



Helwan University

Faculty of Arts

Department of Geography and GIS

Research Plan for Geography and Geographical Information Systems Department (2025 – 2029)



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Introduction

Considering the rapid developments taking place worldwide in various fields, scientific research has become an urgent necessity to support innovation and sustainable development. The department of Geography and Geographic Information Systems at the Faculty of Arts, Helwan University is distinguished by its contribution to this through its three important divisions: Cartography and Surveying, Environment, and the General sections. These divisions contribute to offering integrated solutions to environmental, social, and economic issues through applied and theoretical research that keeps pace with modern scientific advancements.

The research plan (2025–2029) aims to enhance the standing of the department of Geography and GIS by developing research tools, supporting local and international partnerships, and focusing on pressing societal issues. It provides a strategic framework that aligns with the university's goals in research leadership and community engagement.

Vision of the department of Geography and Geographic Information Systems

The Section of Geography and Geographic Information Systems at the Faculty of Arts, Helwan University aspires to be a leading and distinguished academic center at both the local and regional levels in the fields of education, scientific research, and applied innovation. The section seeks to lead in producing advanced geographic knowledge, employing modern geospatial technologies, and offering innovative and sustainable solutions to developmental and environmental challenges. Through its specialized divisions—Cartography and Surveying, Environment, and the General Division—the section aims to become an academic and research reference that serves society locally, regionally, and globally.

Mission of the department of Geography and Geographic Information Systems

The mission of the department of Geography and Geographic Information Systems is to prepare specialized professionals with strong academic and practical skills in the fields of cartography, surveying, environmental geography, and general geography. The department is committed to offering high-quality, multidisciplinary education that integrates theory and practice, utilizes the latest geographic and GIS technologies, and produces scientific research that addresses real-world environmental and developmental issues. It aims to strengthen partnerships with the community and develop regional and international collaborations to enhance its role in addressing societal challenges and contributing effectively to innovation and sustainable development.



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Objectives of the Research Plan (2025–2029) – Geography and Geographic Information Systems Section

1. **Excellence in scientific research and addressing contemporary issues**
 - Focus on applied research that tackles pressing environmental, social, and economic challenges at both the local and international levels.
2. **Enhancing research diversity**
 - Promote research in emerging fields such as digital geography, climate change, and natural resource management.
 - Encourage creativity and innovation through projects using advanced tools and technologies such as geographic information systems (GIS) and remote sensing.
3. **Support for scientific collaboration at national, regional, and international levels**
 - Establish partnerships with global research centers through cooperation agreements.
 - Encourage faculty members to publish joint research with international researchers.
 - Highlight the section's research achievements through conferences and workshops that attract external scholars.
4. **Improvement of the internal research environment**
 - Develop research infrastructure such as laboratories, digital libraries, and advanced software.
 - Launch annual research awards to encourage outstanding projects.
 - Secure sustainable funding through local and international grants and partnerships with the private sector.
5. **Encouraging student participation in research**
 - Engage postgraduate students in priority research projects and guide them toward real societal issues.
 - Provide training programs, workshops, and seminars to enhance student research skills.
 - Launch student research initiatives and offer small grants to support innovative ideas.
6. **Promoting scientific research in service of community and sustainable development**
 - Focus on critical issues such as climate change, water management, desertification, and informal housing.
 - Promote scientific solutions for natural resource management and rural development.
7. **Increasing scientific publications locally and internationally**
 - Motivate faculty members with financial and moral rewards for publishing in high-impact journals.
 - Create a centralized research database to document and facilitate access to publications.
 - Expand digital publishing to enhance the visibility and impact of research.



8. Strengthening the academic standing of the section

- Improve the section's academic ranking at the regional and international levels.
- Launch a peer-reviewed academic journal in geography to provide a platform for research dissemination.
- Promote the value of the section's research through periodic reports and media visibility.

9. Developing research plans in line with global changes

- Anticipate future challenges and adjust research priorities accordingly.
- Integrate digital transformation into research tools and methodologies.
- Benefit from international best practices to continuously improve the research framework.

Methodology of preparing the research plan the department of Geography and Geographical Information Systems 2025 – 2029

The methodology for preparing the research plan of the Geography and Geographic Information Systems is based on comprehensive scientific and strategic foundations. It ensures alignment with the university and faculty's visions, modern developments in scientific research, and societal needs. The following steps were undertaken in preparing the plan:

1. Analysis of the Current Situation of the Section

- **Review of past performance:**
 - Assessment of the section's research achievements over the past ten years, including the number of published papers, organized conferences, workshops, and completed research projects.
- **Evaluation of strengths and weaknesses:**
 - Assessment of available resources such as laboratories, human capital, and technical capabilities.
 - Identification of challenges hindering scientific research.
- **Review of global research trends:**
 - Analysis of current developments in geography and GIS.
 - Exploration of future research opportunities in the field.

2. Identification of Research Priorities

- **Alignment with national and global goals:**
 - Harmonizing the research plan with Egypt's Vision for Sustainable Development 2030 and the United Nations Sustainable Development Goals (SDGs).
- **Focus on urgent societal challenges:**
 - Prioritizing environmental, social, and economic challenges such as climate change, urban management, population issues, and regional planning.



3. Stakeholder Engagement

- **Utilization of academic expertise:**
 - Conducting workshops and meetings with faculty members and assistants to discuss high-priority research issues.
- **Involvement of students and researchers:**
 - Listening to the needs of postgraduate students and researchers and involving them in the preparation and implementation of the plan.
- **Collaboration with the community:**
 - Engaging with governmental and non-governmental organizations, as well as the private sector, to align the research agenda with societal needs.

4. Drafting the Research Plan

- **Defining clear and measurable research goals:**
 - Setting goals that reflect the aspirations of the Geography and Geographic Information Systems Section and its three specialized divisions (Cartography and Surveying, Environment, General Division).
- **Designing research activities:**
 - Preparing a detailed action plan including workshops, scientific conferences, joint projects, and academic publication.
- **Setting timeframes:**
 - Assigning specific time periods for each goal and activity, taking into account research priorities.
- **Resource allocation:**
 - Determining the financial and human resources needed to achieve goals and sustain research operations.

5. Review and Approval of the Plan

- The plan was prepared by a scientific committee within the section and approved by the section council (session No. 332, dated 2 December 2024). The committee consisted of:
 - **Prof. Ashraf Al-Abd** – Chairman, Geography and GIS Section Council
 - **Prof. Omar Muhammad Ali**
 - **Prof. Magda Gomaa**
 - **Prof. Nasr Al-Deen Salem**
 - **Prof. Tarek Kamel**
- A mechanism was also set for **annual evaluation and review** to ensure the plan remains up to date with scientific and societal developments.



6. Performance Monitoring and Evaluation

- **Success indicators:**
 - Measuring progress through indicators such as the number of published research papers, postgraduate student enrollment, and international partnerships.
- **Follow-up mechanisms:**
 - Forming an internal committee to monitor the implementation of the plan and report progress periodically.
- **Feedback and continuous improvement:**
 - Using feedback from students and stakeholders to improve the plan and guide long-term research development.

Conclusion

This methodology serves as a strategic roadmap for developing and implementing the ambitious research plan of the Geography and Geographical Information Systems Section. It is expected to strengthen the section's academic and community role at the Faculty of Arts, Helwan University and to support the achievement of sustainable development goals across relevant fields.

Research plan of Geography and Geographical Information Systems Section 2025 - 2029

Objectives	Activities	Mechanism	Outputs	Success Indicators	Implementation periods	Finance source	Section responsible for implementation
1. Excellence in scientific researches in terms of novelty and variety of research topics	Design multi-disciplines research programs in line with the modern issues and establish partnerships with research centers	Regular assessment for the scientific research plans and developing them based on the research priorities	Enhance the quality of researches published and their diversity	Publish high impact researches in international journals and increase the research awards	2025-2029	Internal resource and research grants	Scientific Section
2. Promoting enrollment in postgraduate studies among Section graduates and newcomers to continue their academic study after graduation	Organize introductory forums and workshops that shed the light on the postgraduate studies	Develop electronic system to manage the applying and existing students' data	Increase the rate of postgraduate studies admission	Increase the percentage of joining students, and the academic satisfaction	2025-2029	University and societal partnerships	Faculty members in collaboration with postgraduate management
3. Enhancing the effectiveness of syllabuses and	Provide courses about the modern	Use the help of Faculty members to	Improve the education quality in	Increase the satisfaction and success	2025-2029	Internal resource	Scientific Section



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postgraduate programs, and making sure that they are compliant with the professional and scientific metrics required and the expectations of the concerned parties	curriculums design	develop the educational regulations and postgraduate studies programs	postgraduate studies	rate of the students			
4. Local and international publishing	Provide courses about international publishing methods	Create competitive incentives to support the scientific research	Increase the rate of scientific publishing	Increase the number of papers published internationally and win research awards	2025-2029	University	Scientific Section
5. Cooperation with business organizations in labor market	Design applied research projects that match the society needs	Form research teams to address the societal issues and serve the surrounding environment	Enhance the links between scientific research and labor market	Increase the number of research projects funded by businesses sector	2025-2029	Partnership with private sectors	Scientific Section and faculty management
6. Collaboration with academic experts	Organize conferences and joint workshops	Develop mechanisms that encourage academic cooperation with the experts	Improve the quality of research and teaching through collaboration	Increase the ration of joint academic production	2025-2029	University and supporting organizations	Scientific Section
7- Preparing staff in the field of scientific research	Prepare programs to support young talents	Provide workshops and advanced courses	Form a base of promising researchers	Increase the number of scientific awards winners	2026-2027	Research grants and university support	Scientific Section
8. Local, regional, and international contributions	Organize annual local, regional, and international scientific conferences	Provide moral support to the participant researchers	Improve the academic level of staff working with maps, area, and environment	Increase the number of researches submitted in the conferences	2026-2028	University, sponsors	Scientific Section
9. Enriching the cultural movement regionally and internationally	Develop cultural events that have international scientific dimension	Establish partnerships with international cultural institutions	Raise the scientific and cultural awareness	Enhance the cultural position of the Section on local, regional, and	2026-2028	Mutual fund between university and external partners	Scientific Section, and the cultural relationships management



				international levels			
10. Developing the interdisciplinary, economical, and social services in the various cognitive and scientific fields	Upgrade the training courses for Faculty Members	Develop the infrastructure for services centers	Improve the quality of services provided to the local society and surrounding environment	Increase the number of services provided to the local society and improve their efficiency	2026-2028	University	Scientific Section and the Faculty



Research priorities of Geographical Information Systems 2025 – 2029

The research plan of the Geography and Geographic Information Systems encompasses a **balanced and integrated set of priorities** across all branches of geography, covering key domains at the Faculty of Arts, Helwan University. These domains include human and physical geography, GIS applications, environmental studies, political and economic geography, and remote sensing. The following outlines the major research themes:

Physical Geography

1. Natural resource management using remote sensing techniques
2. Drought and its impacts on agriculture and water resources in arid regions
3. Climate change and its effects on vegetation and groundwater
4. Geographic distribution of wildlife and the impact of agricultural activities
5. Environmental geography of marine habitats and the influence of human activity
6. Impact of climate change on population distribution, tourism, agriculture, and public health
7. Flood movement patterns using remote sensing
8. Geomorphology of valleys and its effect on economic activities
9. Coastal, riverine, desert, and lake geomorphological development
10. River basin management and its role in regional development

Economic Geography

11. Geospatial analysis of the role of small and medium enterprises in economic development
12. Sustainable use of natural resources
13. Economic geography of e-commerce
14. Spatial distribution of sustainable development in poor regions
15. The role of digital infrastructure in regional development
16. Impact of new industrial zones on rural and urban development
17. Environmental sustainability and economic development: case studies from developing countries
18. Economic geography of sustainable energy production
19. Spatial analysis of social justice in the distribution of resources and services
20. Using technology to improve regional planning and sustainability

Human Geography

21. Spatial analysis of forced migration and its impact on political boundaries
22. Urban and rural demographic changes due to migration
23. Population age structure and its influence on economic patterns



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24. Impact of urban sprawl on agricultural lands
 25. Spatial analysis of population aging and its effect on health services
 26. The role of green spaces in urban life quality
 27. Spatial analysis of informal settlements and their integration into urban planning
 28. Use of GIS in analyzing population distribution
 29. The role of women in rural development and their economic contributions
 30. Demographic shifts and their implications for service planning

Political Geography

31. Political geography of oil and gas pipelines and their impact on international relations
32. Political geography of the Nile River and its effects on basin countries
33. International waterways and their geopolitical influence
34. Geographical analysis of transboundary water conflicts
35. Political geography of renewable energy in the Middle East
36. Spatial analysis of cyberspace and its effect on national security
37. Border disputes and their impact on population distribution
38. Geopolitical transformations in the Middle East and North Africa
39. The role of regional alliances in shaping the new world order
40. Political geography of water conflicts and their impact on development

GIS and Technical Applications

41. GIS-based planning for smart cities
42. GIS analysis of chronic disease patterns
43. Industrial pollution mapping using GIS
44. GIS in the management of tourism sites
45. GIS in managing Egypt's population problem
46. GIS technologies in natural disaster prediction
47. Historical cartography using GIS
48. Spatial analysis of groundwater sources and their uses
49. GIS in planning healthcare networks
50. Studying coastal hazards (erosion, drought, coral reef degradation, etc.) and sustainable management of Egypt's coastal environments

Additional Notes:

- Priority is given to balancing applied and theoretical topics, as well as addressing both regional and global issues.
- The variety of topics reflects the comprehensive vision of the Geography and Geographic Information Systems Section.



Topics in which the research shall be suspended

- Traditional topics of physical geography.
- Traditional topics of human geography.
- Traditional topics of economic geography.



Annex 1

Opinion survey of faculty members to develop the five-year research plan

[2025/2029]

Dear colleagues,

Greetings,

The committee of preparing the research plan section is developing the five-year research plan for the academic year 2025/2029 in order to keep up with the scientific development and upgrade the researches level in the section, therefore kindly share your opinions with us concerning the following points:

Basic data

1. Name of the member:
2. Professional rank:
3. Discipline:

Data related to the research plan

4. List the intellectual production you prepared during the previous ten years
-
-
5. Specify the topical fields in which the research shall be suspended in the future
-
-
6. What are the research priorities to be focused in the research plan of libraries and information section 2018-2022 (*ordered by priority*)
-
-
7. Suggest the interdisciplinary research fields to be focused in the research plan of libraries and information section 2018-2022 (*ordered by priority*)
-
-



Annex 2

Opinion survey of stakeholders from Section, Helwan University to develop the five-year research plan – (2025/2029)

Dear colleagues,

Greetings,

..... Section is preparing a research plan to face the research needs of the society to keep up with the scientific and professional development locally, regionally, and internationally.

Kindly share your opinions with us to develop a mechanism to link the scientific research to the actual needs and solve the field-related problems in the professional work and consolidate the methods of collaboration with you.

Basic data:

1. Name
2. Employer
3. Educational qualification
4. Profession:
5. Experience duration:

Date related to leveraging the section researches

6. Are the results of scientific researched conducted by the section in your workplace being utilized?
- Yes () [go to question No. 8] - No ()
7. If the answer is (no), what are the reasons of lack of benefit from your point of view? (you can choose one than one)
 - Failure to deliver the results of the scientific research conducted by the section to the relevant work entities. ()
 - The research conducted by the section does not reflect the actual needs and problems faced in the field. ()
 - Lack of support from those in charge of information facilities for benefiting from research in the professional field. ()
 - Lack of mechanisms within the section for marketing the scientific research it produces. ()
 - Other (please specify the reasons):
 - *
 - *

