Programme Specification Document

Approved, 2022.04

Overview

Programme Code	35542
Programme Title	Astrophysics
Awarding Institution	Liverpool John Moores University
Programme Type	Masters
Language of Programme	All LJMU programmes are delivered and assessed in English
Programme Leader	Matthew Darnley
Link Tutor(s)	

Awards

Award Type	Award Description	Award Learning Outcomes
Target Award	Master of Science - MS	See Learning Outcomes Below
Alternative Exit	Postgraduate Diploma - PD	For the award of PG Diploma, students will be able to demonstrate familiarity with the chronology and physical mechanisms underlying the formation and evolution of the principal structures in the Universe, on all scales from planets to galaxy superclusters. They will be able to discuss the strengths and weaknesses of different types of observational methods, across the full electromagnetic spectrum and including non-em radiation, for determining important physical properties. In addition students will have a sufficiently detailed knowledge of chosen specialist areas that they can critically evaluate new findings in the refereed research literature.
Alternative Exit	Postgraduate Certificate - PC	For the award of PG Certificate, students will be able to demonstrate familiarity with the chronology and physical mechanisms underlying the formation and evolution of the principal structures in the Universe, on all scales from planets to galaxy superclusters. They will be able to discuss the strengths and weaknesses of different types of observational methods, across the full electromagnetic spectrum and including non-em radiation, for determining important physical properties.

Alternate Award Names	

External Benchmarks

Subject Benchmark Statement	PGT-Physics (2008)

Programme Offering(s)

Mode of Study, Mode of Delivery	Intake Month	Teaching Institution	Programme Length
Part-Time, Distance Learning	September	LJMU Taught	2 Year

Aims and Outcomes

Educational Aims of the Programme

To provide appropriately qualified students with a programme of academic study that will enable them to continue to higher level research in astrophysics, e.g. through a PhD route. To provide a postgraduate study opportunity for those who may be disenfranchised from higher education either by being full-time employees and/or residing in international locations where such opportunities are not available. To develop those learning, computational, communication and reflective skills necessary to enable students to carry out independent study in astrophysics and related areas. To complete a project of independent and original research in astrophysics.

Learning Outcomes

Code	Description
PLO1	Demonstrate a thorough knowledge of the definitions and key properties of major classes of astrophysical objects (planets, stars, galaxies and galaxy clusters) and a clear knowledge of the observational methods used to measure quantitative parameters for astrophysical objects (size, luminosity, velocity, chemical composition, age etc.)
PLO2	Possess a clear awareness of the main physical processes involved in the formation, growth, stabilisation and evolution of astrophysical objects Demonstrate practical experience of the analytical techniques applicable to the area of astrophysical research and the application of advanced mathematical and physical methods to problems in astrophysics.
PLO3	Show originality in the application of knowledge, together with a practical understanding of the critical evaluation of research, scholarship and methodologies within astrophysical science.

Programme Structure

Programme Structure Description

The programme is offered as a part-time course for completion in two years. Students will take the following path. In the first year, they will complete Astrophysical Concepts (7010ASTPHY) with a final assessment in January, followed by one optional module with a final assessment in May. The summer period of the first year, June to September, will be spent on preparatory exercises for the project, but there will be no further assessment, so a total of 60 credits will be completed in the first year. In the second year, the second core module, Astronomical Techniques (7013ASTPHY) will be taken with a final assessment in January, followed by a second optional module with a final assessment in May. The Astrophysics Project (7011ASTPHY) will be completed over the second summer, with submission of the thesis and final assessment in September. Thus 120 credits will be awarded in the second year. There is one intake of new students in September each year. To obtain an MSc., students must acquire 180 level 7 credits. Intermediate awards are Postgraduate Certificate Astrophysics (60 level 7 credits, which must be the two 30-credit core modules, 7010ASTPHY and 7013ASTPHY) and Postgraduate Diploma Astrophysics (120 level 7 credits, which must include the two 30-credit core modules, 7010ASTPHY and 7013ASTPHY, with the remaining 60 credits being any two of the 30-credit optional modules). Students who achieve the full 180 credits with an average mark of 70% or above are awarded MSc. with Distinction. Students who achieve the full 180 credits with an average mark of 60-69% are awarded MSc. with Merit. Students who achieve 50-59% are awarded MSc (Pass). Recruitment will only be onto the full MSc pathway; no students will be recruited directly onto either the Postgraduate Certificate or the Postgraduate Diploma programmes.

Programme Structure - 180 credit points	
Level 7 - 180 credit points	
Level 7 Core - 120 credit points	CORE
[MODULE] 7010ASTPHY Astrophysical Concepts Approved 2022.05 - 30 credit points	
[MODULE] 7011ASTPHY Astrophysics Project Approved 2022.02 - 60 credit points	
[MODULE] 7013ASTPHY Astronomical Techniques Approved 2022.03 - 30 credit points	
Level 7 Optional - 60 credit points	OPTIONAL
[MODULE] 7014ASTPHY Cosmology Approved 2022.03 - 30 credit points	
[MODULE] 7015ASTPHY Numerical Methods in Astrophysics Approved 2022.02 - 30 credit points	
[MODULE] 7016ASTPHY Time-Domain Astrophysics Approved 2022.03 - 30 credit points	

Module specifications may be accessed at https://proformas.ljmu.ac.uk/Default.aspx

Teaching, Learning and Assessment

Acquisition of knowledge through pre-recorded lectures, directed reading, focused literature review exercises, coursework assignments, student discussion groups and tutorials. Learning materials principally delivered interactively by Virtual Learning Environment (Canvas) with use of other current technologies. Testing of the knowledge base is through a combination of online progress tests, written assignments, formal written examinations, project report or dissertation, and oral presentation Analytic, mathematical and problem solving skills are developed through self-learning assessments, focussed literature review exercises, written assignments and tutorials. The Astrophysics Project will involve both experimental and literature research, further developing skills of data retrieval, critical analysis and discussion. Analysis and problem solving skills are assessed through written examinations and by the completion of formal written coursework assignments. Experimental and literature research skills are assessed in the presentation of the Astrophysics Project together with an oral defence. Practical experimental skills, preparing a high-level technical report and giving a technical presentation are developed through the Astrophysics Project module. Computational and programming skills will be developed in many of the Astrophysics Project options, and are at the core of the Numerical Methods in Astrophysics module. Astrophysics Project proposal and report, coursework assignments and examinations, oral presentation. Transferable skills are embedded on the programme. Skills are learned through completion of written assignments, participating in tutorials and collecting and transferring data via computer networks and from on-line databases, and through the Astrophysics Project. Skills are developed through self-assessment exercises, coursework and the oral presentation of the research Project. Tutorials and feedback assist and improve the level of skill achieved.

Entry Requirements

Type	Description
Undergraduate degree	a minimum 2:2 in the physical sciences or a STEM discipline (e.g. science, technology, engineering, mathematics, etc.) a good knowledge of basic physics at degree level, and competence in mathematical techniques including calculus, differential equations and complex numbers
RPL	RPL is accepted on this programme
Other international requirements	As this is a Distance Learning programme the usual rules in terms of UK Visas and Immigration restrictions to full-time study do not apply
IELTS	IELTS 6.5 (minimum of 5.5 in each component)

Extra Entry Requirements

a satisfactory reference from your employer or line manager