



Ministry of Education and Higher Education
Accreditation and Quality Assurance Commission

Information Technology Programs at Palestinian Universities
General Evaluation Report

Based on the Self Evaluation Reports and External Evaluation of
Information Technology Programs at Palestinian Universities
2006/2007

Ramallah- Palestine
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Accreditation and Quality Assurance Commission
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AQAC

دأبت الهيئة الوطنية للاعتماد والجودة والنوعية لمؤسسات التعليم العالي (AQAC) منذ نشأتها عام 2003 على تحقيق عدة أهداف من ضمنها التقييم الشامل للبرامج الأكاديمية بهدف ترخيصها واعتمادها عن طريق تطبيق آلية مزدوجة تحقق التقييم الذاتي من جهة وذلك من خلال عقد ورشات عمل تدريبية حول التقييم الذاتي لمؤسسات التعليم العالي بالاستعانة بنخبة من ذوي الكفاءة في هذا المجال، وإجراء التقييم الخارجي من جهة أخرى، وذلك على عدة مراحل يمكن إيجازها كما يلي:

- **المرحلة الأولى** الانتهاء من تقييم برامج العلوم الصحية والعلوم الإدارية في جميع مؤسسات التعليم العالي في فلسطين.
- **المرحلة الثانية**: متابعة تقييم برامج العلوم الإنسانية والاجتماعية، حيث شارفت عملية التقييم على مراحلها النهائية.
- أما المرحلة الحالية **(المرحلة الثالثة)** والتي نحن بصددتها فقد:

Ø تم تقييم برامج درجة الدبلوم في الهندسة وفي تكنولوجيا المعلومات لجميع مؤسسات التعليم العالي.

Ø الوصول إلى المراحل النهائية في تقييم برامج درجة البكالوريوس والماجستير في تكنولوجيا المعلومات في جميع مؤسسات التعليم العالي، والجهد الذي نتناوله التقارير المرفقة .

Ø العمل جار على تقييم برامج درجة الماجستير والبكالوريوس في تخصصات الهندسة المختلفة، وقد تم قطع شوط كبير في هذا المجال.

ويجري حاليا إعداد الدراسات والإجراءات من أجل البدء بعملية تقييم برامج العلوم التربوية (المرحلة الرابعة) في المستقبل القريب.

وتقوم عملية التقييم الخارجي أساسا على جمع المعلومات وتحليلها عن البرامج والمؤسسات المتمثلة بمدخلات التقييم الذاتي للبرامج، والزيارات الميدانية للمؤسسات، من أجل تحديد مناحي القوة والضعف والمشكلات القائمة في هذه البرامج وفي المؤسسات التي تشملها، وتقديم التوصيات التي قد تساهم في التغلب على هذه المشكلات لتصحيح مسار عملية التعلم والتعليم في مؤسسات التعليم العالي. ونأمل من المؤسسات التي شملتها عملية تقييم البرامج المختلفة أن تدرس بعناية وشمولية مدخلات تقرير التقييم الخارجي ومخرجاته، وأن تجرص على الاستفادة منها في إعداد الخطط المستقبلية من أجل تعزيز نقاط القوة في برامجها، والتغلب على مواطن الضعف إن وجدت من أجل ضمان مسيرة أكاديمية سليمة.

وأخيرا وليس آخرا، تتقدم الهيئة الوطنية للاعتماد والجودة والنوعية لمؤسسات التعليم العالي بجزيل الشكر لكل من ساهم في انجاز هذا العمل، بدءً بمعالي وزير التربية والتعليم العالي د. ناصر الدين الشاعر للعناية الفائقة والمستمرة التي يوليها للهيئة الوطنية، وكذلك للبنك الدولي لما قدم من دعم مادي، وكذلك لمؤسسات التعليم العالي الفلسطينية لتعاونها مع المقيمين الخارجيين، والشكر موصول إلى منسق عمليات التقييم نان عيخبي، وإلى جميع أعضاء فريق التقييم لبرامج تكنولوجيا المعلومات وهم : حسنين بدر؛ د محمود الصاحب؛ د. حاتم العايدي؛ وممثلة نقابة المهندسين واتحاد شركات تكنولوجيا المعلومات (PITA) لما بذلوا من جهد كبير بدءً من الزيارات الميدانية وصولاً إلى تقرير التقييم النهائي.

Information Technology Programs at Palestinian Universities

General Report

Review Team:

- Dr. Hussein Badr (international External Evaluator, Team Head),
- Dr Mahmoud Al Saheb (Local External Evaluator)
- Dr Hatem ElAyedi, (Local External Evaluator)
- Dr Adnan Yahya (coordinator)

AQAC Team:

- Dr. Mohammad AlSubu,
- Dr Issam Khatib
- Mr Mahmoud Dawod
- Eng Iyad Abu Samrah

Participating Societies:

- Palestine Information Technology Association (PITA)
- Engineers Association-Jerusalem Branch

AQAC

Preamble:

The current document reports on the general results of the evaluation of Information Technology (Computing) programs at the Bachelor and Master level at Palestinian Universities as part of the effort to evaluate existing IT and Engineering programs at Palestinian Institutions of Higher Education.

The evaluation took place in three stages: the first is writing the self evaluation report for each program by the institution concerned, the second is studying the self evaluation reports by the evaluation team and conducting the site visits, and the third is delivering a separate report for each program under review and a general discipline report.

While this general report avoids any specific references to individual institutions, the program report sent only to the program concerned can be better interpreted in conjunction with this report.

The current report was prepared with reference to multiple sources, including:

- The self evaluation manual supplied by AQAC: www.aqac.mohe.gov.ps
- Academic evaluation standards in the United Kingdom and ABET and other relevant regional publications: www.qaa.ac.uk, www.abet.org

The evaluation team and AQAC tried their best to operate in a professional and transparent manner. The self evaluation reports and all information gained during the visits were treated with utmost confidentiality, the draft final reports were circulated in the narrowest possible circle and the final reports were distributed only to the institutions concerned and the relevant ministry bodies. No evaluator was allowed to be part of the evaluation team of his own school or to have access to his institution's final reports.

The findings of the report are classified into categories to simplify reading. A forum to discuss these findings, and the evaluation process in general, will follow the distribution of the reports.

A word of thanks is due to the institutions and programs for their cooperation and understanding, to the evaluation team for their professional and transparent work, to AQAC management and support team for their great work, to the professional societies and industrial associations in Palestine for their support and participation, and to the World Bank for funding and supporting this effort.

Purposes of the Review

The Accreditation and Quality Assurance Commission (AQAC) is an autonomous, quasi-non-governmental body acting under the aegis and authority of the Ministry of Education and Higher Education (MOEHE). The general objectives and specific responsibilities of AQAC include:

- Improvement of the quality of Palestinian higher education programs and institutions.
- Fostering the development of criteria and mechanisms for effective self-evaluation and quality assurance on the part of higher education institutions.
- Comprehensive assessment of degree-granting academic programs of study for the purposes of licensing and accreditation, using a two-tier mechanism of institutional self-evaluation and external evaluation and review.

This document is not complete and is awaiting Gaza programs site visits to be finalized. This document reports on the status of Information Technology Education at Palestinian Universities and is based on the outcome of the external evaluation and review undertaken for 13 Information Technology (IT) four-year Bachelor of Science degree programs and 2 MSc programs at 6 Palestinian Universities in the West Bank and Gaza programs. The effort was based on the Self-Study Reports compiled by the institutions concerned in mid 2006 and the series of site visits conducted by AQAC's Information Technology Committee starting October 30, 2006. This document touches on the general points/trends common to programs evaluated, though it is not necessarily the case that it characterizes all programs to the same degree. Reports specific to each program evaluated are submitted to the institution concerned simultaneously with this General Report and one can always refer to the program reports for items specific to the program.

Overview of the Institutions and the Programs Evaluated

The following table summarizes the basic information on the programs covered by this report (data as shown in Self Evaluation Report and subsequent follow-up).

Summary Data on Information Technology Programs in Visited Palestinian Universities

No	Institution		Program		Credit Hours	Year Estab	Faculty Members				No.Students						Graduates
	Name	Address	Name	Level			PhD		MSc	Others	Level						
							Full	PT			1st	2nd	3rd	4th	5th	Total	
1	Hebron University	Hebron	Computer Science	BSc	132	1998	2		6	5	25	22	6	14	0	67	80
2	Palestine Polytechnic University	Hebron	Computer Systems Eng.	BSc	166	1990	3		8	5	25	25	25	32	41	127	316
			Information Systems	BSc	131	1995	6	7	12	6	123	49	34	30	0	236	259
			Information Technology	BSc	139	2000					98	77	62	61	0	298	145
3	Alquds University	AbuDies	Computer Science	BSc	132	1984	5		4	8	50	37	27	37	40*	151	481(Y)
			Computer Engineering	BSc	166	1999	5		2	4	37	52	46	43	24	202	86
			Computer Science	MSc	36	2002	5		0	0	13	35	0	0	0	48	25
4	Arab American University	Jenin	Computer Science	BSc	132	2000	1		4	6	23	16	20	24	0	83	73
			Computer Information Tech.	BSc	135	2001	4		4		51	39	52	63	0	205	200
			Telecommun.Technology	BSc	136	2001	3		4		0	23	38	35	0	96	75
5	Birzeit University	Birzeit	Computer Science	BSc	130	1995	3		2	7	68	54	27	21	0	170	275
			Computer Systems Eng.	BSc	160	2000	3		4	3	50	45	44	69	27	235	30
			Scientific Computing	MSc	36	2001	12		0	0	21	16	24	0	0	61	50
6	An-Najah National University	Nablus	Computer Science	BSc	131	1994	3		3	12	**	34	42	53	0	129	339
			Computer Engineering	BSc	175	2000	2	2	2	3	**	48	40	45	45	178	112
GRAND TOTAL							57	9	55	59	563	572	487	527	96	1682	2065
PT = part time			** = Preparatory year			* = late students			Y = year 1997								

Report Findings:

1. Mission and Goals

1. Many schools are not clear about the goals and mission of their programs and the tasks their graduates are expected to perform. Even when things are clear, they may not be communicated to the stakeholders: industry, planning agencies, students and guardians. This makes it difficult to measure the degree to which the program is accomplishing its mission.
2. There is a clear proliferation of IT programs in the Palestinian Educational system. This is evident in the number of programs offered under titles such as *Computer Engineering*, *Computer Science*, *Computer Systems Engineering*, *Information Technology*, *Computer Information Systems*, *Management Information Systems*, *Computer Engineering and Information Technology*, *Information and Communications Technology*. In many cases the differences between programs is minimal and is not sufficient to warrant a distinct naming. At best, several programs can be accommodated as streams within a more traditional computer specialization. The multiplicity of programs in the field tends to confuse stake holders: students, parents, employers and maybe graduate schools. It also results in the fragmentation of the limited resources, especially faculty, be it internal, between programs of the same institution or external between institutions leads to the absence of a critical mass of faculty members needed to promote innovative research and teaching. The number of different programs may need to be limited, have a clear meaning to all concerned and be in line with international standards while still adaptive to local needs and technological developments. So long as the multiplicity of these programs exists it is advisable that schools educate the stakeholders and their potential and incoming students of the differences between individual programs and the intended outcomes of each to help them make informed decisions.
3. The need for the large number of IT programs being offered by Palestinian schools is not evident. The restrictions on resources and the limited local market may not justify the current number of programs. The committee sees a profound need for highly qualified and skilled IT graduates rather than a large number of inadequately prepared graduates (quality more in demand than quantity). A policy shift towards a number of programs limited by both market needs and resources availability is needed as soon as technically feasible.
4. Based on the feedback from the major stakeholders, it is the opinion of the evaluation team that Palestinian Higher Education governance, including ministry bodies and university administrations have a fundamental national and ethical responsibility to resist instituting money-spinning programs whose quality is likely to be in doubt (due to lack of resources) and which implicitly mislead prospective students into supposing that they will lead to employment opportunities which in fact do not exist in the limited local market.

2. Curriculum and Teaching Plan Issues

1. Professional Societies worldwide have produced a good volume of material dealing with curriculum design in the computing (IT) field. The work covers a multiplicity of specializations (CS, CE, CSE, IT, CIT, MIS, SE both at the BSc and MSc levels). The main contributors are the ACM and IEEE. A reasonably rigorous adherence to these international standards would help in ensuring that separate programs reflect a substantive difference in content between each other. While the committee sees much room for curriculum components to account for the Palestinian local market needs, it

- is our opinion that having Palestinian programs be in line with the accepted international curriculum standards can help the competitiveness of these programs and the mobility of their graduates. It may be necessary to clearly motivate/explain deviations from international standards.
2. Course names and content should match and be in line with accepted international standards. Course credit hours should be assigned in a sound and consistent manner to help stakeholders understand and assess student achievement. This is especially true for laboratory courses (1 Credit hour = 2-3 meeting hours, Project credits, practical training credits, and more).
 3. An effort to deal with university, college and program requirements in a flexible manner that allows exposure to courses in the discipline at an early stage of education is needed. That may require adjustments to the "one-size-fits-all" view on these requirements to account for individual program needs within a college/school.
 4. The adopted curriculum needs to be adaptive to technical developments in the rapidly changing IT field through flexible courses, seminars and regular reviews in view of technical development and curriculum recommendations worldwide.
 5. The balance between a solid scientific (fundamental/foundational) background and skill oriented courses should be maintained. This balance shouldn't be sacrificed for the short term vision of meeting current market needs; these will rapidly change. Graduates with stronger foundations are more capable of adapting to changes in the market. Students need to be made aware that a well rounded training has its advantages over "skills oriented education".
 6. The direction of Bachelor and Master programs is not always well thought out and well motivated. MSc programs tend to adopt conceptual as opposed to systems development directions. Certain Engineering programs exhibit hardware/EE inclination while others are more software/systems oriented and certain programs tend to give preference to hardware projects as opposed to SW or mixed projects. The IT AQAC committee adopts no particular view on this but advises well thought out and articulated explanations for the choices adopted by individual schools.
 7. Research methodology, (technical) writing and communications skills work (professional) and computer ethics and social impact of technology need to be emphasized all through the programs as integral components, in line with international practices and the increasing role of IT in every day life. A careful look at the English language skills of IT graduates needs to be thoroughly considered in view of the need to access the IT literature.
 8. Student admission policies need to be given careful thought. Direct admission to individual programs gets a mixed faculty review and so does deferred admission (admission to a college followed by competitive admission to a program at a later date).
 9. Two negative trends were observed that may have their origins in the limitations of available resources, especially qualified faculty: the first is the limited elective offering and the second is the difficulties facing students taking the thesis option in their MSc studies.
 10. The issue of poor student mathematical skills is not an easy problem, and solutions are not readily at hand, but it is also a responsibility that cannot be evaded. It is the collective responsibility of universities to ensure that students' mathematical skills are brought up to par, by providing them with specially designed courses if need be. The model that needs to be considered is the one the many universities have already taken upon themselves with respect to students' English language skills. These universities seem to recognize that most students enter with inadequate English language skills,

and accept the responsibility of having to provide them with courses that bring these skills up to minimal levels. Something similar may need to be developed with respect to the mathematical skills of incoming science and engineering students.

11. Graduate programs in Science and Engineering should not be instituted under the same conditions of threadbare resources stretched to the breaking point, in an environment devoid of research activity, which has become the lamentable norm for too many undergraduate programs in Palestinian universities. A proper graduate program is much more than just a “super undergraduate” curriculum with somewhat higher-level course content. If the proper conditions and infrastructure are not there, then neither should be the program.

3 The Teaching – Learning Educational Environment

1. Most institutions have an open door policy between students and faculty. Faculty members are involved in student advising and monitoring. However, academic overloads have a detrimental effect on the quality of faculty/student contacts.
2. Support for research is minimal or nonexistent. Exposure of faculty (and consequently students) to technological development, say through conference attendance, membership in professional societies and continuing education, is not adequate.
3. Young faculty members are often not sufficiently trained in teaching, a fact that may limit their ability to deliver the scientific content at a level appropriate for their students.

Faculty Members

1. Basically, in all programs, the lack of adequate, qualified teaching staff was evident. The problem is more acute when it comes to PhD holders. Even in instances when numbers were closer to being "acceptable" the quality in terms of diversity of specializations was deemed inadequate. Efforts to attract new faculty members are not proving successful and incentives do not seem to be sufficient.
2. The limited faculty resources have the implication that faculty are overloaded with teaching and other duties; individual members are forced to teach courses outside their area of expertise and many programs are resorting to part time staff from industry but also from other institutions. It was observed that real faculty loads are frequently higher than what appears on the documentation of their home programs due to the teaching and/or work load elsewhere. As a result, faculty members have no time for scientific research or for getting involved in professional activities to keep them abreast of technological developments in their field.
3. Training of faculty, be it at the time they join programs (on the basics of being an instructor) or retraining to improve technical knowledge is generally ad hoc, inadequate and needs to be substantially improved on the national level. In a field characterized by rapid changes and innovation, knowledge obsolescence can endanger instructors' ability to address real life issues and may reflect negatively on the graduates' ability to integrate into the market let alone lead the market into adopting state of the art solutions. Investment in this regard is no less important than in other resources.
4. The gap in compensation between academia and industry is substantial in the IT field even on the local market. Combined with the gap between local and regional/international compensation for academics, the limited support for research and the heavy teaching load, this makes it clear to the Committee that the chances of

attracting good faculty members without a better compensation scheme are indeed slim.

4. Teaching and Learning Facilities: Laboratory and other Resources

1. Inadequate resources: Research support. One may want to emphasize that scientific research and exposure to the current trends in the field are needed for the stable functioning of a department and not a luxury that can be sacrificed for extended periods. Therefore definite plans to relieve the faculty overload are needed. Numbers of students to programs need to take resource availability into account.
2. Inadequate resources: laboratory equipment must be adequate in numbers, quality and diverse in technological basis. Systems totally and exclusively based on certain operating systems, a single hardware base, a single communications medium must be rejected in favor of a balanced mix of technologies (SW and HW). Most software packages are not licensed. Internet access to students is still limited.
3. Inadequate resources: library resources. Current books need to be used and acquired on a constant basis. Electronic publication and electronic access to library holdings. Cooperation between local libraries is needed to reduce costs.
4. It may need to be pointed out that local resources are not adequate to sustain the large number of IT programs being offered by local schools. Lack of resources is bound to reflect negatively on the quality of graduates. The market is unlikely to absorb all graduates in addition to those coming from external institutions.

5. External Contacts and Knowledge Exchange:

1. **Networking** between local schools needs to be brought to life and sustained. It is unjustifiable to have programs so close to each other without contacts, sharing of resources and experiences. One may want to benefit from models for interaction between programs such as yearly Chairpersons (deans) retreats, joint conferences/workshops to discuss developments and best practices, exchanges of faculty and students, and many other measures in support of intra-Palestinian networking.
2. **Academia Industry Relations:** Very little contacts are maintained between local industry and academic institution. The existing contacts are ad hoc and are not institutionalized and therefore may not be for the longer terms. Issues like program content and program outcome suitability for market needs are of concern to both industry and academia. One can observe the existence of two cultures that do not understand each other very well. Universities have to be in touch with and responsive to industry concerns and needs, obviously. But also, at least as important, is that industry needs to understand what a university education is about; the value of a scientifically trained graduate over the middle and long term (as compared to a graduate who is professionally shallow, with purely vocationally-oriented skills) and the need to invest in such a person. There is an immediate need for collaboration on practical training for student and continuing education and joint projects.
3. **Graduates monitoring** needs to be improved and made institutional. Data collection can be used to assess the suitability of curriculum to the market needs and as means to affect changes.
4. **Extracurricular activities**, including those in the professional field, are of major value for exposing students to activities beyond campus limits. An effort should

be directed at maintaining such activities (seminars, exhibitions, workshops,..) despite the resulting additional faculty load.

6. Quality Assurance:

1. The need for sustained quality assurance measures was obvious at most institutions visited. This is needed at the program and larger unit levels.
2. There is a need to raise the awareness on quality assurance measures on part of faculty and students and administrators. This will help devise and maintain best practices for individual programs and larger units.
3. There is a clear need for the institutionalization of a quality assurance culture and formal structures at the institutional level.

End of Report

AQAC