



Course Specification

(Bachelor)

Course Title: **Introduction to Astronomy**

Course Code: **PHYS 0414**

Program: **BSc in Physics**

Department: **Physics**

College: **Science**

Institution: **Majmaah University**

Version: **1**

Last Revision Date: **30/12/2024**



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A. General information about the course:

1. Course Identification

1. Credit hours: (3,0,0)

2. Course type

A. University College Department Track Others
B. Required Elective

3. Level/year at which this course is offered: ()

4. Course General Description:

In this course, the students will study History of astronomy. - Laws of motion: Keppler's laws – Gravitational law – newton's modified law – Orbits of planets – speed in the orbit – proceeding velocity. - Solar system: planets: 1- Inner Planets (Mercury - Venus - Earth - Mars. 2 – Jovian planets (Jupiter - Saturn - Uranus – Neptune) 3 - Satellites – comets - asteroids. Stars: Stars Dimensions - Destiny - Luminosity - Spectrum types - HR form - Double Stars and Stars masses. The evolution of stars. Galaxies: Milky Way - types of galaxies - galaxies properties – active galaxies – groups and cluster of galaxies - the universe.

5. Pre-requirements for this course (if any):

PHYS 0312

6. Co-requisites for this course (if any):

Null

7. Course Main Objective(s):

- Learn about the history of astronomy and its own laws
- Identify the orbits of sky objects
- Understanding solar and lunar Eclipse
- Linking physics and astronomy
- How to calculate the distance of stars and planets
- The star's classification, structure and evolution
- Galaxies

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	45	100%
2	Lab		
3	Hybrid <ul style="list-style-type: none"> • Traditional classroom 		



No	Mode of Instruction	Contact Hours	Percentage
	• E-learning		
4	Distance learning		

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	Lectures	45
2.	Laboratory/Studio	
3.	Field	
4.	Tutorial	
5.	Others (specify)	
Total		45

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
1.0	Knowledge and understanding			
1.1	The knowledge of basic astronomical principles and terms	K1	Lecture Exercises Problem solving	Exams Homework
1.2	Differentiate between the different astronomical components	K1	Lecture Quizzes Problem-solving	Exams Quizzes Assignments
2.0	Skills			
2.3	Use mathematical equations to calculate the different parameter of astronomy	S2	Problem solving Class discussion	Homework Oral problems
3.0	Values, autonomy, and responsibility			
3.2	Acting responsibly and ethically in carrying out individual as well as group projects.	V1	Group Presentation	Observation Group discussion Group Report





Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
				e-learning quizzes

C. Course Content

No	List of Topics	Contact Hours
1.	History of astronomy – Modern Astronomy	3
2.	Motion Laws: Kepler's Law, General law of gravity, modified Newton's law	6
3	Planet orbits, velocity in the orbit, speed of escape	6
4	Solar system: Planets (Inner Planets- Jovian planets)- Satellites – Comets – Minor Planets – Meteorites	9
5	Stars: distance, luminosity, spectra, masses, classification and evolution	12
6	Galaxies: Milky way, Types of galaxies, properties, Universe	9
Total		45

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Mid-term Exams	7,11	30
2.	Homework and Discussions	Every Lecture	20
3.	E-Exam	One/ semester	10
4.	End-term Exam	End of the semester	40

*Assess

ment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.).

E. Learning Resources and Facilities

1. References and Learning Resources

Essential References

Fundamental Astronomy, H. Karttunen, P. Kroger, H. Oja, M. Poutanen and K. Johan Donner, Springer (2007)





Supportive References	1-Exploration and Introduction to Astronomy, Thomas Arny and Stephen Schneider, McGraw Hill (2013) 2- Introductory Astronomy and Astrophysics, Zeilik Micheal and Stephen A. Gregory, Cengage Learning (1997)
Electronic Materials	www.nasa.gov . - www.space.com
Other Learning Materials	NASA application –Starynight software- Stellarium Software- Redshift software

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Classrooms, data show
Technology equipment (projector, smart board, software)	Smart Board, software
Other equipment (depending on the nature of the specialty)	Library, Seminar Room, and Wi-Fi internet connections

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Teachers	Teacher self-assessments
Effectiveness of Students assessment	Students	Student surveys
Quality of learning resources	Quality committee	Alignment with learning outcomes
The extent to which CLOs have been achieved	Administrators	Student performance data
Other		

Assessors (Students, Faculty, Program Leaders, Peer Reviewers, Others (specify))

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	DEPARTMENT COUNCIL
REFERENCE NO.	16





DATE

30/12/2024

