

Successful implementation of Interdisciplinary projects in Alexandria university

Interdisciplinary projects play a crucial role in Alexandria University's strategic vision, fostering collaboration across diverse fields to address complex societal challenges. By integrating knowledge from multiple disciplines, these projects enhance innovation, drive research excellence, and contribute to sustainable development.

Recognizing the importance of interdisciplinary research, Alexandria University has prioritized it as a key component of its strategic plan. The university actively supports initiatives that bring together experts from different fields, encouraging cross-disciplinary collaboration to produce impactful research, advance technological progress, and strengthen global partnerships.

Through interdisciplinary projects, Alexandria University aims to bridge gaps between academia, industry, and society, ensuring that research outcomes have real-world applications and contribute to national and international development goals.

This document includes 3 items:

- A) Criteria to assess projects implementation and successfulness
- B) Alexandria University Interdisciplinary Projects starting 2022 onwards
- C) Interdisciplinary Projects Concluded successfully in 2022

A)Criteria For A Successful Interdisciplinary Research Project

A successful interdisciplinary research project effectively integrates knowledge, methods, and perspectives from multiple disciplines to address a complex problem. The key criteria for success set out by Alexandria University are:

1. Clear Research Question & Goals

- The project should have a well-defined research question that requires input from multiple disciplines.
- Objectives should be specific, measurable, achievable, relevant, and time-bound (SMART).

2. Strong Collaboration & Communication

- Researchers from different fields must communicate effectively and understand each other's methodologies and terminologies.
- Regular meetings and structured discussions help ensure alignment.

3. Integration of Disciplines

- The project should go beyond simply combining knowledge; it must integrate perspectives and methods to create new insights.
- This requires openness to different ways of thinking and problem-solving.

4. Balanced Team Composition

- A diverse team with complementary expertise and skills is essential.
- Leadership should facilitate collaboration while respecting disciplinary differences.

5. Robust Methodology

- The research design should incorporate appropriate methodologies from each discipline while ensuring coherence.
- Clear justifications should be provided for the chosen approaches.

6. Innovative & Impactful Outcomes

- The research should generate novel insights, theories, or solutions that wouldn't be possible within a single discipline.
- The findings should be applicable and relevant to real-world problems.

7. Effective Knowledge Translation

- The results should be communicated effectively to both academic and non-academic audiences.
- Publications, presentations, policy briefs, and public engagement efforts should be considered.

8. Flexibility & Adaptability

- Interdisciplinary projects often encounter unexpected challenges, requiring flexibility in approach and methodologies.
- The ability to adapt while staying true to research goals is crucial.

9. Adequate Funding & Institutional Support

- Interdisciplinary research often requires funding that supports cross-disciplinary collaboration.
- Institutional backing, including administrative support and infrastructure, can help overcome barriers.

10. Evaluation & Reflection

- Success should be assessed through predefined metrics (e.g., publications, policy impact, societal benefits).
- Regular reflection on the collaboration process helps improve future interdisciplinary efforts.

B) Alexandria University Interdisciplinary Projects starting 2022 onwards

#	Faculty Name	Interdisciplinary Projects	Starting Year	Ending Year	Duration	Type
1	Faculty of Agriculture	NEXUS-NESS	2022	2025	3	International
2	Faculty of Agriculture	Potential of Rice Husk and Sugarcane Bagasse Biochars Supplemented to Acacia and Leucaena Based Diet on Nutrients Digestibility and Greenhouse Gas Emission From Dairy Manure	2022	2027	5	International
3	Faculty of Agriculture	Microbial-augmented biochar to control soil-borne plant diseases and mitigate climate change	2023	2023	0	National
4	Faculty of Agriculture	Advancing non-conventional Water management for innovative climate-resilient water governance in the Mediterranean Area (AG-WaMED)	2022	2025	3	National
5	Faculty of Agriculture	Development of Novel Water-Energy-Food-Ecosystem (WEFE) Mini-complex Based on a Standalone	2023	2026	3	National
6	Faculty of Arts	Ecological Citizenship in Egypt: Raising Awareness of Sustainable Development Goals, Knowledge Transfer, and Development Prospects"	2022	2023	1	International
7	Faculty of Engineering	Wastewater Treatment by Integrated Green Coagulation And Membrane Technology for Reuse	2021	2024	3	National

8	Faculty of Engineering	University Community Urban Lab for Interactive Learning and Innovative Societal Solutions (UC-URBAN LAB)	2021	2024	3	National
9	Faculty of Engineering	Towards a green Economy Farm: Innovative Solar Collector for Biochar Production from Agricultural & Food Industry Wastes, Power Generation, and Crops Drying	2021	2023	2	National
10	Faculty of Engineering	The future vision of green hydrogen in Egypt a technical and economic study	2023	2024	1	National
11	Faculty of Engineering	Water Desalination and Food Manufacturing Technologies at Alexandria University	2023	2024	1	National
12	Faculty of Science	Sustainable technologies and methodologies to improve quality and extend product shelf life in the Mediterranean agro-food supply chain	2020	2024	4	National
13	Faculty of Science	Sustainable Resource Management Programme to solve Desert-ed challenges	2020	2023	3	International
14	Faculty of Science	Beneficial role of insect-based therapy to target liver tumor	2021	2024	3	National
15	Faculty of Science	Agricultural sustainability and water reuse in Egypt : innovative wastewater treatment and soil health	2021	2024	3	National
16	Faculty of Science	Monitoring and Management of Harmful Algal Blooms in northern Coastal Waters of Egypt for ensuring food safety	2022	2024	2	National

17	Faculty of Science	Actinomycetes cell mass as a non-traditional feed ingredient in aquaculture fish diets	2023	2025	2	National
18	Faculty of Science	Green synthesis of novel ferroptosis inducers endowed with enhanced anticancer potential via interaction with additional targets	2023	2026	3	National
19	Faculty of Science	Downscaling atmospheric components over Egypt under different future climate change scenarios (2065-2100)	2022	2024	2	National
20	Faculty of Science	Avocado peel methanolic extract could modulate the PI3K/AKT/SIRT-1/HIF1 signaling pathway and treat high-fat diet-induced liver fibrosis in rats	2023	2026	3	National
21	Institute of Graduate Studies and Research	Enhancing Resource Recovery and Improving Wastewater Reuse Through Synergistic Cooperation between Bioelectrochemical Systems and Forward Osmosis	2019	2024	5	National
22	Institute of Graduate Studies and Research	Feasibility Study for Developing Large Scale Narrow Band Gap Polymeric Solar Cell: Technical Challenges and Life Cycle Economic	2020	2023	3	National
23	Institute of Graduate Studies and Research	Universities resilient to climate change: Public awareness, sustainable education and technology development as principal strategies towards net Zero Carbon Campus	2023	2024	1	International

C) Alexandria University
Interdisciplinary Projects Concluded successfully in 2022

No.	Faculty Name	Project Theme
1	Medical Research Institute	Development of Antimicrobial Electrospun Polymeric Nanofibers Composites Membrane for Municipal Water Safety : prototype Construction
2	Faculty of Science	Powerful strategy for treating triple negative breast Cancer: Silencing miR-21 by small interfering RNA loaded-Chitosan Nanoparticles
3	Faculty of Engineering	Design and Implementation of a Smart and Hybrid Multiport Solid-State Transformer for Marine Applications
4	Faculty of Science	Improvement of the Performance of Reverse Osmosis Membranes using Eco-friendly Materials
5	Faculty of Agriculture Saba Pasha	Development of an Irrigation Management Information and Communication System (IMICS) for the humid tropical region of Kerala and for the dry climate of Egypt as a decision support systems (DSS) tool to improve crop productivity.
6	Faculty of Engineering	Alexandria University Center of Excellence for Smart Urban Governance (ALEXU-COE-SUG)
7	Faculty of Science	Synthesis, characterization, and computational studies on new synthesized azo-based ligands and their metal complexes