MANNAM MEMORIAL NSS COLLEGE, KOTTIYAM

STUDENT ENROLMENT LIST

Name of department : PHYSICS

Name of course : INTRODUCTION TO ASTRO PHYSICS (2021-22)

Sl No	Name of Student	Signature
1	Amina Shan	
2	Arjun. S.S	
3	Gayathri. U.R.	
4	Jithesh B.S	
5	Jyothismayi. S	
6	Keerthana. A.M.	
7	Krishnapriya. G.	
8	Maheswari Mohan. M.V	
9	Manasi H.G	
10	Mekha M	
11	Nimisha. J. Babu	
12	Sandheep. S	
13	Sona Sam	
14	Sreelakshmi. R	
15	Visakh. S	
16	Abhijith B.V	
17	Abhinand B	
18	Abhinav T.K.	
19	Adithyan. S	
20	Akash. S	
21	Akshay. K.S	
22	Akash. S	
23	Amal. A	
24	Anjali. S. Babu	
25	Aparna Prakash	
26	Archana Raj	
27	Ashin Nevas	
28	Aswin. R.	
29	Bimi. B.	
30	Bhaneeje Raj	
31	Devika. M.	
32	Harisree. G.S	
33	Krishnapriya. U	
34	Nikhitha. V.	

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35	Parvathy S. Vimal	
36	Sneha Suresh	
37	Sudheer. N.	
38	Vignesh. H.	
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2021-22

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Introduction to Astrophysics

Curriculum.

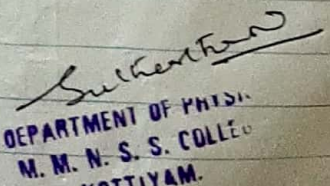
What is Astronomy, Astrophysics - History of modern Astronomy - Ptolemy's model of Universe - Copernican and Galilean contributions - Contribution

Formation of solar system : Nebular hypothesis - The Sun : Physical properties - Internal structure - Sunspots - Solar Wind, prominences and flares - Earth's motion and seasons - Lunar and solar eclipses - Brief familiarisation of solar system objects : Satellites, Comets and Meteorites.

Properties of stars - Spectral types of stars - Constellations Evolution of stars - Supernova, Neutron stars and Black holes.

Objectives

- Develop an understanding of the theoretical foundations of astronomy with special emphasis on: Stellar Evolution and Planetary Astronomy
- Identify major constellations and explain why they appear to move across the sky
- Develop curiosity in students to discover how the universe works and how it began and evolved. and



2021-22

Course Schedule - Introduction To Astrophysics.

13/12/21	(Monday)	3.30-4.30 pm	Branches of astronomy.
15/12/21	(Wednesday)	3.30 - 4.30pm	Astronomy Introduction, Difference between Astronomy & Astrophysics.
18/12/21	(Saturday)	9.30-12.30, 1.30-3.30	History of Astronomy, Ptolemy's model of Universe, Copernician Model, Geocentric, Heliocentric Contribution, Galilean Contribution, Tycho Brahe Contribution.
5/1/22	(Wednesday)	3.30 - 4.30pm.	
8/1/22	(Saturday)	9.30-12.30, 1.30-3.30pm	Formation of solar system, Nebular Hypothesis, Physical properties of sun, Internal structure
17/1/22	(Monday)	3.30 - 4.30pm	Sunspot, solar wind, solar prominences & flares.
19/1/22	(Wednesday)	3.30 - 4.30pm	Earth motion and seasons, Lunar & solar eclipses
24/1/22	(Monday)	3.30 - 4.30pm	familiarisation of solar system objects.
28/1/22	(Friday)	3.30 - 4.30pm	Satellites, comets & meteorites
29.1.22	(Saturday)	9.30 - 12.30, 1.30-3.30	formation of stars, evolution, etc Evolution of medium, small & huge stars
3/2/22	(Thursday)	9.30 - 4.30 -	Properties of stars, spectral types.
15/2/22	(Tuesday)	3.30 - 4.30pm	Supernova, Neutron stars, Black holes.
19/2/22	(Saturday)	9.30 - 12.30pm	HR diagram, Celestial sphere, Brightness of stars.
26/2/22	(Saturday)	9.30 - 12.30 pm	Endcourse Evaluation.

Sutheerthan

(Dr Sutheertha S. Nair)

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Introduction to Astrophysics

Add On-Course 2021-22, PG Department of Physics

MM NSS College, Kottiyam

Total Marks: 50 **Duration: 2 Hours**

Section A: 1-Mark Questions *Answer all questions. Each question carries 1 mark.*

1. What is the primary source of energy for stars?
2. Name the galaxy in which our solar system is located.
3. What does the term "redshift" refer to in astrophysics?
4. Who formulated the laws of planetary motion?
5. What is the name of the boundary around a black hole beyond which nothing can escape?

Section B: 2-Mark Questions *Answer all questions. Each question carries 2 marks.*

1. Explain the concept of the "event horizon" of a black hole.
2. What is the difference between a pulsar and a neutron star?
3. Describe the significance of the Hubble Space Telescope in modern astrophysics.
4. What is a supernova, and how does it relate to the life cycle of a star?
5. Briefly explain the concept of "dark matter" and its role in the universe.

Section C: 15-Mark Questions *Answer all questions. Each question carries 15 marks.*

1. **The Life Cycle of Stars:** a. Describe the stages of stellar evolution for a star with a mass similar to that of the Sun, from its formation to its final state.
   b. Include the key phases such as the main sequence, red giant, and final stages like white dwarf or planetary nebula.
   c. Explain how the mass of a star affects its life cycle and ultimate fate.
2. **Cosmology and the Big Bang Theory:** a. Explain the Big Bang theory and its significance in understanding the origin of the universe.
   b. Describe the evidence supporting the Big Bang theory, such as the cosmic microwave background radiation and the observed expansion of the universe.
   c. Discuss the concepts of cosmic inflation and the formation of the first elements in the early universe.
3. **Exoplanets and the Search for Life:** a. Define what an exoplanet is and describe the primary methods used to detect exoplanets.
   b. Discuss the criteria used to determine the habitability of an exoplanet and what conditions are necessary for life as we know it.
   c. Provide an overview of one or two notable exoplanets discovered and their significance in the search for extraterrestrial life.
4. **Galaxies and Large-Scale Structure:** a. Describe the different types of galaxies (spiral, elliptical, and irregular) and their main characteristics.
   b. Explain the concept of galaxy clusters and superclusters, and their role in the large-scale structure of the universe.
   c. Discuss how observational tools like the Hubble Space Telescope have enhanced our understanding of galaxies and cosmic structures.

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END COURSE EVALUATION

Name of department : Physics

Name of course : Introduction to Astrophysics (2021-22)

Duration of exam : 2hrs.

Total Marks : 50

Sl No	Name of Student	Marks Obtained
1	Amina Shan	32
2	Arjun.S.S	48
3	Gayathri.U.R	47
4	Keerthana.A.M	42
5	Krishnapriya.G	41
6	Maheswari Mohan.MV	38
7	Manasi.H.G	47
8	Mekha.M	46
9	Nimisha.J.Babu	47
10	Sandheep.S	42
11	Sona Sam	41
12	Visakh.S	39
13	Abhijith.B.V	42
14	Abhinand.B	41
15	Abhinav.T.K	38
16	Adithyan.S	46
17	Akhash.S	43
18	Akash.S	42
19	Akshay.K.S	41
20	Amal.A	39
21	Anjali.S.Babu	42
22	Aparna Prakash	41
23	Ardra R	41

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Report

To provide an understanding of the origin and development of universe and to ~~~~ enhance the curiosity of young minds to seek and understand ~~our~~ their place in the universe, PG Department of Physics conducted an add on course 'Introduction to Astrophysics' for the first year degree (Physics) students. The course covered topics such as birth, life and death of stars, planets, galaxies, nebulae and other objects in the universe. The course which was of hr duration started on . The classes were conducted ~~on~~ before or after the normal class hrs and saturdays. Students feedbacks were also collected at the end of the course.

Feed back Analysis

Students feedback showed that the course conducted ~~pro~~ gave enough understanding about the origin, evolution and properties of heavenly bodies. A significant percentage of students wanted to purse their higher studies in Astrophysics. They remarked that the course gave a strong foundation to cherish their dream.

Principal
M.M.N.S.S.COLLEGE
KOTTIYAM

(Resmi V.S.)

(Dr. Sutheerths S. Nair)

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