

B.Sc. (PHYSICS) DEGREE PROGRAM

The Department of Physics offers a four (4) year B.Sc. (Physics) Degree Programme structured either as 3-3-1-1 for **Majors** OR 3-3-2-2 for **Non-Majors**.

All courses are taught in unit system. The unit combination chosen by the student must be approved by the Dean, School of Physical Sciences. There is an opportunity to major in Physics during the 3rd and 4th years of study.

ENTRY REQUIREMENTS

- Candidates must have attained the minimum university and the Faculty of Science entry requirements
- In addition, the prospective candidate must have a minimum of C+ in Physics or Physical Science and C+ in Mathematics at KCSE level.

REGISTRATION GUIDELINES

1ST YEAR

Core Courses:

SPH 101	-Mechanics I	1 st Semester
SPH 102	-Electricity & Magnetism I	2 nd Semester
SPH 103	-Waves & Optics	2 nd Semester

Elective Course (For Non Physics students)

SPH 104	-Man and Physical World	1 st Semester
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Co-requisites: Those wishing to Major in Physics must register for DOUBLE MATHS or MATHS/GEOLOGY; MATHS/METEOROLOGY and must include SMA 101, 103 & 140. Non-Majors may register for MATHS and any other Science subject in the Faculty.

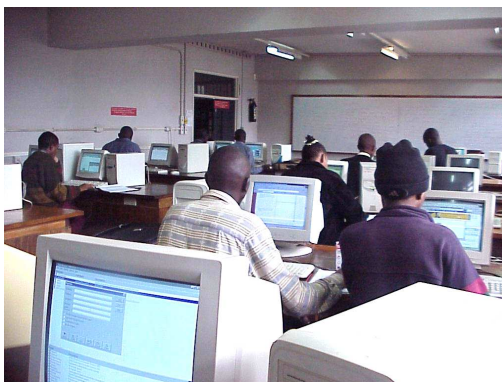
2ND YEAR

Core Courses:

SPH 201	-Mechanics II	1 st Semester
SPH 202	-Electricity & Magnetism II	1 st Semester
SPH 203	-Structure & Properties of Materials	2 nd Semester
SPH 204	-Mathematical Physics I	2 nd Semester

Pre-requisites: SPH 101, 102 and 103

Co-requisites: At least 4 units among SMA 201, 205, 206, 208 for those taking Maths/Physics.



Departmental Computer Lab

To continue with physics in 3rd year, the candidate must take and pass SPH 201, 202, 203 & 204. Majors in Physics must register in ALL five (5) Core Units in both 3rd & 4th years plus a min of 5 units from the Electives, according to the individual's specialization interests that must be in line with current research groups (Table 1), to make a total of 10 units. To register in more than 5 Elective courses, one must seek approval from the Chairman.

Non-Majors MUST take ALL the Core units in 3rd & 4th years.

3RD YEAR

Core Courses:

SPH 301	- Practical Physics I	1 st Semester
SPH 302	- Thermodynamics	2 nd Semester
SPH 303	- Solid State Physics I	2 nd Semester
SPH 304	- Electrodynamics I	2 nd Semester
SPH 305	- Classical Mechanics	1 st Semester

Elective Courses

SPH 306	-Mathematical Physics II	1 st Semester
SPH 307	-Introductory Electronics	1 st Semester
SPH 308	-Physical Optics	1 st Semester
SPH 309	-Quantum Mechanics I	1 st Semester
SPH 310	-Environmental Physics	2 nd Semester
SPH 311	-Introductory Geophysics	1 st Semester
SPH 312	-Digital Electronics	2 nd Semester
SPH 313	-Computational Physics	2 nd Semester
SPH 314	-Practical Physics II	2 nd Semester

Non majors taking mathematics are advised to choose from among : SMA 301, 302, 303, 304, 306 or 320 & 322.

NB. Student may take any one of SMA 320/306 or SPH 306; SMA 360 or SPH 313. SMA 306 need not be taken with SPH 407.



Research facilities in the department

Prerequisites:

SPH 307 for SPH 312	-For condensed matter group
SPH 307 for SPH 410 & 418	-For condensed matter group
SPH 312 for SPH 410	-For condensed matter group
SPH 311 for SPH 415 & 416	-For Earth/Environ. physics

4TH YEAR

Core Courses:

SPH 401	- Atomic Physics	1 st Semester
SPH 402	- Nuclear Physics	2 nd Semester
SPH 403	- Solid State Physics II	2 nd Semester
SPH 404	- Statistical Physics	1 st Semester
SPH 405	- Electrodynamics II	2 nd Semester

Elective Courses:

SPH 406	-Practical Physics III	1 st Semester
SPH 407	-Mathematical Physics III	1 st Semester
SPH 408	-Physics of Materials	2 nd Semester
SPH 409	-Quantum Mechanics II	1 st Semester
SPH 410	-Applied Electronics and Microp.	1 st Semester
SPH 411	-Surface Physics	2 nd Semester
SPH 412	-Plasma Physics	1 st Semester
SPH 413	-Astrophysics	2 nd Semester
SPH 414	-Elementary Particle Physics	1 st Semester
SPH 415	-Applied Geophysics	1 st Semester
SPH 416	-Rock Magnetism and Paleo.	2 nd Semester
SPH 417	-Aeronomy	1 st Semester
SPH 418	-Power Electronics	2 nd Semester
SPH 419	-Quantum Electronics	2 nd Semester
SPH 420	-Projects	2 nd Semester

TABLE 1: Classification of Areas for Specialization

Research Groups	ELECTIVES COURSES	
	3 RD YEAR	4 TH YEAR
Theoretical Physics	SPH 306 SPH 308 SPH 309 SPH 313 SPH 314	SPH 406 SPH 407 SPH 409 SPH 420 SPH 411/412/413/ 414/417
Condensed Matter Physics	SPH 306 SPH 308 SPH 309 SPH 307/314 SPH 312/313	SPH 406 SPH 407 SPH 409 SPH 420 SPH 408/410/411/ 412/419
Electronics & Microprocessor Systems	SPH 306 SPH 307 SPH 309 SPH 312 SPH 313/314/ 308	SPH 406 SPH 409 SPH 410 SPH 420 SPH 418/419
Earth, Environmental Physics, Applied Geophysics & Nuclear Physics	SPH 306 SPH 309 SPH 311 SPH 307/314 SPH 308/310/ 313	SPH 406 SPH 409 SPH 415 SPH 420 SPH 416/417

FUTURE CAREER PROSPECTS

The Department encourages training and research into fairly interactive areas recognized by the National Science Council, Industries, Private sector and Internationally. Physics Graduates have opportunities for:

- Further studies (M.Sc. or Ph.D) in Physics, Computer Science, Engineering, Medical Physics etc.
- Research/service providers in such sectors as Energy, Telecommunications, Electronics & Internationally

RESEARCH COLLABORATION

The Department enjoys research collaborations with internationally institutions e.g. the University of Rome "La Sapienza" (Space Science), Department of Material Science, Uppsala University; Lund Laser Centre, Sweden; ICTP; IAEA; University of Dar es Salaam, Makerere University, University of Zambia, Moi University



Research facilities

TEACHING AND RESEARCH FACILITIES

The Department possesses well equipped research Laboratories: Solid state laboratory; Laser lab, Geophysics Lab; Materials Science Lab; Nuclear Physics Lab and a fully networked Computer Lab for computing purposes.

For further inquiries, please contact the Chairman of the Department, 2nd Floor, Science Building, Chiromo Campus.

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Website: <http://www.uonbi.ac.ke>



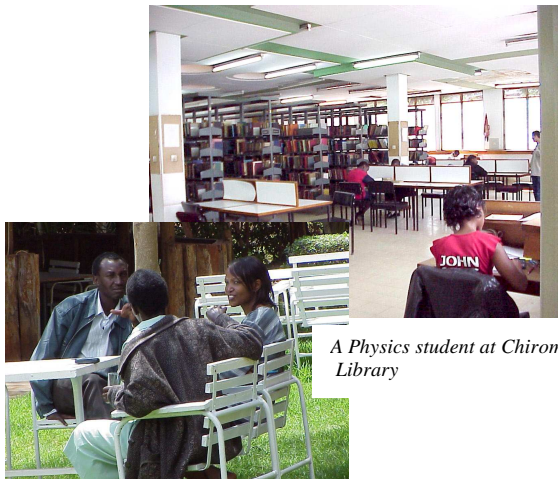
UNIVERSITY OF NAIROBI

DEPARTMENT OF PHYSICS

**B.Sc. (PHYSICS)
DEGREE PROGRAMME**



*Technological &
Manpower Development*



A Physics student at Chiromo Library

NB. Non majors taking mathematics are strongly advised to choose units from: SMA 423, SMA 420, SMA 427 and should NOT take SMA 429, SMA 430 and SMA 431. Student may take any one of SPH 407 or SMA 408 but should not register for SMA 422 and/or SMA 426, and SPH 407 simultaneously.