MODULE DESCRIPTOR

MODULE TITLE	**Galaxies Beyond the Milky Way**						
MODULE CODE	AA2052 (L5)	**JACS CODE**	**F500**	**CREDIT VALUE**	*20 Credits*		
DATE OF APPROVAL	April 2017				**VERSION NUMBER**	1	
SCHOOL	**Physical Sciences and Computing**		**PARTNER INSTITUTION**		**N/A**		

RELATIONSHIP WITH OTHER MODULES

Co-requisites	**NONE**	**Pre-requisites**	**AA1051 AA2051**	**Excluded Combinations**	**None**

MODULE AIMS

This module aims to:

- Provide a broad introduction to galaxies beyond the Milky Way, building on the prerequisite modules. Its approach is quantitative without taking a highly mathematical approach.
- Provide students with an understanding of the location of our Galaxy in the universe the characteristics of other types of galaxies.
- Enable students to carry out estimates of physical properties of galaxies based on their analysis of observational data.
- Provide a broad overview of observations and how observations with new instruments in different wavebands may answer questions about galaxy evolution in the coming years.
- provide practice in transferable skills relevant to communicating scientific concepts.

MODULE CONTENT

THE LOCAL UNIVERSE

- Classification by morphology
- Stellar content
- Theoretical considerations
- Interstellar medium
- Disks, bars and spiral arms

DYNAMICS

- Motions within galaxies
- Galaxy masses, missing mass in galaxies
- Powering of AGN
- Jets from galactic nuclei
- Velocity-distance relation

THE LOCAL GROUP

- Morphology and distribution
- Star formation history
- Future evolution

CLUSTERING OF GALAXIES

- Clusters and superclusters

- Morphological mix
- Cluster dynamics, missing mass in clusters
- Motion of our Galaxy in the universe

EVOLUTION

- Evolution in the universe from the big bang
- When did galaxies first appear?
- Changes with look-back time
- Galaxy interactions

CHALLENGES FOR THE FUTURE

- The problem of the first stars
- Dwarf galaxies
- Absorption line systems
- Future instrumentation

INTENDED LEARNING OUTCOMES

On successful completion of this module a student will be able to:

1.	Describe the structure and characteristics of different types of galaxies and how this is inferred from multi-wavelength observations.
2.	Use basic physical and astrophysical principles to explain the phenomena of galaxies in the universe and solve problems in this subject area
3.	Analyse range of astronomical data to investigate open-ended problems.
4.	Summarise scientific information and concepts, evaluate results and draw conclusions.
5.	Write structured and coherent scientific documents

ASSESSMENT METHODS

The method of assessment for this module has been designed to test all the learning outcomes. Students must demonstrate successful achievement of these learning outcomes to pass the module.

Number of Assessments	Form of Assessment	% weighting	Size of Assessment/Duration/ Wordcount	Category of assessment	Learning Outcomes being assessed
1	Question sheet (numerical and conceptual)	35%	5 questions	Coursework	1,2
1	Data Analysis and Report	40%	1600 words	Coursework	3,4,5
1	Critical Summary of Article	25%	1000 words	Coursework	4,5

MODULE PASS REQUIREMENTS

To pass this module you must achieve a mark of 40% or above, aggregated across all the assessments.

APPENDIX

MODULE CODE: AA2052 (L5) **MODULE TITLE:** Galaxies Beyond the Milky Way

LOCATION OF STUDY: *UCLAN CAMPUS*

MODULE TUTOR(S)	Victor Debattista

MODULE DELIVERY	Semester Long	Semester 1		Semester 2		Semester 3		
	Year long	Semester 1 & 2	✓	Semester 2 & 3				
	Other (please indicate pattern of delivery)	DISTANCE LEARNING						

MODULE LEARNING PLAN

All modules should include details of the average learning time based upon 200 hours per 20 credits.

LEARNING, TEACHING AND ASSESSMENT STRATEGY

Distance learning students will learn via self-study, supported by detailed distance learning material supplied by the Course Team according to a Course Schedule. Tutorial support via online discussion forums, online classrooms email and telephone as required. Students will be encouraged to participate in on-line discussions.

The learning materials include Course Notes with worked examples, and assessed coursework. Additional material and suggested further reading are available via Blackboard.
The self-test questions encourage students to solve conceptual and numerical problems and to build their confidence prior to attempting the assessed question sheet.

The assessed question sheets is designed to enable students to demonstrate their understanding and ability to solve problems and explain the concepts involved.
The data analysis report provides practice in accessing a range of online astronomical data sources, analysing the data to investigate an open-ended problem and drawing conclusions. The resulting scientific report develops students' scientific writing skills.

The assessment "The critical summary of an Article", develops students' critical analysis and their ability to summarise in the form of a structured and coherent scientific document.

SCHEDULED LEARNING AND TEACHING ACTIVITY	No. of hours
Tutorial	8
TOTAL SCHEDULED LEARNING HOURS	8

GUIDED INDEPENDENT STUDY

First reading of posted materials (equiv. to lectures)
Working through details
Background reading
Working on coursework assignments
Reflection on feedback

TOTAL GUIDED INDEPENDENT STUDY HOURS	192

TOTAL STUDENT LEARNING HOURS ***(eg 200 hours per 20 credits)***	200

BIBLIOGRAPHY AND LEARNING SUPPORT MATERIAL

On-line Booklist: http://readinglists.central-lancashire.ac.uk/search.html?q=AA2052