



DUKE UNIVERSITY TIP PROGRAM
ABOVE AND BEYOND: ASTRONOMY, PHYSICS, AND ASTROBIOLOGY
SUMMER 2007
SYLLABUS

Objectives

- Learn to use radio and optical telescopes and understand their purpose as they relate to the fields of physics, astronomy, and astrobiology
- Develop research methodology through planning, implementation, and analysis of data
- Formulate conclusions of the nature of celestial objects through the use of scientific data
- Develop problem solving skills
- Learn fundamental concepts in the field of Astrophysics and apply these concepts in the formulation and execution of an independent research project
- Sharpen presentation skills through the delivery of scientific findings to an audience of peers and professionals
- Develop teamwork skills by collaborating with others while attempting to solve complex problems

Materials

- If you have a computer or laptop, we encourage you to bring it. There are several computers for your use at PARI if you should decide not to bring a computer with you.
- Bring pens, pencils, a notebook, and your required texts
- Bring games, puzzles, books, DVD movies, etc. (there is no cable TV at PARI!)
- Rooms are furnished with linens, pillows, blankets, clocks, and lamps
- Bring a flashlight
- Some cell phones work – we know Verizon and US Cellular work, but others may not. Please bring a calling card with you!

Required Texts

- Download and bring (either electronic or printed) the Radio Astronomy Tutorial located on the MIT Haystack Observatory website (<http://web.haystack.mit.edu/urei/tutorial.html>).
- Purchase *Observing the Universe*. Andrew J. Norton. Cambridge, UK: Cambridge University Press. 2004. 180 pp. ISBN 0-521-60393-5. (\$34.99 paperback)
Available at on-line sources such as amazon.com and bn.com

Daily Schedule

The schedule is shifted to begin at a later hour than normal working or school hours because astronomical observations are done in the evening. The agenda is set up to begin about 10 am, but expect to continue each evening after dinner as described in the agenda. Early morning hours before 10 am are set aside for open forum and informal discussion.