American International University-Bangladesh (AIUB)

# SDG Activity Report 2023

## SDG 14: Life below Water

Conserve and sustainably use the oceans, seas and marine resources for sustainable development


American International University-Bangladesh (AIUB) is contributing to Sustainable Development Goal 14 by promoting the conservation and sustainable use of aquatic ecosystems. The university offers educational programs that includes sustainable management of freshwater ecosystems, such as water irrigation practices and conservation. AIUB's outreach initiatives extend to local and national communities, raising awareness about important issues and the sustainable management of different areas related to SDG 14.

The university organizes events like "Rethinking Climate Action" to promote the sustainable use of resources and to address the impact of human activities. In addition to sustainable practices, AIUB maintains policies on water quality standards, ensuring proper water discharge guidelines are followed to protect ecosystems. Through many efforts, AIUB demonstrates its commitment to fostering good practices and collaborates with local communities to ensure the long-term health and sustainability issues.

#AIUB #SDG14 #AquaticEcosystems #SustainableFisheries #MarineConservation #WaterManagement

# Contents

# University Activities towards SDG 14

## Visit to Bangladesh Naval Academy (BNA)

On December 26, 2022, the Faculty of Engineering, American International University – Bangladesh (AIUB) organized a visit to the Bangladesh Naval Academy (BNA). BNA is situated at the mouth of the Karnaphuli River at Patenga, Chittagong District, Bangladesh. It is a reputed military institution for naval training in Southeast Asia and performs the task of developing commissioned officers to lead the future Bangladesh Navy. 14 teachers from AIUB along with 37 students from Department of EEE and IPE participated in this visit. The team from AIUB reached BNA at 4:00 PM and stayed there for approximately 2 and half hours.

Upon the team's arrival, they were warmly received by Cdre Jahangir Adil Samdany, (TAS), NGP, ndc, psc, BN, and lead to the auditorium by the Training Coordinating Officer (TCO). Next, an officer provided a presentation explaining the history, institutional structure, training curriculum, semester-wise description of basic cadet training, graduation requirements and available opportunities upon graduating from the academy. He explained how all cadets of the Bangladesh Navy undergo 10 weeks of joint services training in Bangladesh Military Academy (BMA) alongside the Army and Air Force cadets. Next, they continue for another 15 months training at BNA, which is followed by 6 months of sea training. Upon graduation, cadets are commissioned in Bangladesh Navy as Sub Lieutenant after 3 years of training and receive a Bachelor of Science Degree (BSc). The presentation was followed by a brief question answer session and a trip to the BNA library.

Prof. Dr. Md. Abdur Rahman (Pro Vice-Chancellor, AIUB) expressed thanks to the authority of the academy for their tremendous support and offered a token of appreciation to Cdre Jahangir Adil Samdany. Lastly, the visiting team took a group photo in front of the BNA BANGABANDHU complex with all the participants from AIUB and enjoyed a walk watching the sunset at the West Point of BNA.

https://www.aiub.edu/visit-to-bangladesh-naval-academy-bna

# Visit to Commodore Superintendent Dockyard (CSD)

On December 26, 2022, the Faculty of Engineering, American International University – Bangladesh (AIUB) organized a visit to the Commodore Superintendent Dockyard (CSD), also known as BN Dockyard. CSD is located at New Mooring, Chattogram, on the bank of river Karnuphuli. 14 teachers from AIUB along with 37 students from Department of EEE and IPE participated in this visit. The team from AIUB reached CSD at 9:30 AM and stayed there for approximately 3 hours.

Commodore Khandakar Akhter Hossain, (E), (NUP, ndc, psc, PhD, BN, CSD) wholeheartedly greeted the AIUB team upon their arrival, and Prof. Dr. Md. Abdur Rahman (Pro Vice-Chancellor, AIUB) thanked the officials of CSD for their support. After a brief group photo, the visiting team was taken for a guided tour to the radar and calibration shops in two groups. At the radar section, the jobs of different sections dedicated to the RF (HF, VHF, UHF) equipment, amplifiers, UPS/IPS, radars (surveillance/tracking/navigation) were explained by the engineers in charge of each section. Following that, the team visited a few labs of the calibration center, where they learned how repair, rework, test and inspection of electronic printed circuit boards (PCBs) of ship equipment is performed. The two groups were next guided to the machine shop that handles the repair DC and induction motors, domestic equipment such as fans/heaters, batteries and distilled water plants. After a short break at the CSD organization, the whole team from AIUB boarded BNS BANGABANDHU, where Captain A N M Ishtiaq Jahan Farouqee, (G), psc, BN, (Commanding Officer of BNS BANGABANDHU) welcomed them on board. Next, Executive Officer Cdr. Md Rashed Hossain, (ND), psc, BN gave a 10-minute presentation explaining the history, functions, armament, sensors, and processing systems of the ship. Following the presentation, executive officers took the visiting team on a guided tour of the ship and familiarized them with several armaments, such as anti-ship missile, surface-to air missile system, rapid compact gun, CIWS (close-in weapon system), torpedo tubes etc. They also pointed out the targeting and detection systems present on the ship, such as fire control radar, surface search radar, MIRADOR optical surveillance and tracking system etc. Next, Prof. Dr. Md. Abdur Rahman sincerely thanked Captain A N M Ishtiaq Jahan Farouqee for his cooperation and shared a token of appreciation for his time and support. The tour ended with a group photo on the BNS Bangabandhu with all the participants from AIUB.

https://www.aiub.edu/visit-to-commodore-superintendent-dockyard-csd

# Visit to Chittagong Dry Dock Limited (CDDL)

On December 27, 2022, the Faculty of Engineering, American International University – Bangladesh (AIUB) organized a visit to the Chittagong Dry Dock Limited (CDDL), a state-owned limited company and a leading maritime industry of Bangladesh based in Chittagong Port. It is located in East Patenga, Chittagong, Bangladesh and operated by the Bangladesh Navy. 14 teachers from AIUB along with 37 students from Department of EEE and IPE participated in this visit. The team from AIUB reached CDDL at 8:30 AM and stayed there for approximately 3 hours.

Upon their arrival, Commodore Mohammad Maksud Alam ((E), BSP, NUP, BCGM, BCGMS, ndc, psc, BN, Managing Director, CDDL) wholeheartedly greeted the AIUB team. One Assistant Engineer provided a short presentation going over CDDL's company profile, scope of work, repair facilities (dry dock, outfitting jetty, cranes machine/electrical/fabrication shop), achieved certification (IRC, ERC, CCCI, BIAA, DGDP, ISO, Nippon Kaiji Kyokai) etc. Following the presentation, Captain Mahbubur Rahman (GM, CDDL) greeted the AIUB team and answered questions from the audience regarding the future plans of CDDL and career opportunities at CDDL for EEE and IPE students.

Next, Prof. Dr. Md. Abdur Rahman (Pro Vice-Chancellor, AIUB) sincerely thanked the CDDL officials for their cooperation and offered a token of appreciation for their time and support. Then two Assistant Engineers took the visiting team for a guided tour of the dock in two groups and familiarized them with several shops. The fabrication shop contained different sized machinery such as shaper, bender, hydraulic press that are used to cutting, shearing, bending, pressing and rolling sheets and pipes. At the machine shop, the guides showed the team a variety of equipment and machinery necessary for turning, milling, drilling, shaping, boring, honing, grinding as well as different structures such as cranes and furnace. They also showed the dry dock to the team and thoroughly described the process of ship docking and gate operation for letting water in. After viewing the pump house providing water to the different sections of the dock and providing help in case of ship fires, the tour ended with a group photo with all the participants from AIUB.

It was a rewarding experience for the engineering students that provided them valuable insight into the applications of engineering in the shipbuilding industry of Bangladesh.

https://www.aiub.edu/visit-to-chittagong-dry-dock-limited-cddl

# Visit to Chittagong Port Authority (CPA)

On December 27, 2022, the Faculty of Engineering, American International University – Bangladesh (AIUB) organized a visit to the Chittagong Port Authority (CPA), a government agency for the management, maintenance and governance of the Chittagong Port located on the Karnaphuli River. CPA is located at Bandar Bhaban, Chittagong, and performs the task of managing and maintaining the port facilities and infrastructure. 14 teachers from AIUB along with 37 students from Department of EEE and IPE participated in this visit. The team from AIUB reached CPA at 1:00 PM and stayed there for approximately 2 and a half hours.

Upon the team's arrival, they were welcomed by Rear Admiral M Shahjahan (NPP, BCGMS, ndc, psc, BN, Chairman, CPA) and lead inside the premises, where Capt. Md. Zahirul Islam (Harbour Master, CPA) gave a speech explaining the functions of the port. He explained how the CPA manages, maintains, improves and develops the port, provides port services and facilities, controls the loading and unloading of ships, manages the storage of cargo and works with customs to maintain order in goods import. The presentation was followed by a brief question answer session, after which Prof. Dr. Md. Abdur Rahman (Pro Vice-Chancellor, AIUB) thanked Capt. Md. Zahirul Islam for his informative speech and offered a token of appreciation to the officials for their help and support. Then, the team traveled to the Chittagong port and toured the docks freely, observing the various structures in the port such as containers, harbour cranes, transport trucks and cargo ships.

The tour came to an end with a group photo on the docks of all the members of the visiting team from AIUB. The visit was very informative and familiarized AIUB students with the ship industry of Bangladesh and the role of engineers in it.

https://www.aiub.edu/visit-to-chittagong-port-authority-cpa


## AIUB Students became Champions in WICBBDB 2023

On August 28, 2023, students from AIUB achieved the title of champions at the Workshop on International Conference on Bangabandhu and Digital Bangladesh 2023 (WICBBDB 2023), hosted by the United International University (UIU). WICBBDB 2023 was dedicated to exploring the convergence of ICT and the Sustainable Development Goals, with the goal of fostering collaboration between academia and industry on a global scale. During the event, 42 research project papers were accepted and presented throughout the day.

Among these 42 research projects, the project paper titled "IoT-Based Smart Poultry and Fish Farming System Using Arduino," authored by AIUB students Sajid Ibna Mahbub, Saima Sadia Ratri, and Sultanul Arifeen Hamim from the Computer Science and Engineering (CSE) department, secured the first position. This exceptional project was the result of their efforts during the "Microprocessor and Embedded Systems" course at AIUB.

Their work was conducted under the guidance of Prof. Dr. Muhibul Haque Bhuyan, a distinguished professor from the Department of Electrical and Electronic Engineering (EEE) within the Faculty of Engineering at AIUB. Notably, Prof. Dr. Bhuyan also led a technical session titled "IoT and ML-based Embedded System" during the workshop.

https://www.aiub.edu/aiub-students-became-champions-in-wicbbdb-2023


## Faculty of Engineering Participated in the Day-Long Training at Safety Academy, Samsung C & T Corporation

On August 10, August 17, August 24, and August 31, 2023, 108 students and 7 teachers from the Department of EEE, CoE & IPE, Faculty of Engineering, AIUB attended day-long training session in 4 different batches at the Safety Academy, Samsung C & T Corporation. The training aimed to enhance participants' awareness and knowledge of workplace safety practices.

The training took place at the Safety Academy, located at Ashkona, Choto Bot Tala, Female Anser Camp. Commencing at 10:00 AM., the training session began with a concise presentation introducing the academy and outlining various safety training programs. Following this, the significance of health and safety was elucidated, emphasizing the immense benefits of safety training in maintaining workplace safety. During the training session, participants were taken to different experience rooms, namely Basic and Electrical Safety, Falls and Enclosures, and Fire Safety. Each experience room provided hands-on exposure to potential workplace hazards and comprehensive guidance on mitigation strategies. After lunch, practical demonstrations of CPR (cardiopulmonary resuscitation) techniques were conducted, emphasizing correct hand placement, compression depth, and the ratio of compressions to rescue breaths. Participants were given opportunities to practice CPR on mannequins to ensure they understood and could perform the technique effectively. The training concluded with the distribution of certificates to all participants at 4:00 PM. Prof. Dr. Muhibul Haque Bhuyan (Professor, Faculty of Engineering, AIUB), Md. Ashiquzzaman (Assistant Professor, Faculty of Engineering, AIUB), Abu Shufian (Lecturer, Faculty of Engineering, AIUB), Dr. Mohammad Tawhidul Alam (Associate Professor, Faculty of Engineering, AIUB), Dr. Tanbir Ibne Anowar (Associate Professor, Faculty of Engineering, AIUB), Dr. Shuvra Mondal (Assistant Professor, Faculty of Engineering, AIUB), Tamim Hossain (Lecturer, Faculty of Engineering, AIUB) attended safety training with different batches on August 2023.

AIUB would like to extend its sincere appreciation to Samsung C & T Corporation for offering this excellent training opportunity and for their gracious hospitality.

https://www.aiub.edu/faculty-of-engineering-participated-in-the-day-long-training--at-safety-academy-samsung-c--t-corporation

## Scholarly talk on "Rethinking Climate Action

The Department of English of American International University-Bangladesh orchestrated a scholarly talk titled "Rethinking Climate Action: Climate Justice for Whom," on 14 December 2023 drawing together the esteemed faculty members of the Faculty of Arts and Social Sciences. The talk aimed to delve into the intricate layers of climate justice, a pressing concern of the time.

Distinguished by the presence of the renowned speaker, Dr. Sajal Roy, a climate action specialist, the discussion became lively with the engagement of the participants. The talk triggered the environmental consciousness and sparked dynamic exchanges among academicians, exploring the multifaceted dimensions of climate justice.

The welcome speech, delivered by Hamidul Huq, Head, Department of English, set the tone for the event, emphasizing the gravity of the topic and the imperative need for collective action. Throughout the event, impassioned deliberations underscored the intersectionality of climate action, dissecting its implications across societal strata. The event ended with the closing remarks from the Professor & Dean of Faculty of Arts and Social Sciences, Dr. Tazul Islam.

The event served as a poignant reminder of academia's pivotal role in championing climate justice and underscored the imperative for collective, equitable solutions in addressing the global climate crisis.

https://www.aiub.edu/scholarly-talk-on-rethinking-climate-action


# DESIGN DIALOGUE: SUCCESSFUL COMPLETION OF ARCHITECTURE THESIS JURY

The department of Architecture, AIUB, has successfully completed the Thesis Jury of final-year students from Fall 2022-23 on the 17th & 18th of January 2023 at the Multipurpose Hall of Annex-7 Building. All faculties, students, and guest jurors spontaneously participated and appreciated the event.

In this event, a total of twenty students presented their final year design studio projects, covering a wide range of topics on contemporary urban, architectural, and environmental issues. The students worked hard on their individual projects throughout the semester under the guidance of Studio mentors Ar. Ashik Vaskor Mannan and Ar. Tarek Morad, along with great encouragement and support from the Head - Ar. M. Arefeen Ibrahim and their thesis supervisors.

The Jury Panel was adorned by invited external jurors - esteemed architects and academicians, including Dr. Mohammad Ali Naqi (Former VC, Stamford University; Vice President, IAB), Ar. A B M Mahbubul Malik (Professor, AUST), Ar. Md. Ehsan Khan (Principal Architect, Ehsan Khan Architects Ltd.), Ar. Farhana Sharmin Emu (Former GS, IAB), Ar. Sarah Bashneen (Chairman & Associate Professor, Stamford University), Dr. Md. Nawrose Fatemi (Associate Professor & Head, University of Asia Pacific), Ar. Shah Fuad Mahammad Cyrus (Principal Architect, CSA), Ar. Nabi Newaz Khan Shomin (Partner Architect, Archeground Limited), Ar. Lutfullahil Majid (Partner Architect, Archeground Limited), Ar. Jubair Hasan (Principal Architect, Jubair Hasan Architects), Ar. Mahmudul Hasan Forhad, Tahmina Rahman (Lecturer, University of Asia Pacific), Ar. Saad Ben Mostafa (DOA, PWD) and the faculties of the Architecture Department. The projects received positive remarks, commendations, and constructive criticism from the jurors based on their concepts and design merit.

Successful public events like these are essential to ensure wider exposure and better job opportunities for graduating students. This also helps to establish a profound connection between academia and practice. The Department of Architecture is thankful to the external and internal jurors, student participants, and the university administration for their support and would like to take this opportunity to wish a very bright, prosperous future to the fresh architects of AIUB.

https://www.aiub.edu/design-dialogue-successful-completion-of-architecture-thesis-jury


# DESIGN DIALOGUE" [SPRING 2022-23]: THESIS JURY BY ARCHITECTURE STUDENTS

The Department of Architecture, AIUB, has successfully completed the Thesis Jury of final-year undergraduate students (Spring 2022-23 semester) from 30th May to 1st June 2023 at the Multipurpose Hall of Annex-7, AIUB permanent campus. The spontaneous participation and presence of faculties, students, and guest jurors made this event a memorable one. This year, a total of thirty-five students presented their final-year studio projects, which ranged from futuristic design approaches to realistic problem-solving on contemporary urban, architectural, environmental, and cultural issues. AIUB Architecture Department has always been a liberal platform for students to explore unconventional and unique ideas to the fullest. Students have worked hard on their individual projects throughout the semester under the guidance of the studio mentors - Ar. Hasan Ahmed Chowdury, Ar. Farzana Siddiqua and Ar. Rashed Hasan, along with great encouragement and support from the Head, Ar. M. Arefeen Ibrahim and the thesis supervisors.

A good number of invited external jurors were present during the event, including renowned architects, academicians, engineers, and researchers, including Ar. A B M Mahbubul Malik (Professor, AUST), Ar. Mohammed Emran Hossain(Design Principal, Architect Emran & Associates), Dr. Md. Nawrose Fatemi (Associate Professor & Head, University of Asia Pacific), Ar. Lutfullahil Majid (Partner Architect, Archeground Limited), Ar. Jubair Hasan (Principal Architect, Jubair Hasan Architects), Ar. Dilruba Ferdous Shuvra (Adjunct lecturer, TA, and PhD Student, University of Wisconsin, Milwaukee, USA), Ar. Tahmida Afroz (Advisor, Collector (Art) Management, Researcher, Bengal Foundation), Engr. Mr. Shamsul Alam (Structural Engineer, TDM), Ar. Amit Kumar Saha (Partner, Vastuvita Architects), Ar. Neaz Sharif (CEO, Aline Architects and, Engineer) and the Faculties of Architecture Department, AIUB. Their valuable comments and discussions during the jury session facilitated the students to comprehend different perspectives, complications, and possibilities of their projects. The projects received positive remarks, commendations, and constructive criticism from the jurors based on their concepts and design merit. The three-day jury sessions ended with a cordial note from the Studio mentors applauding the fresh graduates moving towards a new chapter of their lives. Successful public events like these are essential to ensure wider exposure and better job opportunities for graduating students. This also helps to establish a profound connection between academia and practice. Department of Architecture is thankful to the external and internal jurors, student participants, and the University Administration for their support and would like to take this opportunity to wish a very bright, prosperous future to the newly graduated architects of AIUB.

https://www.aiub.edu/design-dialogue-spring-2022-23-thesis-jury-by-architecture-students



# Faculty Research and Publication

## IoT-Based Smart Poultry and Fish Farming System Using Arduino

DR. MUHIBUL HAQUE BHUYAN

This research work aims to reform the conventional farming system, making it smart and automated with the use of Internet of Things (IoT) technology. The work targeted to automate the poultry and fish farming system. As such, the system uses an Arduino Uno microcontroller as a digital controller integrated with an IoT to aid farmers in remote monitoring and controlling the farming system. The farming system consists of a poultry farm at the top and a fishing farm at the bottom of a vertical farming system. The system mainly monitors the critical parameters of the farming environment, such as pH value, temperature, humidity, dissolved oxygen levels, etc. through some sensors. Then it takes appropriate actions based on the sensed parameter values through some actuators, such as servomotor. DC motor, pump, fan, etc. to regulate the farming environment's variables to the values within the acceptable ranges automatically. This would reduce the time and effort to be spent on farming significantly. Testing and evaluation of the system through Proteus software simulation and hardware implementation show that the target has been achieved.

https://icbbdb.com/workshop-on-icbbdb-wicbbdb-2023/

## Design and Implementation of Solar Power and an IoT-Based Pisciculture Management System

DR. MUHIBUL HAQUE BHUYAN

Introduction: Pisciculture means fish farming for commercial purposes in a pond or in an artificially created fish tank. Proper care is needed for optimum fish yields. Aims: The present research aims to design, simulate, implement, and test a low-cost pisciculture monitoring system to get the environmental status of a fishing pond where aquatic plants and fishes reside. The objective of this work is to produce high-quality and high yields of fish in the pond keeping the standard or prescribed states of the pond water.

Study Design: The factors that affect the pond environment are flow rate, pH level, oxygen level, temperature, humidity, etc. To get high yields of fish from a pond, these factors must be within a specified level. If the values of these parameters go below or above the prescribed level thben the water loses its quality and thereby fishes find it very difficult to survive in that pond because each water quality factor affects the health conditions of fish. Therefore, it is necessary to monitor these parameters. Place and Duration of Study: Department of Electrical and Electronic Engineering, Southeast University (SEU) between June 2021 and April 2022.

Methodology: In this work, we have designed an automated microcontroller, IoT, and solar power-based water quality monitoring system for a fishpond. The automated system restores the values of these factors automatically when any of these factors fail to maintain their level in the pond.

Results: After testing the prototype of the system, we found that the designed system is performing very well and showing different parameter values in the LCD screen as outputs. Conclusion: The system is in expensive and therefore, may be employed in practice.

https://journaljerr.com/index.php/JERR/article/view/799