



# SUSTAINABILITY 2023-2024

---

COMMUNICATION ON  
ENGAGEMENT (COE)





# 11 SUSTAINABLE CITIES AND COMMUNITIES

## RESEARCH ON REDUCED INEQUALITIES

---

Over the past two years, the university's publications about SDG 11 (Sustainable Cities and Communities) have varied, starting with research on the sustainable restoration of historical monuments using geopolymer materials and the evaluation of sustainability rating systems through multi-criteria decision-making models. Innovations in construction materials, such as optimizing pervious geopolymer concrete and using recycled materials for sustainable pervious concrete, have been highlighted. The impact of green roofs on urban runoff quality and the use of geoinformation for monitoring protected areas in Lebanon were also significant topics. Additionally, research addressed the stabilization of unfired earth blocks, the photocatalytic activity of cement slurries, and the effects of various additives on concrete properties. Water quality assessments in natural ponds and the development of economic vessels for cleaning polluted waterways were also covered. The publications reflect a comprehensive approach to enhancing urban sustainability through innovative materials, environmental monitoring, and infrastructure improvements.

1. Absi, J., Adgham, S.A., Sabalbal, G., Arairoy, W., & Saba, M. (2023). **Sustainable approach in the restoration of historical monuments using geopolymer material.** In E3S Web of Conferences. Open access.
2. Al-Sakkaf, A., Mohammed Abdelkader, E., Elshaboury, N., Bagchi, A., & Zayed, T.M. (2023). **An Integrated Multi-criteria Decision Making Model for Evaluating Sustainability Rating Systems.** In Lecture Notes in Civil Engineering.
3. Anwar, F.H., El Mir, A., El-Hassan, H., Hamouda, M.A., & Mo, K.H. (2023). **Use of Taguchi Method to Optimize the Mix Design of Pervious Geopolymer Concrete.** In International Conference on Civil, Structural and Transportation Engineering. Open access.
4. Arairoy, W., Daher, N.E.H., El Bachawati, M., Absi, J., & Saba, M. (2023). **Alternative stabilisation method for unfired earth blocks.** In E3S Web of Conferences. Open access.
5. Assaad, J.J., & Khatib, J.M. (2024). **Recycled materials used for sustainable pervious concrete.** In Sustainable Concrete Materials and Structures.
6. Fadel, M., Courcot, D., Seigneur, M., Ledoux, F., & Afif, C. (2023). **Identification and apportionment of local and long-range sources of PM2.5 in two East-Mediterranean sites.** Atmospheric Pollution Research. Open access.
7. Hatoum, A.A., & Barraij, F. (2023). **Investigating the changes in travel behaviour during an economic crisis in a developing country: A case study of the Greater Beirut Area, Lebanon.** Transportation Research Interdisciplinary Perspectives. Open access.

8. Jabali, Y., Assaad, J.J., & Aouad, G. (2023). **Photocatalytic Activity and Mechanical Properties of Cement Slurries Containing Titanium Dioxide**. Buildings. Open access.
9. Khatib, M., Ahmad, R.H., & Arairoy, W. (2023). **Effect of Polyethylene Terephthalate, Rubber, and Glass Based on Concrete Properties**. In Advances in Transdisciplinary Engineering. Open access.
10. Khatib, M., Daoud, M., Arairoy, W., Saba, M., & Mortada, H. (2023). **Water quality parameters assessment of ras el-Ain natural ponds, ty, lebanon**. Water Supply. Open access.
11. Khatib, M., & Mahmoud, B. (2024). **Economic Vessel to Clean the Polluted Water by Solid Waste in Waterway**. In Lecture Notes in Civil Engineering.
12. Lahoud, C. (2024). **Simulation and Economic Analysis of a Mobilized Thermal Energy Storage System for Mediterranean Climate Buildings: Case Study**
13. Marín, C., El Bachawati, M., & Pérez, G. (2023). **The impact of green roofs on urban runoff quality: A review**. Urban Forestry and Urban Greening. Open access.
14. Marlène KANAAN, **"Franc-parler, moquerie et traits d'esprit dans une lettre de Grégoire de Nysse"**, Liberté de ton et plaisanterie dans la lettre, Presses Universitaires François-Rabelais, (PUFR), coll. Perspectives littéraires, Tours, France, 2023.
15. Marlène KANAAN, **"Le débat entre chrétiens et idolâtres selon Habar Barlām wa Yūwasaf, particularités, échos ecclésiastiques et utilisations apologétiques"**, Actes du colloque Barlaam et Joasaph dans l'histoire des religions, Publications de l'Institut d'Histoire des Religions, Université de Strasbourg, 2024.
16. Marlène KANAAN, **"Habar Būloş al-Rasūl ou l'Apocalypse de Paul selon un texte arabe inédit"**, Parole de l'Orient, Volume 50, USEK, 2024.
17. Mitri, G.H., Bechara, J., Stephan, J.M., McKenna, M., & Choueiter, D. (2023). **Geoinformation applications for monitoring protected areas in Lebanon**. In Proceedings of SPIE - The International Society for Optical Engineering.
18. Nasser Eddine, Z., Barraç, F., Khatib, J.M., & El Kordi, A.A. (2023). **Volume Stability of Pervious Concrete Pavement Containing Municipal Solid Waste Incineration Bottom Ash**. International Journal of Pavement Research and Technology.
19. Rizk, M., Atallah, R., & Maria El Khazen, J. (2024). **Examination of the natural mineral water quality in the Kesserwan region, Lebanon**. Heliyon. Open access.
20. Sabat, M., Fares, N., Mitri, G.H., & Kfoury, A. (2024). **Determination of asbestos cement rooftop surface composition using regression analysis and hyper-spectral reflectance data in the visible and near-infrared ranges**. Journal of Hazardous Materials.
21. Saba, M., Arairoy, W., Sabalbal, G., El Bachawati, M., & Absi, J. (2023). **Use of aluminum powder for the development of a sustainable paste used in the restoration of historical monuments**. In E3S Web of Conferences. Open access.
22. Saba, M., Pérez, G., Coma, J., & Polls, M. (2023). **Geopolymer as an Innovative Material for Green Roofs- A State-of-the-Art Review**. In E3S Web of Conferences. Open access.
23. Semaan, N.M. (2023). **A Novel Service Life Prediction for Reinforced Concrete Infrastructure Systems**. In RILEM Bookseries.
24. Slim, S., **"From Cavern to Closter plan, revolution of the architecture of Greek Orthodox monastery in the Patriarchate of Antioch "**. ARAM-Oxford, July 2023.
25. Slim, S., **" Le rôle culturel et spiritual du monastère Notre Dame de Balamand à l'époque Ottomane"**. Conférence Typarabic, Mars 2024.

هل تستطيع الفلسفة أن تغير المجتمعات الإنسانية وأن تساهم في معرفة كيفية العيش معًا؟", 26. المركز العربي للأبحاث ودراسة السياسات، 2024، ص 74-63

مارلين كنعان، "الألم باب من أبواب معرفة الذات، دونه تبقى الأبواب موصدة"، مجلة نزوى، مسقط، 27، العدد 116، 2023، ص. 44-40

## Books

The "Roman de Barlaam et Joasaph," the first Christian novel, has mysterious origins but was very popular in the Middle Ages, with many versions in different languages, especially Greek. It is a Christian adaptation of the Buddha's life. The Greek version, wrongly attributed to John of Damascus, became a key theological document and a masterpiece of Christian hagiographic literature. This book, authored by Marlène Kanaan and Father Hareth Ibrahim. Marlène Kanaan is a professor at the University of Balamand, Lebanon, and Father Hareth Ibrahim is the director of the Saint Joseph of Damascus Center for manuscript conservation and restoration.



## SUPPORT OF ARTS & HERITAGE

### UOB's Virtual Museum "Morphe"

Morphe is a virtual museum created by the Digital Humanities Center (DHC) and ALBA main Campus at UOB. It aims to make Lebanese art and culture accessible to a global audience through online exhibits. The museum features both tangible assets, such as paintings, sculptures, and archaeological sites, and intangible assets, including oral traditions and social practices. Morphe offers an immersive experience, allowing visitors to virtually explore and enjoy diverse collections from UOB and various cultural partners.

MORPHE | Alwan MUSEUM | Exhibition

You can view 30 paintings from the University of Balamand's collection

Visit UOB's Virtual Museum "Morphe" without leaving your place.

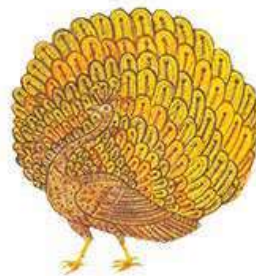
Take a free virtual walk through the different exhibits via an immersive experience

Explore the dynamic virtual space that changes in volume according to its changing location around campus.

### **PAVONe: Platform of the Arabic Versions of the New Testament**

The Digital Humanities Center (DHC) has an online, free database for the Arabic text of the Gospels. Users can browse manuscripts by location or filter by parameters like date and language, with access to detailed manuscript properties.

<https://pavone.uob-dh.org/>



**PAVONe**  
Platform of the  
Arabic Versions Of  
the New Testament

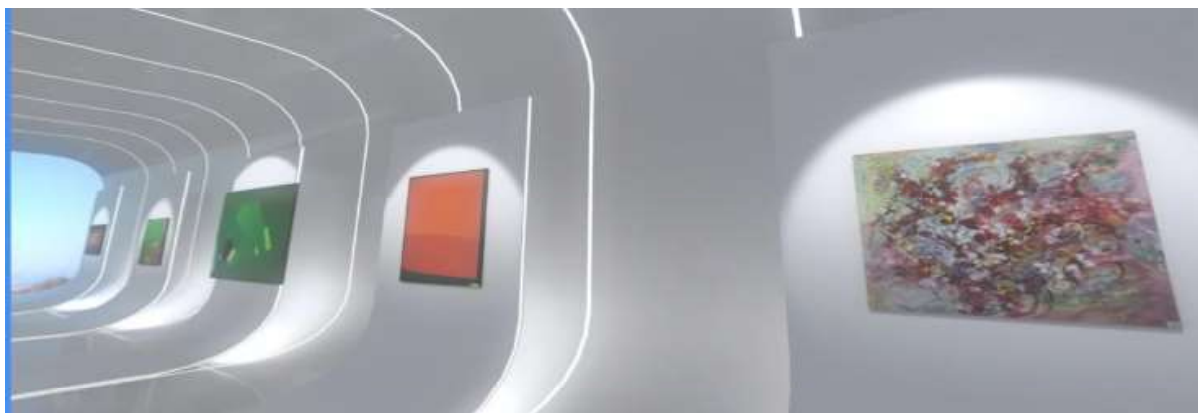
### **ArHive: Database of Arabic manuscripts and historical documents**

The ArHive database, developed by the Digital Humanities Center (DHC) at the University of Balamand, provides free online access to Arabic manuscripts and historical documents, allowing users to browse by location or filter by various parameters, with detailed manuscript properties available.



### **Alwan Virtual Exhibition**

Alwan virtual Exhibition by the Digital Humanities Center (DHC) at UOB is a virtual showcase of paintings from the university's art collections. These artworks, donated by notable Lebanese artists, have been gathered from various exhibitions hosted over the years. This exhibition highlights the rich cultural heritage and artistic contributions of Lebanon. on Google Maps (Virtual visit): <https://goo.gl/maps/gqMif3axGf9fh79L6>



### **Database of Arabic Orthodox Christian**

The Database of Arabic Orthodox Christian Journals, developed by the Digital Humanities Center (DHC) at UOB, provides access to a collection of journals focused on Orthodox Christianity in the Arab world. This resource is valuable for researchers and scholars interested in the historical and theological aspects of Arabic Orthodox Christianity, offering various articles and publications through their online platform.

<http://journals.uobdh.org/>

## **Bibliotheca: Hagiographica Arabica: Database of Eastern saints in Arabic**

Developed by the DHC) at UOB, this database offers information on Eastern saints in Arabic, detailing their lives, acts, and martyrdoms, and is valuable for researchers of hagiography and the Synaxarion in Arabic. <http://bha.uobdh.org/>



## **SyRum - Syriac Rum Orthodox Heritage**

The SyRum project preserves Syriac Rūm Orthodox heritage by digitizing manuscripts and archives in Lebanon, in collaboration with the Catholic University of Eichstätt-Ingolstadt. <https://www.balamand.edu.lb/CentersInstitutes/DHC/Pages/SyRum.aspx>



## **SUPPORT OF ARTS & HERITAGE**

---

The Department of Archaeology and Museology has been conducting several archaeological excavations and studies since 2007 in various places, namely in several locations in Anfeh, both on land and underwater, in the monastery of Our Lady of Balamand, in Deir Mar Assia in Hasroun and in Cyrrhus in Syria.

The investigation of plots 732 and 734 of Hraysheh area in Anfeh comprised a visual survey and the opening of 22 test trenches. The material recovered from the survey included a handful of flint flakes dating to Prehistory as well as some pottery sherds from the Late Ottoman period. As for the excavation, it revealed an agricultural soil of 10 to 30 cm of depth, devoid of any material, and directly covering the bedrock. The joint archaeological mission conducted with the Archaeological Museum of the American University on the site of Ras el Qalaa has yielded several remarkable results. These include the discovery of a Byzantine rock-cut oil press as well as a long staircase connecting the second moat to the upper Crusader structures. The excavations have also focused on a medieval oil press which had already been revealed in a former campaign as well as massive fortification walls standing between the second and the third moat. These walls seem to have been destroyed by stone catapult balls as a lot of over 200 of them have been retrieved from the same area. Parallel to restoration works, the archaeological excavation of the medieval church of St Barbara of Barghoun, property of the patriarchate monastery of Balamand, has focused so far on the external area. The investigation has revealed several tombs, still under study, as well as the foundations of the church.



## DEIR EL BALAMAND MUSEUM INAUGURATION

The monastery of Our Lady of Balamand inaugurated the Deir El Balamand Museum on December 17, 2023, in the presence of His Beatitude John X Patriarch of Antioch and all the East, the minister of culture in Lebanon, H.E. Mohammad Mortada, Deputy Prime Minister of Lebanon, Saadeh Al Shami, Deputy Speaker of the Parliament of Lebanon, H.E. Elias Bou Saab, the Abbot of the Monastery of Our Lady of Balamand, Archimandrite Father George Yaacoub, President of the University of Blamanand, Dr. Elias Warrak as well as a number of religious, political and social figures. The culmination of five months of dedicated efforts, the museum represents a breakthrough in the modern history of the monastery. Housed in one of the monastery's impressive large Medieval rooms, situated at its southwestern corner and originally isolated, the chosen location adds to the significance of the collection.

Featuring a diverse collection of approximately 50 artifacts meticulously labeled and accompanied by relevant texts, plans, drawings, quotes, etc., the museum offers visitors a profound insight into the history of the displayed objects. The carefully curated display provides a journey through time, reaching back to the 17th century, allowing visitors to immerse themselves in the rich history of the monastery. This project was implemented through the collective efforts of the Department of Archaeology and Museology team at the University of Balamand and the Academie Libanaise des Beaux Arts (ALBA).



# UNIVERSITY ETHNOGRAPHY MUSEUM CELEBRATES LEBANESE HERITAGE

---

The Ethnography Museum at the University hosted throughout the past two years multiple groups to introduce Lebanese heritage. Highlights included a visit from the Parish of Saydet Al Najat Byblos, an interactive educational day for Rosaire school students, and EB3 students from Lady of Balamand High School for a hands-on archaeology experience. Additionally, about 35 students from UOB's Department of Agriculture and Food Engineering attended a seminar, exploring old food conservation techniques and traditional agricultural practices.



## HERITAGE EXPERIENCE FOR CHILDREN

The Department of Archaeology and Museology partnered with HEP (Heritage Education Program), Qaa Heritage Vival Project and the Lebanese Ministry of Culture with Landward Research to create an unforgettable heritage experience for over 75 children through hands-on learning.



## OPEN AIR MUSEUM

On the International Museum Day, the Ethnography Museum organized a "Museums for a wellbeing walk in Anfeh", an open-air museum. Archaeologists, colleagues, and students from various backgrounds enjoyed the guided tour and encouraged further activities of that nature.





## DIGITAL HUMANITIES WORKSHOP AT UOB

---

The Digital Humanities Center (DHC) at the University of Balamand, in collaboration with the Orient Institute Beirut (OIB), hosted a two-day workshop on February 15-16, 2023, focusing on Digital Humanities: Concepts and Applications. The event aimed to foster collaboration and knowledge-sharing between the two institutions, showcasing their expertise through ongoing research projects. Scholars from diverse fields, including Arabic and Islamic studies, history, religious studies, artificial intelligence, architecture, sociology, and digital cultural heritage, participated in presentations, discussions, and hands-on sessions. The workshop emphasized the study of text reuse in ancient Arabic literature, particularly Christian-Muslim relations, and underscored the importance of digital cultural heritage in preserving and promoting cultural and religious heritage for future generations.



## POET HENRI ZGHEIB DISCUSSES GIBRAN'S "THE PROPHET"

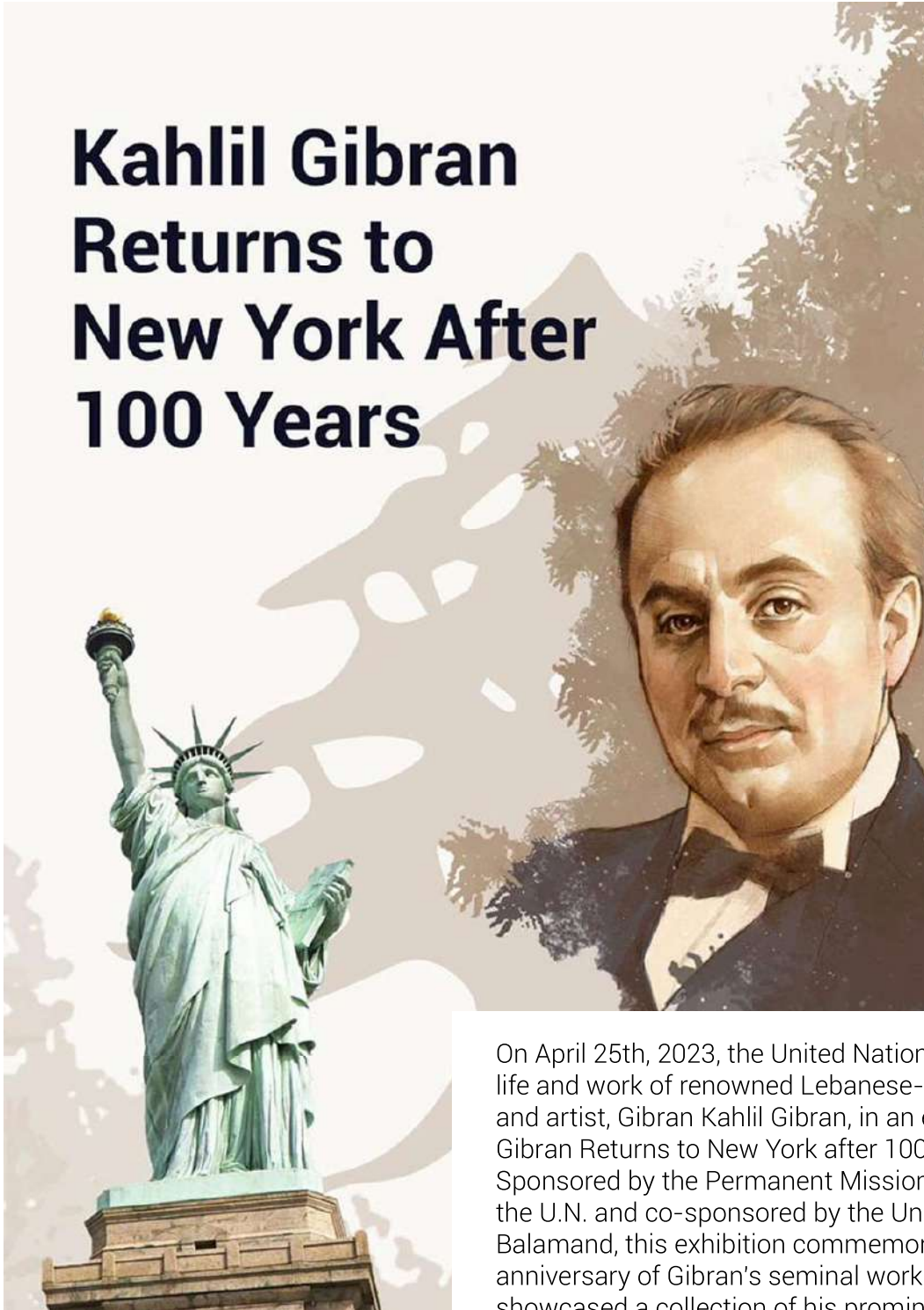
---

The University of Balamand, in collaboration with the Elite Center for Culture and Education, hosted a discussion with poet Henri Zgheib at its Koura campus as part of Tripoli 2024 activities.

The event, attended by cultural figures, faculty, and students, featured Zgheib discussing his recent translation of "The Prophet" by Gibran Khalil Gibran, offering insights into his translation approach and the evolution of the Arabic language. Students also read excerpts from various literary works, enriching the cultural experience.



# Kahlil Gibran Returns to New York After 100 Years



On April 25th, 2023, the United Nations celebrated the life and work of renowned Lebanese-American poet and artist, Gibran Kahlil Gibran, in an event titled "Kahlil Gibran Returns to New York after 100 Years." Sponsored by the Permanent Mission of Lebanon to the U.N. and co-sponsored by the University of Balamand, this exhibition commemorated the 100th anniversary of Gibran's seminal work, "The Prophet." It showcased a collection of his prominent paintings and manuscripts, transferred from Lebanon to the United Nations building in New York. The event featured readings from Gibran's works in multiple languages, musical performances, and video screenings. Presentations from Dr. Henry Habib, Mr. Joseph Geagea, and Dr. Nasria Fliti provided valuable insights into Gibran's significance. The ceremony concluded with a keynote speech by Dr. Elias Warrak, President of the University, reflecting on Gibran's profound impact on Lebanese art, education, and literary culture.

## 2ND ANNUAL GEOHEALTH HUB CONFERENCE "CLIMATE CHANGE & HEALTH IN MENA"

The Public Health Department at the Faculty of Health and Sciences organized the 2nd Annual GeoHealth Hub Conference "Climate Change & Health in MENA" on the university's main campus in Koura. This conference aimed to bring together researchers, professionals, and climate change experts from around the world to exchange knowledge, ideas, and discussions on climate change issues and its impact on health in the Middle East and North Africa region.

The GeoHEalth Hub conference was attended by the Minister of Public Health, Dr. Firas Abiad, and the Director of the Land & Natural Resources Program at the Institute of Environment at UOB, Dr. Georges Mitri, representing the Minister of Environment, Dr. Nasser Yassin. Also present were the President of the University of Balamand, Dr. Elias Warrak, representatives from the World Health Organization (WHO), UNICEF, the United Nations Development Program, and the International Organization for Migration, as well as deans of the university, professors, and a number of students.



## AL KANISA APP

"Alkanisa" app offers prayers, hymns, and news related to the Antiochian Orthodox Church. Released on April 14, 2023, in Arabic and includes content specifically for Holy Week. It was developed by the St. John of Damascus Institute of Theology and the Department of Computer Science



## INNOVATIVE PROJECTS AND COLLABORATIVE WORKSHOPS AT DSI AND MDES

Various projects were carried out within the framework of the DSI and MDES workshops, at ALBA Dekwaneh, focusing on space design, upcycling, furniture, lighting, and reverse engineering. Notable initiatives included the rehabilitation of the Barbara Nassar Cancer Center and a conference held with POLIMI as part of WeDesign. In addition, Dr. Francesco Cara and Dr. Tarek Mahmoud presented a public workshop titled "Tales of Sustainable Futures," showcasing the work of five multidisciplinary groups of designers, architects, multimedia creatives, and fashion designers. These projects and presentations highlight the collaborative efforts and innovative approaches towards sustainable development.



# SUSTAINABLE PRACTICES

## URBAN AND TRANSPORTATION REGENERATION FOR REDUCING AUTOMOBILE DEPENDENCY IN MENA (UPGRADE)

The University of Balamand's Erasmus+ project, "Urban and Transportation Regeneration," aims to develop and integrate sustainable urban and transportation systems in Lebanon and Egypt. Over three years (November 2020 - November 2023), the project focuses on enhancing the relationships between urban planning, transportation, and environmental sustainability.

It involves collaboration with the Housing and Building National Research Center in Egypt and other partners, promoting applied research and innovative solutions to address urban and transportation challenges in the region

### BALAMAND CONNECT

Starting in February 2022, this service has offered affordable transportation to the UOB community, including faculty, staff, and students, promoting a shift from car commutes to sustainable bus transport.

To better meet current needs UOB has shifted from operating the six Balamand Connect routes to offering daily intercampus transportation.

This includes routes from DEK to SEG, KOURA to AKKAR, and a twice-weekly route from KOURA to SEG. Additionally, a bus operates daily between DEK and KOURA to convey faculty, staff and students. Transportation is also provided for medical and nursing students to facilitate their clinical training and residency.



### SUSTAINABLE DEVELOPMENT ON BROWNFIELDS

The Campus in Souk El Gharb, built on the site of a former high school destroyed by conflicts, is evolving into a key educational, social, and civic hub for the Souk El-Gharb community and nearby areas. It plays a significant role in the area's redevelopment and economic growth. Another building is that of the Ethnography Museum at the university main campus, which was originally a barn, located in the premises of Balamand Monastery and annexed to it. Abandoned for several centuries, it was reused during the 19th century as a shed; hence the name "Goat House". Then it was abandoned again and left in ruins. It was rebuilt by Dagher Hanna & Partner in 2008. In January 2015, the collection was registered as the "University of Balamand-UOB Ethnography Museum" at the International Council of Museums (ICOM)