

NEWTON DARA Year4: Unit 1 TUK Nairobi

Day 1 15 October 2018

Course Overview:

- We introduce ourselves....
- Scene setting via DARA Overview talk – plus pictures from 2017 Nairobi Unit 1.
- General strategy : the first half of the programme is series of introductory astronomy lectures; we follow the chapter structure and some contents of “Introduction to Astronomy & Cosmology” by Prof. Ian Morison – all students should have downloaded the free .pdf of this text. The content of this text is not advanced for those who have done astrophysics-based degrees – otherwise it’s a good introduction for those who have done little astronomy. Note that Morison does not give as much detail in some areas e.g. the Interstellar Medium – radio astronomy tells us a lot about the space between the stars.
- The material is given in the form of short “Crash Course Astronomy” (CCA) videos but mainly via lecture presentations based on Prof. Melvin Hoare’s Unit 1 course in Ghana; we also show one or two videos of professional astronomy colloquia.
- In the second half of the course we introduce radio astronomy science and a few of the techniques. The material is based on my lecture course in the University of Manchester.
- To help capture the ideas there are examples workshops after most lectures.

Other activities in the course:

- On one day this week we hope to have the Kenyan “Travelling Telescope” outreach team to talk to us.
- On one day in the second week we will visit the Longonot 32-m radio antenna
- In the second week we have a bench demonstration of a basic radio receiver and the radio frequency spectrum in Nairobi – showing the effect of broadcast TV and mobile phone transmitters
- In the second week we hope to use a 7-m radio telescope remotely at Jodrell Bank to look at hydrogen gas in the Milky Way.
- We run a writing advice session – to guide you when you come to write a supplementary course work essay (5-pages, deadline Dec 31st 2018.)
- We run a CV advice clinic in week 2

Day 1 material is:

- DARA_Overview_Hoare_Wilkinson.pptx
- Ian_Morison_intro_lecture (first few slides only)
- Morison Chapter 1
 - CCA#1: Introduction to Astronomy (shown)
 - CCA#2: Naked Eye Observations (not shown)
 - CCA#3: Cycles in the Sky (shown)
 - CCA#4: The Gravity of the situation (not shown)
 - Celestial Coordinates: video (shown)
- Morison Chapter 2
 - CCA#10: The Sun (shown)
 - M.Hoare material on starlight and Sun (two .pptx presentations)
- Morison Chapter 3 (Planets – we do not cover)
- Morison Chapter 4
 - CCA#27: Exoplanets