Research Plan 2012-17

Research Task Group (RTG)
Research & Post Graduate Studies Committee (RPGSC)

2013
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INTRODUCTION

The BUE is aiming to position itself, among the academic institutions in Africa and the Middle East, as a research-led University where teaching is informed by the research activities of its academic staff. The University promotes both pure and applied research as a necessary and vital part of its role within both academic and wider communities.

The BUE conducts broad-based, internationally competitive research that is relevant to the socio-economic and/or technological development of Egypt and the MENA region. It is building a strong academic base for interacting with industrial and local communities for research-based problem solving, education, knowledge transfer and commercialisation. It is establishing up-to-date central research facilities and infrastructure to support high quality national and international research teams.

The BUE aims to be recognised internationally as providing centres of excellence in a select set of research themes which fit within the strategic objectives of Egypt and the MENA region. It encourages research activities in fields related to the Faculties’ activities with the intention of developing further centres of excellence on which to focus its strategic support for research.

University academics are currently pursuing research in a broad range of areas across all Faculties. This is strongly encouraged by the University. There are key research areas aligned with our stated mission and the University wishes to see critical mass established (or existing critical mass maintained) in these key areas. Therefore, these areas will be prioritised for support with the intention that they will grow as existing research centres or become new research centres.
RESEARCH VISION

“To establish the BUE as a leading research University in Egypt and the MENA region.”

The British University in Egypt is aiming to position itself, among the academic institutions in Africa and the Middle East, as a research-led university where teaching is informed by the state-of-the-art in research activities of its academic staff.

The British University in Egypt promotes both pure and applied research as a necessary and vital part of its role as a University within both academic and wider communities.

RESEARCH OBJECTIVES

The University’s strategic research objectives necessary to fulfil its stated vision are:

- Attract, develop and support research active staff;
- Grow the number of research centres;
- Develop research partnerships with quality research led institutions and research establishments;
- Attract leading academics to conferences and workshops;
- Attract significant research funds from external sources;
- Attract UK and internationally leading figures for externally funded collaborative research activities;
- Encourage academic staff to perform against recognised international metrics;
- Benchmark research performance;
- Obtain research degree awarding powers;
- Continue to support the existing Loughborough University part-time Ph.D. scheme for Teaching Assistants and develop similar schemes with other UK partners.

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RESEARCH TARGETS

In order to achieve the intended strategic objectives, the following targets are identified for the forthcoming five year planning period:

1. Establish at least three further research centres;
2. Establish at least three research partnerships with academic institutions for collaborative research on agreed projects of mutual interest;
3. Host at least one international conference per year;
4. Host at least three national workshops per year;
5. Attract research funds from external sources to a value of at least EGP 30M by the end of the planning period;
6. Attract five internationally leading figures across a range of subject areas for externally funded collaborative research activities involving grants of EGP 100k cash each;
7. Develop and implement a benchmarking mechanism for evaluating research performance;
8. Have each research active member of academic staff publish in Science Citation Index (CIS)-recognised or equivalent international journals;
9. Annually monitor and review academic staff citations and their Hirsch (h)-index;
10. Support at least 20 TAs to complete their part-time PhDs with Loughborough University and other partner universities under the agreed collaborative programmes by 2017;
11. Encourage our Teaching Assistants and graduates to undertake research degrees abroad and return to the BUE;
12. Obtain approval from the Supreme Council of Private Universities for the BUE to award its own PhD Degree as soon as feasible.
RESEARCH GROUPS & CLUSTERS

The BUE currently comprise six faculties, namely, Engineering, Business Administration, Economics & Political Science, Informatics & Computer Science, Dentistry, Pharmacy and Nursing. The research resources, skills and activities of all academic staff members contribute to the overall research agenda and achievements of the BUE. Within each faculty, specialized groups and clusters have been formed in order to guide activities toward strategic research objectives and efficiently employ research infrastructure and skills. The following outlines the major research groups and/or clusters and their relevant areas of strength presented by Faculty.

Realizing that productive research output should be relevant to socio-economic development of the country and the whole region, the BUE has identified a set of strategic research areas whereby it is believed that the country and the MENA region are in need for active research in such important areas. The BUE has outlined the following as its top strategic research areas:

- Energy
- Information Technologies
- Material Sciences & Technology
- Nanotechnology and its applications
- Reliability Engineering
- Robotics
- Smart Systems
- Theoretical Physics
- VLSI & Embedded Systems
- Medical Sciences
- Sustainability
1. ENGINEERING

The Faculty of Engineering (FoE) has six active programmes in addition to a basic sciences service department responsible for the delivery of mathematics and physics modules across all programmes. The six engineering programmes provide a British style of higher education underpinned by two main principles, these are; students centred learning and research active staff remembers. Student centred learning requires students to be active, responsible participants in their own learning. Having this style of education, the need and support for research activities become a vital component in the education processes. The University strategic plan 2012-2017 which has been approved in July 2012 strengthens the importance of research activities as an essential tool for a successful high standard education quality.

The main vision of the FoE is to become one of the leading engineering research institutions across a wide spectrum of state-of-the-art technologies which are of high importance for the country, the Middle East region and the international global market through a cooperative mechanism with locally and internationally recognized research leading institutions. In order to achieve such vision several research groups and/or clusters were established at the underlying departments within the Faculty. The following is a summary of the currently active research groups functioning in each of the six departments.

1.1. ARCHITECTURE
- Sustainable Design & Construction;
- Rehabilitation of Heritage Buildings;
- Construction Management;
- Urban Design and Development.

1.2. CHEMICAL ENGINEERING
- Energy Production and Conversion;
- Renewable Energy (Fuel and Solar Cells);
• Nanocatalysis and Photocatalysis;
• Petrochemical, Polymer, and Pharmaceutical Processes;
• Nuclear Power Plants;
• Environmental Risk Assessment;
• Water Desalination.

1.3. CIVIL ENGINEERING
• Structural Reliability & Smart Structural Systems;
• Nano-technology in Construction Materials;
• Advanced Composite Materials;
• Optimum Design of Substructures;
• Sustainable Water Treatment Technologies;
• Advanced Structural Design of Fibre Reinforced Polymers & Recyclable Green Steel.

1.4. ELECTRICAL ENGINEERING
• Digital communications systems;
• Digital signal processing;
• RF & Electromagnetics;
• Medical imagining;
• Energy harvesting systems;
• Nano-technology for PV systems;
• Grid Connect PV solar systems.
1.5. MECHANICAL ENGINEERING
- Accuracy assessment of mobile robots;
- Intelligent navigation of mobile robots;
- Production Optimization;
- Reliability-based maintenance;
- Environmental Impact Assessment;
- Thermal solar systems for power generation;
- Enhancement of solar collectors thermal performance;
- Control schemes of wind energy systems;
- Enhancement of the impact resistance of Composite Polymeric material using Nanotechnology;
- Macro, and Nano-fibre reinforced polymeric composites.

1.6. PETROLEUM ENGINEERING & GAS TECHNOLOGY
- Enhanced oil recovery;
- Reservoir simulation and well testing;
- Production optimization for oil and gas fields;
- Advanced well logging.

2. INFORMATICS & COMPUTER SCIENCE

In order for the Faculty of Informatics & Computer Science (ICS), and BUE in general, to advance its research output, faculty level research plans have been created that set the guidelines for and feeds into a unified research framework. This framework emphasizes research activities within and among faculties.
Research is a vital component to any university faculty, providing notoriety to its staff members, keeps faculty members at the forefront of their respective fields, and enhances teaching and learning by ensuring faculty members are fully up-to-date in their fields. The goal of the ICS faculty is to provide the BUE with a strong research ethos that will focus on scientific publications in internationally recognised journals, acquire funding from national and international scientific funding agencies, establish several named post-graduate degree programmes (both at the Master’s and Doctorate levels). And establish our faculty as a leading research venue for industry and governmental organizations throughout the region. Therefore, the following four main research clusters were established to guide and drive research activities that are relevant to the industry, community, Egypt and the MENA region as a whole.

- Biometrics
- Software engineering metrics
- Data mining and data warehousing
- Network simulation platforms

3. Business Administration, Economics & Political Science

The Faculty emphasizes Inter-disciplinary scholarly composition so as to encourage recombination and cross-validation of multi disciplinary concepts. Each department's research strategy is developed in the context of the whole Faculty and University research policies. Of particular strategic importance, is the role that effective research policies and practices play in developing strong academic and quality reputations not only in research itself but also in the teaching practices and faculty life of respected Universities. The individual Departments, and the Faculty as a whole, develop and improve research capabilities to produce effective research proposals in order to attract a steady stream of external funding to support its research aims and activities. As a result, the following research clusters were established within the Faculty of Business, Economics & Political Science.
3.1. BUSINESS ADMINISTRATION
- Accounting and Finance
- Entrepreneurship, Innovation and Development
- Operations Research and Operations Management
- Business Decision Information Systems
- Cultural and Ethical Issues in Business Behaviour
- Strategy and Marketing Research

3.2. ECONOMICS
- Economic Growth (Egypt & MENA Region)
- Monetary Policy & Financial Development in Egypt
- Education & the Labour Market in Egypt
- Poverty, Health & Inequality (Egypt & MENA Region)
- Institutionalism & Economic Development

3.3. POLITICAL SCIENCE
- Urban Problems and Policy
- Civil Society and Democratization
- Middle Eastern and North African studies

4. DENTISTRY, PHARMACY & NURSING

This section merges the research activities in medical sciences within the BUE. There are three faculties in the medical sciences area, at BUE, which are Faculty of Dentistry, Faculty of Pharmacy and the Faculty of Nursing. It is envisioned that the three faculties constitutes an integral research hub that emphasize research interests in the dental, pharmaceutical and nursing sciences which all congregate all relevant aspects of a given medical problem.

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4.1 Dentistry
The Faculty of Dentistry is aiming to be recognized as a centre of excellence in the field of dental research. The faculty has identified its vision as to improve oral health by nurturing academic and clinical excellence in the art and science of dentistry through education, research, patient care and community services. The faculty has identified the following research areas:

- Bone grafts for maxillofacial reconstruction;
- Orthodontic tooth movements;
- Dental implants;
- Grafting materials;
- Marginal integrity and fitness of ceramic restorations;
- Fracture resistance of ceramic restorations.

4.2 Pharmacy
The Faculty of Pharmacy aspires to become a remarkable and well known research institute encouraging and supporting the BUE Pharmacy's staff members and at the same time attracting young researchers or postgraduate students from other universities in different pharmaceutical fields. The Faculty has identified the following research areas:

- Determination of drug-impurities and degradation products in bulk and in different pharmaceutical dosage forms using HPLC-PDA and LC-MS/MS.
- Development of accurate and precise methods as HPLC and spectroscopic methods for the determination of different hypoglycemic drugs.
- Controlling the release of the drug and decreasing its degradation; to improve its efficiency, through preparing nano-vesicles which are niosomes & liposomes containing drug.
- Investigating the effect of giving Folic acid® and Neurobion® to HCV-infected patients during treatment with different types of PEG-IFN plus ribavirin in an attempt to evaluate its efficacy and safety as a prophylactic treatment to prevent hematological adverse effects.
- Studying the cytotoxicity and the constitutive phenolics of Myricaria germanica DESV, which is collected from Botanical gardens of the Universities Bonn and...
Regensburg, Germany, aiming to achieve candidate phenolics which could be used for the development of effective antineoplastic agents.

- Phytochemical study of The genus Markhamia belonging to the family Bignoniaceae, which is cultivated in Egypt, contains a number of medicinally important constituents.

4.3. **NURSING**

The Faculty has identified its mission to improve the health of individuals and community through excellence in nursing education and research. The Faculty has identified the following research areas to underpin its activities:

- Bundle of Care
- Evidence Based Practice
- Probiotic & Complementary Therapy
- Quality & Patient’s Safety
- Enhance health promotion and disease prevention
- Improve quality of life in chronic illness
- Healthy diet
- Nursing informatics & E-nursing
- Leadership & management in nursing
- Nursing shortage & recruitment
MULTIDISCIPLINARY THEMES

The BUE encourages its research community to engage in multidisciplinary research activities. Such activities might be overarching several departments within the same Faculty and/or engaging research staff in several Faculties within the BUE. Such multidisciplinary activities enhance the research outcome since it provides a holistic view of any given research problem and results in relevant comprehensive solutions to global problems. Some of the strategic multidisciplinary research themes identified by the BUE are:

1. Sustainability
2. Renewable Energy
3. Nano-Technology
4. Smart Systems
5. Entrepreneurship

Each one of these research topics might have different implications and/or issues within different disciplines. The collaborative research effort resulting by engaging multiple research teams emanating from all relevant disciplines would ensure a comprehensive solution to all of these problems. The BUE by identifying such research topics is recognizing its role towards the community and engaging its research force in providing relevant solutions to persistent global problems.

Other research problems addressing national, regional and international issues and/or phenomena shall be continuously identified and proper research teams assembled to address such issues.
**Research Centres**

The intensive involvement in research activities at BUE stems from its dedication to provide a successful demonstration of a research led university where research activities inform teaching. This objective is accomplished through the creation of unique centres of research excellence. The following outlines the range of research centres currently operating at BUE and their ongoing activities.

1. **Centre of Theoretical Physics (CTP)**

The Centre for Theoretical Physics (CTP) was established, at the BUE, in 2006. The Centre is the 1st of its kind in the Egyptian Universities. It conducts research work, holding international activities (Workshops, Conferences, Schools for young researchers, supervising post graduate students and providing grants for both post graduate and post doctoral fellows). The CTP has been chosen as the 1st Theoretical Physics Centre affiliated to the Abdus Salam International Centre for Theoretical Physics (ICTP), Trieste, Italy, in March 2011. It is now among six centres worldwide affiliated with the ICTP.

The CTP takes the responsibility of being the head quarters of the Egyptian Network for High Energy Physics (ENHEP).

The CTP has identified the following as its mission:

- Establish and sustain a community of scientists based at the British University in Egypt and dedicated to high level research in the primary fields of mathematics and theoretical physics.

- Improve the research profile of Egypt in these fields through an active program of conferences, workshops and specialized seminars.

- Attract leading international researchers as short-term guest scientists or as scientific associates collaborating with the local research community.

- Serve existing Egyptian academic and research institutions by providing access to the research activities of and developing academic links with the members of the Centre.

- Contribute to the promotion of science in general and of physics and mathematics in particular in Egypt, notably through an active program of lectures and other initiative aimed at improving the public understanding of science.
• Prepare an appropriate environment for a selected number of young scientists, Ph.D. and M.Sc. students, in order to do researches in their fields of theoretical physics.

II. CENTRE FOR ADVANCED MATERIALS (CAM)

The Centre for Advanced Materials was established at the British University in Egypt (BUE) under the umbrella of the Faculty of Engineering in September 2007. The main goal is to realize BUE’s vision of growing as a research-led university from the start of its inception in 2005. The centre’s vision is to be identified as an internationally recognized centre of excellence that serves research and development communities and industry in Egypt, the Middle East and beyond.

The centre defined its mission as to advance knowledge in materials technology as part of the national goal for acquiring and joining critical technology areas. A three tier goal defines the mission of the centre; research, service, education. In research, the mission is to provide a forum and environment for the advancement of research in materials science and engineering in collaboration with domestic and international researchers and institutions. Societal impact of the centre is through college and continuing education, and consulting services to the industry.

The Centre for Advanced Materials has acquired several research grants over the past few years. The centre is currently holding total funds of 11 Million Egyptian pounds in ongoing projects. The centre has managed to acquire a range of testing equipment, software packages and workstations to support its staff in their research activities.

The centre is currently actively engaged in the following focus areas:

• Polymer Science;
• Composite Materials;
• Nanotechnology and Smart Materials;
• Dynamic Behaviour of Materials and
• Finite Element Simulation.
III. CENTRE FOR RENEWABLE ENERGY (CRE)

The centre for renewable energy was established at BUE in January 2011 as a manifestation of the joint research collaboration initiative between BUE and LU and at the same time as a result of a well identified need of solutions for renewable energy in Egypt and the MENA region as a whole. The centre has identified the following as its stated mission:

- Developing a BUE research strategy meeting societal needs with respect to renewable Energy and Sustainability.
- Establishing partnerships and collaboration with LU Sustainability Research School (SRS) centre and similar centres in Egypt and abroad aiming at integration.
- Providing ideas and topics for undergraduate and postgraduate research projects which are part of the requirements for earning the relevant degrees.
- Building capacity for BUE to be a leader for research in Renewable Energy at the national and later the regional arena.
- Developing an action plan international and local collaborative research programmes.
- Continual development of BUE research capacity and strategy in view of Egyptian society needs.

The research interests, at the centre, are currently within the following areas:

- Solar thermal collection;
- Wind Energy;
- Desalination;
- Sustainability.

IV. CENTRE OF SUSTAINABILITY & FUTURE STUDIES (CSFS)

The Centre of Sustainability and Future Studies (CSFS) was a result of the success of the First International Conference on Sustainability and the Future (23-25 November 2010). The Centre has emerged as an important part of the BUE’s efforts to address future sustainability in terms of environmental, economic, and social challenges through the engagement of students, academic staff and researchers. The CSFS is envisioned to propose a suit of creative comprehensive solutions that tackle the future from a sustainable point of view.
view. The Centre organized the initiative and competition of Taking Leave in order to enable youth and scientific research to restore the spirit and awareness and write the history of the future. Therefore, issues resulted from the first stage of the competition with the youth ideas (53 new sustainable communities within the 95% of Egypt and 400 members of the youth) and their willingness to give more efforts in the coming stages.

For the future and as a result of the Taking Leave Competition it is expected to utilize the innovative ideas and data obtained from Stage I of the competition in the three different units of the centre of:

- Innovation, creativity and bank of ideas unit;
- Research and scientific studies unit;
- International cooperation GIS and Decision support unit.

The centre is now following up on the completion part of the competition which comprises a follow up second stage which will cover the applications of Green Architecture for the design of suitable residential models, and the design of a showcase pilot building that addresses pivotal economic and/or investment needs.
RESEARCH HISTORY AT BUE

Since the establishment of the British University in Egypt (BUE) in September 2005, it was envisaged to follow a research driven model that informs teaching through its academic staff’s involvement in various research activities. Such notion is important to ensure all academic staff are in the forefront of their relevant disciplines, in addition to the up to date knowledge being conveyed to its students. As such, the BUE is emphasizing the importance of research to its educational function through its involvement in industrial, community, national and regional research oriented problem solving.

Over the past seven years such dedication towards research engagement was manifested in a wide range of individual staff achievements, in addition to institutional capacity building activities which are summarized as follows:

2006-07
The following research activities have been accomplished:

- A comprehensive academic database, of all teaching assistants, has been established to reflect their respective research interests and activities.

- Several individual research proposals for external funding have been submitted.

- An updated conference funding guidelines and procedures were developed.

- Two national seminars were held at BUE to reflect current national strategic interests, entitled, “Nuclear Power Plants”, “Egypt and Climate Change in the 21st Century.”

- The online electronic repository for BUE research findings has been updated and redesigned to encourage research active staff for uploading their published work.

- A new Centre for Community & Consulting Services (CCCS) has been established which would seek industrial research links and funds.

- Several academic staff members have established and engaged in collaborative research.

- One new Research Centre was established;
  - Centre For Advanced Materials (CAM),

Research Task Group (RTG-RPGSC)
• Centre for Theoretical Physics (CTP) has published fifteen new publications in International journals and conducted three workshops

2007-08
The following short term targets were set in order to initiate the necessary steps required to fulfil the declared BUE strategic goals:

• The University should aggressively seek funding from sources such as the EU framework programme VII (a potential source of significant funding).

• To establish and activate links with the industry through the Centre for Community & Consulting Services (CCCS) and the centres of Excellence, CTP & CAM.

• To explore potential mechanisms for enabling postgraduate taught programmes.

• To encourage Post Doctoral Research Assistants (PDRAs) to join the research centres through grants funded by research and development divisions in multinational companies, in cooperation with national & international universities & organisations.

• To establish a powerful computing facility as a corner stone to a Central research facility.

• To improve and expand the electronic databases available for the academic staff.

• To develop a clear mechanism for the oversight of research activity and the monitoring of research performance.

• To propose a faculty award system which would award incentives to distinguished research achievements.

• To have hosted at least one international academic conference.

2008-11
Over the past three years the BUE has been working on developing several systems as per the updated research strategy. The systems were designed to respond to the strategic objectives defined in the updated plan and to address further requests and/or concerns raised by the academic staff in relation to research activities. As a result the following resources are now available:
• A wide range of electronic databases covering all disciplines at the BUE which reached a total of 21 databases.

• The library currently houses a total of 19,000 physical books, in addition to about 60,000 electronic books.

• A new mechanism that allows research active staff members to get a one day off/week for conducting research activities off campus, is currently in place.

• An updated flexible workload model that allows several workload profiles that permit a reduced teaching load for research active staff members to be able to free the necessary time on campus for research related activities.

• A new research portal has been designed and established to provide all research related information for interested staff members including, web links for research grants funding agencies, regular circulations of updated calls for proposals, information about awarded research grants, up to date information about all research centres, an updated list of active research areas at BUE and relevant regulations, guidelines and forms.

• A restructured and formal set of rules and guidelines for awarding conference participation packages were designed which helped in raising the number of staff participations in international conferences and thus reflected in the number of published conference papers.

• A high performance computing facility was acquired and is currently being setup in a dedicated lab area as the nucleus of the central research labs.

In addition to the above research resources, BUE has accomplished the following achievements against the preset research targets for the plan’s duration 2008-11.

• The BUE currently has three functioning research centres, i.e., Centre for Theoretical Physics, CTP, Centre for Arab Islamic Studies, CAIS and Centre for Advanced Materials, CAM. There is a proposal prepared by the Faculty of Engineering which was presented and approved in the Board of Trustees on December 2nd 2008 to establish a forth research centre for Renewable & Sustainable Energy.

• Research centres at the BUE have organized three international conferences over the past two years.
• “4th international conference on the Dark side of the Universe”, 2008, organized by CTP

• “International Conference on Neutrino Physics in the LHC Era”, 2009, organized by CTP

• “International Conference on Advanced Materials & Application in Acoustics & Vibration”, 2009, organized by CAM

• “First International Conference on Sustainability & The Future ” and sponsored by LU, November 2010, organized by the Architectural Engineering Department.

• The Centre for Theoretical Physics has started an International Summer School on High Energy Physics in summer of 2009. The summer school continued running for as second session during the summer of 2010.

• The first group of teaching assistants joining the joint BUE-LU PhD programme has been nominated and one has already started her work at LU in February 2010.

• More than 10% of full time staff members are already involved in joint supervision of graduate students registered in other universities in Egypt some of which are BUE teaching assistants.

• International collaboration is another area where the BUE has invested and is willing to engage in agreements to encourage collaborative research activities between BUE staff and international well acclaimed figures.

  • The joint BUE-LU PhD programme is one form of encouraging joint collaborative research activities through the joint supervision between a BUE supervisor and an LU supervisor for teaching assistants.

  • MOU signed with University of Texas A&M & University of Massachusetts Lowell to promote collaborative research activities.

• The High Performance Computing Equipment which is the corner stone of the central research facility is currently being setup at a dedicated lab. The equipment comprise a central parallel computing server in addition to eight high-end workstations which are to form a distributed parallel computing cluster. These computers have special characteristics that are not found, or are of limited availability, on other university computers, including parallel processing, large memory, and Solaris operating system and Grid Engine.
SUCCESS INDICATORS
All previous measures, systems and mechanisms are proving to be successful as reflected by several success indicators such as:

1. Number of peer reviewed published journal papers, in November 2012 reached 84 with a total of 304 journal papers over the past eight years

2. Number of international conference participations, reflected in the number of published conference papers, in November 2012 reached 53 with a total of 191 conference papers over the past eight years

3. Amount of research funds awarded to the BUE research centres, reached more than LE 2,500,000 in 2009 and more than LE 3,000,000 in 2010. Total research grants exceeded LE 11 Million over the past five years.

4. Number of research active staff members engaged in joint supervision of graduate students, now reached 13 staff members

5. A new research portal currently available through the BUE web site that cross links the interested visitor to the e-prints electronic research repository, the academic staff profiles, strategic research areas at BUE.
6. Global Entrepreneurship Monitor (GEM)

Global Entrepreneurship Monitor (GEM) is an ongoing project aiming at measuring the entrepreneurial level in Egypt and producing a series of reports describing the status of Entrepreneurship in the country. In 2008, a national initiative has been launched by the British University in Egypt, the Industrial Modernization Centre and the Middle East Council for Small Businesses and Entrepreneurship to position Egypt on the global map of entrepreneurship through the participation in the Global Entrepreneurship Monitor Programme (GEM) for the 1st time. GEM is the largest and most developed research program on entrepreneurship in the world and provides an annual assessment of the entrepreneurial activity, aspirations and attitudes of individuals. The BUE’s contribution to the project stems from its role as the research partner in the project. BUE is responsible fully for the conduct of the National Experts Survey, which is interviewing 36 experts in fields related to entrepreneurship and fill in a questionnaire, feed in the data to the SPSS and analyze it in a later stage. BUE is responsible for the follow up with the data collection of adult population survey, which is conducted by a market survey company, to ensure the validity and credibility of data. After the approval of data by the GEM consortium, BUE is responsible for data analysis and the write up of report. BUE is the leading university for the 3rd cycle in 2012.
FUNDING RESOURCES

One of the major targets of the BUE research strategy is to promote research activities through aggressively seeking external funding opportunities to facilitate research and/or industrial collaboration. This summary presents several external funding agencies operating in Egypt and is compiled in an effort to provide the necessary links and contact information to the research community at BUE.

LOCAL FUNDING OPPORTUNITIES

RESEARCH, DEVELOPMENT AND INNOVATION PROGRAMME, RDI

The Research, Development and Innovation (RDI) Programme was launched with a grant of €11 million by the Ministry of Scientific Research and the European Commission in October 2007. In continuation to its success in May 2011 a second financial agreement was signed granting Egypt further €20 million to build on the experience accumulated during the implementation period of RDI Programme – Phase 1 and to further realize a stronger impact to the development of an innovation culture for the benefit of the Egyptian industry and to foster the progressive movement of the Egyptian economy.

The overall objective of RDI Programme - Phase 2 is to further support the Egyptian government’s efforts to enhance research, development and innovation performance facilitating Egypt’s move towards a knowledge-based economy by:

- fostering the Science and Innovation culture and environment
- expanding research collaboration between the R&D and business sectors
- enhancing the impact of Egyptian researchers’ participation in EU funded programmes
- advancing Egypt’s scientific and technological capacity through supporting Centres of Excellence

Component I: Innovation Support

Building on results and experience gained during the implementation of the RDI Programme - Phase 1 to further realize a stronger impact on R&D, the second phase of RDI (signed on June 2011) will dedicate almost €12 Million to the EEIF to continue its support to applied research and innovation. Similar to RDI Phase 1,
Phase 2 will focus on promoting research and innovation in specific sectors aligned with both national and EU priorities.

However, with the current trends of collaborative research, open innovation and no-borders technology transfer, Phase 2 is more keen to support long lasting collaborative projects that could sustain themselves beyond the programme lifetime. This will be implemented through two key components namely the Innovation Support and the Center of Excellence (CoE) Support.

The Innovation Support will focus mainly on providing competitive grants to collaborative applied research projects and establishing innovation clusters that address crosscutting technology/research areas.

Component II: Research Networking

Aiming at enhancing the participation of Egyptian researchers in EU funded research programmes, the RDI Research Networking Unit is in charge of establishing, supporting and monitoring a network of RDI Focal Points (over 40 Focal Points (FP)) in public and private universities, research centres and in various ministries as well as industry. The FP are serving as the major information multipliers of EU funded programmes to the Egyptian research community with special emphasis on the EU Framework Programmes (FP7 and Horizon 2020).

The Research Networking Unit serves to disseminate and exchange information on funding opportunities on a national and regional basis, promote and invigorate researchers capacities and ideas, integrate researchers into European Research area and MPC states, incubate consultants and establish and support research networks, linking them further throughout universities and research centers with EU/MPC networks, extend grants to fund activities such as incoming/outgoing mobility schemes and partnerships with EU Framework Programme projects (FP7 and Horizon 2020), EU-Egypt Innovation Fund (EEIF), and other EU funded projects.

Component III: Support to Centres of Excellence

Designed to assist the government in upgrading the research capacities in existing centres of excellence, launching competitive calls for capacity building and creation of spin-offs from existing centres of excellence, the Support to Centres of Excellence Unit explores also the development of a business plan for the creation of a core CoE with educational, research and technology components.
**SCIENCE & TECHNOLOGY DEVELOPMENT FUND, STDF**

In 2006, the Egyptian State Ministry for Scientific Research has embarked on an ambitious exercise to overhaul Science and Technology (S&T) activities in Egypt. In the course of the year 2007, the outputs of that exercise were a complete restructuring of the S&T governance and management model in Egypt, in addition to the creation of the Higher Council for Science and Technology (HCST), and the Science and Technological Development Fund (STDF). The fund offers several grant categories that match a wide range of research activities:

1. National Grants:
   - Basic & Applied Research Grants
   - Young Research Grants
   - Reintegration Grants
   - Targeted Calls - Deadline has ended
   - Innovation Grants - Deadline has ended
   - Faculty for Factory - Deadline has ended

2. International Grants:
   - Egy/US
   - Egy/German
   - Egy/French
   - Egy/Japanese
   - Egy/Italian
THE ARAB SCIENCE & TECHNOLOGY FOUNDATION, ASTF

The Arab Science and Technology Foundation is an independent, nongovernmental, non-profit regional and international organization. Scientists and researchers from inside and outside the Arab world as well as representatives of Arab and international science centres and organizations have contributed to its establishment. It is based in Sharjah, UAE, and is seeking to set up branches and links in those Arab and world capitals that have scientific entities willing to participate in its activities.
EXTERNAL COLLABORATIONS

In addition to the research centres at BUE, several staff members at all faculties at BUE, are involved in various levels of collaborative research activities with colleagues in Egypt and abroad. These joint research collaborations take several forms such as; joint supervision of graduate students, joint grant proposals presented to national and international funding agencies and contributions in international studies and reviews. The BUE, represented in its research centres and its staff members, has collaborative research ties with the following international institutions, whether institutionally or on a personal basis; Loughborough University, Brandenburg University of Technology (BTU), Texas A&M University (TAMU), Houston University (HU), University of Delaware, University of Mississippi, Ecole polytechnique, Osaka University, CERN, Southampton University and Rathford lab. One of the success stories at BUE is the involvement in the Global Entrepreneurship Monitor (GEM) report launched from BUE in 2009 and the continuous involvement in the 2010 study.

JOINT PhD PROGRAMMES
Joint PhD programmes allow BUE teaching assistants to study for their PhD degrees in the UK, on a part time basis, under joint supervision of the BUE and one of its UK partners. This scheme has been operating successfully for several years, with one of our UK partners, and is planned to expand to include more UK partners as they forge partnerships with the BUE. Such an opportunity allows a unique training opportunity for BUE’s teaching assistants, in the UK, with access to state of the art equipment and lab facilities while maintaining their positions and affiliation with the BUE. In addition such a scheme also opens the opportunity of long lasting research collaborations between the supervising team members at BUE and the UK institution.

FUTURE COLLABORATIONS FRAMEWORK
The BUE has developed a proposed model for a mutual research collaboration scheme that could be implemented with any number of international partners. The research collaboration scheme outlines several models for supporting collaborative research activities, on a group and individual basis. It is envisaged that a lunching event is arranged in either location. During this event both partners shall present several seminars about current research activities and/or ideas which should lead to further discussions among both groups. This initial event shall result in potential mapping between research active staff members in both institutions and then the proposed scheme shall be activated. The framework offers several modes of collaboration support that includes mutual group visits, short visit stays and staff exchange options.
CURRENT AGREEMENTS AND/OR COLLABORATIONS

The BUE has established a range of collaborative research agreements through its research centres with similar partners abroad and/or with other national and international institutions in a range of disciplines.

1. CMS- Collaboration & ENHEP
   The BUE is a member of the CMS-Collaboration, which is the largest experiment in the world. The BUE houses the headquarters of the Egyptian Network of Higher Energy physics (ENHEP). Dr. Amr Radi, who is a staff member at the Centre for Theoretical Physics (CTP) at BUE, is the director of the ENHEP, the coordinator of the Egyptian team at CERN and a team leader at the CMS experiment. A total of eighty seven publications were produced by the CMS Collaboration in 2011 and 2012. The ENHEP collaborates in the (CMS) experiment through collecting, maintaining upgrading and analysing the data of the detectors.

2. University of Houston (UH)
   CAM is collaborating with the Department of Mechanical Engineering.

3. Texas A&M University (TAMU)
   CAM is an active member of International Institute for Multifunctional Materials for Energy Conversion (IIMEC) led by TAMU. CAM and TAMU organized the International Workshop on Advanced Materials for Wind Turbine Blades in May 2011 in Egypt. CAM and TAMU are organizing the International Workshop on Multiscale Modelling in March 2013 in Egypt. CAM is coordinating TAMU offers for internships to BUE students.

4. Case Western Reserve University (CWRU)
   US-Egypt Science and Technology Agreement with CAM

5. Cairo University
   Multi stages deep drawing processes-Optimization and Numerical simulations collaborative work with CAM.

6. University of Enna Kore (Italy)
   CSFS is collaborating with the Department of Architecture Engineering and the MOU between the two universities. Two had WSs already done 2010 and 2012

7. MoU November 2012
   Between the Minister for Development of Technology Utilization, Ministry of State for Administrative Development, Egypt and the Centre of Sustainability and Future Studies (CSFS), the British University in Egypt (BUE).
8. *Mou June 2011*

Between "Centre of Innovation, Monofia Governorate, Egypt and the Centre of Sustainability and Future Studies (CSFS), the British University in Egypt (BUE)."
RESEARCH TRAINING

Research training is a major component of the new BUE research plan. Since BUE has identified itself as aspiring to be a research-led university, it is emphasizing in this plan the necessity of providing a comprehensive research training programme for its teaching assistants, as well as, its junior academic staff in order to ensure the development of their required research skills to drive the research activities within the university.

Through several discussions among all members of the research community, within the BUE, and the contribution of its staff development consultant, six main components were identified to underpin the proposed programme. The programme first sets the theme of “Publish or Perish”, which is now an international motto for all research active institutions, as the main thread that ties all its underlying components. The programme then employs the recently published research development framework as a tool for all stakeholders, i.e., researchers, supervisors, heads of departments, trainers and the institution. The framework is used in educating all relevant stakeholders of the knowledge, behaviours and attributes of successful researchers. The programme then outlines four main mechanisms for supporting young and junior researchers in their work which are writing groups, research seminars, research grant preparation and research mentoring.

PUBLISH OR PERISH

The importance of research publications cannot be emphasised enough. Publish or perish is now the motto for most of the research institutions worldwide. This notion is introduced as the main theme underpinning the research training programme within BUE. As such young and junior researchers are introduced early in their careers to the significance of publishing their work. In addition, the important task of selecting where to publish one’s work is another major concern. This component, in addition to emphasising the importance of research publications, outlines mechanisms for selecting the best location for such a publication. Such a skill is one of the major relevant skills a successful researcher has to acquire.

RESEARCHER DEVELOPMENT FRAMEWORK

The Researcher Development Framework articulates the knowledge, behaviours and attributes of successful researchers and encourages them to aspire to excellence through achieving higher levels of development. The Researcher Development Framework (RDF) was developed in response to a range of recommendations to create a UK development framework for postgraduate researchers and research staff in higher education institutions.
The framework is a comprehensive new approach to enhance the careers of researchers. It was developed by and for researchers, in consultation with academic and non-academic employers.

The Framework consists of four domains, 12 sub-domains and 63 descriptors encompassing the knowledge, intellectual abilities, techniques and professional standards to do research, as well as the personal qualities and skills to work with others and ensure the wider impact of research. Each of the 63 descriptors contains between three to five phases, representing distinct stages of development across the whole research career.

Primarily, the framework is designed for:

- researchers within higher education to evaluate and plan their own personal, professional and career development
- managers/supervisors of researchers in their role supporting the development of researchers
- trainers, developers, human resources specialists and careers advisors in the planning and provision of support for researchers' development
- institutions in making decisions about their strategic approach to development of researchers.

The BUE is planning to employ the Researcher Development Framework in training its young and junior researchers and ensuring the development of relevant intellectual abilities, techniques, standards and knowledge that are necessary for successful productive researchers.

**WRITING GROUPS**

Writing groups are established to provide support for young researchers while writing any research related document, i.e., research paper, research proposal, thesis, dissertation, etc. The group provides peer critique to all its members. It is important to ensure that when establishing a new group the following is considered:

- How to setup a group, including establishing guidelines for coordination and operation
- deciding on routines and activities for effective writing production
- identifying and addressing key research writing issues

writing groups have a range of benefits that include the following:

*Research Task Group (RTG-RPGSC)*
The group gets to know what everybody’s research is about and is able to comment on it;

Receiving and acting on regular writing feedback keeps everybody focused;

Giving regular feedback improves everybody’s own writing skills;

Sharing information can make the research process more efficient and enjoyable;

By explaining one’s writing to others, everybody will discover what is really needed to be said and the way to express it;

Greater confidence and resilience to show one’s writing and ideas to others will be developed;

Staff will further develop peer mentoring skills that are transferrable to teaching and coaching roles;

The group can call on expert advice, which will be more forthcoming for a group over an individual.

**Research Seminars**

Regular research seminars within individual departments are one of the main mechanisms that allow exchange of ideas, feedback and initiate collaborations among the members of the same department. It is beneficial especially for young and junior researchers to present their ideas, get feedback and guidance from senior researchers which might redirect their research activities. When multiple research groups are active within the same department such seminars would engage such groups and might result in collaborations and/or identification of topics of mutual interest and enhance capacity building within the same department. Faculty research seminars would also promote and initiate Cross Departmental collaborations thus enhancing and reinforcing the Faculty’s capacity in multi-disciplinary research.

Cross Faculty seminars are also another facilitator for multi-disciplinary research collaborations. The research committee, as the main body for research activities oversight within the BUE shall propose and agree, each year, a schedule for Departmental, Faculty and Cross Faculty seminars. Research Coordinators at the Department as well as the Faculty levels are entrusted with the organizational role for such seminars.
MENTORING
It is crucial to provide mentoring support to all young and junior researchers within each department. It is the responsibility of the Head of Department and all senior researchers to support and mentor young and junior researchers and provide the necessary help in approaching research topics, writing research grant proposals, selecting journals for research publications, and writing proper research papers, managing research groups, etc.
RESEARCH INFRASTRUCTURE

Over the past seven years the BUE has been working towards establishing a rich, engaging and motivating research environment. Academic staff members comprise the research capacity of any academic institution. Thus, it is crucial for any research oriented institution to provide the necessary research tools in addition to a range of research incentives that underpin, support, engage and motivate its academic staff into productive research activities. Such tools should include a variety of library resources, efficient computing facilities, equipped lab facilities and proper research incentives in the form of research funding, flexible workloads, etc.

LIBRARY RESOURCES

The BUE indentified the importance of providing ample library resources in order to drive the research activities of its academic staff. Library resources were classified into two main categories, i.e., physical resources and online resources. Physical resources mainly comprised books while online resources comprised both electronic books and online journal databases. The following outline the current BUE library holdings in physical and online resources:

- Databases. The Library subscribes to some of the substantial databases in the subject-focused fields. Starting the new academic year 2012/2013, it has added to its collection some important databases in response to the requirements of the academic staff and students. They are: IEEE – ASPP collection (which includes journals, transactions and magazines), IET, ACM, Taylor & Francis- Social Sciences & Humanities Collection and Ebsco electronic books. The Library has also stopped subscription to some of the less used databases like Project Muse-social sciences collection, IEEE proceedings and Bankscope.

- Books: The Library's current book stock is 25,000 volumes in addition to more than 120,000 electronic books available through Ebrary, Ebsco & Springer databases.

- Journals: During the new academic year 2012/2013 the Library plans to add two new journals for Engineering and Political Science in addition to the six journals that the Political Science Department usually subscribes every year. Also the Library will continue its subscription to Foreign Affairs magazine in response to the Students’ Forum request during last academic year.
COMPUTING FACILITIES
The BUE has established a research dedicated computing facility that entails special features which are necessary for today’s research activities. The High Performance Computing Equipment comprises a central parallel computing server in addition to eight high-end workstations which are to form a distributed parallel computing cluster. These computers have special characteristics that are necessary for computer intensive calculations essential in most of today’s research projects. Such characteristics include parallel processing, large memory, Solaris operating system and Grid Engine. In addition, the BUE has acquired several software licenses for the most widely used packages that are required by researchers in all disciplines. This lab is the nucleus of a central research lab facility that is currently being established through collating acquisitions of individual research centres and its resources are available for all active researchers within the BUE.

RESEARCH INCENTIVES
In order to motivate staff to engage in productive research activities, the BUE has designed a suite of research incentives that provide, flexible workloads, funding for conference participation, research days off for conducting surveys, experimental setups and engaging with collaborative research with peers in other institutions. The following is a brief description of these benefits.

**Research Allowance for Academic Staff**
The one day research allowance was designed to allow academic staff a weekly day free of any teaching and/or administrative obligations and thus engaging the staff member fully in research and/or developmental activities. Such a research allowance is available for all staff once appointed at BUE without any obligations, paperwork and/or application procedure. Such a free day could be employed in conducting research on campus or off campus as per the staff member’s research plan.

**Flexible Workload**
In addition to the research allowance, academic staff members who are engaged in funded research projects could be granted flexible workloads with reduced teaching load and more days dedicated to their research activities. This option is subject to application and approval of the university research committee.

**Study Leave for Teaching Assistants**
Teaching assistants, as young researchers, are considered the academic staff members of the future. Thus their training as well as their research activities are monitored and supported by their relevant departments. One form of supporting teaching assistant is allowing them one day as a weekly study leave to conduct research towards their post-graduate degrees. This process is monitored by the
relevant departments and is renewed subject to positive progress reports from their supervisors and their relevant HOD.

**CONFERENCE PARTICIPATION FUND**
The BUE dedicated an annual budget to support staff members in their quest for international presence and interactions through the participation in international conferences. Each staff member is allowed a full coverage package every two years with additional support in case of availability of funds. The BUE is continuously aspiring to increase such funds in order to allow more staff members to benefit from such a privilege.

**RESEARCH PORTAL**
The BUE established a research portal which aims at providing all the necessary research relevant information, resources and documentation to all staff through a single online repository. The portal is continuously maintained to include up to date information, relevant guidelines and regulations.

**RESEARCH @ BUE**
During the plan duration a new newsletter entitled “Research @ BUE” will be launched to convey to the research community at BUE all activities, agreements, awarded grants and achievements. The newsletter is planned to be circulated beyond the limitations of the BUE campus in order to reflect the true research active orientation of the BUE.

**DISTINGUISHED RESEARCHER AWARD**
A new research award shall be designed to acknowledge the research achievements of BUE researchers. The award should have a junior researcher category in addition to a senior researcher category. The award will employ several criteria in the evaluation and final selection of successful researchers. Such criteria will include publications, awarded grants, patents, invited presentations, etc.
MONITORING MECHANISMS
In order to ensure the timely implementation of the proposed research plan throughout the planning period, i.e., 2012-2017, it is essential to identify an accountable body which is entrusted for monitoring the implementation of the proposed plan according to clearly defined mechanisms and criteria. Such monitoring bodies are expected to scrutinize both the adherence to projected targets in addition to the timely achievement of such targets.

MONITORING BODY & SUBGROUPS
The BUE has established the Research & Post Graduate Studies Committee (RPGSC) which is the highest research monitoring body within the university’s organizational chart. The following are few of the terms of reference of the RPGSC:

1. To act in a proactive manner to initiate, promote and develop research in the University.
2. To develop, maintain and oversee the implementation of a coordinated Research Strategy and to advise relevant University Committees on the resource and budgetary implications of this strategy.
3. To monitor and evaluate research performance within the University and advise on the continuation of research centres.

Therefore, the RPGSC shall be responsible for monitoring the implementation of the proposed plan and coordinating all budgetary implications as needed. The RPGSC is expected to perform such a role through the establishment of several work groups, each shall be assigned a specific monitoring task as follows:

RESEARCH OVERSIGHT GROUP
The research oversight group, as a subgroup of the RPGSC, shall be responsible for ensuring the achievement of individual faculty research targets and thus the overall BUE research targets. This shall be accomplished through the employment of a set of monitoring tools as explained later. It is envisaged that a biannual review of the research activities of all faculties shall be conducted by this group by means of interim reports and review sessions in order to allow for any remedial actions or redirection of research activities if deemed necessary.

BUDGET OVERSIGHT GROUP
The budget oversight group, as a subgroup of the RPGSC, shall be responsible for accepting and monitoring budgetary requests, coordination and assurance of allocation of budget needs, establishing financial guidelines for all research centres and managing funds generated by research centres and allocated to the BUE as per
the preset guidelines. The groups shall review all funding requests and make recommendations to the RPGSC for needed action.

**Research Training Group**

As indicated earlier in this plan, research training is highly emphasized and thus it is essential to establish a group that is assigned the role of coordination, arrangement and monitoring of the implementation of proposed modes of research training. It is envisaged that this group would create parallel training teams within each faculty. Faculty training teams shall design their own plans according to the preset modes of training. Quarterly meetings shall be convened, with faculty training teams, to review and monitor the implementation of relevant training plan and intervene and/or redirect training activities if deemed necessary.

**Monitoring Tools**

In order for the proposed bodies and groups to properly monitor the various research activities and resources underpinning this plan, it is fundamental to design a suite of monitoring tools that both simplify and document the monitoring process. This section merely propose a basic suite of such tools and is allowing the monitoring groups the flexibility to design and amend such tools in addition to adding any other monitoring tools they feel necessary. The following will present a brief description of each tool while allowing the actual design to be implemented by the monitoring subgroups.

**Research Activities Template**

This template shall be designed to reflect the research activities at two main levels. The first shall be at the Faculty level while the second at the university level. This template shall be coupled with the target achievement matrix and the strategic research interests matrix in monitoring and ensuring the achievement of all the plan’s targets. This template shall include a section that records the review session’s outcome and any decisions and/or recommendations.

**Research Training Template**

This template shall be designed to reflect the training activities against the relevant faculty training plans. The template shall include a section that record the training review meetings and any decisions and/or recommendations made as a result of such meetings.

**Budget Request & Review Template**

This template is meant to record any budgetary requests including a complete identification of purchases, subscriptions, etc. The template should indicate the
track of approvals of such budgets. In addition, the template is also expected to trace all expenditures against the approved budgets on agreed regular intervals.

**TARGET ACHIEVEMENT MATRIX (TAM)**

This matrix shall be used in creating a global overview throughout the BUE to indicate the contribution of individual Faculties and underlying departments towards the achievement of the BUE planned targets. The matrix shall indicate if any target is not picked up by any of the relevant Faculties. In addition, if a single target is being achieved by several departments and/or Faculties this tool would alert the relevant parties and encourage cross collaboration in order to ensure consistent implementation and prevent any duplication of effort.

**STRATEGIC RESEARCH INTERESTS MATRIX (SRIM)**

This matrix shall be used in creating a global overview throughout the BUE to indicate the contribution of individual Faculties and underlying departments towards the engagement in research activities within the strategically identified areas. The matrix shall indicate if any area is not covered by the relevant Faculty and/or Department. In addition, it will also identify research activities within Faculties that might not be within the strategic interests of the BUE. This might call for fine tuning to the research agenda of the Faculty in question and/or the BUE.


**BENCHMARKS FOR EVALUATING RESEARCH PERFORMANCE**

In order to evaluate the proposed plan and measure the outcomes of the BUE research activities, standardized international benchmarks need to be employed. The following define some of the benchmarks selected for such evaluation. The proposed monitoring bodies, identified above, shall be entrusted with the responsibility of evaluating these benchmarks on a regular interval and reporting to the appropriate committees within the BUE organizational system.

**PUBLICATIONS**

The amount of peer reviewed journal publications, international conference publications, books and book chapters shall constitute one of the basic measures of research outcomes of the BUE community. The BUE shall maintain an up-to-date publication list that is categorised as indicated above, i.e., journal papers, conference papers, books and book chapters. Proper statistics could be employed in gauging the rate of achievements on a yearly basis. Such statistics and their time variation could be employed in reflecting the research achievements throughout the developmental stages of the BUE.

**PATENTS**

A patent is an exclusive right granted for an invention, which is a product or a process that provides, in general, a new way of doing something, or offers a new technical solution to a problem. In order to be patentable, the invention must fulfil certain conditions. The number of patents resulting from research activities, in a certain field, is an indication not only of the amount of research effort spent; it is also a measure of research relevance to real life industrial problems with realistic applications and benefit.

**AWARDED FUNDS**

The amount of awarded research grants is another well accepted benchmark to gauge the amount of research activity within any given institution. Awarded research funds are expected to help generate a portion of the required research budget needed to complete this proposed plan. Therefore, the amount of research funds awarded would also ensure the successful completion of the proposed plan.

**HIRSCH (H) INDEX**

A scientist has index h if h of his/her N papers have at least h citations each, and the other (N – h) papers have no more than h citations each. In other words, a scholar with an index of h has published h papers each of which has been cited in other papers at least h times. Thus, the h-index reflects both the number of publications...
and the number of citations per publication. As such, the h index indicate not only a measure of the number of published papers, it also measures its relevance importance in its field.

**BUE International Ranking**

College and university rankings are lists of institutions in higher education, evaluated by certain criteria. In addition to entire institutions, specific programmes, departments, and schools are also ranked. Rankings are conducted by magazines, newspapers, websites, governments and academics. Various rankings consider measures of research excellence among other factors. Some rankings evaluate institutions within a single country, while others assess institutions worldwide. Some of the most widely known rankings are:

1. Academic Ranking of World Universities (ARWU) compiled by the Shanghai Jiao Tong University and now maintained by the Shanghai Ranking Consultancy
2. Times Higher Education World University Rankings (THE), which is a British publication.
3. Times Higher Education World Reputation Rankings.
4. QS World University Rankings which is a ranking of the world’s top universities produced by Quacquarelli Symonds and published annually since 2004.
5. G-factor ranks university and college web presence by counting the number of links only from other university websites, using Google search engine data. G-factor is an indicator of the popularity or importance of each university's website from the combined perspectives of other institutions.
6. Global University Ranking measures over 400 universities using the RatER, an autonomous, non-commercial, Russian rating agency supported by Russia's academic society
7. High Impact Universities: Research Performance Index (RPI) is a 2010 Australian initiative that studies university research performance. The assessment analyzes research performance as measured by publications and citations.
APPENDIX (A): FACULTY RESEARCH STRATEGIES
FACULTY OF ENGINEERING

Introduction

The Faculty of Engineering (FoE) has six active programmes in addition to a basic sciences service department responsible for the delivery of mathematics and physics modules across all programmes. The six engineering programmes provide a British style of higher education based on two main supporting components, these are; students centered learning and research active staff remembers. Student centered learning requires students to be active, responsible participants in their own learning. Having this style of education, the need and support for research activities become a vital component in the education processes. The University strategic plan 2012-2017 which has been approved in July 2012 strengthens the importance of research activities as an essential tool for a successful high standard education quality.

Vision and Mission

The main vision of the FoE is to become one of the leading engineering research institutions across a wide spectrum of state-of-the-art technologies which are of high importance for the country, the Middle East region and the international global market through a cooperative mechanism with locally and internationally recognized research leading institutions.

Objectives & Themes underpinning the plan

In light of the approved University strategic plan 2012-2017, the FoE has formed its research plan to satisfy the following set of objectives along the five years duration:

1. Strengthen research innovations in areas relevant to society
2. Attract research active staff members in relevant fields of interest
3. Encourage efforts in acquiring research-funded projects and collaboration with national and international funding agencies
4. Develop research partnerships with research led national and international institutions and centers
5. Increase the number of research centers in up-to-date related technological trends
6. Encourage staff members co-supervising of M.Sc. and Ph.D degrees within and outside the BUE
7. Publish research papers in refereed journals of high impact factor.
8. Organize and host national and international workshops and conferences
9. Monitor research quality, recognizing and rewarding faculty, staff and students who excel in achieving high-impact research results
10. Increase intellectual property generation and technology transfer through research incubators.
11. Develop departmental and/or interdisciplinary graduate programs
12. Encourage research activities for undergraduates’ students
13. Market faculty research activities and expertise;
   a. Develop a research page on each department’s website for available research activities
   b. Develop a departmental annual report to highlight research achievements
14. Partner with local and national companies and government organizations in collaborative research and advanced development
15. Develop departmental industrial liaison program

Research Groups and Clusters

The FoE research plan and corresponding objectives will be accomplished through the six active engineering programmes in addition to those three research centers. The programmes’ specific research activities and objectives are directed along the University strategic research plans. This is achieved through the formation of research clusters and groups within each programme with a well-defined research roadmap. The different programmes’ research groups are formed from the available full time academic staff members. Each research group has its own sub-objectives which by the end added to form the whole FoE research plan objectives. The following summarize the main research groups and clusters within each engineering programme:

Architecture Engineering Department

The Architectural Engineering Department currently comprises a total of seven academic staff members.

The research interest of staff members is diverse and covers a wide range of topics. It includes: sustainability, landscape architecture, rehabilitation of heritage buildings, architectural history and theories, philosophy of technology and the dialectical relation between materials, structure, space and architectural style, construction project management, value and risk management in construction, health and safety in construction, client satisfaction, partnership in construction, assessing building performance, corporate social responsibility, lean construction, building science (acoustics and illumination) and technology, performance measurement, design and construction design methods, processes and management, design evaluation, sustainability
studies, urban design and development, virtual reality in architecture, re-building the historical buildings with new techniques and concepts and designing energy efficiency buildings.

Chemical Engineering Department

Research in the department of chemical engineering covers a wide spectrum of interesting research activities ranging from quite fundamental topics through state-of-the-art technologies in chemical engineering. The following topics reflect the on-going and planned research activities:


Civil Engineering Department

The department’s research vision is summarised as the formation of tomorrow’s civil engineers who are capable of facing continuously increasing challenges and complex systems with unique, creative and sustainable solutions and designs.

The Civil Engineering Department currently comprise a total of seven academic staff members with one additional member joining the department in September 2013, and thus raising the number of full time staff members, at the department, to eight.

All members have their research interests aligned with the stated vision and research objectives of the department. The following research topics reflect the on-going activities and its relevance to the stated objectives:


Research Task Group (RTG-RPGSC)
Electrical Engineering Department

Research in the electrical engineering department covers a wide range of topics both on department’s specific topics as well as multidisciplinary level.

The Electrical Engineering Department currently comprise a total of six academic staff members with different research activities. The following topics reflect the on-going and planned department’s research directions and orientations;

Digital communications systems, Digital signal processing, RF & Electromagnetics, Medical imagining, Networks, Energy harvesting systems, Low power IC design, Electronic devices for PV applications, Nano-technology for PV systems, Grid Connect PV solar systems.

Mechanical Engineering Department

Studies in the Mechanical Engineering Department intend to cover four major directions of widely recent trends.

The Mechanical Engineering Department currently comprise a total of fourteen academic staff members with one member joining the department in July 2013, which makes a total of fifteen full time staff members by July 2013. The current research interests are in line with the intended research objectives of the department. Following are the on-going research topics:

Mechatronics & Dynamics

Accuracy assessment of mobile robot, Efficient and effective trajectory generation for automated guided vehicles, Reducing friction in robotic Joint, Intelligent navigational of mobile robots

Industrial Engineering


Thermo Fluids & Combustion

Environmental Impact Assessment due to accidental release of toxic and flammable gases, Ambient air quality due to normal operation of industrial plants, Utilization of

Research Task Group (RTG-RPGSC)
natural gas in diesel engines, Thermal solar systems for power generation, Laminar and turbulent wall-bounded (boundary layer, pipe and channel) shear flows, Development of measuring techniques for wall skin friction measurements, Development of new technological turbulent drag reduction schemes, such as drag reduction utilizing additives, and Micro-blowing, Enhancement of solar collectors thermal performance by surface treatment using nano-based materials, Effects of air temperature and humidity on the performance of a polymer electrolyte membrane fuel cell, Congestion Due to Traffic Design and Its Impact on Fuel Consumption and Vehicle Emissions, Fuel cell performance under the impact of a magnetic field, Control schemes of wind energy systems, Model Predictive Control applications in alternative energy systems, Virtual reality and augmented reality applications in education.

**Design, Materials, Tribology & Manufacturing**


**Petroleum Engineering Department**

The Petroleum Engineering and Gas Technology Department currently comprise a total of six academic staff members. The following topics reflect the on-going and planned research activities:

Enhanced oil recovery, Reservoir simulation and well testing, Production optimization for oil and gas fields, Advance well logging

**Research Resources & Infrastructure**

In order to carry and achieve the targeted objectives, the FoE has provided sufficient research resources and corresponding infrastructure. However, with the increasing number of research activities and related specialized requirements, it is expected that some additional resources will be needed. The currently available research resources and infrastructure includes:

**Research Task Group (RTG-RPGSC)**
I. Subscription in numerous numbers of digital libraries that meet any researcher’s need

II. Up-to-date licenses for most used software tools necessary to underpin research activities and tasks

III. Specialized laboratory equipment suitable to achieve most of the required experimental verification tasks

External Collaborations

Research Training (TAs, post graduate, staff development for junior staff)

Measuring Success
FACULTY OF INFORMATICS & COMPUTER SCIENCE

Introduction

In order for the ICS faculty (and BUE generally) to advance its research output, faculty level research plans have been created that will set the guidelines for a unified research framework. This framework will provide a framework that will operate within and between faculties, with the ultimate goal of enhancing the research output of the BUE. Research is a critical aspect of any university activity, as it drives industry collaboration, enhances the position within university league tables, and provides much needed funding to support fundamental university based activities. In what follows is a description of the research plan for the ICS faculty, which encompasses a period ending in 2017.

Mission and Vision

Research is a vital component to any university faculty, providing notoriety to its staff members, keeps faculty members at the forefront of their respective fields, and enhances teaching and learning by ensuring faculty members are fully up-to-date in their fields. The goal of the ICS faculty is to provide the BUE with a strong research ethos that will focus on scientific publications in internationally recognised journals, acquire funding from national and international scientific funding agencies, establish several named post-graduate degree programmes (both at the Master's and Doctorate levels). And establish our faculty as a leading research venue for industry and governmental organizations throughout the region.

Objectives and Themes Underpinning the Plan

The ICS faculty encourages all staff members to engage some of their daily work efforts towards research, which may utilise as much as 25% or more of their time while on campus. The research day provides a full day (per week) block of time to engage actively in research efforts. This is very useful, but a more comprehensive strategy is required in order to ensure that our faculty becomes one of the leading research oriented faculties within Egypt and the region. There are four basic aspects of our research strategic plan that needs to be addressed:

1. Post-graduate student supervisions
2. Equipment and laboratory space requirements
3. Research and industry based funding
4. Collaborations with other academic and private industry institutions

Research Task Group (RTG-RPGSC)
Post-graduate student levels

Currently, the faculty has approximately 15 teaching assistants, most are engaged in postgraduate studies (the vast majority on MSc programmes). The primary supervisor is typically stationed at other universities within Egypt – with one supervisor at the BUE. The ICS faculty would like to see the majority of TAs engaged in a PhD programme – and certainly would like to place a stipulation that ALL TAs are actively engaged in a post-graduate degree. Furthermore, the degree specialization should correspond to the topics that they TA in at the BUE to ensure that they are able to provide maximal academic support to our students. Further, this would enhance the teaching skills within their academic domain. In the long term, the goal would be to have many of the TAs would be fully engaged within a BUE based postgraduate programme. This would enhance the academic standing at the BUE by providing a research focused postgraduate culture within the BUE.

Part of the issue with TAs engaging in research is space – laboratories must be established that provide staff and TAs the ability to engage in research without disturbance and with proper facilities. The facilities include: space and specialised equipment. The space should be provided by the BUE at some level. Equipment can be acquired through faculty level support, as well as through the acquisition of external funding. This is a vital aspect of our resource strategic plan, which requires the acquisition of 1,000,000 LE over the next 2 years. This funding would provide the needed equipment that would support the research activities of our staff. Aside from the finding issues, each member of staff should be able to have access to adequate laboratory space. This space could be in the form of 2 or 3 rooms on campus that is large enough to house several TAs/lab, secure enough to store equipment, and convenient so all concerned can gain access on a routine basis during normal working hours.

Funding

Funding to support these activities is of course a vital task that will require support from the BUE as well as the direct acquisition of funding from external sources: at the national and international level. Since the ICS faculty is fairly small, the total amount of funding would not be overwhelming. A budge on the order of 1,000,000 LE (100,000 GBP) per years over the projected period of 3 years would be a realistic goal that would fully support all of our activities. This funding would be allocated according to the following general schema:

1- 2 full-time faculty members over 3 years (6 FTE) – at the typical university costing
2- Acquisition of specialised IT based equipment that would support high end computing (some of this could be obtained through the high performance computing labs in the engineering building)
3- Providing stipends to support TAs, especially those engaging in PhD studies. These TAs would in fact become research assistants (RAs) – and would not be required to teach in the labs.

Research Task Group (RTG-RPGSC)
4- Support for conference and related publication costs – all faculty members publishing papers accepted at internationally recognised conferences would be supported up to some fixed value (10,000 LE), with a limit based on a fixed budget (which would be based on 1 attendance per faculty member/year).

5- Support for hosting national and international workshops is a vital activity to enhance the BUE profile. These activities could be based at the BUE and/or at other institutions within and outside of Egypt. Costing for a typical workshop is on the order of 150,000 LE, depending on the number of invited keynote speakers (this estimate is based on 2).

This funding is well within the STDF and ITIDA/ITAC funding allocations, which can reach 3,000,000 LE/major project. Currently, these national funding bodies are hesitant to release funding due to the current climate within Egypt. It is hoped that this will change in the near future as the political situation stabilizes in Egypt. Furthermore, there are outside sources that can be applied for – such as US/Egyptian collaborative efforts with such institutions as the NSF and related organisations within the US.

One of the primary goals for 2013 is for staff within the ICS to submit funding proposals of a large scale (1,000,000+ LE) that will be used to support all activities within the faculty. It is imperative that funding is obtained – and all staff members should be properly trained on how to apply for funding, what projects are currently high priority, and the BUE establishes a budget officer to handle the accounting requirements of such funds.

Research Groups/Clusters

To facilitate funding acquisition and external collaborations, a number of research clusters have been developed within the ICS faculty. These clusters focus on the 4 faculty specialisations – which ensure that the efforts fully inform our teaching and learning strategy set forth by the T and L committee. Currently, the following clusters have been tentatively identified:

Biometrics – 3 faculty members

Software engineering metrics – 4 faculty members

Data mining and data warehousing – 3 faculty members

Network simulation platforms – 2 faculty members

These clusters form the basis for collective research efforts that will drive research into specific domains. Each area is fundable – provided the emphasis is directed towards high priority calls indicated by relevant funding agencies. The goal is for each cluster to produce high quality publications (at least 2 journal papers/year) that will be used to support a grant application. Each group will require a site on the BUE home page – which will also include links to cluster home pages, down to individual home pages for each member of the cluster. Raising our internet
profile is vitally important – prospective students seek out professors based in large part by their web presence.

**Research Resources/Infrastructure**

Research requires effort from both staff members and the university management. Issues such as having time and space to engage effectively in research is an absolute requirement. Separate lab space where post-graduate students can work on behalf of their supervisors is an essential requirement. Having the proper equipment is a matter of both the university and staff members managing grant monies. A financial based infrastructure is required to manage grant monies, placing the book keeping activities in the hand of financial specialists. Clear policies on the amount of overhead the university charges is essential, and having a mechanism in place for allocating overhead funding at the right level is essential as well. Policies regarding the allocation of overhead funds acquire from grant applications must be established in such a way that all faculties benefit in proportion to their need. The university should assist in the instantiation of workshops and international conferences hosted at the BUE (and elsewhere) in terms of financial support, required administrative support, and manpower. Research based activities should be included in each faculty members’ performance profile, and utilised appropriately for performance evaluations/reviews.

**External collaboration**

In order to enhance the likelihood of successful funding acquisition, collaboration with academic institutions within Egypt and internationally must be secured. Currently, there is an Egyptian-German alliance that provides the opportunity to apply for funding for joint projects within universities in the two countries. This arrangement has been offered by the French government, as well as the US government in the past. All such avenues of collaborations with other institutions must be addressed at the highest level to ensure we have a sufficiently broad base from which to apply for a variety of funding sources (i.e. framework calls in the EU).

By collaborating with colleagues located external to the BUE, we can fill in any missing expertise required to complete larger projects. This would also put us in a better position when applying for research grants. The focus here would be on aligning ourselves with groups that have a positive track record with acquiring funding.

These activities are already underway in our faculty. Quarterly reports will be generated which will track all of the research activities as a way of ensuring that we are on target. It is also expected that staff that are research active will be rewarded for the additional effort they put into research. The quarterly reports can be used as a measure of the research output for each staff member – and can be included in the staff members file for subsequent evaluation. For instance, it could be used for annual progress reviews for each staff member, and could assist staff for purposes of promotion. At the very least, research activities also prepare staff for promotions.
(assistant-> Associate->full professorships) as well. Clearly, staff members must feel that they are being rewarded for research activities as they clearly benefit the BUE in a very positive and immediate way.

**Research Training**

The IT world changes at a rapid pace, which requires continuous updating of skills. This is especially true for the ICS faculty, where the domain progresses at an almost exponential rate. Faculty members and TAs alike require a continual updating of their skill set. This could be accomplished by hosting seminars where experts in relevant domains are invited to present talks and discuss research strategies with faculty members on a regular basis. This is a very effective mechanism for imparting knowledge. Further, sabbatical leave is a very useful mechanism for exchanging ideas and developing novel approaches to problems within a variety of domains. They could be granted on regular intervals, on a performance based scheme, for faculty members demonstrating high levels of research output. For post-graduate students, external training courses leading to certificates are extremely useful. The university should help to fund these activities, as they provide opportunities to directly enhance skill sets (applicable to faculty members as well).

**Success Metrics**

In the final analysis, the research output must be benchmarked according to international standards. Typically, these include tables with number of different types of publications (from books to local conferences), patents applied for and granted, amount of funding brought in, number of PhD student completions, and external evaluations such as H-indices. All of these are very easily acquired metrics that clearly provide a set of summary statistics that reflect the output of a research faculty. They measure the international penetration of each faculty member, the sum of which reflects the faculty level output.
FACULTY OF BUSINESS, ECONOMICS AND POLITICAL SCIENCE

Introduction

BUE research strategy needs to focus on an inter-disciplinary scholarly composition so as to encourage recombination and cross-validation of multi-concepts. There also has to be a programme of regular and effective development of research capacity among academic staff and students and dissemination of research findings, publications and good practice within the faculty, to university and to parallel institutions, to policy makers, to potential sponsors and to the wider public.

Each department's research strategy has to be seen in the context of the whole Faculty and University research policies. Of particular strategic importance, is the role that effective research policies and practices play in developing strong academic and quality reputations not only in research itself but also in the teaching practices and faculty life of respected universities? Thus, important though they are effective research policies involve more than just the production of measurable or quantitative research outputs such as conference papers, learned journal articles, monographs, and research reports and so on.

The individual Departments and Faculty as a whole have to develop and improve the capability to produce effective research proposals in order to attract a steady stream of external funding to support its research aims and activities.

Vision & Mission

The BUE aims to become a leading research University in Egypt and the MENA region through the provision of high quality research.

To be able to provide exemplary knowledge-transfer, feasible solutions, researched facilities and appropriate services to business, industry and society across a broad subject range, by offering high quality expertise needed to stimulate and support demand for innovative solutions, and assist collaboration in support of economic development.
Objectives & Themes underpinning the plan

The main thrust of the proposed research strategy is in 4 main areas –

(I) develop the research capabilities, output and impact in each of the three departments (Business, Economics and Political Science), the BAEPS faculty as a whole and the wider BUE;
(ii) Promote a common research agenda among priority BAEPS research groups/clusters;
(iii) Secure a devolved faculty research budget from BUE plus additional external project-related research funding;
(iv) Launch a regular annually research publication and related Working Paper series.

Research Groups/Clusters

University academics are currently pursuing research in a broad range of areas across all faculties. This is strongly encouraged by the university. There is Key research areas aligned with our stated mission and the BUE seeks to support these areas with the intention that they will grow as existing research centres or become new research centres.

To achieve the above, BUE/BAEPS aims to:

- Attract, develop and support research active staff;
- Encourage key research areas to grow into research centres include the following:
  - Information Technologies
  - Business, Enterprise and Entrepreneurship
  - Arab and Islamic Studies.
- Develop research partnerships with quality research led institutions and research establishments;
- Attract leading academics to conferences and workshops;
- Attract significant research funds from external sources;
- Attract internationally leading figures for externally funded collaborative research activities.
- Encourage academic staff to perform against recognized international metrics;
- Benchmark research performance;
- Obtain research degree awarding powers.
Research Resources & Infrastructure

The BAEPS research capabilities demonstrate apparent weakness in its research capabilities and inconsistency in its infrastructural and financial support. Below are points of weakness and recommendations to overcome these weaknesses.

- Potential and established researchers need to be reassured that at least local conference and travel costs will be met and the budget for this should be devolved to the faculty so that the decision times are very swift.
- The existing lack of institutional/infrastructural resources – needs to be elevated by using a secretarial/admin support to help with proposals and in organising research events; the appointment of 1 or more Research Assistants (RAs) with similar duties to TAs is highly advisable.
- In addition, there is lack of formal research communications and review systems within Faculty, absence of a research library, and shortage of commitment from many staff who may be unfamiliar with the demands of research or focused on their teaching careers. There need to be a clear message and practical encouragement from the Dean and head of department.

In addition to the above mentioned objectives, BAEPS/BUE faculty research strategy aims to:

- Establish at least three partnerships with academic institutions for collaborative research on agreed projects of mutual interest.
- Host at least one international conference every other year.
- Host at least three national workshops per year.
- Attract research funds from external sources to a value of at least EGP 30M by the end of the planning period.
- Develop and implement a benchmarking mechanism for evaluating research performance.
- Have each research active member of academic staff publish in Science Citation Index (CIS) – recognized or equivalent international journals.
- Annually monitor and review academic staff citations and their Hirsch(h)-index.
- Obtain approval from the Supreme Council of Private Universities for the BUE to award its own Master and MBA Degrees as soon as possible.

External Collaborations

The broad strategic objective of the BUE is to become a leading institution in Egypt for the provision of knowledge transfer in order to advance industry, the professions and society. Within this broad strategy, the BUE aims to utilize the following opportunities:
- Enhance post-Jan 25 External/foreign research interest in Egypt.
- Provide research opportunities related to tourist and industrial sectors revival.
- Encourage research opportunities related to massive unemployment and social inequality.
- Increase policy and fund raising interest in support of business, entrepreneurship and management development as part of Egyptian economic growth and recovery plans.
- Develop internal research clusters that focus on business needs and can attract external funding and overcome some of the threats and weaknesses.
- Facilitate research opportunities associated with revolution and democratization process.
- Promote external and inter-faculty research cluster opportunities related to urban development.

Research Training (TAs, post graduate, staff development for junior staff)

The BUE seeks to deliver and sustain its academic ambition and strategic objectives dependent on its human resource capital, including staff management, development, progression and reward.

To achieve the required Human resource quality caliber, BAEPS/BUE aims to:

- Continue to support the existing Loughborough University part-time Ph.D. scheme for Teaching Assistants and develop similar schemes with other UK partners.
- Encourage BUE Teaching Assistants and graduates to undertake research degrees abroad and return to the BUE.
- Support at least 20 TAs to complete their part-time PhDs with Loughborough University and other partner universities under the agreed collaborative programmes by 2017.
- Conduct a staff development plan for BAEPS/BUE Faculty and Junior Staff.

Measuring Success

The research group's annual outputs will be measured by the following indicators:

- Number and value of research grants applied for and number won.
- Number of articles in the ‘popular’ press and magazines.
- Number of papers submitted to the above Journals (and others).
- Number of papers accepted by the above Journals (and others).
- Number of Conference papers published in Proceedings.
- Number of papers/research presentations at local forums.
- Number of invitations to staff to speak at local forums.
- Number of Departmental Working Papers published.
FACULTY OF DENTISTRY

Introduction

The British University in Egypt (BUE), on the authorization of the University Senate, offers a five-year Bachelor of Dental Surgery (B.D.S.) Programme in accordance with the regulations approved by the Supreme Council of Egyptian Universities (SCU).

The curricula of study over BUE campus are divided into three phases corresponding to the three levels of learning. The first phase, corresponding to level one comprises one year and is devoted to basic medical sciences. The second phase comprises two years and is devoted to the study of basic and applied dental sciences as well as being a Pre-Clinical phase. Finally the third phase is corresponding to level three, comprises the last two years in which the student studies applied clinical dental courses as well as being trained in specialized dental clinics. Internship of twelve calendar months is compulsory by law before a graduate is granted the license to practice dentistry in Egypt.

Vision

To be recognized as a center of excellence in the field of dental education and to have all of its undergraduates and graduates to be conscious of their personal and professional responsibilities in a global society

Mission

To improve oral health by nurturing academic and clinical excellence in the art and science of dentistry through education, research, patient care and community services

Objectives

The BUE dental graduate should possess:

1. A thorough understanding of biological and technological sciences to enable the integration and correlation of these sciences with clinical dental practice.
2. Competence in diagnosis of oral and dental conditions, disorders, and diseases with proper understanding of the relationship between general and oral disease.

3. Skills to provide the preventive and treatment services commonly required in dental practice.

4. An understanding of the necessity of continuing education.

5. A sense of professional, ethical, and social responsibility.

Research

Faculty academics are currently pursuing research in all specialties of Oral and Dental Medicine. This is strongly encouraged by the University. There are key research areas aligned with our stated mission. Key research areas will be encouraged to grow into research centers include the following:

- Bone grafts for maxillofacial reconstruction
- Orthodontic tooth movements
- Dental implants.
- Grafting materials.
- Marginal integrity and fitness of ceramic restorations.
- Fracture resistance of ceramic restorations.

http://www.americanscience

http://www.americanscience

   - **Aim:** The objective of this study is to assess the effect of platelet rich fibrin (PRF) in association with Hydroxyapatite (HA) graft material for bony regeneration around immediate implant.

4. MSc. Thesis: “Survey of tenascin-C and integrin β1 localization in the odontogenic tissues of lower first molar at different stages of its development and along its pathway of eruption by (Histological and Immunohistological study)”
   - **Aim:** Histological study of odontogenic tissues of developing lower first molar of albino rats. Immunohistological localization of tenascin-C and integrin β1, in the odontogenic tissues of lower first molar at different stages of its development and along its pathway of eruption.

• **Aim:** Evaluating the effect of topical application of simvastatin on inflammed operculum: Histopathologically (haematoxylin and eosin stain), Immunohistochemical expression of tumor necrosis factor alpha (TNF α) & Bone Morphogenic protein -2 (BMP-2)

6. **MSc. Thesis:** “Depth of Cure and Adaptation of Bulk-Fill Resin Composites”

• **Aim:** to determine the depth of cure (assessed through microhardness testing at 1, 2, 3 and 4mm depths) and the adaptation to cavity walls and margins of three recently introduced Bulk-fill composite materials.

7. **MSc. Thesis:** “The effect of different occlusal preparation designs on the fracture resistance of two All - Ceramic crowns restoring endodontically treated teeth ”

• **Aim:** The aim of this in vitro study is to evaluate the effect of three different occlusal preparation designs:
  - Flat occlusal reduction.
  - Occlusal reduction on two planes.
  - Anatomical occlusal reduction.

6- **MSc. Thesis:** “The effect of different occlusal preparation designs on internal fit and marginal integrity of two All - Ceramic crowns restoring endodontically treated teeth.”

**Aim:** The aim of this in vitro study is to evaluate the effect of three different occlusal preparation designs:

- Flat occlusal reduction.
- Occlusal reduction on two planes.
- Anatomical occlusal reduction.

7- **MSc. Thesis:** “Effect of Epidermal Growth Factor on the submandibular salivary glands of Streptozotocin induced diabetic rats”

• **Aim:** to find out whether epidermal growth factor can alleviate the well documented side effects of streptozotocin induced diabetes mellitus on the submandibular salivary gland of adult male Albino rats through:
  - Histological examination to detect any possible structural changes.
  - Immunohistochemical localization of the cytokeratin, myosin and E Cadherin in the parenchyma of the gland.
  - Transmission electron microscopic examination to find out any Ultra structural changes in the different elements of the submandibular salivary gland.
Strategic objectives

− The faculty has identified strategic objectives and specified targets in three key areas:
  • Teaching and Learning
  • Research.
  • Community services

Teaching and Learning

− Our strategic objective is to provide a high-quality British-style research-led learning experience which attracts students of outstanding potential and equips them with the capacity to undertake higher education and research and transferable skills and knowledge required by dentists.

− Enhancing the quality of the student experience is a primary goal of the faculty of Dentistry that will help raise our profile as a faculty of high quality and standards. Achieving this status by attracting the highest quality students; attracting a preponderance active academic staff capable of delivering highest dental education in accord with the British ethos and standards; developing effective, communicative and innovative teaching; providing a learning environment that stimulate our students to become independent learners and to realize their potential, and which encourage research and academic development.

Research

− Our strategic objective is to position the faculty of Dentistry among the academic institutions in Egypt and MENA region.

− The faculty aims to be recognized internationally as providing centers of excellence in a select set of research themes which fit within the strategic objectives of Egypt and MENA region.

− The faculty attracts, develop and support research active staff. Moreover, encourage academic staff to perform against recognized international metrics. Also the faculty attracts leading academics to conferences and workshops.
Community services

- Our strategic objective is to be exemplary provider of knowledge, facilities and oral health care services to community.
FACULTY OF PHARMACY

Introduction

The faculty of pharmacy consists of 4 full timers academic staff members and 12 teaching assistants; five of them engaged in a PhD Programme and the rest in a Master Programme. Faculty of pharmacy is actively engaged in research as it is evidenced by the remarkable number of papers published in year 2012 (mentioned under item 8.measuring of success).

As the BUE aims to become a leading research university in Egypt and the MENA region, it is also our main target to achieve great advances in different pharmaceutical fields.

Vision & Mission

Vision
To become a remarkable and well known research institute encouraging and supporting the BUE Pharmacy’s staff members and at the same time attracting young researchers or postgraduate students from other universities in different pharmaceutical fields.

Mission
To guarantee the availability of different equipments and instruments required for research. To continue working in diverse pharmaceutical research areas.

Objectives & Themes underpinning the plan

1. Determination of drug-impurities and degradation products in bulk and in different pharmaceutical dosage forms using HPLC-PDA and LC-MS/MS.

2. Development of accurate and precise methods as HPLC and spectroscopic methods for the determination of different hypoglycemic drugs.

Research Task Group (RTG-RPGSC)
3. Controlling the release of the drug and decreasing its degradation; to improve its efficiency, through preparing nano-vesicles which are niosomes & liposomes containing drug.

4. Investigating the effect of giving Folic acid® and Neurobion® to HCV-infected patients during treatment with different types of PEG-IFN plus ribavirin in an attempt to evaluate its efficacy and safety as a prophylactic treatment to prevent hematological adverse effects.

5. Studying the cytotoxicity and the constitutive phenolics of Myricaria germanica DESV, which is collected from Botanical gardens of the Universities Bonn and Regensburg, Germany, aiming to achieve candidate phenolics which could be used for the development of effective antineoplastic agents.

6. Phytochemical study of The genus *Markhamia* belonging to the family Bignoniaceae, which is cultivated in Egypt, contains a number of medicinally important constituents.

**Research Groups/Clusters**

The twelve teaching assistants are working under external supervision from different national universities.

**Research Resources & Infrastructure**

All staff members are funding their researches on their owns.

**External Collaborations**

The external collaboration is manifested as follows:

1. Analytical Chemistry Department, Faculty of Pharmacy, Helwan University

2. Pharmaceutical Chemistry Department, Faculty of Pharmacy, Cairo University

Research Task Group (RTG-RPGSC)
3. Pharmaceutics Department, Faculty of Pharmacy, Mansoura University

4. Clinical Pharmacy Department, Faculty of Pharmacy, Ain Shams University

5. Pharmaceutical Biology, Ernst-Moritz-Arndt-University Greifswald, Germany.

6. Department of Phytochemistry and Plant Systematic, National Research Center.

7. Pharmacognosy Department, Faculty of Pharmacy, Cairo University.

Research Training

1. Dr. Shereen Hassib had received a workshop on LC-MS/MS training at faculty of pharmacy, Helwan University, 10th June-15th June 2012, conducted by Thermo Co.

2. Bassam Ayoub had received training on HPLC-fluorimetric detection in CARAS centre, faculty of pharmacy, cairo university, in 2012.

3. Pre-Master and Pre-Ph.D. courses have been received by all TA’s.

Measuring Success

The success could be measured, as mentioned below, through the number of submitted and published articles since September 2012:

Accepted Publications


FACULTY OF NURSING

Research Mission

It is to improve the health of individuals and community through excellence in nursing education and leadership by offering an internationally-recognized rigorous program of evidence based and independent learning, clinical practice and community service. MMNF graduates will be at the forefront of providing competent, compassionate quality care focusing on the unique needs of individuals by enhancing and improving their overall health and wellbeing. MMNF’s mission reflects a core ideology that remains firm and provides guidance in the process of strategic decision-making. This unchanging ideal is backed by a Vision that describes milestones and visionary goals set for the longer term and achievable in the near future.

VISION

1. MMNF will be a leader in knowledge development and dissemination that is nationally and internationally recognized for excellence in promoting the health and care of individuals, families and communities.
2. MMNF will empower students and graduates as lifelong learners who have knowledge and skills relevant to the rapidly-changing environments, by offering dynamic curricula built upon a foundation of multi-disciplinary research and scholarly practice that are relevant, futuristic and responsive to global health care trends.
3. The MMNF will promote excellence in nursing education by creating a strong and diverse nursing workforce comprised of well-rounded, self-confident and independent members of society.

Topics for Research Interest

1) Bundle of Care
2) Evidence Based Practice
3) Probiotic & Complementary Therapy
4) Quality & Patient’s Safety
5) Enhance health promotion and disease prevention

Research Task Group (RTG-RPGSC)
6) Improve quality of life in chronic illness
7) Healthy diet
8) Nursing informatics & E-nursing
9) Leadership & management in nursing
10) Nursing shortage & recruitment

Future Plans

1) Training of Trainers (TOT)
2) Establishing a center for research consultation, continuing education & training,
3) Organize one international conference and one course/workshop annually
4) Establish an internationally recognized MMNF Nursing Journal
5) Maintain relationship with alumni to support research activities
6) Encourage each academic staff to publish research in international journals