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Annual Report

2013 - 2014

Office of Research & Graduate Studies



Office of Research & Graduate Studies



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Results

Research

Research Funding 2013-2014

Type of Funding	Sources	Amount SAR
External	NSTIP, GDRG, Boeing,	12,903,450
Internal	Alfaisal University, SRG, IRG	3,372,591
GRAND TOTAL		16,276,041

Research Output (from Scopus)

Year	2008	2009	2010	2011	2012	2013	2014 (est)
Publications per Year	2	27	55	63	138	165	145
Cumulative Total Publications	2	29	84	147	285	450	595
Number of Citations per Year	0	5	80	215	507	1033	1360
Cumulative Total Citations	0	5	85	300	807	1840	3200
Numb Publications/FT Faculty/Yr (est)	0.1	1.0	1.2	1.0	1.3	1.3	1.1
Number Citations/Total Publ/Yr	0	0.2	1.0	1.5	1.8	2.3	2.3

Performance Indicators

Thomson Reuters Indicators Reports 2013	Ranked 1 st in Kingdom in citation impact of medical papers
SCImago Journal Rank (SJR indicator) 2014	Ranked 2 nd in Kingdom in research excellence of publications
QS University Rankings for Arab Region	Ranked 1st in Kingdom in 5 out of 9 indicators; papers per faculty, citations per paper, staff with PhD, international students, & international faculty. In Arab Region ranked 4 th , 5 th & 8 th out of 50 in international faculty, papers per faculty and citations per paper, respectively.

Intellectual Property & Commercialization of Research

Patents	New Start-Up Company
US patent on nanotechnology granted 2013 & 4 patents applied for: nanotech, wind turb., circuit	Medical implants UK co. Taragenyx founded 2012; Alfaisal 1.3% shares; Eng Prof patent as co-inventor

Equipment & Laboratories

Number of research labs increased by 250% from 4 to 10 in two years	Shortened delivery time for research chemicals by 50% by ordering through KFSHRC hospital system
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Graduate Studies

Current Program	Student Numbers		
	Admitted 2014	Total Current	Total Graduated
Master in Business Administration (MBA)	72	134	184
Master in Biomedical Sciences (MBS)	32	29	4
<ul style="list-style-type: none"> Biomedical Science (BS) Clinical Embryology & Reprod Biology (CERB) Infection Control (IC) 			
Master in Radiological and Imaging Sciences (MRIS)	41	61	0
Master in Genetic Counselling (MGC)	4	3	0
GRAND TOTAL	149	227	188

Achievements



Alfaisal University Engineering Students to build ultra-fuel-efficient vehicle & to compete in the Shell Eco-Marathon Challenge in Manila in 2015



A Letter of Agreement was signed by HH P. Turki Al Saud the Vice President for Research Institutes at KACST (RHS) and HH P. Bandar Al Saud the Chair of the Alfaisal University Executive Committee (LHS) for collaboration between the Joint Centers of Excellence Program (JCEP) at King Abdulaziz City for Science and Technology (KACST) & Alfaisal University.



Winners in 5th Annual Research Day Student Poster Competition receiving trophies from Honorary Guest Speaker HH Prince Turki Al Saud a Board of Trustees Member and VP for Research Institutes at KACST, HH Prince Bandar Al Saud, Chairman of the Alfaisal University Executive Committee, Dr Faisal Al Mubarak, Alfaisal Provost, HH Dr Maha Al Saud, Executive Director for External Affairs and the respective College Deans

Executive Summary

The total external research funding awarded in 2013-2014 reached 12,903,450 SAR. This total includes 187,500 SAR for five student research projects that will be funded by Boeing, as well as a one-time additional grant for projects of also 187,500 SAR. This is a significant accomplishment for Alfaisal University faculty members, as well as for the Office of Research & Graduate Studies. The external funds came primarily from the National Science Technology & Innovation Plan (NSTIP) Strategic Grants program at 8,826,050 SAR; and the General Directorate for Research Grants (GDRG) program at 3,702,400 SAR. It is noteworthy that the NSTIP grant program is funded through a special strategic fund from the Ministry of Finance. All proposals at present must have the PI from a government institution. The GDRG grants program on the other hand is funded through the KACST budget. In this case the PI can be from a private institution, such as Alfaisal University.

In a major achievement, a Lung Cancer Academy was established by a generous support of 500,000 SAR annually from AlAnoud Foundation under the Saudi Lung Cancer Association, a sub-division of Saudi Thoracic Society and with the administrative support of Alfaisal University. The Academy represents an ideal collaborative initiative between charitable non-governmental organization, academia and professional scientific society that brings high quality educational activities and research programs to the community. The Academy delivers multiple educational programs that reaches many health care professionals with interest in thoracic cancer and sets the infrastructure of more activities to come. The first lectures were presented at the Lung Cancer Academy Annual Comprehensive Conference (LCAACC) held at Alfaisal University in 2014 and posted on the website to allow for free access.

A grand total of SR 1,372,591 was awarded for 30 projects for the IRG2014 competition. These are competitive grant applications which are reviewed by the College Research Committees and approved by the Research & Graduate Studies Council. Starting 2015 IRG submission will be through two cycles, one in January for new faculties & the second in June open for all faculties. Furthermore, a new internal research grant competition has been announced 2014: Strategic Research Grants (SRG 2014). This grant is allocating SAR 500,000 per college. Four projects were chosen, and will be starting in 2015. Research priority areas for Alfaisal University were identified to provide assistance to faculty members in development of strategic research grant proposals that are relevant the needs of the country as well as Alfaisal University.

A new five year Strategic Plan (2013-2018) was developed for the Office of Research & Graduate Studies. Operational Plans were also established in 2013 and 2014 in order to implement the Strategic Plan.

In another significant achievement, the SCImago Journal Rank (SJR indicator) places Alfaisal University 2nd in the Kingdom in Research Excellence. The SJR indicator which is a measure of high quality output of research institutions is based on the excellence of scientific journals as documented in the Scopus database (Elsevier B.V.). The SJR indicator measure of high quality research journal output by Alfaisal University faculty and students confirms a recent Thomson Reuters Report (2013) which showed that Alfaisal ranked 1st in the Kingdom in citation impact of medical papers and 3rd overall. Furthermore, the QS World University Rankings: Arab Region has ranked Alfaisal University 1st in the Kingdom in 5 out of 9 indicators. Alfaisal ranked 1st in papers per faculty, citations per paper, proportion of staff with PhD, proportion of international students, and proportion of international faculty. In the Arab Region Alfaisal University ranked 4th, 5th and 8th out of 50 in the proportion of international faculty, papers per faculty and citations per paper, respectively.

The Alfaisal University 5th Annual Research Day Student Poster competition was held on 10 April 2014. A total of 56 applications were received. There were 17 awards: 7 groups were awarded 1st prize, 6 groups were awarded 2nd prize and 4 groups were awarded 3rd prize. There were four specific categories: Business & Management, Engineering & Technology, Medicine & Health Sciences, and Science and Humanities.

The Office of Research & Graduates Studies took the lead this year to arrange and be responsible for MOHE's 6th Student Competition. The Conference strives to improve the scientific knowledge and leadership skills for students of higher education. Furthermore, it is a great opportunity for students to present and apply the knowledge that they have gained. During this conference, students are provided with the opportunity to present their creative ideas as well as their research and graduation projects. The program will include many moderated activities such as: Presenting scientific research, studies and papers; Well-designed scientific posters; Exhibitions which accompany students' research and scientific innovations; and Competitive and well organized presentations of student made films and documentaries. Alfaisal students also participated in the *Prince Sultan University* 1st Undergraduate Research Forum, where all undergraduate university students at Riyadh's universities presented their research work (e.g. papers or posters).

Alfaisal Students were invited by Boeing to attend a summit *The Atlantic WHAT'S NEXT? Navigating Global Challenges with the Innovation Generation*. The students' attendance & participation in this summit enabled them to be exposed to international experience on how to lead & manage in the innovation world. It also exposed them to a group of the world's top leaders in many fields.

Currently there are four active graduate programs at Alfaisal University. The oldest program is the MBA which has already graduated 184 students. The Masters in Biomedical Sciences (MBS) is a thesis and course work masters. It has three tracks Molecular & Cell Biology (MCB), Infection control (IC) and Clinical Embryology & Reproductive Biology (CERB). There is also the Masters in Radiological & Imaging Sciences (MRIS) which helps to train instructors and Masters in Genetic Counseling which will help to fill a critical need for counsellors in the Kingdom and the region. Furthermore, five other graduate programs are in various stages of approval

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1. Research

The total external research funding awarded in 2013-2014 reached 12,903,450 SAR (Tables 1 to 3). This total includes 375,000 SAR from Boeing. This is a significant accomplishment for Alfaisal University faculty members, as well as for the Office of Research & Graduate Studies. Assuming that we have 130 full time faculty members this works out to about 100,000 SAR per faculty member per year.

The external funds came primarily from the National Plan for Science & Technology (NPST) Strategic Grants program at 8,826,050 SAR (Table 2); and the General Directorate for Research Grants (GDRG) program at 3,702,400 SAR (Table 3). It is noteworthy that the NPST grant program is funded through a special strategic fund from the Ministry of Finance. All proposals at present must have the PI from a government institution. The GDRG grants program on the other hand is funded through the KACST budget. In this case the PI can be from a private institution, such as Alfaisal University.

Table 1. Total Research Funding Awarded in 2013

Type of Funding	Sources	Amount SAR
External	NPST, GDRG, Boeing	12,903,450
Internal	Alfaisal University, IRG, SRG	3,372,591
GRAND TOTAL		16,276,041

1.1 External Research Funding & Activities

1.1.1 National Science Technology & Innovation Plan Grants Awarded

A total of 5 projects totalling 8,826,050 SAR were awarded to Alfaisal University faculty members through the National Science Technology & Innovation Plan (NSTIP) Grants Program administered by KACST but financed through a special strategic fund from the Ministry of Finance (Table 2). Two proposals totalling SAR 3,603,050 are under review. All PIs on NSTIP Grants must have an affiliation with a government institution.

1.1.2 General Directorate for Research Grants (GDRG) Awarded

Faculty members receive grants from the General Directorate for Research (GDRG) which directly funded from the KACST budget and thus more flexible than NSTIP competition. Three projects received a total awarded of 3,702,400 SAR (Table 3). Eight proposals are under review. The main advantage of the GDRG competition is that the PI can be from a private institution such as Alfaisal University

Table 2. National Science Technology & Innovation Plan (NSTIP) Strategic Grants Awarded in 2013-2014. Total Awarded: 8,826,050 SAR

#	Amount SAR	Title	College/ Strat Area	PI/Institution
1	1,631,750	Using Micro- RNAs as Biomarkers for Diagnosing Prostate Cancers	CoM / Medical & Health	Ahmed Yaqinuddin/ KFSHRC
2	1,971,300	Preventing Cardiovascular Disease: Using Nutraceuticals as Nutritional Interventions	CoM / Medical & Health	Paul Ganguly/ KFSHRC
3	1,984,000	Role of Striatin in Regular Calcium Homeostasis in Cardiomyocytes: A novel Regulator of The L-type Calcium Channel	CoM / Medical & Health	Moni Nader/ KFSHRC
4	1,870,000	The design of new composite materials containing metal oxide supported 2D-graphene sheets	CoE/ Nano-technology	Edreese Alsharaeh/ King Abdulaziz University
5	1,369,000	Activated Carbon/Methanol Adsorption-Cooling System Driven by a Novel Solar-Powered Heat Engine	CoE / Engineering	H. Z. Hassan Zohair/ King Saud Univ

Table 3. General Directorate for Research Grants (GDRG) Projects Awarded in 2013-2014. Total Awarded 3,702,400 SAR

#	Amount SAR	Title	College/Area	PI
1	1,192,000	RFID-based Multimodal Wireless Framework for Crowd Monitoring and Control in Hajj	CoE	Nidal Nasser – PI & Hisham Abbas Co-I
2	548,000	Optimized Features Encoding and Classification Algorithms for Protein in Bioinformatics	CoSGS	Belloui Bouzid-PI Brahim Samir Co-I
3	470,000	The Role of the Private Sector in Research & Development: A Case Study of Saudi Arabia	CoB	Necati Aydin
4	1,492,400	Functionalized metal/metal-oxides/graphene nanocomposites for solar renewable energy	CoSGS	Edreese Alsharaeh

1.1.3 Aramco Projects

One of the major achievements over the past two years has been the success of Alfaisal University faculty in the Saudi Aramco University Collaboration Programs (UCP). Three out of six research proposals submitted by faculty members at Alfaisal University were accepted for funding as part of the Saudi Aramco University Collaboration Program (UCP).

The three contracts from Alfaisal University that are currently running include: Dr. Muhammad Azeem Ashraf for a project in applied mathematics and computational modeling entitled “Wear behavior characterization of Stellite alloys using computational modeling”; Dr. Nadimul H. Faisal for a project in the area of oil to hydrogen and fuel cells entitled “Advance anode materials for direct hydrocarbon proton conducting solid oxide fuel cell (PC-SOFC) in auxiliary power units”; and Dr. Rehan Ahmed for research on “Nano-composite carbide coatings for wear resistant applications”, which has applications in advanced and nano-structured materials. Two of three projects are on track with respect to deliverables. Both were completed by the end of 2014 and the third will be completed by early 2015.

1.1.4 New Start-up Medical Implants Company

Alfaisal University is a shareholder, with 1.3% of the shares, in a start-up medical implants company Taragenyx founded in 2012 and located in the UK that focuses on regenerative medicine for primarily orthopedic applications (Website <http://taragenyx.com>). Originally called RRG, the company changed its name to Taragenyx for marketing purposes. Dr Rehan Ahmed, Adjunct Research Professor in College of Engineering at Alfaisal University holds a patent on the technology as a co-inventor. The implants company combines engineering with biology in the development of new medical devices that help the body repair itself. Implants last longer and patients heal faster with far less pain. Specialties include: Orthobioactive Coatings, Biologic Coatings, Orthopedic and Dental Implants, Regenerative Medicine.

1.1.5 Al Anoud Foundation

In a major achievement, a *Lung Cancer Academy* was established by a generous support of 500,000 SAR annually from AlAnoud Foundation in August 2013 under the *Saudi Lung Cancer Association*, a sub-division of *Saudi Thoracic Society* and with the administrative support of Alfaisal University (Figure 1). The Academy represents an ideal collaborative initiative between charitable non-governmental organization, academia and professional scientific society that brings high quality educational activities and research programs to the community. The Academy delivers multiple educational programs that reached many health care professionals with interest in thoracic cancer and set the infrastructure of more activities to come.

The faculty of the Academy have developed a comprehensive curriculum that is structured as follows:

- Target audience is divided into different categories Specialist and non-specialist
- Modular format consists of multiple lectures
- A set of lectures selected by the committee of faculty and interested professionals.

The first lectures were presented at the *Lung Cancer Academy Annual Comprehensive Conference (LCAACC)* in 2014 and posted on the website to allow for free access (<http://www.slca-sts.com/information/lca-slide-presentation.html>).



Figure 1. Lung Cancer Academy stakeholders and sponsors
<http://www.slca-sts.com/information/lca-slide-presentation.html>

1.1.6 K.A.CARE and College of Engineering

Collaboration is underway between KACARE and faculty members in the College of Engineering on a pilot project that serves as a proof-of-concept online building energy monitoring system. There is a need in the Kingdom for a framework that provides researchers and other interested parties with access to KSA building energy use patterns. This will ultimately lead to better design and construction practices related to renewable energy as well as improved building energy codes.

Research, development, and innovation (RDI) is one of the core functions for the King Abdullah City for Atomic and Renewable Energy to enable the achievement of the mission of K.A.CARE to deploy a sustainable energy mix in the Kingdom.

1.1.7 ABB and Alfaisal University

An MOU was signed between ABB Electrical Industries Company Limited and Alfaisal University to assist Alfaisal Saudi graduate students & faculty to apply to join ABB projects in strategic areas such as renewable energy and electrical power efficiency (Figure 2). ABB is one of the world's leading power and automation engineering companies that provides solutions for secure, energy-efficient transmission and distribution of electricity.

Additional areas for collaboration include advising on graduate programs, have ABB staff give lectures in ABB business related areas; advice on improving existing graduate programs and propose new programs; Student Training Initiative: Alfaisal Saudi students spend summer training at ABB Premises with the aim of hiring selected students for full time work with ABB Saudi Arabia; Give Alfaisal undergraduate students in University Preparatory Program and College of Engineering possible access to ABB manufacturing facilities and projects within the Company's rules and regulations; Have ABB sponsor the Annual Research Day Student Poster Competition and/or the Annual Student Innovation Competition.



Figure 2. An MOU was signed by (L to R) Dr Faisal AlMubarak, Alfaisal University Provost, and Eng Mohamed Al Masry the ABB Saudi Arabia Country Manager. Looking on are (L to R) Dr Nidal Nasser, A/Dean of Engineering, Dr Matthues Goosen Assoc VP for Research & Graduate Studies, and Eng Zeid Al-Rumaihi ABB Country HR Manager.

1.1.8 Shell Eco-Marathon Challenge

One achievement that stands out is that Alfaisal University Engineering Students to will be competing in the Shell Eco-Marathon Challenge in Manila in 2015. Shell is supporting students from the College of Engineering to join universities from the region in building ultra-fuel-efficient vehicles and participate in the global Shell Eco-marathon (SEM) challenge to be held in Manila in February 2015. Shell and Alfaisal University signed a Memorandum of Understanding (MOU) on 15 September 2013. The MOU was signed by Acting Dean of the College of Engineering, and the Country Chairman of Shell in Saudi Arabia and Bahrain (Figure 3). The Shell Eco-marathon is a great opportunity for Alfaisal students to apply what they have learned in university and gain hands-on engineering and project management experience.



Figure 3. Alfaisal University Engineering Students to build ultra-fuel-efficient vehicle & to compete in the Shell Eco-Marathon Challenge in Manila in 2015

1.1.9 KACST Technology Innovation Centre on Sensor Technology (TIC)

A KACST Technology Innovation Centre (TIC) on Sensor Technology is being established at Alfaisal University (AU) based on a collaborative research model centred on leveraging the infrastructure of the KACST cleanroom and the research manpower, represented by graduate students conducting research at KACST Consortium Centre of Excellence for Nano-manufacturing Applications (CENA). The 50 million SAR funded TIC will provide the critically needed academic support and thesis supervision for CENA graduate students working at KACST cleanroom under AU faculty members and focuses the research outcome on fabrication of specific products in-line with KACST strategies.

Due to its educational excellence and student quality of both men and women, AU offers a unique environment suitable for this collaborative research between KACST, Saudi and regional universities, and potential industrial partners. Establishing the KACST TIC at AU will enable the university recruit and hire key faculty members who will lead the proposed research thrusts and –at the same-time provide supervision to CENA graduate students. AU proposal to contribute 50% of the cost of said faculty members reflects the university’s commitment to the collaboration. Given the nature and underlying strategy for this TIC, The KACST funding budget of SAR 50 million is requested to be spread over 10 years, instead of the standard 5 years. This will support three to four CENA PhD cycles.

Research on sensor fabrication and technology is interdisciplinary by definition. As illustrated in Figure 4, the development of the sensing phenomena, whether it is chemical, physical, or mechanical represents a key research thrust whose vectors stem from the needs of our industrial partners and collaborators. Based on the utilization model of the sensor, the desire to have the sensor autonomous could be of prime importance. In such case, research on energy sufficiency, power sensitive computing and communications ought to be conducted. The KACST TIC at AU will focus on building sensors for two main application categories; (1) energy and (2) healthcare.

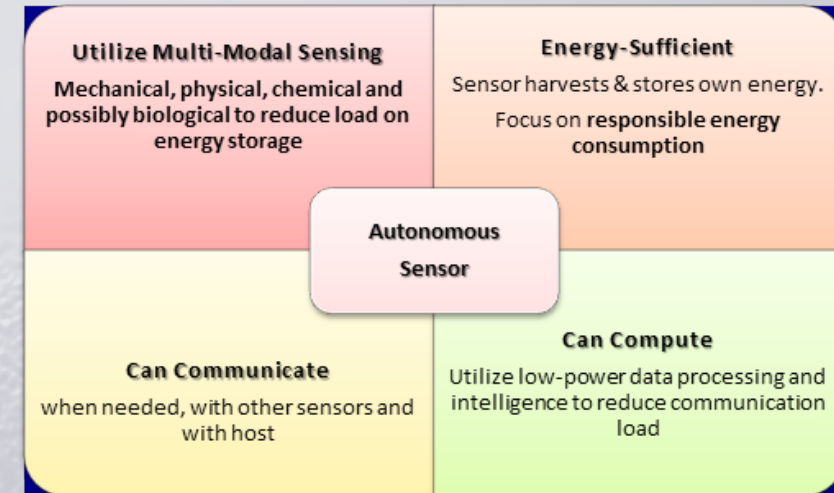


Figure 4. Approach to research vision for KACST TIC on sensor technology at Alfaisal University

1.1.10 JCEP at KACST & Alfaisal University

A Letter of Agreement was signed between the Joint Centres of Excellence Program (JCEP) at King Abdulaziz City for Science and Technology (KACST) and Alfaisal University during the Annual Research Awards Ceremony that was held at the King Faisal Foundation Auditorium on 16 September 2014 (Figure 5).

JCEP at KACST includes several centers in collaboration with world-renowned academic and industry partners, such as MIT, Stanford, Oxford and Cambridge. JCEP’s function is to support and oversee the Joint Centers of Excellence in order to help KACST achieve its strategic objectives in the areas of human capital development and enhancing intellectual property and commercialization.

The current letter of agreement that was signed by HH P. Turki Al Saud the Vice President for Research Institutes at KACST and HH P. Bandar Al Saud the Chairman of the Alfaisal University Executive Committee will allow JCEP partners including MIT and Stanford to contribute in the form lectures and possibly joint student supervision in Alfaisal graduate programs in upcoming graduate programs such as Engineering & Systems Management, as well as in Nano-sciences & Nanotechnology, which are in the final stages of MOHE approval. The agreement will likewise assist Alfaisal Saudi graduate students & faculty to apply to join JCEP projects. Students will also be able to spend summer training at institutes that JCEP is associated with such as Cambridge and Oxford.



Figure 5. A Letter of Agreement was signed by HH P. Turki Al Saud the Vice President for Research Institutes at KACST (RHS) and HH P. Bandar Al Saud the Chair of the Alfaisal University Executive Committee (LHS) for collaboration between the Joint Centers of Excellence Program (JCEP) at King Abdulaziz City for Science and Technology (KACST) & Alfaisal University.

1.1.11 Offset Program, Dassault Systems, Thales & Alfaisal University

Alfaisal University is currently finalizing an agreement with Thales and Dassault Systems to establish a PLM Program (Product Lifecycle Management Program) using the Offset Program. The program will include two components:

- Component A: PLM CURRICULA & TECHNOLOGY FOR HIGHER ENGINEERING EDUCATION Establish world-class academic expertise in teaching advanced engineering software and practices for increased employability
- Component B: PLM COMPETENCY CENTER Give access to entrepreneurs and other Saudi universities to state of the art computing tools and develop know-how Generate sustained revenue flow from selling products and services

The program will be safe & secured with comprehensive assistance from PLM world leader; Quick with a 5 year program to transfer technology, 5 years to ramp up; sustainable with high-value products to sell: services and learning applications; and competitive by making the Kingdom a benchmark in Engineering Education

1.1.12 Boeing Student Research Projects Awards

Boeing has taken the initiative to annually support student research at Alfaisal University through competitive awards. Alfaisal University was founded by the highly reputed King Faisal Foundation as one of the first private non-profit, research and teaching universities in Saudi Arabia committed to achieving international standards of excellence. It has the support of national and international co-founders and

distinguished Board Members such as provided by Boeing, that have continually supported the university in its mission to be a student-centred institution committed to research. The funding provided by Boeing will aid in the building of a strong research oriented institution as envisaged by the King Faisal Foundation.

Five student research projects from the College of Medicine & College of Engineering were funded by the company in 2013-2014. The research funds are administered by the Office of Research & Graduate Studies. In 2014 additional funds have been given to Alfaisal to fund another extra 5 projects as well. The University is extremely thankful to Boeing for taking the initiative to support student research. This is the second year that Alfaisal University has had this competition. The Institution can be very proud of the high quality of our students and the initiatives taking by them to help address areas of strategic concern faced by the country.

1.1.13 MoHE 6th Students Academic Conference 2014

The Office of Research & Graduate Studies took the lead this year to arrange and be responsible for Alfaisal students taking part in the MOHE 6th Students Academic Conference 2014. The Conference strives to improve the scientific knowledge and leadership skills for students of higher education. Furthermore, it is a great opportunity for students to present and apply the knowledge that they have gained. During this conference, students are provided with the opportunity to present their creative ideas as well as their research and graduation projects. The program will include many moderated activities such as:

- Presenting scientific research, studies and papers.
- Well-designed scientific posters.
- Exhibitions which accompany students' research and scientific innovations.
- Competitive and well organized presentations of student made films and documentaries.

1.1.14 Prince Sultan 1st Undergraduate Research Forum

All undergraduate university students at Riyadh's universities were invited to present their research work (i.e. papers or poster) in the *Prince Sultan 1st Undergraduate Research Forum*. Participating at this Forum allowed students to become a speaker at a significant research event in Saudi Arabia. Areas covered by the Forum included:

- Architecture
- Business Administration
- Computer and Information Sciences
- Engineering
- English Language Studies
- General Sciences
- Interior Design
- Law

1.2 Internal Research Funding & Activities

1.2.1 Internal Research Grants (IRG 2014)

A grant total of SR 1,318,591 was awarded for 30 projects for the IRG2014 competition. These are competitive grant applications which are reviewed by the College Research Committees and approved by the Research & Graduate Studies Council.

1.2.2 Strategic Research Grants (SRG 2014-2015)

Two million SAR was awarded over two years in this new strategic grants competition. Each college was awarded up to one project for a total of 500,000 SR per project (Table 4). The projects will start in January 2015. The applications were externally reviewed using a format similar to the KACST NSTIP competition. Winners were Garwin Sing from College of Medicine, George Kulik from College of Science & General Studies, Ricardo Santa from College of Business, and Tarek H. Mokhtar from the College of Engineering.

The main strategic areas & sub areas that were eligible for funding are:

SCIENCE & TECHNOLOGY

- Water
- Energy
- Information Technology
- Environment & Natural Resources

HEALTH, BIOMEDICINE & PHARMACEUTICALS

- Diseases
- Surgery
- Gerontology
- Genetics
- Biotechnology & Biomaterials
- Comparative Effectiveness
- Translational Research

BUSINESS

- Diversification of Economic Base
- Domestic & Foreign Investment
- Economic, Social, Environmental & Cultural Impact of Globalization
- Balanced Regional Development

Table 4. Winners of the Strategic Research Grants Competition 2014 at Alfaisal University

Name of PI	College	Strategic Area	Project Title
Garwin Sing	Medicine	Science & Technology / Health Biomedicine & Pharmaceuticals	An Investigation of the Antimicrobial and Toxic Effects of Reduced Graphene Oxide (rGO) and rGO/Silver nanoparticles
George Kulik	Science & General Studies	Health Biomedicine & Pharmaceuticals	System biology approach to develop personalized cancer therapy by tumor-selective functionalized nanoparticles
Ricardo Santa	Business	Business	Smart City
Tarek Mokhtar	Engineering	Science & Technology	iCE: An intelligent Classroom Environment to Enhance Education in Student-Centered Higher Educational Institutions

1.2.3 Annual Research Awards Ceremony

More than 60 students, in the presence of their parents, faculty and Alfaisal University partners & friends were honoured on 16 September 2014 at the King Faisal Foundation Auditorium in recognition of their research contribution to the University (Figure 6). Winners in the 5th Annual Research Day Student Poster Competition received trophies from the Honorary Guest Speaker HH Prince Turki Al Saud a Board of Trustees Member and VP for Research Institutes at KACST, HH Prince Bandar Al Saud, the Chairman of the Alfaisal University Executive Committee, Dr Faisal Al Mubarak, Alfaisal Provost, HH Dr Maha Al Saud, Executive Director for External Affairs and the respective College Deans; Dr Khaled Al Kattan from Medicine, Dr Nouredine Zettili from Science & General Studies, Dr Nidal Nasser from Engineering and Dr Bajis Dodin from Business. Students who received Boeing Student Research Awards and those taking part in the Shell Eco-Marathon Challenge to build more fuel efficient cars were also recognized.

Faculty Awards for Research Excellence were handed to Dr Paul Ganguly from the College of Medicine, Dr Edreese Alsharaeh from the College of Science & General Studies and Dr Nidal Nasser from the College of Engineering. Patent Awards were handed out to Dr Edreese Alsharaeh and Mr Ali Othman from the College of Science & General Studies and Dr Mohammad AlDosari from KACST. Furthermore, an agreement was signed between the Joint Centres of Excellence Program (JCEP) at King Abdulaziz City for Science and Technology (KACST) and Alfaisal University.

The evening ended with special acknowledgment and thanks to the following Alfaisal partners & friends for their tremendous support in building a research infrastructure and for their unceasing support in the development of students and faculty members; HH Prince Khalid Al Saud, Board of Trustees Member; HH Prince Turki Al-Saud, Board of Trustees Member and VP for Research Institutes at KACST; Dr Sultan Al Sedairy, Executive Director of the Research Centre at KFSHRC; Eng Ahmed Jassar, Board of Trustees Member and President of Boeing Saudi Arabia; Mr Patrick Van Daele, Country Chairman of Shell Saudi Arabia & Bahrain; and Dr Maher Alodan Director of Research, Development and Innovation at K.A.CARE.



Figure 6. Winners in 5th Annual Research Day Student Poster Competition receiving trophies from Honorary Guest Speaker HH Prince Turki Al Saud a Board of Trustees Member and VP for Research Institutes at KACST, HH Prince Bandar Al Saud, Chairman of the Alfaisal University Executive Committee, Dr Faisal Al Mubarak, Alfaisal Provost, HH Dr Maha Al Saud, Executive Director for External Affairs and the respective College Deans

1.2.4 Annual Research Day Student Poster Competition

The Alfaisal University 5th Annual Research Day Student Poster Competition was held on 10 April 2014. A total of 56 applications were received in four specific categories: Business & Management, Engineering & Technology, Medicine & Health Sciences, and Science and Humanities. A total of 17 posters received awards: 7 posters were awarded a 1st prize, 6 groups were awarded a 2nd prize and 4 groups were awarded a 3rd prize (Table 5). The winning students were honoured on 16 September 2014 at the King Faisal Foundation Auditorium in recognition of their research contribution to the University.

Table 5. Winning Poster of the 5th Annual Research Day Student Poster Competition held 10 April 2014 at Alfaisal University

BUSINESS & MANAGEMENT		
Prize	Poster Number	Poster Title and Authors
1 st	B03- AlGhuneim2014	Introducing Zakat to The Saudi Mortgage Market Jude Tashkandi & Reem AlGhuneim
1 st	B05- AlGhuneim2014	Tadawul's Comparative Analysis in Market Efficiency Jude Tashkandi, Malikh Bazarbashi, Noura AlAgil, Reem AlGhuneim
2 nd	B04- AlHammadi2014	Portfolio Diversification in an Emerging Market: The Case of Tadawul <i>Rima AlHammadi, Khulood AlMukiren</i>
3 rd	B07- Alsaud2014	Modelling The Implementation of Business Entrepreneurship Project: A Case of School Children Management Project <i>Duna Alsaud, Noha AlOthman, Abeer Alsaud</i>
ENGINEERING & TECHNOLOGY		
Prize	Poster Number	Poster Title and Authors
1 st	E03- Abdelaty2014	Development and Control of a Wireless Motor <i>Mohamed Tarek Abdelaty, Amgad Tarek Abdelaty, Reem Abdulrahman Mahmoud, Ahmed Medhat Aboutaleb</i>
2 nd	E02- Abdelaty2014	Using Stirling Engine for Solar Energy Conversion in Medium to Large Scale Applications <i>Mohamed Tarek Abdelaty, Mohammed Munair Alnajjar</i>
SCIENCE & HUMANITIES		
Prize	Poster Number	Poster Title and Authors
1 st	S01- Alromizan2014	Role of mTOR Activity in Pathogenesis of Epithelial Ovarian Cancer <i>Maha Al-Romaizan, Azhar R Hussain, Shahab Uddin and Khawla S Al-Kuraya</i>
2 nd	S02- Alshalan2014	Expression Profiling of Epigenetics and Chromatin Remodelling Factors in Human Heart Failure <i>Sara AlShalan, Salma Mahmoud & Coralie Poizat</i>
MEDICINE & HEALTH SCIENCE		
Prize	Poster Number	Poster Title and Authors
1 st	M30- Rahmatullah2014	Postoperative Mid-Term Results of Tricuspid Valve Surgery: Does Valve Repair Have a Better Outcome <i>Mohammad A. Shareef, Syed Hassan Rahmatullah, Nedim Selimovic, Aly AlSanei, Ulf Kjellman</i> <i>Odd Bech Hanseen, Maie Alshahid, Zohair AlHalees, Feras Khaliel</i>

1 st	M10-Dirar2014	The role of SAMHD1 in HIV-2 (Vpx) gene expression and its relation to HIV-2 pathogenesis <i>Qais S. Dirar(1,2), Ahlam Bock(1,3),Walaa Al-Arnous(1),Talal Bakir(3)Abdullah Al-Hokail(1,2),Abdul Rahman Alrajhi(1,2), Majid Halim(1,2),Mohammed Al-Ah-dal(1,2), Maha AlMozaini(1)</i>
1 st	M23- Faiz2014	Cardiac mechanics in patients after arterial switch operation: a speckle tracking echocardiography study AA Faiz, AM Khan,SH Rahmatullah,G Di salvo,Z Al Bulbul,Z Issa,BM Fadel,G Siblani,M Al Fayyadh
2 nd	M24- Mosher2014	TICC TOCC: Transitioning Immediate Cord Clamping To Optimal Cord Clamping to Improve Infant Iron Status <i>Cynthia Mosher,Wesam Alkurdi, Samy Kadaan,Sara Mortaja and Hadi AlHalabi</i>
2 nd	M08-Hoilat2014	The fate of medical students' abstracts presented in the Gulf Cooperation Council Countries Conference for medical students Judie Hoilat, Abdulaziz eshaq, Abdulrahman AlKhateeb, Abdulrahman Bakath-eer, Adem Subait, Ahmed Fothan, Alaa Alsafar, Haneen Thapit, Wedad Alnajjar, Mohammed Alkhani, Abdulhadi al amoudi
2 nd	M21-Mustafa2014	Prevalence and Factors Associated with Self-Medication Practice among Young Adults in Saudi Arabia ,Osama Mustafa, Asma Mustafa
3 rd	M26- Salah2014	Peer-assisted Learning (PAL) Program at Anatomy Resource Centre, Alfaisal University: Student's Perception <i>Haneen Thabit Salah, Judie Hoilat, Sana Kadan, .Wissal Alsheikh, Mohammad, Omer, Sadia Qazi and Muhammad Atif Mazhar</i>
3 rd	M11-Abdulba-ki2014	Supramammillary commissure as an internal landmark for subthalamic nucle-ous targeting Arif Abdulbaki,Amal Mokeem, MD,Thamer Al-Khairallah,MD,Faisal A. Al-Otaibi, MD
3 rd	M16-Dirar2014	Mutations in the formin gene inverted formin 2 gene (INF2) cause focal seg-mental glomerulosclerosis Qais S. Dirar,Hua Suna, Johannes S. Schlöndorff, Elizabeth J. Brown, Henry N. Higgs, and Martin R. Pollak

1.3 Strategic and Operational Plans for Office of Research & Graduate Studies

A new five year Strategic Plan (2013-2018) has been developed for the *Office of Research & Graduate Studies* (pls see ORG website <http://web.alfaisal.edu/research/>). Annual *Operational Plans* have also been established in order to implement the Strategic Plan.

1.4 Research Laboratories

The University currently has a total of 41 laboratories consisting of 10 research laboratories and 31 laboratories to support undergraduate teaching (Table 6). Over the past two years the number of research labs has increased from 4 to 10 and undergraduate labs have gone from 28 to 31, a 250% and 11% increase, respectively. This report summarizes status of all undergraduate & research laboratories at Alfaisal University in terms of usage, ownership & readiness for undergraduate courses and research (Table 2). It was compiled with the assistance of the colleges. Two of the labs (S3-73 (Preparation) & S3-81 (Path/Microb/Physio)) are used for both undergraduate and research thus making the actual total number of labs 39.

Table 6. Increase in Number of Laboratories at Alfaisal University from 2012 to 2014

Type of laboratory	Number of laboratories by Year	
	2012	2014
Research	4	10 (8)*
Undergraduate	28	31
Grand Total	32	41 (39)*

*Two laboratories are shared between research and undergraduate courses

The 10 research laboratories (Table 6) consist of:

- Three College of Engineering labs:
 - CB-6-Renewable Energy, (NEW)
 - CB-10 Shell Eco marathon & Capstone (NEW)
 - SG-52 Nano-indentation,
- Two College of Science & General Studies labs
 - SG-77 Preparation,
 - SG-82 COSGS Faculty Research)
- Five College of Medicine labs
 - SG-63 Physiology
 - SG-81 Biomedical Research (NEW?)
 - S3-73 Preparation (both research & undergrad) (NEW)
 - S3-81 Path/Microbiology/Physiology (research & undergrad) (NEW)
 - SB-10 Biomedical Research (HPLC)

These laboratories will help to improve the in-house research quality at Alfaisal University. A total of 800K SAR was spent in 2014 from the Office of Research & Graduate Studies budget for laboratory equipment purchases and construction costs.

1.5 Analysis of Research Output & Research Performance Indicators

Research output by Alfaisal Faculty has been assessed using both external (i.e. Scopus database) and internal sources. To summarize, Table 7 shown below which is based on Scopus data indicates that Alfaisal is doing well in terms of research output. In 2013 for example 165 journal papers were produced showing Alfaisal University as an affiliation of at least one of the authors. By November 2014 the cumulative total number of publications with an Alfaisal affiliation was 568. By November these 568 papers had been cited 2937 times by other papers.

Table 7. Research Output (Based on Scopus Data)

Year	2008	2009	2010	2011	2012	2013	2014(est)
Publications* per Year	2	27	55	63	138	165	145
Cumulative Total Publications	2	29	84	147	285	450	595
Number of Citations/Yr	0	5	80	215	507	1033	1360
Cumulative Total Citations	0	5	85	300	807	1840	3200
Number Publ/FTF**/Yr (est)	0.1	1.0	1.2	1.0	1.3	1.3	1.1
Number Citations/Total Publ/Yr	0	0.2	1.0	1.5	1.8	2.3	2.3

* Publications showing Alfaisal University as affiliation and ** FTF= full time faculty

1.5.1 Thomson Reuters Research Performance Indicators Report

The high quality of the research output by Alfaisal faculty members was confirmed by a recent Research Performance Indicators Report 2013 (The 3rd Report) commissioned by KACST from Thomson Reuters (Figure 7). Alfaisal University ranked 1st in the Kingdom with the highest average citation impact of 1.46 for clinical medical & health sciences papers. The report analysed research output such as publications, patents and research funding of 30 research institutions in Saudi Arabia during a five year period 2008-2012. Overall, the University ranked 3rd highest out of 30 in average citation impact in all categories. In addition, Alfaisal University also scored 1st in external research funding for private universities with 16.7 million SAR for the period 2010-2013.

Dr Faisal Al Mubarak, the Alfaisal University Provost, Vice President & Chief Academic Officer said "We are extremely proud of the high quality and productivity of our faculty members as well as our students. The 1st ranking nationwide in citation impact of the medical papers produced by our faculty as well as the highest level of external funding for a private university are excellent examples that the University is well on its way to achieve its Vision to be a world-class research university."



Figure 7. Thomson Reuters Research Performance Indicators Report Ranks Alfaisal University 1st in Kingdom in Citation Impact of Clinical Medical & Health Sciences Papers
http://publications.kacst.edu.sa/SystemFiles/Books_Pdf/PDF_635391133237974950.pdf

1.5.2 SCImago Journal Ranking (SJR indicator) of Research Excellence

In another significant achievement, the SCImago Journal Rank (SJR indicator) places Alfaisal University 2nd in Kingdom in Research Excellence (Table 8). The SJR indicator which is a measure of high quality output of research institutions is based on the excellence of scientific journals as documented in the Scopus database (Elsevier B.V.). This is the first year (i.e. 2014) that Alfaisal University has been included in the SCImago Journal Ranking. The SRJ indicator is a measure of the scientific influence of scholarly journals that accounts for both the number of citations received by a journal and the importance or prestige of the journals where such citations come from. The Excellence Rate indicates which percentage of an institution's scientific output is included in the 10% of the most cited papers in their respective scientific

fields. The SJR indicator measure of high quality research journal output by Alfaisal University faculty and students confirms a recent Thomson Reuters Report (2013) which showed that Alfaisal ranked 1st in the Kingdom in citation impact of medical papers and 3rd overall.

Table 8 SCImago Journal Rank (SJR indicator) places Alfaisal University 2nd in Kingdom in Research Excellence of Scientific Papers

KSA Rank	World Rank	KSA Institution	Excellence Rate
1	522	King Abdullah University of Science and Technology	40.39
2	1053	Alfaisal University	27.92
3	1339	King Abdulaziz University	21.87
4	1366	King Saud University	21.33
5	1385	Tabuk University	20.86
6	1445	King Fahd University of Petroleum and Minerals	19.67
7	1540	King Faisal Specialist Hospital and Research Centre	17.61
8	1549	King Abdulaziz City for Science and Technology	17.40
9	1557	King Saud bin Abdulaziz University for Health Sciences	17.25
10	1722	Taif University	13.81

1.5.3 QS University Rankings for the Arab Region

The QS World University Rankings: Arab Region has ranked Alfaisal University 1st in the Kingdom in 5 out of 9 indicators. Alfaisal ranked 1st in papers per faculty, citations per paper, proportion of staff with PhD, proportion of international students, and proportion of international faculty (Table 9). In the Arab Region Alfaisal University ranked 4th, 5th and 8th out of 50 in the proportion of international faculty, papers per faculty and citations per paper, respectively. Furthermore, while Alfaisal has an overall ranking of 8 in the Kingdom and 42 in the Arab Region, it should be noted that the QS ranking methodology, which is largely based on surveys, is reputation driven with 50% of an institution's score derived from surveys. Nevertheless Alfaisal University did extremely well with the more academic indicators at the national and regional levels. These results are supported by two other recent academic performance indicators. The Research Performance Indicators Report 2013 commissioned by KACST from Thomson Reuters had Alfaisal University ranking 1st in the Kingdom with the highest average citation impact for medical sciences papers. Another indicator, the SCImago Journal Ranking (SJR indicator) placed Alfaisal University 2nd in Kingdom in Research Excellence. The SJR indicator which is a measure of high quality output of research institutions is based on the excellence of scientific journals as documented in the Scopus database (Elsevier B.V.).

The QS University Rankings: Arab Region published by British Quacquarelli Symonds (QS) is a dedicated ranking of the top universities in Arabic countries (<http://www.iu.qs.com/arab-region-rankings/>). Published for the first time in 2014, this is a pilot version of the ranking with a methodology that has been

developed to reflect priorities and challenges for universities in the region. Currently Alfaisal University, and for example KAUST, are not ranked in the regular QS World University Rankings System presumably because they are too new.

Table 9 Comparison of Alfaisal University Ranking with National Universities using the QS World University Rankings for the Arab Region. The QS ranking methodology, which is largely based on surveys, is reputation driven with 50% of an institution's score derived from surveys.

(Adapted from <http://www.iu.qs.com/arab-region-rankings/>).

Weight (%)*	Indicator	Alfaisal University Ranking		King Saudi University Ranking		King Fahd University of Petroleum & Minerals Ranking	
		Saudi Arabia	Arab Region	Saudi Arabia	Arab Region	Saudi Arabia	Arab Region
30	Academic Reputation from Global Survey	8	51+	2	5	1	2
20	Employer Reputation from Global Survey	NA	NA	2	11	1	8
20	Faculty Student Ratio	8	51+	1	11	2	14
5	Proportion of Staff with PhD	1	25	4	51+	3	42
5	Papers per Faculty from Scopus	1	5	3	12	2	8
5	Citations per Paper from Scopus	1	8	2	29	3	35
2.5	Proportion of International Faculty	1	4	7	51+	3	33
2.5	Proportion of International Students	1	24	6	51+	3	44
10	Web Impact from Webometrics	8	51+	1	1	3	5
OVERALL (based on weighted average*)		8	42	2	3	1	1

2. Graduate Studies

2.1 Graduate Programs

Currently there are four active graduate programs at Alfaisal University (Table 10). The oldest program is the MBA which has already graduated 184 students. The Masters in Biomedical Sciences is a thesis and course work masters. It has three tracks Biomedical Sciences (BS), Infection control (IC) and Clinical Embryology & Reproductive Biology (CERB). There is also the Masters in Radiological & Imaging Sciences (MRIS) which helps to train instructors and Masters in Genetic Counseling (MGC) which will help to fill a critical need for counsellors in the Kingdom and the region.

Table.10 Current Graduate Programs

Program	Student Numbers		
	Admitted 2014	Total Current	Total Graduated
Master in Business Administration MBA	72	134	184
Master in Biomedical Sciences MBS	32	29	4
<ul style="list-style-type: none"> • Biomedical Science (BS) • Clinical Embryology & Reproductive Biology (CERB) • Infection Control (IC) 			
Master in Radiological and Imaging Sciences MRIS	41	61	0
Master in Genetic Counselling MGC	4	3	0
Total	149	227	188

2.2 Upcoming Programs

Alfaisal is implementing five other graduate programs. These programs are in various stages of approval (Table 11).

Table.11 Up coming Graduate Programs

Programs	Status
1 Masters in Engineering & Systems Management (COE)	Final stage of MOHE approval
2 Masters in Applied Nanotechnology (COSGS)	Final stage of MOHE approval
3 Masters in Public Health (COM)	Final stage of MOHE approval
4 Masters in Renewable Energy Management (COE)	To be submitted to MOHE after internal approval
5 Doctoral Program in Biomedical Sciences (COM/COE/ COSGS/ KSFHRC)	The program has gone through the internal and most of the external approval process. To be sent to MOHE permission to start.



Alfaisal