

Note that students must pass all GST courses in order to graduate.

5.0 HAVILLA UNIVERSITY GENERAL CODE OF CONDUCT

Accommodation

Havilla University is a fully residential institution. Students are not allowed to go out of campus at will. Should there be need for a student to go out of campus, appropriate permissions must be obtained which includes a verbal or written permission from the parent or guardian on record.

Class attendance

All students must meet 75% attendance rate for any course in order to qualify for the end of Semester/sessional examinations.

Cooking in the hostel

Students are not allowed to cook in the hostels. All students are expected to eat from the cafeteria. Any violation of this rule will result in expulsion.

Cults/confraternities

Havilla University has zero tolerance for students with cult/confraternities affiliations. Any student that joins, organizes or encourages others to join such, or participates in cult-related activities within or outside the campus shall be expelled.

Ikom fire crusade

All students are required to participate in Ikom Fire Crusade activities which involves feeding and clothing widows and orphans as well as health, spiritual growth and life skills seminars.

Meet the chancellor

Every semester, a date shall be announced for a motivational session with the Chancellor.

Religious activities

There shall be a mid-week service every Wednesday at 5:30pm at the University Worship Center (UWC).

Sports

All students are to participate in sporting activities. It is our belief that everyone has some sporting ability. We intend to groom and raise champions who will compete favourably at all levels; local, national, international/Olympics.

GENERAL DRESS CODE

1. **Mondays & Tuesdays:** Western-style (Euro-American) office wear
2. **Wednesdays & Thursdays:** African-style Office wear
3. **Fridays:** HUNI Spirit (HUNI-branded T-shirts and cap)

All students are expected to dress modestly at all times on and off campus.

- a. Bump shorts and ultra-miniskirts are prohibited.
- b. All short dresses (above the knee length) must be worn over tights
- c. Tights must be worn with shirts or dresses that cover the buttocks
- d. Raggedy jeans are not allowed for both males and females

- e.** Transparent shirts/blouses must be worn with the appropriate inner wear
- f.** Off-shoulder dresses/blouses are not acceptable
- g.** Dresses/blouses that show cleavage are not acceptable except if worn with appropriate inner wear
- h.** Students must be clean shaven at all times.
- i.** Male haircut must not be higher than one centimetre.
- j.** For females, multi-coloured and ultra-long braids are not allowed

6.0 DEPARTMENT OF BIOLOGICAL SCIENCE (B.sc Biotechnology)

6.1 Objectives of the degree programme in Biotechnology

- i. To provide students with a sound understanding of the concepts and methodologies of modern molecular biotechnology in key areas that meet the needs of society.
- ii. To broadly educate students for positions in the modern biotechnology industry
- iii. To prepare students for graduate and professional studies in the life sciences at the molecular level.
- iv. To provide, through training and orientation, an appreciation of the rewards of inter- and multi-disciplinary approach to the solution of complex life problems

6.2 Learning Outcomes for Biotechnology

All Bachelors honours degree student in Biotechnology are expected to develop the following abilities and skills:

- a. Regime of Subject Knowledge
Cognitive abilities and skills relating to solution of problems in modern biotechnology
- b. Competencies and Skills
Practical skills relating to the conduct of laboratory and field research in modern biotechnology
- c. Behavioural Attitudes
General skills relating to non-subject specific competencies, communication, interpersonal, organization skills and ethical standards.

6.3 Career Opportunities in Biotechnology

The background and expertise provided by this multidisciplinary degree provide graduates with qualification and flexibility for employment in diverse areas. Career opportunities exist in medical, agricultural, pharmaceutical, educational, environmental, and food/beverage industries. Other areas of

career options are research, entrepreneurial, science policy formulation law and intellectual property, consulting, forensic science, marketing and sales, amongst many others.

6.4 Admission Requirements for Biotechnology

i. UTME Entry

Candidates should have good scores in the Unified Tertiary Matriculation Examination (UTME) and must also possess the following minimum qualifications: SSCE or its equivalents with credit level passes in five subjects at not more than two (2) sittings. These include English Language, Mathematics, Biology, Chemistry to form the core subjects with credit in two other relevant science subjects; Physics, Agricultural Science and Geography. Candidates must also earn an acceptable score in the post UTME screening.

ii. Direct Entry (DE)

Candidates seeking admission by Direct Entry into 200 Level must have at least five (5) O'level credits, with a minimum of two (2) relevant subjects at GCE/IJMB Advanced level or any approved equivalents in relevant science subjects.

Duration of Programme

Type of Entry	Duration	Standard Residency	Extended Residency	Total Semesters
UTME	4 years	8 semesters	4 semesters	12
DE	3 years	6 semesters	4 semesters	10

6.5 Grading and Computation System

A five-point grading system is currently adopted as shown.

Mark Range	Letter Grade	Grade Point
70-100	A	5
60-69	B	4
50-59	C	3
45-49	D	2
0-44	F	0

- **Total Load Units (T.L.U)**

This is the total number of courses units carried by a student in a particular semester. It is the summation of the load units on all courses carried during the semester, for example, a student who is taking 8 courses for 2 units each has a T.L.U of $8 \times 2 = 16$ for that semester.

- **Cummulative Load Units (C.L.U)**

This is the summation of total load units over all the semesters from beginning to date. A student who is prone to repeating courses will finish (if he does not drop out) with higher C.L.U than his non-repeating colleagues and will most likely require a longer time to complete requirements for the award of a degree.

- **Total Credit Point (T.C.P)**

This is the sum of the product of course unit and rating of each course, for the entire semester. For example, consider a student who took 5 unit courses of 3 units each, suppose the grade he obtained in the five courses were A, B, C, D and F respectively.

The T.C.P of this student is obtained as $(3 \times 5.0) + (3 \times 4.0) + (3 \times 3.0) + (3 \times 2.0) + (3 \times 0.0)$
 $= 15 + 12 + 9 + 6 + 0 = 42$

- **Cummulative Grade Point (C.G.P)**

This is summation of Total Credit Point (TCP) divided by the Total Load Units (TLU) for example, consider the student's score referred to in section (iii), his T.C.P is 42.0 and has T.L.U of 15 (i.e 5 courses of 3 units each for the semester, his G.P.A is therefore $42/15 = 2.80$). The highest G.P.A that can be earned is 5.0 and that is when a student has earned an "A" grade in every course during the semester. The lowest G.P.A obtainable is 0.00, signifying an "F" grade all through.

- **Cummulative Grade Point Average (C.G.P.A)**

This is not the summation of G.P.A’s for all semester; rather it is the summation of T.C.P for all the semesters to date divided by the summation of T.L.U for all the said semesters. Like the G.P.A, C.G.P.A’s obtainable ranges from 0.00 to 5.00. In effect, $C.G.P.A = C.C.P/C.L.U$ where C.C.P is Cumulative Credit Point and C.L.U is the Cumulative Load Unit.

- **Final Assessment & Class of Degree**

Class	C.G.P.A
• First Class	4.50-5.00
• 2 nd Class Upper Division	3.50-4.49
• 2 nd Class Lower Division	2.40-3.49
• 3 rd Class	1.50-2.39

For the purpose of determining the class of degree, the C.G.P.A shall cover 100 to 500 levelcourses for UTME students and 200 – 500 for Direct Entry students.

6.6 Graduation Requirements

To be eligible for the award of degree of the Havilla University, the following conditions must be fulfilled:

- i. The student must have met the prescribed entry requirements;
- ii. The student must have taken and passed all the prescribed courses, including all compulsory and required courses;
- iii. The student must be of a high moral standard; and
- iv. The student must also meet any other requirement(s) as prescribed by the Senate of the University.

Level	100	200	300	400	Total
Compulsory/Required courses	48	32	28	31	139
Elective courses	0	10	2	16	28
Total	48	42	30	47	167

6.7 Students' Industrial Work Experience Scheme (SIWES)

This is 6 units and will take place at the end of first semester 300 Level.

Academic Regulations for Degree

Courses

Definition of Terms

- The **UNIT** of a course is defined in relation to the semester duration: this is equivalent to a lecture duration of one hour weekly for one semester of about 15 teaching weeks or three to four hours every week, in the laboratory for one semester of same duration (15 weeks) or the equivalent in workshop or field work time. The size of course shall, as much as possible, be a maximum of four units and its duration shall be one semester except for projects and design course which may carry more than three units and may last more than one semester.
- **Core/Compulsory Course**
A course which every student must compulsorily take and pass in any particular programme at a particular level of study.
- **Required Course**
A course that you take at a level of study and must be passed before graduation.
- **Elective Course**
A course that students take within or outside the faculty. Students may graduate without passing the course provided the minimum credit unit for the course had been attained.
- **Optional Course**
A course which students can take based on interest and may count towards the minimum credit unit required for graduation.
- **Pre-requisite Course**
A course which student must take and pass before taking a particular course at a higher level.

Student Workload

The maximum number of units a student can register for is 25 units per semester. The minimum number of units a student can register for is

15 units per semester.

Academic Status

The academic standing of a student shall be determined by the following conditions:

- i. The Cumulative Grade Point average (CGPA) shall be used as a guide for assessing students, taking into account the minimum CGPA of 1.50 required for graduation.
- ii. A student shall be in good standing as long as his GPA and CGPA are not below 1.50.
- iii. A student shall be given a warning if his GPA is below 1.50
- iv. A student whose CGPA is below 1.50 but whose GPA is at least 1.50 will be given a warning, (note that this will apply only to 100 level students in the second semester; since their first CGPA at the end of the 2nd semester could be less than 1.50 because of a very poor 1st semester GPA), e.g.: 1st Semester GPA = 0.50; 2nd semester GPA = 1.50; CGPA = 0.80.
- v. A student shall be placed on Probation, if his GPA is below 1.50 for two consecutive semesters, e.g. Semester 1: GPA = 0.50; Semester 2: GPA 0.85
- vi. A student whose CGPA is below 1.50 for two consecutive semesters but whose GPA is at least 1.50 will be placed on probation. E.g.: Semester 1: CGPA = 0.75; Semester 2: GPA = 1.50; CGPA = 0.80
- vii. A student on probation because his/her CGPA is below 1.50 for two consecutive semesters, will be asked to withdraw, if his/her CGPA remains below 1.50 for a third consecutive semester.
- viii. A student on probation because his/her GPA and CGPA are below 1.50, will be asked to withdraw, if his/her GPA is below 1.50 the following semester.
- ix. A student whose CGPA is below 1.50 at the end of a particular semester of study shall be placed on probation.
- x. A student on probation because of a CGPA below 1.50 and still has a CGPA below 1.50 at the end of the particular period of probation shall be required to withdraw. However, in order to minimise waste of human resources, consideration shall be given to withdrawal from programme of study a possible transfer to other programmes within the university. Nevertheless, the student's case will be considered in terms of entry

qualification required, ability and aptitude.

- xi. Subject to the conditions for withdrawal and probation, a student may be allowed to repeat the failed course unit (s) at the next available opportunity, provided that the total number of credit units carried during that semester does not exceed 24, and the Grade points earned at all attempts, shall count towards the Cumulative Grade point Average (CGPA).
- xii. In addition to the above conditions, which relate to academic matters, a student may also find it necessary to withdraw voluntarily from the University. The other conditions for withdrawal include: poor health, disciplinary actions from the university as well as unauthorised withdrawal.
- xiii. A student who absents him/herself for two consecutive semesters, without a valid reason, may be asked to withdraw from the university, irrespective of his cumulative grade point average.

Duration of Semester

During each semester, 15 weeks (exclusive of the public holidays and Mid – semester breaks) shall normally be reserved for teaching and two weeks for examination.

Continuous Assessment

Assessment of students' achievement shall be continuous. The student shall be periodically informed of his / her standing in the course. The final examination for each course shall normally be at the end of the semester in which the course is offered. The course grade will be made up of the students' score in the continuous assessment as well as the end of course examination. The continuous assessment shall carry a maximum mark of 40%.

SIWES Eligibility Criteria

All 300 level students are eligible to partake in the SIWES programme, for 4 year programme.

PROSPECTIVE LIST OF ACADEMIC AND TECHNICAL STAFF

S/ N	Designation	Number	Area of Specialization
1.	Professor/ Associate Professor	1	√ Animal Biotechnology
2.	Senior Lecturer	2	√ Plant Biotechnology
3.	Lecturer I	2	√ Environmental Biotechnology
4.	Lecturer II	2	√ Industrial Biotechnology
5.	Assistant Lecturer	2	√ Medical Biotechnology
6.	Technologists	3	√ Food/Agricultural Biotechnology
			√ Nutritional Biochemistry
			√ Medical Bacteriology
			√ Immunology, Immunochemistry
			√ Phytomedicine, Drug Discovery,
			√ Public and Environmental Health
			√ Food Microbiology
			√ Epidemiology and Biostatistics
			√ Food Safety
			√ Reproductive Biology / Biochemistry
			√ Toxicology/Environmental Toxicology
			√ Hydrobiology
			√ Parasitology
			√ Physiology

CURRICULUM FOR B.Sc. (Hons.) IN BIOTECHNOLOGY**100 LEVEL****FIRST SEMESTER**

Course Code	Course Title	Status	Credit unit
HUN 101	The God's factor and 21 st century challenges I	R	1
HUN 121	Security Education I	R	1
GST 111	Communications in English I	C	2
GST 121	Use of Library, Study Skills and Information Communication Technology (ICT)	C	2
GST 113	Nigerian Peoples & Culture	C	2
BIO 101	General Biology I	C	3
BIO 107	Practical Biology I	C	1
CHM 101	General Chemistry I	C	3
CHM 107	Practical Chemistry I	C	1
CSC 101	Introduction to Computer Science	C	3
MTH 101	Elementary mathematics I (Algebra)	C	3
PHY 101	General Physics I	C	3
PHY 107	Practical Physics I	C	1
	Total credit unit		26

SECOND SEMESTER

Course Code	Course Title	Status	Credit unit
HUN 102	The God's factor and 21 st century challenges II	R	1
HUN 121	Security Education II	R	1
GST 112	Logic Philosophy & Human Existence	C	2
GST 122	Communication in English II	C	2
GST 123	Communication in French	C	2
BIO 102	General Biology II	C	3

BIO 108	Practical Biology II	C	1
MCB 102	Introductory Microbiology	C	3
CHM 102	General Chemistry II	C	3
CHM 108	Practical Chemistry II	C	1
MTH 102	Calculus and Trigonometry	C	3
PHY 102	General Physics II	C	3
PHY 108	Practical Physics II	C	1
	Total credit unit		26

200 LEVEL**FIRST SEMESTER**

Course Code	Course Title	Status	Credit unit
HUN 201		R	1
HUN 221		R	1
GST 211	Environment and Sustainable Development	C	2
BCH 201	General Biochemistry I	C	3
BCH 203	General Biochemistry Practical I	C	1
BIO 201	Genetics I	C	2
MCB 201	General Microbiology	C	3
STA 203	Statistics for Physical Science and Engineering	C	4
	Total credit unit		17

SECOND SEMESTER

Course Code	Course Title	Status	Total unit
HUN 202		R	1
HUN 212		R	1
GST 222	Peace Studies and Conflict Resolution	C	2
GST 223	Introduction to Entrepreneurial Studies	C	2
GST 224	Leadership Skills	C	2
BTG 202	Introduction to Biotechnology	C	3
BIO 204	Biological Techniques	C	2
BCH 202	General Biochemistry II	C	3
BCH 204	General Biochemistry Practical II	C	1
CHM 202	Organic Chemistry I	C	2
CHM 204	Analytical Chemistry I	C	2
BTG 299	Industrial Attachment I	C	3
	2 Units Electives	E	2
	Total unit		26

Electives**Note: Pick a total of 4 unit course**

Course Code	Course Title	Status	Total unit
MCB 202	Basic Techniques in Microbiology	E	2
CSC 204	Data structures	E	2

300 LEVEL**FIRST SEMESTER**

Course Code	Course Title	Status	Total unit
HUN 301		R	1
HUN 311		R	1
GST 311	Introduction to Entrepreneurial Skills	C	2
BTG 301	Molecular Genetics	C	3
BTG 304	Molecular Cell Biology	C	3
BTG 302	Molecular Genetics Laboratory	C	2
BTG 309	Microbial Technology	C	3
BTG 307	Animal Micro-techniques and Tissue Culture	C	3
BCH 301	Enzymology	C	3
MCB 303	Immunology	C	3
	2 Units Electives	E	2
	Total unit		26

Electives**Note: Pick one course**

Course Code	Course Title	Status	Total unit
BCH 308	Food and Nutrition in Biochemistry	E	2
CSC 313	Database Design & Management I	E	2

SECOND SEMESTER

Course Code	Course Title	Status	Total unit
HUN 302		R	1
HUN 312		R	1
BTG	SIWES	C	6

329			
	TOTAL CREDIT UNITS		8

400 LEVEL**FIRST SEMESTER**

Course Code	Course Title	Status	Total unit
HUN 401		R	1
HUN 402		R	1
GST 302	Enterprise development I	C	1
BTG 401	Biotechnology Seminar	C	1
BTG 403	Methods in Recombinant DNA Technology	C	4
BTG 405	Nucleotide Sequence Analysis	C	3
BTG 404	Industrial Biotechnology	C	3
BTG 406	Metabolic Engineering	C	3
	8 Units Electives	E	8
	Total unit		25

Electives**Note: Pick 8 units electives courses**

Course Code	Course Title	Status	Total unit
BTG 411	Plant Gene Transfer	E	4
BTG 413	Analytical Methods in Microbiology	E	4
BCH 415	Methods in Biochemistry	E	3
GST 402	Enterprise Development III	C	1

SECOND SEMESTER

Course Code	Course Title	Status	Total unit
HUN 402		R	1
HUN 412		R	1
BTG 416	Bioresources Management	C	3
BTG 418	Biosafety Issues	C	1

BTG 420	Intellectual Property Rights & Bioethics	C	1
BTG 408	Process Biotechnology	C	3
BTG 407	Research Project	C	6
	8 Units Electives	E	8
	Total unit		24

Electives

Note: Pick all elective courses

S/N	Course Code	Course Title	Status	Total unit
1	BTG 410	Biotechnology Robotics	E	3
2	BTG 412	Comparative Virology	E	3
3	CSC 409	Database Design and Management II	E	2

DIRECT ENTRY PROGRAMMES FOR BIOTECHNOLOGY

University Required Courses for Direct Entry (DE) Students

200 LEVEL

FIRST SEMESTER

Course Code	Course Title	Status	Total unit
HUN 101	The God's factor and 21 st century challenges I	R	1
HUN 121	Security Education I	R	1
HUN 201		R	1
HUN 221		R	1
GST 111	Communications in English I	C	2

GST 121	Use of Library, Study Skills and Information Communication Technology (ICT)	C	2
GST 113	Nigerian Peoples & Culture	C	2
GST 211	Environment and Sustainable Development	C	2
MCB 201	General Microbiology	C	3
STA 203	Statistics for Physical	C	4
BCH 201	General Biochemistry I	C	3
BCH 203	General Biochemistry Practical I	C	1
BIO 201	Genetics I	C	2
	Overall units for Direct Entry		25

SECOND SEMESTER

Course Code	Course Title	Status	Total unit
HUN 102	The God's factor and 21 st century challenges II	R	1
HUN 122	Security Education II	R	1
HUN 202		R	1
HUN 212		R	1
GST 112	Logic Philosophy & Human Existence	C	2
GST 122	Communication in English II	C	2
GST 123	Communication in French	C	2
GST 222	Peace Studies & Conflict Resolution	C	2
GST 223	Introduction to Entrepreneurial Studies	C	2
GST 224	Leadership Skills	C	2
BCH 204	General Biochemistry Practical II	C	1
CHM 202	Organic Chemistry I	C	2
CHM 204	Analytical Chemistry I	C	2
BTG 299	Industrial Attachment I	C	3
BTG 202	Introduction to Biotechnology	C	3
BIO 204	Biological Techniques	C	2
BCH	General Biochemistry II	C	3

202			
	Overall units for direct entry		29

300 LEVEL**FIRST SEMESTER**

Course Code	Course Title	Status	Total unit
HUN 301		R	1
GST 311	Introduction to Entrepreneurial Skills	C	2
BTG 301	Molecular Genetics	C	3
BTG 304	Molecular Cell Biology	C	3
BTG 302	Molecular Genetics Laboratory	C	2
BTG 309	Microbial Technology	C	3
BTG 307	Animal Micro-techniques and Tissue Culture	C	3
BCH 301	Enzymology	C	3
MCB 303	Immunology	C	3
	2 Units Electives	E	2
	Total unit		25

Electives**Note: Pick one course**

Course Code	Course Title	Status	Total unit
BCH 308	Food and Nutrition in Biochemistry	E	2
CSC 313	Database Design & Management I	E	2

SECOND SEMESTER

Course Code	Course Title	Status	Total unit
HUN 302		R	1
HUN 312		R	1
BTG 329	SIWES	C	6
	Total unit		8

400 LEVEL**FIRST SEMESTER**

Course Code	Course Title	Status	Total unit
HUN 401		R	1
HUN 402		R	1
GST 302	Enterprise development I	C	1
BTG 401	Biotechnology Seminar	C	1
BTG 403	Methods in Recombinant DNA Technology	C	4
BTG 405	Nucleotide Sequence Analysis	C	3
BTG 404	Industrial Biotechnology	C	3
BTG 406	Metabolic Engineering	C	3
	8 Units Electives	E	8
	Total unit		25

Electives**Note: Pick 8 units electives courses**

Course Code	Course Title	Status	Total unit
BTG 411	Plant Gene Transfer	E	4
BTG	Analytical Methods in Microbiology	E	4

413			
BCH 415	Methods in Biochemistry	E	3
GST 402	Enterprise Development III	C	1

SECOND SEMESTER

Course Code	Course Title	Status	Total unit
HUN 402		R	1
HUN 412		R	1
BTG 416	Bioresources Management	C	3
BTG 418	Biosafety Issues	C	1
BTG 420	Intellectual Property Rights & Bioethics	C	1
BTG 408	Process Biotechnology	C	3
BTG 407	Research Project	C	6
	8 Units Electives	E	8
	Total unit		24

Electives**Note: Pick all elective courses**

S/N	Course Code	Course Title	Status	Total unit
1	BTG 410	Biotechnology Robotics	E	3
2	BTG 412	Comparative Virology	E	3
3	CSC 409	Database Design and Management II	E	2

COURSE DESCRIPTION FOR B.SC. (HONS) IN BIOTECHNOLOGY

GENERAL STUDIES

GST 111 Communication in English I (2 Units)

Effective communication and writing in English Language skills; writing of essay, letters, speeches, public announcements, minutes of meetings and term papers; Reading and listening of Comprehension; sentence construction, outlines and paragraphs; collection and organization of materials; punctuation.

GST 112 Logic, Philosophy and Human Existence (2 Units)

A brief survey of the main branches of Philosophy Symbolic; Local Special symbols in symbolic logic-conjunction; negation, affirmation, disjunction, equivalent and conditional statements law of tort; The method of deduction using rules of inference and bi-conditionals qualification theory; Types of Discourse; Nature of arguments, Validity and soundness; Techniques for evaluating arguments.

GST 113 Nigeria Peoples And Culture (2 Units)

Nigerian history, culture and arts in pre-colonial times; Nigerian's perception of his world; culture areas of Nigeria and their characteristics; evolution of Nigeria as a political unit; indigene/settler phenomenon, concepts of trade; economic self-reliance; Social justice, Individual and national development; Norms and values; Negative attitude and conducts (cultism and related vices); Re-orientation of moral and national values; Moral of obligations of citizens; Environmental problems.

GST 121 Use Of Library, Study Skills & Information Communication Technology (ICT) (2 Units)

Brief history of libraries; library and education; University libraries and other types of libraries; study skills (reference services). Types of library materials, using library resources including e-learning, e-material, etc.; understanding library catalogue and classification; Copyrights and its implication; Database resource, Bibliographic citations and referencing; Development of modern ICT; Hardware technology, Software technology, Input devices, Storage devices and Output devices; word processing skills.

GST 122 Communication in English II (2 Units)

Logical presentation of papers; phonetics; instruction on lexis; art of public speaking and oral communication; figures of speech; precise; report writing.

GST 123 Communication in French**(2 Units)**

Introduction to French; French Alphabets and Sounds – Writing and Pronunciation; French Syllabus – Writing and Pronunciation; French Words – Writing and Pronunciation; Phrases, Simple Sentences and Paragraphs; Conjunction, dialogue; Advance Study of Sentences.

GST 211 Environment and Sustainable Development**(2 Units)**

Man- his origin and nature; man and his cosmic environment; scientific methodology; science and technology in the society and service of man; renewable and non-renewable resources – man and his energy resources; environmental effects of chemical plastics; Textiles, waste and other material; Chemical and radiochemical hazards; introduction to the various areas of science and technology; Elements of environmental studies.

GST 222 Peace and Conflict Resolution**(2 Units)**

Introduction to entrepreneurship and new venture creation; Entrepreneurship in theory and practice; Forms of business, Staffing, Marketing and new venture; determining capital requirements, raising capital; Financial planning and management; starting a new business, Feasibility studies; Innovation; legal Issues; Insurance and environmental consideration. Possible business opportunities in Nigeria.

GST 223 Introduction to Entrepreneurship**(2 Units)**

Introductory Entrepreneurial skills: Relevant Concepts: Enterprise, Entrepreneur, Entrepreneurship, Business, Innovation, Creativity, Enterprising and Entrepreneurial Attitude and Behaviour. History of Entrepreneurship in Nigeria. Rationale for Entrepreneurship, Creativity and Innovation for Entrepreneurs. Leadership and Entrepreneurial Skills for coping with challenge. Unit Operations and Time Management. Creativity and Innovation for Self-Employment in Nigeria. Overcoming Job Creation Challenges. Opportunities for Entrepreneurship, Forms of Businesses, Staffing, Marketing and the New Enterprise. Feasibility Studies and Starting a New Business. Determining Capital Requirement and Raising Capital. Financial Planning and Management. Legal Issues, Insurance and Environmental Considerations.

GST 224 Leadership Skills**(2 Units)**

Transformation is a fundamental shift in the deep orientation of a person, organization or society such that the world is seen in new ways and new actions and results become possible that were impossible prior to the transformation. Transformation happens at the individual level but must be embedded in collective practices and norms for the transformation to be sustained. Leadership Development

Programme (LDP) proposes novel approaches to teaching and learning, which emphasizes the practical involvement of participants. It is interactive and involves exercises and actual implementation of breakthrough projects by teams that make difference in the lives of the target population. In this course, leadership concepts comprising of listening, conversation, emotional intelligence, breakthrough initiatives, gender and leadership, coaching and leadership, enrolment conversation and forming and leading teams will be taught.

GST 311 Introduction to Entrepreneur Skills (2 Units)

The course is a continuation of GST 222 (Entrepreneur studies). Attention is given to Personal management, Financial Management, Machinery management, concept of marketing, salesmanship, available trade for entrepreneurs and decision making, students are expected to be exposed on some of the entrepreneurial skills.

Some of the ventures to be focused upon include the following: 1. Soap/Detergent, tooth brushes and tooth paste making 2. Photography 3. Brick, Nails, screws making 4. Dyeing/textile blocks paste making 5. Rope making 6. Plumbing 7. Vulcanizing 8. Food process/packaging/preservation 9. Production of Chemical and allied products.

100 LEVEL

BIO 101: General Biology I (3 Units)

Cell structure and organization, functions of cellular organelles, diversity, characteristics and classification of living things, general reproduction, interrelationship of organisms; heredity and evolution, elements of ecology and types of habitats.

BIO 102: General Biology I (3 Units)

A generalized survey of the plant and animal kingdoms based mainly on the study of similarities and differences in the external features, ecological adaptation of these forms.

BIO 107: Practical Biology I (1 Unit)

Laboratory experiments designed to illustrate the topics covered in BIO 101

BIO 108: Practical Biology II (1 Unit)

Experiments designed to emphasize the practical aspects of topics of course BIO 102

MCB 102: Introductory Microbiology (3 Units)

History of the Science of Microbiology. Sterilization and disinfection; Structure, ecology and reproduction of representative microbial genera. Cultivation of

micro-organisms. Isolation of micro-organisms; isolation of bacteria, viruses.

CHM 101: General Chemistry I**(3 Units)**

Atoms, molecules and chemical reactions. Modern electronic theory of atoms. Electronic configuration, periodicity and building up of the periodic table. Hybridization 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. Introduction to electrochemistry. Radioactivity.

CHM 102: General Chemistry II**(3 Units)**

Historical survey of the development and importance of organic chemistry; Fullerenes as fourth allotrope of carbon, uses as nanotubules, 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 alkanes, alkenes, alkynes, alcohols, ethers, amines, alkyl halides, nitriles, aldehydes, ketones, carboxylic acids and derivatives. The chemistry of selected metals and non-metals. Comparative chemistry of Groups IA, IIA and IVA elements. Introduction to transition metal chemistry.

CHM 107: Practical Chemistry I**(1 Unit)**

Fundamentals of laboratory safety and practice, basics of presentation of experimental data and report, measurement of masses and volumes, preparation and standardisation of solutions, determination of percentage purity of inorganic acids and bases, titrimetric analysis and determination of pH and pOH of select solutions.

CHM 108: Practical Chemistry II**(1 Unit)**

Qualitative inorganic analysis: identification and determination of cations such as Groups IA, IIA and IIIA, transition metals and anions such as the halides, OH^- , CO_3^{2-} and SO_4^{2-} . Qualitative organic analysis: identification tests for basic functional groups such as alkanes, alkenes, alkynes, alcohols, ketones and carboxylic acids.

CSC 101: Introduction to Computer Science**(3 Units)**

Survey of computers and information processing and their roles in society. This course introduces a historical perspective of computing, hardware, software, information systems, and human resources and explores their integration and application in business and other segments of society. Students will be required to complete lab assignments using the PC's operating system, and several commonly used applications, such as word processors, spreadsheets, presentations, graphics and other applications. Internet and on-line resources, browsers and search engines.

MTH 101: Algebra**(3 Units)**

Real number system; Elementary Set Theory; Theory of Quadratic Equations; Polynomials; Partial Fractions; Real Sequences and Series; Mathematical Induction; Permutations and Combinations; The binomial theorem and its applications; Complex Numbers.

MTH 102: Calculus and Trigonometry**(3 Units)**

Circular measure; Trigonometric functions of angles of any magnitude; Compound angles; Inverse Trigonometric functions; Solution of trig. equations. Functions: Concepts and notation; Polynomial, Rational, Trigonometric and Exponential/Logarithmic Functions; Functional Linear Equations; Concepts of Limits; The idea of continuity of functions; The derivative as limit of rate of change; Techniques of differentiation; Applications; Integration as an inverse of differentiation, Methods of integration, Definite integrals Application to areas, volumes.

MTH 104: Vectors, Geometry and Dynamics**(3 Units)**

Geometric representation of vectors in 1-3 dimensions, components, direction cosines, Addition, Scalar multiplication of vectors, scalar product, vector product and triple products; Application to Geometry; Two-dimensional co-ordinate geometry: Straight lines, circles, parabola, ellipse, hyperbola: Tangents and normals. Impact of two smooth spheres, and of a sphere on a smooth sphere.

PHY 101: General Physics I**(3 Units)**

Space and time, frame of references; Units and dimension; Vectors; Kinematics; Fundamental laws of Mechanics, statics and dynamics; Work, Energy and Power; Conservation laws; Universal gravitation; Rotational dynamics and angular momentum Molecular treatment of properties of matter; Elasticity: Hook's law,

Young's, Shear, and Bulk moduli;
 Hydrostatics: Density, Pressure; Buoyancy: Archimedes' Principles;
 Hydrodynamics: streamline, turbulence, Bernoulli and continuity equations,
 Reynold's number, Viscosity: laminar flow, Poiseuille's law; Surface tension;
 Capillarity: Adhesion, cohesion, drops and bubbles. Temperature: the zeroth law of
 thermodynamics, heat: gas laws of thermodynamics, transfer, expansion, kinetic
 theory of gas; Waves: sound, applications.

PHY 102: General Physics II (3 Units)

Optics: Reflection at Plane, curved surfaces; Refraction through Plane surfaces; Thin Lenses; Optical instruments; Electrostatics; Conductors and Currents; Dielectrics; Magnetic fields and induction; Maxwell's equations; Electromagnetics oscillations and waves & its Applications; Semiconductors; Thermionic Emission; Electrons, Photons, and the Atom; Photoelectric effect; Atomic nucleus and Radioactivity; Compton effect; de-Broglie Hypothesis; Dual nature of Matter; Nuclear reactions: Fission and Fusion, Thermonuclear reaction; Uncertainty Principle.

PHY 107/108: Practical Physics I/II (1 Unit Each)

This introduction course emphasizes quantitative measurements, the treatment of measurement errors, and graphical analysis. A variety of experimental techniques will be employed. The experiment includes studies of metres, the oscilloscope, mechanical systems, electrical and mechanical resonant systems, light, heat, viscosity, etc., covered in PHY 101 and PHY 102.

MCB 102: Introductory Microbiology (3 Units)

History of the Science of Microbiology. Sterilization and disinfection; Structure, ecology and reproduction of representative microbial genera. Cultivation of micro-organisms. Isolation of micro-organisms; isolation of bacteria, viruses.

200 LEVEL**CHM 202: Organic Chemistry I (2 Units)*****Pre-requisite - CHM 102***

Factors affecting structure and physical properties of organic compounds; Factors availability of electrons; Stereochemistry. Methane, energy of activation and free radical substitution reactions in alkanes. Functional group chemistry. Electrophilic and Nucleophilic substitution reaction. Aromacity. Various organic reactions, e.g. addition free radical, elimination reactions, etc.

CHM 204: Analytical Chemistry I (2 Units)***Pre-requisite - CHM 102***

Theory of errors. Statistical treatment of data: Theory of sampling. Chemical methods of analysis including volumetric, gravimetric and physicochemical methods. Optical methods of analysis. Separation methods.

STA 203: Statistics for Physical Science and Engineering (4 Units)

Scope for statistical methods in physical sciences and engineering. Measures of location, partition and dispersion. Elements of probability. Probability distribution: binomial, Poisson, geometric, hypergeometric, negative-binomial, normal. Estimation (Point and interval) and tests of hypotheses concerning population means proportions and variances. Regression and correlation. Non-parametric tests. Contingency table analysis. Introduction to design of experiments. Analysis of variance.

B10 201: Genetics I (2 Units)

Hereditary and non-hereditary characteristics. Probability and tests of goodness of fit. Quantitative inheritance, variation in genome structure, introduction to population genetics.

BIO 204: Biological Techniques (2 Units)

Preparation of microscope slides, biological drawings, microtomy, colorimetry, photometry, cytological techniques, chromatography, collection and preservation of biological specimens. Herbarium techniques. Laboratory experiments designed to cover practical aspects of topics on genetics and

cell biology should be included.

BCH 201: General Biochemistry I

(3 Units)

Introductory chemistry of amino acids; their properties, reactions and biological functions. Classification of amino acids: neutral, basic and acidic; polar and non-polar; essential and non-essential amino acids. Introductory chemistry of proteins; methods of their isolation, purification and identification. Primary, secondary, tertiary and quaternary structures of proteins. Basic principles of tests for proteins and amino acids. Biological functions of proteins. Introductory chemistry of carbohydrates, lipids and nucleic acids. Nomenclature of nucleosides, and nucleotides; effects of acid and alkali on hydrolysis of nucleic acids.

BCH 202: General Biochemistry II

(3 Units)

The cell theory. Structures and functions of major cell components. Cell types, constancy and diversity. Cell organelles of prokaryotes and eukaryotes. Chemical composition of cells. Centrifugation; Methods of cell fractionation. Structure, function and fractionation of extra- cellular organelles. Enzymes. Water and bio-molecules: protein, carbohydrates, lipids etc.

BCH 203: General Biochemistry Practical I

(1 Unit)

Laboratory experiments designed to reflect the topics covered in BCH 201. Introduction to laboratory methods and procedures employed in studying biochemical processes.

BCH 204: General Biochemistry Practical II

(1 Unit)

Laboratory experiments designed to reflect the topics covered in BCH 202. Introduction to laboratory methods and procedures employed in studying biochemical processes.

MCB 201: General Microbiology

(3 Units)

Nutrition and biochemical activities of micro-organisms. Antigens and antibodies. Identification and economic importance of selected microbial groups. Microbial variation and heredity.

MCB 202: Basic Techniques in Microbiology

(2 Units)

Culturing of micro-organisms; preparation of media for microbial growth. Isolation of pure culture; streaking, pour plates etc; subculturing

procedures. Staining techniques for differentiation of micro-organisms. Enumeration of micro-organisms, direct and indirect procedures. Identification of micro-organisms to include colonial and cellular morphology and biochemical procedures.

BTG 202: Introduction to Biotechnology

(3 Units)

Historical developments. Principles and applications of biotechnology. Implications of molecular biology, including ethical and social controversies. Topics to be covered should include introductory aspects of microbial biotechnology, agricultural biotechnology, biofuels, cloning, bioremediation, medical biotechnology, DNA fingerprinting and forensics.

BTG 299: Industrial Attachment I

(3 units)

Student should be attached to relevant industrial organizations for 12 weeks preferably during the long vacation for appropriate experience. Students should be assessed based on seminar presentations, written reports and supervisors' assessments.

300 LEVEL

BTG 301: Molecular Genetics

(3 Units)

Principles of genetics at the molecular level. Chemical nature of hereditary material. The genetic code, regulatory mechanisms, the molecular basis of mutation. DNA replication and recombination.

BTG 303: Molecular Cell Biology

(3 Units)

Genetics at the molecular level as related to gene structure, function, variation and control with a comprehensive treatment of plant and animal cell structure and function. Basic concepts of cell physiology are treated.

BTG 305: Molecular Genetics Laboratory

(2 Units)

Experiments designed to achieve the practical components of BTG 301 and enrich students' grasp of the theoretical foundation of the course.

BTG 307: Animal Micro-techniques and Tissue Culture

(4 Units)

Microscopic structure of organism, introductory microtechniques.

BTG 309: Microbial Technology**(3 Units)**

An integrated discussion of recent genetic biochemical and engineering approach to microbial processing from antibiotics, biomass and citric acids to zymomonas and ethanol production.

BTG 329: Industrial Attachment (24 Weeks)**(6 Units)**

Students should be attached to relevant industrial organizations for 24 Weeks preferably during the long vacation for appropriate experience. Students should be assessed based on seminar presentations, written reports and supervisors' assessments.

BCH 301 Enzymology**(3 Units)**

Discovery, classification and nomenclature of enzymes. Vitamins and co-enzymes; minerals in enzyme biochemistry. Fat and water soluble vitamins. Structures and functions of vitamins and co-enzymes. Genetics of enzymes. Enzyme inhibition. Mechanisms of enzyme-catalysed reactions. Effects of temperature, pH, ions and inhibitors on enzyme catalysed reactions. Derivation and significance of Michaelis-Menten equation. Allosteric/Regulatory enzymes. Active sites of enzymes. Estimation of kinetic parameters of enzyme activities. Zymogen activation, digestive enzymes etc. Production, isolation, purification and characterization of enzymes. Recent advances in enzymology.

MCB 303: Immunology**(3 Units)**

Introduction. Historical background. Innate and acquired immunity. Antigens, antibodies, cellular immunity. Immunological tolerance and suppression. Surgical grafting. Complement System. Hypersensitivity. Immunological anomalies. Diagnostic immunology, Vaccines, effector systems of parasite killing and nature of resistance in plants.

CSC 313: Database Design and Management I**(3 Units)**

Information storage & retrieval, Information management applications, Information capture and representation, analysis & indexing, search, retrieval, information privacy; integrity, security; scalability, efficiency and effectiveness.

Introduction to database systems: Components of database systems DBMS functions, Database architecture and data independence use of database query language.

BTG 399 Industrial Attachment I (3 units)

Student should be attached to relevant industrial organizations for 12 weeks preferably during the long vacation for appropriate experience. Students should be assessed based on seminar presentations, written reports and supervisors' assessments.

400 LEVEL

BTG 401 Biotechnology Seminar (1 Unit)

Development of communication skills needed by professionals in the field of biotechnology through student oral presentations.

BTG 416 Bioresources Management (3 Units)

Biological diversity, genetic diversity, specific diversity; species of local cereals, local legume species, local fruit tree species. Genetic diversity expressed through large number of associations or combinations of genes in individuals of single species. Wild local plants related to cultivated species and whose genetic diversity is crucial ingredient to co-breeding or hybridization processes aimed at giving more vigour to the crop varieties that have been cultivated over so many years. Loss of genetic variability of crops or genetic erosion; species disease resistance, utilization of plant and animal genetic resources, local germplasms. Conservation of plant and animal genetic resources, the effects of destruction of natural environment on local plant and animal genetic resources. The importance of conserving the biological heritage of plant and animal kingdoms. Development of seed and gene banks, modes of operation of gene banks, germplasm collections of local crop species, gene banks and breeding. Selection of resistant varieties, biotechnologically-based alternatives to live animal experiments; biotechnological protection of forest plantations and economic plants, germplasm appropriation and privatization for crop improvement. Patents and plant breeders' rights, production of improved plants and animals.

BTG 403: Methods in Recombinant DNA Technology (4 Units)

Introduction to techniques and experimentation approaches used in DNA technology: Principles and techniques of polymerase chain reaction,

Southern, Northern and Western Blot methods of protein and DNA identifications. Methods of gene transfer. Principles, methodologies and applications of electrophoresis, chromatography, spectroscopy, spectrophotometry, centrifugation and isotopic techniques. Ultracentrifugation, dialysis, optical microscopy. Review of modern analytical methods.

BTG 418: Biosafety Issues (1 Unit)

Definition and scope. Hierarchy of regulatory organs. Overview of safety issues and application in various products and services. Environmental risks associated with genemanipulation. Biohazards, risk assessment and management.

BTG 405: Nucleotide Sequence Analysis (3 Units)

Computer analysis of nucleotide sequences assembly; restriction analysis; gene location and identification; protein sequence analysis and structure prediction; database searching; sequence alignments; and phylogenetic analysis.

BTG 420: Intellectual Property Rights and Bioethics (1 Unit)

Definition and scope, ethical issues, sperm bank designer babies, organ donation. Property rights protection, patents, innovations and lineation and other legal instruments.

BTG 404: Industrial Biotechnology (3 Units)

Micro-organisms of industrial importance and their roles, culture techniques and maintenance of selected strains, improvement of strains through mutation, gene amplification, hybridization, protoplast fusion and transformation & DNA techniques and future impact. Basic fermentation design and operations. Single cell proteins, bioinsecticides and biofertilizers. Development and prospects of enzyme technology. Biodegradation of industrial materials. Industrial production of organic acids, amino acids, antibiotics and vitamins.

BTG 408: Process Biotechnology (3 Units)

Description of various types of vessels for cell cultivation. Bioreactor design and optimization. Agitation of bioreactors. Survey of the applications of

biotechnology, emphasizing the pharmaceutical industry and the operation of fermentation systems. Case studies of downstream separation and purification protocols employed on an industrial scale.

BTG 406: Metabolic Engineering (3 Units)

Regulation of metabolism, induction, nutritional repression, feedback regulation, metabolic control mechanisms; regulatory mechanism of carbohydrates metabolism; regulation of protein and amino acid synthesis; Regulation of biosynthetic pathways in prokaryotes and eukaryotes, feedback resistance mutation.

BTG 410: Biotechnology Robotics (3 Units)

Application and use of robotic equipment in the analysis of large number of samples; assay and protocol design; data collating, analysis and interpretation, applications in various life science industries.

BTG 411: Plant Gene Transfer (4 Units)

Principles and experimental techniques of non sexual gene transfer in plants. Application of gene-transfer techniques in crop improvement and research in gene expression.

BTG 412: Comparative Virology (3 Units)

Biology of viruses and approaches to control through the use of antiviral agents and genetic engineering. Genome organization, gene expression, replication, movement and transmission across kingdom.

BTG 413: Analytical Methods in Microbiology (4 Units)

Hands-on training in the use of analytical instrumentation in microbiological research and applications including biotransformatics and fermentations, biodegradation and identification of bacteria and fungi.

BTG 407: Research Project in Biotechnology (6 Units)

Independent research undertaken by students into selected areas of biotechnology under the guidance of project supervisors.

CSC 404: Database Design and Management II (3 Units)

Rational Databases: Mapping conceptual schema to relational Schema;

Database Query Languages (SQL) Concept of Functional dependencies & Multi-Valued dependencies. Transaction processing; Distributed databases.

BCH 415: Methods in Biochemistry

(3 Units)

Tissue and cell culture techniques, immunoassays, blotting, and isotopic techniques. Principles, methodologies, instrumentation and applications of electrophoresis, manometry and centrifugation techniques. Chromatographic techniques including paper, thin layer, column, gas, and high performance chromatographic techniques. . Spectroscopic techniques including uv-visible, infra-red, nuclear magnetic resonance and mass spectrometry. Fluorimetry, polarographic including potentiometric and electrometric measurements. This course includes laboratory practical classes which will provide students opportunity to practice the various techniques and familiarise themselves with the types of equipment used for the techniques.

PROSPECTIVE EQUIPMENT IN THE BIOTECHNOLOGY LABORATORY

Biotechnology Laboratory



Hot Plate with Stirrer



UV Illuminator



Vortex



Oven



Anaerobic Culture Jar



Analytical Balance



Autoclave



Eliza Micro plate Reader



First Aid Box



Microscope



Deep Freezer



UV/Visible Spectrophotometer



Distiller



Biobase Shaking Water Bath



Eliza Micro Plate Reader

A. LIST OF STANDARD BIOLOGY LABORATORY EQUIPMENTS

S/N	NAMES
1	Anaerobic jar
2	Monocular microscope
3	Binocular microscope
4	Filter paper (Ash less 125mm)
5	Filter paper (110mm)
6	Human torso
7	Human heart
8	Human foetus
9	Human skin
10	Human whole skeleton
11	Human eye
12	Human ear
13	Human brain
14	Spirit lamp
15	Kilner jar
16	Reagent bottle
17	Test tube holder with wooden hand
18	Wire gauze
19	Wet and dry hydrometer
20	Bunsen burner
21	Ceramic mortar and pestle
22	Dissecting set
23	Hand lens
24	Insect net
25	Rain gauge
26	Tripod stand
27	pH meter (portable field type)
28	Stirred digital water bath
29	Recirculating laminar flow cabinet
30	Thermometer
31	Microtome machine
32	Oven
33	Aneroid barometer
34	Ice flake machine
35	Top loading weighing balance
36	Hot plate with magnetic stirrer
37	Refrigerator
38	Muffle furnace
39	Power pack
40	Human skull
41	Hygrometer

B. STANDARD GLASSWARES FOR BIO/BIOTECH LABORATORY

S/N	NAMES
1	Beaker (1000ml)
2	Beaker (500ml)
3	Beaker (600ml)
4	Beaker (100ml)
5	Measuring cylinder (2000ml)
6	Measuring cylinder (500ml)
7	Measuring cylinder (250ml)
8	Round bottom flask (250ml)
9	Conical flask (100ml)
10	Conical flask (250ml)
11	Conical flask (25ml)
12	Funnel
13	Test tube

C. LIST OF CONSUMABLES FOR STANDARD BIO/BIOTECH LABORATORY

S/N	NAMES
1	Formaldehyde (1x2.5ltr)
2	Ethanol (1x2.5ltr)
3	Ethylene methylene blue (EMB) Agar(1x 500g)
4	Methanol (1x2.5ltr)
5	Foil paper (1x 1carton)
6	Masking tape (1x 1roll)
7	Absorbent Cotton wool(1x1carton)
8	Inoculating loop (1x1carton)
9	Inoculating needle (1x 1carton)
10	Glass spreader
11	Syringe & needle (5ml)(1x 1packet)
12	Lighter (1x 1 pack)
13	Glass petri dishes(1x1carton)
14	McCartney bottleS (1x 1carton)
15	Durham tubes (1x 1carton)
16	Spirit lamp (10)

D. Standard Biotechnology Laboratory Equipment

1	Autoclave
2	Beaker
3	Beaker Tongs
4	Bunsen Burner
5	Centrifuge

6	Centrifuge Tubes
7	Compound Light Microscope
8	Cryo Tubes
9	Distiller
10	Dropper Pipettes
11	Electronic Balance/Digital Scale
12	Electrophoresis Chambers and Power Pack
13	Face Shield
14	Forceps
15	Fume Hood
16	Funnel
17	Gloves
18	Goggles
19	Graduated Cylinder
20	Hot Plate
21	Incubators
22	Lab Coats
23	Laminar Air Flow Chamber
24	Microcentrifuges
25	Microcentrifuge Tubes & Racks
26	Micropipette
27	PCR Tubes
28	Pestle and Mortar.
29	Petri Dish
30	Ring Stand
31	Storage Container
32	Test Tube
33	Thermometers
34	Water Bath

E. BIORAD – Complete Biotechnology Lab Set up for 35-45 Students

SN	Item
1	Mini centrifuges
2	T100 thermal cycler
3	Water bath
4	UltraRocker rocking platform
5	Incubation oven
6	BR-2000 vortexer
7	PowerPac Basic power supplies

8	Mini-Sub cell GT electrophoresis chambers with 7 x 10 cm trays
9	8-well combs
10	Mini-PROTEAN Tetra cell 2-gel systems for Ready Gel or TGX precast gels
11	Mini Trans-Blot modules
12	10-well gel loading guides
13	UV lamps
14	Package agarose gel support film, 50 sheets
15	Professional adjustable-volume micropipets, 2–20 μ l
16	Professional adjustable-volume micropipets, 20–200 μ l
17	Professional adjustable-volume micropipet, 100–1,000 μ l
18	Racks pipet tips (2–200 μ l), 200 tips/rack
19	Racks pipet tips (100–1,000 μ l), 100 tips/rack
20	Racks Prot/Elec pipet tips (1–200 μ l), 200 tips/rack

Appendix I

RULES AND REGULATIONS GUIDING STUDENT CONDUCT DURING EXAMINATIONS

1. The following qualifies students to enter the examination hall;
 - a. Student name is on the list provided by the course lecturer
 - b. The student is properly and neatly dressed using the school dress code for the day of the week.
 - c. The student is wearing his/her HUNI identity card with the picture part prominently displayed in front.
 - d. The men are clean-shaven with low cut hair
 - e. The women's hair is neatly done
 - i. No extensions longer than the shoulder-length
 - ii. No odd-coloured extensions (only dark brown and black are acceptable)
2. Students must enter the examination hall with only pens, pencils, a mathematical set, and a calculator.
3. No student will be allowed into the hall with extraneous materials
 - i. Paper strips with written information regardless of whether the information is related to the course or not.
 - ii. Telephones
 - iii. Earpieces
 - iv. Writings on any part of their bodies
4. Examination starts and ends at the exact time listed on the timetable.
 - a. Tardiness is not allowed: Students must be at the examination hall 30 minutes before the start time listed on the timetable.
 - b. Any student who comes late, up to 30 minutes after the examination starts, **may** be allowed into the hall but will **not** be given extra time.
5. During the examination;
 - a. No communication between the students is allowed.
 - b. Students should ensure that they sign the attendance register. That is proof that you were indeed in the examination hall. Students should ensure that they fill in all information required in the attendance sheet (Matric number, course code, course name, script number, date, signature, etc).

- c. No student shall be given an extra sheet unless the invigilator examines the answer booklet and confirms that it has been completely used.
 - d. All rough work must be done on the answer booklet! The student should just draw a single straight line across to cancel. Tipex or 'white out' fluid is **NOT** allowed.
 - e. Students are not allowed to talk to or request 'help' with the questions or answers from the invigilators or supervisors during the examination.
 - f. Students are not allowed to leave the examination hall unless it's an emergency
 - i. If a student must leave the examination hall, he/she shall be accompanied by an invigilator or someone assigned by the examination supervisors.
 - g. Students should be aware that the Chief Examiner and/or the Supervisors shall come into the hall unannounced at any time during the examination.
6. At the end of the examination, the student should ensure that his/her script is collected by the invigilator.
 7. The student is prohibited from carrying out, aiding, and abetting direct or indirect leakage of examination questions.
 8. It is illegal for a student to ask a course lecturer to change marks to improve his/her course grades or for someone else.
 9. No student should allow or aid another student to substitute freshly prepared answer scripts for those used during an examination.
 10. No student should Initiate or request the correction of an approved result/grade based on false claims.

Appendix II

THE EXAMINATION BOARD

1. Chief Examiner is the Vice-Chancellor
2. Examination Supervisors:
 - a. Dr. Antor Odu Ndep
 - b. Dr. Helen Uzezi Wara
3. Examination Officers:
 - a. Mr. Anthony Ibe (Computing & Sciences)

- b. Mr. Amaechi Igharo (Management & Social Sciences)
- 4. Examination Secretariate is Dr. Ndep's office at the Academic Block (labeled HOD Public Health)

ORGANIZATION AND CONDUCT OF EXAMINATIONS

11. The following qualifies students to enter the examination hall
 - a. Student name is on the list provided by the course lecturer
 - b. The student is properly and neatly dressed using the school dress code for the day of the week.
 - c. The student is wearing his/her HUNI identity card with the picture part prominently displayed in front.
 - d. The men are clean-shaven with low cut hair
 - e. The women's hair is neatly done
 - i. No extensions longer than the shoulder-length
 - ii. No odd-coloured extensions (only dark brown and black are acceptable)
12. Students must enter the examination hall with only pens, pencils, a mathematical set, and a calculator.
 - a. No student will be allowed into the hall with extraneous materials
 - i. Paper strips with written information regardless of whether the information is related to the course or not.
 - ii. Telephones
 - iii. Earpieces
 - iv. Writings on any part of their bodies
13. Examination starts and ends at the exact time listed on the timetable.
 - a. Tardiness is not allowed: Students must be at the examination hall 30 minutes before the start time listed on the timetable.
 - b. Any student who comes late, up to 30 minutes after the examination starts, may be allowed into the hall but will not be given extra time.
14. During the examination;
 - a. No communication between the students is allowed.
 - b. Students should ensure that they sign the attendance register. That is proof that you were indeed in the examination hall. Students should ensure that they fill in all information required in the attendance sheet
 - c. No student shall be given an extra sheet unless the invigilator examines the answer booklet and confirms that it has been completely used.
 - d. Students are not allowed to talk to or request for 'help' by the invigilators or supervisors during the examination.

- e. Invigilator is prohibited from allowing a student to substitute freshly prepared answer scripts with those he/she used in the examination hall.
 - f. Students are not allowed to leave the examination hall unless it's an emergency
 - i. If they must leave the examination hall, they shall be accompanied by an invigilator or someone assigned by the examination supervisors.
 - g. The Chief Examiner and/or the Supervisors shall come into the hall unannounced at any time during the examination.
15. At the end of the examination;
- a. The invigilators and examination officer must ensure that the number of scripts tallies with the number of students who wrote the examination.
 - b. The scripts, attendance register, and question paper must be neatly placed into an envelope.
- c. The Examination officer takes the envelope to the secretariate
- d. The course lecturer is given the envelope in the presence of the examination supervisors.
16. The course lecturer is prohibited from;
- a. Carrying out, aiding, and abetting direct or indirect leakage of examination questions to students.
 - b. Helping students to answer questions during an examination.
 - c. Changing marks to pass or victimize a student.
 - d. Allowing or aiding a student to substitute freshly prepared answer scripts for those used during an examination.
 - e. Initiating or requesting correction of an approved result/grade based on false claims.
 - f. Withholding or destroying a script or grade to enable a student to qualify for a (special) supplementary examination.

