

HAVILLA UNIVERSITY NDE, IKOM
CROSS RIVER STATE, NIGERIA

FACULTY OF COMPUTING & SCIENCES
DEPARTMENT OF PHYSICS



B.Sc. physics with electronics
STUDENT HANDBOOK

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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

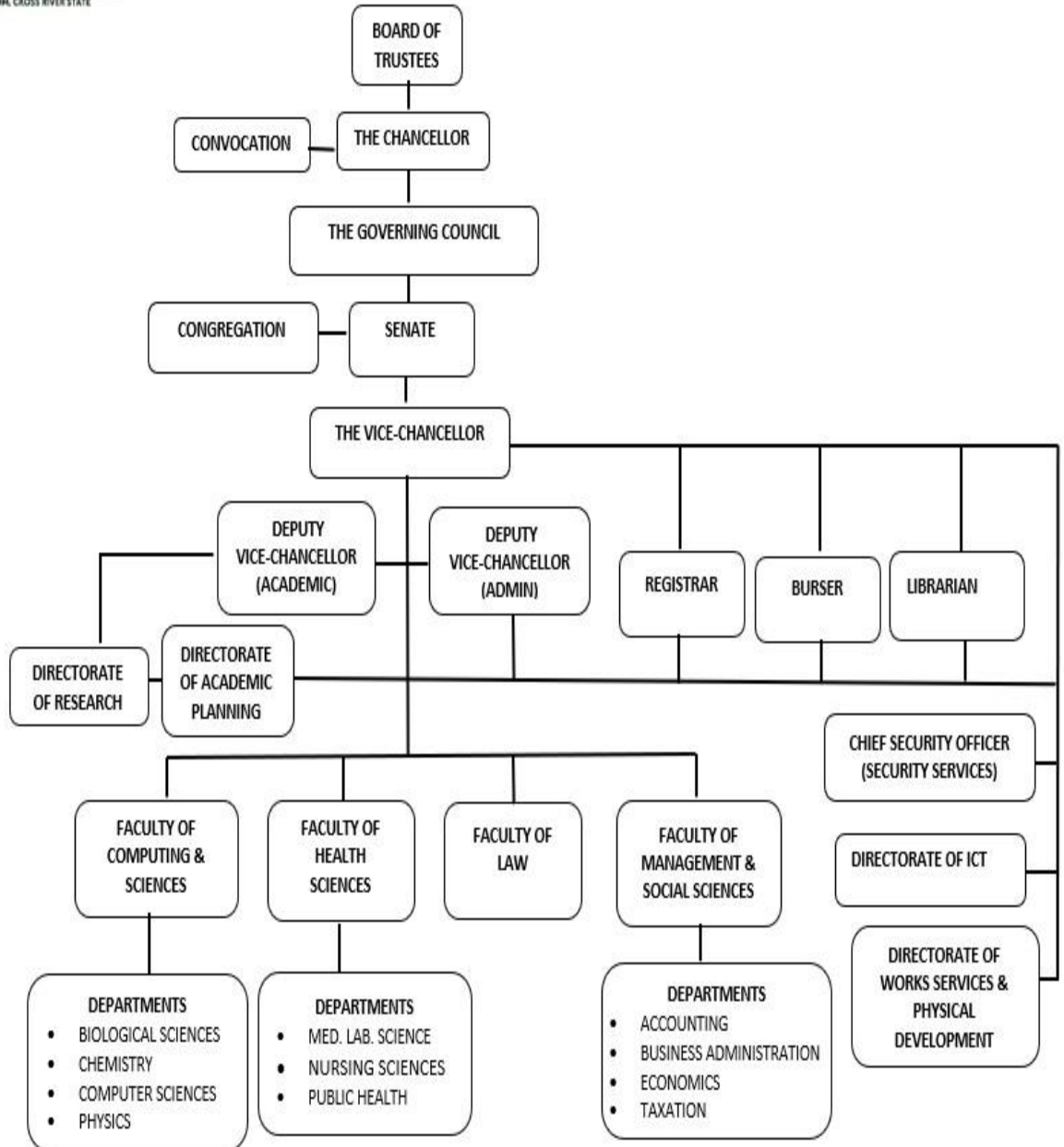
Other Officers

Dr. Antor Odu Ndep	Director of Academic Planning
Mrs. 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
1	Cecilia James Sunday	Genetics & Biotechnology	PhD. MSc. BSc	Lecturer II	Lecturer
DEPARTMENT OF CHEMISTRY					
S/N	NAME OF STAFF	DISCIPLINE	QUALIFICATION	RANK	POSITION
1	Barizomdu Tina Pii	Analytical/Environmental Chemistry	PhD. MSc. BSc	Lecturer II	Lecturer
2	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
1	Iwara Kommomo	Computer Science	MSc., BSc.	Assistant Lecturer	Lecturer
2	Nsor Emmanuel Nsor	Computer Science	BSc.	Technologist I	Technologist
DEPARTMENT OF MATHEMATICS					
S/N	NAME OF STAFF	DISCIPLINE	QUALIFICATION	RANK	POSITION
1	Samuel Tita Wara	Electrical Electronics Engineering	Ph.D., MSc., BSc.	Professor	Lecturer
2	Raphael Owan Asu	Statistics	MSc. BSc.	Assistant Lecturer	Lecturer
DEPARTMENT OF PHYSICS					

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

FACULTY 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	NAME OF STAFF	DISCIPLINE	QUALIFICATION	RANK	POSITION
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
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FACULTY OF MANANGEMENT AND SOCIAL SCIENCES

DEPARTMENT OF ACCOUNTING

1	Mr. Kondo Augustine Kondo	Account Staff	MSC. BSc.	Account Officer 1	Accountant
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DEPARTMENT OF BUSINESS ADMNISTRATION

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
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GENERAL STUDIES UNIT

S/N	NAME OF STAFF	DISCIPLINE	QUALIFICATION	RANK	POSITION
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1	Peter Augustine Silas	Linguistics	PhD., MSc. BSc	Lecturer II	Lec tur er
2	Benson Efejadi Egugozie	French in International Relations	Ph.D., MSc., BSc.	Lecturer II	Lec tur er

CORPERS

S/N	NAME OF STAFF	DISCIPLINE	QUALIFI CATION	RANK	PO SI TI ON
1	Efosa Prosper Osarumwense	Science Laboratory Technology (Physiology & Pharmacology)	BSc.		
2	Madonna Chinechere m Ezeoke	Parasitology & Entomocology	BSc.		
3	Kim Danladi	Buiding Technology	HND		
4	Mabel Ngwoke	Pure and Industrial chemistry	BSc.		
5	Morowooluwa Dami Omowonuola	Economics	BSc.		
6	Nnebedum Glory	Mechanical Engineering	BSc.		
7	Deborah Ayomide Babarinde	Biochemistry	BSc.		
8	Fidelis Ndubuisi Asu	Accounting	BSc.		

BURSARY

S/N	NAME OF STAFF	DISCIPLINE	QUALIFI CATION	RANK	PO SI TI ON
c	Mr. Kondo Augustine Kondo	Account Staff	MSC. BSc.	Account Officer 1	Ac co un

					tant
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	Millicent Ajam		O'level		Cleaner
2	Mrs. Mary Ndoma		O'level		Cleaner
3	Maureen Ibangha Bassey		O'level		Cleaner
4	Alice Ukwudi Ibanye		O'level		Cleaner
VEGETATION CONTROL					
S/N	NAME OF STAFF	DISCIPLINE	QUALIFICATION (specify)	RANK	POSITION
1	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	$\frac{65}{18}$ =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.

4.0 GRADUATION REQUIREMENT

To graduate and for the award of any degree in Havilla University, the student must have completed and passed the prescribed courses and electives.

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**

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 PHYSICAL SCIENCES (B.sc Physics with Electronics)

6.1 INTRODUCTION TO THE PROGRAMME

This programme has been developed to provide students simultaneously with solid theoretical grounding in physics and competency in the technological area of Electronic Engineering. The programme structure puts a heavy emphasis on the acquisition of practical skills and also offers a wide range of choice of subject areas. With B.sc Physics with Electronics, we aim to provide a firm foundation in every aspect of physics and to explain a brand spectrum of modern trends and to develop experimental, computational and mathematical skills of students.

6.2 OBJECTIVES OF THE PROGRAMME

On successful completion of the programme, the graduate shall be able to realize the following objectives:

- Demonstrate skills in scientific inquiry, problem solving and laboratory techniques
- Demonstrate a broad base of knowledge in physics
- Demonstrate understanding of our place in the physical universe
- Demonstrate understanding of the laws of nature
- Develop a solid grasp of core concepts and applications of classical mechanicals, electricity and magnetism, quantum mechanics and statistical physics

6.3 ADMISSION REQUIREMENTS

Candidates can be admitted into any of the degree Physical sciences programmes by one of the following ways:

- The Unified Tertiary Matriculation (UTME)
- Direct Entry

6.3.1 UTME Admissions

Students intending to graduate in Physics with Electronics must satisfy the general University entrance requirement and should normally pass:

- (i) Minimum of five Ordinary level (SSCE or NECO) credit passes in English Language, Physics, Mathematics, Chemistry and any other subjects from Geography, Biology or and Agricultural Science at NOT more than two (2) sittings
- (ii) Minimum UTME/Post-UTME score for admission into the Department which shall be determined by the University admission committee

6.3.2 Direct Entry Admission

Candidates for direct entry while fulfilling the conditions in (i) and (ii) above must have in addition passes with a satisfactory grade at “A” level in Physics and Mathematics may be considered for 200 level admission.

The mode of study shall be full time. The B.sc Degree course will take four year of study for UTME entrants including a minimum of 6 months of SIWES while the duration of study for Direct entry candidates will be three years.

6.4 JOB OPPORTUNITIES

By virtue of his training, the physics with electronics graduate has a wide range of job opportunities in the following areas:

- a) Meteorology
- b) Telecommunication
- c) Aviation Industry
- d) Energy Centers
- e) Manufacturing Industry
- f) Petroleum Industry
- g) Medical Institution

6.5 COURSE STRUCTURE

Following the directives of Nigeria University Commission (NUC), the department of Physics with electronics will join other department in the faculty to offer the same courses in the first year of study.

However, from (200) level upwards, the department shall take a departure and offer core physics courses in addition to general studies courses and some borrowed courses from other department in the faculty such as Computer Science and Mathematics.

7.0 DETAILED DESCRIPTION OF THE DEPARTMENT COURSES (UTME)

100 LEVEL

FIRST SEMESTER

FIRST SEMESTER 100 LEVEL

Course Code	Course Title	Status	Credit Units
HUN 101	The God's factor and 21 st century challenges I	R	1
HUN 121	Security Education I	R	1
GST 101	Communication in English I		2
GST 121	Use of Library, Study Skills & Information Communication Technology (ICT)	C	2
GST 131	Nigerian Peoples & Culture	C	2
MTH 101	General Mathematics I	C	3
CHM 101	General Chemistry I	C	3
CHM 107	Practical Chemistry I	C	1
PWE 101	General Physics I	C	3
PWE 107	Practical Physics I	C	1
PWE 108	The Universe	C	3
PWE 111	Introduction to Computer Science I	C	3
TOTAL CREDIT UNITS			25

SECOND SEMESTER 100 LEVEL

Course Code	Course Title	Status	Credit Units
HUN 102	The God's factor and 21 st century challenges II	R	1
HUN 122	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
MTH 102	General Mathematics II	C	3
CHM 102	General Chemistry II	C	3
CHM 108	Practical Chemistry II	C	1
PWE 122	Electricity and Magnetism	C	3
PWE 102	Thermal & Physical Properties of matter	C	3
PWE 132	Physics Laboratory I	C	3
TOTAL CREDIT UNITS			24

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

200 LEVEL**FIRST SEMESTER**

Course code	Course Title	Status	Credit Units
HUN 201		R	1
HUN 221		R	1
GST 211	Enviroment and Sustainable Development	C	2
PHY 122	Thermal Physics	C	2
PHY 211	Classical Physics	C	2
PWE 211	Semiconductor Devices and Materials	C	3
PWE 221	Electronic Practicals	C	1
PWE 231	Electric Circuit and Electronics	C	2
CMP 221	Computer Programming I	C	3
	TOTAL CREDIT UNIT		17

SECOND SEMESTER

Course code	Course Title	Status	Credit Units
HUN 202		R	1
HUN 212		R	1
GST 212	Peace Studies & Conflict Resolution	C	2
GST 222	Introduction to Entrepreneurial Studies	C	2
GST 223	Introduction to Entrepreneurial Studies	C	2
GST 224	Leadership Skills	C	2
PHY 222	Electromagnetism	C	3
PWE 204	Solid state physics I	C	3
PHY 252	Energy and Environment	C	2
PHY 212	Elementary Modern Physics	C	2
PWE 232	Electric Circuit Theory	C	2
PWE 217	Vibrations and wave	C	1
PHY 262	Vector, Tensor & Complex Analysis	C	3
PHY 242	Practical Physics IV	C	1

	ELECTIVE (CHOOSE ONE		
MTH242	Linear Algebra	E	2
CMP212	Computer Programming II	E	2
	TOTAL CREDIT UNITS		25

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

300 LEVEL

FIRST SEMESTER

Course code	Course Title	Status	Credit Units
HUN 301		R	1
HUN 311		R	1
GST 311	Introduction to Entrepreneurial Skills	C	2
PHY 321	Electricity and Magnetism	C	2
PHY 331	Quantum physics I	C	3
PHY 341	Statistical and Thermal Physics	C	2
PWE 311	Stellar Physics	C	2
PWE 331	Electronics Practical/Research method	C	2
PWE 311	Introduction to Telecommunication System	C	2
PHY 311	Classical Mechanics	C	2
PWE 307	Waves and optics	C	2
	ELECTIVES (CHOOSE)		
PHY 303	Geophysics I	E	2
PHY 391	Biophysics I	E	2
	TOTAL CREDIT UNITS		25

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

SECOND SEMESTER

Course code	Course Title		Credit Units
HUN 302		R	1
HUN 312		R	1
PWE 312	Student Industrial Work Experience Scheme	C	6
	TOTAL CREDIT UNIT		8

400 LEVEL

FIRST SEMESTER

Course code	Course Title	Status	Credit Units
HUN 401		R	1
HUN 402		R	1
PWE 412	Electrodynamics	C	3
PWE 403	Digital signal processing	C	3
PHY431	Quantum Physics II	C	3
PWE 417	Biophotonic	C	3
PWE 441	Seminar	C	1
PWE 415	Applied spectroscopy	C	3
	TOTAL CREDIT UNITS		18

SECOND SEMESTER

Course code	Course Title	Status	Credit Units
HUN 402		R	1
HUN 412		R	1
PHY 462	Solid State Physics II	C	3
PWE 412	Digital Electronics	C	3
PWE 422	Instrumentation and Measurement System	C	2
PWE 406	Plasma science and technology	C	3
PWE 426	High energy astrophysics	C	2
PWE 451	Research Project	C	6
	ELECTIVE COURSES		
PHY 452	Geophysics II	E	2
PHY 492	Biophysics II	E	2
	TOTAL CREDIT UNITS		25

8.0 DETAILED DESCRIPTION OF THE DEPARTMENT COURSES (DIRECT ENTRY)

200 LEVEL (FIRST YEAR)

FIRST SEMESTER

Course code	Course Title	Status	Credit Units
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
PHY 221	Thermal Physics	C	2
PHY 211	Classical Physics	C	2
PWE 211	Semiconductors Devices and Materials	C	3
PWE 221	Electronic Practicals	C	1
PWE 231	Electric Circuit and Electronics	C	2
CMP 221	Computer Programming I	C	3
PHY 241	Practical Physics III	C	1
	TOTAL CREDIT UNITS		26

SECOND SEMESTER

Course code	Course Title	Status	Credit Units
HUN 102	The God's factor and 21 st century challenges II	R	1
HUN 122	Security Education II	R	1
HUN 212		R	1
HUN 202		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
PHY 212	Elementary Modern Physics	C	2
PHY 222	Electromagnetism	C	3
PWE 204	Solid state physics I	C	3
PHY 252	Energy and Environment	C	2
PWE 217	Vibrations and wave	C	1
PYE 232	Electric Circuit Theory	C	2
PHY 262	Vector, Tensor & Complex Analysis	C	3
PHY 242	Practical Physics IV	C	1
	ELECTIVE (CHOOSE ONE)		
MTH 242	Linear Algebra	E	2
CMP 212	Computer Programming II	E	2
	TOTAL CREDIT UNITS		28

300 LEVEL (SECOND YEAR)

FIRST SEMESTER

Course code	Course Title	Status	Credit Units
HUN 301		R	1
HUN 311		R	1
GST 311	Introduction to Entrepreneurial Skills	C	2
PHY 321	Electricity and Magnetism	C	2
PHY 331	Quantum physics I	C	3
PHY 341	Statistical and Thermal Physics	C	2
PWE 311	Stellar Physics	C	2
PWE 331	Electronics Practical/Research method	C	2
PWE 311	Introduction to Telecommunication System	C	2
PHY 311	Classical Mechanics	C	2

PWE 307	Waves and optics	C	2
	ELECTIVES (CHOOSE ONE)		
PHY 303	Geophysics I	C	2
PHY 391	Biophysics I	C	2
	TOTAL CREDIT UNITS		25

SECOND

SEMESTER

Course code	Course Title	Status	Credit Units
HUN 302		R	1
HUN 312		R	1
PWE 312	Student Industrial Work Experience Scheme	C	6
	TOTAL CREDIT UNIT		8

400 LEVEL (FINAL YEAR)

FIRST SEMESTER

Course code	Course Title	Status	Credit Units
HUN 401		R	1
HUN 402		R	1
PWE 412	Electrodynamics	C	3
PWE 403	Digital signal processing	C	3
PHY431	Quantum Physics II	C	3
PWE 417	Biophotonic	C	3
PWE 441	Seminar	C	1
PWE 415	Applied spectroscopy	C	3
	TOTAL CREDIT UNITS		18

SECOND SEMESTER

Course code	Course Title	Status	Credit Units
HUN 402		R	1
HUN 412		R	1
PHY 462	Solid State Physics II	C	3
PWE 412	Digital Electronics	C	3

PWE 422	Instrumentation and Measurement System	C	2
PWE 406	Plasma science and technology	C	3
PWE 426	High energy astrophysics	C	2
PWE 451	Research Project	C	6
	ELECTIVE COURSES		
PHY 452	Geophysics II	E	2
PHY 492	Biophysics II	E	2
	TOTAL CREDIT UNITS		23

9.0 COURSE DESCRIPTION

General Studies Courses

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

CHM 101 General Chemistry (3 Units)

Atoms, molecules and chemical reactions; Chemical equations and stoichiometry; Atomic structure and periodicity; Modern electronic theory of atoms; Valence forces and chemical bonding; Inter molecular forces; Kinetic theory and gas laws; Basic chemical Kinetics

CHM 102 General Chemistry (3 Units)

Historical survey of the development and importance of Organic Chemistry; nomenclature and classes of organic compound; homologous series; functional group; isolation and purification of organic compound; qualitative and quantitative organic Chemistry; stereochemistry; determination of structure of organic compound; saturated hydrocarbon; unsaturated hydrocarbons.

CHM 107 Practical Chemistry I (1 Unit)

Theory and practice of volumetric/quantitative and inorganic qualitative analyses

CHM 108 Practical Chemistry II (1 Unit)

Melting points and boiling points determination; Heats of solution and neutralization; Solubility and solubility curves; Organic purification methods; Reactions and qualitative analyses of organic functional groups

CSC 101 Introduction To Computer Science (3 Units)

History of computers; functional components of computer, characteristics of a computer, problem solving, flow charts, Algorithms, computer programming, Statements, symbolic names, Arrays, subscripts, expressions and control statements. Introduction to BAS

MTH 101 Elementary Mathematics I (3 Units)

Elementary set theory, subset, union, intersection, complements, Venn diagrams. Real numbers; integers, rational and irrational numbers; mathematical induction, real sequences and series; Theory of quadratic equations, Binomial theorem; Complex numbers; Algebra of complex numbers, The Argand Diagram, De Moivre's theorem, n^{th} roots of unity. Circular measure; Trigonometric functions of angles of any magnitude, Addition and factor formula.

MTH 121 Elementary Mathematics III (3 Units)

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

MTH 102 Elementary Mathematics II (3 Units)

Geometric representation of vectors in 1-3 dimensions; components, direction cosines, addition, scalar, multiplication of vectors linear independence; scalar and vector products of two vectors; Differentiation and integration of vectors with respect to a scalar variable; Two-dimensional co-ordinate geometry; Geometry, Straight lines, circles, parabola, ellipse, hyperbola; Tangents, normal, Kinematics of a particle; Components of velocity and acceleration of particles moving in a plane. Force, Momentum, laws of motion under gravity, projectiles, resisted vertical motion. Angular momentum, Simple harmonic motion, elastic string, simple pendulum, impulse.

MTH 122 Elementary Mathematics IV (3 Units)

Polynomials, Remainder and factor theorems; Partial fractions, Inequalities, Matrix algebra, addition, multiplication and transpose of matrices; Determinants, inverse of matrices; Cramer's rule and application of linear equation; Ordinary differential equations, First order equation, second order homogenous equations with constant coefficient.

PHY 101 General Physics I (3 Units)

Space and time, Frames of reference, Units and dimensions, scalars and vectors, linear and circular motion; velocity, acceleration. Laws of mechanics and gravitation, simple applications. Conservation of energy, Momentum; Work, Power, Simple Harmonic Motion, Simple pendulum; Moment of inertia.

PHY 102 General Physics II (3 Units)

Concepts of heat, temperature; measurement of temperature, clinical thermometer. Heat capacity, specific heat, latent heat, calorimetry. Gas laws; kinetic theory of gases. Thermal energy, isothermal and adiabatic changes. Conduction, convection, radiation

PHY 107 Practical Physics I (1 Unit)

This introductory course emphasizes quantitative measurement, the treatment of measurement, errors and graphical analysis, reading and repeated readings, best value, mistakes, discrepancy, systematic errors, detecting systematic errors, use of the mean. Studies of meters, the oscilloscope, the mechanical systems, electrical and mechanical resonant systems, light, heat, viscosity, etc.

PHY 108 Practical Physics II (1 Units)

A continuation of the treatment of experimental errors and analysis. Mean square error, standard deviation, sample and set standard errors, meanings and uses. Frequency distribution, histogram and frequency data curve, least square errors and curve.

PWE 122 Electricity And Magnetism (3 Units)

Electric field and potential; Electric charge, Definition of point charge, Coulomb's law, The electric field, Electric flux, Gauss's Law and its applications, Electric potential energy and potential difference. Capacitors and Capacitance. Electric field between charged plates, Dielectrics, Energy stored in a capacitor, Capacitors in series and parallel. Ohm's Law; Resistors in series and parallel, Emf, internal resistance and terminal potential difference of a battery. Kirchhoff's laws and applications, Electric power for DC and AC voltages. Magnetism; Force on current-carrying wire in a magnetic field, Definition of magnetic field B, Force due to B on charge q moving with

velocity v , B due to a long straight current-carrying wire, Electromagnetic Induction; Faraday's law of electromagnetic induction, Lenz's law.

Sets, Logic And Algebra

(3 Units)

Introduction to the language and concepts of modern mathematics. Topics includes: Basic set theory; mappings, relations, equivalence and other relations, Cartesian products. Binary logic, methods of proof. Binary operations.

200 LEVEL

CMP 221 Computer Programming I

(3 Units)

Introduction to problem solving methods and Algorithm development; designing coding, debugging and documenting using techniques of good programming language style; computer organization; programming language and programming Algorithm development.

CMP 212 Computer Programming II

(2 Units)

Principle of good programming; structured programming concepts. Debugging and testing; string processing, internal searching and sorting; Data structures, Recursion. C++ programming language or any other similar language should be used in teaching the above.

MTH 242 Linear Algebra

(2 Units)

Vector space over the real field. Subspaces, linear independence, basis and dimension. Linear transformations including linear operators, linear transformations and their representation by matrices—range, null space, rank, Singular value decomposition, Eigenvalues and Eigenvectors.

PHY 241 Practical Physics III

(1 Units)

Laboratory experiments aimed at the practical applications of the theory of errors in measurement. Fitting a straight line, computational errors, two – dimensional errors.

PHY 242 Practical Physics IV

(1 Units)

The laboratory course consists of a group of experiments drawn from diverse areas of physics (optics, electromagnetism, mechanics, modern physics etc). It is accompanied by seminar studies of standard experimental techniques and the analysis of famous cha

PWE 211 Semi-Conductor Devices And Materials (3 Units)

Semiconductor fundamentals; crystal structure; Fermi level, energy-band diagram; intrinsic and extrinsic semiconductor; carrier concentration, scattering and drift of electrons and holes; drift current, diffusion mechanism, Hall effect.

PWE 231 Electric Circuit And Electronics (2 Units)

DC circuits; Kirchoff's laws, sources of E.M.F and current; network analysis and circuit theorems; AC circuits; Inductance, capacitance, the transformer, sinusoidal waveforms; root mean square and peak values; power, impedance and admittance; series and parallel R L C circuit.

PWE 232 Electric Circuit Theory (2 Units)

General outline of linear circuits and linear circuit analysis; linear transformations; one-port and two-port networks; Single phase sinusoidal alternating current circuits; locks diagrams, poly-phase circuits, network topology.

PHY 211 Classical Physics (2 Units)

A more advanced treatment of the topics serves as a bridge between 100 level Mechanics and 300 level topics in Mechanics). Rigid, bodies, Rigid dynamics; moment of inertia, angular momentum. System of particles, moving coordinate system.

PHY 221 Thermal Physics (2 Units)

The foundations of classical thermodynamics including the Zeroth law and definition of temperature; the first law, work done and heat; Carnot's cycle and the second law; entropy and irreversibility. Thermodynamic potentials and the Maxwell's relations. Statistical mechanics: Microstates and statistical description. The equipartition theorem; Planck's radiation law; the Boltzmann distribution.

PHY 222 Electromagnetism (3 Units)

General concepts – divergence, curl, gradient theorems, Stokes theorem, introduction to curvilinear coordinates; Electricity and electrostatics; Electric field; potential and electricity of discrete and continuous distribution of charges, dielectric media.

PHY 252 Energy And Environment (2 Units)

Energy and power; principles, demands and outlook, transformation of energy and its costs, thermal pollution, electric energy from fossil fuel, hydroelectric generation; principles and problems. Energy efficiency in industry and building; District heating systems; Technology, distribution and infrastructure in the Nordic electric power system. The trade in the Nordic electric power market.

PHY 262 Vector, Tensor & Complex Analysis (3 Units)

Vector algebra, vector dot and cross product. Equations of curves and surfaces. Vector differentiation and applications, gradient, divergence and curl, vector integration, line, surface and volume integrals, Green's strokes and divergence theorems

PWE 204 Solid State Physics I (3 Units)

Crystal structure and crystal binding; lattice properties, indexing crystal diffraction; Laue equations; reciprocal lattice, Brillouin zones; Structure factor; inter-atomic forces, bonding types, elastic properties; lattice vibrations and thermal properties; electronic band structure; semiconductors.

PWE 217 Vibration And Waves (1 Unit)

Behaviour of oscillating systems and waves from fundamental concepts to real examples in physics and technology; Mechanical vibrations and waves, sound waves, electromagnetic waves, optics and gravitational waves.

300 LEVEL

PWE 307 Waves And Optics (2 Units)

Wave phenomena, acoustic wave; the harmonic oscillator; vibration in strings. Beats, waves on a string, energy in wave motion; elementary treatment of waves; types and properties, longitudinal waves, standing waves, group and phase velocity; propagation.

PHY 303 Geophysics I (2 Units)

Introduction to geophysical exploration. Geophysical survey: gravity method, magnetic method, resistivity method, electrical method, seismology, seismic waves (P and S waves - properties and speeds), earthquake seismology, seismic imaging: reflection and refraction.

PHY 311 Classical Mechanics (2 Units)

Newtonian Mechanics; motion of a Particle in one, two and three dimensions; system of particles and collision theory; Newtonian gravitation; conservative forces and potentials, oscillations, central force problems; moving coordinates, accelerated frames of reference and rigid body motion.

PHY 331 Quantum Physics I (3 Units)

Blackbody radiation the photoelectric effect, the Compton effect, line spectra, X-rays and electron diffraction; Birth of modern physics, introduction to quantum mechanics, wave particle duality, the Heisenberg uncertainty principle, the Bohr theory, Schrödinger wave equation Waves.

PHY 341 Statistical And Thermal Physics (2 Units)

Basic concepts of statistical mechanics; microscopic basics of thermodynamics and application to macroscopic systems. Hobb's and Gibb's functions. Thermodynamic probability and entropy, condensed states, phase transformations, Maxwell – Boltzman statistical physics methods

PHY 391 Biophysics I (2 Units)

X-rays, diffraction and electron micro-elements of the physics of macromolecule. Basic enzyme behaviour; radiation physics; radiation hazards and protection.

PWE 311 Introduction To Telecommunication (2 Units)

Frequency response of amplifiers; Poles, zeros and Bode plots; amplifier transfer function; techniques of determining 3dB frequencies of amplifier circuits; frequency response of single-stage and cascade amplifiers; frequency response of differential amplifiers.

PWE 311 Stellar Physics (2 Units)

Physics of the stellar interior and the underlying fundamental process and parameters. Star formation and stellar atmosphere physics. Different models developed for the explanation of the stability, dynamics and evolution of stars.

400 LEVEL

PHY 431 Quantum Physics II (3 Units)

State vectors and operators in different representations in quantum mechanics. Harmonic oscillator, use of creation and annihilation operators. Angular momentum, spin and addition of angular momenta. Time-independent and time-dependent perturbation theorem.

PHY 452 Geophysics II (2 Units)

Solid earth physics, terrestrials' magnetism, oceanography (related fields include geodesy, volcanology, seismic studies, gravity and magnetic studies, earthquakes and plate tectonics).

PHY 462 Solid State Physics II (3 Units)

Dielectric properties; magnetism, paramagnetism and diamagnetism; ferromagnetism and antiferromagnetism; magnetic resonance; imperfection in solids; density of states; Bloch's theory Kroniq Penny model; E – K diagram; photo-conductivity and superconductivity.

PHY 492 Biophysics II (2 Units)

Salt and water transport in the gut. The origin of living matter, bioengineering.

PWE 412 Electromagnetic Dynamics (3 Units)

Maxwell's equations and their applications; waves in space and in dielectric and conducting media. The wave equation, propagation of plane waves, reflection and refraction; transmission lines, wave guides and resonant cavities, radiation.

PWE 403 Digital Signal Processing (3 Units)

Developing time invariant digital signal system skills, prototypical linear time invariant systems. Adaptive, non-linear and time varying systems

PWE 406 Plasma Science And Technology (3 Units)

Overview of the fundamental principles that govern low pressure plasma discharge, current applications of plasma processing, surface analysis techniques in industry.

PWE 417 Biophonics (3 Units)

Introduction of Biophotonics; fundamental of light and matter; Basics of Biology; basics of light-matter interactions, molecules, cells and tissues; Lasers for biophotonics; Bio-imaging- Principles and application; Optical Biosensors, light activated Therapy; Tissue Engineering with light; Optical Tweezers, Scissors and Traps

PWE 426 High Energy Astrophysics (2 Units)

Emission process, observing facilities and characteristic object categories in high energy astrophysics. Gamma-ray TeV observations. The physics of neutron stars and black holes.

PWE 422 Instrumentation And Measurement System (2 Units)

Basic circuit models, filters, modulators; display and storage building blocks; transducers and their applications; noise in measuring system measurements.

PWE 412 Digital Electronics (3 Units)

The transistor as a switch, power dissipation base over drive storage drive and Switching speed, logic gates, NAND or with close logic, the TTL AND gate, truth table, noise margins, television pole, open collector and tristate, TTL, CMOS, NMOS, ECL combination.

PWE 415 Applied Spectroscopy

(3 Units)

Spectroscopic techniques used in research and industry to determine the electronic, chemical and structural properties of matter through its interaction with electromagnetic radiation. Basic principles of quantum mechanics, mechanics, thermodynamics and optics

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.