

# UNITING OUR WORLD TO EXPLORE THE UNIVERSE

OFFICIAL ENDORSEMENT FOR IAU100

## SPECIAL PROJECTS FOR BANGLADESH THROUGHOUT 2019

### About IAU

The International Astronomical Union (IAU) was founded in 1919. Its mission is to promote and safeguard the science of astronomy in all its aspects through international cooperation. The key activity of the IAU is the organization of scientific meetings. Every year the IAU sponsors nine international IAU Symposia. The IAU Symposium Proceedings series is the flagship of the IAU publications. Every three years the IAU holds a General Assembly, which offers six IAU Symposia, some 15 Focus Meetings, and individual business and scientific meetings of Divisions, Commissions, and Working Groups. Among the other tasks of the IAU are the definition of fundamental astronomical and physical constants; unambiguous astronomical nomenclature; promotion of educational activities in astronomy; and informal discussions on the possibilities for future international large-scale facilities. The IAU also works to promote astronomical education, research and public outreach actions towards the public. IAU created the Office of Astronomy for Development (OAD), a joint venture with the South African National Research Foundation as well as with the IAU Office for Astronomy Outreach (OAO), a joint venture with the National Astronomical Observatory of Japan. Astronomy is used as a tool for stimulating capacity building by means of 3 IAU OAD Task Forces - Universities and Research, Children and Schools and Public Outreach. Regional offices have been created in other countries as well.

### IAU 100

In 2019, the International Astronomical Union (IAU) will celebrate its 100th anniversary. To commemorate this milestone, the IAU will organise a year-long celebration to increase awareness of a century of astronomical discoveries, as well as to support and improve the use of astronomy as a tool for education, development and diplomacy under the central

theme “Uniting our World to Explore the Universe”. These celebrations will stimulate worldwide interest in astronomy and science and will reach out to the global astronomical community, national science organisations and societies, policy-makers, students, families and the general public. The IAU100 activities will take place at global and regional levels, especially at national and local levels. The IAU is preparing a comprehensive programme of flagship initiatives to reach the targeted audiences worldwide through the IAU National Outreach Contact points in 100 countries. An IAU100 Special Project is a highlighted astronomy-oriented activity that supports the IAU100 Goals under one or more of the IAU100 Flagship Programmes and will be implemented at a local or national level.

## IAU 100: Goals

- Increase awareness of progress and excitement in astronomy over the past century, in particular:
  1. The importance of collaborative enterprise of astronomy as a whole
  2. The importance of technology development for astronomical progress
  3. The coordinating role of the IAU fostering communication and exchange of ideas for the global astronomical community.
- Promote widespread access to astronomy knowledge and observing experiences.
- Support and improve the use of astronomy as a tool for education, development and diplomacy.
- Support and improve an inclusive, equalitarian and diverse astronomy community. Facilitate the preservation and protection of the world’s cultural and natural heritage of dark and quiet skies.
- Raise awareness and discuss prospective new exciting developments in the next 100 years of astronomy.

## IAU 100: Flagship Programme

- IAU100 Celebration
- Astronomy for Society
- IAU100 Exhibition
- New worlds
- 100 Years of General Relativity
- Astronomy Natural and Cultural Heritage
- Inclusive Astronomy
- Astronomy for Education
- Star Parties

## Bangladesh is going to be ready for IAU 100

Powered with a vision of creating awareness in Astronomy and Space Science among the people of Bangladesh, a National Committee has been formed consisting of distinguished members from the academia, the professional astronomers (both resident and non-resident), celebrated organizers, pioneers in amateur activities. All the activities planned in this document to be implemented throughout Bangladesh in 2019 will be conducted under the direct supervision of the National Committee (NatCom). For each flagship program decided in IAU100, there are several projects being set up that will be implemented by the NatCom in Bangladesh. The NatCom will prepare a comprehensive program of Flagship initiatives to reach targeted audiences nationwide through the IAU National Outreach Office.

## IAU 100 Program for Bangladesh

- IAU100 Exhibition
- Life & Worlds
- Abdul Jabbar Astronomy Workshop
- Journey to the Universe
- Star Parties
- School of Gravity
- Space Camp
- Press Conference & Daylong Astro Journalism Workshop

# IAU100 Exhibition

Under this Flagship program, an exhibition will be produced that will showcase major achievements in astronomy in the last century and selected IAU milestones along with BAS activities. The exhibition is not going to focus only on the past, but also on the interdisciplinary and international scope of the field as well as researching the origins and dynamics of the Universe is not a one-off discovery, but a continuous process that takes decades to fully grasp and comprehend.

The exhibition will be launched in National Museum of Science and Technology in Dhaka, Bangladesh and will be displayed in several selected locations during 2019.

**Flagship Program tags:** *IAU100 Exhibition, IAU100 Celebrations, Astronomy for Society*

Description & Materials	Location	Time & Duration	Cost Estimation
Posters	Dhaka	Half day each	BDT 70,000.
Transports	Chittagong		
Projector	Rajshahi		
Outlet	Sylhet		
	Khulna		
	Barisal		

# Workshop on School of Life & Exo-Worlds

Over the past twenty years, astronomers have observed more than 3,000 planets outside of our solar system, consequently revealing the diversity of planets that exist in the universe. This has opened door for us to re-examine and re-define theories on the origin and evolution of planetary systems, and it has also brought us to the point where discovering extra-terrestrial life has become a real possibility. The ever-increasing number of detections continues to drive exoplanet research forward and we are currently on the cusp of a technological revolution where near-future space and ground-based observatories will allow an unprecedented opportunity to further explore and characterise smaller, potentially habitable exoplanets for signs of life. This program will contain one-day workshops containing lectures, video presentations including hands on workouts using NASA astrobiology worksheet.

**Flagship Program tags:** *New Worlds: 'Are we alone?', Astronomy for Education, IAU100 Celebrations,*

Description & Materials	Location	Time & Duration	Cost Estimation
Projectors	Dhaka	Each one 1 Day	BDT 20,000 each
Sound System	Rajshahi	Long	Total : 20,000 ×4
NASA Astrobiology worksheet	Sylhet		(location) = BDT
	Chittagong		80, 000

# Abdul Jabbar Astronomy Workshop

Bangladesh Astronomical Society (BAS) regularly arrange an astronomy workshop under the title Abdul Jabbar Astronomy workshop since 2009. The goal of this workshop is to introduce the real astronomy and space science to the young learners and provide an opportunity to practice on this arena.

Usual tentative outline:

## 1. Introduction to Astronomy

- Historical breakthroughs
- Astronomy in South Asia and Bangladesh

## 2. Positional Astronomy

- Familiarizing with Sky
- Constellations and Sky Co-ordinate system
- Introducing open source astronomical software and their applications

## 3. Solar system

- Gravity and Mechanics
- Formation & planetary distribution
- Planets and Planetary features (motion, rings spins, aurora, magnetic fields, etc.)
- Non planetary components : comets, asteroids, meteors etc.

## 4. Stellar Evolution

- Light and EM radiations
- Star formation and key parameters of star formation
- Time line of a star and stellar evolution & classification
- Death of stars & Black holes

## 6. Galaxies and Interstellar physics

- Classification and galactic clusters
- Galactic formation and evolution
- Building block of large scale structure and presence of dark matter

## 7. A cosmic journey from the beginning to end of the universe

- Cosmological Principle and different cosmological models and their features
- Cosmological history of the universe
- Accelerating universe, dark energy and unsolved problems

## 8. Searching life beyond our world

- Physics of escaping gravity and machines and our space exploration
- Habitable zones and SETI

- The future tour and master plans

**Flagship Program tags:** *Astronomy for Education, Astronomy for Society, Inclusive Astronomy*

Description & Materials	Location	Time & Duration	Cost Estimation
Projectors	Dhaka	Each one 1 Day	BDT 20,000 each
Sound System	Rajshahi	Long	Total : 20,000 ×4
NASA Astrobiology worksheet	Sylhet		(location) = BDT
	Chittagong		80, 000

## Journey to the Universe

This program is dedicated to remote area schools in Bangladesh. There will be a two-member facilitator team, the team will arrange a one day program on 20 selected schools. It is going to represent fascinating video documentaries and the team will work as *guide* to make remote area students understand their position in this vast open universe. Solar and night sky observation will be also arranged based on availability of clear sky on that particular day. Other than that, if possible within the scope and availability, this program aims to build a series of astronomical tools based on available materials, and make audience understand text book topics and lessons from astronomical perspective so that remote area student and teachers can adopt these learnings with their daily practice. Each program will extract the high-quality materials from the IAU’s Cosmic Light EDU kit for the International Year of Light, IAU astroEDU resources, OAD- - funded resources, and other key science education resources. The project will be presented as a

go-to package for teachers to be used in and out of classroom. This manifestation will be exhibited in different schools outside Dhaka.

**Flagship Program tags:** *Astronomy for Education, Inclusive Astronomy, Astronomy for Society*

Description & Materials	Location	Time & Duration	Cost Estimation
Projectors	Dhaka	Each one 1 Day	
Sound System	Chittagong	Long	BDT 15,000 each
Outlet/Handout	Rajshahi		Total : 15,000 ×20
Transport	Sylhet		(locations) = BDT
Telescope	Khulna		300, 000
Solar filters	Barisal		

# Star Parties

This Flagship Program will enable as many people as possible, especially children, to look at the sky through a telescope and gain a basic understanding of the Universe. As part of the Flagship we will also commemorate the 50th anniversary of the Moon landing in 2019. It is planned to have at least 10 Star Parties in and around Dhaka and other suitable parts of Bangladesh to arrange star gazing events and star parties.

**Flagship Program tags:** *Star Parties, IAU100 Celebrations*

Description & Materials	Location	Time & Duration	Cost Estimation
Projectors	Dhaka	Each one 1 Day	
Sound System	Rajshahi	Long	BDT 10,000 each
Outlet	Sylhet	10 Days	Total : 10,000 ×10
Transport	Chittagong		(location) = BDT
Distributing books and booklets			100, 000

# School of Gravity

School of gravity is going to be semi-advanced workshop designed for high school and pre university students. This workshop will consist of a step by step covering of Galilean reference frame to Lorenz transformation, Newtonian Dynamics, Pre Einstein relativity to Einstein's special theory of relativity, followed by basics of general theory of relativity. At the very end, the audience will be introduced to the concepts of tensor.

**Flagship Program tags:** *100 Years of General Relativity, Astronomy for Education*

Description & Materials	Location	Time & Duration	Cost Estimation
Projector & Screen	Dhaka	Each one 3 Day	BDT 20,000 each
Sound System	Rajshahi	Long	Total : 20,000 ×3
Work book	Chattagram		(location) + 10,000
Resident			(materials) = BDT 70, 000

# Press Conference & Daylong Journalist Workshop

The IAU100 events will be launched sometime in January 2019 with a gala event. First, there will be a Meet the Press event where the members of the NatCom will meet members from the press including the print and online media, tv channels, social media representatives. The NatCom members will explain the IAU100 activities, answer questions and exchange views with the members of the Press. After the Meet, there will be a day-long workshop for journalists to educate them about IAU100 programs and other astronomical things in particular. This workshop will help them to represent astronomical news to their audiences in a much better and understandable way.

**Flagship Program tags:** Astronomy for Education, IAU100 Celebrations, Inclusive Astronomy

Description & Materials	Location	Time & Duration	Cost Estimation
Projectors & Screen	Dhaka	1 Day Long	BDT 300,000
Sound System			Total : BDT 300,00
Work book			

## SUMMARY

Title	Flagship Program tags	Location	Time & Duration	Cost Estimation
IAU100 Exhibition	IAU100 Exhibition, IAU100 Celebrations, Astronomy for Society	Dhaka Chittagong Rajshahi Sylhet Khulna Barisal	Half day each	BDT 70,000.

Title	Flagship Program tags	Location	Time & Duration	Cost Estimation
Workshop on Life & Exo-planetary Worlds	New Worlds, Astronomy for Education, IAU100 Celebrations, Inclusive Astronomy	Dhaka Rajshahi Sylhet Chittagong	Each one 1 Day Long	BDT 20,000 each Total : 20,000 ×4 (location) = BDT 80,000

Title	Flagship Program tags	Location	Time & Duration	Cost Estimation
Abdul Jabbar Astronomy Workshop	Astronomy for Education, Astronomy for Society	Dhaka Rajshahi Sylhet Chittagong	Each one 1 Day Long	BDT 20,000 each Total : 20,000 ×4 (location) = BDT 80,000

Title	Flagship Program tags	Location	Time & Duration	Cost Estimation
Journey to the Universe	Astronomy for Education, Inclusive Astronomy, Astronomy for Education	Dhaka Chittagong Rajshahi Sylhet Khulna Barisal	Each one 1 Day Long	BDT 15,000 each Total : 15,000 ×20 (location) = BDT 300,000

Title	Flagship Program tags	Location	Time & Duration	Cost Estimation
Star Parties	Star Parties, IAU100 Celebrations	Dhaka Rajshahi Sylhet Chittagong	Each one 1 Day Long 10 Days	BDT 10,000 each Total : 10,000 ×10 (location) = BDT 100,000

Title	Flagship Program tags	Location	Time & Duration	Cost Estimation
School of Gravity	100 Years of General Relativity Astronomy for Education	Dhaka Rajshahi Chittagong	Each one 3 Day Long	BDT 20,000 each Total : 20,000 ×3 (location) + 10,000 (materials) = BDT 70,000

Title	Flagship Program tags	Location	Time & Duration	Cost Estimation
Press Conference & Daylong Journalist Workshop	Astronomy for Education, IAU100 Celebrations, Inclusive Astronomy	Dhaka	Each one 1 Day Long	BDT 300,000 Total : BDT 300,000

**Total:**

Summary	Locations	Duration	Net Cost Estimation
		Jan 2019-Dec 2019	BDT(300000+70000+100000+300000+80000+80000+70000) = BDT 1,000,000

# National Committee

## IAU100 celebrations in Bangladesh

	Name	Designation	Affiliation	Contact
1.	Dr. Rezaur Rahman	Convener	President, Bangladesh Astronomical Society	01717177288 dr.rezaurrahman@gmail.com
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14.	Representative 1 TBD	Member	from Ministry of Science and Technology (MOST), GoB	
15.	Director General	Member	National Museum of Science and Technology, MOST, GoB.	
16.	Director General	Member	Bangabandhu Novotheatre, MOST, GoB.	
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