**Self-Assessment of**

**Software Engineering Programme**

**(Light Follow Up Report)**

**Philadelphia University**

**Department of Software Engineering**

**2016 - 2017**

# CONTENTS

Note. The (*) field should be filled only for external purposes.

# PART A

## FRAMEWORK: PROVISION'S PROGRAMME, SCOPE, AND INPUT RESOURCES

**A1 PROVIDER**

1. **Name of Department**: Software Engineering
   **Name of Faculty**: Information Technology
   **Name of University**: Philadelphia
2. **Contact Details**:   Address: P.O. Box 1, Philadelphia University 19392, Jordan
   Tel:  00962 2 6374444 – Ext. 502
   Fax: 00962 2 6374440
   Email: it@philadelphia.edu.jo
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3. **Name of Department Chairman**: Dr. Moayad A. Fahdil
   **Address**: As in (2) above
   **Email**: nemam@philadelphia.edu.jo
4. **Name and Address of Self-Assessment Committee's Liaison Officer**: Said Ghoul
5. **Date of University Establishment**: 1989 and the first batch of students was admitted in 1991.
6. **Type of the University**: *Private.*

**7. The Mission of the University**:

Philadelphia University has been established to actively participate in comprehensive national and regional development through quality education and its relevance to keep abreast of changes within an atmosphere of democracy, freedom, creativity, opportunity, and lifelong interactive learning.  The University attempts to be responsive to international educational standards and engages in research activities, which are inline with national and regional development plans.  It attracts students from local, regional, and international areas seeking higher education. The University provides interaction amongst students with the local community and at the international level. It also concentrates on the preparation of well-trained manpower capable of contributing to solving society's problems through projects and academic research.

To accomplish this mission, the University strengthens its academic programmes and academic relations with similar organizations. The commitment of the University in this direction is evidenced by setting up a special International Office within the University higher management system. The University values scholarship and research and as such provides 5% of the University budget for research activities, which includes grants for *sixteen* M.Sc. / Ph.D. students.

There has been a stability in student numbers in the last years and there are currently about (*) undergraduate and (*) master full time students. There are some (*) overseas students from (*) countries.

The total staff number at the University reaches to about (*), of whom (*) are in academic and (*) in support roles. Academic is headed by deans who manage academic activity through (2) deaneries.

The University has been recognized as an active member of the A vicenna Virtual Campus under the auspices of UNESCO and European Union, the International Association of Universities (IAU), the Arab European Universities Association (AEUA), the Association of Arab Universities, and the Association of Islamic Universities.

## A2 PROVISION

**A.2.1- Provision's assessed programs**:  B.Sc. in Software Engineering.

The Department of Software Engineering has been established in 2003 based on the recommendation of the Quality Assurance Agency (QAA) given to the University after the second round of review for Software Engineering Programmes conducted by the Al-Hussein Fund for Excellence and the QAA.

Previously the Department was called "Computer and Computer Information Systems". It was one of the Faculty of Science Departments in the fall 2003. That Department was closed and was replaced by three new different Departments, under the Faculty of Information Technology namely: **Computer Science  (CS),** **Software Engineering (SE),** and **Management Information Systems Department (MIS).**

The new SE Department currently offers the following undergraduate programme: a B.Sc. (Honour) degree in Software Engineering. The degree can be studied by Daytime mode: Daytime or Evening. The mode normally takes four years to complete, but allows some flexibility in certain cases, for the duration to be shortened or extended according to individual rate of study.

The Jordanian Higher Education Accreditation Council (JHEAC) accredits this programme and its related learning resources. The programme was first accredited by JHEAC in 2004 and is periodically revised and approved by the University. Currently the total number of students is (*) as fixed by the JHEAC.

The Daytime and Evening studies started in 2003/2004 and since 2008, students are graduated each semester**,** but the Evening study has been stooped since 2010.

The same thing can be said on the CS and MIS Department. The Jordanian Higher Education Accreditation Council (JHEAC) accredits the programme for this department and its related learning resources. The programme was first accredited by JHEAC in 2004. Currently, the total number of students is (*) as fixed by the JHEAC. A separate SED report for the SE, SC and MIS department will show the progress since 2009.

The Department newly offers a postgraduate programme (M.Sc. in Software Engineering). This programme has been accredited by JHEAC in 2016 **[Annex H, Box File 17 (a1)]**. This programme is the third of its kind to be accredited to a private University in the Kingdom.


## A3 AIMS AND OBJECTIVES

The essence and rational of our aims and objectives are drawn from the University and Faculty missions.  The first review round review in 2003 was a valuable learning experience gave us an opportunity to critically evaluate our teaching and research provision.  As a result we have:

- Revised our aims and objectives
- Improved the infrastructure to support teaching and research activities
- Started the M.Sc. programme in Software Engineering
- Made attempt to bring research activities into closer contact with teaching
- Established a responsive and a practical Quality Control System
- Taken steps to engender a culture of team spirit and high quality work in the Department.

### 1. Mission of the Department
The mission of Software Engineering Department is derived from the over all IT Faculty and University missions **[Box File 1]**. The Department is committed to provide an opportunity to students with varied entry qualifications to obtain relevant and well rounded education, through the provision of a high quality Degree programme, which is well resourced and is supported by a good quality research. Its mission is to provide outstanding education to its undergraduate students in accordance with the principles of the University mission, to advance scholarship in key domains of software engineering, and to engage in activities that improve the welfare of society. The Department aims to maintain an environment that promotes innovative thinking; values mutual respect and diversity; encourages and supports scholarship; instills ethical behavior; and engenders life-long learning. The Department has one of the largest and most comprehensive Software Engineering undergraduate programs in Jordan. It intends to produce, its graduates, as competent Software Engineering practitioners who have a solid foundation of basic and fundamental knowledge and experience in applying the existing IT to contemporary problems.
The Department creates opportunities for students to understand and gain competence as a Software Engineering practitioner.

### 2. Main Aims of Teaching
1- Enable students to develop their capacity to learn and participate in society as competent professionals **[Box File 8]**;
2- Prepare students for the world of work, develop self-confidence and careers in software engineering, software project management, and software development and integration **[Practical Training Module File (16), Graduation Project Module File (17)]**;
3- Develop among students the awareness of the social, organizational, and professional context in which they will be working **[Learning Resources in Box File 8]**;
4- Produce graduates who will be able to contribute to and take active part in a variety of industrial, commercial, and academic activities **[Box File D]**;
5- Produce graduates who exhibit a range of broad based skills and activities related to Software Engineering **[Programme Specifications in Annex C & Box File 16(a)]**;

**6-** Produce graduates who can adapt to changing technology and have the ability to recognize technological and human trends **[Programme Specifications, Box File 16 (a)]**;

**7-** Produce graduates who meet the industry standard in Software Engineering and have experience in the use of general tools and technologies used in the design and implementation of software. **[External Reports in Box Files 14(c2), 23(c), and Graduation Project Module File D]**;

**8-** Provide study opportunities, which are comparable with national, and international academic qualifications **[Box Files 16(a), 25]**

**9-** Engender among students the spirit of research and enquiry through suitable mechanism such as departmental research **[Staff Development in Box File 4]**;

**10-** Enable students to develop transferable skills such as verbal and written communication, teamwork leadership, etc **[Box File D, Course Catalogue in Box File 16 (a)]**.

## 3. Objectives

Successful completion of the programme should lead to the following learning outcomes:

### A- Knowledge and Understanding of
A1) the system development life cycle;

A2) a wide range of principles and tools available to the software developer, such as software process methodologies, choice of algorithm, language, software libraries and user interface technique;

A3) the principles of object oriented software construction;

A4) the software development process, including requirements analysis, design, programming, testing and maintenance;

A5) the range of situations in which computer systems are used, the ways in which people interact with them;

A6) professional issues to cover: social, ethical and legal aspects;

A7) communication issues in large, complex software projects;

A8) the principles and techniques of a number of application areas informed by the research directions of the subject, such as software engineering, net-centric, and distributed systems.

### B-Intellectual (thinking) skills -able to
B1) model object-oriented software systems;

B2) investigate and improve the specification of a software system;

B3) design and plan software solutions to problems using an object-oriented strategy;

B4) identify a range of solutions and critically evaluate and justify proposed design solutions;

B5) write and test programs using at least one object-oriented programming language;

B6) evaluate systems in terms of general quality attributes and possible trade-offs presented within the given problem;

B7) use and evaluate appropriate tools and techniques

B8) reflect and reason concerning a given information handling problem or opportunity.

### C-Practical skills -able to
C1) specify, design and construct CASE tools and application software;

C2) use logic and discrete mathematics to specify software elements;

C3) develop and apply testing strategies for software applications;

C4) develop software applications in a development environment that makes use of commonly supported tools;

C5) identify some of the main risks of software development and use;
C6) use network information services
C7) Prepare and deliver coherent and structured verbal and written technical reports;
C8) use the scientific literature effectively and make discriminating use of Web resources;
C9) analysis of system requirements and the production of system specifications;
C10) use appropriate computer-based design support tools.

**D-Transferable skills** -able to
D1) effectively participate in team-based activities;
D2) structure and communicate ideas effectively, both orally, in writing, and in cases involving a quantitative dimension;
D3) use IT skills and display mature computer literacy;
D4) work independently and with others;
D5) manage learning and self-development, including time management and the development of organisational skills;
D6) display personal responsibility by working to multiple deadlines in complex activities;
D7) undertake practical training and placements in relevant organisations
D8) appreciate the need for continuing professional development and in recognition of the need for lifelong learning.

In order to provide students with the "life long learning" attitude, the teaching method is essentially based on self learning (3 hours in class rooms and 6 hours out of class rooms: coursework, practical works, workshops, seminars, etc.)

**4. Main Aims of Research**
Computing is a wide-ranging scientific discipline whose applications affect numerous areas of research endeavours, but which has its own theoretical base that is expanding rapidly. It is a discipline with aspects both of theoretical style of Mathematical research and of practical nature and skills of Engineering. Our research mission statement reflects this diversity and is:
"To make a positive contribution to the University's Research Mission of attaining good quality research of international standard". This can be more enforced and achieved by the M.Sc. programme that the Department has commenced.

In this context the Department has set itself the following aims:

1. To be ranked amongst the best of Software Engineering departments in Jordan, with research output which can be assessed via the normal indicators such as journal papers, conferences, workshops, research grants, etc **[Box File 4 ]**.
2. Give strong leadership and encouragement to the staff to conduct suitable research so that a culture of research develops and is sustained.
3. Set realistic and planned targets for achievement, and support it with appropriate physical, technical and human resources.
4. Make strong efforts to enhance the university investment by attracting external research funding/resources.
5. To continue encouraging further learning and scholarship through financed postgraduate schemes for deserving staff **[Box File 4]**.

The University and the Faculty are acting strongly to enhance research in a much wider way through organising international conferences.  As example, the year 2014 will have two major events in this context **[Box File 4]**:

- The University is organising the sixth IEEE ISIICT 2014. This conference is sponsored by:
  ◦ IEEE Computer Society
  ◦ Philadelphia University

- The Faculty is organizing the 3<sup>rd</sup> IT Workshop.

## A4 STUDENTS, STAFF, AND LEARNING RESOURCES AND STRUCTURES

### 1. Students Profile

The following data have been taken at the end of the academic year 2015/2016.

### a) Total Number of Students in the University
There are **(409)** Full-Time students in the University distributed as follows:
  **(\*)** in the Day Study (DS)
  **(0)** in the Evening Study (ES)

This number is distributed according to the Faculties at the University as shown in Table (1).

**Table (1) Distribution of Students in the University** (filled only when external evaluation)

| Faculty | No. of Students | | |
|---|---|---|---|
| | Day Study | Evening Study | Total |
| Administrative and Financial Science | | 0 | |
| Arts | | 0 | |
| Engineering | | 0 | |
| IT | | 409 | |
| Law | | 0 | |
| Pharmacy | | 0 | |
| Science | | 0 | |
| Nursing | | 0 | |
| Master Programme | | | |
| **Grand Total** | | **6594** | |

### b) Distribution of Students in the Provision in Each Mode of Study [Box File 1 (f1)]

Table (2-a) shows the distribution of students in the Department in both modes (Day and Evening) for the last four years. The maximum number of students as accredited by JHEAC is (\*). The Faculty intends to apply to JHEAC in order to increase the number of students to (\*).

**Note** that the numbers shown in Table (2-a) are different than those of Tables (7-a) and (7-b) in Part C. This is due to the fact that the numbers in Table (2-a) indicate all students admitted to the programme by different requirements: Those coming directly from the Tawjehe (normal batch), those who are bridged from the society colleges, and those who were transferred from other faculties in the University, and other universities. For the purpose of

this report, the calculation of students' progression is based on the actual number of students in the normal batch as Tables (7-a) and (7-b) indicate.

**c) Distribution of Students in the Mater Programme [Box File 1 (f2)]**

Table (2-b) shows the distribution of students in the Master Programme. All students in this programme are evening students. The maximum number of students as accredited by JHEAC is 60.

**Table (2-a) Distribution of Students in the Department** (filled only when external evaluation)

| Year | No. of Students | | Total |
| --- | --- | --- | --- |
| | Day Students | Evening Students | |
| Sept. 2016 | | 0 | |
| Sept. 2015 | | 0 | |
| Sept. 2014 | | 0 | |
| Sept. 2013 | | 0 | |
| **Grand Total** | | **0** | |

**Table (2-b) Distribution of Students in the Master Programme**

| Year | Total No. of Students |
| --- | --- |
| Sept. 2017 | |
| Sept. 2016 | |
| Sept. 2015 | |

**2. Staff Profile**

*a) Academic Staff*

The academic staff members are divided into two categories: full-time and part-time. The number of full-time PhD staff members in the Department of Software Engineering 5 **(5 men),** and the number of full-time MSc staff numbers is 3 **(1 man and 2 women)** while the part-time staff comprises 2 to 4 members (only in summer semester), depending upon the number of students and the needs of the Department. Also, the Department relies on other departmental faculty members to teach some topics.

The academic staff members are between 28 and 65 years of age and have adequate experience ranging from 5 to 35 years.

There are also (\*) academic staff members from the Basic Sciences Department / Faculty of Science who assist in teaching Mathematics and other related topics.

All members of the teaching staff have a variety of specializations and research interests. These can be categorized into areas as shown in **Table (3)**. Broadly, there are six research groups at the Faculty level who contribute in maintaining the currency of the subject material in the Degree programmes as shown in **Table (4)**. **Annex A** contains more details on staff profile, and **Box File (3)** contains the staff CVs.

*b) Non-Academic Staff*

Besides the academic staff, the Department has (3) other full time technicians, one of them holds a B.Sc. degree in (\*), one hold B.Sc. in (\*),  and one holds B.Sc. degree in (\*). The technicians have 2 to 5 years working experience and some of them have been appointed

from Philadelphia University graduates who hold bachelor degrees with Grade "Excellent" or "Very Good".

All of the non-academic staff members are qualified as laboratory tutors and assist lecturers in the laboratory classes. This qualification comes in the first place from their undergraduate degrees and there are some certified courses they have to attend before commencing their work as laboratory tutors **[Box File 4]**. Some of them are responsible for maintenance of computer hardware and software in the laboratories, and have attended some training courses to be qualified for this job. The technical services are managed by a Lab Manager.

The Department also has one full-time secretary and one full-time courier whose job is to collect, deliver, and transport official papers from the Department and other units in the University, and to do some copying work, etc. A list of the non-academic staff members with their qualifications and responsibilities is in **Box File 1(e)**. The CVs of non-academic staff are found in **Box File 3(a2)**.

**Table (3) Academic Staff Qualifications and Specialisation** <span style="color:red">(filled only when external evaluation)</span>

|  | **Main Area** | **Academic Rank** | **No of PhD Staff** |
|---|---|---|---|
| 1- | **Computer Science/Artificial Intelligence** | **Associate Prof.** | **1** |
|  |  | **Assistance Pro.** | **1** |
| 2- | **Computer Science** | **Assistance Pro.** | **1** |
|  |  | **Lecturer** | **1** |
| 3- | **Software Engineering** | **Assistance Pro.** | **1** |
|  |  | **Lecturer** | **1** |
| 4- | **Computer Information Systems** | **Lecturer** | **1** |
|  |  |  |  |
|  |  | **Total** | **7** |

## c) Background Information
### (c.1) Recruitment of +Academic Staff
- The University advertises its needs for new academic staff members holding Ph.D. and M.Sc. degrees. Advertisement is made through local as well as international (particularly Arab) print and electronic media via the University Web site.
- All applications are forwarded to the Faculty, which in turn forwards them to the respective departments.
- The University has a centre for academic training. This centre delivers training to new lecturers. Many courses and seminars on "teaching methods", "quality assurance", and "new technology" have been given to new and old staff members during the last three years. The procedure of recruiting and developing new staff member is described in **Box File 6**.
- Having selected candidates initially, the Department recommends them to the Faculty Council. The Faculty recommends the selected candidates to the Deans' Council for further approval (or rejection) of the candidates.

### (c.2) Structure of Appointment Package
The University attracts staff members, especially those with Software Engineering degrees, by offering a suitable employment package, which consists of:
- The basic salary (based on academic rank and academic work experience).

- University allowance based on a ratio of the basic salary, which is 135% for Software Engineering staff members.
- Transportation and family allowance for all staff members, and allowance for housing (for non-Jordanians).
- The 13<sup>th</sup> month salary at the end of each year.
- Social insurance, health insurance, life insurance, work permit, and the annual residence fees (for non-Jordanians).

In comparison with employees of other public and private universities, Philadelphia staff members are among the best positioned in terms of payment and fringe benefits.

**Table (4) Research Groups  (completed only when external evaluation)**

|  | Research Group Members | Academic Rank | Head of the Group | Research Area |
|---|---|---|---|---|
| 1- | Prof. Dr. Mohammad Bettaz<br><br>Dr. Mourad Maouche<br>Dr. Ali Fouad<br>...<br>Master Students | Professor<br><br>Associate Professor<br>Assistance Professor | Prof. M. Bettaz | Formal Methods |
| 2- | Dr. Samer Hanna<br>Hayat Jaber<br>Fawze Abu Jaber | Assistance Professor<br>M.Sc student<br>M.Sc student | Dr. Samer Hanna | **Software Engineering Education** |

*(c.3) Faculty Incentives and Stability*
Other incentives include research grants and financial support to publish research work, enabling staff members to attend local and international scientific conferences and seminars. Good quality research work improves the chances for promotion within the Department **[Academic and Administrative Regulations Handbook in Box File 6(c)]**.

*(c.4) Average Load of Teaching and Administrative Activities*
The weekly average load of the academic staff is fixed as follows: 9 hours per week of actual contact for professors, 12 hours for associate and assistant professors, and 15 hours for lecturers.  In addition, the staff members provide at least six office hours per week for tutoring and personal contact with the students, and may participate in Departmental, Faculty, and University committees **[Table (A-1) of Annex A]**.

*(c.5) Funding Research and Staff Development*
- All research activities at the University are dealt through the Deanship of Scientific Research and Postgraduate Studies. **Box File 4** contains detailed information of the Faculty activates.
- 5% of the total University annual budget is earmarked for funding staff research and scientific conferences.

- The University offers an annual subsidy for research projects, which includes expenses for references, research requirements and travel expenses (if any).
- External resources may provide funding for scientific research conducted at the University in different topics and fields.

*(c.6) Internal and External Supply of New Academic Staff*
The Faculty staff members are largely recruited from higher educational institutions inside and outside the Country. In some cases, sabbatical leave holders and/or unpaid leave beneficiaries may join the Faculty teaching staff on a temporary basis. The University has embarked on a fellowship program abroad for distinctive graduates towards M.Sc. and Ph.D. degrees for its future staffing. The University has nominated (*) candidates from its academic staff members and the Teaching assistant staff for the M.Sc. or Ph.D. degree in Information Technology **[Box File 4].**

## 3. Learning Resources

- *Administrative - Physical Resources*
  Eight offices are provided for administrative functions, out of which one room is dedicated to general meeting. The occupancy of the other five rooms is as follows: Dean, Dean's secretary, Department chair, Department chair secretary, and one room for advisory services for students. All of them are equipped with common office furniture and relevant computer systems.

- *Teaching Staff – Physical Resources*
  six staff offices are provided and generally the occupancy is one member per office. Each member is supplied with a suitable PC, which is networked and connected to the Internet. Normal facilities such as telephones, furniture, etc. are provided. In addition, there is one room for staff meeting and one room for Exam Working Group work.

- *Academic – Physical Resources*
  - (*) Department classrooms **[Box File 8(b1)]** shared with the other departments in the Faculty. Each capable of holding an average of 40 students, and equipped with a white/black board and an overhead projector.
  - One lecture theatre capable of holding 120 students. The theatre is equipped with computer, data show, and overhead projector on demand.
  - Four laboratories **[Box File 8(b2)]**, each with 20 - 25 PCs or networked systems, and 1 to 2 printers in addition to 8 other laboratories are shared with other departments in the Faculty as shown in Table (5). Moreover, the Faculty orders continuously new PCs to improve the labs. All the lab resources are covered by suitable service contracts. In addition, the Department technicians make sure that the labs operate smoothly. Complete information is provided in **Annex B**.
  - One e-learning centres (Avicenna) shared with other departments in the Faculty and other Faculties.

- *Library Facilities*
  The University houses a main modern Library resourced with multiple copies of standard textbooks, reference books, journals, and CD ROMs. It provides a national and international loan mechanism and has affiliation with more than 120 universities and scientific organisations. It remains open from 08 AM to 04 PM during weekdays.

It includes:

**-1** *Conventional Library*, which contains books and journals **[Box File 8 (a1)]**. The textbooks section contains more than (*) different English titles in computing, of which more than (*%) are edited in years 2014 and 2016. The Journals section contains (*) computing academic and research journals of international repute.

**-2** *Electronic Library* consists of (*) CD ROMs for the taught programming languages courses and module support tools, such as self-study packages **[Box File 8(a2)]**. It has access to approximately 800 universities electronic libraries via the World University Library that is endorsed by the United Nation University. The World University Library has six databases that contain more than (*) periodicals available online. The online resources in the electronic library include sites that list more than 50000 online books and access to online libraries and encyclopaedias and other databases on the Internet.

**-3** *Internet Access Service,* available in a room containing 20 PCs.

<div align="center">

**Table (5) Computer Laboratories**

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1. *Programming Laboratory (1)  Room No. (IT501)*

| No. of PCs | PC Characteristics | Laboratory space | Lab Supervisor |
|---|---|---|---|
| 20 | **Acer PC**<br>*Core 2 Duo 3 GHz*<br>*2 GB DDRAM2*<br>*160 GB HardDisk*<br>*Ethernet Card 10/100*<br>*17" LCD Monitor*<br>*Internal Speakers* | *10.20 X 5.80 m2* | *Kadigah Q.* |
| 1 | | *Data Show(Sharp)* | |
| 1 | | *Switch 24 port* | |
| Teaching load | | *18 h/w* | |

2. *Programming Laboratory (2)  Room No. (IT502)*

| No. of PCs | PC Characteristics | Laboratory space | Lab Supervisor |
|---|---|---|---|
| 20 | **Acer PC**<br>*PentiumIV 3 GHz*<br>*512 MB SDRAM*<br>*80GB HardDisk*<br>*Ethernet Card 10/100*<br>*17" Monitor*<br>*Internal speakers* | *10.20 X 5.80 m2* | *Nihad A.* |
| 1 | | *Data Show(Sharp)* | |
| 1 | | *Switch 24 port* | |

3. *Applications and Information Science Laboratory (1)  Room No. (IT503)*

| No. of PCs | PC Characteristics | Laboratory space | Lab Supervisor |
|---|---|---|---|
| 20 | **Dell PC**<br>*Core i5 3.20 GHz*<br>*4 GB DDRAM 3*<br>*500 GB HardDisk*<br>*Ethernet Card 10/100*<br>*20" LCD Monitor wide screen*<br>*Internal Speakers* | *10.20 X 5.80 m2* | *Haya K.* |
| 1 | | *Data Show(Sharp)* | |
| 1 | | *Switch 24 port* | |
| Teaching load | | *18 h/w* | |

4. *Unix  Laboratory (1)  Room No. (IT505)*

| No. of PCs | PC Characteristics | Laboratory space | Lab Supervisor |
|---|---|---|---|
| 20 | SunRay 100 | 10.20 X 5.80 m2 | Sammer J. |

| | 17" Monitor | | |
|---|---|---|---|
| **1** | | Switch 24 port | |
| Teaching load | | 18 h/w | |

**5.** *Applications and Information Science Laboratory (3) Room No. (IT512)*

| No. of PCs | PC Characteristics | Laboratory space | Lab Supervisor |
|---|---|---|---|
| 20 | **Dell PC**<br>*PentiumIV 3 GHz*<br>*2 GB DDRAM2*<br>*320GB HardDisk*<br>*Ethernet Card 10/100*<br>*19" Monitor* | **10.8 X 5.55 m2** | *Rami H.* |
| **1** | | Data Show(View Sonic) | |
| **1** | | Switch 24 port | |
| Teaching load | | 18 h/w | |

**6.** *Multimedia Laboratory (1) Room No. (IT514)*

| No. of PCs | PC Characteristics | Laboratory space | Lab Supervisor |
|---|---|---|---|
| 20 | **Dell PC**<br>*Core i5 3.20 GHz*<br>*4 GB DDRAM 3*<br>*500 GB HardDisk*<br>*Ethernet Card 10/100*<br>*20" LED Monitor wide screen*<br>*Internal Speakers* | **10.8 X 5.55 m2** | *Ahmed J.* |
| **1** | | Data Show(Hitachi) | |
| **1** | | Switch 24 port | |
| Teaching load | | 18 h/w | |

**7.** *Applications and Information Science Laboratory (4) Room No. (IT515)*

| No. of PCs | PC Characteristics | Laboratory space | Lab Supervisor |
|---|---|---|---|
| 20 | **Dell PC**<br>*Core i5 3.20 GHz*<br>*4 GB DDRAM 3*<br>*500 GB HardDisk*<br>*Ethernet Card 10/100*<br>*20" LCD Monitor wide screen*<br>*Internal Speakers* | **10.8 X 5.55 m2** | *Muntaser D.* |
| **1** | | Data Show(Hitachi) | |
| **1** | | Switch 24 port | |
| Teaching load | | 18 h/w | |

**8.** *Programming Laboratory (3) Room No. (IT516)*

| No. of PCs | PC Characteristics | Laboratory space | Lab Supervisor |
|---|---|---|---|
| 20 | **Dell PC**<br>*Core i5 3.20 GHz*<br>*4 GB DDRAM 3*<br>*500 GB HardDisk*<br>*Ethernet Card 10/100*<br>*20" LCD Monitor wide screen*<br>*Internal Speakers* | **10.8 X 5.55 m2** | *Hiam S.* |
| **1** | | Data Show(Hitachi) | |
| **1** | | Switch 24 port | |
| Teaching load | | 18 /w | |

**9.** *Programming Laboratory (3) Room No. (IT517)*

| No. of PCs | PC Characteristics | Laboratory space | Lab Supervisor |
|---|---|---|---|

| 20 | **Dell PC**<br>*Core i5 3.20 GHz*<br>*4 GB DDRAM 3*<br>*500 GB HardDisk*<br>*Ethernet Card 10/100*<br>*20" LCD Monitor wide screen*<br>*Internal Speakers* | **10.8 X 5.55 m2** | *Mohammed T.* |
|---|---|---|---|
| **1** | | *Data Show(Hitachi)* | |
| **1** | | *Switch 24 port* | |
| Teaching load | | 18 /w | |

### 10. Network Laboratory (1) Room No. (IT507)

| No. of PCs | PC Characteristics | Laboratory space | Lab Supervisor |
|---|---|---|---|
| *20* | **Dell PC**<br>*Core i5 3.20 GHz*<br>*4 GB DDRAM 3*<br>*500 GB HardDisk*<br>*Ethernet Card 10/100*<br>*20" LCD Monitor wide screen*<br>*Internal Speakers* | **10.20 X 5.80 m2** | *Suha M..* |
| **1** | *Data Show(Sharp)* | | |
| **1** | *Switch 24 port* | | |
| Teaching load | *18 h/w* | | |

### 11. Programming Laboratory (4) Room No. (IT508)

| No. of PCs | PC Characteristics | Laboratory space | Lab Supervisor |
|---|---|---|---|
| *20* | **Dell PC**<br>*PentiumIV 3GHz*<br>*2 GB DDRAM2*<br>*320GB HardDisk*<br>*Ethernet Card 10/100*<br>*17" Monitor wide Screen* | **10.20 X 5.80 m2** | *Mohammed A.* |
| **1** | *Data Show(Hitachi)* | | |
| **1** | *Switch 24 port* | | |
| Teaching load | *18 h/w* | | |

### 12. Network Laboratory (2) Room No. (IT509)

| No. of PCs | PC Characteristics | Laboratory space | Lab Supervisor |
|---|---|---|---|
| *20* | **Acer PC**<br>*Core 2 Duo 3 GHz*<br>*2 GB DDRAM2*<br>*160 GB HardDisk*<br>*Ethernet Card 10/100*<br>*20" LCD Wide Screen Monitor*<br>*Internal Speakers* | **10.20 X 5.80 m2** | *Mustafa M.* |
| **1** | *Data Show(Sharp)* | | |
| **1** | *Switch 24 port* | | |
| Teaching load | *18 h/w* | | |

- *Self Study Facilities*
  The self study facilities include the following:
  -4  The Faculty Learning Resource Centre, as mentioned before.
  -5  The Electronic Library as mentioned before.

**-6** The Department Web/Intranet provides the students with all relevant information such as:
- Undergraduate Handbook
- Programme Specifications
- Lectures and course notes.
- Bulletin board for messages and general use.

This provides the students with   a rich "one stop" learning environment.

**-7** Computer purchase. Students are encouraged to buy their own machines though the University tries to offer as much support as possible.

**-8** Disabled students' facilities. The University has appointed an equal opportunity officer to help and assess the needs of any physically disabled student.

- *Training Facilities* **[Box File 8(b3)]**

  - The University has signed a licensed grant with Microsoft allowing the University to use Microsoft software. In addition, the agreement allows one person to be trained on Microsoft products.
  - We are continuing to build on the results of the agreement that signed with the International Finance Corporation and the Ministry of Information and Communications Technology on improving the curricula, teaching methods and assessment approaches to increase the employability chances of our graduates.
  - We are continuing our agreement with Oracle Academy that provides our students with training material on the latest Oracle products, discounts on certificates, and training opportunities with Oracle Academy Partners. The program also includes train-the-trainer programs that provide information on the latest Oracle technologies to faculty staff and lab supervisors.

 *Lecture Support Facilities*
   In the Department data shows used to support modules and seminars presentations.

- *University Computer Centre*
   It provides the Department with training and maintenance facilities **[Box File 8(b3)]**.

- *Networking Facilities*
   *Ethernet:* The PCs in each laboratory are connected to an Ethernet platform of 10/100 Mbps.
   *Intranet*: All computing facilities of the University are connected through a Gigabit Intranet backbone.
   *Internet***:** The University is connected to the Internet by 4 Mbps through 2 separate networks.

- *Type and Level of Access*
   Within the Department, access to networking facilities is free at any time for the staff and the students.

- *Code of Practice for Student Computer Usage*
   The Undergraduate Handbook **[Box File 16(a2)]** provides students with departmental code of conduct, which relates to the responsible use of Computer resources.

- *Incubator Lab*

  This lab is a result of feedback from students and staff. The main purpose of the lab is to encourage a focus for new ideas, industrial applications etc so that the staff, students and Industry can have a common forum and facility. Two projects were commenced in this context supervised by Faculty staff members **[Box File 8]**.

- *Special Help Tutorial Room*

  Students having problems in some modules may meet specialist lecturers in this room. Specific and directed tutorials may help them.

- *Bookshops* that contain books, exercises with solutions, solutions to previous examinations and other relevant materials.

- *Undergraduate Handbook*

  All students are provided with a hard copy of Undergraduate handbook which includes relevant course documentation and regulations **[Box File 16 (a2)]**. An electronic version of this handbook is available on the web site of the Department.

- *Careers Advisory Service*

  This service provides information for students and graduates of the University.

- *Photocopying*

  Other than library, photocopy may be done at different bookshops, at an affordable cost.
- *Printing*

  Students can take printout (free of charge) in any lab of the Department. Each lab contains one to two printers for this purpose.

- *Extracurricular Activities*

  The University provides opportunity for the students to enrich their talents in their free time. This includes:
  - -9 A Deanship of Student Affairs, which organises the social, cultural and sport activities for the students in the University. It also has an alumni office that keeps track of the graduates.
  - -10 Several spaces for different sports.
  - -11 Several spaces for cultural activities **[Box File 8(a3, a4)].**
  - -12 Several common rooms for meetings, snacks, and cafeterias.
  - -13 Four Internet cafes each one containing 10 PCs.
  - -14 A students club.

# PART B

# EVALUATION OF THE QUALITY OF EDUCATION

## B0 AIMS AND OUTCOMES

1- The learning outcomes of the programme include many skills, e.g. knowledge and understanding skills, intellectual skills, practical skills, and transferable skills, which broadly track the computing benchmark of the British Quality Assurance Agency (QAA), and the Computing Curricula SE20147. These learning outcomes are in conformity with the Jordanian qualification framework and are approved by the Jordanian Higher Education Accreditation Council (JHEAC). Last accreditation was in 2012, which has influenced the current programme specifications **(Part C (C2-1))**

2- The Department has confidence in the overall match between programme specifications, intended learning outcomes, and the computing benchmarks. Moreover, in the curriculum content, each module description contains its expected learning outcomes and how they achieve some or most of the programme aims. Examples on achievements of some learning outcomes through sequences of modules are given in **Part C (C2-3)** of this report and in **[Box File 3(b)].**

3- The experience of the staff, relevant graduate data from the old Department (Computer and Computer Information Systems) and other Faculty departments over the past years and other records indicate that, in general, the programme has been successful. **[Box File 14 (b)]**.

4- The modules are designed to have a suitable balance of subject matter, and the assessment methods vary according to the expected learning outcomes. **[Course Catalogue, Box File 16(a2) and all Module Files]**.

## B1 DESIGN, ORGANISATION, AND CONTENT OF CURRICULUM

### 1. Assessment of the Curriculum

#### a) Design, Organisation, and Content of Curriculum

- As one programme of three programmes in the Faculty of Information Technology (Software Engineering, Computer Science, and Management Information Systems), the Software Engineering programme is designed to have core modules shared with other programmes and some other specialised modules.

- The curriculum that is based on the CC2016 is designed to have a broad based structure, which utilizes the knowledge of the new entrants to build a strong foundation through Introductory Level modules (Level 1). Mathematical and fundamental computer skills are emphasized at the early stage to prepare for more rigors later on. In addition, other University based modules help in improving students' communication skills in Arabic and English languages and social/cultural issues. **[Part C, sections C2-1 and C2-2, and Table (D-2) in Annex D].**

- The aim of the core modules is to prepare students for more complex and specialist work which could be studied at a later stage. Never the less, a wide coverage of the topics is necessary to enable choice and coherence of the curriculum. The core modules that could form the Intermediate Level (Level 2) modules are designed with this purpose in mind and hence are widely utilised in second and third year work. **[Part C (C2-1) and Table (12) in that Part].**

- As the students progress to the third and final years they should be well informed about the overall subject area and are mature enough to make informed choices. The curriculum structure has clearly defined prerequisites and displays pathways providing some specializations, **Box File 3(b2)** contains some examples of possible paths of interest in the curriculum.

- It is however important to realize that theoretical studies have to be supported with practical and real life professional experience. Other generic skills must also be developed. This is achieved by organizing suitable work experience in industry for the students. **[Part C (C2-2) and Box Files 14(b) and 16(a1)]**

- Students are placed in industry under an industrial supervisor and academic supervisor. The student works two full days per week for a semester in industry (at least 160 hours). The other three days are used for normal module study at the University. In addition, the University has signed a statement of agreement with Phoenix for student training. Some other students can gain experience in the Computer Centre of the University. **[Practical Training Module File (16)].**

- The student is closely monitored through a well-defined system. This is a valuable experience for all parties as the academic staff gets an opportunity to liaise with industry through visit and other communication. The regulations require that the student receives a satisfactory report to gain a credit at this stage. **[Box Files 14(b)]**

- The student is also guided in the ethos of self-help, teamwork, and communications. This prepares him/her to tackle a major project at a later stage in the final year. For more details of the operation refer to the Course Catalogue and **Box File 16(a2-1).**

- The third and final years allow flexibility for the student by providing two elective modules. A graduation project is offered in the final year in addition to other Advanced Level (Level 3) modules. The graduation project is of cardinal importance as it represents an amalgam of various skills and key components of the programme learned so far by the student. The time allocated to the project is one to two semesters. It encourages the student to exercise flair and originality and demands strong commitment from him/her. Suitable project supervision ensures that the student is given guidance and support when required.

However, the ethos of self-reliance and research has to be paramount. Regular maintenance of documentation and communication develops written and oral skills. The Scientific Research and Postgraduate Working Group (SRPWG) validates the level and depth of work and consistency across many projects. **[Graduation Projects Module File (17)) and Box File D].**

- The curriculum contains a theoretical part, which enables potential graduates to adapt to future development in the field and to proceed for postgraduate study.   On the other hand, the practical coursework within modules raises an opportunity for students to gain various skills and experience of working both in groups and as individuals. **[Course Catalogue and all Module Files]**.

- **Module Levels and Implementation Strategies:**
  In consultation to ACM/IEEE SE2014, a choice of implementation strategies is available. Experience has, however, shown that **Procedural-First** (or **Imperative-First**) **strategy** is most effective at Introductory Level (Level 1). In the early years, there is a strong emphasis on disciplined approach to learning. For building bridges and for preparation for specific areas, a **Topic-based strategy** appears to be most suitable at Intermediate level (Level 2). These two strategies are still appreciated to be implemented in the Faculty of IT for all programmes.
  Level 3 modules are organized so that the student can have some academic depth from the advanced modules offered in this level and can exercise some choice and select logical combinations of modules to reflect a specific subject emphasis. The subject matter of the modules relates to staff expertise, market needs, departmental research and academic consideration. Suitable tables (**Tables (11–14)**) are shown in **Part C (C2-1)**.

  The University has participated with the Avicenna Virtual Campus under the auspices of UNESCO and European Union. This helps the Faculty (and the Department) to adopt the E-learning strategy as another teaching method to deliver the curriculum for students. This approach of using E-learning strategy encourages other Faculties at the University to follow. Within this project, 4 modules were developed by the Faculty: Artificial Intelligence, Software Analysis and Design, Introduction to Information Systems, and Fundamentals of Telecommunications and Computer Networking **[Annex I, Box File 21]**. Those 4 modules were evaluated to be the best modules among the other 15 Mediterranean Universities participated in the project. This gives Philadelphia University the chance to establish the Avicenna E-learning lab as the focus in the Kingdom.

  The module design relates well to the major learning outcomes. Full details on individual modules are given in the **Course Catalogue [Box File 16(a2-1)]**.
  Overall, the programme spans 3 modules  of Computational  Science and Algorithms (6.81 %), 6 modules of Programming Languages (13.62 %), 4 modules of Main Computer Components (9.09  %), 6 modules of Information Science  and Applications (13.62 %) and 14 modules  of Software Engineering (22.72 %), 3 modules of Supplementary Courses ( 6.81 %), and 1 modules of  Graduate project(2.72  %). Refer to **Table (D-3) in Annex D** for the distribution of modules that are covered in each area.

### b) Input Resources
The physical resources are designed for reasonable student comfort and convenience. Most of the facilities have developed along with the modules and hence suitably matched to their requirements. The purchase of equipment, computers, etc. is driven partly by policy and

partly by needs. The University is proud of its record in this area and invests considerable resource to maintain and enhance the education process **[Box File 8]**.

Suitable specialist laboratories and software tools, etc. are available to achieve efficient delivery of the curriculum **[Annex B]**. Suitable textbooks, journals, etc. are housed in the library.

The academic staff members are well qualified and experienced in teaching the material at undergraduate and postgraduate levels. New staff members are employed through a carefully constructed procedure and suitable staff development is given. **[Box File 3(c) and Box File 4]**.

In general, a serious attempt is made to match the resources to the educational objectives.

Full details of resources are given in **Part A**.

## 2. Assessment of Learning Opportunities

The net result of the four-year study at the Department can be summarised as follows:

- The curriculum attempts to provide an interesting and rewarding learning experience through a structure, which builds on fundamentals, teaches important principles of Software Engineering at a suitable level and provides coherent paths for some student choice. Adequate physical and human resources and active research are recognised to be of cardinal importance in this process. **[Part C (C2-3) and Box File 3].**

- We expect that our graduates have skill characteristics of well-trained Software Engineering students who can move on to postgraduate study or be employed at any computing institution. This can be proved from the graduates records of the old Department.

- Diverse and effective teaching methods are employed to run the curriculum. These methods are: lectures, tutorials, laboratory sessions, seminars, workshops, and e-learning. Each module description includes some of these methods according to the level of the module **[Course Catalogue in Box File 16(a)]**. Generally, the modules of the first and second years are implemented by lectures, laboratory, and tutorials (as appropriate), where students usually depend highly on staff members in their learning. However, for the third and fourth years modules, lectures, (unsupervised laboratory), e-learning, and seminars are implemented to give opportunity to students to be self-learners. These various methods stimulate learning and the development of skills in lifelong learning, where students are encouraged to take responsibility for their own learning. In addition, these methods make efficient and effective use of available facilities and equipment in the University such as the main library, numerous computer laboratories, and Internet (**Part A (A4-3)**).

Modules supported by the e-learning approach (part of Avicenna project) were evaluated. This evaluation was based on the feedbacks by both the staff teaching the module and the students. Most of the feedbacks concern the technical aspects. Such aspects were considered by the developing team. As a major advantage for adopting the e-learning approach is that to deliver the subject in a coherent and unified way.

- Various methods of module assessment are applied. **[Part C (C2-3), Course Catalogue, and Box File 21]**. Examples of assessment are: examinations, coursework, assignments, laboratory work, tutorial participation, projects, essays, and report writing. These methods help in developing student's cognitive abilities and skills for programming, modelling, building computer-based systems, problem solving by analysing criteria and specifications appropriate to certain problems, and finally, report

writing. The students receive regular formative and qualitative feedback on their corrected midterm exam papers, assessed coursework, and reports. The percentage of these assessment methods increases according to the level of the module. The module supported by e-learning materials has its own assessment method, where the above various assessment methods are used together with the e-learning assessment criteria. The developing team of the e-learning module has provided the module with its assessment criteria. The assessment includes answering MCQs and T/F questions at the end of each e-learning session. For the time being, such assessment is not used by the module instructor because the e-learning part is used as a supporting material to the module and a further development for this part of the project is under way. For the Graduation Project, there is a clear procedure to assess each project **[Graduation Project Module File (17)]**. This directs students to make some investigations for their projects including references to related work, and evaluation or reflection of the product.

- The teaching staff members are appropriate for the curriculum on offer and are effectively deployed **[Table (A-3) in Annex A and Box File 1(d), and staff CVs in Box File 3]**. The University has implemented a mechanism for academic staff development in order to be kept up-to-date in their discipline and in relevant pedagogy as explained in **Part A (A4-2-c)**. Please, refer to **Box File 4** for the procedures. For maintaining the quality of teaching and enhancing it, the Department makes use of "Students feedback questionnaires" as well as forms of classroom peer review **[Box Files 7(a) and 21]**.

- In some cases, a large cohort of students on a particular module is divided into several groups and taught by individual lecturers. The coordinator of such module organises the work of the team, where he/she manages every thing related to the exams, coordinating meetings (three meetings per semester), and any peer review of the module. **[Box File 7(a)].**

- In addition to the feedback from students, the quality of many projects and assignments give positive indications about the learning process.

## 3. Innovation of Curriculum

Following the QA experience gained by the Faculty from the previous reviews, the Faculty has become a pioneer in this area. It participated in committees and conferences at the level of the Ministry of Higher Education and Scientific Research in developing and accrediting some IT curricula.

The Software Engineering curriculum was developed as a consequence to the reviews of the previous programme (Computer and Computer Information Systems) made by the British QAA Committee that visited the Faculty in two rounds (in 2003, and 2007). Also, the development of the curriculum was based on contact with industry, Jordan Ministry of Higher Education Benchmark, ACM/IEEE benchmarks, British and Australian Universities (e.g. Manchester and Monash Universities). Although curriculum design is informed by QAA computing benchmark, suitable formal mechanisms within the department take note of feedback and attempt to take appropriate action **[Curriculum Working Group (CWG) (Box File 2), Faculty Quality Assurance Committee (FQAC) (Box File 26), and Department Council (DC) (Box File 9)]**. The Curriculum Working Group (CWG) and the Department

Quality Management Committee (DQMC) together with the Module Working Groups (MWGs) in the Department usually recommend the development and modification of curriculum.

The curriculum is constantly evolving to cope up with new technologies and rapidly developing software. The first curriculum was designed in 2003 and then updated in 2005, 2011, and 2016. The present curriculum assures the inclusion of the current Intended Learning Outcomes (ILO). Experienced external examiners also evaluate the development of curriculum **[Box File 23]**. Moreover, the Department and the Faculty have participated in many workshops on curriculum design held by the Ministry of Higher Education and Scientific Research, in which many Software Engineering specialists from many Jordanian Universities were participating. This is another valuable contribution to the subject of curriculum design **[Box File 23]**.


## B2 TEACHING, LEARNING, AND ASSESSMENT

### 1. Teaching, Learning, and Assessment Strategies

Teaching methods were designed to achieve Philadelphia University mission, which is providing high quality education with a leading contribution to the advancement of knowledge, by developing the imagination, talents, creativity and skills necessary for the varied and rapidly changing requirements of modern life for a student **[Philadelphia Student Handbook]**.

To achieve the goal, four essential attributes have been identified:
1. Knowledge, citizenship and employment a concentration on capturing a depth-knowledge for a student in a chosen filed and applying that knowledge in practice. Furthermore, a preparation for life-long learning in pursuit of personal and professional development.
2. Communication skills: Student will be able to communicate effectively across a range of contexts.
3. Problem-solving skills: Student will be an effective problem-solver, capable of applying logical, critical and creative thinking to a range of problems. Further, that student will have competencies in information literacy.
4. Social responsibilities: Students are expected to act ethically, with integrity and social responsibility.

Strategies are informed by experience and skills of the academic and technical staff and are related to the nature of the subject matter in individual modules. Thus, a suitable mixture of theoretical, practical, tutorial, and group work strategy is used. The Curriculum Working Group (CWG), and the Department Quality Management Committee (DQMC) meet regularly and debate various issues of interest **[Box File 2]**.

Some staff members are active in research and their knowledge and experience will definitely contribute to the teaching process **[Annex A** and **Box File 1 (d)].**


### 2. Teaching and Learning Modes and Assessments

*a) Modes*

Software Engineering programme is designed to ensure that teaching and learning go forward over a broad front. Lectures are the main standard feature arrangement, while tutorials, projects, case studies, interactive classroom strategies, quizzes, seminars, laboratories and self-access packages are increasingly built into the programme. Adding module web material and self-reading articles are two new techniques used to support degree requirement.

Materials, which are knowledge-based and mainly related to theory, are delivered through formal lecture setting of about 40 students. Usually, recommended textbooks are used as core material supplemented by additional notes, students individual notes taken during lecture etc. Student's participation in the lecture is required and it is taken into the lecturer's consideration. Material, which can be delivered through lectures but also needs practical work, is structured to provide work in a suitable laboratory (1-3 hours per week). In general, the balance between the lecture work and the lab work is reflected in the assessment weightings **[Teaching and Assessment Matrix, Annex C]**.

Most modules allow tutorial support in less formal circumstances to deal with individual student problems as soon as possible. The tutorial is also valuable because it brings the lecturer and students in closer contact and permits better communication at an individual level.
Other delivery mechanisms such as seminars, case studies, and group projects are used according to need. For such mechanisms, students are divided into groups (maximum 3 students in the group) for a specific topic related to the module subject. Students are expected to present well scientific documented report with oral discussion in the class to develop independent learning skills.

As the students mature, self-study and self-driven approaches are used e.g. supervised industrial experience, in graduation project etc. **[Box File D]**. Interaction with staff is encouraged, e.g. through individual tutor scheme. **[Box File B]**.

The use of electronic media has an important place in the educational process.  A full commitment has been made to utilize this channel of communication as well.

### b) Assessment of Modes
The Department has instituted a comprehensive policy for teaching evaluation. The basic elements of this policy are:

1- The Department is required to evaluate teaching for diagnostic, formative, and summative purposes on an individual and continuing basis.
2- Evaluation schemes must be part of a process for improvement, with adequate feedback on evaluation results and outcomes by external examiners and peer review.
3- The teaching and learning should be evaluated by student questionnaires, interviews, peer evaluation, self-evaluation and self-reflection. This increases the reliability and validity of the process.

Most of the skills are developed through the progression of the studies. For example, in the Windows Programming and Object-Oriented Paradigms modules, the first year students are required to design and make short presentation of their work to the lecturers. The student is rewarded by suitable assessment and /or advice.
Similarly, there are modules, which require report writing, which again forms part of the assessment process. With more advanced work, project work and practical training help to

develop students self-learning and self-reliance. Successful graduates find suitable employment in industry.

All these processes are open to scrutiny. Examples of student's work can be found in **Box File 14(c)**.

Many staff members have used the electronic media for their assignments. Many exercises are set via the web and many students use that facility for giving the answers and communicating via the web.

This work will develop further as more home grown material finds its way to the web.

There are whole rafts of other self-learning opportunity such as CD ROMs, electronic library, distance learning (for some modules), etc., which the students often used. An improvement in the use of such facilities by students is expected.

### c) Information and Communication Technology

Staff members may communicate with students through email. This enables students to communicate easily in coursework supplement. Each staff member writes his/her email address in the syllabus sheet that is distributed to students at the beginning of the semester.

The modules of the curriculum are available on the Web site of the Department. In some modules home page, there are scholarly documents and materials for students to review what has been taught in the classroom or retrieve more information as self-learning exercise. Some coursework, tutorials, assignments, and previous exam papers for a module are also available as student-base investigations and learning. For evidence of such case, please check the Web site http://www.philadelphia.edu.jo/faculties/faculty-of-information-technology

The Department schedules some lab hours as free lab in which some CDs and Web-based platforms are deployed for on-line delivery of modules **[Box File 6]**.

## 3. Students Assessment

### a) Methods

Undergraduates are assessed for each module independently and there is no carry over of marks from one year to the next. The University keeps a grade record for each student semester by semester in the administration and registration office.

Modules are assessed through a mixture of unseen examination and coursework. The relative weightings are given in **Teaching and Assessment Matrix in Annex C**.

Assessment can be diagnostic, formative or summative. Group-learning activities (laboratory sessions, tutorials, seminars, and field-based activities) are generally diagnostic since they provide an indicator of the learner understands of the subject matter. On the other hand, the summative assessment depends on the unseen examinations, such as the final exam.

The student must score an aggregate mark of 50% in a module to gain the credit hours.

As e-mail facility has been activated and well established, the Faculty begins to use it as on line assessment tool for enhancing assessment and thereby student learning. Its potential is formative in the sense that it can help students get a clearer idea of what is expected, facilitate constructive feedback and engage students in learning from their peers.

All modules other than Graduation Projects and Practical Training modules have two components:

**Component 1:**
   Exam 1 (week 7) + Exam 2 (week 12) + suitable coursework/assignments   = 60%
**Component 2**
   Final unseen exam + (with some modules) final lab exam or a project   = 40%
**Total**   = 100%

In order to pass the module, the student must score at least 50% mark aggregated over the two components. The first component is mainly for diagnostic and formative work, although it is also summative. In practice, the first component assessment is discussed with students and appropriate action is taken. The assessment strategy reflects the objectives of the module.

The minimum pass mark is 50% for any module, whereas the minimum pass for accumulated average in each semester is 60%. Students will be warned if they do not obtain average of at least 60%. Normally students are encouraged to repeat the module with low marks in order to address their weakness and improve their accumulated averages. However, student cannot continue in the programme if this average is not achieved by the third attempt.

For the third year, supervised work experience (i.e. Practical Training module), the assessment depends on the quality of performance of the student at the work place. This assessment is done through a special mechanism, which takes note of the Industrial input **[Module File (16)]**.

Similarly, the assessment breakdown for the final year Graduation Project is the same as any course **[Module File (17)]**:


- ● *Procedure for Setting Examination and Assessment*

For all modules, lecturers have to prepare exam papers which should be set and validated as illustrated in Figure (1). These exam papers are answered on answer sheets and have to be taken in class. On the other hand, the Faculty of Information Technology has commenced the on line exam for Computer Skills 1 module which is a compulsory module for all students in the University. A special committee consists of many lecturers of this module is responsible for setting and validating such exam **[Procedure of on line exam in Box File 9]**.

When a particular module is taught by many different lecturers, the examination paper is produced through team effort.

**In order to distinguish and classify students within one class,** the Department has applied criteria that examiners to prepare their exam papers **so that they are divided into three question categories: basic notions, familiar problems, and nufamiliar problems [Module Files]. However, these** criteria enable the internal examiners to distinguish between different categories of achievement. The criteria are achieved through the diversity of the questions paper for the examinations, the degree of hardness embedded in it, whether they are of intellectual type (i.e. demonstrate analysis, synthesis, evaluation and problem solving approach for unfamiliar problems), or test the knowledge of the basic principle of the subject.

The Department is using a marking scheme, where each lecturer provides the Department with outline solutions for his/her module, illustrating the breakdown of marks to each sub-question and describes the type of answer required to gain the stated marks **[All Module Files]**.

The Department has an Examination Working Group (EWG) to ensure comparability of standards between modules. The EWG ensures that the question paper for an examination

shall indicate the marks, which are available for each question. The marking of all assessments at all years shall be subject to an accuracy check, including checking that all answers attempted have been marked and that marks have been calculated and transcribed onto mark-sheets correctly.
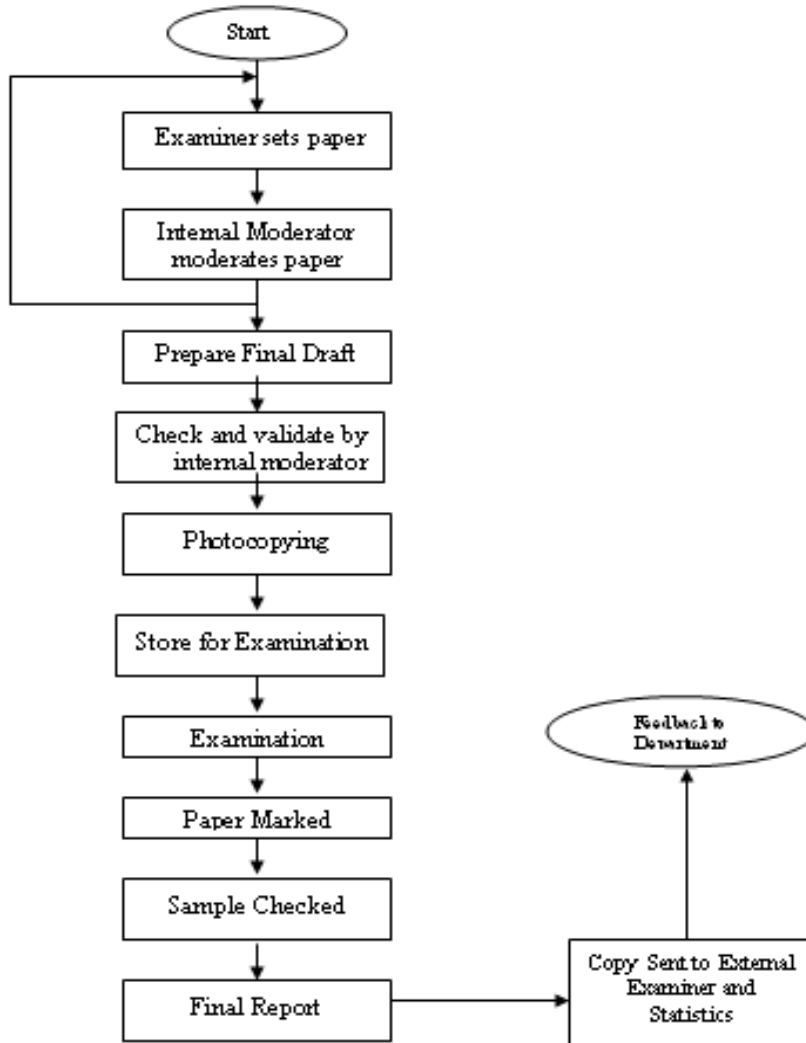


**Figure 1: Procedure for Setting Examination**

A minimum of 10% sample of scripts for individual assessments should be subject to double consideration to confirm the quality of marking. This involves a second member of academic staff to use their professional judgement to confirm the validity and equity of the marks, taking into account the marks and comments of the first marker. To resolve disagreements between first and second markers, a third marker may be asked to arbitrate.

Where a student has answered more questions in formal examination than is specified on the question paper, all answers must be marked and the relevant number of answers to which the highest marks are given must be used to determine the overall mark for the examination.

The assessment strategy followed by the Department is effective in discriminating between different categories. This is achieved through the type of questions in examination paper, and the coursework he/she does, which is assessed in a variety of different ways. This reflects the way of testing different levels of knowledge acquired by the students to discriminate between the first class, second class, third class, and pass. The student needs to build up a consistent performance across a range of subjects and a range of skills.

The formative assessments followed provide the students with feedback on progress and inform development. It identifies the areas that would benefit from extra attention from the student, or extra support from academic staff.

The Graduation Project reflects the standard of intellectual skills gained by the student in terms of analysis, synthesis, evaluation and problem solving. The transferable skills are demonstrated through the presentation of the project.

### b) Students Assessment: Future Enhancement
- **Online communication tools**
  **A discussion about using chat facility to encourage lecturer/student communication; furthermore, a degree of feedback from lecturer/student can be established.** Such thing can enable students to raise questions and share ideas about the assessment.

- **Online multiple choice questions**
  The trend is to encourage lecturers of different modules to establish multiple choice software for the their modules to give students the opportunity to check their underlying knowledge and enabling them to self assess their skills and knowledge with a view to voluntarily engaging in self-directed learning activities.

### c) Assessment of the Methods
- We believe in producing quality computer graduates. With high workload some of our students could take more than four years to complete their University degree. Their longer academic tenure is more than compensated through knowledge enhancement, and professional development.
- The coursework and assignments are valuable in building student confidence in their own work and provide focal points for communicating with staff. Most of the coursework marks are encouraging and the students respond well to this aspect.
- In order to assess multi-sections modules fairly, the relevant staff members coordinate the teaching scheme, examination papers, and schedules. The assessment of such modules shows that the median of marks in all sections is as expected.
- The relative quality and standard of the exam papers can be readily assessed by the provision of sample solutions and clear marking schemes.
- The assessment of the graduate projects takes into account multidisciplinary skills and demands active participation from the student.
- At the end of each semester, the EWG issues a statistical report for all modules and submits it to the DQMC. The Committee then investigates and analyses data in order to

identify irregular cases especially for multi-section modules, and tries to resolve any inconsistency in the work.
- The feedback of students is effective since the meetings of students with the staff members resolve many students' problems.

*In conclusion, the Department feels confident that the methods of student assessment are fit for purpose and work well.*


## B3 STUDENT PROGRESSION AND ACHIEVEMENT

### 1. Admission Profile [Box File 11(b1)]

- Admission criteria are issued by the Ministry of Higher Education and Scientific Research, which governs all private universities. These criteria are quite adequate at present,
- The fact that the Department takes its full capacity at the specified entry level (Table (2), **Part A (A4-1))** can be considered as a good indicator of student's attraction. It is worth mentioning that the Jordanian Accreditation Council, according to available staff and facilities, fixes the Department capacity.
- The Ministry of Higher Education and Scientific Research has amended the minimum requirement for admission in private universities as 55% in the Tawjehe exam starting at the beginning of the academic year 2006/2007. This in turn will increase the Grade Point Average (GPA) of admitted students and the calibre of the intake. Figures in Table (6) in **Part C** show that the average of the maximum averages of admission scores is (*%)
- *This gives a positive indication about the position of the Department in competing for well-qualified entrants.*
- The Department attracts students from the North and the Middle regions. This is due to the location of the University, which is convenient for these regions. (*%) of the students are from the North region, (*%) from the Middle, and (*%) from the South as shown in **Table (E-1), Annex E**.
- The distribution by gender for day students (for the last 3 years, 2010/2011-2012/2013. 2013-2014) is (*%) females and (*%) males.

### 2. Progression and Completion Rates [Box File 14(c1)]
- Referring to Tables (8-a), (8-b), (8-c) in **Part C (C1-2)**, the progression rates for the day and evening studies are good. The figures show an increasing progression rate from stage to stage. We feel that the high rate of progression is due to: (1) assigning the most experienced staff for teaching the first year modules, (2) providing appropriate teaching and learning resources, (3) With advancing years the students attain more maturity.
- The method used for calculating progression statistics discriminates between students who have completed the study and being awarded the degree later on (after one semester, two semesters, and so on). Since the Department has started at the academic year 2003/2004, it has several graduates' cohorts. Therefore, the students who are dropped out from the Department are considered. This approach gives a better indication on the exact number of those who failed to get the degree.

### 3. Student Achievements

*a) Awards*
Awards are not applicable yet.

*b) Assessment*
- The research activities of the Department provide a healthy environment from which the graduate projects and master theses can benefit.
- We expect that the comprehension and knowledge in the latest technology will be reflected on the performance of the students in their graduation projects in terms of subject-specific and analytical skills. This matches the aim of the provision in providing skilled programmers and software developers.

*c) Independent Evidence [Box File 14(c2)]*
- The Department is proud of having some brilliant students. One of those students has participated in a "Oracle DataBase".

## B4 STUDENT SUPPORT AND GUIDANCE

### 1. Strategies and Documentation
- The Department has a Student Guidance Working Group (GWG), which is responsible for designing and implementing the overall strategy for students' guidance. This strategy is reviewed and amended as necessary from time to time. **[Box File 2(g)]**.

- In order to improve quality, the Department is implementing an induction procedure with the help of the "New Students' Reception Committee" for the new students, where in addition to the one-day tour of the University facilities, the Dean of the Faculty, the Head of the Department and the Vice Dean, meet the new students and introduce them to the study plan, the available teaching and learning resources, and discuss any issues raised by the students. **[Box File 11(b2)]**. On the other hand, induction for returning students is also implemented as it is beneficial in specifying the progressive nature of the learning experience, for example, higher order skills and independent learning. For this purpose, many meetings are held between the Dean and the students and the Head of Department with the students.

- The Department provides an Undergraduate Handbook containing important information for students undertaking degree in Software Engineering. This handbook is available as a hard copy and on the Web. The Department provides the students with a prospectus explaining briefly all the information related to staff, students, facilities, programme structure, aims, objectives, etc. **[Box File 11(a1), Box File 16(a2)]**.

- **Academic Guidance**
  All students should have academic tutors. The new students are grouped into 20-30 students, and each group is assigned to an academic staff member for the duration of the whole programme. The students remain with the same tutor until their graduation. The tutor deals with all routine undergraduate inquiries, advises for academic registration at the beginning of each semester and any other relevant issues. Problems that cannot be dealt with by the tutor will be referred to the head of the Department, the Dean of the Faculty, or to an appropriate member of academic staff. **[Box File**

**16(b1)]**. The tutor is also responsible for monitoring the students' progress through their studies.

The University has provided the following automated subsystems for the staff and students:
- Automatic tutor registration system
- Automatic registration support via intra/internet
- Automatic academic queries: marks, timetable.

In order to cater for pastoral care and personal issues a University facility through the University Students Affairs Deanship is available.

- **Staff-Student Liaison Committee**

  The Department is committed to receiving and responding to student feedback in order to improve the teaching and learning environment at the Department. Feedback is gathered in a variety of ways:
  1. Through the personal tutorial system.
  2. Informal contact with academic staff.
  3. Formal meetings between staff and students.
  4. Evaluating questionnaires.

  The Department recognises the formal meetings between staff and students as an important channel of communication between the students and the staff. The Department established a staff-student liaison committee, **which consists of 8 staff members** in addition to a wide representation of students from each year (approximately 16 students). The code of practice is available for the committee members to guide them on the process. This committee meets once a month to discuss all the issues concerning the staff and the students in order to improve the performance of the teaching and the learning process **[Box File 2(h)]**.

- **Student Monitoring**
  1. The Department is still using the student monitoring procedure, where a progress report is sent to the academic tutor twice a semester (after the first and the second mid-term exams, **[Box File 19(a2)]**). The report will summarise the student's performance and the course work submitted until that date, along with the marks and an indication of whether the performance was satisfactory or not. It asks the tutor to discuss the reasons for that and the strategy for the improvement.
  2. The Department uses the standard student questionnaire that gives a feedback on the module content, organisation, teaching and learning support, lecturer evaluation, and good and unpopular features of the module **[Box File 7(a)]**. The results are fed to the Departmental Quality Management Committee (DQMC), which analyses the results and takes actions.
  3. The Department makes use of the Drop in Centre of the Faculty in which help is offered to those students who face problems in some modules. A timetable is announced for students that need some extra hours in some modules.

- **Module Coordination Working Groups**

The coordinator of each module will hold a meeting (three times a semester) with the lecturers and students representatives of that module to monitor and discuss all the issues concerning the module **[Box File 2(f)]**.

- **Students Financial Support**
  Student Financial Aid is provided to students in two mechanisms; the first mechanism is through the Student Fund established by the University in addition to the Orphan Student Fund. Philadelphia University is among the first to implement the Orphan Student Fund programme.  Any student who is in need may apply for some support through the Student Fund programme.  This programme provides partial support for students on a case-by-case basis. The Orphan Student Fund Programme provides support for those students who happen to lose their sole source of support due to death and during their study at Philadelphia University.  This support provides 75% waiver of tuition and fees.

  The second mechanism is through special Discount Scholarships provided by the University to the students based on various criteria.  These criteria include discounts for staff and employees families, discounts for Outstanding high school students, discounts for University establishers families, discounts for Union of Free Business workers, discounts for Jordanian Women Union, discounts for Armed Forces, discounts for Ministry of Education, discounts for brothers and sisters, discounts for West bank and embassy of Palestine support, Charities, the Queen Nour scholarship, etc.   These discounts range from 5% up to 100%. This financial aid provided by a private University such as Philadelphia University is evidence that it seeks outstanding students, irrespective of their financial position.

- **Free Transport**
  The University provides free and convenient travel for students from Amman and neighbouring areas.

- **Health Insurance**
  The University provides free health insurance for all students.
- **Student Registration Process**
  All staff members are involved in student registration process (module registration and withdrawal) by time-sharing the responsibility through an agreed and published timetable **[Box File 16(b1)]**.
- **Careers Information and Guidance:** *Assessment*
  The Deanship of Student Affairs establishes channels with the employers. It usually holds a one-day meeting with graduates and invites representatives from public and private sectors to inform the graduates about the employment opportunities.
  Experienced members of the staff with good industrial contacts are also able to advise students on career matters.
  The Department is also organising meetings with the graduates and their employers in order to meet the expected graduates and discuss the job market needs.
  Workshops are usually held with the cooperation of the Alumni office to discuss the ways of improving the curriculum and put their feedback in the pipes of the improvements **[Box File 23(c)]**.
  All the relevant information that are related to this aspect are available at the Deanship of Student Affairs.

**B5 LEARNING RESOURCES**

The Department feels that it benefits well from a supportive, progressive, and forward thinking University Management. The willingness of the University to encourage good resources provision can be seen from the laboratories and internet services equipments and the continuous improvement and development of the infrastructure at the University level.

**1. Strategies and Documentation**
The overall strategy has been developed over the years and has been responsive to the needs of developing systematic plans. The building stock is being continuously updated through new building construction.

The major instrument for dealing with Learning Resources is the Faculty Learning Resources Committee, which consists of a Department Quality Assurance member, the Lab Manager, and representative students. At least once a year, this committee considers the full range of resources, formulates plans and agendas, and validates various requirements **[File Box 2 (a)].**

The *Resources management is* done through a University mechanism where separate persons are assigned individual Faculty responsibility. These persons assist the Faculty with the overall management of resources, maintenance contracts. The day to day running and management of resources is taken care of by the chief technician who is in close contact with the users of the equipments, labs, etc.

There are written guidelines that describe learning resources and services. A convenient resources handbook **[Box File 8(b4)]** describing how to obtain and make use of resources is freely available in hard copy form and on the Web. Its main features are:
1. Availability of all types of equipment,
2. Laboratories and others spaces,
3. Teaching materials,
4. Access to books, CDs, etc.
5. E-learning resources,
6. Self learning resources,

**2. Library Services**
The *Main University Library* houses a well-resourced computer section with up to date books, journals, CDs, reference materials, etc. The Department Library Working Group receives requests from members of staff and organises to get suitable books order in the library. Usually generous response is received to most demands. The university is proud of its library, which has not only met all the national standards, but has gone a fair way beyond.
The first year induction process familiarises the new students with the procedures of library use. Some of the first year assignments force the students to use information search facilities through the library, Internet, etc.
Generally, each student is allowed a loan of three books for a period of two weeks. There are reference materials, which students cannot borrow from the library. There are also multiple copies of recommended module textbooks.

**3. Equipment and Information Technology**

*a) Student Computing Laboratories*
- They are fully described in the Learning Resources Handbook **[Box File 8(b)]**.
- In the early years, simple search exercises and general use of electronic facilities are encouraged. All the 12 laboratories in the Faculty have Internet facilities and students are free to use them between 08 AM to 16 PM. In the advanced years, students are directed to do specific tasks, which will require a focus in the use of IT facilities. For specialist curriculum requirements, facilities such as UNIX lab, Multimedia, and networking facilities are available and are adequate for teaching purposes, e.g. Networks and multimedia modules. The probability that there will be more than one student per terminal, even at busy times, is quite low and hence the waiting time is negligible.
- The maintenance staff members ensure regular maintenance of laboratory facilities and there are maintenance contracts with specialised organisations.

*b) Computing Services*
- All computing services have modern equipment and operate at top speed.
- The staff members responsible for operation of such services receive full training and are competent in the management of their particular area. New technical staff receive training through their colleagues and monitoring process **[Part A (A4-2-b)]**.
- Suitable training for staff in operational matters is provided by the University Computer Centre as and when required.
- The open access labs are equipped with suitable technical systems.
- Networking facilities are used in teaching, learning, and communicating with students through Web-based exercises and assignments.

*c) Teaching, Learning, and Social Accommodation.*
- Practical experience has shown that the classrooms, labs, etc. are sufficient with regard to the number of students. The maximum number of students per class is unlikely to be more than 40 **[Box File 7(b)]**. A more representative number is 25. Compared to many other universities where it could be 100, this number stands excellent. The comfort levels are well managed and many facilities are new.
- The campus is situated in a pleasant surrounding among hills and is appreciated by students. Moving from one building to another is not intensive and is supported by a very convenient shuttle service, although the distances are small.
- There are well-equipped free sport and cultural facilities **[Box File 8(a3, a4)],** which have a gymnasium, football, etc. Most of the universities do not have all these facilities.

*d) Technical and Administrative Support*
- The laboratory tutor keeps all the facilities in his laboratory at a functional level with the help of the maintenance staff. This ensures equipment suitability and reliability at an excellent level.
- The staff members prepare the needed practical work with the appropriate tutor, who provides the student guidance and helps in student practical evaluation.

**4. Collective Expertise of Academic Staff and Curriculum**
The collective expertise of the academic staff is suitable for effective delivery of the curriculum, for the overall teaching, learning, and assessment strategy, and for the achievement of intended learning outcomes. In fact, the number of academic staff is adequate

according to the staff/students' ratio is 1/20. Their collective expertise covers generally all the knowledge area of the curriculum **[Box File 3(c)]**. The staff members derive their academic strength through teamwork and research effort. The actual load (12 hours/week) in general allows the availability of the staff to effectively deliver the curriculum, engage in suitable development work, support the students and pursue some research or scholarly activity.

## 5. Appropriate Staff Development Opportunities [Box File 4(a, b, c, d, e, f, g, h)]
The Department is committed to a fully-fledged staff development. This is evidenced by many opportunities, which staff members have for personal development, e.g.:
- New members are provided with staff induction
- Members are very strongly encouraged to join one of the six research groups
- Full encouragement is given to attend and participate in international conferences and symposia organized by the Department
- Provision of peer review and teaching seminars to improve teaching
- Opportunities to register for Higher Degrees.

## 6. Technical and Administrative Support
Appropriate technical and administrative supports are available **[Box File 8(b5)]**. Our Programme has adequate technical and administrative supports: each laboratory having a supervisor, who maintains the laboratory and helps in programming, teaching, and learning. The University Computer Centre provides specialised training sessions. The Department activities are supported by the Department chair, two academic advisors, personal tutors, and different working groups ensuring full management.

## 7. Strategy for the Deployment of Learning Resources
The timetabled requirements can initially reserve resources. However, the Handbook of resources provides guidance about their availability and the protocol involved in obtaining them. If difficulties arise then these have to be reported to the Learning Resources Committee.
The curriculum is developed in order to provide students with a lifelong learning attitude. So, generally, for each hour in the classroom, the student is expected to spend 2 hours as self-learning, which is supported by the overall resources envelope.


## B6 QUALITY MANAGEMENT AND ENHANCEMENT

### 1. Management and Monitoring
The Department strongly believes that a quality management system should be a practical vehicle to collect and analyse data and brings about meaningful improvements without a disproportionate penalty in bureaucratic load. This can only be done if members of the staff fully understand the system and participate in it. Although academic credibility has always been a priority for the University, formalized quality systems are relatively new and demand high overheads.
In 2002, the Faculty of IT developed a quality management structure (**Figure 2**), which is still fully operational in all Departments. The eventual authorizing agency for all academic work within the University is the University Deans Council (UDC) chaired by the President.

The University Quality Assurance Committee (UQAC) is a specialist committee, which is responsible for the quality issues at the University level. For each faculty, there is a Faculty Quality Assurance Committee (FQAC), which acts as an interface with the University

system. Similarly, the Faculty Council (FC) and the Department Council (DC) are the authorizing agencies at the Department and at the Faculty levels. Their main roles are intended to be more as overseers in global capacity while the detailed work is done at other levels.
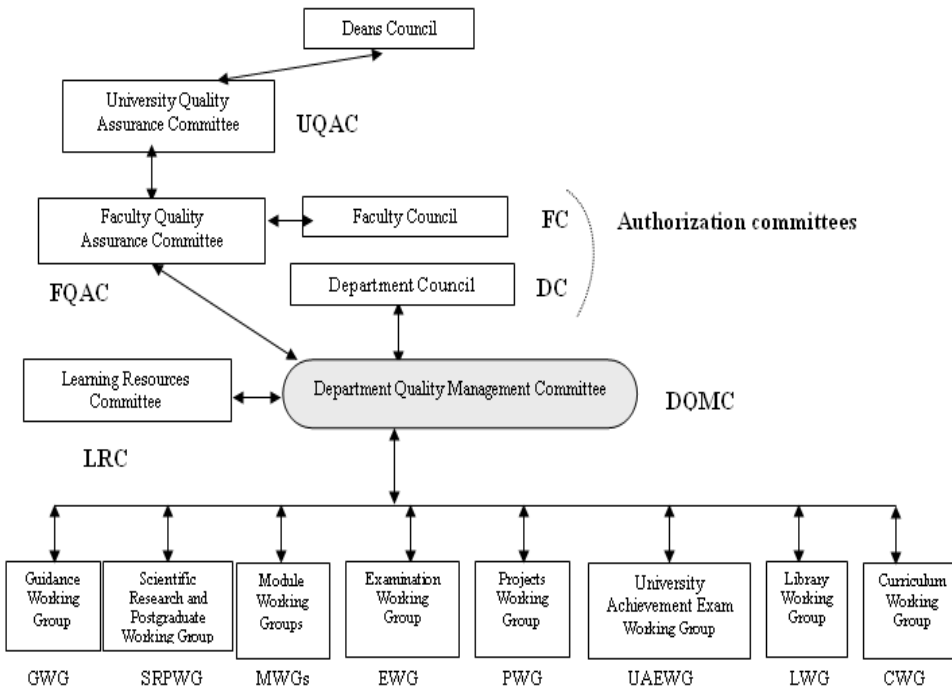


**Figure 2: Quality Management Structure**

At the departmental level, the main nucleus of quality issues is the Departmental Quality Management Committee (DQMC) **(Figure 2)**. Various small "working groups" collect and monitor data and pass it to the DQMC, where information can be fully debated and analysed and recommendations arrived at. The DQMC will report to DC and obtain final authorization. Most minor matters can be reviewed at the DQMC. The DQMC has a central role of collecting information from various sources.

At the beginning of each semester, the Quality Assurance Officer **[Box File 26]** provides the DQMC with the quality management and monitoring agenda of relevant tasks **[Box File 19(a1, a2)]**. This agenda **(Annexes F and G)** is distributed to all staff members. The following paragraphs describe the various functional aspects.

1. *The Learning Resources Committee (LRC)* is a Faculty committee. It considers all resources, formulates plans and agendas, and validates various requirements, and presents them to the DQMC.

2. *Curriculum Working Group* usually recommends the development and modification of curriculum in collaboration with the Module Working Groups.

3.  *The Library Working Group (LWG)*. It plans, controls and deals with library requirements.

4.  *University Achievement Exam Working Group (UAEWG)* is a group that prepares students for the University achievement exam. This exam is similar to the Educational Testing Services (**ETS**) that is run by the Ministry of Higher Education and Scientific Research at the end of each semester.

5.  *The Projects Working Group (PWG)*. It plans, controls and improves the process of carrying out the student graduation projects.

6.  *The Examination Working Group (EWG)*. This committee plans, controls and improves the student examination process. It provides data to be analysed by the DQMC.

7.  *The Module Working Groups (MWGs)*. These groups manage and coordinate the teaching, learning, and the assessment of various modules. Since they are directly involved in the delivery of the modules, their role is to continually review the modules. They can propose changes via the DQMC.

8.  *The Scientific Research and Postgraduate Working Group (SRPWG)*. This group is responsible for all matters concerning the scientific research and postgraduate programme, such as managing seminars, conferences, helps in curriculum design, staff selection, setting up timetables for MSc programme, recommending MSc projects, supervisors, and examination marks, etc.

9.  *The Guidance Working Group (GWG)*. It plans, controls, and improves the student guidance and advising process.

The two major processes for quality control are Module review and Programme review:
-   The Module review is achieved through the operation of the MWGs, which is a continuous process to monitor the progress of a particular module, although major changes are likely to be rare **[Box File 24]**. If however a syllabus change is needed, then the normal procedure through the DQMC will take place. The CWG would consider the proposal and finally the change can be made.
-   

The Usage of library is monitored by the LWG and data passed to DQMC **[Box file 2(d)].**

*Staff Development and Training*

The *staff development and training* **[Box File 4]** is managed as follows: Every new staff member follows the new staff induction process **[Box File 4(a)]**, which operates at two levels: University level, and Department level. The University organises a general training session at the beginning of each semester, where the general fundamentals of teaching and learning are presented. The Department specialises this process in the computing area. It introduces new lecturers to teaching groups related to their interest and specialisation. In the first stages of their training, they only observe and get advice from a senior staff member assigned to them. At a later stage, they give lectures and are evaluated by the senior member over approximately one month. In most cases the new member is appointed based on this

**Comment [Unknown A4]:** No Programme review section

evaluation. However, if the results are persistently unsatisfactory, the individual may be not appointed.

*The peer observation* **[Box File 21]** is managed as follows:
In order to maintain good teaching standards every lecturer must be peer observed. Each lecturer is peer reviewed, during the semester by a more senior colleague. He/she receives a copy of the peer review report and help from the reviewer, who directs the report to the DQMC.

The *staff evaluation* is an annual exercise, where each staff member's activities are evaluated by the Head of Department and the Dean, through an established procedure **[File Box 4 (h)].** This provides the Dean with an up to date picture about the staff in the Department. Decisions such as promotions, renewal of contracts, recruitment of manpower, etc. are assisted by these data.

The Scientific Research and Postgraduate Working Group organises seminars, teaching method workshops, and international conferences **[Box File 2(b)]**. The Department encourages staff members' participation in international conferences. The University confers the "best lecturer" prize upon a deserving staff member, pays all expenses to a staff member who presents papers at international conferences, and confers the "best researcher" prize to a deserving person **[Box File 4(f)]**. For the laboratory tutors, the Department organises local training sessions and gives them the opportunities to attend training sessions outside the University **[Box File 4(g)]**.

### Examination Process
The examination process is as depicted in **Figure 1, Part B (B2)**. The students with poor results contact their respective academic tutors who give them advice and report their status to the DQMC. A sample of papers is scrutinised by external examiners who then provide their comments via the EWG.

### Written Student Feedback
The GWG collects the students' questionnaires for every module each semester and passes the analysis to the DQMC, which, in cooperation with MWGs and other committees, can take actions.

### Monitoring
The DQMC after collecting reports from various MWGs and committees produces a set of output reports, which provide an overall summary and various associated recommendations to be finally authorised by the DC and FC. A description of these reports is in **[Box File 7(a)]**. The automation of the Quality management and monitoring processes was started.

## 2. Quality Enhancement

a) *Main Outcomes of the Quality Management Process*
   Over the last three years, the operation of the Quality Management Process has resulted in the following:
   1. Closing the CIS program,
   2. Revision and updating of the aims and objectives of the provisions of all programmes in Faculty of IT.

3. Revision of the curriculum design and content. The revised is based on the ACM/IEEE 2013 recommendations concerning Software Engineering. The **Faculty Curriculum Design Handbook** gives details on curriculum design and content for all programmes in the Faculty **[Box File 11]**.
4. Introduction of new teaching mode (e-Learning).
5. Use of new teaching modes (such as seminars and workshops) and focussing on others (such as tutorials).
6. Use of additional assessment modes (such as diagnostic) and intensification of others (such as formative) in order to ensure particularly the achievement of the outcomes of each module and, in general, the achievement of the programme outcomes.
7. Providing students with a complete new undergraduate handbook, which contains all the relevant information, required by students through their academic year.

b) *Evidences of Successful Enhancements*

The recent drive of the University to focus attention on quality issues has brought about the formalization of various processes in all Faculties, which in the past although available lacked rigor and thoroughness. In this connection there is marked improvement in record keeping and staff awareness about quality issues.

As the quality assurance process and its application are applied in Jordan Universities since 2001, its full outcome on successful quality enhancement is fully realized. However, some positive results are as follows:

1. A rigorous process to recruit staff has been developed as a part of quality process.
2. The quality system has provided a natural mechanism to install and operate a peer review system. In addition a new staff review system is in place.
3. Many workshops and lectures have been set by the academic training and development center of the University to train staff members in various aspects of the teaching process.
4. All processes related to exam setting, marking papers, and assessment strategies have been revisited and strengthened.
5. New teaching and learning methods have been introduced, e.g. e-learning method.
6. Students have been given a greater voice in the University affairs.
7. Recommendations from MWGs, PWG, and LWG have resulted in suitable actions.
8. As a result of student feedback, regarding for example weakness in English and Maths, a drop in centre has been established in all faculties.
9. The shared experience on Quality Assurance at the University level has leaded to enhance the quality in several others faculties (Laws was classified the first excellent provision at Jordan level, and the Finance Science was marked excellent).

**2. Sustainability**

Since the beginning of applying the quality assurance process in the Faculty in 2001, the Department fully shares the commitment with other departments in the Faculty to maintain robust QA procedures through the Faculty and University QA systems. It is recognised that the value of these procedures is in the practical use of them in monitoring data and hence effecting real improvements.

At this stage, we believe that we have a strong foundation and the apparatus to bring about and sustain future developments by:

1. Reviewing, on regular basis, our degree scheme in line with 'informed opinion', derived particularly from external examiners, accrediting bodies and widely respected reports like "ACM/IEEE Curriculum 2013".
2. Filling vacant academic posts with candidates who have the qualifications and the ability to deliver our curriculum while making contribution to our research effort.
3. Maintaining a close scrutiny on all the quality mechanisms and insist on participation from all staff in the Department.
4. Providing encouragement and practical help in raising the profile of teaching activities e.g. educational research.
5. Improving quality of research and where possible encouraging scholarly activity e.g. through small research initiatives.
6. Keeping a close watch on deployment of resources to make sure that none of the planned activities are starved of resource.

## B7 PROGRESSION SINCE 2003

### a) Aims and Objectives

The Department of Software Engineering has been established in 2003 after the recommendation of the Quality Assurance Agency (QAA) given to the University after the second round of review for Software Engineering Programmes conducted by the Al-Hussein Fund for Excellence and the QAA.

**Comment [Unknown A5]:** Must be revisited

Previously the Department was called Computer and Computer Information Systems. It was one of the Faculty of Science Departments. That Department is closed and was replaced by two new different Departments, under the faculty of Information Technology namely: **Software Engineering Department (CS)** and **Computer Information Systems Department (CIS).**

The new SE Department currently offers the following undergraduate programme: a B.Sc. (Honor) degree in Software Engineering. The degree can be studied by Daytime mode. The mode normally takes four years to complete, but allows some flexibility in certain cases, for the duration to be shortened or extended according to individual rate of study. The Jordanian Higher Education Accreditation Council (JHEAC) accredits this programme and its related learning resources. The programme was first accredited by JHEAC in 2004 and is periodically revised and approved by the University.

Fix accredited :[**Comment [Unknown A6** year

So, the aims and objectives of the provision were revised according to the new title of the provision, which is *Software Engineering.*

### b) Curriculum Design, Content, and Organisation.

- The curriculum is revised to reflect better the new title "Software Engineering".
- A new curriculum was designed according to the recommendations of ACM/IEEE 2013, the computing benchmark, the previous review conducted by the QAA assessors in 2003, external examinations, and the accreditation council of the higher education. The programmes of some well-known universities (such as The University of Manchester) were studied and inspired the new curriculum, which is applied since 2003 **[Box File 26]**.
- A programme specification, an undergraduate handbook containing all the needed information and a course catalogue, of the new provision, were provided to staff members and to students **[Box File 8(b7, b3, b5)]**. A staff induction handbook **[Box File 8(b8)]**, a Learning resources handbook **[Box File 8(b4)]**, and Web materials are provided.

- Given the importance of the Graduate Project, it was designed as a conventional module. It follows a strict controlled and evaluated process. **[Box File 26].**
- Individual research competencies of staff members are used in designing the curriculum and the syllabus of modules related to their specialities (Software Engineering, Formal Methods, Networking, etc.) and in graduate projects **[Box File 3(c), Box File 26]**.
- These researches competencies were lead to open a Postgraduate Program in Software Engineering, which is unique at Jordan Level

### c) Teaching, Learning, and Assessment.
- Introduction of a new method of teaching (e-learning) in addition to the various old methods of teaching: Lecture, tutorial, seminars, workshop, etc. **[Box File 8 (b5), Modules Files]**. The e-learning allows a self learning mixed with the lecturer-based learning.
- The University established a higher-level Academic Industry Interaction Committee. An IT-Incubator Lab (I-Lab) has been established. Our I-Lab is working on initiative ideas of our experienced faculty and students to develop potentially commercial products. This I-lab is still working, but with more efficiency gained by the experience.
- We provide continuous stress on modern teaching and learning methods; therefore the University took initiative and has been uniquely selected in the Kingdom by the UNESCO as a focal point for E-learning in Jordan. Several courses were and continue to be developed for Avicenna University.
- The use of the library by students is increased **[Box File 7(a)]**.
- The staff development process continue to be enhanced by induction, research projects, student feedback, and peer review **[Box File 4, Box File 7 (a), Box File 19(a), Box File 21].**
- The assessment process is continued to be enhanced by formalisation of different assessment modes with a maximum of scrutiny: Diagnostic, formative, and summative **[Box File 6, all Module Files]**.
- The assessment strategy which was introduced to ensure that assessment are progressively more demanding in terms of depth and the application of higher order skills as students progress through the levels of the programme **[All Module Files]** continues to be applied.
- Marking schemes, which were introduced in the assessment process, are know a conventional task and extended to all kinds of exams. **[All Modules Files]**.

### d) Students Progression and Achievement.
- The calibre of the intake is set up to (\*%). It does not reduce the level where programme cannot meet its learning outcomes.
- The graduation project assessment procedure was enhanced to ensure that discrimination between the students is minimized **[Graduation Project Module File (17)]**. Each student is assessed separately, as in a conventional module.

### e) Student Guidance and Support
- A more extensive induction period that includes the induction to the Department and the programme (including the provision of the programme handbook) continues to support new students.
- Revised written guidelines on the student academic guidance process are available.

- As a University policy to reach to the broader sector of our society, we continue to maintain competitive and affordable tuition and fees. So, several fee reduction schemes, based on merit-com-means and other criteria, are now proposed.
- An automatic Student Guidance System is used to guide and support the academic process of student.
- An automatic Student Registration System is used to register/withdraw modules via intranet/ internet.

### f) Learning Resources
- The Department has recruited sufficient staff members for the programme (the rate is still 1/20), well above the requirement by the Higher Education accreditation.
- Our staff recruitment process continues to be improved. It has been a great success, as we have the largest number of faculty members in the Faculty with high calibre research activities among all Software Engineering Departments in Jordan. Staff members are evaluated each year according to a lecturer evaluation procedure, and members which are stated unsatisfactory are replaced. This stimulates a continuous motivation of the staff members and guards the quality at its acceptable level **[Box File 3(a)]**.
- The six research groups continue to participate to the elaboration of the curriculum and to inform modules syllabuses and contents by research.

  **Comment [Unknown A7]:** Must be fixed

- Our staffing coverage of certain academic subjects, such as Computer Networks, Artificial Intelligence, Parallel Processing, and Databases is now quite comprehensive and has considerable research and academic experience.

  **Comment [Unknown A8]:** Must be fixed

- We are the first among private Universities to establish a scholarship programme for our Teaching Assistant Staff and with relatively large number of scholarships. A number of our teaching assistants continue have awarded scholarships to get their terminal degrees. This will insure continuous up-gradation of knowledge, skills, and modernization in the Department.
- The University continues to be a nominated member by UNESCO of prestigious Virtual Laboratory Project established between European and some selected universities from Asia, Europe and Africa.

### g) Quality Management and Enhancement
- All rules and regulations of the University are clear for its teaching and administrative staff members and students. These continue to be distributed in written format for everyone. All rules and decisions relating to teaching, recruitment, research, promotion, curriculum, needs, etc., are made at the level of a number of councils, and discussed freely on an institutional basis.
- An important progression in the quality control process is its implementation not only at the Department level but also at the Faculty and University levels, as it is through them that quality as a whole is maintained and enhanced. Our good experience in High Education Quality Assurance and our excellent obtained result (First position in Jordan) was a strong basis and motivation for others provisions in other faculties (consequently Laws was classified also the first, and the Finance Science has an excellent position). Through Quality Assurance workshops, seminars, and practices at several levels, the involved peoples (academic and administrative) in this process have gained Quality Assurance culture and practice.

  Our policy is still to ensure that the Quality Assurance procedures (of management and of monitoring) themselves are effective and efficient. So, these procedures and the performance of staff regularly are reviewed, by sharing experience between all University faculties. This leaded to standard and more effective procedures which continue to evolve.

Consequently, the University provisions outcomes become excellent as stated by the different ETS exams (several provisions were classified the first at Jordan level)

- Another important progression in the Quality Assurance process is the intensive practice of the monitoring and the consequences of this monitoring on the enhancement of the provision quality. The monitoring forms were revised, new ones were designed, and even the management forms were influenced. Management data were analyzed, indicators were interpreted, and decisions were taken.
- The automation of the Quality Assurance Process is started since we have mastered it: all procedures and forms are online accessible to any person involved in this process. All communications are via intranet, and a soft Base Room is going to be created in addition to the hard one. Several management and monitoring processes were automated, and the I-Lab directed by the DQMC, is working on this important application **[Box File 19]**.

- We are at the state where each programme in our Faculty is periodically self assessed and an internal Quality Assurance team evaluate these programmes and provide a report for the Faculty as whole in the form and style of the Quality Assessment of Software Engineering provided by the British external QA examiners, Jordan 2003.
- In addition, a clear and operational quality management, monitoring, and enhancement process was redefined and enacted based on a global shared experience at the University Level: Appropriate arrangements, Staff development, Monitoring reports, Quality management agendas and reports, Observation of teaching, external examiners reports, programme modules review, etc. **[Box Files 4, 7, 8, 9, 19, 21, 23, 24, 25, 26].**
- The Department is committed to staff development, this is particularly important given the rapid rate of change that characterizes the subject area of Computing. The University Staff Appraisal System continues to provide the opportunity for academic staff to review their career achievements and expectations in a thorough way on a regular basis. Therefore, all our faculty members are regularly appraised under the University's Staff Appraisal scheme. Part of this procedure identifies staff induction and training needs. These are reported to both the Head of Department and the University's Personnel Section, which may mount relevant training courses itself or recommend other sources of relevant training.
- The incubator laboratory and centre for staff development are working.
- The University Quality Assurance Handbook is revised, and Faculty Quality Assurance Lecturer Handbook was developed and saved in the Faculty site: http://www.philadelphia.edu.jo/it/lbook.pdf. It contains all the procedures and forms involved in the Quality Assurance process needed by any lecturer. A Hard copy is in **Box File 6**.

- All courses within our degree scheme continue to have internal and external examiners, who review the exam papers and sometimes are invited to make comments about our exams at the Examination Committee meetings. The internal examiners are senior staff members. Each member is nominated to check an exam in his knowledge area. The external examiners submit reports, to be discussed by the appropriate committee, which identifies any actions needed. A sample of external examiners' reports for recent years is presented in **[Box File 23(a)]**.
- A student feedback process (with revised documents) continues to be applied at several levels: module, programme, specialised committees, and meetings **[Box File 7(a), Box File 19(a1)]**.
- A Departmental Staff/Student Committee (Panel) was enforced which consists of student representatives from all students' levels (e.g. freshman, sophomores, juniors, and seniors), and a carefully chosen subset of the Departmental staff. At the beginning of each

semester the committee arranges a Staff-Student meeting attended by all staff members and all students of the Department **[Box File 2(g)]**.


**B8 CONCLUSION**

**1. Key Conclusions, Opportunities and Concerns**

*a) The key conclusions identified at the University, Faculty, and Department since the last review in 2003*

- Despite the relatively short history of private universities in Jordan compared to well established government institutions, Philadelphia University has set an example by taking part in virtually all significant academic, cultural and community issues at the highest levels and beyond national boundaries. The higher management through its significant investment programme has demonstrated its vision to play a lead role in the higher education of coming generation of students. Indeed, unlike many profit-making institutions, the top management here is convinced that only through high quality education and research can the University make real progress. The high calibre educators who are recruited from all over the world exemplify this, and many of them have strong collaborative research work with UK, France, Germany, Italy, and USA. Another example of this commitment is the number of prestigious centres established in the University as shown in the University Profile **[Box File 6]**. The University is also committed to apply the quality assurance process in all Faculties **[Box File 2].**

- In view of the short history of private universities, the Ministry of Higher Education and Scientific Research has been cautious in permitting them to run postgraduates courses. The position is now changing and Philadelphia University is the only university among all private universities in Jordan that takes the opportunity to offer Master Programmes in Software Engineering and English Language. The Department has commenced the Master programme in Software Engineering on the academic year 2005/2006 with 14 students (maximum allowed was 15) **[Box File 17]**.

- We provide continuous stress on modern teaching and learning methods; therefore the University took initiative and has been uniquely selected in the Kingdom by the UNESCO as a focal point for E-learning in Jordan. Therefore, the Faculty has participated in the E-learning project by designing and implementing four IT subjects: Fundamentals of Artificial Intelligence, Software Engineering, Information Management, and Data Communication and Networks **[Box File 21]**. Each subject is designed by a team from IT Faculty with coordination with the lecturers that have taught the subject. This practice is implemented now as supporting material to regular classes to obtain feedback from students and lecturers. In this project, the IT Faculty is classified the best among all participating universities (at the world level).

- The IT Faculty with the different three programmes has proceeded towards enhancing the curriculum to match the international standards. The standards of ACM/IEEE 2013 have been followed to establish curriculum that has common core courses for all programmes and has diversity of disciplines to suite the specific programmes. The new study plans set up on 2003/2004, and than update on 2007/2008 and updated on 2016/2017 are effective

enough (compared to the one set up on 2000/2001) to cover the breadth and depth of the specific programmes.

- The Faculty is in its way to establish a new programme "Multimedia and Computer Networks". The proposal of this programme has been set up and the Faculty is waiting for the formal approval.

- As part of sustainability in Quality Assurance, the Faculty has conducted an internal review in June 2006 for all programmes that the Faculty offers, where each department has submitted a SED and reviewed by an internal QA team.

- While not being complacent, we believe that our quality control procedures work reasonably well. This is evident by having very good qualified students who compete with students from all over the world. For example, one of our students has participated in a "Microsoft Word 2003" project for international competition held by Microsoft in the year 2005/2006. He was ranked the fifth among 4000 participant from 66 countries. He was selected among others to present his achievement in USA during summer 2005/2006. Another student in the Faculty has obtained the third rank in the world in the Microsoft competition in Computer Graphics **[Box File 14(c2)]**. Other evidences are the ratings we receive from students in the module assessment questionnaires **[Box File 7(a)]**, the reports we receive from external examiners, and the independent feedback we have received from appraisals of our Academic Programme. However, we are not reluctant to seek independent advice and bring about improvements if necessary.

- The Department is committed to Equal Opportunity Policy and transparency of decision-making. Therefore, the Department subscribes to the University's Equal Opportunity Policy Statement for the recruitment of staff and students. All our modules are open to Home, and foreign students regardless of their background, sex, religion, or colour. Staff posts in the Department are open to all applicants without restriction, apart from that of having suitable job qualifications. We have female as well as male staff members.

- An important progression in the quality control is the implementation of the administrative procedures of the Department, as it is through them that quality as a whole is maintained and enhanced. Our policy is to ensure that these procedures themselves are effective and efficient. This matter is the responsibility of the Quality Management Team and Committees, which review these procedures and the performance of staff regularly. Students are given important role in some committees. With this environment in which staff/students meetings and interactions take place in an atmosphere full of freedom, transparency and democracy - a great deal of the University mission and the departmental objectives are fulfilled and implemented.

- An induction of staff members in quality assurance process was improved **[Box File 4]** through: QAA Workshops and documents, British council seminars, Department QA seminars, Department seminars with alumni.

- The University provides continuous stress on Industry education and Market oriented technologies, therefore, the University established a higher-level Academic Industry Interaction Committee. An IT-Incubator Lab (I-Lab) has been established. Our I-Lab is working on initiative ideas of our experienced faculty and students to develop potentially commercial products.

- The University is not reluctant to develop and improve its educational process and services. This is evident by developing the electronic registration system and supplying on line services for lectures to submit and accredit students' marks and to follow the academic guidance conveniently.

- The University commitment to excellent resources and establishing a new faculty (Nursing) and new stock of buildings is an indication of its confidence in the ability of its entire staff. The enthusiasm of the President and the Vice President at our work is a big help in boosting the staff morale.

- The Faculty has set up a procedure and selection criteria for the "Best Computer Program Award" in the Kingdom that is awarded by the University each year.

- Receiving the first rank award from **Al-Hussein Fund for Excellence** makes us the shining centre of QA in our University. We have helped in spreading QA culture and philosophy to all faculties and departments. We assessed the Faculty of Law and the Faculty of Administrative and Financial Sciences in setting up there QA requirements. The Faculty of Law obtained the first rank in QA in Jordan for the year 2006. Our QA educators are permanent members in all QA committees in different faculties. We provide periodic seminars on QA for all faculty members at the University.

- After receiving the first rank award from "Al-Hussein Fund for Excellence" in 2003 and to appreciate students' performance, the Faculty has commenced awarding its distinguished students. The awards include the first and second ranked students in each batch and the best graduation project in each academic year.

## b) *Opportunities*

- The idea of student drop-in centre for very weak students in English and Maths and key skills is successful and more resources will be directed to this idea.

- Our effort in scientific research performance increases the prospects of competing nationally and internationally. Such success in scientific research performance will have a positive effect on the quality of education in both undergraduate and postgraduate programmes. This is likely to attract additional funding from private and public organizations.

- Our current success has put us in a position where we can confidently collaborate with other national as well as international institutions on many levels. We will utilize this opportunity whenever possible.

- As a result of our success in Software Engineering, our University has played a pioneering role in specializations such as Computer Science, MIS, Web engineering, etc

- Due to our unique location, half way between Amman and the ancient Roman City of Jerash, we are in a position to serve populations from the rural areas in middle Jordan who otherwise would have difficulty in reaching Amman. We will continue to capitalize on this opportunity and expand our programmes.

*c) Concerns*

- Although many students have positive view of the location of the University outside the capital Amman, some on the other hand, do not share this view. These students continue to seek admission at universities located within the Greater Amman area.

- As a private university this institution is regularly checked and assessed by the Ministry of Higher Education. We feel that such regulations are very beneficial to raise the quality of teaching in our institution. However, regulation standards are not equally applied to public institutions, which are not subject to the same level of regulations. This is evident by the number of students allowed per section compared to public institutions. That is to say, those public institutions are allowed up to 100 students per section compared to 40 in private institutions. This specific regulation redirect money towards opening multi sections for courses instead of freeing staff members for research and allocating enough money for research and other activities.

- Many public institutions open additional programmes such as parallel programme, evening programme and international programme in which they charge higher fees to levels comparable to private institutions. However, these public institutions continue to receive significant financial support from the Jordanian Government. This provides a conspicuous advantage to public universities.

- Although, the staff consists of dedicated professionals, higher expectations of quality at all fronts can steeply increase the workload. It is therefore necessary to take steps to ease the overload.

## 2. Conclusion

After the QA Subject Review of 2003, the Faculty took detailed and extensive steps to examine all its activities in the context of Quality issues. In doing so the staff used reference points and guidelines from:
- QAA Follow up 2007
- Subject Review Report (Department of Computers and Information Systems – Philadelphia University-2003)
- Arthur Brown Report (2003)
- QA Handbook by H.F.E.
- Subject Review Handbook by QAA

As a result, the QA procedures have been thoroughly overhauled. Full attention has been paid to the points raised by the Subject Review Report. Staff members have been fully engaged in Quality issues and the senior management has given full support in drive towards betterment.
The current SED (September 2016) has been produced with the benefit of all this knowledge and attempts to present the improvements in a positive and honest manner. It is the genuine desire of all the staff to improve the quality of the provision so that the students and staff can take pride in their institution and its activities.

Although many positive points have already become visible as a result of recent deliberation, the Faculty and the Department will be looking to sustain improvement

through their commitment to excellence and planned activity. This task will not be easy but we believe the culture of excellence has taken root in this Department and all departments in the Faculty, and our staff members have the ability, tenacity and the will to succeed.

# PART C

## RELEVANT INFORMATION, DATA, AND ANALYSIS
(renewed only for external evaluation)

## C1 QUANTITATIVE AND QUALITATIVE INFORMATION ON STUDENT PROGRESSION AND ACHIEVEMENT

### 1. Analysis of Entry Requirements

- The Ministry of Education organizes and runs exam system (Tawjehe exam) comparable with A-level standard of UK. Typical requirement in private universities was an average of 55%-65%. As the Ministry of Higher Education is the institutional level at which the entry requirements of students are decided, these requirements are reviewed and amended from time to time by this Ministry. Therefore, an average of 60% is required for students to enter universities for B.Sc. in IT starting from the academic year 2010/2012.
- Admission is limited by the Department capacity, which is regulated by the Jordan Accreditation Council according to the available spaces, facilities, and staff.
- The range and average of the qualifications of the students for the last three years are as shown in Table (6) **[Box File 11(b1)]**. This table shows the highest, lowest, and average of Tawjehe grades.

**Table (6) Average of Admission Scores** (filled only when external evaluation)

| Year | Highest Average | Lowest Average | Average of the Cohort |
|---|---|---|---|
| 2012/2015 | | | |
| 2011/2014 | | | |
| 2010/2013 | | | |
| **Average of Averages** | | | |

The highest average score of the averages is 98.9, the lowest is 53.6, and the average of the averages of the cohorts is 68.7. The case of 53.6 is due to a special permission from the Higher Education Ministry for some non-Jordanian students.

### 2. Students Progression and Achievement [Box File 14(c1)]

A student is considered to progress from year to year by gaining at least 30 credit hours for that year. To get graduation, students must accumulate 132 credit hours.

a) *Number of Students8*
   Table (7)  shows statistical data for students' progression for the day  study.

*Note.* The data in Table (7)  refers to the number of students admitted in the first semester of each year as a batch, which is slightly different from the figures presented in Tables (1) and (2) in **Part A (A4-1)**.

**Table (7) Statistical Data for Day Study**

| Academic Year | 2012/2013 | 2013/2014 | 2014/2015 | 2015/2016 |
|---|---|---|---|---|
| No. of students in their 1st year | | | | |
| No. of students in their 2nd year | | | | |
| No. of students in their 3rd year | | | | |
| No. of students in their 4th year | | | | |

**Comment [Unknown A12]:** Must be filled

*b) Average Percentage Rate of Successful Students*

The average percentage rate of successful students' progression for the batches of 2013, 2014, and 2015 are shown below for each of the two studies.

- Students' progression for the batch admitted in 2012 is shown in Table (8).

**Table (8) Students' Progression for the Batch 2012**

| Year | Average % of Successful Progression |
|---|---|
| | Day Study |
| 2012/2013 | |
| 2013/2014 | |
| 2014/2015 | |

**Comment [Unknown A13]:** Must be filled

*c) Main Features of Student Progression and Achievement*

The percentages of progression (Tables (7) and (8)) for the years 2012, 2013,2014 and 2015 show that the progression rates are good, and show a steady improvement. We feel that this is a result of serious attention paid to the quality of teaching and learning resources.

**C2 CURRICULAR STRUCTURES AND DESIGN**

**1. Curriculum Presentation**

*Undergraduate Curriculum*

The provided programme was first accredited by the Jordanian Higher Education Accreditation Council (JHEAC) on 2003. The curriculum was revised twice and locally approved by the University. The last revision was conducted in the year 2005 **[Box File 15]**. The current provided programme follows mostly the report of the Computing Curricula 2001 project (CC2001) and computing benchmark. The current programme also was inspired by some well-known universities such as The University of Manchester.

**Comment [Unknown A14]:** Muar be fixed

The system of study at Philadelphia University is based on the credit units. The basic unit of currency is 3 credit hours module. A module, which delivers at least 3 hours per week of lectures or tutorial time, is worth 3 credit hours. Some modules may also provide an extra 1-hour per week lab/practical work. But the module is still classified as 3 credit hours. In general, over a 16 weeks semester, a typical module provides a minimum of 45 hours of contact time. The final week of the semester is used for examinations.

For the B.Sc. programme in Software Engineering, the curriculum core is structured from departmental modules and further supported by supportive, Faculty, and University modules. Suitable elective modules allow choice for the students. This choice is realised by picking 2 departmental elective modules out of a set of 14 modules. The total number of the modules

for the full programme is 44 modules (132 credit hours). The programme specification of the provision is shown in **Annex C** and **Box File 16**. Table (9) shows the distribution of modules into University, Faculty, Supportive, and Department requirements.

**Table (9) Module Distribution**

| Type of requirements | Compulsory Modules | Elective Modules (2 of 4) | Total No. of Modules | Percentage |
|---|---|---|---|---|
| Department | **15** (45 hours) | **2** (6 hours) | **17** (51 hours) | 38.65% |
| Faculty | **9** (27 hours) | --- | **9** (27 hours) | 20.45% |
| Supportive | **9** (27 hours) | --- | **4** (27 hours) | 20.45% |
| University | **9** (27 hours) | --- | **9** (27 hours) | 20.45% |
| **Total** | **42** **(126 hours)** | **2** **(6 hours)** | **44** **(132 hours)** | **100%** |

It is note worthy the 8 Faculty modules and 1 out of 9 University modules are heavily computer oriented and add to the core value of the curriculum. The outline framework is derived from 14 defined areas in CC2013 report, which are combined into 9 convenient areas shown in Table (10).

**Table (10) Areas of Specialisation and Number of Modules**

| | Area | Compulsory Modules | | Elective Modules | | Total No. of Modules |
|---|---|---|---|---|---|---|
| | | No. | (No. /44) % | No. | (No./44) % | |
| 1- | Computational Science and Algorithms (CA) | 3 | 06.81 | 0 | 0.00 | 3 |
| 2- | Programming Languages (PL) | 6 | 13.62 | 0 | 0.00 | 6 |
| 3- | Main Computer Components (CA) | 4 | 09.09 | 0 | 0.00 | 4 |
| 4- | Software Engineering (SwE) | 10 | 22.72 | 4 | 09.09 | 14 |
| 5- | Information Science and Applications (ISA) | 6 | 13.62 | 0 | 0.00 | 6 |
| 6- | Supplementary Courses (SP) | 3 | 06.81 | 0 | 0.00 | 3 |
| 7- | Graduate project (GP) / Practical Training (PT) | 1 | 02.72 | 0 | 0.00 | 1 |
| | **Total** | 33 | 75.00 | any 2 | 04.54 | 37 |

Meanwhile, **Table (D-1) in Annex D** explains further what compulsory and elective modules are included in each specified area. Modules not marked with "*", in Table (D-1), include practical work of at least 25% of the total weight of the module.

Although the progression of students in the study follows the prerequisite relations, the curriculum can be structured into four years of study each of two semesters. This helps to provide an academic guidance for students to follow as long as the prerequisites are completed. The academic guidance of curriculum is shown in **Table (D-2) in Annex D**. **Box File 16** includes more details of curriculum structure.

*Levels of the Modules*: The main computing modules utilized terminology and philosophy of ACM/IEEE report concerning computing curriculum design. The CC2001 has been used in the current curriculum **[Box File 16]**. We also follow the QAAHE computing benchmark. Following the CC2001 report, the modules in the curriculum are organised into three levels: introductory, intermediate, and advanced.

The curriculum is designed according to the **Imperative First Strategy** for the **Introductory Level,** which is found to be satisfactory. This model although focuses on procedural programming, it emphasises the principles of object-oriented programming and design from the second semester of the first year. Java programming language is used as first language of this type. The **Intermediate Level** is designed according to the **Topics-based approach**, which is the most common approach for this level. Students take most modules in the core areas indicated in Table (10). For the **Advanced Level**, the Department wishes to orient such modules to its own areas of expertise. Some advanced modules compose the state-of-the-art topics including Advanced Operating Systems (Distributed Operating Systems), Advanced Computer Architecture (Parallel and High Performance Systems), Advanced Computer Networks (Network layer Protocol, Transport and Application Protocols, Network Management, etc.), and Advanced Databases (Data Warehousing and Data Mining), in addition to some elective modules in the areas of Wireless and Mobile Computing, Parallel Algorithms, Genetic Algorithms, etc. Tables (11-13) illustrate an overall list of modules, which range from Introductory to Advanced Levels. The prerequisite requirements are also indicated.
Recent methodology in programming such as object-oriented programming, software tools, and current technologies in networks and operating systems are included in the curriculum.

Modules designated as **Introductory** are offered in the first and second years of University curriculum. Modules listed as **Intermediate** are usually offered in the second or third year and build a foundation for further study in the field. Modules designated as **Advanced** are taken in later years (third and fourth) and focus on those topics that require significant preparation of the coursework and research. The Department requirements reflect distinctive features, which determine how modules are partitioned and related to each other. The Introductory modules concentrate on fundamental material while the Intermediate modules expand the knowledge base. The Advanced Level modules build on this strength and provide choice through elective modules (Table (14)). Thus, the Advanced Level modules contain more specialised and research oriented topics.

### Table (11) Introductory Modules

| Module Number | Module Title | Prerequisite |
|---|---|---|
| 0250101 | Differentiation and integration(1) | None |
| 0250104 | Discrete Structures | None |
| 0250231 | Introduction to Statistics and Probabilities | None |
| 0721110 | Introduction to Software Engineering | 0750113+0731110 |
| 0721220 | Object Oriented Programming   * | 0750114 |
| 0721221 | Object Oriented Data Structures * | 0721220+0250104 |
| 0721240 | Computing Ethics | 0731110 |
| 0731110 | Introduction to Information Systems and Technology | None |
| 0731213 | Introduction to Web Programming | 0750114 |
| 0750113 | Programming Fundamentals (1)   * | None |
| 0750114 | Programming Fundamentals (2)   * | 0750113 |
| 0750215 | Visual Programming   * | 0721220 |
| 0750231 | Logic Circuits Design | 0731110 |
| 0770110 | Introduction to Internet and Web Technology | None |

### Table (12) Intermediate Modules

| Module Number | Module Title | Prerequisite |
|---|---|---|
| 0721110 | Introduction to Software Engineering | 0750113+ 0731110 |
| 0721220 | Object Oriented Programming | 0750114 |
| 0721230 | Software Requirements | 0721110 |
| 0721222 | Software Modelling | 0721110 |
| 0750272 | Numerical Analysis | 0750114+0250101 |
| 0750333 | Principles of Operating Systems | 0750233+0731110 |
| 0721221 | Object Oriented Data Structures | 0721220 + 0250104 |
| 0731340 | Fundamentals of Computer Networks | 0721221 |

**Table (13) Advanced Modules**

| Module Number | Module Title | Prerequisite |
|---|---|---|
| 0721320 | Software Architecture | 0721222 |
| 0721330 | Software production | 0721222 |
| 0721350 | Computer Organization and Architecture | 0750231 |
| 0750322 | Design and Analysis of Algorithms | 0721221+0250231 |
| 0721322 | Software Analysis And Design | 0721230 + 0721320 |
| 0721438 | Practical Training | Dept. Agree+90 hours + 750215+721320 |
| 0721331 | Software Project Management | 0721330 |
| 0721324 | Advanced Object Oriented Programming | 0721220 |
| 0721420 | Software Construction and Development | 0721322+721324(متزامن) |
| 0721430 | Software Testing | 0721322 |
| 0721421 | Software Re-Engineering | 0721420 |
| 0721448 | Research Project 1 * | Dept. Agree+90 hours |
| 0721423 | Graphical User Interface Design | 0721320+0750215 |
| 0721449 | Research Project 2 * | 0721448 |

**Table (14) Departmental Elective Modules**

| Module Number | Module Title | Prerequisites |
|---|---|---|
| 0721422 | Web Software Engineering | 0731221 |
| 0721439 | Secure Software Construction | 0721430 |
| 0721439 | Special Topics in Software Engineering | 0721322 |
| 0721445 | Introduction to Cloud Computing | 0721420+721213 |

## 2. Curriculum Characteristics

- ***Objectives of the Main University-Required Modules.*** These requirements are to broaden the student's base for different topics such as culture, national education, languages, and generic computer skills.
- ***Objectives of the Main Faculty-Requirement Modules.*** These requirements are to consolidate mainly the students' background in many common topics. They constitute the common knowledge required for all students in the Faculty of Information Technology.
- ***Objectives of the Main Supplementary-Requirement Modules.*** These requirements are to consolidate mainly the students' background in Mathematics and statistics.
- ***Objectives of the Main Computing Modules in the Curriculum***.
  The curriculum is designed according to the Imperative First Strategy for the introductory modules. This model also focuses on programming and problem solving methodologies, but emphasises the principles of object-oriented paradigms from the second semester of the first year. The curriculum of Intermediate modules is designed according to the Topics-based approach, which is the most common approach for the intermediate modules. Students take separate modules in each of the core areas enumerated below (Windows programming with object-oriented paradigms, Computer Networks, OS and Architecture, Professional Practices, etc.). For the advanced modules, the Department draws its strength

from its own areas of research expertise. The advanced and elective modules contain more demanding topics in the areas of Advanced Object Oriented Programming, Software Architecture, Software production, Software Construction and Development, Software Testing,Software Re-Engineering, Project, and Practical Training. The Department offers the elective modules according to students' specialization and interest.

Recent methodology in programming such as object-oriented programming, event-driven programming, software tools, and current technologies in Software Engineering are included in the curriculum.

- *Supervised Work Experience (Practical Training Module).* This attends to the Practical Training module in year 3. This module adds a new flavour to the coursework the student has to go through before earning the degree. In order to ensure that practical training has rigorous implementation that complies with University Code of Practice, we have set up some important regulations to emphasise the educational value of the training. The Department and Faculty Councils approve these regulations **[Practical Training Module File (16)].** Students are placed in industry or University Computer Centre and work two days per week at the work place. In addition, some students are placed with Phoenix. Students placed in industry are jointly supervised by industry and University supervisors. The supervision is through visits and liaison.
- *Graduation Project Module:* **[Graduation Project Module File (17)]**. The Final Year Project is an important integrative module, which invites the potential graduate to apply his/her knowledge, skill and academic ability to a specific problem. The project demands skills in researching materials, verbal and written communications and encourages the student to tackle problems, which simulate industrial situations. The time allocated to the project is one to two semesters.
  - *Elaboration on Content and Emphasis of Practical Components of Modules.* Most of the modules contain practical work that makes students use current software tools and computing technologies. Thus, the practical part of modules accounts for at least 25% of the total number of hours. Many laboratory assignments are given during the semester through which the students can practice what they have learned from the theoretical part of the module, or develop their skills in using most recent software tools and programming languages. For example, the practical works in "Computer Skills (2) for Scientific Colleges", "Windows Programming", and "Object-Oriented Paradigms" modules emphasis on different methodologies for problem solving via C++, C#, Java and Python languages. However, the practical work in Software Construction and Development module it is concerned with application construction and development, the practical work (e.g. in Multimedia Systems module) emphasises on using different multimedia tools such as Macromedia Flash, MIDI maker. Besides the necessary stress on practical components in various modules, the student also undergoes practical training and undertakes graduation project. These two combined help the students to get the necessary professional exposure required in the industry domain.
- *Identification of Key Stages of Progression in the Curriculum:* In order to progress from one year to the next year, a student must complete successfully at least 10 modules (30 credit hours). To achieve graduation, the student has to complete successfully 44 modules (132 credit hours) with minimum accumulative average of 60%.
- *Flexibility:* The progression rules provide some flexibility for the student to control his/her own rate of study. The course system with flexible prerequisites enables students to smoothly progress from level to level. The assessment procedure allows generous opportunity for students to improve their grades to secure progression.

**3. Additional Information**

**(a)** The curriculum is also informed through
1. The Departmental Curriculum Working Group (CWG) **[Box File 15]**.
2. The Department Council.
3. The Faculty and the University Curriculum Committees. **[Box File 15]**.
4. Industrial Liaison through workshops, seminars, or visits. **[Box File 15]**.
5. External Examiner through examination procedures and examination standards. **[Box File 23]**.

**(b)** *Part-Time Lecturers*: Part-time lecturers from other institutions are consulted, whose advises are usually considered in developing the curriculum.

**(c)** *Descriptions of Modules:* An overall structure of the curriculum is shown in Table (D-2) in **Annex D**; the full details of the modules are shown in the **Course Catalogue [Box File 1].**

**(d)** *Choice:* The curriculum while supplying essential subject material provides opportunities for some choice through approved electives, prerequisites and defined pathways.
Some examples of possible paths are shown in **Box File 3(b)**.

**(e)** *Methods of Student Assessments:* The assessment of each module is a balance of unseen examinations and course work, lab work and assignments. Two written mid term exams serve to provide useful feedback for the staff and the students while rewarding them with a suitable proportion of the final mark. Examples of various types of assessment are readily found in modules such as Object-Oriented Paradigms, Object-Oriented Data structures, Software Architecture, Software production, Software Construction and Development, and Software Testing, etc. **[Course Catalogue, Box File B, and Table (1) in Annex C].**

**(f)** *Internal and External Examiners:* Each module is managed by a coordinator and the exam papers of each module are moderated by an internal examiner. To upgrade the standard of student assessments, the whole process of the exam assessment is monitored by an external examiner **[Box Files 19 and 23].**

**(g)** *Modes of Teaching and Learning:* Different methods are implemented for teaching such as lectures, tutorials, laboratory, and seminars. Examples of such methods are as stated in (e) above. E-learning is a new method that is added to our teaching and learning methods, where some modules are delivered by in-class lectures and self-learning. Web materials for most of the modules are ready now on Web pages for students to learn on-line. However, students use the lecturer's email to communicate easily in delivering homework, course material and so on. [www.philadelphia.edu.jo/it.asp].

**(h)** *Students' Induction, Support and Guidance:* This is a well-developed aspect with a framework, which provides support to the students throughout their programme. The key mechanisms include the following:
- Induction procedures at admission with access to senior members of staff
- Provision of Academic tutor for each student
- Provision of good physical and learning resources including up to date electronic educational media, e.g. Email and web based material.
- Provision of good social facilities
- Membership of various committees and hence a voice in resource allocation and other matters **[Box File 14].**

**(i)** *Examples of Intended Learning Outcomes***:** One example of the intended learning outcomes is student achievement of in-depth knowledge and skills in theoretical aspects. This is achieved through one of several possible sequences of modules, such as: Discrete

**Comment [Unknown A17]:** There no such link

Structures, and Software production. Another example of the intended learning outcomes is the acquirement of good understanding of a wide range of software engineering of computer systems, such as: Software Construction, and Software Testing. **Box File 3(b1)** contains examples of similar cases.


## C3 EXTERNAL RELATIONS AND SERVICES

In order to improve the quality and performance of the assessed provision, the University and the Department have implemented several mechanisms:

- The University has academic and cultural co-operation agreements with other universities and higher education institutions. These agreements include, among other things, exchange of teaching staff members and furtherance of academic and cultural relations. Expected benefits of such relations include upgrading the level of some departments and enrichment of the University staff experience.
- The University is a member of
    - International Association of Universities (IAU) with its headquarter in Paris.
    - Association of Arab Universities (AARU).
    - Association of Universities for Islamic World (AUIW).
    - International Union of World Libraries (IUWL).
    - UNESCO project for electronic learning.

- *A Collaborative Relation with Derby University (U.K.).* This helps in curriculum designing and review, skill exchanges via visits and staff exchange, and in quality management and enhancement.
- *Attending Conferences.* Several institutions organise conferences, symposiums, and workshops, which are attended by concerned Philadelphia staff members. On the other hand, some institutions take part in the conferences and other colloquiums organised by Philadelphia University. A part from that a mutually co-operative relation does exist between the University and local community although it has not developed yet to reach the level aspired for.