



Quality Assurance Unit – QAU

**Summary of the Scientific Research Plan**

**(Academic year 2017/2018)**

(Accredited by Board Resolution No. 2 dated 1/11/2017)

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### (1) Introduction:

High Institute for Engineering & Technology - Obour is an Egyptian institute that strives to develop and create a scientific research environment for faculty members and the assisting staff, as the board supports the innovative, creative and exploratory thinking that aids in achieving the Institute's vision and mission.

Hence, the research plan is directed towards serving the community and the surrounding environment, and seeks to achieve the objectives of sustainable development in the Egyptian society in accordance with Egypt's vision 2030.

#### High Institute for Engineering & Technology-Obour in brief

- Affiliated to the Ministry of Higher Education, was established under Ministerial Decree No. 2526 year 2008.
- Affiliated to the Egyptian Society for Quality and Training, which was established under Ministerial Decree No. 1025 year 1997, (a non-profit organization).
- Academic activities launched in the academic year 2008/2009 with the credit hours system, then institute transferred to the semesters system starting academic year 2017/2018.
- Includes three major programs: Electrical engineering (Electronics & Communication), Architectural engineering, and Civil engineering.
- Member in the Association of Arab Universities since its inception, the Arab Council for Training Arab University Students, and the Arab Union for Youth and the Environment.

#### Vision:

"Rising a prominent position among colleges and higher institutes for engineering sciences in Egypt, supplying the labor market with a distinguished graduate, and providing an advanced administrative and academic work environment for teaching, learning, scientific research, and community service and development".

#### Mission:

"The High Institute for Engineering and Technology - Obour seeks, through its architectural, electrical and civil programs, for the integrated development of the student's personality, and to build the professional foundations for a distinguished engineer who keeps pace with the developments of the labor market, capable of creativity, continuous learning, and production and development of applied scientific research to serve the community and develop the environment".

## (2) Methodology for preparing research plan

- 1- Developing a proposed structure for the plan and defining the research objectives in light of (the vision and mission of the institute - Egypt 2030 vision - the needs of society).
- 2- Gathering the available data to formulate and prepare elements of the research plan - Sources of data from the faculty members regarding the vision of the scientific departments and of the existing research topics.
- 3- Reviewing the proposals of research topics submitted by the scientific departments and their consistency with the research objectives of the institute.
- 4- Determining the resources required to implement the plan - an estimated budget for spending on the unit's activities shall be drawn up annually, in light of the disbursement mechanisms in force in the Covenant.
- 5- Formulating the plan and presenting it to the scientific departments - An initial copy of the research plan was prepared and presented to the scientific departments for discussion and opinion.
- 6- Plan accreditation and declaration by the Board of Directors - Plan was finalized, discussed in the Board of Directors, and approved.
- 7- Preparing annual executive plans - including the timetable for achieving the outputs and activities for the goals that have been identified and agreed upon.

## (3) Core values:

- Excellence and precedence.
- Quality (continuous improvement and development, and mastery).
- Professional ethics.
- Teamwork.
- CSR- Community Services Responsibility

## (4) Research plan strategic directions

### Objectives

High Institute for Engineering & Technology-Obour aims to develop a long-term research plan that reflects the integrated methodological framework for the academic and scientific aspects on one hand, and to study the extent of the gap between what is available and what is required to achieve objectives on the other hand.

Within the framework of this methodology, the research plan relied on the vision, mission and objectives of the engineering institute, and the formulation of a comprehensive research plan for all scientific programs in line with national standards and ethical and professional rules, knowledge transfer and continuous interaction with various societal parties in a way that contributes to achieving the goals of economic and social development, and linked to Egypt's strategic plan represented by the Sustainable Development Strategy - Egypt 2030.

#### Elements of implementing the research plan:

- a. Availability of financial resources.
- b. Development of the infrastructure of equipped laboratories, halls, library and information networks.
- c. Benefiting from the state's plan to support education and scientific research.
- d. Developing cooperation with civil society organizations and industrial organizations surrounding the institute.

#### Elements of the research plan's success:

Success of the research plan depends on developing a comprehensive vision for the elements of the plan that corresponds to the capabilities of the institute and its needs and levels of research, which must be taken into account, whether at the level of meeting the research needs of the institute or compatibility with the country's trends represented in the vision of Egypt 2030, and keeping pace with the latest technologies and global research trends. The success of the research plan also depends on:

- a. The belief of the human power in the heads and faculty members, assisting staff and administrators that the research plan of achieves the appropriate scientific form, which leads to effective participation in the implementation of what is required and which will not be accomplished except by the efforts of everyone.
- b. Commitment, desire, and willingness to achieve the required trends of research.
- c. Commitment to issue an annual completion report to follow up on the plan's work.
- d. Providing the necessary resources to complete the terms of the plan at the appropriate level.

### (5) Research plan orientation:

Over the next five years, the engineering institute focuses on the research problems that are addressed on several main directions, namely quality and excellence, with a focus on creating new concepts for the advancement of scientific research and community development in general, and encouraging support for local, regional and international partnership by maximizing the benefit from; participating in the membership of the Association of Arab Universities, and participation in the membership of the Arab Council for Training

**(6) Research plan axes:**

In light of the general orientation of the research plan, the scientific departments have defined their research axes as follows:

Scientific Dept.	Research Plan Axes	Resources available
<b>Electrical Engineering (Electronics &amp; Communication)</b>	<ol style="list-style-type: none"> <li>1. Meet the sustainable development requirements of energy.</li> <li>2. Maximizing the utilization of local energy resources (traditional and renewable).</li> <li>3. Development and modernization of solar energy generation control systems.</li> <li>4. Building a system to generate unconventional power for laboratory applications.</li> <li>5. Design and implementation of a multi-source power generation system.</li> <li>6. The field of satellites, spacecraft and terrestrial vehicles.</li> <li>7. Cryptography systems (information security in communication networks)</li> </ol>	<ul style="list-style-type: none"> <li>• Solar Energy Lab available at the engineering institute.</li> <li>• The National Authority for Remote Sensing.</li> <li>• Professional and research experiences of faculty members</li> </ul>
<b>Architectural Engineering</b>	<ol style="list-style-type: none"> <li>1- Planning and developing new cities to accommodate the rapid population increase without slums.</li> <li>2- The replacement and development of slums.</li> <li>3- Establishing a training center.</li> <li>4- Monitoring the area's resources and building systems.</li> <li>5- Study of urban development.</li> <li>6- Local community development.</li> <li>7- Improving housing efficiency.</li> </ol>	<ul style="list-style-type: none"> <li>• Environmental measurements laboratory available at the institute.</li> <li>• Cooperation with the National Center for Housing and Construction Research.</li> <li>• Professional and research experiences of faculty members</li> </ul>
<b>Civil Engineering</b>	<ol style="list-style-type: none"> <li>1- Managing water resources to achieve sustainable development (surface water - groundwater - rain harvesting - water quality - insurance against flood risks)</li> <li>2- Strengthening and consolidating the structural elements using new technologies.</li> <li>3- Developing survey applications in order to improve the accuracy of the different survey devices.</li> <li>4- Development of structural engineering to reach the highest levels of the international classification.</li> <li>5- Recycling construction waste to benefit from it and preserve the environment.</li> <li>6- Using environmentally friendly and low-cost alternatives to cement.</li> <li>7- Using modern technology in the concrete industry.</li> </ol>	<ul style="list-style-type: none"> <li>• Cooperation with the National Water Research Center.</li> <li>• Cooperation with the National Center for Housing and Construction Research.</li> <li>• Professional and research experiences of faculty members</li> </ul>
<b>Basic Engineering Sciences</b>	<ol style="list-style-type: none"> <li>1- Stopping the deterioration of the environment and maintaining its balance.</li> <li>2- Moving to more sustainable consumption and production patterns.</li> </ol>	<p>Professional and research experiences of faculty members</p>

**(7) Activities to implement the plan's objectives:**

1. Creating a clear mechanism to follow up the implementation of the research plan through clear KPIs to measure performance.
2. Establishing and publishing a database for research conducted by faculty members, and setting up mechanisms for updating them continuously.
3. Doubling local and international scientific publishing in various disciplines.
4. Establishing mechanisms to support research and contribute to its publication in international journals.
5. Establishing mechanisms to focus on the applied dimension in the research structure of research topics, especially master's and doctoral theses.
6. Encouraging research topics in the inter-fields between the institute's departments.
7. The participation of most faculty members in developing scientific research policies and plans.
8. Encouraging the assisting body to participate in local conferences, whether by attending or giving scientific research.

Dean

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