

Liverpool John Moores University

Title: THE SCIENCE OF SCIENCE FICTION
Status: Definitive
Code: **4009ASTRON** (101071)
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:** 50.00
Total Learning Hours: 120 **Private Study:** 70

Delivery Options

Course typically offered: Semester 2

Component	Contact Hours
Online	38.000
Seminar	6.000
Tutorial	6.000

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Report	AS1	practical assessments	70.0	1.00
Essay	AS2	coursework 1000 word commentary on the scientific principles underlying a selected work	30.0	

Aims

- i) To develop basic analytical and critical skills*
- ii) To discuss the impact of scientific knowledge on our society*

iii) To introduce the students to a basic knowledge of the fundamental physical principles governing the structure of our universe

iv) To highlight the connections between different branches of science and between science and arts

Learning Outcomes

After completing the module the student should be able to:

- 1 Basic knowledge of main ideas of modern physics and astrophysics
- 2 Awareness of the intimate connections between different branches of science
- 3 Knowledge of how scientific progress influences cinema and literature

Learning Outcomes of Assessments

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

REPORT	1	2	
ESSAY	1	2	3

Outline Syllabus

Introduction to the history of SF cinema and literature.

Main ideas of SF and their connection with science. Science in SF.

Laws of motion, mass-energy equivalence ($E=mc^2$), structure of matter, indetermination principle, antimatter.

Structure of the universe, cosmological expansion, curved space-time, event-horizons, wormholes, black holes, hidden dimensions, space travel, time travel.

Computers, artificial intelligence.

Extrasolar planets, what is life?, entropy, chance and the origin of life, the chemistry of aliens, development of life and civilizations, interstellar communications, SETI.

Learning Activities

The course is structured in a series of lectures and seminars.

In each lecture a basic topic of Science Fiction cinema and literature is presented by viewing short clips of movies and reading paragraphs of short stories or novels; it is then analysed by discussing the basic underlying scientific principles.

A series of seminars will be devoted to analyse a selected number of outstanding SF movies and short stories (or novels), from both scientific and artistic point of view.

References

Course Material	Book
Author	Bizony, P.
Publishing Year	0
Title	2001: filming the future
Subtitle	
Edition	
Publisher	Aurum Press
ISBN	1-85-10-365-2

Course Material	Book
Author	Krauss, L.M.
Publishing Year	0
Title	The physics of Star Trek
Subtitle	
Edition	
Publisher	Flamingo
ISBN	0-00-655042-8

Course Material	Book
Author	Clute, J., Nicholls, P.
Publishing Year	0
Title	The encyclopedia of science fiction
Subtitle	
Edition	
Publisher	orbit
ISBN	1-85723-124-4

Course Material	Book
Author	MacVey, J.W.
Publishing Year	0
Title	Interstellar travel
Subtitle	
Edition	
Publisher	Scarborough House
ISBN	0-8128-8523-6

Course Material	Book
Author	Greene, B.
Publishing Year	0
Title	The elegant universe
Subtitle	
Edition	
Publisher	Vintage
ISBN	0-099-28992-X

Course Material	Book
Author	McEvoy ,J.P.,Zarate, O.
Publishing Year	0
Title	Introducing quantum theory
Subtitle	
Edition	
Publisher	Icon books
ISBN	1-84046-057-1

Course Material	Book
Author	Davies, P.
Publishing Year	0
Title	The fifth miracle
Subtitle	
Edition	
Publisher	Penguin science
ISBN	0-14-028226-2

Notes

Science Fiction is one of the most popular subjects in both modern cinema and literature. By means of the SF medium, basic scientific ideas can be introduced and discussed in a simple and appealing way, since abstract concepts can be visualized and assimilated without the need to use heavy mathematical formalism.

Merging and extrapolation of ideas from different field of science is another paramount characteristic of SF. From analysis of SF material students can get a broad vision of all different facets of scientific knowledge.

The course is articulated in a series of lectures and seminars, where clips from SF movies and short SF stories are presented and critically discussed in light of our present scientific knowledge. This will also help students in developing critical and analytical attitudes.

The course will prove beneficial for all students curious about the structure of reality, willing to broaden their basic knowledge of the fundamental rules governing our physical universe, interested in the development of scientific ideas and their impact on the arts and the evolution of mankind.

It is also intended that this module be offered by distance learning.