الـكـلـيـة الأسـتـرالـيـة فـي الكـويت
Australian College of Kuwait

ACK RESEARCH STRATEGY PLAN

2016 - 2021
June 2016

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CHAIRMAN INTRODUCTION

The Australian College of Kuwait (ACK) is dedicated to the development of human potential through its focus on learning and training. It has evolved since its commencement eleven years ago to become an educational institution that provides its students with knowledge, the practical skills to apply it and a positive attitude toward the work place.

Currently ACK is in the process of formulating a research strategy to guide future efforts and directions. Predominantly, emphasis will be on applied research addressing problems related to national priorities. These have been identified by the Kuwait Foundation of Advancement of Sciences (KFAS) as Energy, Water, the Environment, Innovation, and Entrepreneurship.[*]

To achieve its research goals, ACK will seek the collaboration of international institutions with expertise in the aforementioned priorities. It is hoped that the transfer of know-how will enhance local research capabilities. ACK will also engage with the local industry to ensure the local relevance of its applied research.

In so doing, ACK aspires to contribute to an environment of knowledge and a future where coming generations can adapt to the challenges of the modern world.

Abdullah A. O. Al-Sharhan
Chairman

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[*] The Kuwait Foundation of Advancement of Sciences (KFAS) has also identified Energy, Water and the Environment as a research priority for Kuwait.

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OUR RESEARCH VISION

Our faculty at ACK have always been involved in conducting research on individual and collaborative basis. In further support of this research output, the college has taken major steps in establishing an institution-led approach. This approach is targeted at enhancing the profile of ACK as a leading higher educational institution in applied fields of research relevant to its offerings. This decision is clearly embedded in Key Strategic Goal 2 of ACK's Strategic Plan for 2015-2020: "A teaching model that is focused on continuous improvement of our teaching, is highly valued by our students and our international partners and supported by research relevant to our applied curriculum".

Our research vision is to enhance the profile of ACK as a higher educational institution by contributing to the pursuit of original research aimed at extending the boundaries of applied knowledge. In support of this vision we aim at establishing and sustaining thematic lines of applied research that address priority areas aligned with the National Development Plan of Kuwait* and focused on real-life problems led by a strong engagement with industry. The form and character of our research strategy have evolved from discussions at the senior executive and college-wide faculty levels.

We will keep promoting an environment rich in opportunities for original research and innovation through constant support of faculty, infrastructure, and collaboration with organizations including Kuwait Foundation for Advancement of Science (KFAS), international partners, and industry in general.

Prof. Isam Zabalawi
President (Chair of the Research Council)

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* The Kuwait National Development Plan published by the Ministry of Planning (www.mop.gov.kw).

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OUR RESEARCH MISSION

01 To enhance the research profile of ACK locally and regionally.

02 To create national and international impact in the field of applied research.

03 To establish a research program supportive of the applied teaching model at ACK.

04 To create interdisciplinary and collaborative lines of research.

05 To sustain strong partnerships with research organizations (KFAS) and industry.

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RESEARCH KEY STRATEGIC GOALS

This document presents the five-year research strategy plan (2016-2021) which is aligned with the ACK strategy document. This plan provides the rational and details aimed at informing and guiding stakeholders involved in research activities radiating from ACK.

Our research strategy is underpinned by a general road map that establishes clearly defined stimuli. These stimuli are designed to build research capacity leading to various targeted research outputs. This approach is highly supportive in creating a successful and sustainable research plan. Through this plan, ACK will be providing researchers with seed funding and logistic support to conduct pilot research projects in priority areas. The projects supported by seed funds are expected to be further developed through partnership and funding from local, national, and international venues.

STIMULI
Themes
People
Infrastructure
Systems

CAPACITY
Environment
Research-oriented staff

OUTPUT
Scientific
Commercial

Figure 1. ACK Research Road Map

The ACK research plan is characterized by four key strategic goals that encompass the basic elements referred to in the road-map (Figure 1).

01 Establish thematic research areas with a strong association to national priorities.

02 Build research capacity amongst college constituents.

03 Enable access to infrastructure supportive of a research eco-system.

04 Develop and maintain effective and efficient research systems.

4.1
Key Strategic Goal 1
Establish thematic research areas with strong relation to national priorities

The Schools of Engineering and Business at ACK host a number of research interests that encompass theoretical and applied research managed by the ACK Research Center. However, with a stress on the applied nature of research, our main focus is based on themes that are aimed at serving the sustainable development of the State of Kuwait. Despite the fact that the college does not offer research oriented higher educational degrees, student engagement is injected in through projects to enrich the learning experience across college constituencieOur research themes are carefully selected to coincide with the priority areas stipulated by local research funding agencies. At the top of the list of these agencies is the Kuwait Foundation for the Advancement of Sciences (KFAS). The main overarching research priorities at KFAS are environment, water, and energy. Our college is working in close collaboration with KFAS in many academic activities including research, symposia, and conferences.

The eight specific research themes adopted by ACK Research Center are: Water and Environment; Energy; Materials; Mechatronics and Automation; Learning Philosophies and Frameworks in Higher Education; Business Management and Finance; Innovation and Entrepreneurship; and Marketing Communications. Projects conducted by the ACK Research Center are characterized by strong collaboration with KFAS and other government and industrial organizations. These partnerships are drawn upon to secure the applied nature of our research projects and themes are always abreast with the dynamic nature of industry demands. In addition, the themes at ACK have considerable common grounds in research areas with our international partners.

ACK Research Themes

4.1.1 Water and Environment

- Desalination & Water Treatment
- Sustainability & Green Buildings
- Air quality & Climate Change
- Waste Management
- Computational Fluid Dynamics

4.1.2 Energy

- Energy Efficiency & Conservation
- Renewable Energy
- Production Optimization & Enhanced Oil Recovery
- Reservoir Analysis & Simulation

4.1.3 Materials

- Material Behavior
- Nanotechnology
- Forensic & Repair of constructions
- Testing Methods

4.1.4 Mechatronics and Automation

- Electrical Machines & Controls
- Signal & Image Processing
- Control & Dynamics of Complex Systems
- Industrial Automation & Robotic

4.1.5 Learning Philosophies and Frameworks in Higher Education

- Employability Knowledge & Skills
- Project-Based Learning
- Mathematics Education for Business & Engineering
- Provisions for Learning Difficulties & Learning Support in Higher Education

4.1.6 Innovation and Entrepreneurship

- Sustainable Energy
- Small & Medium Enterprises (SMEs)
- Commercialization of Products & Services
- Manufacturing

4.1.7 Business Management and Finance

- Organizational Behavior
- Macro & Micro Finance

4.1.8 Marketing Communications

- Strategic Marketing
- Consumer Behavior
- Service Marketing
- International Marketing

Table 1 Objectives Under Key Strategic Goal 1: Establish Thematic Research Areas With A Strong Relation To National Priorities

Objectives	Mechanisms	KPI's - Annual
1.1. Reinforce a culture of applied research: Maintain a system that encourages and rewards research.	• Organize regular events to raise awareness of the importance of research to ACK constituencies • Establish Annual Research Awards • Introduce rewards for publications in Q1 and Q2 Journals	• Number of organized events • Number of research awards • Number of publications
1.2. Enhance the profile of ACK through support of research-related activities: Encourage regular research activities organized by academic departments which are open to the public.	• Introduce regular academic seminars open to public • Invite speakers on priority research topic • Encourage participation in academic events • Organize academic events	• Number of regular seminars • Number of invited speakers • Number of faculty participations in academic events • Number of organized academic events
1.3. Develop and revise applied research themes aligned with ACK offerings and the National Development Plan: Develop priorities aligned with the National Development Plan that will eventually become defining characteristics of ACK and potential areas for research excellence.	• Establish a Chairman List of National Challenges for projects of applied and entrepreneurial nature aimed at serving national needs • Evaluate the national research priorities and ACK faculty interests • Update research themes to maintain ACK profile abreast with national priorities • Enhance common areas of research between ACK and international partners	• Number of publications per research theme • Number of collaborative projects with CQUniversity • Number of collaborative projects with other institutions
1.4. Contribute to national industrial growth through research addressing real-life problems: Build strong partnership with industry and develop a database for applied research projects to be addressed by the faculty based on real-life problems.	• Develop a faculty-for-factory program • Explore local industry to conduct research which addresses real-life problems • Develop research-oriented consultation projects	• Number of faculty participating in faculty-for-factory programs • Number of industrial research projects • Funding acquired through external projects • Number of consultation projects

4.2
Key Strategic Goal 2:
Build research capacity amongst college constituents

Our college strives to recruit faculty with a strong background in applied research. Our faculty form the backbone of our research community. The research strategic plan places a central focus on developing the capabilities and capacities of our researchers. This is to be achieved through a provision of unconditional support from the ACK board and senior management team for all research oriented activities that are aimed at enhancing the profile of the college.

Moreover, the applied nature of learning at ACK, through its regionally unique project-based learning (PBL) model, enhances the possibilities for student participation in research projects. This student-teacher engagement enriches the learning development experience for both constituents. Global engagement is further reinforced with the presence of a strategic partnership in research with international institutions. The title of adjunct research professor is awarded to collaborators from ACK and our international partner institutions.

Table 2 Objectives Under Key Strategic Goal 2: Build Research Capacity Amongst College Constituents

Objectives	Mechanisms	KPI's - Annual
2.1. Attract and retain faculty with strong research background: Develop recruitment systems that enrich the faculty with the background necessary for effecting the thematic research focus stipulated in the strategy plan.	• Increase number of PhD faculty • Include relevant research background in recruitment policies • Prolong contractual periods for research-productive faculty • Establish and maintain research tracks with reduced teaching load	• Ratio of PhD to non-PhD faculty • Number of total publications for recruited faculty • Number of publications per recruited faculty in Q1 or Q2 journals • Retention rate of faculty • Number of faculty on the research track
2.2. Promote faculty professional and career development: Support and encourage career development for faculty through appropriate funding of research events and promotion policies that focus on research output.	• Include research performance in annual appraisal • Establish and manage a research focused promotion policy • Facilitate research funding • Encourage participation in academic events	• Number of faculty promoted • Number of internally and externally funded research proposals • Number of activities attended by faculty
2.3. Establish international partnerships: Develop agreements with international partners to collaborate on research of mutual interest and encourage researchers from both institutions to address established thematic focus.	• Develop strategic research partnership agreements with international partners • Introduce adjunct status in remote institutions for research collaboration • Provide funding for collaborative research	• Number of joint research projects with international partners • Number of faculty with adjunct status • Amount of funding for collaborative projects

4.3
Key Strategic Goal 3:
Enable access to an infrastructure supportive of a research eco-system

The infrastructure at ACK provides a wealth of opportunities for promoting innovation and research. We pride ourselves on having a campus that enriches academic and extracurricular learning experiences. The established ACK Research Center serves as an excellent venue to manage all research activities radiating from ACK. Our specialized engineering workshops and laboratories, supported with experienced multinational teaching assistants and technicians, are equipped with state-of-the-art tools and machinery. A selected number of our laboratories are being prepared for commercial testing and consultation work. This enhances interaction with industry and diversifies the learning experience for our students, faculty, and technicians. Further partnerships are being sought with industry to utilize their equipment and laboratory facilities in order to conduct further industry-led research. The workspaces for Project Based Learning (PBL) engage students and teachers in experiences rich in inquiry, critical thinking, research, and innovation. Moreover, the faculty offices and spaces support interaction and engagement in brainstorming and collaborative research. Our infrastructure hosts a set of computer laboratories and equipment supportive of research activities. The ACK library was amongst the first in Kuwait to host on and off campus access to academic literature and wider scientific resources.

Table 3 Objectives under Key Strategic Goal 3: Enable access to an infrastructure supportive of a research eco-system

Objectives	Mechanisms	KPI's - Annual
3.1. Manage research system within a research center: Establish a research center where all internal and external research activities are governed and managed through an appropriate set of committees, policies, and procedures.	• Activate and maintain the ACK Research Center administration • Promote research activities through the ACK Research Center	• Active assignment of a research center manager • Number of research-related initiatives led by the research center
3.2. Develop original research through our Innovation and Entrepreneurship Center (IEC): Support innovative original research that could be commercialized and has the potential to obtain patents.	• Activate and maintain the ACK IEC administration • Promote innovation-oriented research through IEC • Encourage technology transfer through patents and industrial commercialization • Encourage multidisciplinary projects between business and engineering	• Number of innovation and entrepreneurship related initiatives led by the center • Number of publications or projects related to innovation • Number of patents and commercial projects • Number of joint engineering-business projects
3.3. Maintain up-to-date laboratories and workshop facilities: The laboratories, IT systems, and workshops are important resources to the applied nature of research at ACK. They are to be maintained and updated on a regular basis.	• Develop an action plan for updating laboratory equipment to research standards • Seek and maintain minimum standards for commercial testing in engineering labs • Maintain a number of TA's and RA's to support research activities in labs and workshops	• Status of the action plan • Percentage achievement of the action plan goals • Number of available testing facilities • Number of third party tests performed at ACK • Number of TA's/RA's
3.4. Support library facilities with strong research resources: The library is committed to providing physical and electronic resources suitable for maintaining a faculty abreast with the latest research in their discipline and in-line with ACK priority themes.	• Maintain ACK library research oriented resources up-to-date • Explore possibilities to establish common subscriptions in online research resources with local partner institutions	• Allocated budget for resources and number of active subscription • Status of collaborative subscriptions

4.4
Key Strategic Goal 4:
Develop and maintain effective and efficient research systems

The ACK Research Center is underpinned with a supportive system that ensures effectiveness and efficiency of research activities. The Center is sustained by appropriate and competent staff to execute regular research activities. The governance model, portrayed in Figure 2, engages the senior management team and the faculty in the evaluation process to make sure our funded projects are of good quality and that they are within the ACK research themes and focus areas. The developed research plan maintains a clear focus which aims to build a defining character for the College and guide our faculty towards the goal of establishing excellence in selected areas. A clear set of policies and procedures safeguard our research system transparency and fairness, which are core values at ACK.
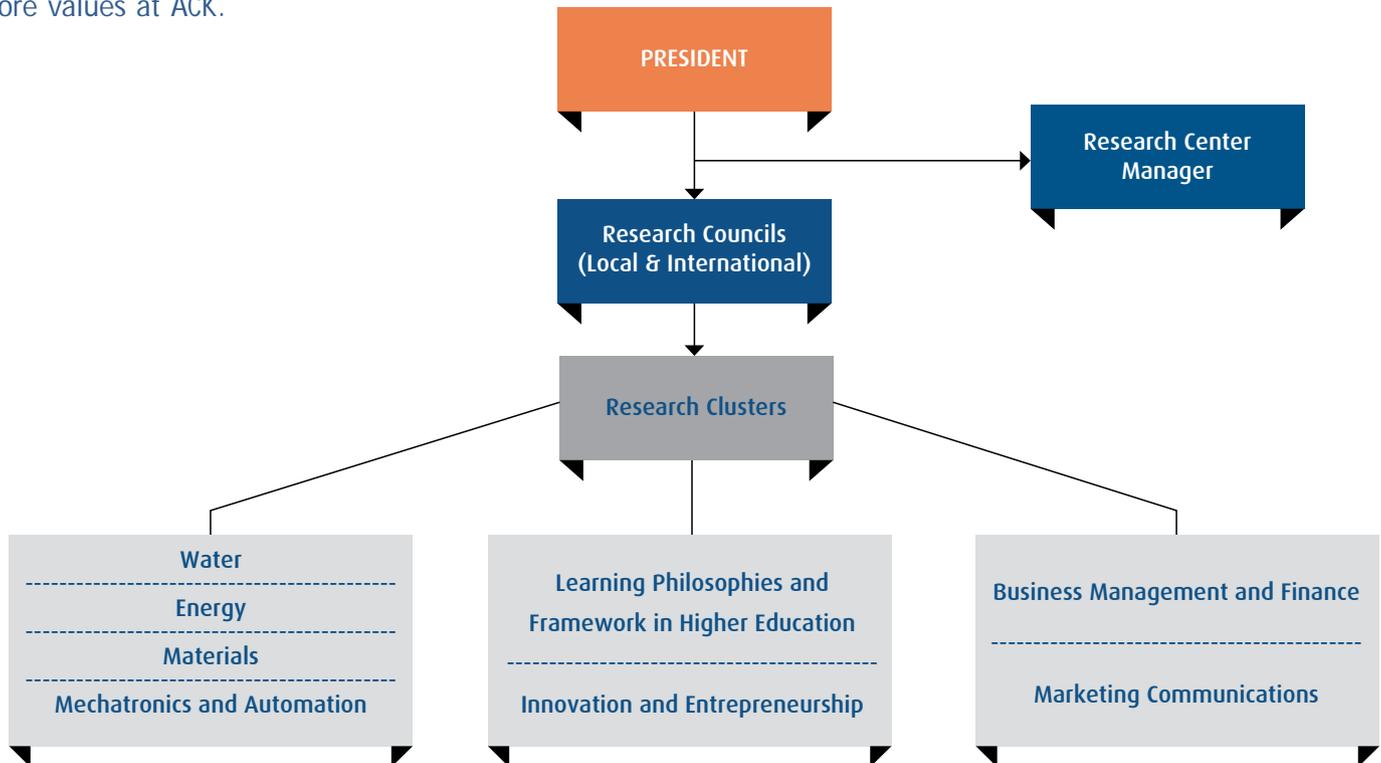

Figure 2. Governance Model for ACK Research Program.

Table 4 **Objectives under Key Strategic Goal 4: Develop and maintain effective and efficient research systems**

Objectives	Mechanisms	KPI's - Annual
4.1. Transparent and responsive research governance: The research governance ensures appropriate delegation of tasks and promotes an environment of effectiveness and fairness in the research systems.	• Manage research center activities through the established governance model. • Publish annual research activities and achievements	• Status of ACK Research Center as reflected by its activities • Publishing of annual review on research status at the College
4.2. Supportive budget model: ACK has committed to provide an annual budget to support research projects within the strategy plan. This budget is subject to increase based on proven quality research output.	• Manage effective and efficient use of annual ACK research budget • Enhance research budget through evidence of achievements	• Percentage spent of allocated research fund • Number of publications per research fund
4.3. Focused research plan: The research framework emphasizes focus be placed on the approved ACK strategy plan.	• Develop, update, and publish documentation in the research strategic plan • Encourage research clusters	• Status of research strategic plan • Number of projects initiated through research clusters
4.4. Clear set of policies and procedures: The policies and procedures for research at ACK are supportive of the research strategy, transparent, properly communicated to faculty, and regularly visited for improvements.	• Develop and update policies and procedures • Organize regular awareness and feedback communications with faculty	• Status of policies and procedures • Number of research awareness related activities

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