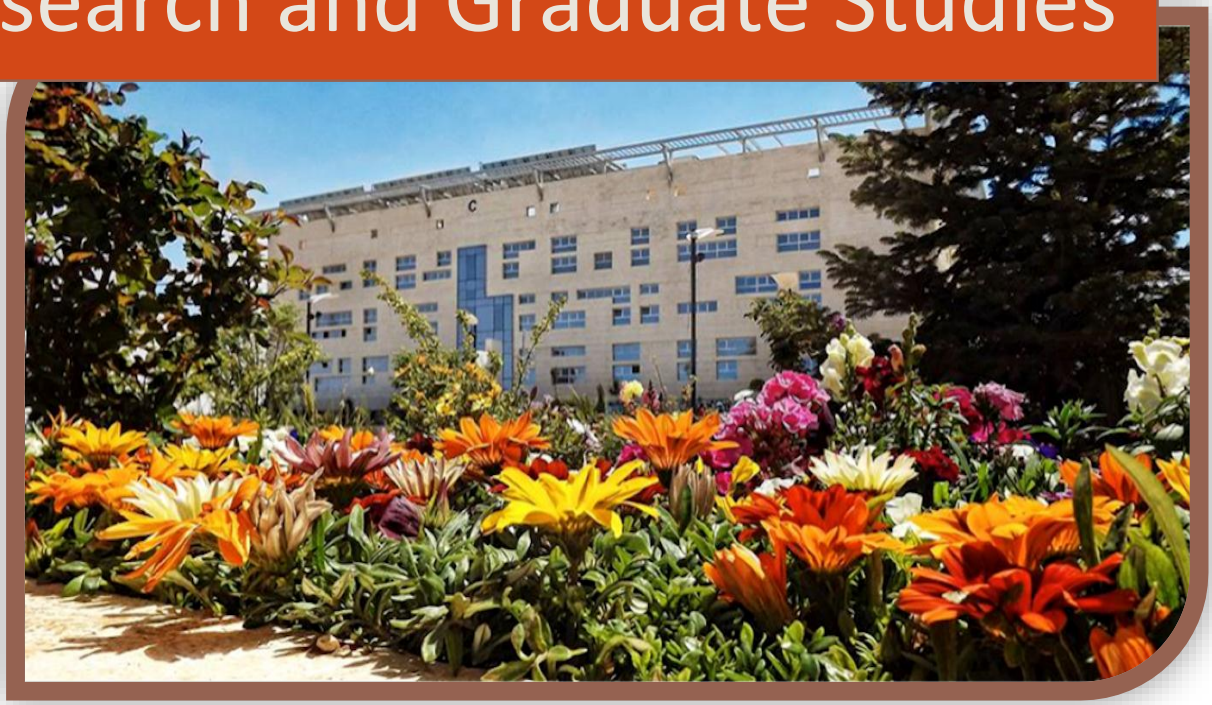
GJU

الجامعة الألمانية الأردنية

German Jordanian University

Research and Graduate Studies



Annual Report | 2016

Innovative research, graduate learning and teaching, and creative practice

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PREFACE

The German Jordanian University (GJU) has proven to be one of the leading universities in Jordan and its uniqueness comes from the design of its programs being responsive to the market demand and the needs of industry, management, and government.

Graduate studies at GJU are of distinguished nature, with highly regarded graduate programs taught in English with most entrepreneurial and innovative curricula structures adapted to the industrial needs and offered at a unique location with state-of-the-art facilities and resources. Many graduate programs are operated with one or more German partner universities. Students may choose to spend one semester in a German partner university. Such an interaction is vital to the transfer of high tech expertise in all fields. GJU graduate programs benefit from the flying faculty program, which is supported by DAAD, where a German Faculty member may spend few weeks at GJU teaching a regular course in an intensified manner. Furthermore, a profound partnership has been established with the private sector for the graduate school of business and public private partnership will continue to be enhanced.

Scientific research at GJU is considered to be one of the vital roles of faculty members. High caliber research has profound impacts on researchers, students, the institution and the country. It stimulates thought, expands horizons, enhances reputations, finds new topics for master theses students and solves important issues. The deanship is meant to help GJU achieves these goals. This is done through providing seed funding for research grants, supporting access to national and international funding, facilitating publication of research results, and encouraging faculty to participate in international scientific conferences. It is intended to establish profound research lines that will ultimately be self-sustaining. GJU provides limited funds to be used as seed grants, stop gap grants, supplementary grants and student research grants.

This report provides an overview of graduate studies, their distinguishing factors, and evolution over the past years. It also provides an overview on the scientific research, project funding, and publications in esteemed scientific journals. We strive to provide fascinating environment for innovative research, graduate learning and teaching, and creative practice so that our students receive a well-rounded education and our faculty get optimal support, while ensuring that codes of academic discipline are fulfilled to the maximum possible extent with transparency and equal opportunity for all.

Sincerely,

Prof. Dr. Salem Al-Agtash
Dean of Graduate Studies and Scientific Research

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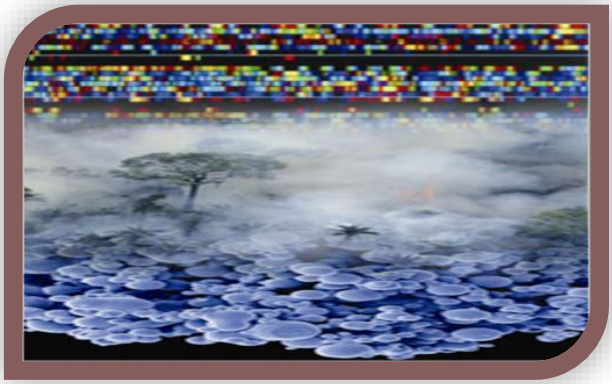
DEANSHIP



The mission of GJU Deanship of Graduate Studies and Scientific Research (GSSR) is to provide a distinguished graduate educational experience and essential resources and services to promote excellence in research and innovation. We follow GJU's model of applied sciences that is characterized by its philosophy of combining theoretical knowledge with practice and application-oriented approaches of teaching and research. In collaboration with schools and departments, GSSR offers graduate degrees in variety of disciplines including engineering, architecture, business, language, and logistics.

Team

The team of the deanship follows on day-to-day work supporting the development of the graduate studies and scientific research lead by the dean Prof. Dr. Salem Al-Agtash responsible for the strategic planning and execution of all matters related to graduate studies and scientific research.

Assistant dean Eng. Rasha Homoud

Eng. Rasha is developing GJU project office to oversee, support, and monitor all types of grants and projects related to research. She follows a process of inception, facilitation, monitoring, communicating and reporting on all types of projects being carried out at GJU.

Officer Eng. Fatima Mashaaleh

Eng. Fatima administers the office of the deanships, organizes the council of graduate studies, and follows on the decision making process. She administers programs of graduate studies and follows on the admission and registration processes of all graduate students.

Administrator Mrs. Diana Al-Shawabkeh

Mrs. Diana administers scientific research and support project offices. She follows on administration matters in regard to research projects as well as profiles of research grants and implementation.

GRADUATE STUDIES

Pursuing graduate studies is a key to personal development as it supports self-initiatives and talents to explore research potential for solving pressing global challenges and issues; provides self-esteem to contribute to advancement of science and discovery of new knowledge; and improves job opportunities and living standards with advanced knowledge and skills.

Factors of success

Distinguished factors of GJU's graduate studies include:

- Highly regarded programs taught in English with most entrepreneurial and innovative curricula structures adapted to the industrial needs
- Highly qualified faculty members equipped with profound industry and research experiences
- Unique location with state-of-the-art facilities and resources
- Multidisciplinary research that bridges science from variety of domains
- Selective admission process for all programs
- Welcoming community inspired by trust, respect, values, and integrity
- Opportunity to study in Germany via the study abroad program organized in coordination with GJU partner universities
- Opportunity to obtain GJU or DAAD scholarship for further postgraduate degrees

Graduate programs

GJU graduate programs comprise of a number of credit hours with compulsory and elective courses and thesis or comprehensive exam. The study approach is based on practice, work challenges, and case study. Figure 1 shows the number of enrolled students in 2016 and comparisons with previous years since 2010.

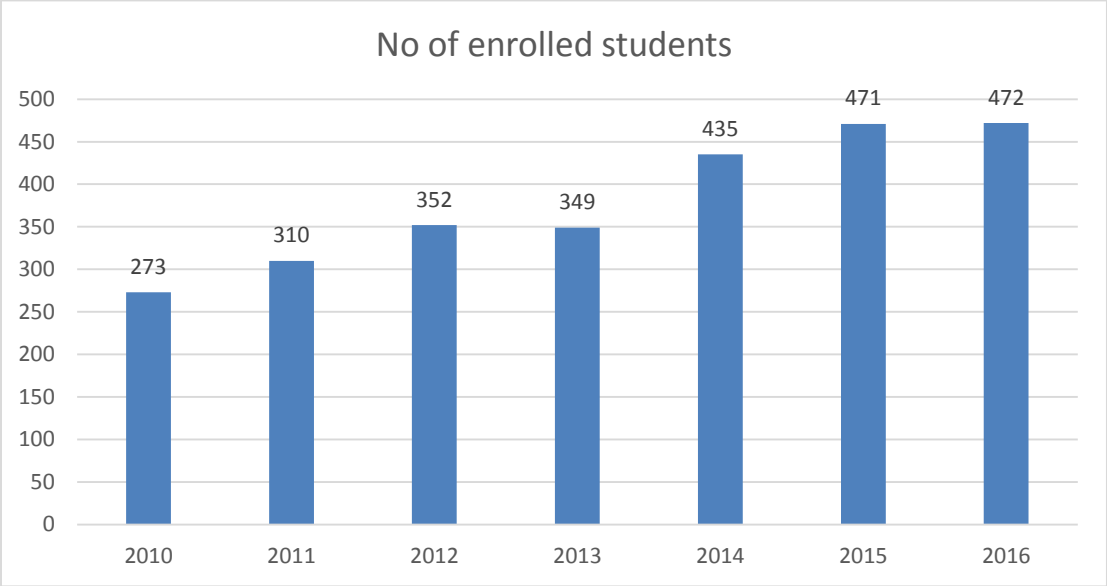


Figure 1: Number of students enrolled in graduate programs during 2010 – 2016.

GJU offers the following graduate programs on both thesis and non-thesis tracks:

Architectural Conservation

The M.Sc. program in Architectural Conversation is designed for students whose career interests are in architecture. It provides knowledge and understanding of architectural conservation, along with practical conservation skills to preserve buildings and heritage sites.

Business Administration

The MBA program in Business Administration is designed for students whose career interests are in management and business careers. The program has been designed to bolster the advancement of knowledge with practical real-world applications. Its major concentrations are in Management, Marketing, Human Resources Management, Banking and Finance, Quality Management and Logistics.

Computer Engineering

The M.Sc. program in Computer Engineering is designed for students whose career interests are in computer hardware, software, networking, and robotics. The program's unique feature is in the applied nature that fosters hands on experience as well as research innovation. The core courses of the program provide students with a broad knowledge of computer systems, advanced topics in operating systems and computer architecture, networking, and distributed systems. The core courses are to be taken at GJU in the first two semesters of the program. After completion of the first year, students have their choice of specialized courses to be offered at GJU or taken at the German partner universities. These specialized tracks are: autonomous system, hardware system design, computer network, and software system design.

Enterprise Systems Engineering

The M.Sc. program in Enterprise Systems Engineering is designed for students whose career interests are in enterprise systems. It is designed to use the systems engineering life cycle as a framework for linking outcome-based engineering analysis and decision making with enterprise strategic objectives, addressing methods and tools for managing complexity, determining measures of effectiveness, and assessing return on investments from an engineering perspective. Gradates of this program will be able to build an awareness of computing practices in industry and emerging technologies, emphasizing a working knowledge of current computer design and development techniques.

Environmental and Renewable Energy Engineering

The M.Sc. program in Environmental and Renewable Energy Engineering is designed for students whose career interests are in environment and energy. This program provides integration of environmental and renewable energy under the heading of sustainability. Students acquire deep understanding of the issues of sustainability, discussing issues such as ecosystem approaches, collapse, efficiency traps, fossil fuel depletion and its implications. A key component of the program lies in providing solid background in alternative energy sources.

German as a Foreign Language

The MA program in German as a Foreign Language is designed for students whose career interests are in culture, linguistics, and training. The program covers both theoretical and practical content in the field of "Deutsch als Fremdsprache" (DaF) ("German as a Foreign Language"). The content includes language training as well as hands-on training in country and culture studies, linguistics, methodology, scientific and research work, technical language communication, literature, German foreign cultural policy in conjunction with intercultural communication. Particular attention is placed on practical on-the-job- training through regular

visits, observations as well as the training offered by the German Department. These measures introduce students to their future work as quickly as possible. Holders of the DaF-Master program qualification are expected to work as lecturers of German language and culture (or "Cultural mediators") in universities, schools, and relevant institutions.

Logistic Management

The M.Sc. program is designed for students whose career interests are in Logistics. It aims to provide students with a comprehensive and coherent set of knowledge in logistics and supply chain management processes and activities. Areas include warehouse design and optimization, inventory control, transportation management, purchasing strategies, humanitarian relief logistics, production and operations management, and other fields.

Spatial Planning

The M.Sc. program in Spatial Planning is designed for students whose career interests are in sustainable planning and urban design. The program is interdisciplinary and it incorporates multi-dimensional perspectives using problem-solving practical approaches to achieve integrated sustainable planning and urban design. Graduates are prepared to contribute to the contemporary built environment at the local, regional, and international arenas with their hands-on up-to-date theories and practices.

The distribution of student enrolment in the programs during 2013 – 2016 is given in figure 2. The highest enrolment is in the MBA project at Talal Abu-Ghazaleh Graduate School of Business.

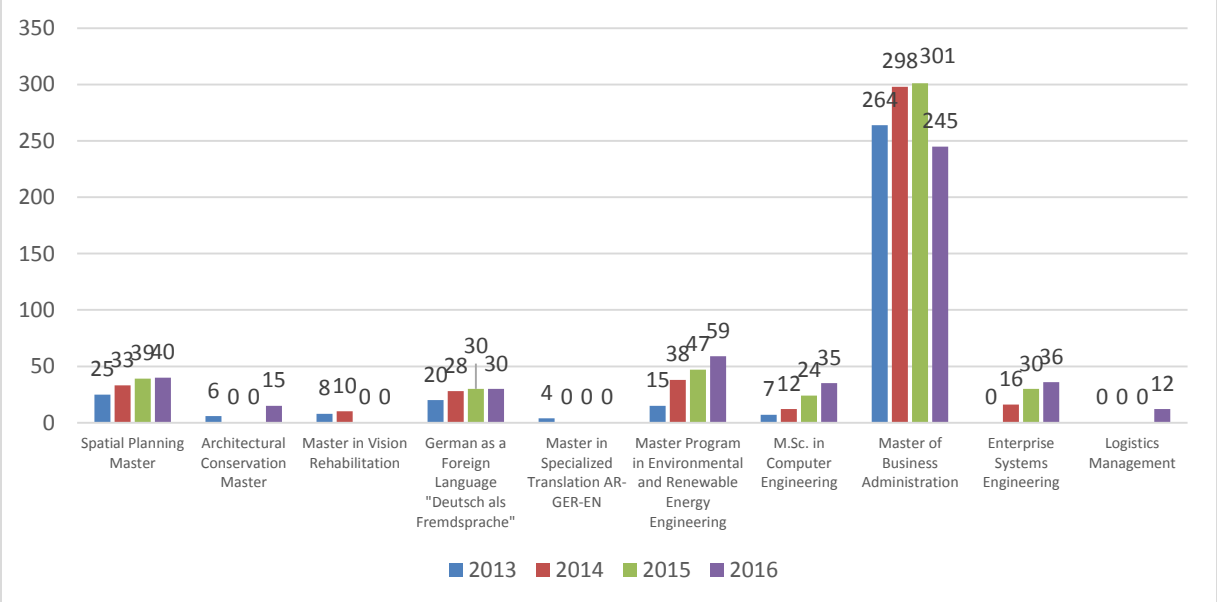


Figure 2: Student enrolment in GJU graduate programs during 2013 – 2016

Scholarships

- Teaching assistant grant up-to a full waiver of tuition and fees and monthly stipends
- Academic excellence grant with full waiver of tuition and fees and monthly stipends
- Scientific research grant with monthly stipends

Council of graduate studies

A council is formed every academic year with representatives from the departments that offer graduate programs at GJU. The council oversees the decision making process of the graduate studies, including decisions of opening new programs, curricula revision, topic of master thesis, and appointing supervisors.

SCIENTIFIC RESEARCH

The research philosophy of GJU is based on active engagement with the need of the society and the private sector to anticipate and solve current and foreseen issues. Therefore, its regulation encourages scientific research not simply for the sake of producing published research papers in high quality international journals (which is a by-product of the approach and not a central goal), but to address real needs that Jordan faces.

Projects

A strong research profile is built and faculty members have been active in many research-funding projects nationally and internationally. The main emphasis of research is on the fields of energy, medical applications, water, and ICT. Research focus is highly linked to faculty research projects funded: Internally by GJU seed funding, nationally by the Scientific Research Fund, or externally by international programs mainly the EU funded Tempus and FP7/ H2020 projects. The level of research funding and intangible support for research that the university receives from various funding agencies reflects the engagement of faculty with research needs as well as trust and credibility GJU has established.

Figure 3 shows the growth in the number of projects granted to GJU faculty members by different funding agencies during the last six years. In 2015, there is a growth of 370% of new projects. In 2016, the number of projects is 21 as the number of projects to be managed by faculty members will be limited.

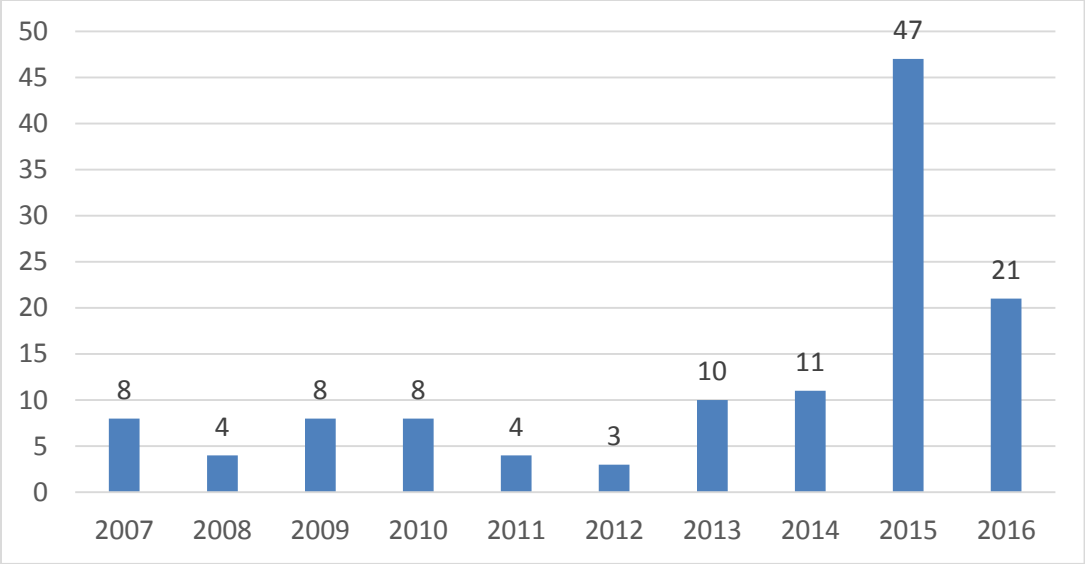


Figure 3: Number of projects granted to GJU faculty members during 2007 – 2016.

The distribution of the projects among the schools during 2013 – 2016 is given in Figure 4. The schools of electrical engineering and information technology, applied technical sciences, natural resources engineering, and applied medical sciences are leading in project implementations.

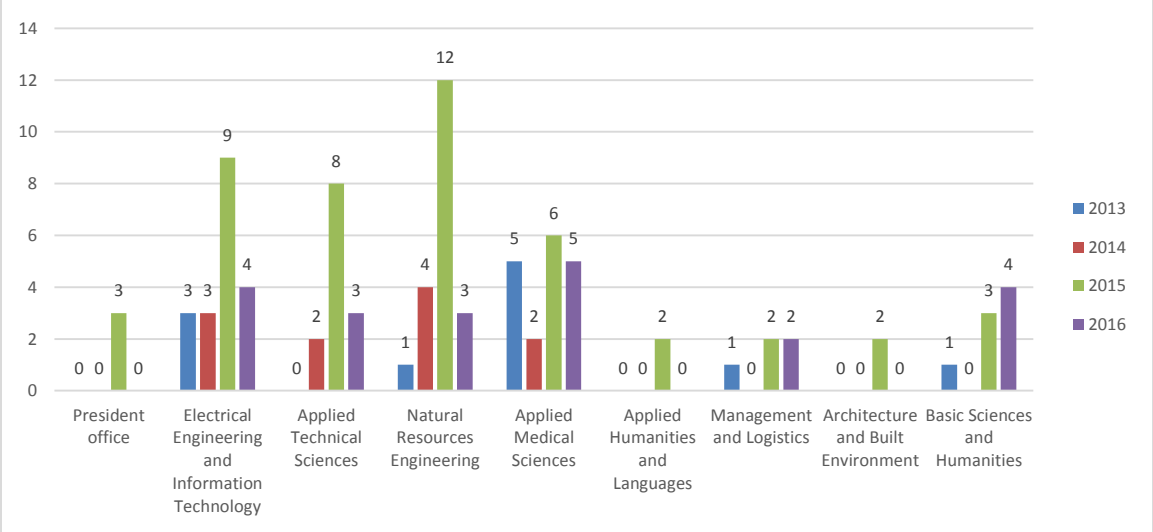


Figure 4: Distribution of projects in schools during 2013 – 2016.

Figure 5 shows the funding amounts in Jordan dinars during the same period 2007 - 2016. There is a correlation between the increase number of projects and the funding amounts. The funds represent the total project amounts, which are often distributed among project partners with an average GJU's share of 20%.

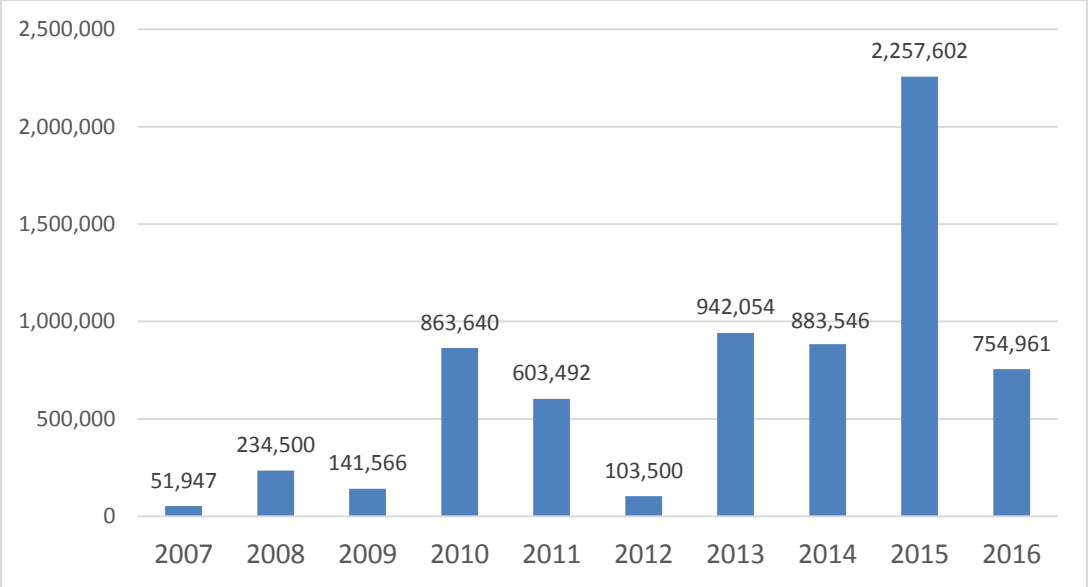


Figure 5: Funding amounts in Jordan Dinars[1] granted to GJU faculty members during 2007 – 2016.

[1] One Jordan Dinar currency is equivalent to about 1.3 Euros

The distribution of funding sources/ donors during 2009 – 2015 is given in figure 6. In 2015, the number of projects funded by GJU seed sources is 45 with a total amount of 457,504.00 Jordan dinars. The number of projects funded by the European Union as joint projects is 25 with a total amount of 3,629,971.00 Jordan dinars. The number of projects funded by the National Scientific research funds is 15 with a total amount of 784,546.00 Jordan dinars. In 2016, the number of projects funded by GJU seed is 18 with a total amount of 465,877.00 Jordan dinars, one project was funded by the National Scientific Research fund of a total of 114,700.00 Jordan dinars and 2 projects were funded by EU as joint projects with a total amount of 174,384.00 Jordan dinars.

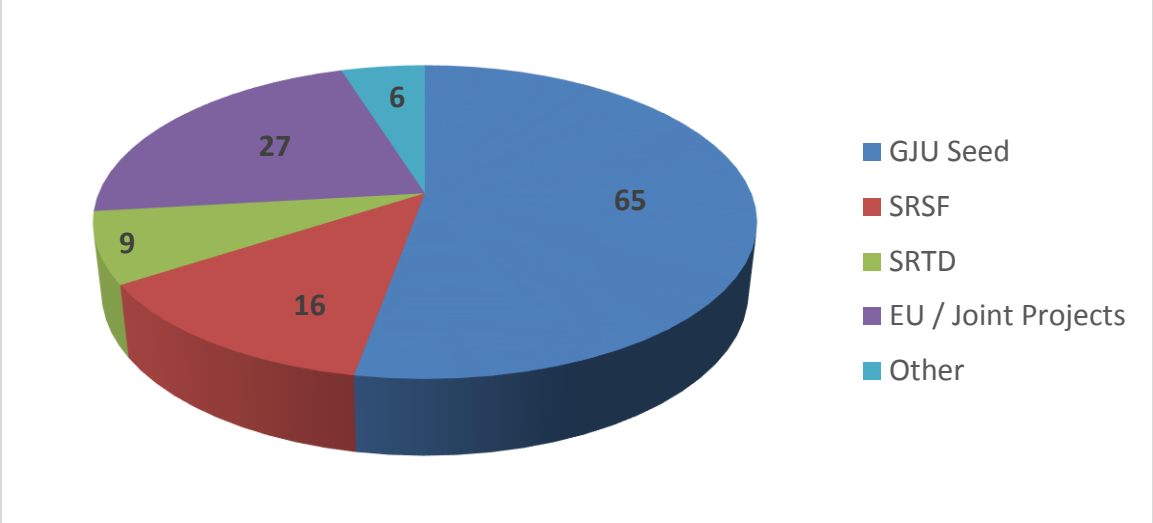


Figure 6: Distribution of donors during 2009 - 2016

Figure 7 shows the distribution of the number of funded projects in each school during the same period. The engineering schools have the largest share of these projects, and therefore need to be given special attention to maintain the same pace of research development during the upcoming years.

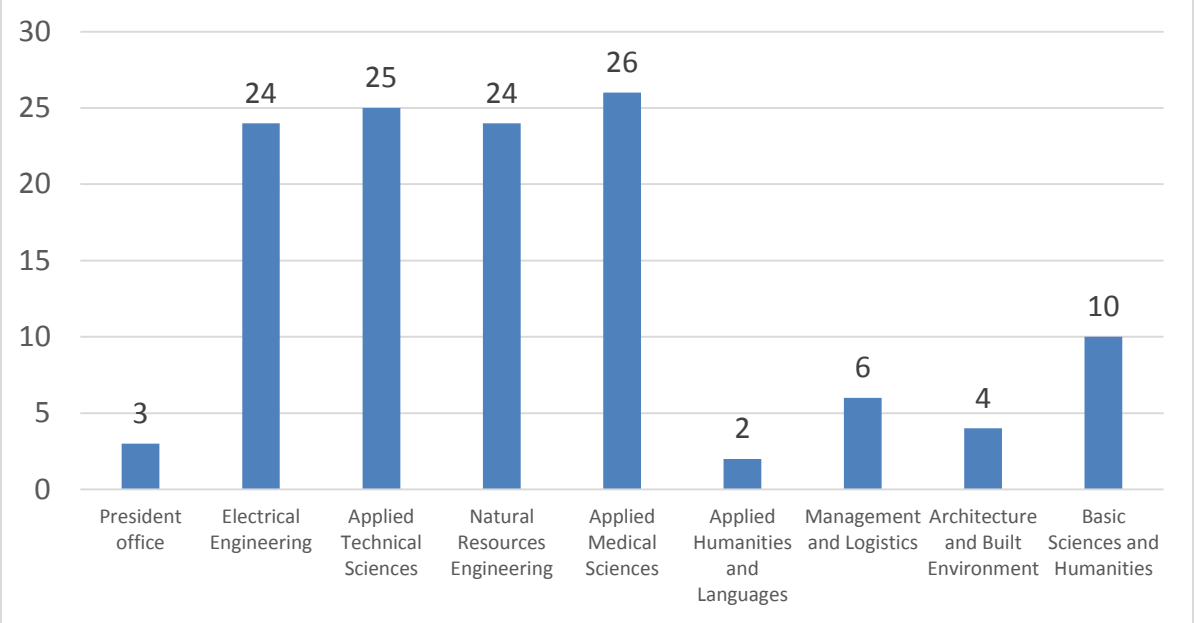


Figure 7: Distribution of projects in schools during 2009 - 2016

In brief, GJU has made a tremendous effort to motivate its faculty to carry out research in areas of relevance to the region and solicit internal and external funding. As was discussed for each school, research has focused in areas related to environment, water resources, renewable energy, system automation and ICT.

Council of scientific research

A council is formed every academic year with representatives from GJU and two external people with prominent experience. The council oversees the decision making process of scientific research at GJU, including approval of project funding, research incentives, forming policies and more.

Publications

Faculty members produce on average 1-2 research papers per year that are often published in prestigious international journals. The feedback from international reviewers who judge the quality of this research for promotion of faculty members typically give high grades and are most often viewed to be well above international standards. Figure 8 depicts the number of both journal and conference publications which GJU faculty produced during the years 2007 – 2016. The number of publications in 2016 reached 197, 94 or the total journal publications are indexed in ISI Thompson Reuters.

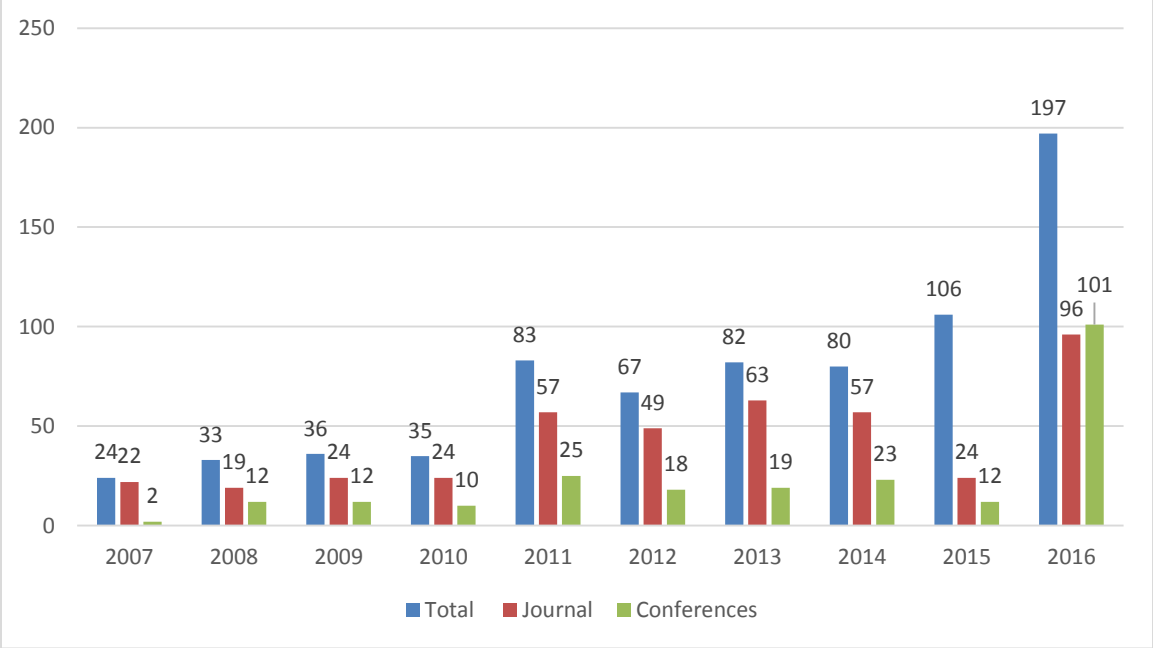


Figure 8: Number of publications produced during 2007 – 2016

The distribution of The distribution of publications at GJU schools during 2015 – 2016 is given in figure 9. The school of electrical engineering and applied technical sciences have the highest rate of publications.

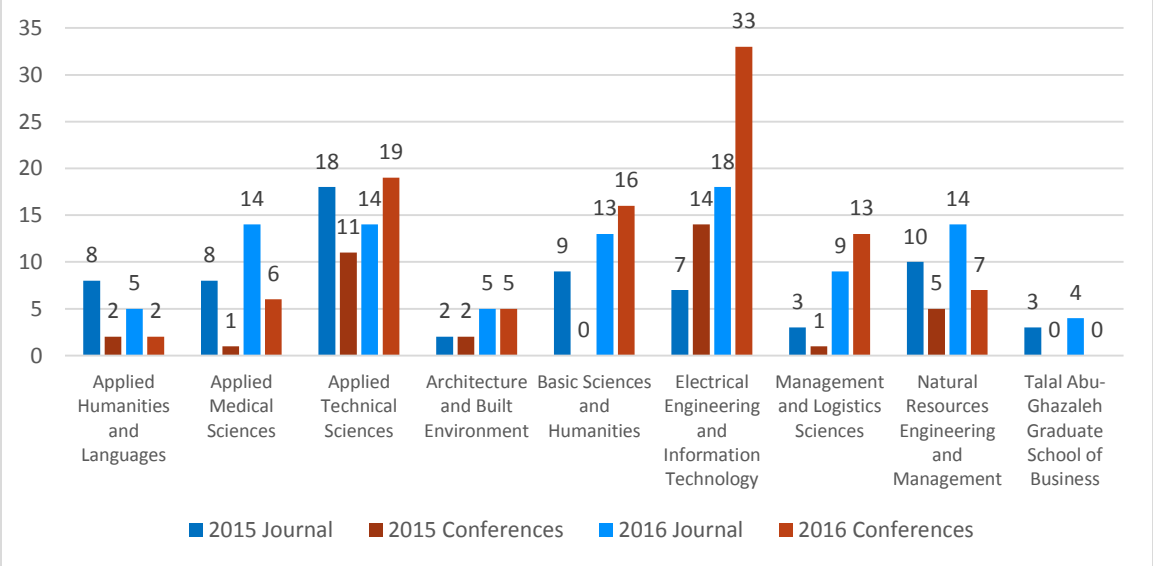


Figure 9: Distribution of publications at GJU schools during 2015 – 2016

CONCLUSION

GSSR supports growth of graduate studies and students while fostering personal initiatives and talents to explore new innovations and maintaining a high level of personal and professional development. Curricula of graduate programs are regularly reviewed to maintain relevance and to adapt to practice learning and teaching. Curricula of graduate programs are now offered on the basis of thesis and non-thesis options.

GSSR supports research of national and international priorities with a goal is to establish distinguished interdisciplinary research centres through collaboration with faculty and staff from GJU various department and schools in areas related to energy, environment and water, information and communication technology, and health and Life sciences.

As part of GJU efforts, GSSR will continue to support the development of German academic aspects through strengthening German participation, developing joint and dual academic programs, and establishing affiliations and exchange programs with German partner universities. It will also continue to support operational and quality management processes such as document archiving and control, record retention, communication and action management, internal audit and reviews. The deans' council has recently approved GSSR proposal to install structures and processes of quality assurance in accordance with national and international quality standards and accreditation systems. The objective is to pursue accreditation at the European level for all graduate programs in order to facilitate joint and dual degree structure with German universities.