

IHSB

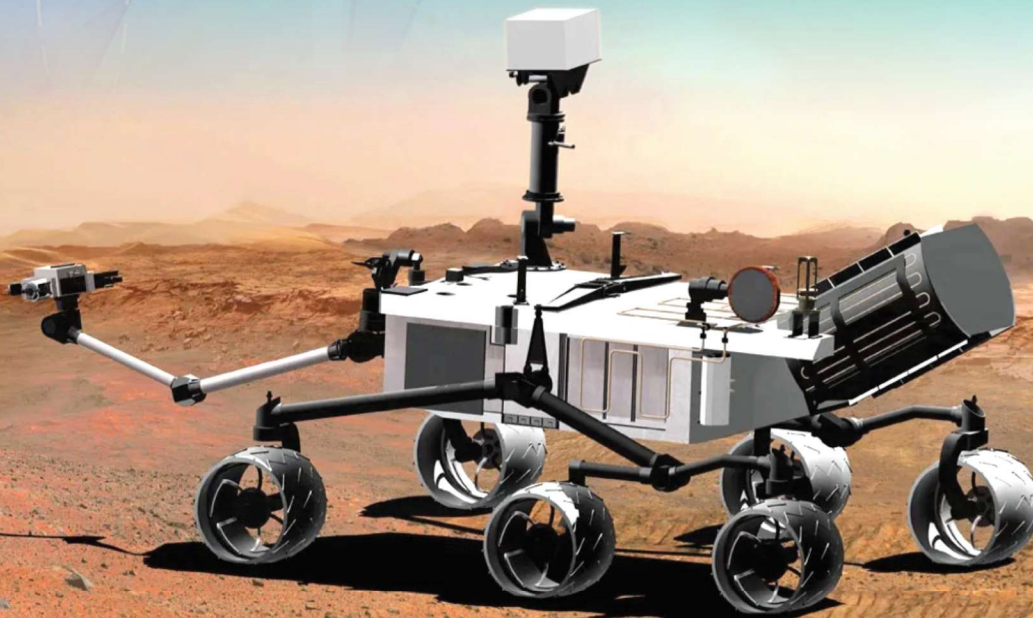
# STEM FEST

Learn

# 2023

Explore

Create



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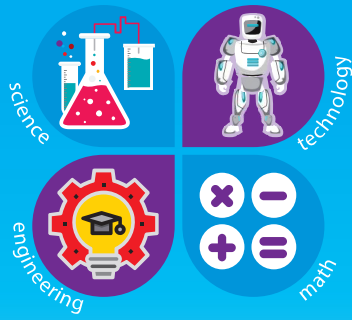
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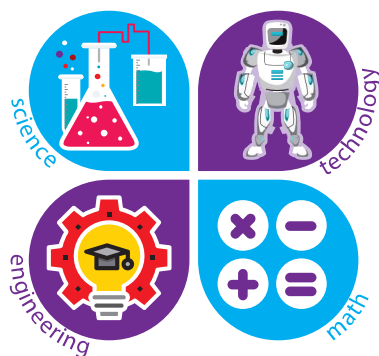
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## Brief Introduction of **STEM FEST**

In the 21st century, scientific and technological innovations have become increasingly important as we face the benefits and challenges of both globalization and a knowledge-based economy. To succeed in this new information-based and highly technological society, students need to develop their capabilities in STEM to levels much beyond what was considered acceptable in the past. We are grateful to our school for giving us this opportunity to organize this Internationally recognized event once again.

Long a part of the educational landscape in developed countries, STEM Fest is a festival of science, technology, engineering and mathematics that aims to inspire a new generation of leaders in these fields. Students have the chance to showcase their talents, celebrate innovation and participate in exciting competitions that are so much fun they hardly realize they are learning! This year, in addition to the project displays and scientific symposiums, we are also organizing Olympiads on Biochemistry, Mathematics and Physics.

It is anticipated that science and technology companies will join the festival, providing a valuable link between the key players in today's corporate sector and our upcoming scientists and engineers.

Science and technology is the driving force behind national development. As inspiration for the coming generation to celebrate science and technology in all its forms, STEM Fest is a major calendar event on the road towards a more advanced and prosperous Bangladesh.



**Architect Yeafesh Osman**

Minister - Ministry of Science and Technology  
Peoples Republic of Bangladesh

## Chief Guest: MESSAGE

আমি অত্যন্ত আনন্দিত যে, ইন্টারন্যাশনাল হোপ স্কুল বাংলাদেশে তৃতীয়বারের মতো স্টেম ফেস্টিভাল করতে যাচ্ছে। আমাদের দেশে স্টেম শব্দটি সম্ভবত খুব একটা ভালোভাবে পরিচিত না। এটি দিয়ে কি বোঝানো হয়, এটিও সম্ভবত আমাদের ছাত্র-ছাত্রী এবং অভিভাবকেরা খুব ভালো করে জানেন না। আসলে বিষয়টা হয়েছে বিজ্ঞান, প্রযুক্তি, অংক এবং প্রাসঙ্গিক যে নতুন প্রযুক্তি সমূহ আসছে, সেগুলোর চর্চা করার বিষয়। আমরা এমনিতে সাধারণভাবে এসব বিষয় নিয়ে শিক্ষা গ্রহণ করে থাকি। প্রাতিষ্ঠানিকভাবে শিক্ষা গ্রহণ করে থাকি, প্রশিক্ষণের ব্যবস্থাও থাকে, কিন্তু তাকে চর্চা করার বিষয়ে আমরা সেই পরিমাণ সচেতন না অথবা তেমন কোন আয়োজন আমাদের এখানে এখনো পর্যন্ত চোখে পড়েনি। খুব সাম্প্রতিককালে আমি ঢাকার গুলশানে জাপান-বাংলাদেশের একটি যৌথ উদ্যোগের খবর জানি, যারা স্টেমন নামে পরিচিত এবং তারা একেবারে শিশুদেরকে এই বিষয় গুলোতে, বিশেষ করে প্রোগ্রামিং অথবা রোবোটিক্স চর্চা করাচ্ছে।

এই ইন্টারন্যাশনাল খুব স্কুলটি সেক্ষেত্রে একটি বড় পদক্ষেপ গ্রহণ করতে পারল। এটি চর্চা করার জন্য একটি প্যাটফর্ম হতে পারল। এখানে ছেলেমেয়েরা অন্ততপক্ষে ধারণাটি পাবে, চর্চা করবে এবং ভবিষ্যতের জন্য নিজেদেরকে তৈরি করার জন্য সক্ষমতা অর্জন করতে পারবে। একটি বিষয় খুব স্পষ্ট করে বলা দরকার, আমরা যে পৃথিবীতে বসবাস করি, সেই পৃথিবীতে যে শিক্ষাটি এখন আমরা আমাদের সন্তানদেরকে দিচ্ছি, সেটি প্রথম শিল্পযুগের শিক্ষা এবং সেই শিক্ষার একটি প্রধানতম উদ্দেশ্য ছিল কেরানি তৈরি করা অথবা সাধারণ কর্মী তৈরি করা। কিন্তু আমরা ইতোমধ্যেই ডিজিটাল বিপবের যুগে এসে গেছি এবং এই ডিজিটাল বিপবের যুগে কেবলমাত্র সাধারণ শিক্ষা দিয়ে অন্ততপক্ষে নতুন প্রজন্মের কর্মসংস্থান থেকে শুরু করে জীবন-জীবিকা পেশা তৈরি করা সম্ভব হবে না।

আমি ইন্টারন্যাশনাল হোপ স্কুলের এই উদ্যোগকে স্বাগত জানাই, শুভেচ্ছা জানাই। আমি নিজে উপস্থিত থেকে যদি কথা বলতে পারতাম, তবে নিঃসন্দেহে আরো খুশি হতাম, কারণ নতুন প্রজন্মের ছেলে-মেয়েরা সব সময় আমার কাছে প্রিয়। ওদের চোখের দিকে তাকিয়ে, আমরা বাংলাদেশের ভবিষ্যৎ দেখি। এই ভবিষ্যৎ দেখাটা সত্যিকার অর্থেই ফলপ্রসূ করার জন্য তাদেরকে উৎসাহিত করা, তাদেরকে প্রকৃত তথ্যসমূহ পরিবেশন করা এবং আগামী দিনের জন্য প্রস্তুত করা আমাদের সকলেরই কর্তব্য হওয়া উচিত।

যারা এই অনুষ্ঠানে অংশগ্রহণ করছে, প্রতিযোগিতায় অংশগ্রহণ করছে বা অন্যান্যভাবে আয়োজন করছে, তাদের সকলের প্রতি আমার ধন্যবাদ রইল, কৃতজ্ঞতা রইল এবং অভিনন্দন রইল। আমার প্রত্যাশা যে, এই আয়োজনটি প্রতিবছরই হবে। আমাদের ছেলেমেয়েরা এখন থেকে সামনে যাওয়ার চমৎকার পথ খুঁজে পাবে।

আপনাদের সবাইকে জয় বাংলা জয় বঙ্গবন্ধু।



**Abdilaziz Zholdoshev**  
Chairman  
International Hope Company Limited

## IHSB Chairman's MESSAGE

STEM is a curriculum based on the idea of educating students in four specific disciplines science, technology, engineering and mathematics in an interdisciplinary and applied approach. Rather than teach the four disciplines as separate and discrete subjects, STEM integrates them into a cohesive learning paradigm based on real-world applications.

What separates STEM from the traditional science and math education is the blended learning environment and showing students how the scientific method can be applied to everyday life. It teaches students computational thinking and focuses on the real world applications of problem solving. As mentioned before, STEM education begins while students are very young.

The kind of material offered in a STEM education is focused on engaging kids in critical thinking. Critical thinking is the process of actively conceptualizing, applying, analyzing, and evaluating information through observation, experience, reflection, reasoning or communication. As such, students will be encouraged to answer questions or solve problems not based on memorization but based on actively engaging with the material to understand the issue at hand and solve it using logic. These kinds of situations better reflect what is expected of them in the workplace experiencing situations like this early in their education will better prepare them for their futures.

Communication skills are perhaps the most important of all life skills. Having the ability to discuss and convey complex concepts to others while also learning from one another will be the key to achieving success in a child's life as they grow up. Group activities in STEM promote sociable skills like active listening, open-mindedness, and open them up to giving and receiving constructive feedback.

Thank you



**Roksana Zarin**  
Principal  
International Hope School Bangladesh

## IHSB Principal's MESSAGE

It's really a terrific feeling to be among the students and a pleasure to share few words about this beautiful event. I am proud and so overwhelmed to see the great endeavor taken by us, International Hope School Bangladesh. In the 21st century, science and technology have reached its peak. And its charisma has spread as far as our country. To speak about STEM Fest, this festival was founded and created by Brian Greene, professor of mathematics and physics at Columbia University and author of several science books. , and Tracy Day, a prominent journalist. The festival's events are rooted in science. And then it spread worldwide, especially in the developed world. Australia is another pivotal country to organize STEM Festival remarkably.

It's a really wonderful moment for us as Hope School is becoming a part of the developed world. STEM Fest's mammoth arrangement gives a fresh impression on this. It seems the kids here were so well taught and that made it possible for them to come up with so many brilliant projects based on science, technology, engineering, and mathematics. As far as I know, there are ample science fairs in our country here and there but this STEM Fest is still at the beginning stage to flourish as it should.

I thank all the participants and the school team for pioneering such an event. This will obviously encourage the students to be more engaged in inventions which will definitely lead our country to achieve more success as a nation in the nearest future. Thank you and have a great day!



**Otmane Charmouka**  
Head of Organizing Committee  
STEM Fest

## Organizing Committee

### HEAD OF MESSAGE

As the STEM Fest Organizing Committee Head, it fills me with immense pride to stand before this vibrant gallery of young minds, each driven by the spark of curiosity that fuels the annual STEM Fest. This is not just an exhibition of projects, but a testament to the boundless potential that lies within each and every one of you.

Through this fest and Olympiad, you've delved into the depths of the unknown, tackled questions that pique your imagination, and dared to challenge the status quo. From exploring the intricacies of the natural world to reimagining the technological landscape, you've woven threads of discovery, innovation, and ingenuity into projects that resonate with us all.

Beyond the displays and data tables, it's the spirit of inquiry that truly shines. Here, we witness the tireless hours spent researching, the late-night tinkering in pursuit of solutions, and the unwavering resilience in the face of challenges. We see collaboration blossom as minds meet, ideas collide, and a collective understanding takes shape.

The STEM Fest and Olympiad is not just about winning or losing; it's about the journey of exploration, the thrill of discovery, and the joy of learning. It's about pushing the boundaries of knowledge, taking risks, and embracing the messiness of creativity. It's about asking bold questions, even those that may seem impossible, for within those questions lies the seed of tomorrow's breakthroughs.

To the budding scientists, engineers, researchers, and inventors before me, remember this: You hold the power to ignite change, to illuminate the world with your ideas, and to shape a future brimming with possibility. As you navigate the corridors of this fest, let your curiosity be your compass, your imagination your guide, and your passion your fuel. May this experience ignite a lifelong love for learning, and may you forever carry the spirit of inquiry within you.

So, let the exploration begin! Dive deep into these projects, celebrate the brilliance that surrounds you, and let the spark of curiosity lead you ever onward to new horizons. The future awaits, and it's filled with discoveries waiting to be made by courageous minds like yours.



## Hopians Blast Off to the Future with VR Training in Perth!

Get ready for a reality check, Perth! A group of intrepid Hopians have just embarked on a mind-bending journey, thanks to cutting-edge virtual reality (VR) training facilitated by Westralia Education Services. This innovative program is transporting them to new worlds, teaching them valuable skills, and preparing them for the future of work in ways never before imagined.

Gone are the days of dusty textbooks and monotonous lectures. Westralia Education Services is revolutionizing learning by harnessing the power of VR. Students don their headsets and step into immersive simulations, where they can explore the depths of the ocean, dissect a virtual frog, or travel to ancient Rome – all from the comfort of a classroom.

With VR training, the possibilities are endless. From scaling the heights of Mount Everest to exploring the inner workings of the human body, Perth students are no longer confined by the limitations of the classroom. They are pioneers, trailblazers, and the future workforce, equipped with the skills and experiences that will propel them to success in a rapidly changing world.

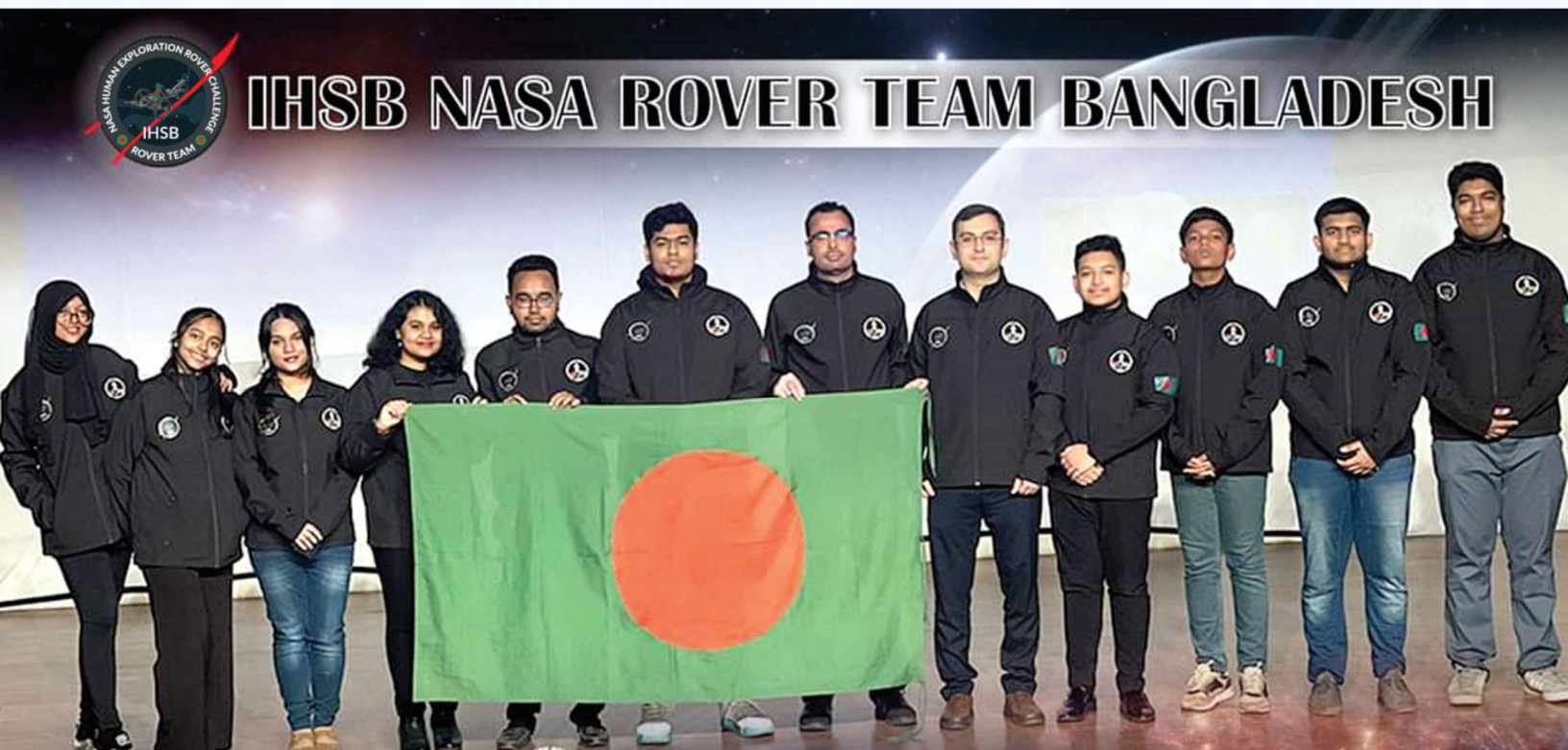


## Gear Up, Galileo Gang! Hopians Rocket to HERC 2024!

Forget chalkboards and textbooks, strap on your astronaut helmets, because the IHSB crew is blasting off on an epic odyssey! They've defied gravity and earned their ticket to the coveted NASA Human Exploration Rover Challenge to be held on April 19-22, 2024! This is the third time our Hopians have been selected for this prestigious event. Buckle up for a tale of relentless grit, mind-bending engineering, and rover-powered adventure. HERC is no ordinary test. It's NASA's proving ground for future space pioneers, where student teams like ours build, race, and conquer simulated lunar or Martian terrains in their human-powered rovers. Imagine tackling lunar craters, navigating Martian valleys – that's the daily grind for these future space heroes.

For months, our Galileo Gang has transformed classrooms into Mission Control. From sketching blueprints to welding rugged frames, their passion for space bleeds into every bolt and gear. This isn't just a rover they're building; it's a testament to their teamwork, innovation, and the fiery spirit of exploration. HERC is more than just crossing the finish line. It's about defying limitations, learning from every crater-sized bump, and collaborating like a galactic crew. These students aren't just engineers; they're astronauts in the making, paving the way for future lunar footprints and Martian colonies.

So, as our team preps for liftoff, let's blast them off with our support! Follow their journey, share their triumphs, and maybe even catch their epic race online. Remember, every cheer is a cosmic fuel injector, propelling them towards that interstellar finish line. This is just the beginning for our Hopian trailblazers. They've reached for the stars and have their fingers firmly clenched around them. Now, let's join the cosmic cheering squad as they race towards the future, one ingenious innovation at a time!



# IHSB NASA ROVER TEAM BANGLADESH



# Hopian Math Whiz Takes Home Second Place!

A round of applause for Tazmina Rahman, who has just brought home second place in the prestigious Academia Maths Olympiad! This rigorous competition challenges math geniuses from across the region, and Tazmina has proven themselves to be one of the brightest among them.

The Olympiad tested students on a broad range of mathematical concepts, demanding not only exceptional problem-solving skills but also a deep understanding of the subject. She rose to the challenge, tackling complex equations and theorems with unwavering focus and determination. Their performance has left everyone in awe, showcasing their intellectual prowess and genuine passion for the world of numbers.

Tazmina's achievement at the Academia Maths Olympiad is not just a personal victory; it's a beacon of hope for all young aspiring mathematicians. It reminds us that with hard work, perseverance, and a genuine love for the subject, anything is possible. We are incredibly proud of her and excited to see what the future holds for this brilliant mind!

# Our Green Geniuses Take Second Place at the Science Fair!

Congratulations to our Hopian scientists who captured second place at the kids campus school science fair with their innovative Greenhouse project! Their dedication, creativity, and passion for sustainability truly shone through, making them a force to be reckoned with among their peers.

The project, titled "Smart Greenhouse" explored the potential of increasing food production, reducing water usage, and improving air quality. Through meticulous research, meticulous planning, and tireless experimentation, the team developed a greenhouse that pushed the boundaries of what's possible.

Their efforts were met with enthusiastic praise from the judges, who commended their presentation.

The team's success at the science fair is not only a testament to their individual talents but also a reflection of our school's commitment to fostering a culture of scientific inquiry and environmental awareness. We are incredibly proud of their accomplishment and excited to see what these young green warriors achieve next!



# Honourable Judges



**Dr. Md. Aftab Uddin**

Professor,  
Department of Genetic Engineering and Biotechnology,  
University of Dhaka



**Prof. Dr. Shamsuddin Ahmed**

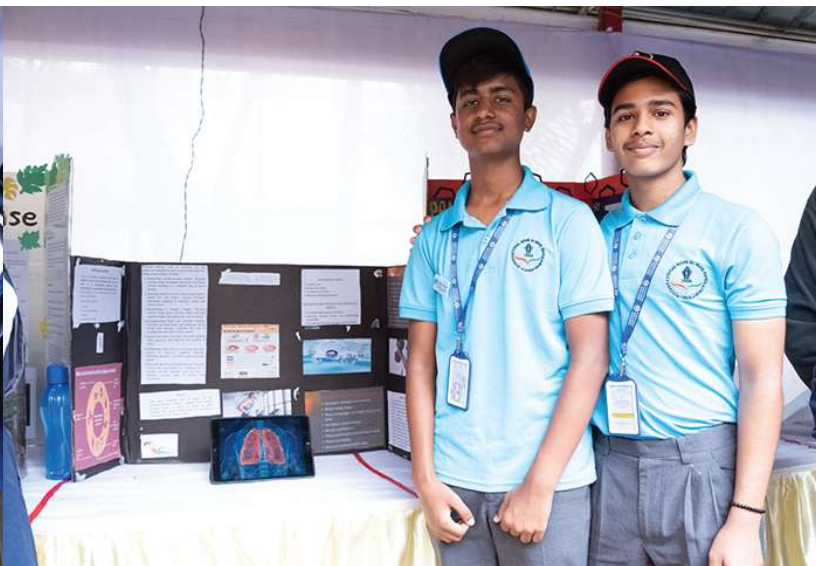
Professor, Department of Mechanical, and Production Engineering (MPE),  
Islamic University of Technology (IUT),  
A subsidiary of Organization of Islamic Cooperation (OIC),  
Board Bazar, Gazipur 1704, Bangladesh

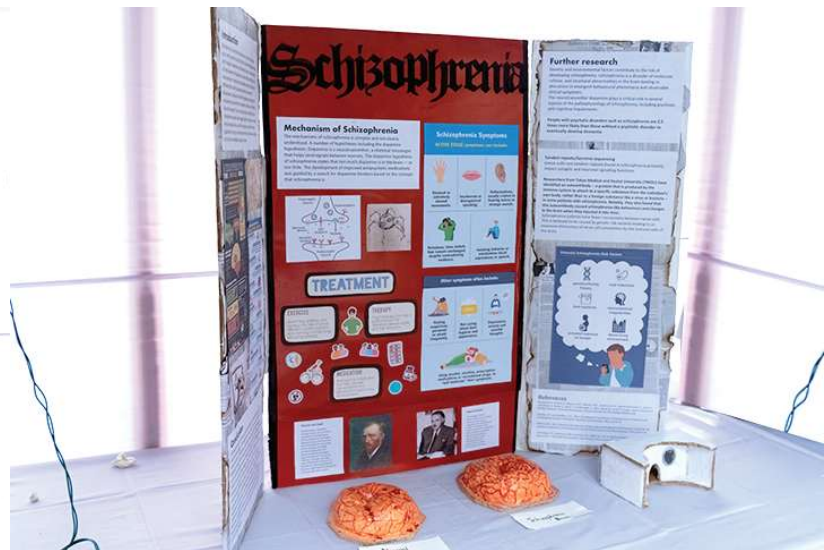
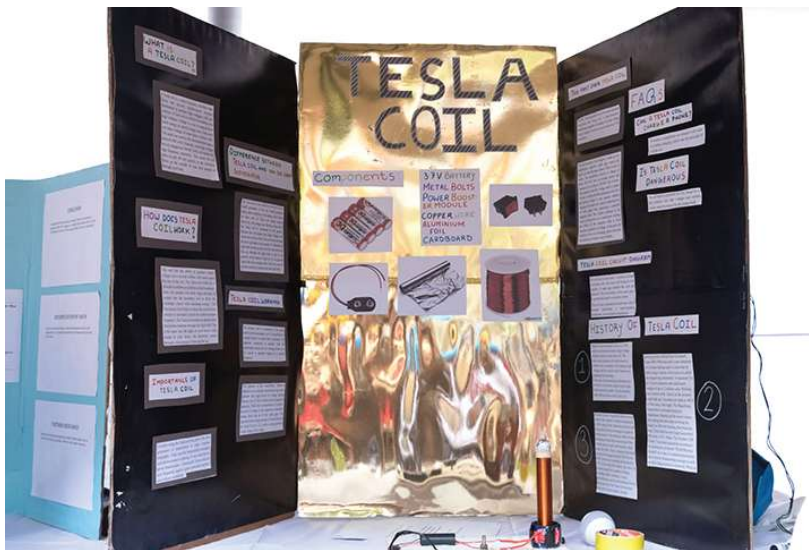
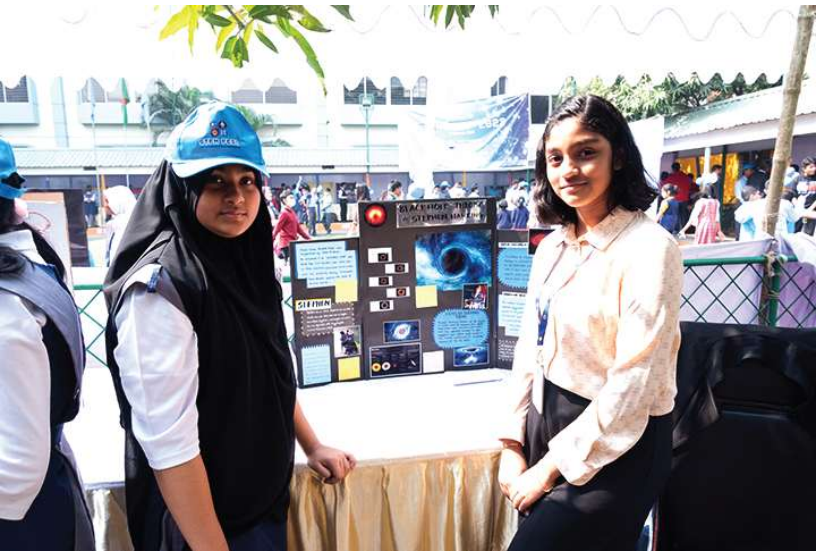


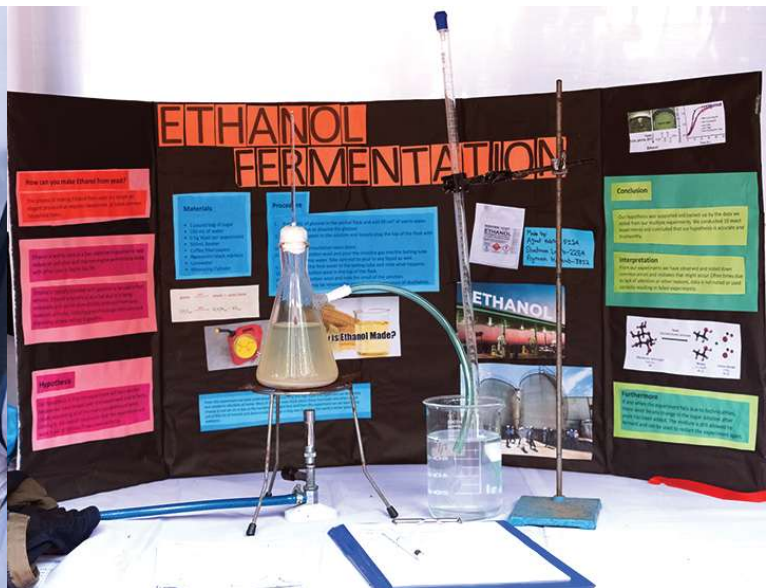
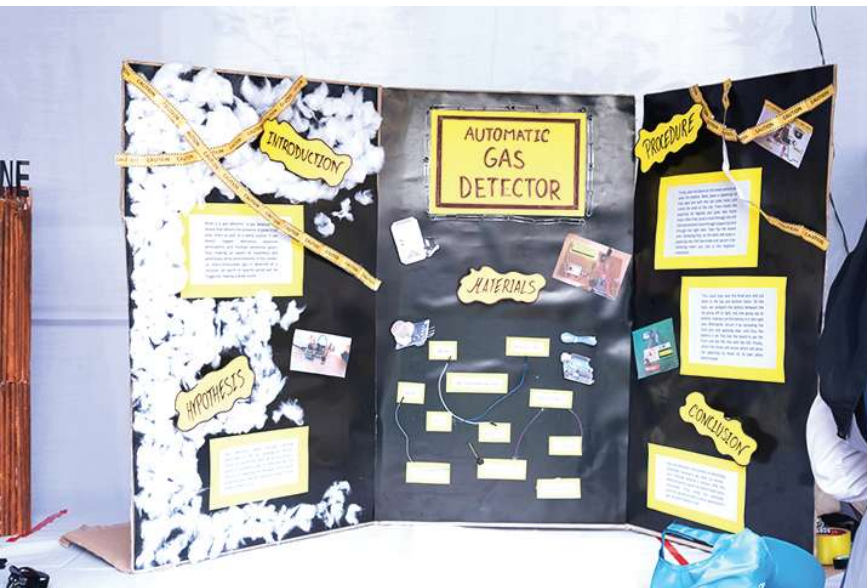
**Prof. Zamberi Bin Jamludin**

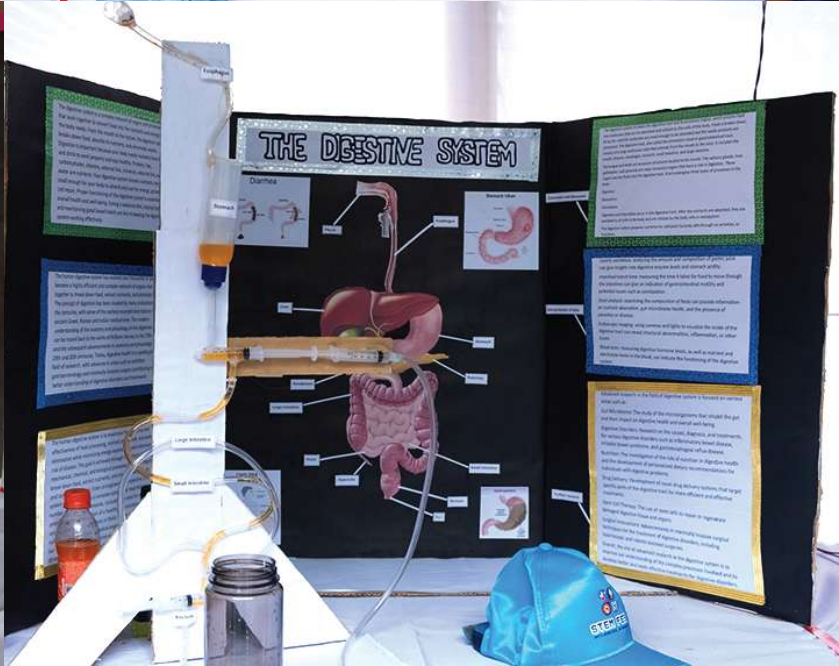
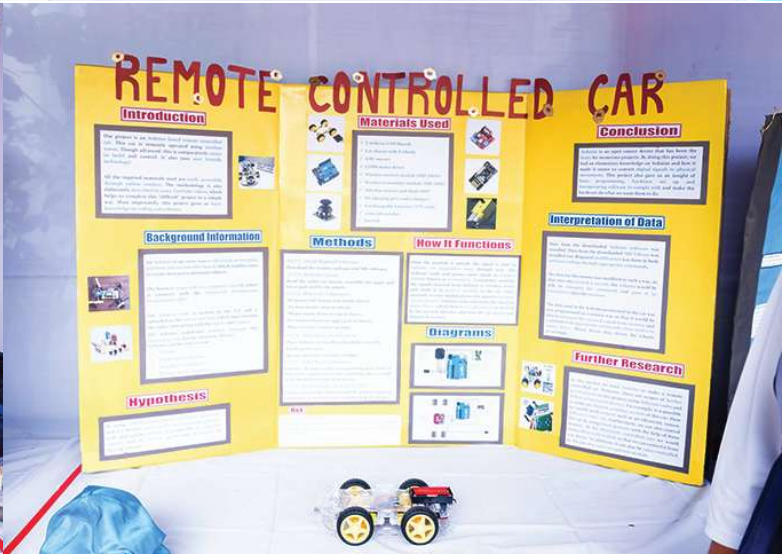
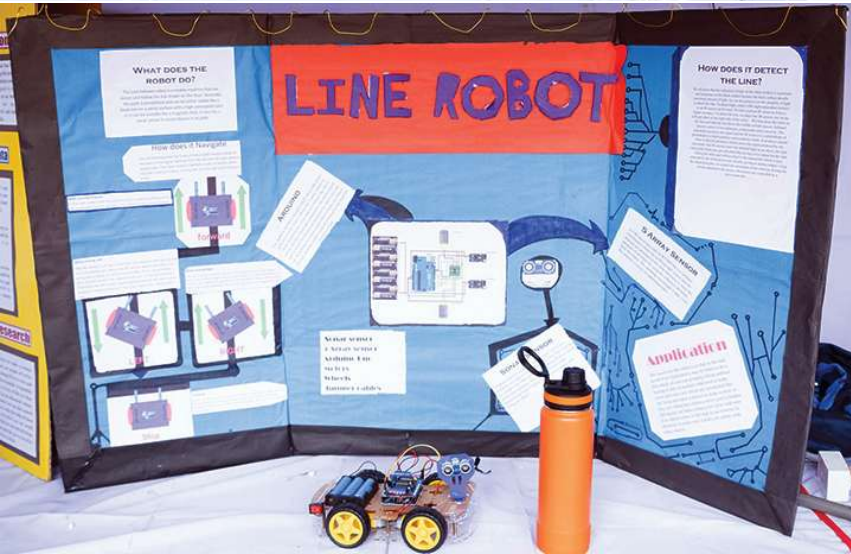
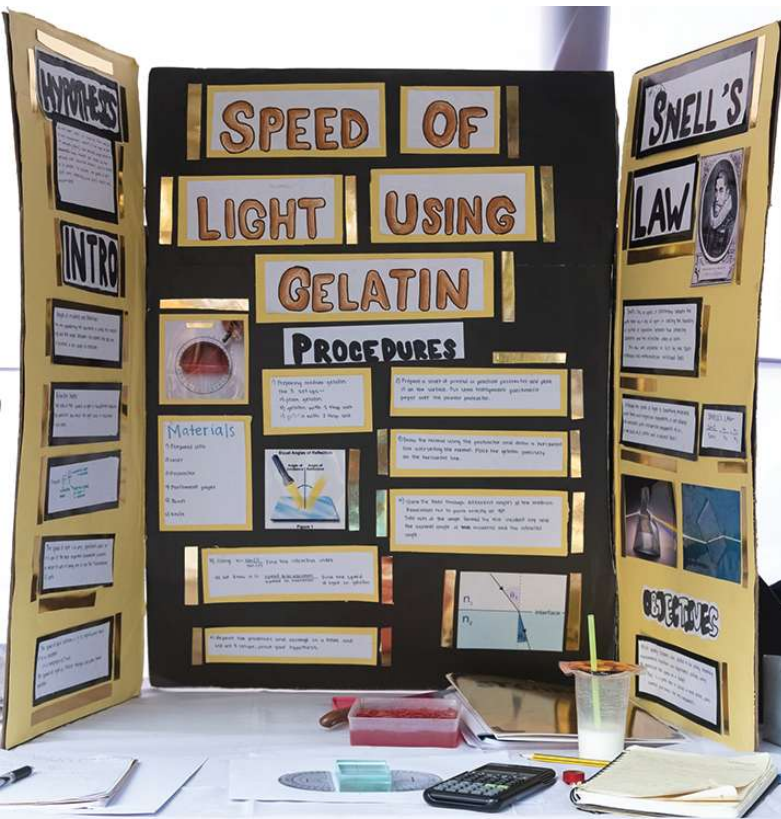
Fakulti Teknologi dan Kejuruteraan Industri dan Pembuatan (FTKIP),  
Universiti Teknikal Malaysia Melaka, Hang Tuah Jaya, 76100,  
Durian Tunggal, Melaka. Malaysia

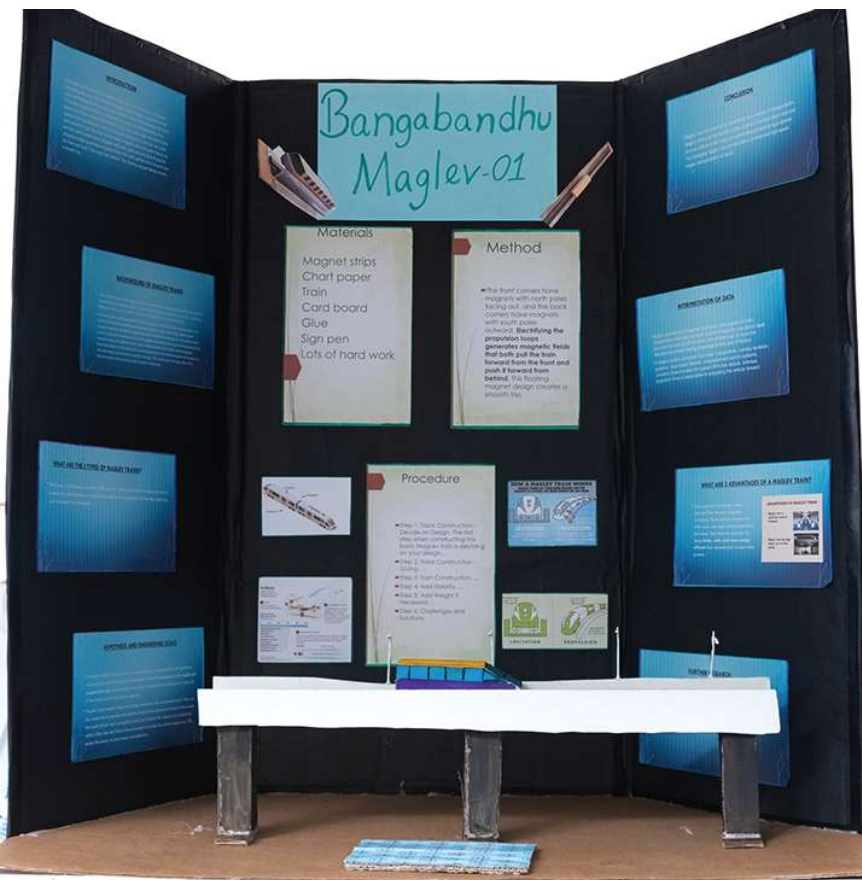
Former Visiting Professor (2022-2023), Department of Mechanical,  
and Production Engineering (MPE), Islamic University of Technology (IUT),  
A subsidiary of Organization of Islamic Cooperation (OIC), Board Bazar,  
Gazipur 1704, Bangladesh















# STEM FEST AWARD CEREMONY

ACADEMIC YEAR 2022-2023



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# Greetings, Curious Minds!

Welcome to the latest edition of the STEM Fest magazine! As editors, we're thrilled to once again be at the forefront of showcasing the groundbreaking work of young scientists like yourselves. Each year, we're blown away by the depth and diversity of projects on display. This year is no different! From unraveling the mysteries of the cosmos to tackling real-world challenges with ingenious solutions, you've tackled topics that spark our imaginations and inspire us all.

This magazine is your canvas to share your brilliance with the world. Within these pages, you'll find not just descriptions of your projects, but the stories behind them – the sparks of curiosity that ignited your journey, the late-night experiments that led to breakthroughs, and the unwavering passion that fueled your research.

We believe that every one of you holds the potential to change the world. This STEM Fest and Olympiad isn't just about competition; it's about collaboration, learning, and pushing the boundaries of what's possible. Remember, the most groundbreaking discoveries often begin with a question, a hunch, or a moment of pure wonder. So, dive into these pages, marvel at the ingenuity on display, and let it ignite your own scientific spirit. Be inspired by the diverse perspectives, be intrigued by the unexpected ideas, and be challenged by the questions that remain unanswered.

Congratulations on your amazing work, young scientists! We, the editors of the magazine, are cheering you on every step of the way. As you continue your journey of discovery, remember to keep asking questions, keep exploring, and most importantly, keep that spark of curiosity burning bright.

With excitement and admiration,

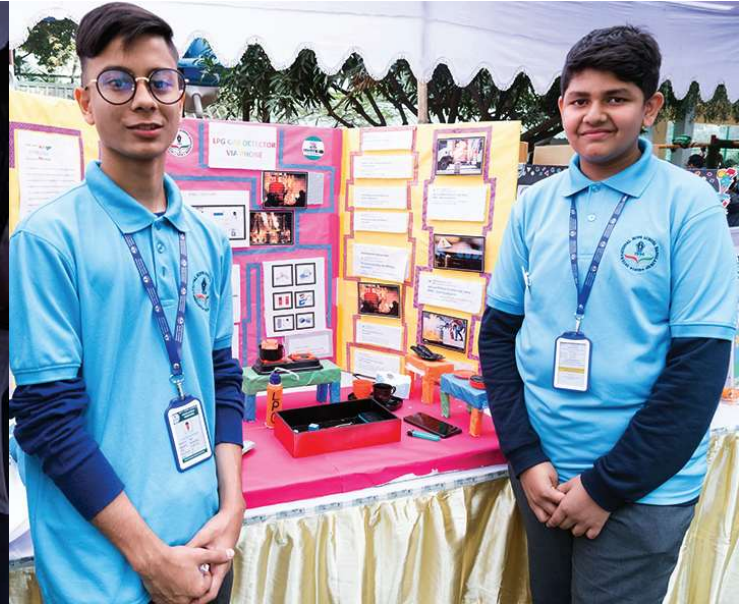


Syeda Naziha Haque  
Editor  
STEM Fest Magazine 2023



Mohammad Galib Abrar Akhand  
Editor  
STEM Fest Magazine 2023

# Projects in STEM Fest 2023







# STEM FEST AWARD CEREMONY

ACADEMIC YEAR 2022-2023



# STEM FEST AWARD CEREMONY

ACADEMIC YEAR 2022-2023





## STEM Fest 2023 held at International Hope School Bangladesh



International Hope School Bangladesh (IHSB) organised and concluded STEM Fest 2023 on Sunday, the 5th of February, from 10:00 a.m. to 4:00 p.m. in its Main Campus in Uttara, Dhaka. The Chief Guest of the event was H. E. Architect Yeafesh Osman, Honorable Minister of Science and Technology to the Government of the People's Republic of Bangladesh.

Through storytelling and poetry, H. E. Architect Yeafesh Osman imparted some important messages to the students of IHSB during the Inauguration Ceremony. He recounted the birthing of "Digital Bangladesh" and shortly described the impact of computer literacy on the less fortunate and how widespread mobile phone usage has largely contributed to economic growth in Bangladesh. He hoped that Hopians will rise high and beyond and be a great source of hope for the nation. The students found his speech highly engaging and applauded after every poem or short story. Ms. Rokhana Zarin, Principal of IHSB, along with other high school officials presented an honorary crest and gift to the honorable minister.

STEM Fest aimed at enhancing the scientific prowess, problem solving and critical analysis skills of the students. The projects on display were divided into five categories: Physics, Chemistry, Biology, Information and Communication Technology and Food Science. The main highlights of the event were the Student versus Robot Rubik's Cube Challenge, Bridge Load Testing Display, and IHSB NASA Rover Team Project Display. Some extraordinary projects caught everyone's attention, such as the Air Hockey Table, Artificial Pancreas, Hydroponics in Vertical Farming, Vegan Burgers, Molecular Gastronomy, Forest Fire Detection, Robotics Showcase by Hopian Mathematics, Programming and Robotics Club (HMPPRC), Obstacle Detecting Bot, Drone, Paper Recycling Machine and many more to list. Respected lecturers from three universities from STEM fields were invited as judges to decide upon the worthy winners from each category.

Metropolis

# 2nd STEM Fest held at IHSB

Metro Desk

Monday, 06 February, 2023, 12:00AM



### Trending

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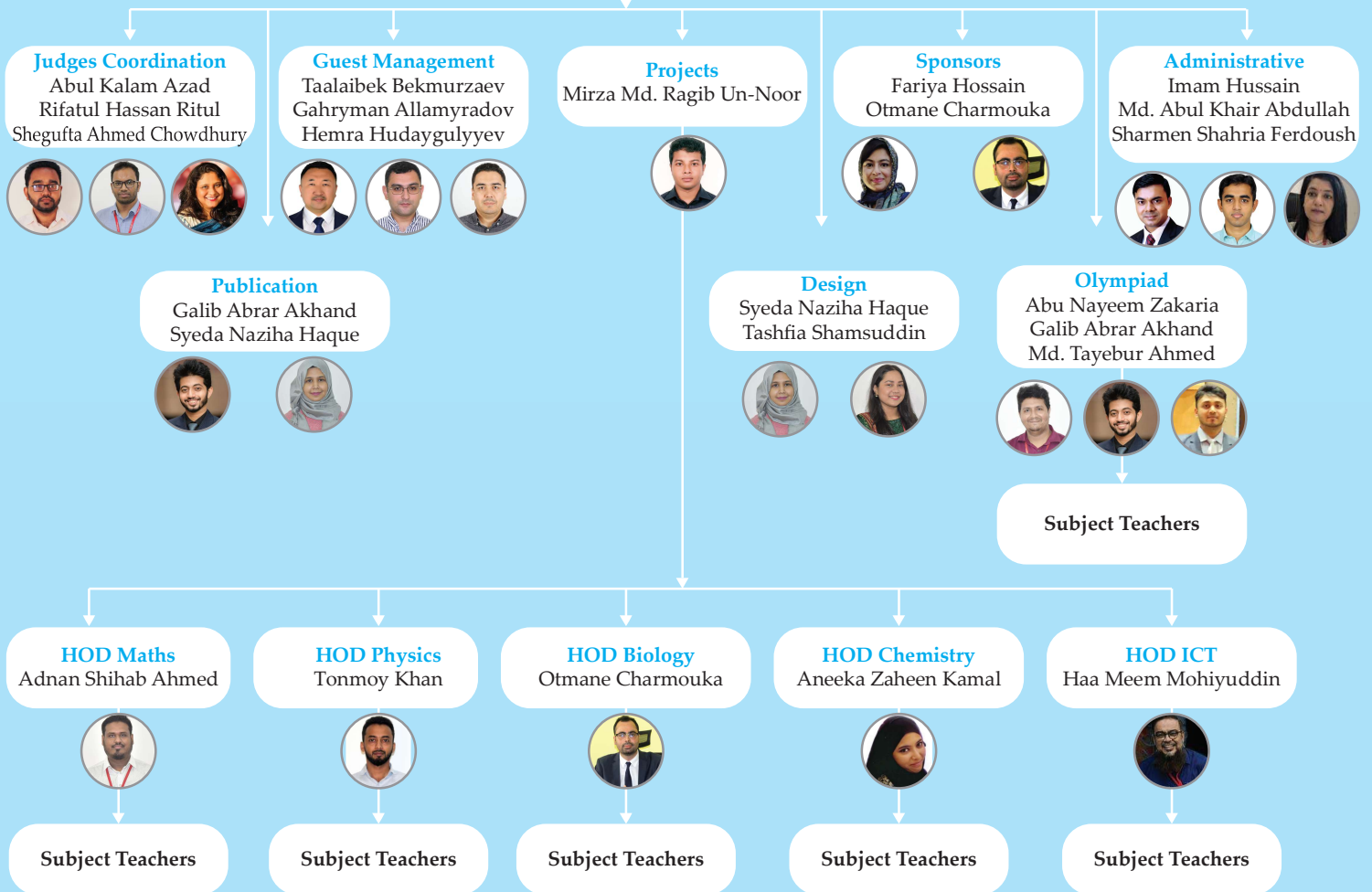
The 2nd STEM Fest organised by International Hope School Bangladesh (IHSB) was held on the school premises in the city's Uttara area on Sunday.

Students from 1st grade-10th grade took part in the event where a total of 88 science projects were displayed, says a press release.

Besides, student from Gulshan and Chattogram branches of the school attended the programme. Science and Technology Minister Architect Yeafesh Osman was present as the chief guest while IHSB Principal Rokhsana Zerin and Chairman of the school Md Abdul Aziz Joldoshob spoke at the event.



**Head of  
Organizing Committee**  
Otmane Charmouka





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