SHAHEED ZULFIKAR ALI BHUTTO
INSTITUTE OF SCIENCE AND TECHNOLOGY

SELF-ASSESSMENT REPORT

PhD- Computer Science

Spring 2016

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INSTITUTE OF SCIENCE AND TECHNOLOGY

SELF-ASSESSMENT REPORT

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Self-Assessment Report
Executive Summary

PhD-Computer Science-SZABIST Islamabad Campus

Introductions

SZABIST- Quality Enhancement Cell (QEC) since its inception has been active in promoting its core function of bringing standardization to ***SZABIST***'s academic programs in line with the guidelines enunciated by the Higher Education Commission. In this regard, till Spring2016, majority (58 of 62) programs offered at ***SZABIST*** were selected for Self-Assessment process.

QEC conducted a number of workshops to create awareness of the Self-Assessment process and its significance in further improving the quality of education at ***SZABIST***. In Islamabad Campus, Self-Assessment process of all the programs was simultaneously initiated. In this regard, twelve programs from Management Sciences, three programs from Computer Sciences, three programs from Social Sciences and one program was from Media Sciences department. The highlights of PhD-Computer Science (PhD-CS) Self-Assessment process were as follows:

1. Nomination of Program Team (PT)

The PT was nominated by the Acting Head of Computer Science Department, Mr. Iqbal Ahmad on March 22, 2016. Following were the members of the PT:

(i) Dr. Umair Abdullah
(ii) Dr. Naeem Ahmad Khan

2. Submission of PT Report

The PT submitted the report on June 21st, 2016. The QEC examined the report, identified shortcomings and communicated the same to the PT. After incorporating QEC suggestions, the report was finalized on June 27th, 2016.

3. Nomination of Assessment Team (AT)

The AT was nominated by the Head of IR/QEC, Dr. Muhammad Altaf Mukati and Ms. Faryal Shahabuddin on June 28th, 2016. Following were the members of the AT:

(i) Dr. Muhammad Imran
(ii) Mr. Ahmed Ali Qureshi
(iii)Ms. Khansa Hayat Abbasi

4. Date of Submission of AT Report

The AT Report was submitted on July13th, 2016.

5. AT Findings and Recommendations

Following are the some of the recommendations made by the AT to overcome the major shortcomings in the program:

(i) Due to full course load (4 courses) faculty members cannot devote much time to research oriented activities. It is recommended that full course load should be three courses.

(ii) Alumni Association is not formally established, it is proposed that that Alumni association should be created to enhance Alumni- Institution linkage.

(iii) Research labs are not sufficient, so it is recommended that Research labs should be maintained and updated.

(iv) Faculty development program is ineffective, It is recommended that the institution should provide sufficient amount of training and workshop facilities for the professional development of faculty.

(v) Research analysis tools are insufficient, It is recommended that state of the art analysis tools for research must be acquired.

(vi) Research output of the faculty and scholars is limited, It is recommended that the institution should promote research publications and participation in research conferences through adequate reward and reinforcement.

6. Preparation of Assessment Results Implementation Plan Summary

The AT prepared the Assessment Results Implementation Plan Summary by highlighting the weaknesses of the program and suggesting remedial measures. The Computer Sciences Department plans to implement the suggested corrective measures in the near future to improve the quality of education delivered at ***SZABIST***.

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SZABIST

SELF-ASSESSMENT REPORT

PhD-Computer Sciences

Program Team Report

Spring 2016

SHAHEED ZULFIKAR ALI BHUTTO
INSTITUTE OF SCIENCE AND TECHNOLOGY

SZABIST

Islamabad Campus

PROGRAM TEAM REPORT

PhD in Computing

48 Credit Hours

Spring, 2016

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Criterion1: Program Mission, Objectives and Outcomes

Criterion1: Program Mission, Objectives and Outcomes

Standard 1-1: Program Measurable Objectives

a. Institute and Program Mission Statements

Mission Statement of Shaheed Zulfikar Ali Bhutto Institute of Science and Technology

The Shaheed Zulfikar Ali Bhutto Institute of Science and Technology was established with the objectives of producing highly qualified, scientific and technical personnel to meet the country's requirements; of conducting state-of-the-art scientific and technological research and development in support of the private and public sectors; of providing hi-tech scientific and technological assistance to the Pakistan's industrial sector to enable it to compete with the world industries in global trading; of providing highly trained scientific and technological personnel to be able to benefit the growth of high-tech industries and attract foreign and Pakistani investment; and of providing a sound socio-economic and scientific base and infrastructure to Pakistan to be able to meet the economic and technological challenges of the 21st century.

Mission Statement of Department of Computing

The Department of Computing aims at nurturing its students for pursuing professional and research career in computing and associate fields by facilitating them to master the relevant knowledge and skills through comprehensive academic programs.

Mission Statement of Ph.D. in Computing

The mission of the Doctoral Program in Computing at SZABIST is to provide students with the knowledge, skills and intellectual practices required for successful careers in research, teaching, industrial and professional services. The program places primary emphasis on the development of research culture and

competence by employing teaching as a vehicle to academic professionalism, resulting in strengthening of the nexus between teaching and research segments. The doctoral program is integral to the department mission of furthering its status as a premier computing department.

b. Program Objectives (PhD Computing)

SZABIST offers an individualized, intensely research-oriented Ph.D. Computing program. Key objectives of the Ph.D. Computing program are based on creating highly qualified human resources in the field of computer science to meet the demands of the global knowledge-economy. The specific objectives for training the Ph.D. scholar are:

A. To help them become independent researchers and leaders in academia and industry
B. To crystallize their research interests and pursue cutting edge research in the domain of computer science
C. To enhance their skills by embracing new computing technologies through self-directed professional development and post-graduate training along with the ability to effectively disseminate knowledge
D. To significantly advance the state of knowledge and to accurately present research findings/achievements in writing

c. Program Outcomes - Ph.D. Computing

To attain the educational objectives of the Ph.D. Computing program, the department intends to produce the following measurable outcomes at the time of graduation. Graduates of the Ph.D. Computing program will have:

1. The ability to utilize the knowledge acquired to be used in solving computing problems
2. The ability to think critically, perform scientific analysis and develop solutions for typical computing problems
3. Proficiency in the research methods, theoretical and conceptual foundations of computing
4. In depth knowledge in advanced and evolving areas in computing and industrial research

5. The ability to independently acquire knowledge and enhance skill-sets

6. The ability to communicate effectively by acquiring technical research writing and presentation skills

7. Have an understanding of professional, ethical and social responsibilities and to work within teams and in multi-disciplinary environments

8. Recognize the need for, and an ability to engage in, enduring professional development

9. Perform original research to meet relevant industrial and societal needs and publish their research in peer-reviewed journals and refereed conferences

10. Demonstrate academic leadership and exhibit creativity and innovation in the field of computing and learn new research results through special topics and advanced course work.

d. Describe how each Objective is Aligned with the Program, and Institution Mission Statements

Sr.	Objective	Alignment with program, and institution mission statement
1	To become independent researchers and leaders in academia and industry.	The objective is achieved by providing advanced technology education to the scholars in the form of class room lectures, term projects, independent research studies, laboratory sessions, research workshops and seminars. The main emphasis is put towards developing core and soft skills of the scholars to excel in their professional career.
2	To crystallize their research interests and pursue cutting edge research in the domain of computer science.	The scholars are motivated to attend and participate in research conferences and workshops in their respective area of research and liaison with research groups engaged in similar research activities. The scholars are encouraged to interact with the local industry in order to promote product-oriented interdisciplinary research culture.
3	To enhance their skills by embracing new computing technologies through self-directed professional development and post-graduate training along with the ability to effectively disseminate the knowledge	The scholars are encouraged to conduct original research in the active areas of research in the domains of Computer Science, Bioinformatics, Computer Networks, Software Engineering, Information Security and Information Technology; and make contribution to their field by submitting their original research to international conferences and quality journals. The scholars are encouraged to publish their research in HEC-recognized W, X, Y and Z category journals.
4	To significantly advance the state of knowledge and to accurately present research findings/achievements in writing.	The scholars are motivated for adopting independence and originality of thought in the research process. Their quantitative and qualitative research capabilities are polished through specially designed advanced courses. The Ph.D. program attaches high significance to frequent interactions of scholars with their supervisors and proper documentation of their meetings is maintained. Finally, the scholars are

e. Elements of Strategic Plan

Main elements of the strategic plan to achieve program mission and objectives

Our academic strategic plan is based on our mission to be a student-centered department that prepares broadly educated, technologically proficient and highly productive citizens.

1. An Integrated Academic Experience: An integrated academic environment fosters connections among disciplines, between faculty and students, and with campus and community. Such an integrated experience is rich in opportunities for information exploration, knowledge discovery and learning. It provides diverse perspectives, and it prepares students to be thoughtful skilled citizens able to contribute to the common good. We achieve this goal through ongoing collaborative efforts that involve administration, faculty, students and staff.

2. Diverse Curriculum: Keeping in mind that a well-designed academic curriculum needs not only to be comprehensive and effective but also flexible. Therefore, as new technology emerges and demands of the field evolve, the curriculum is revised without losing its commitment to quality. For this purpose, a wide range of electives subjects are offered to ensure that the curriculum is responsive to the ever changing needs of computer science field.

3. Research and Development: Student research, especially which is connected to real world concerns, not only enhances critical thinking and analytical skills for students, it also enriches research scholarship and benefits the country. The Department of Computing engage students as researchers by integrating research opportunities into the curriculum (particularly through Independent Studies and Thesis), by providing training for students in research methodology and responsible research conduct, and by involving graduate students in multi-disciplinary research carried out at SZABIST, such as Renewable Energy, Remote Distance Learning etc. to name a few. SZABIST also aids student research by providing student travel grants to present their work at conferences and creating a campus-based student research journal.

4. Professional Career building: Executive Development Center (EDC) facilitates arranging internships for all students and acts as a liaison between the industry and the students. Every semester, renowned national and multinational companies contact the EDC to conduct their employment tests, interviews and other on-campus recruitment activities to directly induct SZABIST graduates into their organizations. Additionally, at least once a year, a 'Job Fair' is held at the campus where many leading companies are invited to explain their recruitment procedures and the scenario about present and future vacancies. A graduate directory is published once a year. It is a compendium which gives CVs of all students who have graduated during the year and it is distributed free of charge to all leading companies, where it serves as a useful reference book to find appropriate candidates for present and future vacancies.

5. Co-curricular Learning: In order to promote active, self-motivated, exploratory and attentive learning, a wide range of curricular and co-curricular opportunities are used. It includes student research, recreational and athletic programs, and allied co-curricular opportunities arranged by academic societies and student councils. Furthermore, an annual dinner is held with its leading alumni and adjunct faculty, particularly those who are gold medalists or are working in leading multinational organizations, to network with the corporate world for innovative curriculum development, internships, placements, sponsorships and collaborations.

f. Program Objective Assessment (Table 1.1)

Objective	How Measured	When Measured	Improvement /Issues	Improvements Made
Ph.D. scholars must have thorough knowledge of the basic concepts and tools in computing, along with the ability to assimilate new knowledge.	Course outline covered and assessment of midterm examination, final examination, assignments and term project reports for the taught courses.	Every Semester	Updating curriculum to incorporate new concepts and research trends	Board of studies and doctoral committee review courses to update curriculum

Have a sound understanding of the Computer Science research work.	Independent studies, research projects, synopsis, thesis.	Every Semester	Access to indexed databases is needed.	Based on the number of credit hours registered during a semester, progress reports submitted by the scholars are evaluated by the
Have a varied and balanced educational experience based on theoretical knowledge and practical skills that will enable Ph.D. scholars to advance in the profession of computer science by adapting the emerging technologies and the ever changing needs of the cutting edge computer science research.	By offering advanced courses and arranging seminars and providing feedback on research findings. Specialized training sessions on research methods as conducted to apprise scholars of the modern research methods	Every Semester	Identifying individual scholars research requirements of varied nature and arranging resource persons from industry.	Experts from academia and industry are invited to conduct seminars and discussion sessions
Offer a response to the need in society for highly qualified professionals with specific training in the field of computing	The scholars are trained to meet this objective through rigorous training in advanced computer science courses, research methods, independent research studies, research proposal writing, synopsis defense and thesis writing	Monitoring the progress every Semester. (Progress reports are sought from the scholars every semester)	Ph.D. scholars need to be proficient in problem solving.	Acquisition of latest books in the relevant fields of studies on quarterly basis. Obtaining subscription of relevant journals.

Enable graduates to integrate their professional education and experience and equip scholars to start up their own companies, who are aware of ethical issues and societal needs and can effectively serve to society.	On successfully completing Ph.D. in Computing, the scholars have sufficient mastery in their area of research and are capable to offer independent consultancies to various organizations and companies	Every Semester	Specialized sessions from entrepreneurs from different fields needs to be arranged.	EDC arranges seminars on professional development by inviting motivational speakers

Standard 1-2:

a. Program Outcomes and Objectives Matrix (Ph.D. Computing)

In order to assure that graduates of the Ph.D. Computing program have achieved the program's outcomes, a summary matrix depicting the mapping of program's learning outcomes to its objectives is shown in the following table.

PROGRAM OBJECTIVES	PROGRAM OUTCOMES									
	1	2	3	4	5	6	7	8	9	10
A	X	X	X	X					X	
B	X	X	X	X		X		X		X
C	X		X	X	X			X		X
D					X	X	X	X	X	

Table 1-2. Mapping of Program Objectives and Outcomes

a. Employer Survey

Not Applicable

b. Alumni Survey

Not Applicable

Standard 1-3: Assessment Results and Improvement Plans

a. Describe the action taken based on the periodic assessments

- Board of Studies and Doctoral Committee meetings are held regularly to evaluate and upgrade the course content and evaluate scholars' research progress.
- Students counseling is done to encourage them to publish their research findings in reputed conferences and international journals.
- Students are required to attend different workshops, conferences and thesis/ dissertation defenses.
- Ph.D. scholars are required to submit progress report every semester, which is evaluated by an independent reviewer. Necessary feedback is provided to the scholars to cater for any deficiencies.

b. Describe major program improvement plans based on recent assessments

Program Improvement Plan based on Recent Assessment is as follows:

- Integrate research project with the areas of specialization and include industry projects along with theoretical and academic research
- Introduce new courses to cater the market needs
- Changing course delivery from traditional class room teaching to case-based teaching methodology
- Organizing national and international research conferences on more frequent basis

c. Strengths and Weaknesses of the Program

Strengths of the program:

- Faculty from diverse industry/corporate backgrounds
- Seminars and workshops conducted on regular basis
- Research focused curriculum and course work
- A faculty member is detailed to coordinate with the scholar on regular basis for effective guidance and timely addressing the issues/problems related to research activities of the Ph.D. scholars.

Weaknesses of the program:

- Need to develop research labs
- There is a need for stronger industry collaboration
- Insufficient professional training opportunities offered to faculty

d. Significant Future Plans for the Program

- Changing course delivery from traditional classroom teaching to case-based teaching methodology
- Introducing research in new specialization areas
- Establishing specialized research labs for Ph.D. scholars
- Acquiring state-of-the-art research analysis tools
- Acquiring subscription to indexed databases

Standard 1-4: Overall Performance Using Quantifiable Measures

a. Indicate percentage of successful students during study years showing their average CGPA per semester, time required to complete the program, and dropout ratio of students

The maximum time to complete Ph.D. Computing program is 7 years. This timeframe includes 18 credit hours course work and 30 credit hours research work.

Average CGPAs

The following table consists of average CGPAs of the PhD Computing program:

Average CGPA

Semester GPA	Fall 2012	Spring 2013	Fall 2013	Spring 2014	Fall 2014	Spring 2015	Total Average
Average GPA	3.35	3.34	3.47	3.43	3.07	3.05	3.332

Drop Out Ratio

	Fall 2012	Spring 2013	Fall 2013	Spring 2014	Fall 2014	Spring 2015	Total Average
Dropout	0	0	0	3	1	0	0
Enrollment	0	3	0	7	6	1	2.83
Drop out Ratio	0	0	0	0.43	0.17	0	0

Drop out ratio has been calculated using the following formula:

Drop outs

Drop out ratio = ----------

Total Enrollment

b. Employers' survey

Not applicable

c. Percentage of Student Evaluation/Assessment Results for all the Courses and Faculty

Semester	Faculty & Courses Rating				
	Excellent	Very Good	Good	Satisfactory	Poor
Spring 2013	62%	13%	25%	0%	0%
Fall 2013	57%	43%	0%	0%	0%
Spring 2014	57%	0%	29%	14%	0%
Fall 2014	50%	50%	0%	0%	0%
Spring 2015	83%	17%	0%	0%	0%
Fall 2015	29%	14%	14%	14%	29%

d. Research Activities

The publication list table by each faculty member is given below:

List of research activities per faculty member

Names	Journal Publications		Conference Publications		Patents	Tech Reports/ Books
	Inter-national	Local	International	Local		
Dr. Muhammad Usman	12	0	19	0	0	2 Books, 1 Book Chapter
Dr. Azhar Mahmood	6	2	2	1	0	0
Dr. Muhammad Naeem Khan	10	2	4	0	0	0
Dr. Muhammad Imran	6	1	9	0	0	4 Book Chapters
Dr. Umair Abdullah	2	1	7	0	0	1 Book Chapter

LIST OF PUBLICATIONS

Faculty Name: Dr. Muhammad Usman

Books

1. Usman, Muhammad. "Improving Knowledge Discovery through the Integration of Data Mining Techniques." IGI Global, USA. 2015. 1-361. Web. 3 Jul. 2015. doi:10.4018/978-1-4666-8513-0
   http://www.igi-global.com/book/improving-knowledge-discovery-through-integration/124196
2. Muhammad Usman, "Integrated Online Analytical Mining - OLAM: An Architecture for Enhanced Visualization and Targeted Analysis", LAP LAMBERT Academic Publishing, Germany (2012). ISBN: 3659130869 9783659130861
   http://dl.acm.org/citation.cfm?id=2378471

Book Chapter

1. Muhammad Usman, "Integration of Data Mining and Statistical Methods to Improve Knowledge Discovery", Improving Knowledge Discovery through the Integration of Data Mining Techniques, pp. 1- 12, IGI Global, USA. 2015. doi: 10.4018/978-1-4666-8513-0.ch001

International Journals

1. Naeem Ur Rehman, Sohail Asghar, Muhammad Usman, Simon Fong, Kyungeum Cho, Yong Woon Park, High Level Classification Recommended Decision Making for Autonomous Ground Vehicle (AGV), Journal of Computational and Theoretical Nanoscience, accepted for publication 2016. **(Impact Factor: 1.343)**.
2. Aunsia Khan, Lian-sheng Liu, Muhammad Usman and Simon Fong, "Early Diagnosis of Alzheimer's disease Using Instance Based Learning Techniques", Journal of Medical Imaging and Health Informatics, accepted for publication 2016. **(Impact Factor: 0.642)**.
3. M. Usman and Muhammad Usman, "Multi-Level Mining of Association Rules from Warehouse Schema" Kuwait Journal of Science, accepted for publication, 2016. **(Impact Factor: 0.09)**.
4. M. Usman and Muhammad Usman, "Multi-Level Mining and Visualization of Informative Association Rules" International Journal of Information Science and Engineering", vol 32, Issue 4, 2016. **(Impact Factor: 0.41)**.

5. S.A Khan, M. Usman, N. Riaz "Face Recognition via Optimized Features Fusion" International Journal of Intelligent and Fuzzy Systems. vol 28, Issue 4, pp:-1819-1828, (2015). IOS Press, Netherlands. DOI:10.3233/IFS-141468 **(Impact Factor: 1.81)**.
6. S.A Khan, K. Kenza, M. Nazir, M. Usman "Proficient Lungs Nodule Detection and Classification Using Machine Learning Techniques" International Journal of Intelligent and Fuzzy Systems. vol 28, Issue 2, pp:-905-917, (2015). IOS Press, Netherlands. DOI: 10.3233/IFS-141372 **(Impact Factor: 1.81)**.
7. S.A Khan, A. Hussain, M. Usman, M. Nazir, N. Riaz, A.M Mirza "Robust Face Recognition Using Computationally Efficient Features " International Journal of Intelligent and Fuzzy Systems. vol 27, Issue 6, pp:-3131-3143, (2015). IOS Press, Netherlands. . DOI: 10.3233/IFS-141270 (**Impact Factor: 1.81)**.
8. Muhammad Usman, Russel Pears, A.C.M Fong "A data mining approach to knowledge discovery from multidimensional cube structure" Knowledge-Based Systems, 40, pp:36-49 (2013). DOI: http://dx.doi.org/10.1016/j.knosys.2012.11.008 **(Impact Factor: 2.9)**.
9. Muhammad Usman, Russel Pears, A.C.M Fong "Discovering diverse association rules from multidimensional schema"Expert Systems with Applications, vol.40(15), pp:5975–5996 (2013). DOI:10.1016/j.eswa.2013.05.031 **(Impact Factor: 2.24)**.
10. Muhammad Usman and Sohail Asghar "An architecture for integrated online analytical mining" International Journal of Emerging Technologies in Web Intelligence, vol.3(2), pp:74-99 (2011).**[Peer Reviewed and Indexed [SCOPUS, ULRICH, ProQuest, EBSCO, DOAJ, , DBLP, Google Scholar etc.]**
11. Muhammad Usman and Russel Pears "Integration of data mining and data warehousing: A practical methodology"International Journal of Advancements in Computing Technology, vol.2(3),pp:31-46 (2010). **[SCOPUS, ULRICH, ProQuest, EBSCO, DOAJ, , DBLP, Google Scholar etc.]**
12. Muhammad Usman, Sohail Asghar, Simon Fong "Integrated performance and visualization enhancement of OLAP using growing self-organizing neural networks" International Journal of Advances in Information Technology, vol.1(1),pp:26-37 (2010). **[SCOPUS, ULRICH, ProQuest, EBSCO, DOAJ, , DBLP, Google Scholar etc.]**

International Conferences

1. Muhammad Raza Tayyab, Muhammad Usman and Waseem Ahmad, ""A Machine Learning Based Model for Software Cost Estimation" accepted for publication in - SAI Intelligent Systems Conference - IntelliSys, (2016).
2. Muneeb Mirza, Muhammad Usman, Robert P. Biuk-Aghai and Simon Fong, "A Modular Approach for Implementation of Honeypots in Cyber Security" accepted for publication in Third International Conference on Advances in Intelligent Systems in Bioinformatics, Chem-Informatics, Business Intelligence, Social Media and Cybernetics (IntelliSys), IEEE, (2015).

3. Sidra Tariq, Muhammad Usman, Raymond Wong, Yan Zhuang, Simon Fong, "On Learning Software Effort Estimation, Third International Symposium on Computational and Business Intelligence, IEEE, pp. 79-84, (2015).
4. Mahroosh Irfan, Muhammad Usman, Yan Zhuang, Simon Fong, "A Critical Review of Security threats in Cloud Computing" Third International Symposium on Computational and Business Intelligence, IEEE, pp. 105-111, (2015).
5. Aunsia K, Muhammad Usman, "Early Diagnosis of Alzheimer Disease Using Machine Learning Techniques" In Proceedings of the International Conference on Knowledge Discovery and Information Retrieval, part of the 7th International Joint Conference on Knowledge Discovery, Knowledge Engineering and Knowledge Management (IC3K 2015), Vol 1, Lisbon, Portugal, November 12-14, 2015. SciTePress ,ISBN 978-989-758-158-8, IEEE (2015)
6. Awan, M., and Muhammad Usman. "Intelligent Analysis of Data Cubes Via Statistical Methods" In Tenth International Conference on Digital Information Management (ICDIM), IEEE, pp. 20-27, (2015).
7. Jibran, M. and Muhammad Usman. "An Effective Model for Aspect Based Opinion for Social Reviews" InTenth International Conference on Digital Information Management (ICDIM). IEEE, pp. 49-56, (2015).
8. Afzaal, M., and Muhammad Usman, "A Novel Framework for Aspect Based Opinion Classification for Tourist Places" In Tenth International Conference on Digital Information Management (ICDIM). IEEE, pp. 1-9, (2015).
9. Malik Irfan Shaukat and Muhammad Usman. "A Framework for Multi-Label Learning using Label Ranking and Correlation" Sixth International Conference on the Applications of Digital Information and Web Technologies (ICADIWT), IEEE, pp. 296-303, (2015).
10. Mubashaar Raza and Muhammad Usman. "A Conceptual Model for Software Architecture Design and Evaluation." Sixth International Conference on the Applications of Digital Information and Web Technologies (ICADIWT), IEEE, pp. 247-254, (2015).
11. Usman, M., Muhammad Usman, and Waseem Ahmad. "A conceptual model for multi-level mining and visualization of association rules" Ninth International Conference on Digital Information Management (ICDIM). IEEE, pp. 175-181, (2014).
12. Sajid, Mashhood, Rubab Hussain, and Muhammad Usman. "A conceptual model for automated attendance marking system using facial recognition" Ninth International Conference on Digital Information Management (ICDIM). IEEE, pp. 7-10, (2014).
13. Azeem, Muhammad, Muhammad Usman, and Waseem Ahmad. "Intelligent data cube construction and exploration" Ninth International Conference on Digital Information Management (ICDIM). IEEE, pp. 168-174, (2014).
14. Muhammad Usman, Russel Pears, A.C.M. Fong "Data guided approach to generate multidimensional schema for targeted knowledge discovery" In Proc. of 10th Australasian Data Mining Conference (AusDM), vol. 134, pp:229-240, (2012).

15. Muhammad Usman and Russel Pears "Multi level mining of warehouse schema" In Proc. of 3rd International Conference on Networked Digital Technologies (NDT), vol. 136, pp:395-408 (2011).
16. Muhammad Usman and Russel Pears "A methodology for integrating and exploiting data mining techniques in the design of data warehouses" In Proc. of 6th International Conference on Advanced Information Management and Service, pp: 361-367 (2010).
17. Muhammad Usman, Sohail Asghar, Simon Fong "Data mining and automatic OLAP schema generation" In Proc. of 5th International Conference on Digital Information Management (ICDIM), pp:35-43 (2010).
18. Muhammad Usman, Sohail Asghar, Simon Fong "A conceptual model for combining enhanced OLAP and Data mining systems" In Proc. of 5th International Joint Conference on INC,IMS and IDC, pp:1958-1963 (2009).
19. Muhammad Usman and Sohail Asghar "Enhancing OLAP performance and visualization" In Proc. of 6th Annual International Conference on CISTM, pp: 59-71 (2008).

Faculty Name: Dr. Azhar Mahmood

1. Azhar Mahmood "Data Mining Techniques for Wireless Sensor Networks A Survey", International Journal of Distributed Sensor Networks Vol.2013.

2. Azhar Mahmood, JianfengXu, "A Hybrid Framework for ICU Mortality 2014 Prediction", Journal of Software Engineering Vol.8, No.4 2014.

3. Azhar Mahmood, JianfengXu "A Quotient Space based Clustering 2014 Protocol for Wireless Sensor Networks", Information Technology Journal Vol.13, No.15 2014.

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7. Azhar Mahmood "A Novel Framework to Increase Software Quality by Mining Source Code", Journal of Software Engineering Vol.7, No.3 2013.

8. G.Li, Azhar Mahmood, "Comparison and Evaluation of Source Code Mining Tools and Techniques: A Qualitative Approach", Intelligent Data Analysis, Volume 17-3 2013.

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International Conference on Fuzzy Systems and Knowledge Discovery (FSKD) 2011, pp. 1929-1933.

10. Azhar Mahmood, "Methodology for Mapping Business Process into Execution Language", International Journal of Engineering Science and Technology (IJEST), Vol. 3, No.1 2011.

11. Azhar Mahmood, "Transformation of BPML to BPEL", 10th National Research Conference, SZABIST Islamabad, June, 2010.

Faculty Name : Dr. Muhammad Naeem Khan

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2. Rafique, M., & Khan, M. N. A. (2015). Profiling software applications for forensic analysis. *Computer Fraud & Security*, *2015*(6), 13-18.

3. Khan, M., Akram, M., &Riaz, N. (2015). A Comparative Analysis of Software Protection Schemes.

International Arab Journal of Information Technology (IAJIT), *12*(3).

4. Khan, S., Nazir, M., Riaz, N., & Khan, M. (2015). Optimized Features Selection using Hybrid PSO-GA for Multi-View Gender Classification. *International Arab Journal of Information Technology(IAJIT)*, *12*(2).

5. Bashir, M. S., & Khan, M. N. A. (2015). A triage framework for digital forensics. *Computer Fraud & Security*, *2015*(3), 8-18.

6. Ahmed, N., Subhan, F., Haider, S., Ahmed Khan, N., Ahmed, S., & Saleem Alimgeer, K. (2014). Positioning in bluetooth networks using lateration approach-a comparative study. *Science International*,*26*(5).

7. Yaqoob, L., Khan, N. A., &Subhan, F. (2014). An Overview of Existing Decision Support Systems for Disasters Management. *Science International*, 26(4), pp.1765-1776.

8. Khan, M. N. A. (2012). Performance analysis of Bayesian networks and neural networks in Classification of filesystem activities. *Computers & Security*, *31*(4), 391-401.

9. Umar, M., & Khan, M. N. A. (2012). A Framework to Separate Non-Functional Requirements for System Maintainability. *Kuwait Journal of Science & Engineering*, *39*(1), 211-231.

10. Khan, M. N. A., Chatwin, C. R., & Young, R. C. (2007). A framework for post-event timeline reconstruction using neural networks. *Digital investigation*, *4*(3), 146-157.

11. Shafqat, S., Khan, M. N. A., Riaz, N., & Khan, K. (2016). Identity Matrix: Architecture Framework for Trusted Cloud Computing through Cloud Intellect. Journal of Internet Technology (JIT), Volume 17(2016) No. 4, pp.1-9.

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e. Number of short courses workshops, seminars organized on community service level

Sr. No.	Activity	Year
General Category		
1.	Plantation Day	2015
2.	Book Fair	2015
3.	Rise for Pakistan Campaign	2015
4.	Pakistan Day/Cultural Day/Fun Fair	2015
5.	Blood Donation Campaign	2015
6.	SZABIST Islamabad in Express Education & Career Expo	2015
7.	Guest Lecture on 'Cyber Terrorism'	2015
8.	IDP's: A Challenge	2015
9.	Seminar on "Importance of International Humanitarian Law & Working of ICRC"	2015
10.	SZABIST Islamabad Participates in "The News Education Expo"	2015

11.	Seminar on Iqbal, as a Re-constructor of Religious Thought in Islam	2015
12.	"Harassment" Awareness Seminar	2015
13.	Seminar on Electoral Reforms	2015
CS Program Category		
1.	Electronics Project Exhibition Held at SZABIST	2015
2.	“How Software Systems Work?”	2015
3.	Drupal Camp (Website training)	2015
4.	Stepping Into the Practicality	2015
5.	Szabfirefoxisl Club launch awareness session	2015

f. Faculty and student surveys results to measure the administrative services (provided by Administrative Services).

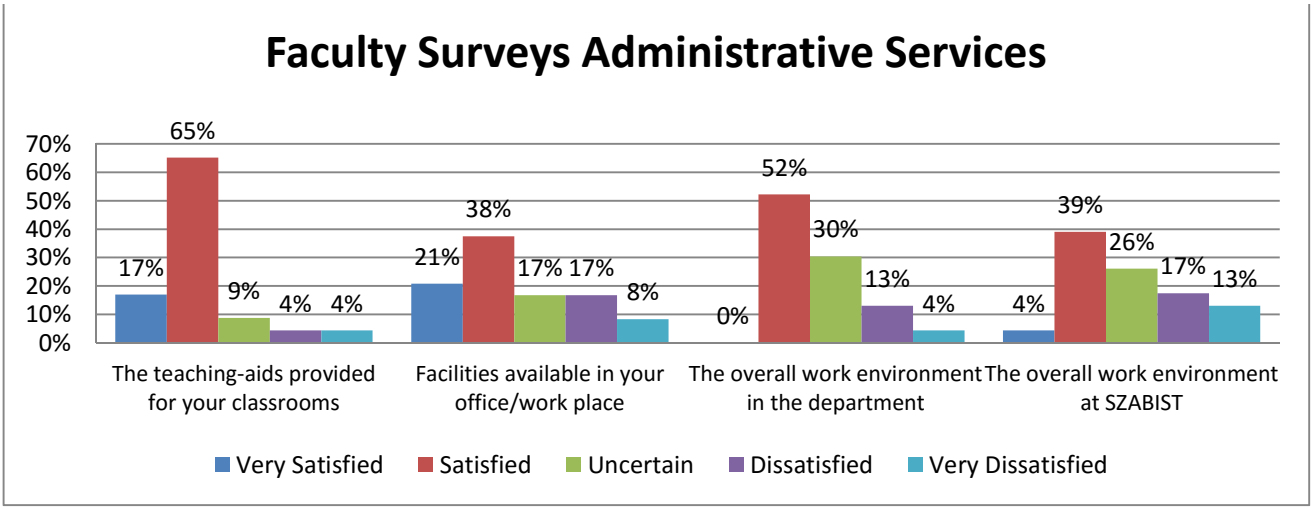


Figure 2: Faculty Administrative Service

e. Number of short courses/workshops/seminars

The details of the activities performed at community service level are stated below:

Type of Activity	Number
Conferences	2

List of Conferences

1. 18th National Research Conference, 2014
2. 19th National Research Conference, 2014

CRITERION –2 Curriculum Design and Organization

Standard 2-1	**Courses vs. Objectives**
Standard 2-2	**Theory, Problem Analysis/ Solution and Design in Program**
Standard 2-3	**Mathematics and Basic Science Requirements**
Standard 2-4	**Major Requirements as Specified by Accreditation Body**
Standard 2-5	**Humanities, Social Science, Art and Ethical, Professional and other Requirements**
Standard 2-6	**Information Technology Content Integration throughout the Program**
Standard 2-7	**Communication Skills (Oral and Written)**

a. Curriculum Plan for Ph.D. in Computing[1]

First Semester	Second Semester	Third Semester	Fourth Semester	Fifth Semester	Sixth Semester
CSC 6101 – Research Methodology	CSC 5xxx – Elective-II (from CS-,SE- or NS-Stream)	Research Proposal Defense (6 Cr. Hr.)	Thesis Research (9 Cr. Hr) (Progress Report is sought duly endorsed by the supervisor which is evaluated by the Internal Review Committee)	Thesis Research (9 CHr) (Progress Report is sought duly endorsed by the supervisor which is evaluated by the Internal Review Committee)	Thesis Research and Dissertation Submission (6 CrHr) (1 x JCR Publications is required. Dissertation is evaluated by Internal Review Committee and External Review Committee. Thesis defense is arranged once
CSC 5101 – Advanced Analysis of Algorithm	CSC 5xxx – Elective-III (Independent Study-Topic related to CS, SE or NS-Stream)	Comprehensive Examination			
CSC 5xxx – Elective-I (from CS-,SE- or NS-Stream)	CSC 5xxx – Elective-IV (Independent Study-Topic related to CS-, SE- or NS-Stream)				

[1] Source: SZABIST Islamabad Prospectus 2015

					dissertation is approved by both the committees.

Table 2.1: Ph.D. Computing degree plan.

The detail of elective courses for Ph.D. Computing program is provided in Table given below.

List of Electives Courses[2]

CS-Stream-I	**SE-Stream-I**	**N&S-Stream-I**
CSC 5xxx - Real-Time Systems	SEC 5xxx – Software Requirement Engineering	NSC 5xxx – Advanced Computer Networks
CSC 5xxx - Digital Image Processing	SEC 5xxx – Software System Architecture	NSC 5xxx – Network Security
CSC 5xxx – Machine Learning	SEC 5xxx – Software System Quality	NSC 5xxx – Applied Cryptography
CSC 5xxx – Data Mining	SEC 5xxx – Advanced Software Engineering	NSC 5xxx – Information Security
CS-Stream-II	**SE-Stream-II**	**N&S-Stream-II**
CSC 5xxx – Reverse Engineering	SEC 5xxx – Software Analysis and Testing	NSC 5xxx – Telecom Policies and Regulations
CSC 5xxx – Digital Forensics and Malware Analysis	SEC 5xxx – Web Engineering	NSC 5xxx – Mobile Ad-hoc Networks
CSC 5xxx – Advanced Resource Sharing Architecture	SEC 5xxx – Software Project Management	NSC 5xxx – Advanced Data Communications
CSC 5xxx – Computer Vision		

[2] SZABIST Islamabad Prospectus 2015

CSC 5xxx – Robotics		
CSC 5xxx – Advanced Database Design		
CSC 5xxx – Distributed Computing		
CSC 5xxx – Systems and Network Programming		

Table 2.2: Elective courses for Ph.D. Computing program.

Pre-Requisites:

- The successful completion of the core course of Research Methodology is pre-requisite for registering Independent Study-I. Likewise, successful completion of Independent Study-I is pre-requisite for registering Independent Study-II. Additionally, research theme/topic for both the independent studies should be same. Finally, passing the comprehensive exam is pre-requisite for registering Dissertation Research Proposal (Ph.D. Synopsis).

b. Credit Hours Requirement for Ph.D. in Computing

As per HEC (subject to change with HEC requirements) the requirement for Ph.D. Computing program is to earn 48 credit hours comprising the followings course work and research work.

Sr. #	Category	Cr. Hr.
1	Core Courses (Research Methodology, Advanced Analysis of Algorithms)	06
2	Elective Courses (From CS, SE or NS Streams)	06
3	Research-oriented Independent Study-I and Independent Study-II (these independent studies are substitute for 2 x elective courses)	06
4	Comprehensive Exam (based on courses registered at serial 1 through 3)	-
5	Research Proposal Defense	06

6	Dissertation	24
	Total	48

Table 2.3: Curriculum Course Requirement

b. Describe how the program content (courses) meets the program Objectives

Courses vs. Program Objectives

Course Code	Program Objectives			
	A	B	C	D
CSC 6101		X	X	
CSC 5101	X	X		X
IS-1 CS 6108	X	X		X
IS-2 CS 6208	X	X		X
CSC 5xxx	X	X	X	
NSC 5xxx	X	X	X	
SEC 5xxx	X	X	X	

Table 2.4: Ph.D. Computing program courses vs Program Objectives

c. Courses vs. Program Outcomes

Area of Concentration: *Core Computer Sciences*

Courses/ Group of Courses	Program Outcomes									
	1	2	3	4	5	6	7	8	9	10
CSC 6101 – Research Methodology			X	X	X	X	X			X
CSC 5101 – Advanced Algorithm Analysis	X	X	X							X
CSC 5xxx – Electives of Computer Science*	X	X	X	X	X	X		X	X	X

SEC 5xxx – Electives of Software Engineering*	X	X	X	X	X	X		X	X	X
NSC 5xxx – Electives of Networks and Security*	X	X	X	X	X	X		X	X	X
CS 6108 (IS-I)			X	X	X	X	X	X	X	
CS 6208 (IS-II)			X	X	X	X	X	X	X	
* Elective subject. Outcomes satisfied will depend upon the elective selected by the student.										

Table 2.5: Courses versus Outcomes

Standard 2-2: Theory, Problem Analysis/Solution and Design

The core and elective courses of Ph.D. program comprise of theoretical knowledge and practical applications within the ambience of computer science discipline. In almost all the courses, students undergo rigorous projects and term papers to apply the knowledge and skills acquired by attending that particular course.

Element	Courses
Theoretical Background	Research Methodology, Advanced Algorithm Analysis and Elective Courses
Problem analysis and solution * In addition to Research Methodology and Advanced Algorithm Analysis, Ph.D. Scholars select two elective courses corresponding to the stream they have chosen.	Advanced Algorithm Analysis and Elective Courses
Research &Applications	Research Methodology, IS-I, IS-II

Table 2.6: Standard 2-2 requirements

Standards 2-3: Mathematics and Basic Sciences Requirement

Not applicable at Ph.D. Computing degree level.

Standard 2-4: Major Requirements by Accreditation Body

As per HEC, the minimum requirements for award of Ph.D. degree are as follows:

1. GAT Subject/GRE international with minimum score of 60%. The minimum acceptable scores are valid for admissions thereafter.
2. A total of 48 credit hours must be completed.

   a. 18 credit hours of Ph.D. course work. This includes a minimum of 6 credit hours of Independent Studies.

   b. 30 credit hours of Ph.D. dissertation. Includes (6 credit hours of Qualifying examination corresponding to Ph.D. research proposal/synopsis).

- Ph.D. level course work of at least 18 credit hours followed by a Comprehensive Examination span over four taught courses, IS-I and IS-II.
- Ph.D. Comprehensive Examination is used to assess a student's knowledge acquired through taught courses and proposed research area.
- Ph.D. Qualifying Examination will constitute the Ph.D. research proposal, which must be presented and defended before the Doctoral Committee.
- An open defense of Dissertation is essential for the award of Ph.D. degree.
- Acceptance/publication of at least one research paper in an HEC approved "X" category journal is essential for the award of Ph. D. degree.
- The Ph.D. Dissertation is evaluated by at least two Ph.D. experts from technologically/academically advanced foreign countries in addition to local Doctoral Committee members.

Standards 2-5: Humanities. Social Sciences, Arts, Ethical. Professional & Other Requirements

Not applicable.

Standards 2-6: Information Technology Content Integration throughout the Program

Not applicable.

Standards2-7: Communication Skills (Oral & Written)

Not applicable.

Criterion 3: LABORATORIES AND COMPUTING FACILITIES

Standard 3- 1	Lab Manuals / Documentation / Instructions
Standard 3- 2	Adequate Support Personnel for Labs
Standard 3- 3	Adequate Computing Infrastructure and Facilities

SZABIST Islamabad is equipped with state-of-the-art computer facilities with round-the-clock high bandwidth connectivity to the Internet. Moreover, the campuses are equipped with Wi-Fi enabled devices providing students with unlimited access to the Internet. Computer Labs are open to all the students for computing and printing facilities from 8:00 am to 09:30 pm from Monday to Saturday and from 09:00 am to 05:30 pm on Sunday. Color and laser printing is available at nominal cost.

To avoid disruptions, students are not allowed to enter the labs while classes are in progress. To ensure the integrity of the network, students are not allowed to install their own software programs on SZABIST computers. Should additional software be required to undertake a course-related assignment, students seek the written approval of the concerned faculty member and then contact the Computer Lab Administrator well to make arrangements for installing the software only on specific workstations.

To handle sudden and abrupt power interruptions, a five minutes power backup is available for all computers. All users are advised to regularly save their work. Students are also advised to maintain a backup of their data, as the Lab staff will not be responsible for any loss of data.

Laboratory Title	**Computer Lab 01**
Location and area	SZABIST Islamabad Campus Ground Floor-Academic Block

Objectives	General Purpose Lab equipped with General purpose software, Operating Systems. Internet connectivity with 1GB/Sec LAN and 20 MB bandwidth. Access to online digital libraries, SZABIST Islamabad E-Library. Printing Assignments, Articles, research papers, Thesis. Available throughout the week for every student Provide adequate computing facilities to every individual with diverse study programs. Available Dedicated Print Server and enterprise Printers for fast and controlled printing.
Adequacy for instruction	52Desktop Computers with adequacy of 50-60 Students. Four AC's (2 Ton) are available for keeping the Computer Labs environment best for work. Multimedia and Public addressing system is available on request. One System Engineer is available for any IT support and help of faculty members and students. One Central 20 KVA UPS Power Supply for more than 8-10 minutes backup is in place.
Courses taught	General Purpose Lab Trainings and Workshops

	Oracle Primavera SAP
Software available if applicable	Microsoft Windows 7 Professional, MS-Office, Oracle, Primavera, etc.
Major Apparatus	Computer Systems
Major Equipment	Dell OptiPlex 330, HP LaserJet P3015, HP Color LaserJet 500 m551
Safety regulations	Available

Laboratory Title	**Computer Lab 02**
Location and area	SZABIST Islamabad Campus Ground Floor-Academic Block
Objectives	For Practical courses of MS/PhD (CS) week days and Management Science courses during weekend. Equipped with latest software modules for courses e.g. Programming and Development, Databases, Web & Mobile Applications, Operating Systems, IP and Network, Security etc. Prepared for the different Workshops, trainings, Practical Examination of computer Science courses

	File sharing and Printing services
Adequacy for instruction	50 Desktop Computers with adequacy of 50-60 students Four 2-Ton ACs are available for keeping the Computer Labs environment best for sitting and work Multimedia and Public addressing system. One System Engineer is available for any IT Technical support and help for any need of faculty members/students One Central 20 KVA UPS Power Supply for more than 8-10 minutes backup
Courses taught	Programming Fundamentals, Object oriented programming, Computer Network and Data Communication, Relational Database Systems, Web Technologies 1, Operating Systems, Web Technologies-II, Android Application Development, Data Warehousing & Mining, Projects
Software available if applicable	Windows 7 Professional, Eclipse LUNA, Oracle 10g client express, VMware Player, Ubuntu VM, Fedora 18 VM, Cisco Packet tracer 5.3, Visual Studio Ultimate 2013, SQL Server 2008, MySQL 5.6, Primavera P-6 8.3.
Major Apparatus	Computer Systems

Major Equipment	HP Compaq dx2310, Sony VPL-DX 120
Safety regulations	Available

Laboratory Title	**Telecom Lab**
Location and area	SZABIST Islamabad Campus 2nd Floor-Academic Block
Objectives	For conducting Practical classes of MS (CS). Equipped with latest software modules for courses e.g. Programming and Development, Databases, Web & Mobile Applications, Operating Systems, IP and Network, Security etc. Prepared for the different Workshops, trainings, Practical Examination of computer Science courses, Internet Usage, File sharing and Printing services
Adequacy for instruction	32 Desktop Computers with adequacy of 30-40 students Two ACs (2-Ton) are available for keeping the Computer Labs environment best for sitting and work Multimedia is available. One System Engineer is available for any IT

	Technical support and help for any need of faculty members/students One Central 10 KVA UPS Power Supply for more than 5-10 minutes backup
Courses taught	Computing
Software available if applicable	Windows 7 Professional 64 bit, Microsoft Office 2007, Eclipse C/C++, Eclipse Java IDE, STS 3.6 , Oracle 10g client express, VMware Player, Ubuntu VM, Cisco Packet tracer 5.3, Visual Studio 2010, Primavera P-6 8.3, E-Views 7, SPSS 20, Wireshark 1.12
Major Apparatus	Intro to Computing, Programming Fundamentals, Data Structure & Algorithm, Software Engineering, Android Application Development
Major Equipment	Dell OptiPlex 7010 Core i7, HP Compaq 8200 Core i7, HP Prodesk 400 Core i7 , With 8GB RAM and 750GB HDD Sony VPL-DX 100 Multimedia
Safety regulations	Available

Laboratory Title	**DLD Lab**
Location and area	2nd Floor Academic Block
Objectives	The Advanced Computer Architecture Lab is one

	of the most important and well equipped labs. The Lab is well equipped with both hardware and software facilities required by the students to perform the necessary experiments designed for this lab.
Adequacy for instruction	10 Desktop Computers with adequacy of 40-50 students Three ACs (2-Ton) are available for keeping the Computer Labs environment best for sitting and work Multimedia is available. One Telecom Lab Assistant and Lab Demonstrator is available for any IT/ Electronics Technical support and help for any need of faculty members/students One Central 5 KVA UPS Power Supply for more than 5-10 minutes backup
Courses taught	Physics, Digital Logic Design, Computer Architecture
Software available if applicable	Windows 7 Professional, Microsoft Office, Mat Lab R2011B, Cisco packet tracer 5.3, Borland c++ 5.02, Eclipse java, Dsch2.7
Major Apparatus	Digital Multi meter, Probs, Digital Oscilloscope,
	Trainer Kit RIMS ,Logic Gates,

Major Equipment	HP Compaq 2310, Sony Multimedia.
Safety regulations	Available

Standard 3-1: Laboratory manuals/documentation/instructions for experiments must be available and readily accessible to faculty and students.

a. Explain how students and faculty have adequate and timely access to the manuals/documentation and instructions.

SZABIST Islamabad is equipped with state-of-the-art computer facilities with around-the-clock high bandwidth connectivity to the Internet. Moreover, the campuses are equipped with Wi-Fi enabled devices providing students with unlimited access to the Internet.

Computer Labs are open to all students for computing and printing facilities from 8:00 am to 09:30 pm from Monday to Saturday and from 09:00 am to 05:30 pm on Sunday.

To avoid disruptions, students are not allowed to enter the labs while classes are in progress. Color and laser printing is available at nominal cost.
To ensure the integrity of the network, students are not allowed to install their own software programs on SZABIST computers. Should additional software be required to undertake a course-related assignment, students first seek the written approval of the concerned faculty and contact the Computer Lab Administrator well in advance to make arrangements for loading the software only on specific workstations.

To handle sudden and abrupt power interruptions, a five minutes power backup is available for all computers. All users are advised to regularly save their work. Students are also strongly encouraged to maintain a backup of their data, as the Lab staff will not be responsible for any loss of data.

a. Resources sufficient

The hardware and software resources currently held with SZABIST are not sufficient for the Ph.D. Computing program specially to meet the requirements of the accreditation body. SZABIST needs the following labs which will be considered at the time of evaluation:

1. Hardware\Physics Lab
2. Embedded Systems Kits

Standard 3-2 Adequate Support Personnel for Labs

Indicate for each laboratory, support personnel, level of support, nature and extent of instructional support

Instructions are clearly written on the Notice Boards pertaining to:

- Lab student IDs
- Uniquely generated E-mail IDs for Student and SZASBIST Islamabad official Correspondence
- Plagiarism Testing (***plagiarism@szabist-isb.edu.pk***)
- Help Desk for students e.g. Software Installation (***systems@szabist-isb.edu.pk***)
- Installed Software with version.
- Internet Usage Proxy Settings
- Instructions and settings to use Printer
- Rules and Regulations for Lab usage
- Lab classes schedule
- ZABDESK queries (***support@szabist-isb.edu.pk***)

However, no written manuals are available in the computer Labs for learning to use ZABDESK, Microsoft Office and other related programs and software.

There must be adequate support personnel for instruction and maintaining the laboratories.

Computer Laboratories are managed with a reasonable number of professional personnel's to provide continuous support to the labs, students and faculty members.

At SZABIST Islamabad, we have five functional Computer labs. Eleven dedicated staff members are working at different time-slots to ensure continuous delivery of knowledge. The details are provided below:

Shifts	Time Slots	Personnel(s)
Morning	8:00 am -04:00 pm	5
Evening	2:00 pm -10:00 pm	3
General	10:00 am -06:00 pm	3

Standard 3-3: The University computing infrastructure and facilities must be adequate to support program's objectives.

a. Describe how the computing facilities support the computing component of your program.

The MSCS program is much dependent on the facilities provided by SZABIST, Islamabad, in the form of technology as listed below.

All labs are equipped with latest software to help in imparting education in a professional manner. Before the start of each term, all computers are checked for potential maintenance requirements and are repaired and replaced if needed. Once the academic session starts, it generally runs smoothly without facing any serious problem related to lab resources.

No.	Particulars	Quantity
1	**Servers**	**10**
	IBM Blade Centre HS 21 Chassis S	1
	IBM Blade Centre HS-21	2
	IBM Blade Centre HS-22	1
	Dell PowerEdge R730	2
	Dell PowerEdge T430	1

	Dell PowerEdge 2900	2
	HP Proliant ML370	1
	Dell PowerEdge 1500	1
2	**Desktop Computers**	**206**
	Dell OptiPlex 330	52
	HP Compaq dx2310	60
	Dell OptiPlex 7010 Core i7	10
	HP Compaq 8200 Core i7	14
	HP ProDesk 400 Core i7	40
	Apple I Mac systems	8
	Dell OptiPlex 760 core 2 duo	22
3	**Multimedia**	**26**
4	**Printers**	**3**
	LaserJet Black	2
	Color	1
	Scanner	1
5	**UPS**	**16**
	20 KVA	2

	10 KVA	3
	5 KVA	1
	1 KVA	6
	2KVA	4

b. Are there any shortcomings in the Computer Science Infrastructure and facilities?

Based on the information given above, it can be concluded that the computer lab facilities are adequate and at par for offering the Ph.D. Computing program at SZABIST, Islamabad. Although the above facilities are shared among different programs offered at SZABIST, the current resources are not sufficient for the Ph.D. Computing program particularly to meet the minimum requirements of the accreditation body which spells out that dedicated labs are required for the program. Presently, however, the lab schedules are being managed so that each degree program gets sufficient lab time.

Criterion4:Student Support and Advising

Standard 4-1: Sufficient Frequency of Course Offering

a. Provide Department's strategy for course offering

PhD course work credits may be implemented via selection of a particular mode of course execution (as recommended by the respective Graduate Committee/Program Manager) from the various available approaches, including guided/taught courses and independent research studies.

b. Explain how often required courses are offered

Due to two intakes per year, all the courses are offered in each semester. Core courses are offered from the first semester and electives are offered from the second semester onwards. If 5 or more students request for a particular course to be offered, it can be offered in any semester i.e. Fall, Spring and Summer.

c. Explain how elective courses are offered

Each student has to take two elective courses from the specified stream in order to complete the program. Students select elective courses from the specified stream of their choice from the list of electives being offered. Electives are offered from the second semester onwards, and all the pre-approved electives corresponding to different streams are published in the prospectus.

d. Explain how required courses outside the department are managed to be offered in sufficient number and frequency

There is in-house permanent faculty for all the courses; therefore students do no need to register any course with other programs. The permanent faculty usually teaches core courses and electives.

Standard 4-2: Effective Faculty and Student Interaction

Describe how you achieve effective student/faculty interaction in courses taught by more than one person such as two faculty members, a faculty member, and a teaching assistant

Courses are taught by both permanent and visiting faculty members. Permanent faculty has their offices located within the campus whereas visiting faculty members have a separate room for exam preparation, consultation activities. Each lecture is of 3 hours duration.

Course instructors, in addition to delivering the lecture, assign at least one hour consultancy time to assure better understanding of the concepts and theories by the students. Ph.D, Computing program is looked after by a dedicated Program Manager and each course is evaluated by the Academic Support Office to determine deficiencies in each course. Students can provide suggestions for each course through course evaluation, which is reviewed by the Program Manager. Program Manager is responsible to discuss these evaluations with the respective faculty members and students and makes sure that every issue is addressed during the semester.

Standard 4-3: Professional Advising and Counseling

a. Describe how students are informed about program requirements

Students are informed about program requirements through advertisements, prospectus, brochures, student hand book, admissions department, program heads, and orientation, website and ZABDESK guideline.

b. Describe advising system and indicate how its effectiveness measured

There are multiple venues here in SZABIST-Islamabad for students to be advised ranging from matters pertaining to personal, academic and professional growth. The students are provided advice and counseling through Student Adviser of the campus, program managers, counseling sessions, seminars, professional trainings, guest lectures and workshops. The effectiveness of the same is measured through the feedback system after such activities and later satisfaction shown by the students. The presence of the student adviser, program managers and faculty members is ensured by Digital Attendance System and posting of their advising hours. [46]

c. Describe the students counseling system and how students get professionalcounseling when needed

The advising services are provided through professional seminars, orientations, workshops,

teachers and Program Managers. The campus has establishing an EXECUTIVE DEVELOPMENT CENTER (EDC) for providing more facilitation to students.

Student counseling is pursued when a student needs trusted support and advice about areas of study and possible career whereabouts, growths or changes. This provides an opportunity for students to discuss and discover opportunities in their career plans and works with a qualified professional who understands the difficulties of navigating a career that is rewarding and makes you feel fulfilled. The mission of career counseling department in SZABIST is to promote psychological and social well- being of the student so that would help them better understand their thoughts and feelings about work and education.

Students who seek career guidance and support, the types of issues and topics that will be addressed in sessions may include the following:

- Assist students to isolate any deleterious thoughts and behaviors which need to be resolved.
- Pointing out what career path, role, and prospects would make them truly satisfied.
- What could be personal issues that can affect their work life in future and how to confront them?
- Addressing problems which they are facing in work environment that are holding students back.
- Guiding students how to make a presentable CV and Cover Letter.
- Assisting students how to find the most suitable job related to their studies and interests.
- Conveying a set of possible goals and a plan of action.
- Taking steps to change one's life and become improved and happier.

d. Indicate if students have access to professional counseling; when necessary

Executive Development Centre (For Student Convenience)

The EDC Office's agenda is no less than student facilitation and professional advising. It encourages students seeking counsel, to make the most out of it. Student aspirations and future plans are the driving forces behind his/her motivation. For a sustained motivational environment,

the concerned office assists and suggest the students the most appropriate and contemporary ways to achieve desired career outcomes.

The Open Door Policy The Executive Development Centre believes in an interactive environment. Any student stressed out with bleak career options, is facilitated to the best of EDC's capability. The office incorporates an Open-Door policy for greater accessibility and student convenience.

e. Describe opportunities available for students to interact with practitioners, and to have membership in technical and professional societies.[3]

EDC; Creating Opportunity and Identities

The Executive Development Office emphasizes on the need to bring together the industry with the students. All such measures that lead to skill development and professional grooming of the students are the primary concerns of EDC. In order to create an environment of learning and development, a series of activities pertaining to career counseling are carried out to facilitate the students in the best possible way.

Moreover the concerned department is also making sure that students feel important while being part of a well renowned educational institute. To uplift and endorse student identity and stature, EDC office plans to work over professional profiles of our Alumni. Furthermore, Alumni reunions and get-togethers will further add fuel to the office's overall vision to build a long-lasting relationship between SZABIST and SZABIANS.

Recently the EDC office conducted On-Campus Recruitment Drive of Meezan Bank Ltd in SZABIST Islamabad. In this activity, representatives from Meezan Bank Ltd visited the campus and took Test/Interviews from students. The benefit of this activity was that student had access to the senior staff of the Meezan Bank Ltd and could directly approach them for obtaining guidance

[3] Source of information is EDC

regarding their career. They learned different techniques, tools and skills required to improve individual personality so that could help them in securing favorable and successive career in the future.

CRITERION 5: PROCESS CONTROL

Standard 5-1	Admission Process
Standard 5-2	Registration and Students
Standard 5-3	Faculty Recruitment and Retention Process
Standard 5-4	Effective Teaching and Learning Process
Standard 5-5	Program Requirements Completion Process

Criterion5:Process Control

Standard 5-1: Admission Criteria

a. Describe the program admission criteria at the institutional level, faculty or Department if applicable

Admission Requirements

For admission to the PhD Program, the candidate must have:

- Eighteen years of education in a related field with minimum 1st division / CGPA 3.00 from a HEC recognized institution.
- Passed the SZABIST PhD Entrance Examination (the candidate must also submit acceptable score on the GRE as per requirement of HEC during their first year of study) preference will be given to GRE/GAT-Special score holders.
- Passed the Selection research proposal, defense / Interview with the SZABIST Graduate Committee.

b. The admission process flowchart

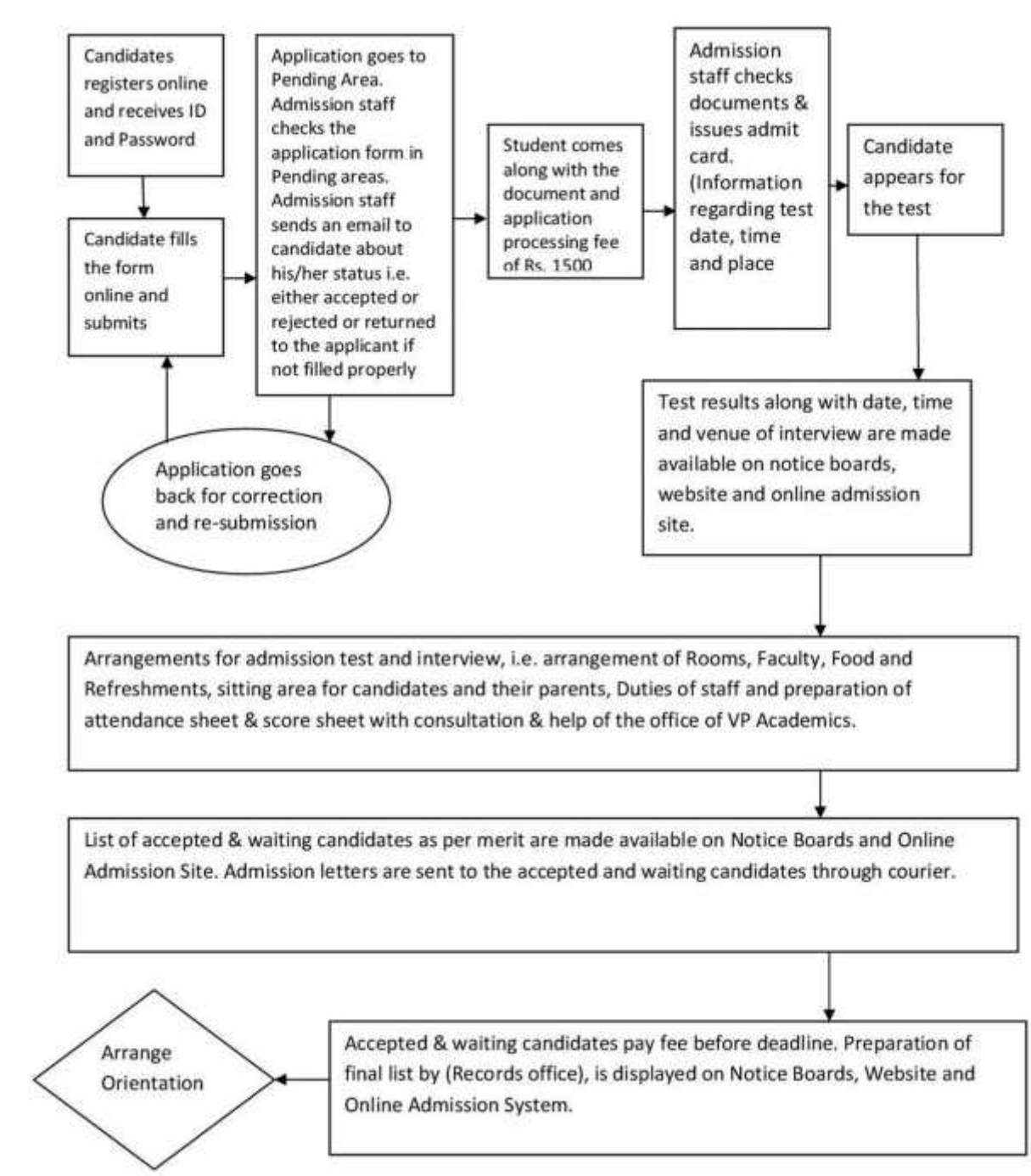


Figure 5.1

c. Describe policy regarding program/credit transfer

PhD Course Transfer:

Transfer of course from HEC recognized university may be allowed in some special cases by making a petition to the graduate committee before formal acceptance into the PhD program.the studenst may be required to take additional courses as recommended by the graduate committee. The student must complete 48 credit hours in total.

Transfer

Following are two types of transfer:

1) Transfer in (Student from other SZABIST campuses come to Islamabad Campus).

2) Transfer out (Student from Islamabad Campus gets transferred to other SZABIST campuses).

Transfer In

- Relevant campus contact us
- Correspondence with the relevant campus
- Receiving of file
- Checking of documents received in student files.
- Conduct student interview with the relevant Program Manager, if recommended.
- Final approval by HOC Academics
- Provide transfer acceptance letter to student
- Submission of fee
- Get clearance of Finance Office.
- Send documents to Records Office for registration number.
- Update Profile with the registration number in ZABDESK.
- Inform Students

Transfer Out

- Receive application of the students
- Check transfer criteria of the students (completion of 25% courses at original campus)
- Contact and correspond with the relevant campus
- Get approval for the relevant campus

- Prepare campus transfer file
- Get clearance by Finance Office, Labs and Library
- Transfer from approval by relevant Program Manage
- Send from to Records Office for closing of account and letter grade issuance
- Get final approval from the VP Academics
- Dispatch form and file to the relevant campus
- Keep a photocopy of file with Karachi Campus.
- A maximum of up to 50 credits may be considered for transfer into Bachelor program.

SZABIST Inter-Campus Transfer

For transfer candidate from other SZABIST campuses, the candidate must fulfill the admission requirements of the local campus he / she wishes to transfer into.

All courses / grades are transferable. A transfer fee will be applicable for students transferring from any other SZABIST campus.

d. Indicate how frequently the admission criteria are evaluated and if the evaluation results are used to improve the process.

Admission criteria and process are reviewed in the Academic Council meeting, which is held at least twice a year and as frequently as twice a month.

Some of the positive changes in the Admission process during the last year are:

i. Extended office hours from 9:00 am to 9:00 pm to facilitate applicants during the months of May and June.

ii. Storage facility for Admission department has been provided with plans to extend it further in the future.

Standard 5-2: Registration and Students

a. Registration Process and Policy

The following registration procedure is strictly followed at the beginning of each semester:

- Academic Department sends a formal request to ZABSOLUTION which opens all interface of registration for course registration.

- Program Managers offers courses on ZABDESK and then notices for the registration of courses is announced to the students through Emails and website.
- Students must register through ZABDESK, the automated SZABIST Online Registration System and after that they can do manually which is allowed for 2 days only. For further assistance, they can contact Academic Office.
- Registered students who have paid their fee, but have remained absent in the first four classes, will be automatically de-registered from the course.
- Students not registered will not be allowed to attend classes. No registration will be allowed two weeks after classes begin.

b. Describe how students' academic progress is monitored and how their program of study is verified to adhere to the degree requirements

Absence Rules

Students are required to maintain a minimum of 80 percent attendance throughout the semester in order to qualify for the Final Examination. Maximum 3 absences (for courses of 3 hour duration classes) are allowed per semester per course; these absences are meant to be used for emergency purposes like health problem, family death etc. Additionally, two late arrivals are considered equal to 1 absence. Registered students who have remained absent for more than three classes during the semester, will be awarded an 'F' grade in the course.

Leave Rules

There are no leaves at SZABIST. Students are required to manage their attendance as per above guidelines. However, one additional absence is allowed if the student is travelling for Hajj, subject to submission of documentation and requisite approval by Program Manager.

General Marks Distribution

General marks distribution (not applicable to all courses/programs) is as follows:

Tests (for 1.5 hour session courses) optional 20 %

Midterm Examination 30 %

Assignments 5-10 %

Quizzes 5-10 %

Term Paper, Project and Presentation 10-15 %

Final Examination 35-40 %

Depending on the course content, a deviation of 10 percent is permissible at faculty's discretion. Thesis policies vary between departments. For further details consult the relevant Program Manager or Head of Department.

Grading Plan

The following Letter Grade Plan is followed at SZABIST:

Letter Range Grade Point

A+ 95 – 100 4.00

A 91 – 94 3.75

A- 87 – 90 3.50

B+ 83 – 86 3.25

B 79 – 82 3.00

B- 75 – 78 2.75

C+ 72 – 74 2.50

C 69 – 71 2.25

C- 66 – 68 2.00

D+ 64 – 65 1.75

D 62 – 63 1.50

D- 60 – 61 1.25

F < 60 0

In certain cases, the following Letter Grades are assigned.

Letter Remarks:

S Satisfactory

U Unsatisfactory

I Incomplete

W Withdrawn

J Result withheld

- All grade points earned will be averaged towards the final grade point for graduation; in case a course is retaken, better grade will be used for calculation.
- There is no provision for giving or requesting grace marks.
- Minimum CGPA required for graduation is given in section on Rules Governing Degree Completion.
- If incomplete grade 'I' is not completed before the specified deadline, the default grade is 'F'.

Minimum Passing Grade

For PhD Computing, the minimum passing grade for each course is **B-**.

Compulsory Repeat Grade

- A course in which low grades are earned, are to be repeated compulsorily. These are as follows:
- For MS/PhD programs, courses with earned grade of 'C+' or below must be repeated.
- 'F' grade in a course does not count as having met the pre-requisite for taking an advanced course, and there will be no attendance or assessment waivers the next time students take the course.
- Students with repeat grades must take the course next time when it is offered.
- Non-undergraduate program students may get attendance waiver in Compulsory Repeat Grade courses, except courses in which they received an 'F' grade.
- However, if a student wants to improve a 'Pass Grade,' he/she is required to take all assessments as assigned for the course, and no attendance waiver is given.
- A student repeating course(s) that is/are no longer offered will be allowed an appropriate replacement course, which will be approved by the Program Manager.

Required Maintenance CGPA

Minimum required CGPA for Ph.D. program is 3.00.

Dismissal

A student shall be considered for dismissal under the following conditions:

1. Dismissal on Academics through Probation

SZABIST follows the probation and dismissal policy as recommended by HEC, "Whenever CGPA of a student falls below the required threshold, he/she will be placed on "First Probation" for the next semester. If in the First Probation semester, the student does not increase his/her CGPA to the required level, he/she will be placed on "Second Probation" in the next semester. If in the Second Probation semester, the student does not increase his/her CGPA to the minimum requirements, he/she shall be struck off from the degree program.

The minimum required CGPA for Ph.D. Computing program is 2.75 level, below which a student shall be on First Probations followed by Second Probations or dropped-out.

2. Degree Time-Barring Dismissal

The registration will stand terminated if a student has not completed the degree requirements within seven years for Bachelors Program and five years for Masters, and MS and, five years for PhD programs.

3. Dismissal Due to Academic Dishonesty

The registration will stand terminated if the student is involved in a case of academic dishonesty e.g. submission of fake documents etc.

4. Dismissal on Disciplinary Grounds

The registration will stand terminated if a student is dismissed on disciplinary grounds by the Disciplinary Committee.

On dismissal, a notification shall be issued by the Campus, and forwarded to the Office of Vice President (Academics) for dissemination to other SZABIST Campuses for information.

A student, once dismissed shall not be allowed to register for any certificate courses, at any campus.

A dismissed student may apply for "Letter Grade" as documentation for credits taken at SZABIST, after dismissal.

c. Indicate how frequently the process of registration and monitoring are evaluatedand if the evaluation results are used to improve the process

Evaluation of Registration and Student Monitoring Process

The Student Registration and Student Progress Monitoring processes are regularly reviewed through ZABDESK by the relevant Program Managers. A Program Managers meeting is held once in a month chaired by head of the Campus to discuss all the relevant issues in the Program. If needed, meeting could be held before the completion of one month. Any necessary amendment in policy and resolving certain individual cases is carried out in these meetings.

Standard 5-3: Faculty Recruitment and Retention Process

a. Describe the process used to ensure that highly qualified faculty is recruited to the program.

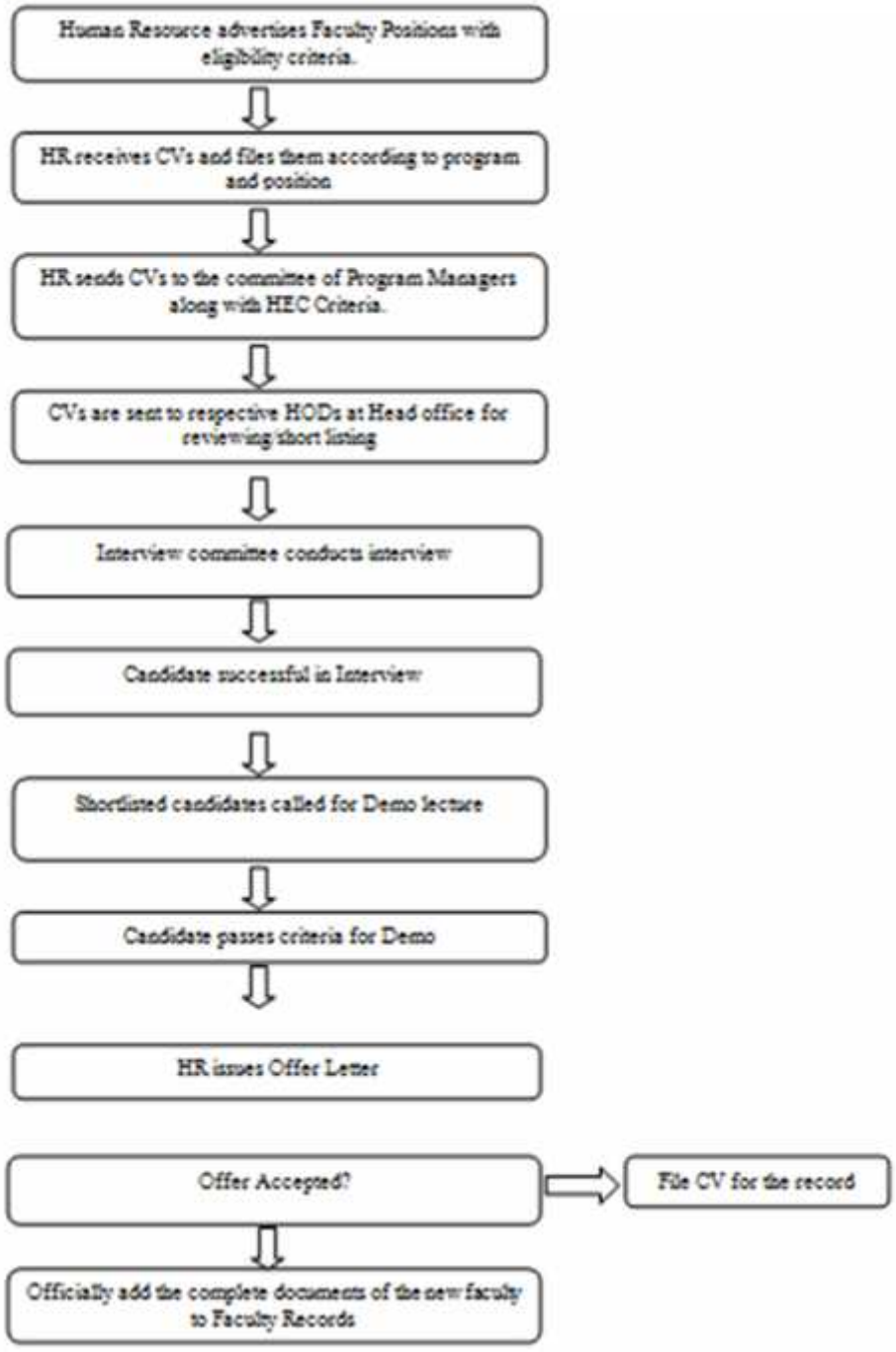
Recruitment Process:

Human Resource department of SZABIST Islamabad advertises the faculty positions every year in national newspapers and official website for attracting a pool of qualified candidates for recruitment.

HR department receives the applications and files the relevant ones according to discipline & position. HR department sends the CVs to the committee of program managers along with HEC criteria of faculty appointment. Further, they are shortlisted by the relevant HOD at Head office i.e. SZABIST Karachi.

Then, a selection committee (consisting of Head of Campus, Program Managers, Director Academics, and relevant HOD and Program Managers at SZABIST Karachi) is formed to conduct the interviews of screened candidates. For effective evaluation, there is a standard interview criterion (faculty interview form) for faculty positions. Those who qualify the interviews are invited for a demo session in which selection committee evaluates effectiveness of lecture delivery as per standard demo evaluation form.

a. Flow Chart


Human Resource advertises Faculty Positions with eligibility criteria.
HR receives CVs and files them according to program and position
HR sends CVs to the committee of Program Managers along with HEC Criteria.
CVs are sent to respective HODs at Head office for reviewing/short listing
Interview committee conducts interview
Candidate successful in Interview
Shortlisted candidates called for Demo lecture
Candidate passes criteria for Demo
HR issues Offer Letter
Offer Accepted?
File CV for the record
Officially add the complete documents of the new faculty to Faculty Records

c. Indicate methods to retain excellent faculty member.

Retention Process

For permanent faculty members, SZABIST Islamabad Campus has incorporated such aspects of employee motivation into the incentives being offered that help in retaining faculty members. Besides, encouraging research and development activities through publication honorarium, continuing education program and financial support for participation in national international conferences, some other benefits offered are car loan, provident fund, life insurance etc.

The SZABIST Islamabad Campus aims to produce highly qualified, scientific and technical personnel to meet the economic and technological challenges of the 21st century. In order to support the mission statement of the institute, SZABIST Islamabad makes sure that HEC criteria be incorporated into recruitment, appraisal and faculty promotion processes. For promotion, faculty members are evaluated as per HEC guidelines i.e. qualification, experience and publication etc. Promotion cases of faculty members are reviewed every year by the promotion committee at Head Office i.e. SZABIST Karachi. Faculty members meeting the promotion criteria of HEC submit the required documents to HR office for case preparation and submission to Head office. Cases are reviewed by the committee considering the HEC criteria and availability of positions in respective department/area.

d. Indicate how evaluation and promotion processes are in line with institution mission statement.

Qualification

ii. Research: The publications in Journals with high impact factor will be preferred. iii. Length of service

Faculty of Computing

a. Lecturer to Assistant Professor

Option I

Degree requirement

The candidate for promotion is eligible if s/he has earned Master's degree (MS/MPhil) in Computing or allied field of studies from HEC recognized University/Institution.

Experience

At least two (2) years of teaching / research experience in an HEC recognized university / institution or an equivalent professional experience in the relevant field in a national or international organization.

Publications

No Publications are required.

Option II

Degree requirement

The candidate is eligible if s/he has earned a PhD degree awarded in Computing or allied field of studies form HEC recognized University.

Experience

No teaching experience is required for a candidate with PhD degree.

Publications

No publications are required.

b. <u>Assistant Professor to Associate Professor</u>

Academic Criteria

The candidate must have earned a PhD degree awarded in Computing or allied field of studies from HEC recognized University.

Experience

The candidate must have at least seven years of teaching/research experience in an HEC recognized University/Institution or equivalent professional experience in the relevant field.

Publications

The candidate must have 8 publications in an HEC/PEC recognized Journals.

c. <u>Associate Professor to Professor</u>

Academic Criteria

The candidate must have earned a PhD degree awarded in Computing or allied field of studies from HEC recognized University.

Experience

The candidate must have at least twelve years of teaching/research experience in an HEC recognized University / Institution or equivalent professional experience in a national or international organization.

Publications

The candidate must have 12 publications in an HEC recognized Journals.

	Designation	Options	Qualification	Experience	Publications
A	Lecturer to Assistant Professor	Option I	Master's (MS/MPhil) degree in relevant field from an HEC recognized University/	2-years teaching/research experience in a recognized Institution/ University/College or 2-years professional experience in	Nil
		Option II	PhD in relevant field from HEC recognized	No experience required	Nil
B	Assistant Professor to Associate Professor		PhD in the relevant field from Institution recognized by HEC.	07-years teaching/ research experience in a recognized institution/University or 07-years professional experience in the relevant field in a national or	8 research publications in HEC recognized Journals.
C	Associate Professor to Professor		PhD in the relevant field from an HEC recognized University / Institution.	12-years teaching/ research in HEC recognized University or postgraduate Institution or professional experience in	12 research publications in HEC recognized

e. Indicate how frequently this process in evaluated and if the evaluation results are used to improve the process.

Presently, faculty development programs are evaluated through following processes which are a part of HR manual for this purpose:

i. Promotion policy (as per HEC criteria)

ii. Performance appraisal (based on teaching, research & development, participation in academic and non-academic activities etc)

The process is evaluated annually on the following parameters for improvement:

i. Promotion cases are reviewed by the promotion committee annually as per HEC guidelines to promote and retain the qualified faculty members.

ii. Performance of faculty members is appraised annually to reward and recognize their achievements in the areas of teaching, research and academic and non-academic activities etc.

Standard 5-4: Effective Teaching and Learning Process

a. Describe the process and procedures used to ensure that teaching and delivery of course material is effective and focus on students learning Process and Procedures used to ensure Active Learning and that Courses' Learning Outcomes are met.

SZABIST, employs an indigenously developed Campus Management System called ZabDesk to automate its academic processes i.e. Course offering in a particular semester, course progress, recording attendance and result management of all students for a particular course. A very important feature of ZabDesk known as course portfolio facilitates effective teaching. By using the course portfolio service, a teacher can share all the lecture material through ZabDesk. The effect of this feature aids in learning, as he/she is well informed on the course progress e.g. which was the last lecture and what is included in the upcoming exam.

In order to ensure effective teaching at SZABIST Islamabad, first and the foremost concern is to ensure selection of appropriate faculty that has sufficient years of experience in teaching a particular course. Intertwined to teaching faculty is synthesis of suitable course outline for the said course. SZABIST conducts two yearly curriculum revisions on Board of Studies meetings.

Each, Board of Studies meeting is attended by:

a) Faculty from all the campuses

b) Industry experts

c) Renowned academicians from other institutes

The idea is to have a broader view of suggestions for improvements that can further enrich the curriculum from both academic and industrial perspectives. All the course outlines are standardized by Board of Studies revisions to make them more effective for our students.

Teaching methodology comes next where we employ different techniques to make a course more comprehendible by students such as:

a) Increasing contact hours for practical courses
b) Employing additional teachers for heavier/lengthier courses
c) Equipping computer labs with most up to date tools for a particular technology
d) Introducing case studies to augment the theoretical concepts covered in each course
e) Introduction of modeling tools and making diagrams as a mandatory teaching aid for almost all the courses

The grading policy is designed in such as way that a teacher keeps an ample number of quizzes and assignments. Both of these are used as necessary tools to assess each student's performance in a

particular course. Teachers, on the other hands are evaluated anonymously by the students in each semester. These evaluations are sent to the all the program heads that are supposed to take action for any anomaly.

In order to attain industry academic linkages and also to augment degree courses with the current industry trends each semester, SZABIST Islamabad arranges workshops on varied topics including but not limited to the following:

a) Latest trends in software industry such as new technology innovations e.g. Big Data

b) User group sessions on technology such as Java and databases

c) Career counseling session to graduating students

d) Invited talk of renowned people in IT to share their personal stories with students

e) Legal and ethical issues in IT etc.

b. Indicate how frequently this process is evaluated and if the evaluation results are used to improve the process

There are two sit in assessments in the 8th (midterm) and 16th week (final exam). Final exam covers the complete curriculum and is conducted and marks the end of the semester. Almost 60% are awarded before that which gives a student an enough ideas of his/her performance in the said course. All the teachers are supposed to share the assessments results with students and discuss all the mistakes they made in their attempts. Teachers also share the assignment and quiz solutions with the students. To ease the pressure on students, SZABIST Islamabad has introduced a gaming week just after the midterm exams. By adopting such process SZABIST Islamabad ensures complete and

effect teaching on campus.

Standard 5-5: Program Requirements Completion Process

a. Describe the procedure used to ensure that graduates meet the program requirements

Minimum CGPA to graduate is 3.00 for Ph.D. Computing.

PhD-CS Program	Requirement for Completion of Degree
PhD-CS 48 credit hours	• Minimum Duration of Ph.D. Computing is 3 years • Course work of 18 credits (6 courses) is needed which includes 2 x core courses, 2 x electives and 2 x independent studies. • Dissertation (30 credits) • Maximum duration to complete this degree is 7 years

Table 5.1: Requirement for Completion of Degree

One year is the maximum time allowed to a student for improving grades after completion of course work. The maximum time allowed to complete the Doctorate program is 7 years.

Without completing all degree requirements, including, clearance of financial dues, completing the required courses, independent research and Dissertation, the degree is not awarded.

b. Describe when this procedure is evaluated and whether the results of this evaluation are used to improve the process

Periodic Evaluation of above Procedure and its Improvement

The monthly Academic Heads meeting, the bi-annual Academic Council meeting and the bi-annual meeting of the newly formed Board of Studies, regularly discuss and evaluate the procedures that ensure completion of degree program requirements. These discussions lead to improvements and amendments in the processes and procedures pertaining to the Ph.D. degree program.

CRITERION - 6 FACULTY

Standard 6-1	**Program Area, Qualification and Number**
Standard 6-2	**Activities, Training and Professional Development**
Standard 6-3	**Motivations and Job Satisfaction**

Criterion: 6 Faculty

Standard 6-1 Program Faculty Qualifications and Number

a. Each faculty member should complete a resume, prepared in a format included in email.

Launched.

b. Table indicating program areas and number of faculty in each area

Program area of specialization	Courses in the area	Number of PhD faculty members related to each area
Machine Learning	2 courses	Full Time: 2
Data Science	3 courses	Full Time: 4
Wireless Sensor Networks	5 courses	Full Time: 1
Software Engineering	9 course	Full Time: 2
Expert Systems	2 course	Full Time: 1
Computer Vision & AI	4 courses	Full Time: 1

List of Permanent Faculty - Computing

Sr. No	Name	Area of Specialization (As per PhD Dissertation)	Areas of Research Interest

1.	Dr. Muhammad Usman	Computer & Information Sciences	Machine Learning Data Science
2.	Dr. Azhar Mahmood	Computer Applied Technology	Wireless Sensor Networks Data Science Software Engineering
3.	Dr. Muhammad Naeem Khan	Computer Systems Engineering	Machine Learning Software Engineering
4.	Dr. Mohammad Imran	Computer Vision & AI	Computer Vision & AI Data Science
5.	Dr. Umair Abdullah	Data Science & Expert System	Expert Systems Data Science

Standard 6-2 Current Faculty, Scholarly Activities and Development[4]

a. Describe the criteria for faculty to be deemed current in the discipline and based on these criteria and information in the faculty member's resumes, what percentage of them is current. The criteria should be developed by the department.

SZABIST uses the following criteria for the faculty to be deemed current in their respective areas of study:

i) Participating in academic events like seminars / sessions

ii) Participating in academic and industry conferences / workshops

iii) Presenting and publishing papers in conferences / colloquium / monographs

[4] The source of information is HR Department

iv) Publishing research papers in local and international journals

v) Publishing articles in newspapers and magazines

vi) Conducting trainings and workshops

vii) Supervising research at bachelors and masters level

viii) Supervising research at MSMS/MS/Ph.D. level

ix) Pursuing further education in their specialized field

x) Incorporating their research and otherwise learning into their teaching through content and methodology

b. Describe the means for ensuring that full time faculty members have sufficient time for scholarly and professional development. [63]

SZABIST Islamabad Campus understands and values the fact that faculty members should have space enough to concentrate on their professional development with respect to their involvement in research and academic activities with a balanced amalgamation of personal and professional life. Continuing education policy is a great incentive for faculty members pursuing higher studies in the field.

As per Continuing education policy (HR manual), faculty members can pursue their education upto PhD level. However, presently PhD degree is being awarded in management and computer sciences programs.

c. Describe existing faculty development programs at the departmental and university level

SZABIST Islamabad Campus motivates the faculty members to actively participate in research activities and publications through financial rewards and appreciation. Continuing education program is another incentive for faculty members to keep them abreast of latest developments and concepts in the field.

Demonstrate their effectiveness in achieving faculty development.

•The university encourages the faculty to enhance their professional skills by enrolling in MS and PhD programs at SZABIST as a part of continuing education program. The university through this facility provides a free education facility to its full time faculty within SZABIST.

•Faculty is permitted to go on "study-leaves" overseas to attain scholarship in their respective discipline. In past the faculty has availed this facility at the MS and Post Doctorate level.

•Additionally, faculty is also facilitated by nominations to attend seminars and workshops routinely held within Karachi city and nationally to update and enhance their knowledge in their core teaching areas.

d. Indicate how frequently faculty programs are evaluated and if the evaluation results are used for improvement.

• The faculty development programs are evaluated annually for the need to improve and assess their relevance at the Academic Council and finally at the Board of Trustees.

Standard 6-3 Faculty Motivation and Job Satisfaction

a. Describe programs and processes in place for faculty motivation.

The following elements are routinely incorporated to measure faculty motivation. However, there is a need to include some more facilities for their retention at SZABIST:

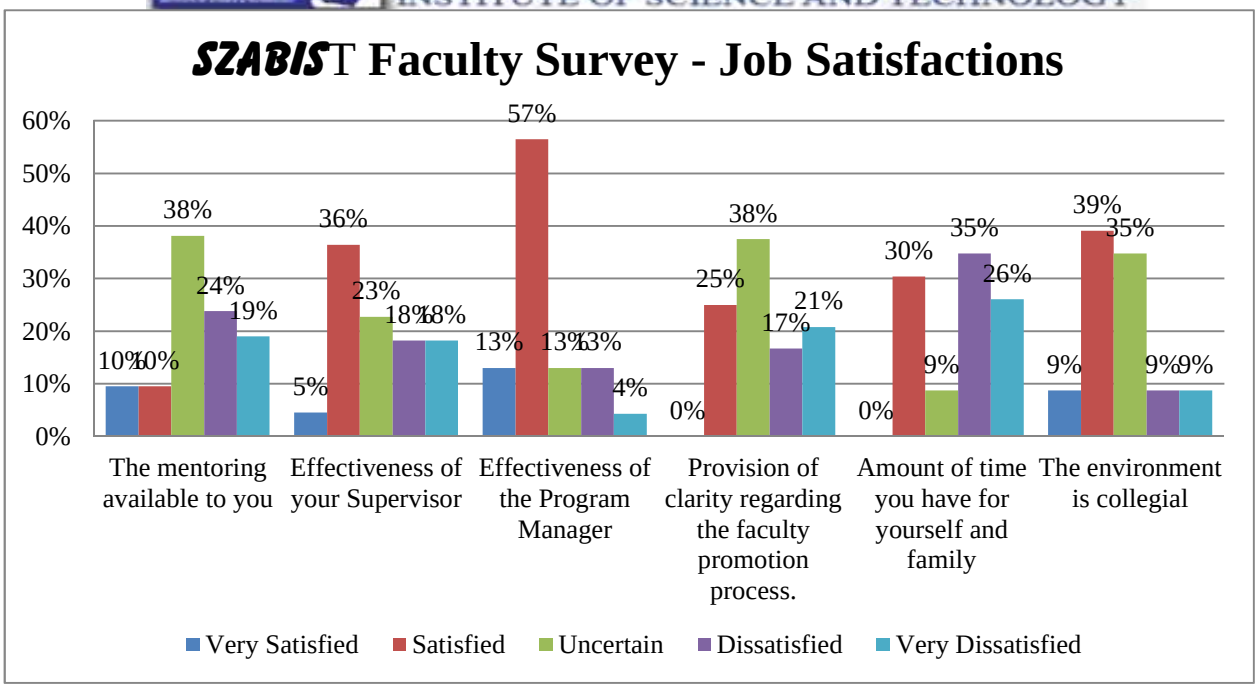
- Cordial working environment
- Flexible faculty timings
- Annual and casual leaves
- Performance-based increment and annual bonus
- Loan facility
- Continuing Education with waiver on tuition fees
- SZABIST Employees Housing Society (SECHS)
- Annual picnics and social gatherings
- 50% fee concession for children of employees

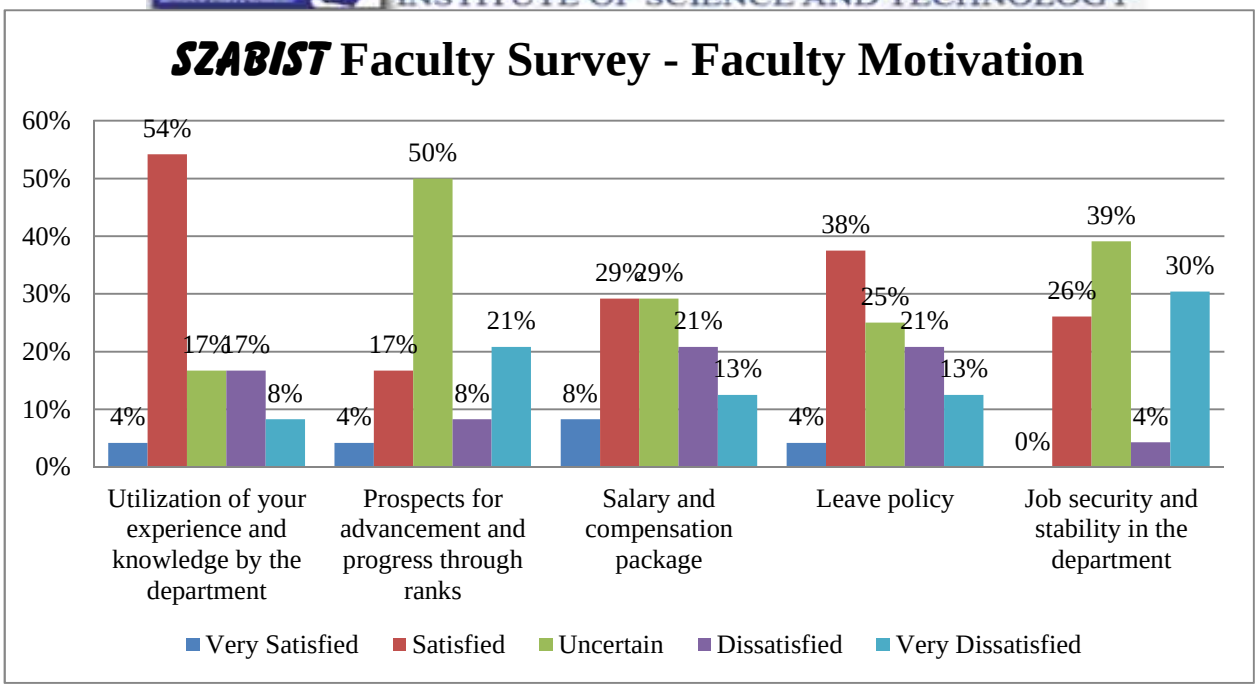
b. Indicate how effective these programs are

Programs are effective as

- The programs are effective in the sense, that it provides the faculty the opportunity of professional development through Continuing Education facility, through nomination and financial support to attend the seminar's conferences nationally and internationally.
- The 50% concession of fee to children of employees again is a source of motivation of for employees as their children are able to get education at the top institution of higher education.
- The flexible timing enables the employees to manage their time on campus with the time of their classes.
- The reward system in terms of performance based increments and annual bonuses, motivates employees to work effectively and efficiently.

c. Obtain faculty input using faculty survey on programs for faculty motivation and job satisfaction[5]


SZABIST Faculty Survey - Job Satisfactions
60%
50%
40%
30%
20%
10%
0%
10%
10%
38%
24%
19%
5%
36%
23%
18%
18%
13%
57%
13%
13%
4%
0%
25%
38%
17%
21%
0%
30%
9%
35%
26%
9%
39%
35%
9%
9%
The mentoring available to you
Effectiveness of your Supervisor
Effectiveness of the Program Manager
Provision of clarity regarding the faculty promotion process.
Amount of time you have for yourself and family
The environment is collegial
Very Satisfied
Satisfied
Uncertain
Dissatisfied
Very Dissatisfied


SZABIST Faculty Survey - Faculty Motivation
60%
50%
40%
30%
20%
10%
0%
54%
17%
17%
8%
4%
50%
17%
4%
8%
21%
29%
29%
21%
13%
8%
38%
25%
21%
13%
4%
39%
26%
4%
30%
0%
Utilization of your experience and knowledge by the department
Prospects for advancement and progress through ranks
Salary and compensation package
Leave policy
Job security and stability in the department
Very Satisfied
Satisfied
Uncertain
Dissatisfied
Very Dissatisfied

Criterion: 7 Institutional Facilities

Standard 7-1

(a) New Learning Trends

At SZABIST Islamabad, new learning trends are welcomed with great enthusiasm and significant efforts are made to make sure that students are given every chance to excel in their studies by all means possible. This includes the introduction of interactive CBT sessions in class, innovative practical puzzle oriented solutions and most important of all is the HEC digital library which allows some of the best research resources to be accessed by students.

- There are ample class rooms with all the multimedia and computer access.
- Ample library infrastructure and access to scholarly journals and articles for supporting learning and education
- Fully equipped computer labs with required software and internet access are adequate to support new trends in learning

(b) Adequacy of Facilities

In the light of institutional infrastructure and Library and computer/IT support the facilities for library and computer labs are adequate for new trends in learning.

Standard 7-2

(a) Library Facility

No.	Particulars	Quantity
1	**Printed Form**	
	a. Computer Sciences	3647
	b. Miscellaneous	24
	A. Reports	**3698**
	a. Independent Study	2623
	b. Project	303
	c. Thesis	618
	d. Practicum	154
	B. Newspapers (Daily)	**12**
2	**Digital Form**	
	A. E-Books (SZABIST Digital library developed by the Librarians)	25000
	B. Books (Ebrary HEC)	41000
	C. CD's	2850
	a. Research (IS) Related	2000
	b. Books Related	850
	C. DVD's (Video Lectures)	200
	D. Journal/Magazines (Online)	41000
	a. Emerald	Yes
	b. Springer Link	Yes
	c. Jstore	Yes
	d. Ebscohost	Yes
	e. Taylor and Francis	Yes

	f. Project Muse	Yes
	g. Ebrary	Yes

In addition to these there are a lot of digital resources offered through digital library to support e-learning. For Instance,

1. SZABIST Digital library having more than 25000 eBooks on all discipline developed by the SZABIST librarian.
2. EBSCOHOST Business Source Premier is the industry's most used business research database, providing full text for more than 2,300 journals, including full text for more than 1,100 peer-reviewed titles. This database provides full text back to 1886, and searchable cited references back to 1998. Business Source Premier is superior to the competition in full text coverage in all disciplines of business, including marketing, management, MIS, POM, accounting, finance and economics. This database is updated daily on EBSCOhost.
3. E-library offers a wide variety of content across many subject areas, especially in business and social science and computer science. It acquires integrated collections of eBooks and other content. E-library continues to add quality of eBooks and other authoritative titles to their selection from the world's leading academic and professional publishers.
4. Emerald is a long established publisher with over 200 titles in the field of management, information science and engineering. All of Emerald research journals are peer-reviewed to ensure the highest quality. HEC has provided access to 150 of the total journal titles. You can view by clicking @Journals Listing
5. Content in JSTOR spans many discipline s, with over 500 high-quality publications available in the archives.

6. JSTOR provides the ability to retrieve high-resolution, scanned images of journal issues and pages as they were originally designed, printed and illustrated.
7. Project Muse provides online access to 430 full-text journals from 108 publishers in humanities, and social science. MUSE pricing meets library needs around the world. Access URL http://muse.jhu.edu/.
8. Springer is the world's second largest STM publisher, delivering high quality peer-reviewed journals through its acclaimed online service - Springer Link. Through Springer Link, Springer publishes more than 1,250 journals online of which 1,030 are now available to Institutes within a range of PERI countries. Springer also offers optional pricing for the remaining (new and takeover journals in its programme).
9. Taylor & Francis has grown rapidly over the last two decades to become a leading international academic publisher. More than 1,300 titles in humanities, social sciences and applied sciences.

Standard 7-2

(a) Adequacy of Library Facility

The details of computer lab facilities are elaborated in Section 3 under criteria 3-1. The details of the backup support i.e. server support to utilize lab equipment in efficient and appropriate manner are described below.

Active Directory Server

HP Proliant ML-370 G4 Server Intel Xeon dual processor E5-2620 v3 2.40 GHz, 8GB RAM,

1-TB HDD, RAID controller 5. Installed Windows Server 2008 R2 as a Server operating system with Active Directory and DNS Server roles are deployed for Users Accounts.

File and Print Servers

IBM Blade Centre Servers HS-21 and HS-22 servers with 8GB RAM and large amount of storage capabilities are available for the students for file sharing and printing services.

Internet Gateway (Proxy) server

HP core i7, 8GB RAM 1TB HDD with Linux based operating system Installed running Squid Proxy server for Caching &fast internet access.

ZABDESK server:

Dell-R730 rack mount based Server Intel Xeon dual processor E5-2620 v3 2.40 GHz, 32GB RAM, 3-TB HDD, RAID controller 5. Installed Windows Server 2012 R2 Hyper-V and IIS roles for ERP based application access for faculty and students ZABDESK.

Web server

Dell-R730 rack mount based Server Intel Xeon dual processor E5-2620 v3 2.40 GHz, 32GB RAM, 3-TB HDD, RAID controller 5. Installed Windows Server 2012 R2 Hyper-V and IIS roles, Symantec Mail Gateway Services.

VPN Server

Dell PowerEdge 2900 Series,Technical Specifications are Intel Xeon processor E5410 2.33 GHz, 6GB RAM, 3*72GB SCSI HDD, RAID controller 5. Installed with MSWindows Server 2008 R2 using VPN over Intranet with other Campuses.

(b) Adequacy of Facilities

In the light of institutional infrastructure and Library and computer/IT support the facilities for library and computer labs are adequate for new trends in learning.

Standard 7.3

a) Adequacy of the class rooms

We have following teaching facilities available at SZABIST Islamabad campus

- Classrooms / Lecture rooms: 16
- Seminar / Exam Halls: 03
- Computer Labs 02
- Telecom Lab 01
- Digital Lab 01
- Radio Station 01
- Media Lab 01
- TV Studio 01

We have following state of the art facilities in all classrooms;

- Automatic Multimedia
- Computer Systems with UPS backup
- ACs
- Fans
- 24/7 Power Generators
- Heaters
- Whiteboards
- Comfortable Chairs
- Rostrum / Dyce
- Marble floors
- Ceiling roofs

Other then these facilities, we have following facilities for seminars;

- Portable sound system

- Electronic Dyce
- Wireless MICs
- Video Conferencing facilities
- Portable/fixed LCDs

We are planning to have all classrooms equipped with central and fixed sound systems. However, portable speakers are available which can be used with laptops and systems for video lectures.

(b) Adequacy of Faculty Offices

Every Faculty member is assigned a working space in the form of cubicle/office with computer systems, telephone land line connected through internal exchange and adequate furniture and adequate heating/cooling/ printers/ stationary and other required support are provided to carry out official duties and work independently.

Criterion 8: Institutional Support

Standard 8-1 Sufficient Support and Financial Resources for Faculties

a. Describe how your program meets this standard. If it does not explain the main causes and plans to rectify the situation.

Competitive compensation package is being offered to the permanent faculty members being appointed at SZABIST Islamabad Campus.

1. Annual and performance increments are awarded on gross salary. Annual (inflationary) increment is 10% whereas performance increment is 5%. A performance bonus is also awarded to every employee annually.
2. After completion of three years of successful teaching, SZABIST Islamabad Campus will provide them vehicle (car) loan.
3. For permanent faculty members, SZABIST Islamabad Campus offers continuing education program to pursue higher studies as per their requirement.

b. Describe the level of adequacy of secretarial support, technical staff and office equipment.

Academics support office at SZABIST Islamabad Campus provides secretarial and technical support to the department which includes the following:

- Class management
- Attendance sheet circulation
- Time table maintenance
- Schedule circulation

Standard 8-2:

a. There must be an adequate number of high quality graduate students, research assistants and Ph.D. students.

- Provide the **number of graduate students** for the last three years.

Number of Graduate Students

Year	No. of Graduates
2012-13	**0**
2013-14	0
2014-15	0

Table 8.1: Number of Graduate Students

b. Graduate to faculty ratio.

Graduates: Faculty Ratio*

Year	Graduates	No. of Faculty Members	Ratio
2012-2013	**0**	**4**	**0:1**
2013-2014	**0**	**4**	**0:1**
2014-2015	**0**	**4**	**0:1**

Number of Faculty (Ph.D.-Computing)

Particulars	Faculty		
	2012-13	2013-14	2014-15
Total Number of Faculty	4	4	4
Full Time faculty	4	4	4
Adjunct Faculty	0	0	0

Standard 8-3: Financial support for Library and computer Facilities

FUNDS ALLOCATED

a. Describe resources available for library.

b. Describe resources available for computing facilities.

	YEARS		
PARTICULARS	**2011-12**	**2012-13**	**2013-14**
LIBRARY	1,000,000	1,000,000	1,000,000
COMPUTERS/LABS	5,735,000	5,770,000	5,675,000

Source of Information: Finance

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INSTITUTE OF SCIENCE AND TECHNOLOGY

SZABIST

Guidelines for Program Team Report and QEC Review

Program: PhD- Computer Science

Date: June 27th , 2016

Prepared by QEC Staff:

Mr. Syed Muhammad Ali

Ms. Faria Tausif

Dr. Daniel Peerzada

PROGRAM SELF ASSESSMENT CHECKLIST

The following is a summary checklist of the main criteria and the associated standards that need to be addressed in the program self-assessment report.

CRITERIA AND ASSOCIATED STANDARDS		**Yes/ No**	**Issue/Observation**	**Possible Evidences**
Criterion 1- Program Mission, Objectives, and Outcomes				
Standard 1-1	Program Measurable Objectives			
	a. Document institution, department, and program mission statements	Yes		
	b. State program objectives	Yes		
	c. State program outcomes	Yes		
	d. Describe how each objective is aligned with program, college, and institution mission statements	Yes		
	e. Outline the main elements of the strategic plan to achieve the program mission and objectives	Yes		
	f. Table 4.1 program objectives assessment	Yes		
	Please find sample of Table 4.1 attached in Annexure I (i-ii)			
Standard 1-2	Program Outcomes			
	a. Table 4.2 outcomes versus objectives **Please find example of Table 4.2 attached in Annexure II (iii)**	Yes		
	b. Employer survey	No	Not applicable	
	c. Alumni survey	No	Not Applicable	
	d. Graduating student's survey	No	Not Applicable	
Standard 1-3	Assessment Results And Improvement Plans			
	a. Describe the action taken on based on the periodic assessments	Yes		
	b. Describe major future program improvement plans based on recent assessments	Yes		

	c. List strengths and weaknesses of the programs	Yes		
	d. List significant future plans for the program	Yes		
Standard 1- 4	Overall Performance Using Quantifiable Measures			
	a. Indicate the CGPA of successful students per semester, time required to complete the program, drop out ratio of students per semester (of the last 3 yrs) **Please find example attached in Annexure III (pg iv)**	Yes	.	
	b. Indicate the percentage of employers that are strongly satisfied with the performance of the department's graduates. Use Employer's survey.	Yes		
	c. Percentage of Student Evaluation/Assessment results for all the courses and faculty. Use Teacher Evaluation Results.	Yes		
	d. Percentage/List/Number of research activities i.e. journal publications, funded projects, conference publications per faculty and per year, and the faculty awarded excellence in research **Please find example attached in Annexure III (pg iv)**	Yes		
	e. Number of short courses workshops, seminars organized on community service level **Please find example attached in Annexure III (pg iv)**	Yes		
	f. Faculty and student surveys results to measure the administrative services provided	Yes		
Criterion 2 – Curriculum Design And Organization				
	Courses detailed outline as in item E criterion 2 of the Self Assessment Manual			
Standard 2-1	Courses Vs. Objectives			
	a. Title of Degree Program	Yes		
	b. Definition of Credit Hour	Yes		
	c. Degree Plan: Attach a flow chart showing pre-requisites, core, and elective courses.	Yes		

	Please find example attached in Annexure IV (pg v-ix)			
	d. Table 4.3 curriculum course requirement **Please find example attached in Annexure IV (pg v-ix)**	Yes		
	e. Describe how the program content (courses) meets the program Objectives.	Yes		
	f. Table 4.4 Courses versus Outcomes. List the courses and tick against relevant outcomes. **Please find example attached in Annexure IV(pg v-ix)**	Yes		
Standard 2-2	Theory, Problem Analysis/ Solution and Design in Program			
	a. Table 4.5 Standard 2-2 requirements	Yes		
Standard 2-3	Mathematics & Basic Sciences Requirements			
	a. Address standards 2-3, 2-4, and 2-5 using information required in Table 4.4	Yes		
Standard 2-4	Major Requirements as Specified by Accreditation Body	Yes		
Standard 2-5	Humanities. Social Sciences, Arts, Ethical. Professional & Other Requirements			
	a. List the courses required by the Accreditation Body.	No		
Standard 2-6	Information Technology Content Integration Throughout the Program			
	a. List the courses required by the Accreditation Body.	Yes		
	b. Describe how they are applied and integrated throughout the program	Yes		
Standard 2-7	Communication Skills (Oral & Written)			
	a. List the courses required by the Accreditation Body.	Yes		
	b. Describe how they are applied in the program.	Yes		
Criterion 3 – Laboratories and Computing Facilities				
Standard 3- 1	Lab Manuals / Documentation / Instructions			
	a. Explain how students and faculty have adequate and timely access to the	Yes		

	manuals/documentation and instructions			
	b. Are the resources available sufficient for the program?	Yes		
Standard 3- 2	Adequate Support Personnel for Labs			
	Indicate for each laboratory, support personnel, level of support, nature and extent of instructional support. **Please find example attached in Annexure V(pg x)**	Yes		
Standard 3- 3	Adequate Computing Infrastructure and Facilities			
	a. Describe how the computing facilities support the computing component of your program	Yes		
	b. Are there any shortcomings in the computing infrastructure and facilities?	Yes		
Criterion 4 – Student Support and Advising				
Standard 4-1	Sufficient Frequency of Course Offering			
	a. Provide the department's strategy for course offerings	Yes		
	b. Explain how often core courses are offered.	Yes		
	c. Explain how often elective courses are offered.	Yes		
	d. Explain how required courses outside the department are managed to be offered in sufficient number and frequency	Yes		
Standard 4-2	Effective Faculty / Student Interaction			
	Describe how you achieve effective student/faculty interaction in courses taught by one or more than one person; such as two faculty members, a faculty member, and a teaching assistant or a lecturer	Yes		
Standard 4-3	Professional Advising and Counseling			
	a. Describe how students are informed about program requirements	Yes		
	b. Describe the advising system and indicate how its effectiveness is measured	Yes		
	c. Describe the student counseling system and how students get professional counseling when needed	Yes		
	d. Indicate if students have access to	Yes		

	professional counseling; when necessary			
	e. Describe opportunities available for students to interact with practitioners, and to have membership in technical and professional societies	Yes		
Criterion 5 – Process Control				
Standard 5-1	Admission Process			
	a. Describe the program admission criteria at the institutional level, faculty or department if applicable. b. Make a Flowchart **Please find example attached in Annexure VI (pg xi-xii)**	Yes		
	c. Describe policy regarding program/credit transfer	Yes		
	d. Indicate how frequently the admission criteria are evaluated and if the evaluated results are used to improve the process	Yes		
Standard 5-2	Registration and Students			
	a. Describe how students are registered in the program	Yes		
	b. Describe how students' academic progress is monitored and how their program of study is verified to adhere to the degree requirements	Yes		
	c. Indicate how frequently the process of registration and monitoring are evaluated and if the evaluation results are used to improve the process	Yes		
Standard 5-3	Faculty Recruitment and Retention Process			
	a. Describe the process used to ensure that highly qualified faculty is recruited to the program. b. Make a Flowchart **Please find example attached in Annexure VI (pg xi-xii)**	Yes		
	c. Indicate methods used to retain excellent faculty members	Yes		
	d. Indicate how evaluation and promotion processes are in line with institution mission statement	Yes		
	e. Indicate how frequently this process is	Yes		

	evaluated and if the evaluation results are used to improve the process			
Standard 5-4	Effective Teaching and Learning Process			
	a. Describe the process and procedures used to ensure that teaching and delivery of course material is effective and focus on students learning	Yes		
	b. Indicate how frequently this process is evaluated and if the evaluation results are used to improve the process	Yes		
Standard 5-5	Program Requirements Completion Process			
	a. Describe the procedure used to ensure that graduates meet the program requirements	Yes		
	b. Describe when this procedure is evaluated and whether the results of this evaluation are used to improve the process	Yes		
Criterion 6 – Faculty				
Standard 6-1	Program Faculty Qualifications and Number			
	a. Faculty resumes in accordance with the format	Yes	Launched	
	b. Table 4.6 faculty distribution by program's areas **Please find example attached in Annexure VII (pg xiii)**	Yes		
Standard 6-2	Current Faculty, Scholarly Activities & Development			
	a. Describe the criteria for faculty to be deemed current (updated in the field) in the discipline and based on these criteria and information in the faculty member's resumes, what percentage of them is current. The criteria should be developed by the department	Yes		
	b. Describe the means for ensuring that full time faculty members have sufficient time for scholarly and professional development	Yes		
	c. Describe existing faculty development programs at the departmental and university level. Demonstrate their effectiveness in achieving faculty development	Yes		

	d. Indicate how frequently faculty programs are evaluated and if the evaluation results are used for improvement	Yes		
Standard 6-3	Faculty Motivation and Job Satisfaction			
	a. Describe programs and processes in place for faculty motivation	Yes		
	b. Indicate how effective these programs are	Yes		
	c. Obtain faculty input using faculty survey (Appendix C) on programs for faculty motivation and job satisfaction	Yes		
Criterion 7 – Institutional Facilities				
Standard 7-1	New Trends in Learning (e.g. E-Learning)			
	a. Describe infrastructure and facilities that support new trends in learning	Yes		
	b. Indicate how adequate the facilities are	Yes		
Standard 7-2	Library Collections & Staff			
	a. Describe the adequacy of library's technical collection	Yes		
	b. Describe the support rendered by the library	Yes		
Standard 7-3	Class-rooms & Offices Adequacy			
	a. Describe the adequacy of the classrooms	Yes		
	b. Describe the adequacy of faculty offices	Yes		
	Please find examples of Criterion 7 attached in Annexure VIII (pg xiv-xvi)			
Criterion 8 – Institutional Support				
Standard 8-1	Support and Financial Resources			
	a. Describe how your program meets this standard. If it does not explain the main causes and plans to rectify the situation	Yes		
	b. Describe the level of adequacy of secretarial support, technical staff and office equipment	Yes		
Standard 8-2	Number and Quality of GSs, RAs and Ph.D. Students			
	a. Provide the number of graduate students, research assistants and Ph.D. students for	Yes		

	the last three years			
	b. Provide the faculty: graduate student ratio for the last three years	Yes		
Standard 8-3	Financial Support for Library and Computing Facilities			
	a. Describe the resources available for the library	Yes		
	b. Describe the resources available for laboratories	Yes		
	c. Describe the resources available for computing facilities	Yes		
	Please find examples of Criterion 8 attached in Annexure IX (pg xvii-xix)			

***Key**

Y- Yes N- No N/A- Not Applicable

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SELF-ASSESSMENT REPORT

PhD Computer Science

Assessment Team Report

Assessment Team Report

The AT report is comprised of the following:

A. Review Report
B. Assessment Results Implementation Plan Summary
C. Criteria Referenced (Rubric) Evaluation of SAR

A. The Review Report

1. Names of Assessment Team Members

i. Dr. Muhammad Imran

ii. Khansa Hayat

iii. Ahmed Ali Qureshi

2. Date of Nomination

June 27th 2016

3. Assessment duration (e.g. 7 days or 10 days)

7 Days

4. Name of Department and Program being assessed.

Computer Sciences, PhD Computing

5. Shortcomings of the PT report

A total of 4 full time staff members are dedicated to provide continuous support to students and faculty on each working day in the library.

In Standard 3-2 adequate support personnel in labs:
Safety regulations present are Fire extinguishers and
Major equipment include: its Core i7 HP elite 800 GI & HP PR 0400 G2, MM-Sony VPL-DX122.

6. Comments on:

i. Relevance and the comprehensiveness of the responses to criteria / standards given in the SA Manual

The report is as per the criteria given in the SA manual

ii. Authenticity of the information / data provided in the report

The data has been verified from the relevant department and is found to be authentic and up to the best knowledge of the department representative

iii. Adequacy of the summaries / conclusions drawn by PT on the basis of various feedbacks / surveys

The conclusions presented in the report are very short or not at interpreted all (except for tables which are self explanatory).

iv. Observations made during the assessment

The report is well formatted except for minor errors in the text color and tabular representation of the data

v. Strengths and weaknesses of the Program

Strengths:

- Well established objectives and outcomes (having strong association)
- Comprehensive strategic plan
- Strong follow-up mechanism for the scholars in research
- Program improvement plan in place
- Faculty from diverse fields
- Practical and empirical implementation of theory through seminars and workshops
- Curriculum design is based on research

Weaknesses:

- Up to date research labs are not there
- Industry academia collaboration is missing
- Faculty development plan is missing
- Strong link is needed to be created between alumni and institution (Alumni Association)

vi. Date of the presentation of AT report in the exit meeting

B. Criteria Referenced (Rubric) Evaluation of SAR

CRITERIA REFERENCED SELF ASSESSMENT– METHODOLOGY AND EVALUATION TOOL

Scoring of Criterion Items:-

1. Key areas of each criterion are to be scored normally by considering the approach taken by the university and the results achieved. Maximum score for each item is 5 and the minimum is1. The visiting team is required to award the score by encircling one of the entries against each item. The total of the encircled values (TV) for each criterion will be determined and normalized in percentages. Each criterion has a weight allocated to it. Scores pertaining to a particular criterion will be the product of TV and its weightage. Following are the guidelines to be used to awarding score to each key area.

Self Assessment Report **Criterion 1 - Program Mission. Objectives and Outcomes Weight = 0.05**	
Factors	**Score**
1. Does the Program have documented measurable objectives that support faculty / college and institution mission statements?	5
2. Does the Program have documented outcomes for the graduating students?	3
3. Do these outcomes support the program objective?	5
4. Are the graduating students capable of performing these outcomes?	3
5. Does the department assess its overall performance periodically using quantifiable measures?	5
6. Is the result of the Program Assessment Documented?	4
Total Encircled Value (TV)	25

SCORE 1 (S1) = [TV / (No. of questions * 5)] * 100 * Weight	4.1

Criterion 2 - Curriculum Design and Organization	**Weight**
Factors	**Score**
1. Is the curriculum consistent?	5
2. Does the department assess its overall performance periodically using quantifiable measures?	3
3. Are theoretical background, problem analysis and solution design stressed within the program's core material?	5
4. Does the curriculum satisfy the core requirements laid down by Accreditation Body?	5
5. Does the curriculum satisfy the major requirements laid down by HEC and Accreditation Body?	5
6. Does the curriculum satisfy the professional requirements as laid down by Accreditation Body?	5
7. Is the information technology component integrated throughout the program?	1
8. Are oral and written skills of the students developed and applied in the program?	1
Total Encircled Value (TV)	30
SCORE 2 (S2) = [TV / (No. of questions * 5)] * 100 * Weight	15

Criterion 3 – Laboratories and Computing Facilities = 0.10	**Weight**
Factors	**Score**
1. Are laboratory manuals / documentation / instructions etc for experiments available and readily accessible to faculty and students?	5
2. Are there adequate number of support personnel for instruction and maintaining the laboratories?	4
3. Are the university's infrastructure and facilities adequate to support the program's objectives?	4
Total Encircled Value (TV)	13
SCORE 3 (S3) = [TV / (No. of questions * 5)] * 100 * Weight	8.6

B. Assessment Results Implementation Plan Summary (PhD-CS) Islamabad Campus

AT Findings	Corrective Action	Implementation Date	Responsible Body	Resources Needed
1. Due to full course load (4 courses) faculty members cannot devote much time to research oriented activities	It is recommended that full course load should be three courses	The course load i.e. 4 courses is quite reasonable however if any faculty member is involved in research oriented activity and requires facilitation for the reduction of courses would be accommodated.	Research Committee, Department of Computer Science	–
2. Alumni Association is not formally established	It is proposed that that Alumni association should be created	Alumni associated has formally been created/established	EDC	Already part of budgetary provision
3. Research labs are not sufficient	Research labs to be maintained and updated	Dec 2016	HOC	Request has been made in the budget for academic year 2016-17
4. Faculty development program is ineffective	It is recommended that the institution should provide sufficient amount of training and	The matter has been addressed and during the current year 21 workshops /28 seminars have been held .Hence few faculty members recommended /allowed to	HR	Budgetary provision for conducting training and development of faculty members exists.

	workshop facilities for the professional development of faculty	participate in training courses.		
5. Research analysis tools are insufficient	It is recommended that state of the art analysis tools for research must be acquired	The requirements from the respective department are been ascertained so that the related tools could be acquired.	IT, Library, Research Committee	IT, Library, Research Committee will identify
6. Limited number of data bases have been subscribed	It is proposed that Indexed databases to be acquired	The requirement in this respect is also being ascertained from the respective PM. The possibility of providing indexed data would then be explored.	IT, Library, Research Committee, Department of Computer Science	IT, Library, Research Committee will be identified by the concern party.
7. Research conferences held but now there is a break	It is suggested to organize conference on regular basis (one per year)	Organizing such conferences on regular bases are being planned keeping in view the existing resources.	HOD,HOC, Research Committee	Budget
8. Research output of the faculty and scholars is limited	It is recommended that the institution should promote research publications and participation in research conferences through adequate	Effort are been made to promote research publications adequate reward is granted to the researcher. However for reinforcement, it further their performance, will be linked with research publications.	HR, Research Committee	HR will identify

	reward and reinforcement.			

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President's Comments :
The results of the Self-Assessment Report process will help SZABIST in meeting its commitment towards excellence in education. This will be done with the timely implementation of the recommendations given by the Assessment Team. I would like to thank the Program Team, Assessment Team and the IR/QEC staff for their efforts in completing this exercise.

Name and Signature:

Madame Shahnaz Wazir Ali

Dean's or (Acting)HoD's Comments :

In order to improve PhD-CS program requirements of the Department are being ascertained. Efforts are also being made to provide analysis tools and to promote research activities/ publications. Similarly faculty and student development concerns have been addressed by organizing 21 workshops, 28 seminars and interactive sessions during the current year.

Name and Signature:

Mr. Iqbal Ahmad

QEC Comments :
The initiation and completion of the Self-Assessment process of PhD-CS program was a significantly arduous task but proved fruitful, as the assessment highlighted areas of the program that require improvements. The IR/QEC staff is confident that the implementation of the corrective actions will amplify the market standing of the program and students' overall educational experience. The process reached its destination with the support of the Program and Assessment Teams, and commitment of the IR/QEC staff.

Name and Signature:

Ms. Faryal Shahabuddin

Ms. Faria Tausif

SHAHEED ZULFIKAR ALI BHUTTO
INSTITUTE OF SCIENCE AND TECHNOLOGY

SZABIST

SELF-ASSESSMENT REPORT

PhD-Computer Science

Program Team Registration Forms

SHAHEED ZULFIKAR ALI BHUTTO
INSTITUTE OF SCIENCE AND TECHNOLOGY
Islamabad Campus

Registration Form

Program Team

Program Team of (Name of Department / Faculty): PhD - Computing

Team Leader: Dr. Muhammad Naeem Khan

Name: Dr. Umair Abdullah | Position: Assistant Professor

Institution: SZABIST - ISB | Contact No: (Office) 486 3363 ext 443

Mobile No: 03005341053 | Email Address: dr.umair@szabist-isb.edu.pk

Role in Program Team:

Beside his / her own responsibilities, he/ she will also be responsible for the following:

- To attend the SAR meetings as and when required.
- To ensure that Self Assessment Mechanism is being implemented as per the given guidelines.
- To prepare drafts of the SAR on the given dead line and send them to QEC for timely feedback.
- To keep the record of all the supporting documents addressing various standards of the SAR.
- To circulate all the applicable feedback forms to the target stakeholders and include the analysis of the same in the SAR.
- To communicate with the management on the effectiveness and suitability of the Self Assessment Mechanism.

Declaration of the Program Team Member:

I am quite willing to be part of this team and assure that I would do my best to play my role in the working of Program Team.

(Signature of PT Member) | 24-03-2016 Date

IQBAL AHMAD
Senior Manager
Admin and Finance
SZABIST, Islamabad

Approved By: _____

(Head of the Department)

Note: Completed form should be sent to the QEC

SHAHEED ZULFIKAR ALI BHUTTO
INSTITUTE OF SCIENCE AND TECHNOLOGY
Islamabad Campus

Registration Form

Program Team

Program Team of (Name of Department / Faculty): Phd Computing

Team Leader: Dr. Muhammad Naeem Khan

Name: Dr. Muhammad Naeem Khan Position: Assistant Professor

Institution: SZABIST, Islamabad Contact No: (Office) 4863363 Ext 447

Mobile No: 0334-5471861 Email Address: dr.naeem@szabist-isb.edu.pk

Role in Program Team:

Beside his / her own responsibilities, he/ she will also be responsible for the following:

- To attend the SAR meetings as and when required.
- To ensure that Self Assessment Mechanism is being implemented as per the given guidelines.
- To prepare drafts of the SAR on the given dead line and send them to QEC for timely feedback.
- To keep the record of all the supporting documents addressing various standards of the SAR.
- To circulate all the applicable feedback forms to the target stakeholders and include the analysis of the same in the SAR.
- To communicate with the management on the effectiveness and suitability of the Self Assessment Mechanism.

Declaration of the Program Team Member:

I am quite willing to be part of this team and assure that I would do my best to play my role in the working of Program Team.

(Signature of PT Member) 24-03-2016 Date

IQBAL AHMAD
Senior Manager
Admin and Finance
SZABIST

Approved By: _____

(Head of the Department)

Note: Completed form should be sent to the QEC

SHAHEED ZULFIKAR ALI BHUTTO
INSTITUTE OF SCIENCE AND TECHNOLOGY

SZABIST

SELF-ASSESSMENT REPORT

PhD Computer Science

Assessment Team Registration Forms

SHAHEED ZULFIKAR ALI BHUTTO
INSTITUTE OF SCIENCE AND TECHNOLOGY

SHAHEED ZULFIKAR ALI BHUTTO
INSTITUTE OF SCIENCE AND TECHNOLOGY
Islamabad Campus

Registration Form

Assessment Team

Assessment Team of (Name of Department / Faculty): PhD - CS

Team Leader: Dr. Muhammad Imran

Name: Muhammad Imran Position: Assistant Prof.

Institution: SZABIST (ISB) Contact No: (Office) _____

Mobile No: 03366361661 Email Address: dr.mahilimran@szabist.pk

Role in Assessment Team:

- Beside his / her own responsibilities, He/ She will also be responsible for the following:
- The review of SAR
- Physical Verification of the academic facilities
- Verification of the contents of SAR
- Evidence gathering to support their findings
- Evaluation of SAR in light of the above points
- Reporting on the findings of the evaluation and visits
- Converting the report in the HEC-specified rubric format

Declaration of the Assessment Team Member:

I am quite willing to be part of this team and assure that I would do my best to play my role in the working of Assessment Team.

(Signature of AT Member) 27/6/2016 Date

Approved By: _____

(Head of the QEC)

SHAHEED ZULFIKAR ALI BHUTTO
INSTITUTE OF SCIENCE AND TECHNOLOGY

SHAHEED ZULFIKAR ALI BHUTTO
INSTITUTE OF SCIENCE AND TECHNOLOGY
Islamabad Campus

Registration Form

Assessment Team

Assessment Team of (Name of Department / Faculty): PhD CS

Team Leader: Dr. M. Imran

Name: Khansa Hayat

Position: Lecturer

Institution: SZABIST Isbd.

Contact No: (Office) Ext. 105

Mobile No: 0321-9577355

Email Address: khansa.hayat@gmail.com

Role in Assessment Team:

- Beside his / her own responsibilities, He/ She will also be responsible for the following:
- The review of SAR
- Physical Verification of the academic facilities
- Verification of the contents of SAR
- Evidence gathering to support their findings
- Evaluation of SAR in light of the above points
- Reporting on the findings of the evaluation and visits
- Converting the report in the HEC-specified rubric format

Declaration of the Assessment Team Member:

I am quite willing to be part of this team and assure that I would do my best to play my role in the working of Assessment Team.

(Signature of AT Member)

27/6/2016.

Date

Approved By: 

(Head of the QEC)

SHAHEED ZULFIKAR ALI BHUTTO
INSTITUTE OF SCIENCE AND TECHNOLOGY

SHAHEED ZULFIKAR ALI BHUTTO
INSTITUTE OF SCIENCE AND TECHNOLOGY
Islamabad Campus

Registration Form

Assessment Team

Assessment Team of (Name of Department / Faculty): PhD (CS)

Team Leader: Dr. M. Imran

Name: Ahmed Ali Qureshi

Position: Assist. Prof

Institution: SZABIST (ISB)

Contact No: (Office) 540

Mobile No: 0333-1571624

Email Address: ahmed.a
edu.p

Role in Assessment Team:

- Beside his / her own responsibilities, He/ She will also be responsible for the following:
- The review of SAR
- Physical Verification of the academic facilities
- Verification of the contents of SAR
- Evidence gathering to support their findings
- Evaluation of SAR in light of the above points
- Reporting on the findings of the evaluation and visits
- Converting the report in the HEC-specified rubric format

Declaration of the Assessment Team Member:

I am quite willing to be part of this team and assure that I would do my best to play my role in the working of Assessment Team.

(Signature of AT Member)

27-6-2016

Date

Approved By: Tariq

(Head of the QEC)