Liverpool John Moores University

Title:	THE UNIVERSE THROUGH A SMALL TELESCOPE
Status:	Definitive
Code:	**4005ASTRON** (101066)
Version Start Date:	01-08-2011
Owning School/Faculty:	Astrophysics Research Institute
Teaching School/Faculty:	Astrophysics Research Institute

Team	Leader
Andrew Newsam	Y
David Hyder	

Academic Level:	FHEQ4	**Credit Value:**	12.00	**Total Delivered Hours:**	96.00
Total Learning Hours:	120	**Private Study:**	24		

Delivery Options
Course typically offered: Runs Twice - S1 & S2

Component	Contact Hours
Online	30.000
Practical	60.000
Seminar	3.000
Tutorial	3.000

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Practice	AS1	Practical exercises	70.0	
Essay	AS2	Popular Essay	30.0	

Aims

This module is as a standalone distance learning course suitable for students from any background and as such requires no specialist mathematical or scientific skills. It is intended to be a self-contained astronomy course teaching students how to use a telescope and how to use their observations to produce scientific results. It will follow a syllabus covering solar system, stellar and galactic astronomy.

Learning Outcomes

After completing the module the student should be able to:

1	Demonstrate a familiarity with the overall geography of the heavens, an appreciation of the types of observatories that are used to gather astronomical information, and practical experience of observing.
2	Describe what can and cannot be observed using a small telescope in various conditions.
3	Understand how to record observations properly and show those observations can be used to produce scientific results.

Learning Outcomes of Assessments

The assessment item list is assessed via the learning outcomes listed:

prac exercises	1	2	3
CW	1	2	3

Outline Syllabus

(1) Introduction to positional astronomy: celestial sphere, angular sizes and distances, time zones, R.A. and declination. The nature of light; the electromagnetic spectrum. Types of telescope - reflectors and refractors and the associated advantages and disadvantages of each. This section of the course is accompanied by
a detailed tour of the night sky to introduce beginners to the constellations and the many and varied objects of interest contained within them that are observable with a small telescope. The practical will also involve testing telescope equipment for pointing accuracy and limiting resolution in different conditions.

(2) The Moon: discussion of the geology and topography of the Moon and the many theories that have arisen concerning its origin. The practical exercise associated with this chapter involves measuring the heights of the mountains on the Moon from observations.

(3) Observing the planets: phases of the Moon; phases of Venus and Mercury; cratering on the Moon, retrograde motion of the superior planets; the moons of Jupiter and Saturn; eclipses; observing Uranus, Neptune and Pluto; meteor showers, observing asteroid motion, searching for comets; observing sunspots and calculating the rotation of the Sun. The practical involves making observations of the Moons of Jupiter to calculate the planet's mass using Kepler's law.

(4) Variable stars: ranging from pulsating Cepheid variables to eclipsing binaries and covering the most suitable objects for obsrevations with a small telescope. The practical assignment involves making observations of certain variable stars to

produce light curves and thus determining the type of variable.

(5) Deep Sky Objects: globular clusters, nebulae and distant galaxies. The practical involves comparison of nebulosity, star density, brightness, colour, shape and the presence of dust bands and will include comparisons of the Hyades and Pleiades and an evaluation of the images obtained on extra-galactic Messier objects.

Learning Activities

CD-ROM containing notes and audio tour of the sky, video, web, email and relevant sky charts

References

Course Material	Book
Author	Kaufmann&Freedman
Publishing Year	1999
Title	Universe
Subtitle	
Edition	
Publisher	Freeman
ISBN	

Course Material	Book
Author	Magazines - Astronomy Now, Astronomy, Sky & Telescope
Publishing Year	0
Title	
Subtitle	
Edition	
Publisher	
ISBN	

Course Material	Book
Author	Patrick Moore
Publishing Year	0
Title	The Sky at Night
Subtitle	
Edition	
Publisher	BBC
ISBN	

Notes

This module will teach students how to make observations using an amateur

telescope and how to make scientific conclusions based upon those observations.