

# B.Sc. (ASTRONOMY & ASTROPHYSICS)

This degree course is designed to train graduates who will have the relevant skills to work in areas of Basic and Applied Sciences, such as Satellite Space Stations (e.g., San Marco in Malindi), Astronomical Observations and Aeronautical Engineering Departments and Remote Sensing.

## 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 or Principal Passes in Physics and Mathematics at KACE/EAAACE.

## REGISTRATION GUIDELINES

### 1<sup>ST</sup> YEAR

#### Core Courses:

SPA 101	-Introductory Astronomy	1 <sup>st</sup> Semester
SPA 102	-Gravitation & The Solar System	1 <sup>st</sup> Semester
SPH 101	-Mechanics I	1 <sup>st</sup> Semester
SPH 102	-Electricity & Magnetism I	2 <sup>nd</sup> Semester
SPH 103	-Waves & Optics	2 <sup>nd</sup> Semester
SPH 107	-Programming Methods	2 <sup>nd</sup> Semester
SMA 103	-Calculus I	1 <sup>st</sup> Semester
SMA 104	-Calculus II	2 <sup>nd</sup> Semester
SMA 140	-Intr to Probability & statistics	2 <sup>nd</sup> Semester
CCS 001	-Communication Skills	1 <sup>st</sup> Semester
CCS 009	-Elements of Economics	2 <sup>nd</sup> Semester
CCS 010	-HIV/AIDS	1 <sup>st</sup> Semester

### 2<sup>ND</sup> YEAR

#### Core Courses:

SPA 201	-Light & Astronomical Optics	1 <sup>st</sup> Semester
SPA 202	-Int. to The Solar System	2 <sup>nd</sup> Semester
SPA 203	-Solar Physics	1 <sup>st</sup> Semester
SPH 201	-Mechanics II	2 <sup>nd</sup> Semester

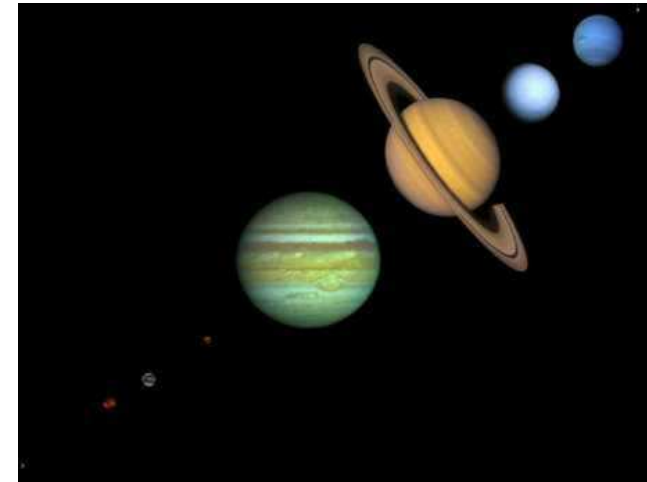
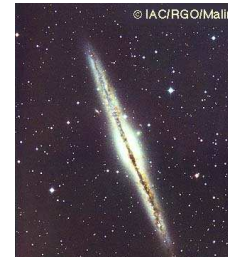
SPH 202	-Electricity & Magnetism II	1 <sup>st</sup> Semester
SPH 203	-Structure & Properties of Materials	2 <sup>nd</sup> Semester
SPH 204	-Mathematical Physics I	2 <sup>nd</sup> Semester
SPH 205	-Instrumentation electronics	2 <sup>nd</sup> Semester
SMA 201	-Electricity & Magnetism II	1 <sup>st</sup> Semester
SMA 209	-Elements of algebra	1 <sup>st</sup> Semester
SMA 221	-Vector Analysis	2 <sup>nd</sup> Semester
SMA 240	-Probability & Statistics	2 <sup>nd</sup> Semester



Departmental Computer Lab

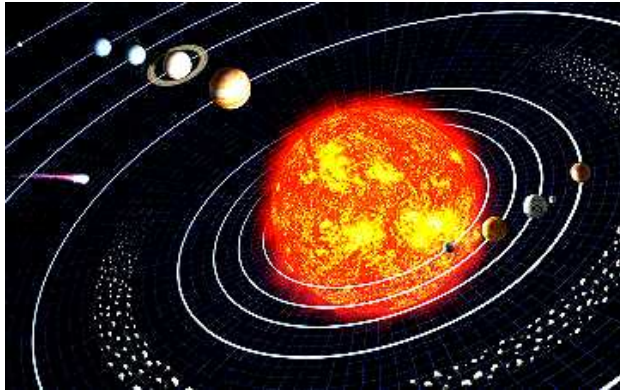
### 3<sup>RD</sup> YEAR

SPA 301	- The Distant Stars	1 <sup>st</sup> Semester
SPA 302	- The Evolution of Stars	2 <sup>nd</sup> Semester
SPA 303	- Galaxies & The Universe	1 <sup>st</sup> Semester
SPA 304	- Physics & Astronomy Practicals	2 <sup>nd</sup> Semester
SPH 302	- Thermodynamics	2 <sup>nd</sup> Semester
SPH 304	- Electrodynamics I	2 <sup>nd</sup> Semester
SPH 305	- Classical Mechanics	1 <sup>st</sup> Semester
SPH 306*	- Mathematical Physics II	1 <sup>st</sup> Semester
SPH 308	- Physical Optics	1 <sup>st</sup> Semester
SPH 311	- Introductory Geophysics	1 <sup>st</sup> Semester
SPH 313	- Computational Physics	2 <sup>nd</sup> Semester
SPH 329*	- Microwave Theory & Devices I	1 <sup>st</sup> Semester
SPH 330*	- Microwave Theory & Devices II	2 <sup>nd</sup> Semester
SPH 331*	- Analogue & Digital Commun	1st Semester
	*Electives	



### 4<sup>TH</sup> YEAR

SPA 401	- Int. Properties & Physics of Stars	1 <sup>st</sup> Semester
SPA 402*	- Observational astrophysics	1 <sup>st</sup> Semester
SPA 403	-Intr to G Relativity & Cosmology	1 <sup>st</sup> Semester
SPA 404	-Fundamentals of space Flight	1 <sup>st</sup> Semester
SPA 405	-Advanced remote sensing	1 <sup>st</sup> Semester
SPA 406	-Astronomy Projects	2 <sup>nd</sup> Semester
SPH 402*	-Nuclear Physics	2 <sup>nd</sup> Semester
SPH 404	-Statistical Physics	2 <sup>nd</sup> Semester
SPH 405	-Electrodynamics II	2 <sup>nd</sup> Semester
SPH 412	-Plasma Physics	2 <sup>nd</sup> Semester
SPH 415*	-Applied Geophysics	2 <sup>nd</sup> Semester
SPH 417	-Aeronomy	2 <sup>nd</sup> Semester
SPH 431	-Antenna Theory & Radio Waves	1 <sup>st</sup> Semester
SPH 432	-Satellite & Mobile Communications	2 <sup>nd</sup> Semester



### 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 among others

### TEACHING AND RESEARCH FACILITIES

The Department posses 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.

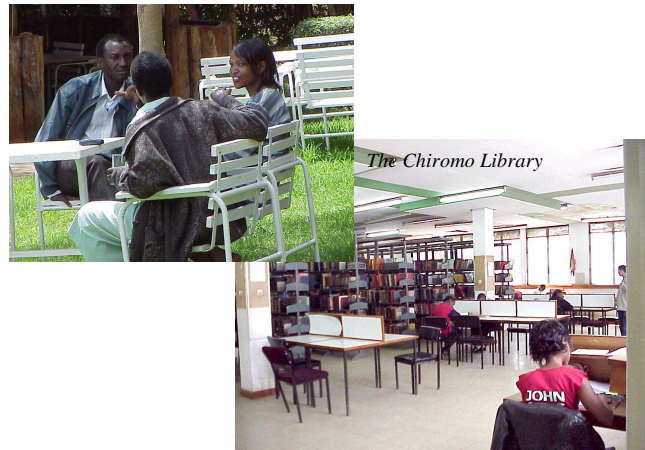
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UNIVERSITY OF NAIROBI

## DEPARTMENT OF PHYSICS

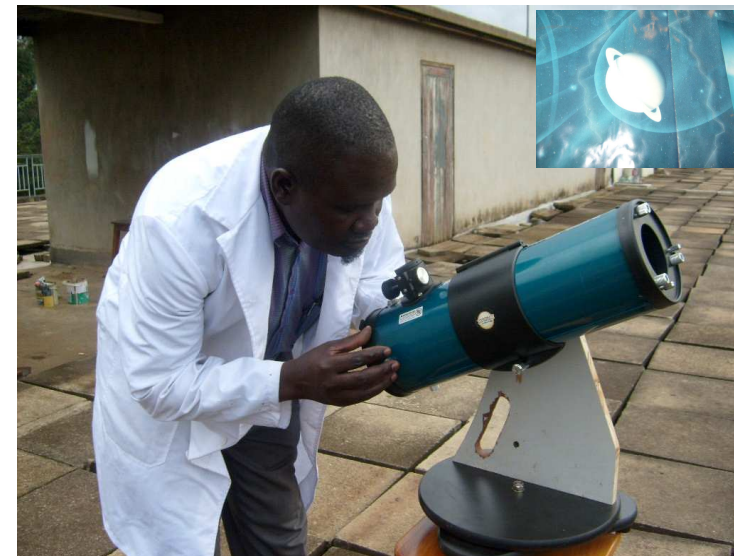
# B.Sc. ASTRONOMY & ASTROPHYSICS



### FUTURE CAREER PROSPECTS

Graduates have opportunities for:

- Astronomical Observations
- Space Science centres and Institutes
- Telecommunication industries
- Aeronautical DivisFurther studies (M.Sc. or Phions of Civil Aviation



*Technological &  
Manpower Development*