



The
BRITISH
UNIVERSITY
IN EGYPT

FACULTY OF ENERGY
AND ENVIRONMENTAL
ENGINEERING

FACULTY OF ENERGY AND
ENVIRONMENTAL ENERGY AND
ENVIRONMENTAL ENGINEERING
STRATEGIC PLAN
2018-2022

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FOREWARD

The Faculty of Energy and Environmental Engineering at The British University in Egypt is stated to initiate the undergraduate program in the educational year 2018/2019. The Faculty of Energy and Environmental Engineering is an effective and modern faculty that offers the most diverse range of engineering energy specialism in Egypt. The overall mission of the faculty is to provide a broad spectrum of education, research and awarding of locally and internationally accredited degrees in the fields of Energy and Environmental Engineering that enables graduates to develop their knowledge, skills and entrepreneurship, and to contribute to the development of the community. The BUE is an Egyptian private university within the framework of Egyptian educational law and regulations providing a British style of education with an ethos consistent with UK quality assurance and academic standards.

The Faculty of Energy and Environmental Engineering undergraduate programmes comprise a preparatory year followed by four years in one of three programmes each of which will lead to a Bachelor of Science degree. The faculty undertakes high quality academic and applied research of relevance to energy, industry and the economy of Egypt and the Middle East. The curricula offered in the Faculty of Energy and Engineering programmes emphasis both theoretical and practical aspects including design and implementation. It provides students with theoretical and practical skills that industry and employers require. The Faculty of Energy and Environmental Engineering maintains close partnership with the energy and industry sector in Egypt and beyond which substantially benefit the students.

Students in The Faculty of Energy and Environmental Engineering study in an environment that encourages diversity and innovation. Staff are not just academic experts in their field but often have 'real life' practical experience, which they bring to their subjects, as well as close contacts with the 'world of work'. In this way students in the Faculty of Energy and Environmental Engineering learn not just what to think but how to think. With the recent development of the new BUE strategy 2018-22, in support of Egypt's vision Egypt-2030, it is imperative that the faculty of Energy and Environmental Engineering revise its new strategic plan to ensure its alignment with the strategic interests of the whole university and the country.

ACHIEVING OUR AMBITIONS

The Faculty of Energy and Environmental Engineering's ambition is underpinned by a clear vision and mission, and the adoption of a number of core values and operating principles.

THE BUE VISION

BUE will be highly ranked and internationally respected, making a significant contribution to the development of Egypt and the MENA region.

THE FACULTY VISION

The Faculty of Energy and Environmental Engineering strives to be regionally recognized as a leading institution which offers students and researchers a variety of internationally accredited energy engineering programmes. The faculty is characterized by professionalism and research as well as its contribution to community development and facing its challenges.

THE BUE MISSION

Operating on a vibrant 21st century university campus, offering a modern innovative British style education producing distinctive, highly employable and high calibre graduates contributing to the development of Egypt and MENA region.

THE FACULTY MISSION

The mission of the Faculty of Energy and Environmental Engineering is to provide a broad spectrum of education and research to offer nationally and internationally recognized quality degrees in energy and environmental engineering that enable graduates to develop their knowledge, skills and initiative to contribute to community development

CORE VALUES

To promote our unique identity through:

- Mutual respect in a multicultural environment.
- Academic honesty and integrity.
- The maintenance of high academic standards.
- Development of innovative partnerships with business, industry, charitable foundations, and healthcare
- Continuous quality improvement.
- The development of the Faculty's community.
- Contribution to society through the pursuit, dissemination, and application of knowledge.
- Education which enhances graduates' ability to learn throughout life.
- The full engagement and involvement of staff, students and alumni.
- Open and transparent leadership and management.
- Concern for sustainability and the relationship with the environment.

OPERATING PRINCIPLES

In accordance with the founding principles our operating principles are characterized by:

- Governance that ensures a dual Egyptian/British board and a credible system that ensures transparency and academic independence.
- Quality assurance mechanisms that ensure that standards are equal to those of the British validating institutions and that students have a comparable experience to those in the UK.
- State of the art programmes that underpin our graduates' abilities to achieve their potential in a highly evolving and developing profession.
- Emphasizing student's self-learning and critical thinking, in order to allow them the ability to excel and continuously develop their creative problem-solving skills.
- A research lead education with the majority of our staff engaged in state-of-the-art relevant research that informs their teaching and curriculum development.
- Industrial engagement and integration with the faculty's activities and objectives.

CONTEXT

1. THE SIZE & SHAPE OF THE FACULTY

The Faculty of Energy and environmental engineering student population in 2023 is expected to be around 500 students in the three Programmes: Renewable Mechanical Energy, Renewable Electrical Energy, Biomechanical Engineering, with expected increase in the capacity of students each year. Also, it is planned to add two new undergraduate programmes in the period between 2018 and 2023.

2. VALIDATION & ACCREDITATION OF ENERGY AND ENVIRONMENTAL ENGINEERING PROGRAMMES

All energy and environmental engineering degree programmes are accredited by the Egyptian Supreme Council of Universities (SCU). Accreditation of programmes also will be sought from International Professional and Statutory Bodies, where appropriate.

As a strategic objective, all undergraduate energy and environmental engineering students shall be eligible, on entry to the Faculty, to study on a dual degree track and obtain a BUE degree and a UK degree awarded by a leading UK University, subject to satisfying the regulatory requirements for the award of each degree.

3. RESEARCH FRAMEWORK

The Faculty of energy and environmental engineering academic staff are currently pursuing research in a broad range of areas to support all departments in energy and environmental sectors. This is strongly stimulated and supported by the Faculty through various incentives and support mechanisms. There are key research areas aligned with our stated mission and the Faculty wishes to witness developing in these key areas.

In addition to the individual research plans and activities within each department, the faculty aims to establishing multi-disciplinary research groups for the emphasis in development of research teams responsible for writing of research grant proposals, in addition to encouraging multi-disciplinary research activities. The following lists the main research groups within the faculty:

- ENERGY
 - Fossil Fuels
 - Energy Saving & Integration
 - Renewable Energy
- WATER
 - Water Resources
 - Water Treatment
- ENVIRONMENT
 - Visual Pollution
 - Water Pollution
 - Electro-Magnetic Pollution
 - Noise

The faculty environmental plans are to initiate several research centres which aids to engage staff in collaborative research activities and improving the faculty's research capacity in strategic research areas, the faculty also aims to validating most of the research lab facilities by certifying their outcomes. The following lists the projected research centres within the faculty of energy and environmental engineering:

- Centre for Renewable Energy
- Centre for Biodiesel/Biofuel
- Centre for Modelling and Simulation

4. KNOWLEDGE TRANSFER & COMMERCIALISATION

The faculty plans to establish industrial linkage platform that is aimed at engaging the research community within the faculty of energy and environmental engineering with the industry. The platform is created to achieve several objectives, as follows:

- Engagement of industry in developing and updating our programmes;
- Engagement of students and industries towards better communities through community service learning and training programmes;
- Directing our research activities to solve industrial and environmental challenges;
- Engaging our students with the faculty staff for a better research unit;
- Engaging our senior students in developing innovative solutions to persistent industrial challenges;
- Offering our consultation expertise to solve challenges and/or design innovative industrial products;
- Offer our expertise through knowledge transfer media to relevant industries.

The launch of the BUE Science Park within the planning cycle is expected to enrich and add a new dimension to such activities.

5. INTERNATIONALISATION

The faculty is planning to attain several international collaborations with a range of researchers across the world. However, such activities are individual efforts that are not formulated within a structured framework. As one of the main six themes that are underpinning the new BUE strategic plan, internationalisation shall be taken forward by the faculty of energy and environmental engineering through an internationalisation implementation plan that aims at developing a platform for engaging staff and students in international collaborations and activities.

- Plan to achieve internationalisation:
 1. Program Validation with UK partner
 2. Staff exchange
 3. Hiring staff members from different countries
 4. Attend international scientific events (Conferences, Seminars, Research activities)
 5. Establishing international agreements in the field of energy

STRATEGIC OBJECTIVES & TARGETS

The Faculty of Energy and environmental engineering has specified strategic objectives and stated targets in order to attain the six themes which are underpinning the new BUE strategic plan. The objectives and corresponding targets are listed in the following discussion in three main areas that represent the platform for the faculty's activities including Teaching & learning, Research, and community services. In addition, it is important provide the needed support for achieving such objectives and targets through identifying the required enabling structures and mechanisms.

I. TEACHING & LEARNING

Strategic Objective

We will ensure that the students are active participants in their learning and are provided with a transformational Student Experience to enable them to excel whilst developing graduate attributes required by employers and for lifetime achievement across Egypt and the MENA region, through a technology enabled, high quality, and British style teaching and learning, within a vibrant 21st Century setup.

The primary goal of the Faculty of Energy and environmental engineering is enhancing the quality of the student experience at BUE to contribute in raising our profile as a Faculty of high quality and standards. There are various aspects to achieving this status: attracting the highest quality students; hiring a research active academic staff capable of delivering UK higher education in accordance with the British standards; delivering effective, communicative and innovative methods of teaching; providing a learning environment that encourage our students to become independent learners and to realise their potential. Each of the set objectives is mapped to the themes and their corresponding objectives and/or targets, in the BUE strategic plan, to ensure and demonstrate compatibility of both plans, this is indicated between brackets at the end of each objective to reflect the theme number and the corresponding objective number.

OBJECTIVES

- TL1 Develop new undergraduate programmes to support Egypt's development (1.a);
- TL2 Embed entrepreneurial skills as an integral element within all programmes (1.b);
- TL3 Introducing consultation to different sectors in Egypt & establishing certified in the areas of energy (1.4);
- TL4 Introduce the concept of sustainable design in all programmes (1.c);
- TL5 Reward innovative and creative teaching activities;
- TL6 Introduce online learner support resources relevant to programmes of study (2.a);
- TL7 Convert all frequent student services to online media (2.d);
- TL8 Propose alternative furniture options to allow for flexible classroom settings (2.e);
- TL9 Enhance Student Support Officer role (2.b);
- TL10 Deliver higher education that acquire the British norms (3.a);
- TL11 Develop staff and student exchange programmes (3.b);
- TL12 Redesign the faculty staff development programme (3.b)

- TL13 Maintain UK standards for quality of teaching (3.a);
- TL14 Review employability skills development activities within all programmes (3.c)
- TL15 Seek International collaborations with scientific and industrial institutions (5.d);

TARGETS

- T1-1 Develop at least 4 new undergraduate Energy programmes to support Egypt's development (Egypt's vision 2030) (1.1);
- T2-1 Identify at least one module, in each programme, where entrepreneurial skills are introduced and amend the module contents, as per the module changes cycle;
- T2-2 Develop at least two faculty wide events each year to engage students in an extracurricular entrepreneurial exercise;
- T3-1 Identify at least one module, in each programme, where the concept of sustainable design is introduced and amend the module contents, as per the module changes cycle;
- T4-1 Raise the student intake standard 5% annually up to 90%;
- T5-1 Develop a faculty council teaching excellence award scheme;
- T5-2 Provide high achieving students with up to 20 or more full studying scholarships;
- T5-3 Student will be allowed to study abroad for at least one semester;
- T6-1 Engage the CELT in developing online interactive tools for at least 50% of the modules in each programme;
- T6-2 Develop online engaging materials for all modules (2.1);
- T6-3 Deliver Student centred teaching and learning education
- T7-1 Establish computer labs to provide students with administrative and educational Services (2.2);
- T7-2 Full Technology Integration in teaching and learning
- T8-1 Select at least one classroom and propose an alternative furniture design to allow flexible classroom settings then use as a pilot testing bed for innovative teaching methods;
- T9-1 Expand the role of Student Support Officer to integrate with the University Academic Success Centre;
- T10-1 Validate all programmes in the faculty from UK partner (3.1);
- T11-1 Establish summer training internship (3.7);
- T11-2 Develop a one year off/on mechanism to allow students to spend one year, non-credit, at UK partner, in at least three programmes;
- T11-3 Ensure international internships annually for students and staff in international scale;
- T12-1 Deliver an appropriate staff development programme that advances the university staff development plan (3.3);
- T12-2 Introduce at least five new interactive workshops within the staff development programme (3.3);
- T13-1 Establish quality assurance unit (3.4);
- T13-1 Ensure that at least 50% of graduation projects are related to industry instigated challenges;
- T14-1 Engage future employers in FEEE's programmes (3.6);
- T15-1 Sign at least two national and international (Scientific- educational - consultations) agreements (5.5);

I. RESEARCH

Strategic Objective

Produce world-class research outcome that has economic impact on Egypt's development and applications in the international arena and reflects on the international ranking of the faculty and BUE, through knowledge COMMERCIALISATION schemes via the BUE Science Park platform.

The Faculty of Energy and Environmental Engineering at BUE is aiming to position itself, as a top contender among the academic institutions in Africa and the Middle East, as a research-led faculty where teaching is indicated by the research activities of its academic staff. The Faculty promotes applied research as a necessary and crucial part of its role within both academic and wider communities.

The Faculty of Energy and Environmental Engineering conducts broad-based, internationally competitive research that is relevant to the technological development of Egypt and the MENA region. It is building a strong academic base for matching with industrial and local communities for research-based problem solving, education, knowledge transfers and commercialisation, which shall integrate with the new BUE Science Park. It is establishing up-to-date central research facilities and infrastructure to support high quality national and international research teams and support the activities of the science park.

The Faculty of Energy and Environmental Engineering at BUE aims to be recognised internationally as providing centres of excellence in select set of research themes which fit within the strategic objectives of Egypt and the MENA region. It encourages the identification of areas of research strengths with the intention of developing further centres of excellence on which to focus its strategic support for research. Each of the set objectives is mapped to the themes and their corresponding objectives and/or targets, in the BUE strategic plan, to ensure and demonstrate alignment of both plans, this is indicated between brackets at the end of each objective to reflect the theme number and the corresponding objective number.

OBJECTIVES

- R1 Start a joint Ph.D. scheme for the Faculty's Teaching Assistants with UK partners (4.a);
- R2 Develop Faculty-Science Park integration scheme (4.c);
- R3 Attract, hire and support research active staff (4.a);
- R4 Attract significant research funds from external sources (4.c);
- R5 Attending high impact events and international focused conferences (5.a);
- R6 Establish an international medium to disseminate research outcomes; (5.b)
- R7 Encourage publications in high impact research journals (5.b).
- R8 Encourage new opportunities via developing international agreements or collaborations (5.d);

TARGETS

- R1-1 Explore the possibility of negotiating UK partners for a joint PhD programme (4.6);
- R2-1 Develop and propose an integral collaborative scheme for FEEE-TICO-Science Park operations to support innovations and research outcomes in the field of Energy (4.1);
- R3-1 Attract at least 4 new research active academic staff, with international expertise, one in each faculty's programmes (4.10);
- R3-2 Train staff and students on knowledge commercialization schemes (4.2);
- R4-1 Apply for external research funding (4.8);
- R5-1 Participate in national and international conferences and workshops (5.2);
- R6-1 Establish an international peer reviewed Energy and Environmental Engineering journal;
- R7-1 Establishing research units to help staff and student development for encouraging publication, supporting writing proposals and acquiring research grants.
- R7-2 Offer several workshops, annually, as part of the staff development programme to support staff publications in high impact journals;
- R8-1 Sign at least two national and international (Scientific- educational - consultations) agreements (5.5)

II. COMMUNITY SERVICES & ENTERPRISE

Strategic Objective

Deliver economic, social and cultural benefits to the wider community through the faculty's teaching, research, commercial activities, social enterprise, and community service, as well as through the impact of its students, graduates and alumni, this will contribute to the society's development and ultimately the economic development of Egypt and the MENA region through the establishment of an integrated industrial linkage scheme via a range of platforms including the BUE Science Park.

The Faculty of Energy and Environmental Engineering is planning to establish multifaceted professional dialogue with several industrial partners which resulted in the engagement of both sides in a fruitful collaborative scheme. The Faculty is also aiming to launch an entrepreneurial workshops and events to allow range of opportunities for individuals and teams to present promising innovative ideas in topics related to the faculty's focus (energy, water desalination, recycling). the Faculty is aiming at identifying a range of other services that could be offered to the community in light of its staff high expertise.

Within this broad strategy, the Faculty of Energy and Environmental Engineering at BUE will realize its aim in integrating their operations with the new BUE Science Park, as an active supporter of new and established SMEs (small and medium size enterprises) using the expertise of both the students and the staff by:

- Promoting enterprise (i.e. the ability to innovate, recognise and create opportunities, work in a team, take risks and respond to challenges);
- Assisting new and existing entrepreneurs to launch and grow their own ventures, by providing the necessary technical support;
- Working with stakeholders in Egypt, often with reference to curriculum and programme development, to advance opportunities for students and graduates, fund professorships and sponsor the upgrade of current facilities, etc.

Each of the set objectives is mapped to the themes and their corresponding objectives and/or targets, in the BUE strategic plan, to ensure and demonstrate alignment of both plans, this is indicated between brackets at the end of each objective to reflect the theme number and the corresponding objective number.

OBJECTIVES

- | | |
|----|---|
| C1 | Promote and widen opportunities and access to formal and informal learning across Egyptian society (1.b); |
| C2 | Produce employable graduates in fields of high demand across Egypt (1.b); |
| C3 | Design a range of informal learning platforms aimed at relevant industries (1.b); |
| C4 | Establish the knowledge of commercialization to support the faculty's structure (4.c); |
| C5 | Develop integral scheme for Faculty-Science Park collaboration to support innovation (4.c); |
| C6 | Identify multi-national companies that would establish R&D offices at the Science Park (4.c); |
| C7 | Expand the Industrial Linkage Platform to employ resources available (4.c); |

C8 Promote and develop opportunities for international agreements (5.d);

TARGETS

- C1-1 Establish a continued educational centres to Engineers (1.3);
- C1-2 Research will help to develop projects and enhance energy industries (1.3);
- C2-1 High quality graduate energy disciplines engineers (1.5);
- C3-1 Design at least three professional development workshops in each programme to be offered to practicing engineers as one mode of knowledge transfer (1.3);
- C4-1 Train staff and students on knowledge commercialization schemes (4.2);
- C5-1 Update the staff expertise directory and engage the CCCS in marketing the faculty's consultation expertise to the relevant industries (1.4);
- C5-2 Develop and propose an integral collaborative scheme for FEEE-TICO-Science Park operations to support innovations and research outcomes in the field of Energy (4.1);
- C6-1 Develop and propose an integral collaborative scheme for Faculty-Science Park operations to support innovations and research outcomes (4.1);
- C7-1 Communicate with the renewable energy industrial sector (4.4);
- C8-1 Sign at least two national and international (Scientific- educational – consultations – agreements) (5.5);

ENABLING STRUCTURES

Enabling Objective

To ensure the necessary structures and mechanisms are in place to support our academic ambition and the successful delivery of our strategic objectives.

Delivering and sustaining our academic ambition and strategic objectives will be dependent on the provision of an effective and efficient supporting infrastructure that relates to several key areas:

- To our **human resource capital**, including staff management, students' and administrators' development, progression and reward;
- To our **governance, leadership and management** structures, including sound financial **planning** and securing the requisite **resources** to ensure sustainability;
- To our **physical estate**, by providing a high quality learning and research environment that supports the student and academic experiences;
- To our **internal and external relations**, including our marketing, public relations and communication strategies;
- To our **internationalisation** strategy, by expanding our range of **UK and other global partnerships**

OBJECTIVES

- ES1 Strengthen and embed Governance and Leadership across the Faculty;
- ES2 Increase our sources of revenue;
- ES3 Ensure that our marketing, public relations and communications activities are targeted to meet our developing activities;
- ES4 Support a robust programme of maintenance and upgrading for classrooms and laboratories;
- ES5 Ensure our human resources are adequate and capable of delivering all planned objectives;
- ES6 Strengthen and develop our data collection and analysis mechanisms, to inform planning and decision making.

TARGETS

- ES2/3-1 Update financial planning mechanisms to ensure the availability of needed funds to cover all faculty's activities;
- ES4-1 Revise lab facilities upgrading plan, annually, to ensure any deferred items are considered;
- ES4-2 Update the lab facilities management framework, annually, to ensure maintenance procedures are implemented and consumables are purchased in a timely manner;
- ES4-3 Update health and safety risk assessments for all lab facilities, regularly, to accommodate the new additions;

- ES5-1 Update the staff development plan, annually, to embed new topics based on staff needs and review reports;
- ES5-2 Update staff recruitment plan annually, to ensure the availability of needed staff and the maintenance of the targeted staff/student ratio;

UNDERLYING IMPLEMENTATION PLANS AND MONITORING MECHANISM

In order to achieve the set targets and objectives, several detailed implementation plans shall be developed as follows:

1. Teaching & Learning plan
2. Research plan
3. Enterprise and Knowledge Transfer plan
4. Internationalisation plan
5. Enabling and Support Services plan

It is essential to monitor the performance of all implementation plans in order to ensure the results are in line with the projected targets. The following sections outline the mechanism for monitoring the implementation plans and ways to amend and adjust the strategic plan during its implementation.

IMPLEMENTATION PLANS MONITORING

In order to ensure the achievement of all targets and objectives, the faculty management team shall monitor the execution of all underlying implementation plans. The monitoring review is completed once every year to capture the performance of the faculty, as a whole, through the development of the annual faculty report.

In order to formulate an accurate image of the faculty annually, based on its performance, the following steps need to be completed:

1. Data Collection

The monitoring stage relies on sets of data that are usually collected at the end of each academic year. Data collection is conducted by communications with relevant central departments. Further data may be extracted from several online sources that are necessary to supplement the decision making process in some instances.

2. Data Analysis

The next stage that follows data collection is to conduct a thorough data analysis, which is important to achieve two main objectives. The first, relates to identifying recurring trends, anomalies and new beginning trends. The second is correlating relevant performance indicators in order to paint a complete image of the faculty's effectiveness and performance and would isolate potential solutions to under-performing indicators.

3. Feedback

The results of data analyses are expected to render potential recommendations that need to be taken into consideration within the decision-making process in order to reflect on an improved performance of the faculty in the following planning period, i.e., the following year.

FULL TERM STRATEGIC PLAN MONITORING

The full term monitoring cycle is conducted at the completion of the strategic plan term. Currently, the faculty is following a five-year strategic plan term. During the five-year term, annual implementation cycles are expected to have been conducted and resulted in updates to some or all of the developed action plans. Such amendments, updates and recommendations shall be grouped under main categories such as: proposals, new targets, amendments, etc. Such recommendations are then normally employed in informing the development of the new strategic plan for the following planning term.

REPORTING

The results of the planning mechanism, as explained in the previous sections, are communicated to the senior management and discussed in relevant committees and administrative bodies within the faculty through a reporting system structured as follows:

ANNUAL REPORTS

The faculty management team shall compile annual reports, submitted and discussed at the Industry-Faculty Liaison Committee and the faculty council. Both of the referred committees include external members representing the industrial and academic communities in Egypt. The approved final report shall be submitted to the BUE president to inform the senior management about the status of the faculty. Such annual reports mainly evaluate the execution of the strategic plan and the progression of all set targets. The report includes a section about new initiatives which might include recommendations for additions and/or amendments to the current implementation plans.

FULL TERM REPORT

The faculty management team shall compile a full term report linking all proposals and recommendations made through all previous annual reports. Further analysis and data collections are expected, at this stage, in order to extract strategic implications of proposed amendments and recommendations. In addition, the faculty management team might suggest one or all of the following and engage the whole community, internal and external, in providing feedback and recommendations:

- Amended vision of the faculty;
- New targets in all faculty's activities;
- Introduction of new programmes to reflect external changes;
- Terminate programmes that might not be operating at the expected standard;
- Reposition the faculty as a result of its perceived reputation;
- Internationalisation activities.

