SHAHEED ZULFIKAR ALI BHUTTO
INSTITUTE OF SCIENCE AND TECHNOLOGY

SELF-ASSESSMENT REPORT

BS Computer Science

Spring 2016

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SELF-ASSESSMENT REPORT

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Quality Enhancement Cell
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Executive Summary

BS-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 BS-Computer Science (BSCS) Self-Assessment process were as follows:

Nomination of Program Team (PT)

The PT was nominated by the Acting Head of Computer Science Department, Mr. Iqbal Ahmad on August 18, 2015. Following were the members of the PT:

(i) Dr. AzharMahmood
(ii) Mr. ShahzadLatif

Submission of PT Report

The PT submitted the report on November 10, 2015. The QEC examined the report, identified shortcomings and communicated the same to the PT. After incorporating QEC suggestions, the report was finalized on June 22nd, 2016.

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. Umair Abdullah
(ii) Mr. Tousif ur Rehman
(iii) Mr. Ahmed Aslam

Date of Submission of AT Report

The AT Report was submitted on July13th, 2016.

AT Findings and Recommendations

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

Updated list of elective courses is missing. It is suggested that prospectus should be updated to include all elective courses approved by the BOS of SZABIST.
Lack of support and financial resources for faculties and secretarial support. It is recommended that there is a need for improvement in support and financial resources for faculties and secretarial support.

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 SciencesDepartment plans to implement the suggested corrective measures in the near future to improve the quality of education delivered at SZABIST.

SHAHEED ZULFIKAR ALI BHUTTO
INSTITUTE OF SCIENCE AND TECHNOLOGY

SZABIST

SELF-ASSESSMENT REPORT

BS Computer Science

Program Team Report

Spring 2016

SZABIST

Program Team Report

Bachelors of Computer Sciences (BS-CS)

Spring 2016

Shaheed Zulfiqar Ali Bhutto Institute of Science and Technology

Islamabad

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CRITERION –1 Program Mission,

Objectives and

Outcomes

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Standard 1-4	**Overall Performance Using Quantifiable Measures**

Criterion 1: PROGRAM MISSION, OBJECTIVES AND OUTCOMES

Standard 1-1: Program Measurable Objectives

a. Mission Statement

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

The Shaheed Zulfikar Ali Bhutto Institute of Science and technology has been 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 sector; of providing hi-tech and scientific and technological assistance to the Pakistan industry to enable it to compete with the world industries in global trading; of providing highly trained 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.[1]

Mission Statement of the Department

The department aims to equip students with requisite; technical breadth and communication skills to become innovators and leaders in eth field of Computer Science and related disciplines. The department strives for excellence through imparting knowledge comprehensively in Computer Science with an emphasis on research in collaboration with industry, dissemination through scholarly publications and service to professional societies, the community and the nation. [2]

Mission statement of BS Computer Science Program

To provide a quality education in Computer Science and Information Technology in order to produce scientifically, technologically, and professionally competent graduates who are adept to perform a significant role in the continuing transformation of the local and global society. [3]

b. Program Objectives

The objectives of the program are to provide broad and basic education in computer science's multiple disciplines comprising of Software Engineering and Information Technology / Telecommunications. The students will acquire sufficient fundamental knowledge to adapt quickly to the changes that are occurring and will continue to occur during their professional careers.

The goal is to educate and train students to become proficient in the state-of-the-art as well as emerging technologies in all key areas of the discipline. The students will acquire proficiency in design and construction of Computer Science applications. An important objective of the program is

[1] Source of Information: Program Manager

[2] Source of Information: Program Manager

[3] Source of Information: Program Manager

to offer a curriculum that evolves to keep pace with the rapid growth of technology in various areas of Computer Science. [4]

Program Objectives (BS Computer Science)

Upon completion of their degree, the SZABIST BS Computer Science graduates will be able to:

1. Have a well-rounded education and a solid basis of knowledge in mathematics, basic science, technical sciences communication and Computer Science.

2. Have a varied and balanced educational experience with an appropriate mix of theoretical knowledge and practical skills that will enable them to enter into and advance in the profession of Computer Science by adapting to emerging technologies and the ever changing needs of industry or the cutting edge Computer Science research.

3. Effectively design and construct software applications.

4. Work effectively in teams. This includes oral and written communication as well as the collaborative skills.

5. Conduct themselves as responsible, ethical professionals and responsible citizens, who are aware of the ethical issues and societal needs and can perform service to society and the

   Computer Science profession through participation in professional societies, government, civic organizations, and humanitarian endeavors. [5]

c. Program Outcomes (BS Computer Science)

To attain the educational objectives of the BS CS program, the department intends to produce the following measurable outcomes at the time of graduation. Graduates of the program will have: [6]

1. The ability to utilize logic, mathematics, and physical sciences to model and solve Computer

   Science problems.

2. The ability to think critically, perform scientific analysis and develop solutions for typical

   Computer Science problems.

3. Proficiency in software design and development, design and analysis of algorithms theory of programming languages, operating systems, theory of computation and computer

   architecture.

4. In depth knowledge in advanced and evolving areas in Computer Science.

5. The ability to acquire knowledge and skills independently.

6. The ability to communicate effectively using technical writing and visual and oral presentations.

7. Have an understanding of professional, ethical and social responsibilities.

8. The ability to work within teams and in multi-disciplinary environments.

9. Knowledge of contemporary issues.

10. Recognize the need for, and an ability to engage in, continuing professional development.

[4] Source of Information: Program Manager

[5] Source of Information: Program Manager

[6] Source of Information: Program Manager

d. Describe how each objective is aligned with program, college and institution mission statements. [7]

Objectives	Alignment with program, college and institution mission statements.
Have a varied and balanced educational experience with an appropriate mix of theoretical knowledge and practical skills that will enable them to enter into and advance in the profession of Computer Science by adapting to emerging technologies and the ever changing needs of industry or the cutting edge Computer Science research.	To provide broad and basic education in computer science's multiple disciplines comprising of Software Engineering and Information Technology / Telecommunications.
Effectively design and construct software applications.	The ability to think critically, perform scientific analysis and develop solutions for typical
Have a varied and balanced educational experience with an appropriate mix of theoretical knowledge and practical skills that will enable them to enter into and advance in the profession of Computer Science by adapting to emerging technologies and the ever changing needs of industry or the cutting edge Computer Science research.	Proficiency in software design and development, design and analysis of algorithms theory of programming languages, operating systems, theory of computation and computer architecture. In depth knowledge in advanced and evolving areas in Computer Science
Conduct themselves as responsible, ethical professionals and responsible citizens, who are aware of the ethical issues and societal needs and can perform service to society and the Computer Science profession through participation in professional societies, government, civic organizations, and humanitarian endeavors.	To provide a quality education in Computer Science and Information Technology in order to produce scientifically, technologically, and professionally competent graduates who are adept to perform a significant role in the continuing transformation of the local and global society. Have an understanding of professional, ethical

Work effectively in teams. This includes oral and written communication as well as the collaborative skills.	The ability to work within teams and in multi-disciplinary environments The ability to communicate effectively using technical writing and visual and oral

[7] Source of Information: Program Manager

e. Main elements of the strategic plan to achieve the 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. [8]

1. 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 exploration, discovery and learning. It provides diverse perspectives, and it prepares students to be thoughtful competent 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: 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 core and 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. Computer Science Department engage students as researchers by integrating research opportunities into the curriculum (particularly through lab projects and internship-based learning opportunities), by providing training for undergraduate students in research methodology and responsible research conduct, and by involving undergraduate students in multidisciplinary research carried out at SZABIST, such as Renewable Energy, Stem cell, Remote distance learning etc to name a few. SZABIST also aid 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 college campus where many leading companies are invited to explain their recruitment procedures and the scenario about present and future vacancies.

Moreover, a graduate directory is published every year. It is a compendium which, gives CVs of all students who have graduated during the year and, is distributed free of charge to all leading

[8] Source of Information: Program Manager, assistance was requested to BSCS program manger Karachi campus but on feedback provided.

companies to serve as a useful reference book for finding appropriate candidates for present and future vacancies.

5. Co-curricular leaning: In order to promote learning that is active, self-motivated, exploratory and attentive, a wide range of learning opportunities, both curricular and co-curricular are used. It includes student research, internships, recreational and athletic programs, and co-curricular opportunities, such as, academic societies and student councils. It should be noted that an 8 week internship with a reputable company is a compulsory pre-requisite for graduation. This is to give the students a foretaste of what essentially and truly happens in industry, an effort to bridge the gulf between the classroom and the industry.

Furthermore, an annual dinner is held with its leading alumni and adjunct faculty, particularly those who are gold medalists or are working in top multinational organizations, to network with the corporate world for innovative curriculum development, internships, placements, sponsorships and joint activities.

f. Program Objectives Assessment [9]

Objectives	**How Measured**	**When Measured**	**Improvement identified**	**Improvement Made**
Have a varied and balanced educational experience with an appropriate mix of theoretical knowledge and practical skills that will enable them to enter into and advance in the profession of Computer Science by adapting to emerging technologies and the ever changing needs of industry or	Course outline, midterm examination, final examination, assignments and reports	Every Semester	Curriculum needs updating	Board of studies review the courses and update accordingly

Effectively design and construct software applications.	Practical, Reports, Projects, ,Assignments	Every Semester	Need to bring in guest, speakers/professionals from industry	Guest speakers invited from industry
Have a varied and balanced educational experience with an	Course exams, Practical	Every Semester	Need to bring in	Guest speakers invited for class

[9] Source of Information: Program Manager, assistance was requested to BSCS program manger Karachi campus but on feedback provided.

appropriate mix of theoretical knowledge and practical skills that will enable them to enter into and advance in profession of computer science by adapting to emerging technologies and the ever changing needs of industry or the cutting edge computer science research.	Reports, Projects, Assignments.		guest speakers from industry	session
Conduct themselves as responsible, ethical professionals and responsible citizens, who are aware of ethical issues and societal needs and can perform service to society and the computer science profession through participation in professional societies, government, civic	Group Assignments, final reports and presentation, surveys, liaisons with different organizations.	Every Semester	No course related to this	EDC, time management, motivational speakers seminars
Work effectively in teams, this includes oral and written communication skills as well as collaborative skills.	Group projects, Group assignments and	Every Semester	Final Year Projects	Oral communication and written skills course

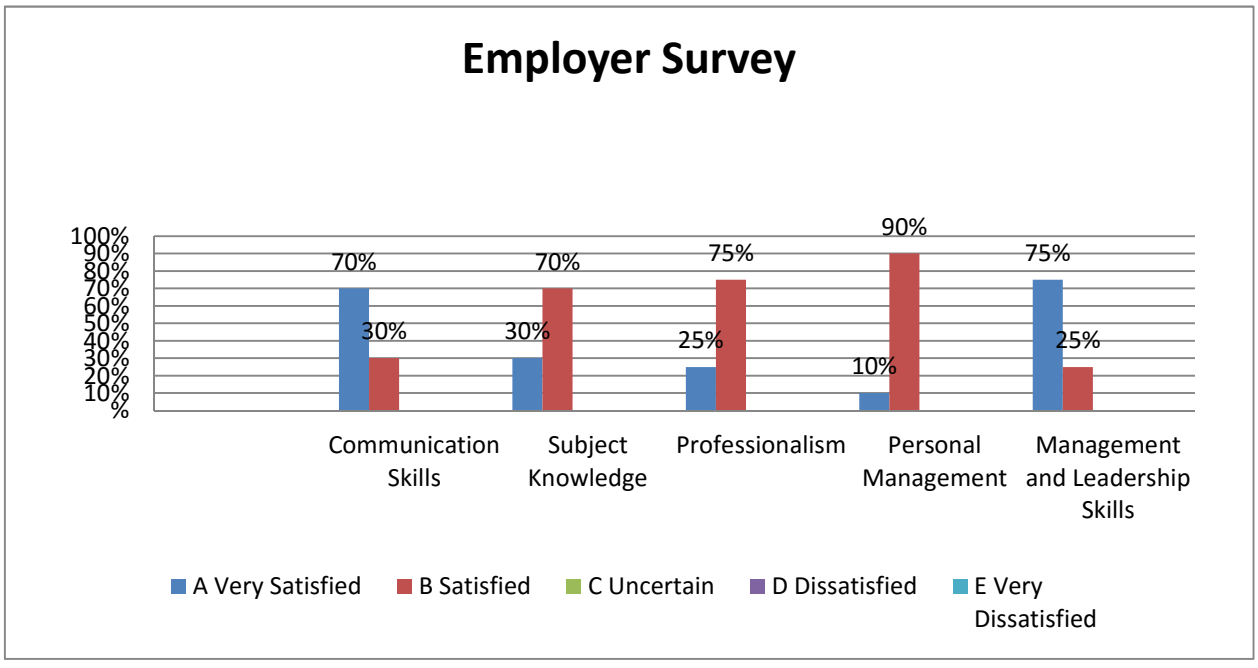
Standard 1-2: Program Outcomes

In order to assure that graduates of the DSCS program have achieved the program's outcomes, a summary matrix depicting the mapping of Program's learning outcomes to tis objectives is shown in the following table. [10]

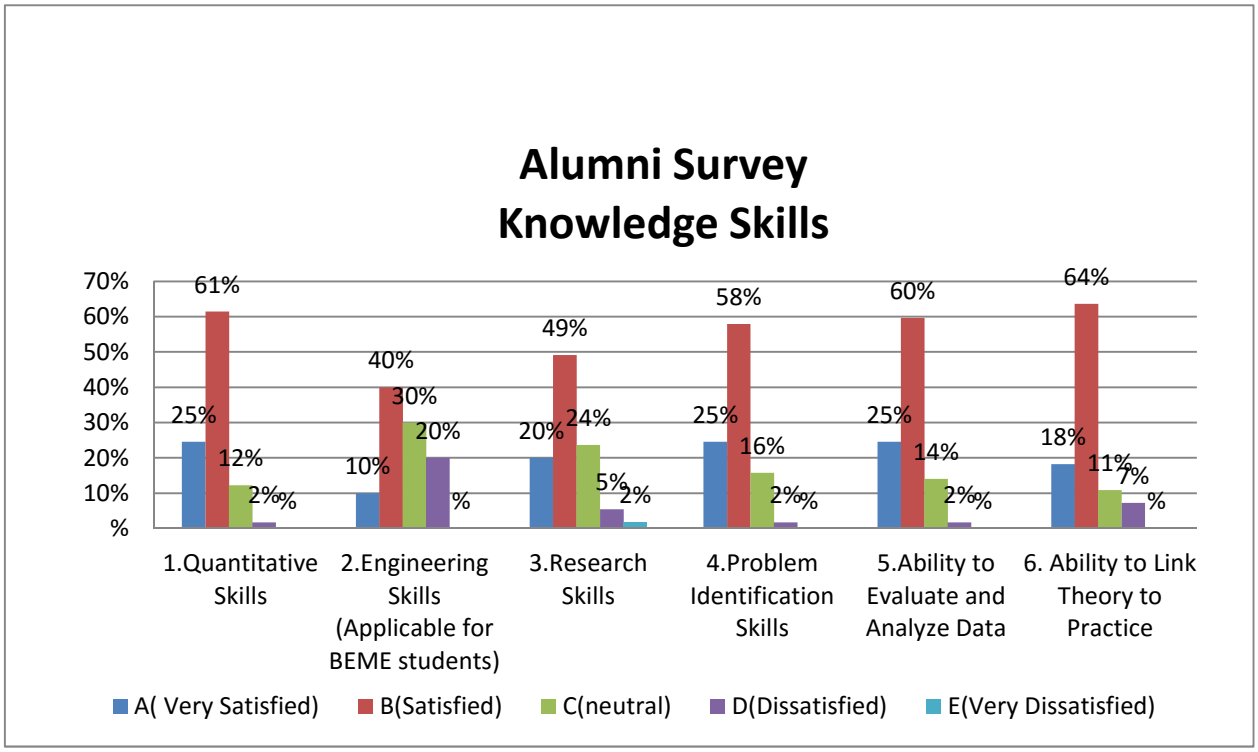
a. Program Outcomes and Objectives Matrix (BS Computer Science)

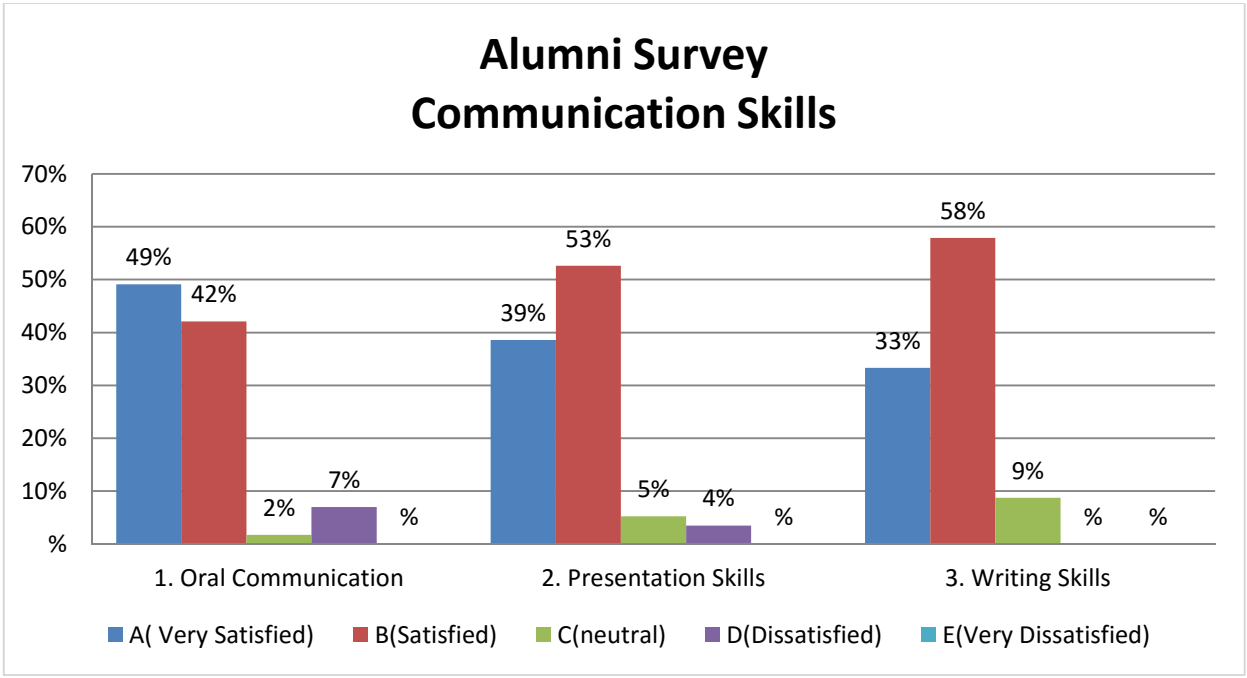
Learning Outcomes	1	2	3	4	5
1	√	√	√	√	
2	√	√	√	√	
3	√	√	√	√	
4	√	√	√		√
5		√		√	√
6				√	√
7					√
8			√	√	
9	√	√	√		
10		√			√

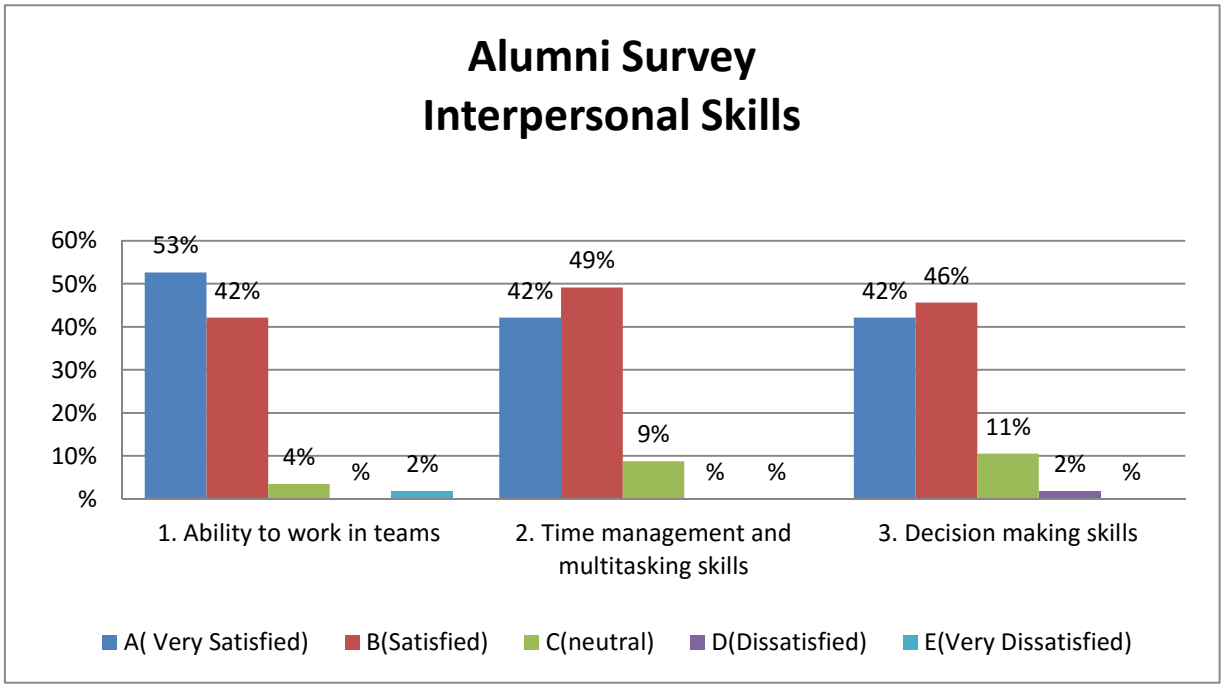
b. Employer Survey



c. Alumni Survey


Alumni Survey
Knowledge Skills
70%
60%
50%
40%
30%
20%
10%
%
61%
25%
12%
2%
%
40%
10%
30%
20%
%
49%
20%
24%
5%
2%
58%
25%
16%
2%
%
60%
25%
14%
2%
%
64%
18%
11%
7%
%
1.Quantitative Skills
2.Engineering Skills (Applicable for BEME students)
3.Research Skills
4.Problem Identification Skills
5.Ability to Evaluate and Analyze Data
6. Ability to Link Theory to Practice
A(Very Satisfied)
B(Satisfied)
C(neutral)
D(Dissatisfied)
E(Very Dissatisfied)


Alumni Survey
Communication Skills
70%
60%
50%
40%
30%
20%
10%
%
49%
42%
2%
7%
%
39%
53%
5%
4%
%
33%
58%
9%
%
%
1. Oral Communication
2. Presentation Skills
3. Writing Skills
A(Very Satisfied)
B(Satisfied)
C(neutral)
D(Dissatisfied)
E(Very Dissatisfied)



d. Graduating Survey

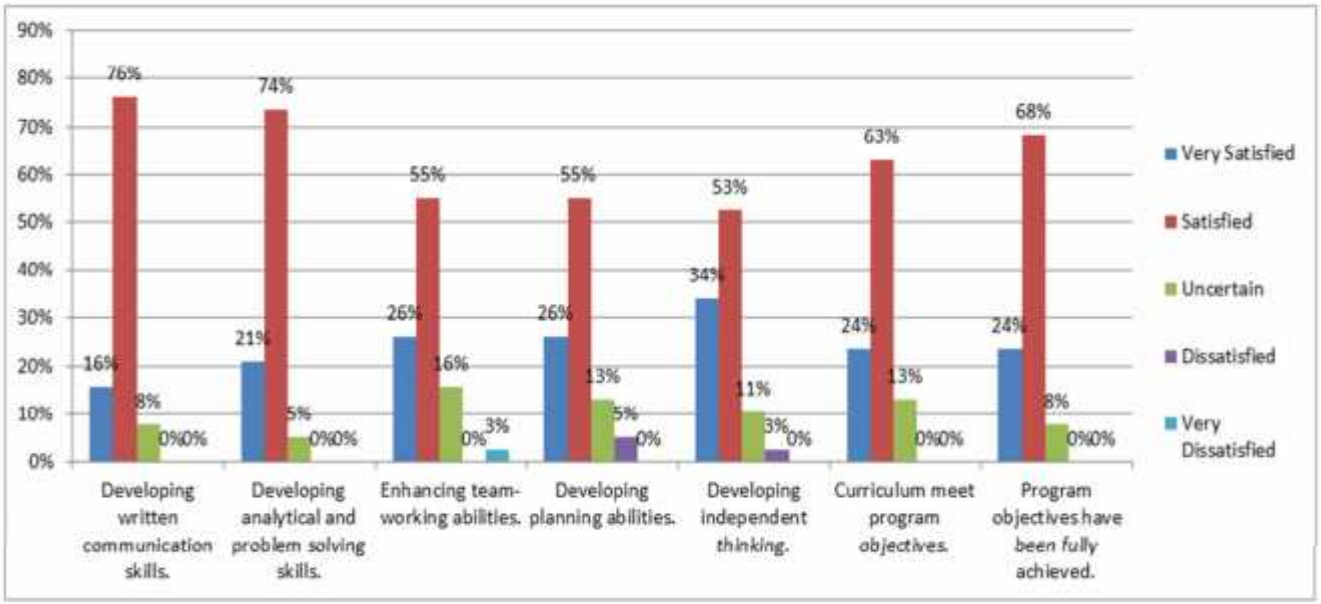


Figure 1: Graduating Survey[11]

Standard 1-3 Assessments Results and Improvement Plans

a. Describe the action taken based on the periodic assessments[12]

- Board of studies meetings in fall and spring semester held to evaluate and upgrade the course contents/ methods\objectives
- Students counseling is done to encourage students
- Students are required to attend different workshops and seminars related to their courses
- Course evaluations are conducted by using various methods

b. Describe major future program improvement plans based on recent assessments[13]

- Introduce new courses to align with market needs

- Upgrade teaching methods from traditional classroom teaching to case study-based teaching methodology

[11] Source of Information: QEC team

[12] Source of Information: Program Manager

[13] Source of Information: Program Manager

c. Strengths and weaknesses of the program [14]

Strengths:

- Faculty from diverse industry/corporate backgrounds
- Seminars and workshops conducted on a regular basis
- Research course is included as part of curriculum

Weaknesses:

- Required extensive lab and infrastructure support
- State of the art software are required
- Require stronger industry collaboration
- Training opportunities\faculty development need to be offered for faculty

d. Significant future plans for the program [15]

- Introduce new specialization areas and courses
- Upgrade teaching methods from traditional classroom teaching to case study-based teaching methodology
- Establish new labs and infrastructure
- Certification form Accreditation council

- Introduce more hand on practice session in various courses which help students in their professional career
- Planning to offer Diploma in Information Technology program at SZABIST Islamabad Campus.

Standard 1-4 Overall Performance Using Quantifiable Measures

a. Indicate the CGPA of successful students per semester, time required to complete the program, and dropout ratio of students per semester (last 3 years) [16]

Semesters	Graduates	CGPA
Year 1, July 2012 - June 2013		
Spring 2012	6	2.94
Summer 2012	2	2.62
Fall 2012	5	2.92
Year 2 July 2013 - June 2014		
Spring 2013	17	3.04
Summer 2013	1	2.61
Fall 2013	5	2.91
Year 3 July 2014 - June 2015		
Spring 2014	5	2.83
Summer 2014	2	2.88

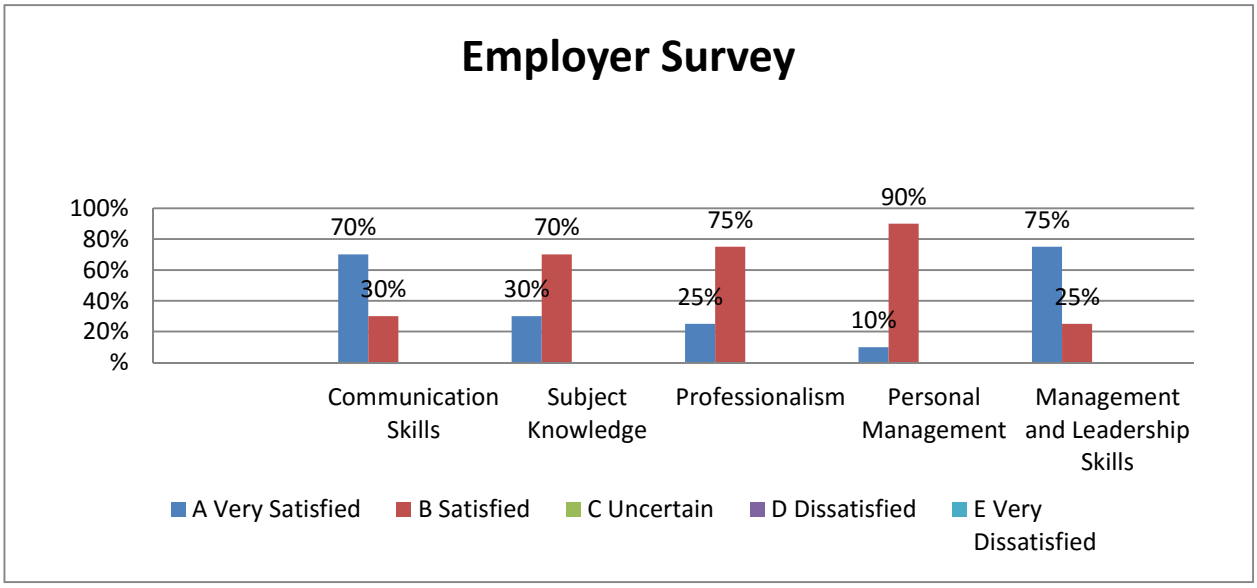
[14] Source of Information: Program Manager

[15] Source of Information: Program Manager

[16] Source of Information: Records

Year	Dropouts	Enrolled students	Dropout ratio
2012	56	4	0.07
2013	47	4	0.08
2014	44	0	0

b. Indicate the percentage of employers that are strongly satisfied with the performance of the department's graduates. Use Employer's survey.



c. Percentage of Student Evaluation/Assessment results for all the courses and faculty. Use Teacher Evaluation Results.

Faculty and Course Evaluations[17]

Year	Semester	Faculty & Courses Rating(%)					
		Excellent	Very Good	Good	Satisfactory	Not Satisfactory	Poor
2012	Fall	52.3	13.3	7.4	26.72	0	0
2012	Spring	46.6	17.14	17.5	11.4		7.3
2013	Fall	27.27	51.33	9.7	10.26		1.4
2013	Spring	44.11	20.1	14.7	20	0	0
2014	Fall	40	20	30	10		0
2014	Spring	52	9.61	20.8	9.6		8

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

List of research activities per faculty per year[18]

Names	Journal Publications		Conference Publications		Patents	Tech Reports/ Books
	International	Local	International	Local		
Dr. Muhammad Usman	6	0	11	0	0	2 Books, 1 Book
Dr. Azhar	6	2	2	1	0	0
Dr. Muhammad	10	0	0	0	0	0
Muhammad Nadeem Khokhar	0	0	2	0	0	1 Magazine
Zubair Ahmad	3	0	1	0	0	0
Shahzad Latif	2	0	0	0	0	0

[17] Source of Information: ASO

[18] Source of Information: Faculty

LIST OF PUBLICATIONS [19]		
Teacher Name : Dr. Muhammad Usman		
#	Publication Title	Year
1.	S.A Khan, K. Kenza, M. Nazir, M. Usman "Proficient Lungs Nodule Detection andClassification 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	2015
2.	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).	2013

3.	Muhammad Usman, Russel Pears, A.C.M Fong "Discovering diverse associationrules from multidimensional schema"Expert Systems with Applications, vol.40(15 pp:5975–5996 (2013). DOI:10.1016/j.eswa.2013.05.021 (Impact Factor: 2.24)	2013
4.	Muhammad Usman and Sohail Asghar "An architecture for integrated online analytical mining" International Journal of Emerging	2011
5.	Muhammad Usman and Russel Pears "Integration of data mining and data warehousing: A practical methodology "International Journal of	2010
6.	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)	2010
7.	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). URL:http://ieeexplore.ieee.org/xpl/articleDetails.jsp?arnumber=7014687	2015
8.	MubashaarRaza 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.	2015
9.	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).	2014
10.	Sajid, Mashhood, Rubab Hussain, and Muhammad Usman. "A conceptual model for automated attendance marking system using facial recognition" Ninth International Conference on Digital Information	2014

[19] Source of Information: Faculty

	Management (ICDIM). IEEE, pp. 7-10, (2014).	
11.	Azeem, Muhammad, Muhammad Usman, and Waseem Ahmad. "Intelligent data cube construction and exploration"Ninth International Conference on Digital Information Management (ICDIM). IEEE, pp.	2014
12.	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.	2012
13.	Muhammad Usman and Russel Pears "Multi level mining of warehouse schema" In Proc. of 3rd International Conference on Networked Digital	2011
14.	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	2010
15.	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
16.	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
17.	Muhammad Usman and Sohail Asghar "Enhancing OLAP performance and visualization" In Proc. of 6th Annual International Conference on	2008

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Teacher Name : Dr. Azhar Mahmood		
#	**Publication Title**	**Year**
1.	Azhar Mahmood “Data Mining Techniques for Wireless Sensor Networks A Survey”, International Journal of Distributed Sensor Networks Vol.2013.	2013
2.	Azhar Mahmood, JianfengXu, “A Hybrid Framework for ICU Mortality	2014

3.	Azhar Mahmood, JianfengXu "A Quotient Space based Clustering Protocol for Wireless Sensor Networks", Information Technology	2014

4.	Azhar Mahmood, "A Distributed Data Extraction Method for Mining Sensor Networks data", International Journal Computer Science Issues,	2013
5.	Azhar Mahmood, "Controlling In-patient Environment by Mining Sensor Networks Data," in 10th International Conference on Fuzzy Systems and	2013
6.	Azhar Mahmood, "An Approach to Generate Test Goals from Use Case	2013
7.	Azhar Mahmood "A Novel Framework to Increase Software Quality by	2013
8.	G.Li, Azhar Mahmood, "Comparison and Evaluation of Source Code Mining Tools and Techniques: A Qualitative Approach", Intelligent Data	2013
9.	G.Li, Azhar Mahmood, An evaluation of source code mining techniques," in 8th International Conference on Fuzzy Systems and Knowledge	2011
10.	Azhar Mahmood, "Methodology for Mapping Business Process into Execution Language", International Journal of Engineering Science and	2011
11.	Azhar Mahmood, "Transformation of BPML to BPEL", 10th National	2010

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Teacher Name : Dr. Muhammad Naeem		
#	**Publication Title**	**Year**
1.	Ahmed, G., Khan, M. N. A., & Bashir, M. S. (2015). A Linux-based	2015
2.	Rafique, M., & Khan, M. N. A. (2015). Profiling software applications	2015
3.	Khan, M., Akram, M., & Riaz, N. (2015). A Comparative Analysis of Software Protection Schemes. *International Arab Journal of*	2015

4.	Khan, S., Nazir, M., Riaz, N., & Khan, M. (2015). Optimized Features Selection using Hybrid PSO-GA for Multi-View Gender	2015
	(IAJIT), *12*(2).	
5.	Bashir, M. S., & Khan, M. N. A. (2015). A triage framework for	2015
6.	Ahmed, N., Subhan, F., Haider, S., Ahmed Khan, N., Ahmed, S., & Saleem Alimgeer, K. (2014). Positioning in bluetooth networks using	2014
7.	Yaqoob, L., Khan, N. A., &Subhan, F. (2014). An Overview of Existing Decision Support Systems for Disasters Management.	2014
8.	Khan, M. N. A. (2012). Performance analysis of Bayesian networks and neural networks in classification of file system	2012
9.	Umar, M., & Khan, M. N. A. (2012). A Framework to Separate Non-Functional Requirements for System Maintainability. *Kuwait Journal*	2012
10.	Khan, M. N. A., Chatwin, C. R., & Young, R. C. (2007). A framework for post-event timeline reconstruction using neural networks. *Digital*	2007

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Teacher Name : Muhammad Nadeem Khokhar		
#	**Publication Title**	**Year**
1.	Naz, H., Khokhar, N. (2009). Critical Requirements Engineering Issues and their Solution. In the Proceedings of the ICCMS 2009, Feb 20 to Feb 22, 2009 at Macau, China. Publisher: IEEE Computer Society	2009
2.	Naz, H., Khokhar, N. (2007). Software Requirements vs. End Product. In the Magazine FLARE; Issue June, 2007, International. Publisher: FLARE.	2007
3.	Alam, M. N., Khokhar, N. (2010) . A Literature Review On Data Mining in Bio-informatics. In the Proceedings of the ICIIT 2010, October 28 to October 30, 2010 at Lahore, Pakistan. Publisher: IEEE, Inc. Printed in	2010

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Teacher Name : Zubair Ahmed		
#	**Publication Title**	**Year**
1.	S. Harris, Ahmed.Z.(2011)" • An Open Multi-Tenant Architecture to	2011
2.	S. Harris, Ahmed.Z.(2011) "How to leverage SOA, Technologies and Best Practices to Improve Existing ERPs," European Journal of Scientific	2011
3.	Ahmed, Z., Asghar, S. (2008). "A framework for mapping an ERP to a software product line." Proceedings of the International Conference on Enterprise Information Systems and Web Technologies (EISWT-08), Orlando, FL. USA, 7-10 July 2008. ISBN: 978-1-935160-02-1	2008
4.	MahrukhSiraj et al. (2011) "A model for ICT based services for	2011

LIST OF PUBLICATIONS		
Teacher Name : Shahzad Latif		
#	**Publication Title**	**Year**
1.	**Study of focusing of electromagnetic waves refracted by an inhomogeneous slab into uniaxial anisotropic medium using Maslov's Method**" Journal of Modern Optics**,** ISSN 0950-0340, **Impact Factor: 1.163**	2008
2.	"Facial **expression recognition using computationally intelligent techniques**" Journal of Intelligent & Fuzzy Systems 28 (2015) 2881–2887	2015

e. Number of short courses workshops, seminars organized on community service level[20]

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	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 &	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

[20] Source of Information: Program Manager

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

Administrative Services[21]

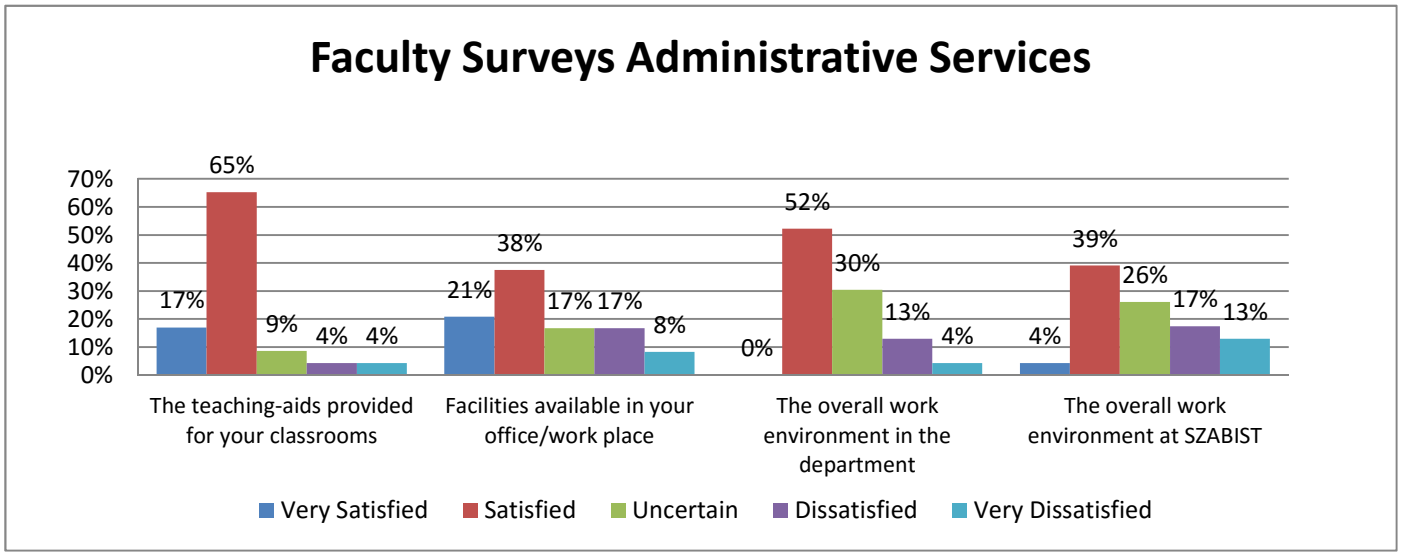

Figure 2: Faculty Administrative Service

[21] Source of Information: QEC Team

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**
Standard 2-7	**Communication Skills (Oral and Written)**

.

Criteria2: Curriculum Design and Organization

Standard 2-1 Courses versus Objectives

a. Title of Degree Program[22]

Bachelors in computer Science (BSCS)

b. Definition of Credit Hour [23]

1. A credit hour means teaching a theory course for 60 minutes each week throughout the semester
2. One credit hour in laboratory or practical work / project would require lab contacts of two hours per week throughout the semester.
3. One credit hour in laboratory or practical work / project would require lab contact of two hours per week throughout the semester.
4. The credit hours are denoted by two digits within brackets with a coma in between.
5. The first digit represents the theory part while the second (right side) digit represents the practical. Thus 3(3,0) means three credit hours of theory, while 4(3,1) means a total off our credit hours, of which three are of theory while one credit hour is for laboratory.
6. The weekly contact hours of a 3(3,0) course will be three, the contact hours of a 4(3,1)course will be six.
7. The contact hours during each week of the Summer Session will be doubled to ensure that the course is completely taught in a semester with half the duration compared with regular (Fall/Spring) semester.

c. Degree Plan[24]

Semester 1			
CS 1101	English Composition and Comprehension	(3,0)	3
CS1117	Introduction to Computing	(2,1)	3
CS1102	Calculus and Analytical Geometry	(3,0)	3
CS1206	Islamiat and Pakistan Studies / Humanities	(3,0)	3
CS1118	Fundamentals of Programming	(3,1)	4
Semester 2			
CS1108	Object Oriented Programming	(2,1)	3
CS1211	Technical and Business Writing	(3,0)	3
CS1203	Physics	(3,1)	4
CS2414	Multivariate Calculus	(3,0)	3

[22] Source of Information: Program Manager

[23] Source of Information: Program Manager

[24] Source of Information: Program Manager

CS3505	Discrete Mathematical Structures	(3,0)	3
Semester 3			
CS2311	Communication and Presentation Skills	(3,0)	3
CS2305	Linear Algebra & Differential Equations	(4,0)	4
CS1212	Statistics and Probability	(3,0)	3
CS2317	Digital Logic Design	(3,1)	4
CS2313	Data Structures and Algorithms	(3,1)	4
Semester 4			
CS2302	Data Communications and Computer Networks	(3,1)	4
CS2412	Database Systems	(3,1)	4
CS2411	Computer Organization and Assembly Language	(3,0)	3
CS2314	Finite Automata Theory and Formal Languages	(3,0)	3
CS2318	Operating Systems	(3,1)	4
Semester 5			
CS2417	Introduction to Software Development	(3,1)	4
CS2315	University Elective – 1	(3,0)	3
CS3517	Software Engineering Concepts	(3,1)	4
CS3521	Computer Architecture	(3,0)	3
CS2415	Human Computer Interaction	(3,0)	3
Semester 6			
CS3607	CS Elective 1	(3,0)	3
CS3611	Design & Analysis of Algorithms	(3,0)	3
CS3612	CS Elective 2	(3,0)	3
CS3619	Numerical Computing	(3,0)	3
CS3624	Compiler Construction	(3,0)	3
Semester 7			
CS4704	Final Year Project- I	(3,0)	3
CS4805	Professional Practices	(3,0)	3
CS4702	Artificial Intelligence	(3,0)	3
CSxxxx	CS Elective 3	(3,0)	3
CSxxxx	CS Elective 4	(3,0)	3
Semester 8			
CS4804	Final Year Project - II	(3,0)	3
CS4802	University Elective – 2	(3,0)	3
CSxxxx	CS Elective 5	(3,0)	3
CSxxxx	CS Elective 6	(3,0)	3
CSxxxx	CS Elective 7	(3,0)	3

Key: *Purple Color shows the Elective Courses*

d. Curriculum Course Requirement[25]

Semester	Maths and Basics Sciences
1	Calculus and Analytical Geometry
1	Physics and Basic Electronics
2	Multivariate Calculus
3	Linear Algebra & Differential Equations
3	Statistics and Probability
6	Numerical Computing
Semester	**CS Core courses**
1	Introduction to Computing
2	Discrete Mathematical Structures
3	Digital Logic Design
4	Database Systems
4	Computer Organization and Assembly Language
4	Finite Automata Theory and Formal Languages
4	Operating Systems
4	Introduction to Software Development
5	Computer Architecture
6	Design & Analysis of Algorithms
7	Artificial Intelligence
Semester	**Humanities and Social Sciences**
1	English Composition and Comprehension
2	Technical and Business Writing
3	Communication and Presentation Skills
4	Islamiat and Pakistan Studies / Humanities
5	Foreign Language
Semester	**Other Core**
1	Fundamentals of Programming
2	Object Oriented Programming
3	Data Structures and Algorithms
4	Data Communications and Computer Networks
5	Human Computer Interaction
7	Professional Practices
7	Final Year Project- I
8	Final Year Project- II
Semester	**Other Core**
5	University Elective – I
6	CS Elective 1
6	CS Elective 2

[25] Source of Information: Program Manager, assistance was requested to BSCS program manger Karachi campus but on feedback provided.

7	CS Elective 3
7	CS Elective 4
8	University Elective – II
8	CS Elective 5
8	CS Elective 6
8	CS Elective 7

e. Describe how the program content (courses) meets the program objectives [26]

The curriculum is designed by applying pedagogical principles to achieve desired program objectives.

There are sufficient number of mathematical courses offered in the earlier semester to build basis for its applications in more advance and important courses like Operating Systems and Computer Architecture, Computer Networks and Data Communication etc.

Similarly to achieve the communication and language objectives, more basic English language courses are offered such as English Composition and comprehension and Technical and Business Writing in advance so that they may aid student in understanding all the text written in English language. There is a course called Communication and Presentation Skills that prepares every student for preparing any kind of presentation, which is an essential part of each course offered in the BSCS program.

Course like final year projects challenges them to work effectively in teams to develop a novel and useful application for the local and international community. These projects require each student to practically apply whatever they have learned in the previous courses and also present it to a wider audience to further funding in prototyping it as a professional application. Thus curriculum is designed in such as way that it not only helps understands the difficult field of Computer Science but also makes them a confidant individual that can take up a challenging task in his/her professional careers

[26] Source of Information: Program Manager, assistance was requested to BSCS program manger Karachi campus but on feedback provided.

f. Courses versus Outcomes: List the courses and tick against relevant outcomes[27]

Course	Title	1	2	3	4	5	6	7	8	9	10
CSC 1101	Calculus and Analytical	√				√				√	
CSC 1102	English Composition and					√		√			
CSC 1103	Fundamentals of Programming	√	√	√	√	√	√		√	√	√
CSC 1104	Introduction to Computing	√	√		√	√	√		√	√	
CSC 1105	Islamiat and Pakistan					√		√			
CSC 1201	Discrete Mathematical	√				√				√	
CSC 1202	Multivariate Calculus	√				√				√	
CSC 1203	Object Oriented Programming	√	√	√	√	√	√		√	√	√
CSC 1204	Physics					√				√	
CSC 1205	Technical and Business					√	√	√	√	√	
CSC 2101	Communication and					√	√	√	√	√	
CSC 2102	Data Structures and	√	√	√	√	√	√		√	√	√
CSC 2103	Digital Logic Design	√	√	√	√	√	√		√	√	√
CSC 2104	Linear Algebra and	√				√					
CSC 2105	Statistics and Probability	√				√				√	
CSC 2201	Computer Organization and	√				√				√	
CSC 2202	Data Communications and	√	√	√	√	√	√		√	√	√
CSC 2203	Database Systems	√	√		√	√	√		√	√	√
CSC 2204	Finite Automata Theory and										
CSC 2205	Operating Systems		√		√	√				√	√
CSC 3101	Computer Architecture			√							
CSC 3102	Human Computer Interaction	√						√			
CSC 3103	Introduction to Software	√	√								
CSC 3104	Software Engineering-I	√	√	√	√	√	√	√	√	√	√

[27] Source of Information: Program Manager

CSC 3201	Compiler Construction	√	√	√	√						
CSC 3202	Design and Analysis of	√	√	√	√	√	√	√			
CSC 3203	Numerical Computing	√				√				√	
CSC 4101	Artificial Intelligence	√	√	√							
CSC 4102	Professional Practices	√							√	√	√
CSC 4105	Final Year Project-I	√	√	√	√	√	√	√	√	√	√
CSC 4205	Final Year Project-II	√	√	√	√	√	√	√	√	√	√
CS Electives											
CSC 4701	Advanced Internet				√						√
CSC 4801	Advanced Programming	√	√		√						
CSC 4702	Advanced Telecommunication	√	√		√					√	√
CSC 4802	Android Application	√		√							√
CSC 4703	Applied Data Mining	√	√	√	√					√	√
CSC 4803	Auditing Information Systems									√	
CSC 4704	Bioinformatics				√						
CSC 4804	Business Process Re-	√	√	√						√	√

Standard 2-2 Theory, Problem Analyses/ Solution and Design in Program

After a few revisions, separate labs are introduced in BSCS curriculum. Moreover lab durations are also increased from two to three hours to provide an ample opportunity and focus on practical part of theory covered in the course. There are 10 such courses which have separate lab component introduced to make it convenient for students to practice theoretical stuff in the laboratory. These labs are conducted by Lab Engineers who are supposed to share solution of every problems introduced. [28]

Elements	Courses
Theoretical Background	CS 1101, CS 1102, CS1104, CS1105, CS1205,
Problem Analyses	CS2105, CS2102, CS2203, CS2201, CS2104,
Solution Design	CS1203, CS4101, CS4105, 4205

[28] Source of Information: Program Manager

Standard 2-3 Mathematics & Basic Sciences Requirements

The curriculum must satisfy the core requirements for the programs, as specified by the respective accreditation body. The following is the breakdown of core mathematics and basic sciences courses as part of the BSCS curriculum at SZABIST Islamabad. [29]

Program	Computing Core	Supporting Courses	General Education	Electives
BS Computer Science	Introduction to Computer Science	Calculus and Analytic	English-I(Functional	Financial Accounting
	Programming Fundamentals	Probability and Statistics	English-II (Technical and	Financial Management
	Object Oriented Programming	Linear Algebra	English-III (Communication	Human Resource Management
	Discrete	Electromagnetism	Islamic and	Marketing
	Data Structure		Professional	Economics
	Digital Logic			Psychology
	Operating			International
	Introduction to Database Systems			Foreign/Regional Languages (French, German Sindhi, Punjabi
	Introduction to Software			Philosophy
	Computer Communication			
	Human Computer			
	Senior Design			

[29] Source of Information: Program Manager, assistance was requested to BSCS program manger Karachi campus but on feedback provided.

Standard 2-4 Major Requirements as Specified by Accreditation Body[30]

Program	Computing Core	Supporting C	General Education	Electives
BS Computer Science	Introduction to Computer	Calculus and Analytic	English Comprehension and Composition	IT Innovations
	Programming Fundamentals	Probability and Statistics	Technical and Report Writing	Applied Data Mining
	Object Oriented Programming	Linear Algebra	Communication and Presentation	Embedded Programming
	Discrete Structures		Islamic and Pakistan Studies	Android Application
	Data Structures and Algorithms		Professionals Practices	Advanced Internet Architecture
	Digital Logic and Design [1]			IOS Development
	Operating S			Network Security and Encryption
	Introduction to Database Systems			Advanced Telecommunication
	Introduction to Software			Technopreneurship
	Compute Communications and Networks			Ethical Hacking
	Human Computer Interaction			Linux Administrator I
	Senior Design Project			Auditing Information

[0] Source of Information: Program Manager

.

Standard 2-5 Humanities, Social Sciences, Arts, Ethical, Professional & Other Requirements[31]

Program	General Education	Others
BS Computer Science	English Comprehension and Composition	IT Innovations
	Technical and Report Writing	Applied Data Mining
	Communication and Presentation Skills	Embedded Programming
	Islamic and Pakistan Studies	Android Application Development
	Professional Practices	Advanced Internet Architecture
		IOS development
		Network Security and Encryption
		Advanced Telecommunication
		Technopreneurship
		Ethical Hacking
		Linux Administrative I
		Auditing Information Systems

Standard 2-6 Information Technology Content Iintegration throughout the Program[32]

a. L i s t the courses required by the Accreditation Body

Program	IT COURSES	
BS-Computer Science Program	CSC 1103	Fundamentals of Programming
	CSC 1203	Object Oriented Programming
	CSC 2102	Data Structures and Algorithms
	CSC 2205	Operating Systems
	CSC 2201	Computer Organization and Assembly Language
	CSC 2202	Data Communications and Computer Networks

b. Describe how they are applied and integrated throughout the program.

1. Introduction to computer is an introductory course which is sets the basis for all the other courses covering general concepts of computer organization, networks, the internet, operating system databases etc. The course builds foundations for rest of the courses that in the later semesters. Linux operating system is also introduced to the computer science students which is used a mandatory tool for all the courses' assignments etc.

[31] Source of Information: Program Manager

[32] Source of Information: Program Manager

2. Programming fundamental is an introduction towards programming in which 'C' language is thought. Programming fundamental is focused towards structured programming and is the foundation course towards other programming courses, which are introduced later in the program to the students.
3. Object oriented programming is offered after building programming basics in the Programming Fundamental course.
4. Since the syntax is almost the same, sofocusis more of the basic building blocks of object oriented programming constructs such as encapsulation, inheritance and polymorphism. The course ends with a focus on importance of design in object-oriented programming.
5. Data Structures and Algorithm is another important course in which the C or Java languages are used to make students understand how better search codes, sorting codes are written which can help the students appreciate the benefits and uses of better data structures in advance solutions.
6. Operating systems is a course in which students are acquainted with the core concepts of operating systems threading, paging, Virtual memory, etc. to better understand how operating systems work. Students are also required to do labs using C on Linux operating Systems.
7. Computer organization is a course which helps understand the hardware of a computer how instruction sets, computer logic and arithmetic; data and control, peripherals and multiprocessors work and formulate the computer architecture
8. Software Engineering is a basic course with a broad courses outline covering the following aspects of software engineering:
    - Requirements Gathering
    - Software Processes & its Improvement
    - Software Design and its Implementation
    - Quality Assurance by different testing phases
    - Introduction to Software Project Management
    - How a Risk can be managed in software development

Standard 2-7 Oral and written communication skills of the student must be developed and applied in the program[33]

a. List the courses required by the Accreditation Body.

Program	Courses	
BS-Computer Science Program	CSC 1102	English Composition and Comprehension
	CSC 1205	Technical and Business Writing

[33] Source of Information: Program Manager, assistance was requested to BSCS program manger Karachi campus but on feedback provided.

b. D e s c r i b e how they are applied and integrated throughout the program. [34]

English Composition and Comprehension provides students with the rhetorical foundations that prepare them for the demands of academic and professional writing.

Communication and Presentation Skills enables students not only to speak before groups of any size with poise and confidence but also organize their content according to their audience, this course serves as baseline knowledge for all the later courses where they are required to present their work for both internal and external audience.

Technical and Business writing familiarizes students with essentially all the different formats of writing used in business communication. A component covers the importance of clarity in technical communication between organizations and individuals.

[34] Source of Information: Program Manager, assistance was requested to BSCS program manger Karachi campus but on feedback provided.

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CRITERION –3 Laboratories and Computer Facilities

Standard 3-1	**Lab Manuals, Documentations, Instructions**
Standard 3-2	**Adequate Support Personnel's for Labs**
Standard 3-3	**Adequate Infrastructure and Facilities to Support Program Objectives**

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. [35]

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.

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 online digital libraries, SZABIST Islamabad E-Library Printing Assignments, Articles, research papers, Thesis.
Adequacy for instruction	52Desktop Computers with adequacy of 50-60

[35] Source of Information: System Support Staff, IT department.

	students Four AC's (2 Ton) are available for keeping the Computer Labs environment best for sitting and work Multimedia and Public addressing system is available on request. One System Engineer is available for any IT
Courses taught	General Purpose Lab Trainings and Workshops Oracle Primavera
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
Safety regulations	Available

Laboratory Title	**Computer Lab 02**
Location and area	SZABIST Islamabad Campus
Objectives	For Practical courses of BS (CS) week days and Management 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

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

	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,
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
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
Safety regulations	Available

Laboratory Title	**DLD Lab**
Location and area	2nd Floor Academic Block
Objectives	The Digital Logic Design Lab (DLD 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
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
Courses taught	Physics, Digital Logic Design,
Software available if applicable	Windows 7 Professional, Microsoft Office, Mat Lab R2011B, Cisco packet tracer 5.3, Borland

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. [36]

- 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 easy to use manuals are available in the computer Labs for learning to use ZABDESK, Microsoft Office and other related Programs and software.

b. Resources sufficient

The resources are not sufficient for the program specially the as per requirement of accreditation body, Szabist needs following category of labs will be considered at the time of evaluation: [37]

1. Hardware\Physics Lab

2. Embedded Systems Kits

Standard 3-2: There must be adequate support personnel for instruction and maintaining the laboratories.

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

At SZABIST Islamabad, we have five functional Computer labs. A total no of 11 dedicated staff members are working at different time slots to ensure unhindered delivery of knowledge. Instructions are clearly written on the Notice Boards pertaining to:

[36] Source of Information: System Support Staff, IT department.

[37] Source of Information: System Support Staff, IT department. Program Manager

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. [38]

The BSCS program is heavily 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 in parting education in a professional manner. Before the start of each term, all computers are checked, repaired, and replaced if needed. Once the term begins, things usually proceed without a hitch.

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

[38] Source of Information: System Support Staff, IT department.

	Color	1
	Scanner	1
5	**UPS**	**16**
	20 KVA	2
	10 KVA	3
	5 KVA	1
	1 KVA	6
	2KVA	4

b. Benchmark with similar departments in reputable institutions to identify short comings in computing infrastructure and facilities if any. [39]

Based on the information given above, it can be concluded that the computer lab facilities are adequate and up to par for the BSCS at SZABIST, Islamabad. Although the above facilities are shared among SZABIST programs, so the resources are not sufficient for the BSCS program specially the as per requirements of accreditation body which says dedicated labs are required for the program, however the schedules are managed so that each program gets sufficient lab time

[39] Source of Information: System Support Staff, IT department. Program Manger

CRITERION – 4 STUDENT SUPPORT AND ADVISING

Standard 4-1	**Offer Courses Frequency**
Standard 4-2	**Student Teacher Interaction**
Standard 4-3	**Student Counseling**

.

Provide the following information

Standard 4-1: Courses must be offered with sufficient frequency and number for students to complete the program in a timely manner.

a. Provide the department's strategy for course offerings. [40]

Due to two intakes per year, we offer almost all the courses in the given semester i.e. all forty courses are offered in each semester. This provides each student an ample opportunity to take a particular course that he/she may have failed in an earlier semester. Moreover, we also entertain student's requests for any course to be offered in any semester if the registration strength us above 10. We continually review course and curriculum as to make these markets competitive. Board of Student is a biannual event that serves as a forum for discussion and recommends for approval from the academic council for all such additions.

b. Explain how often required courses are offered. [41]

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 for the third year onwards. If 10 or more students request for a particular course to be offered, it can be offered in semester i.e. Fall, Spring and Summer.

c. Explain how often elective courses are offered. [42]

Each Student has to take 9 electives in order to complete the program. Students select elective courses of their choice from the list of electives being offered. Electives are offered for the third year onwards, pre-approved electives are advertised in the prospectus and it's on students choice we offer those electives in a given semester. Normally, we offer these in the Fall and Spring semester and in case of Gradating students we may offer it in the summer semester which maybe the last semester for that batch.

d. Explain how required courses outside the department are managed to be offered in sufficient number and frequency. [43]

There is in-house Permanent faculty for all courses; therefore students do no need to go outside the department in order to take any course. Our permanent faculty usually teaches core courses. There is only one condition in which students can take course from outside department if they are in the final semester and need course to complete their degree, which is not available in that current semester.

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[40] Source of Information: Program Manger

[41] Source of Information: Program Manger

[42] Source of Information: Program Manger

[43] Source of Information: Program Manger

Standard 4-2: Courses in the major area of study must be structured to ensure effective interaction between students, faculty and teaching assistants. [44]

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 1.5 hours duration.

Course instructors are requested to assign time other than teaching to assure better communication between classes. Each program has a program manager and each course is evaluated by Academic Support office to find deficiencies in each course. Students can provide comments regarding each course, which is reviewed by the relative program manager right after the evaluation week. Program Manager is responsible to discuss these evaluations with teacher and students and makes sure that every problem is solved during the semester.

Standard 4-3: Guidance on how to complete the program must be available to all students and access to academic advising must be available to make course decisions and career choices. [45]

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 the advising system and indicate how its effectiveness is 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 student counseling system and how students get professional counseling when needed.

Student Counseling

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.

How students get benefitted?

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.

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. [47]

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 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.

[47] Source of Information: EDC

CRITERION –5 Process Control

Standard 5-1	**Admission Process**
Standard 5-2	**Registration Process**
Standard 5-3	**Recruitment and Retention Process**
Standard 5-4	**Teaching Process**
Standard 5-5	**Program Requirement Completion Process**

Standard 5-1: The process by which students are admitted to the program must be based on quantitative and qualitative criteria and clearly documented.

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

Admission Process after Announcement of Admission Dates [48]

- Candidate registers online and receives ID and Password
- Candidate fills the form online and submits. (Can also use SZABIST Lab Facilities)
- Application goes to pending area. Admission staff checks the application form in pending area.
- Admission staff sends an email to candidate about his/her status i.e. either accepted or rejected or returned to applicant if not filled properly (whatever the decision is)
- Application goes back to applicant for correction and re-submission.
- Students comes along with documents and application processing fee of Rs.1500/-
- Admission staff check documents & issues admit card, (Information regarding test date, time and place)
- Candidate appears for the test
- Test results along with date, time an venue of interview are made available on notice boards, website and online admission site.
- Arrangements for admission test & Interview process, i.e. arrangement of Rooms, Faculty, Food & Refreshments, sitting area for candidates and their parents, Duties of staff and preparation of attendance sheet & score sheet with consultation & help of the office of V.P academics .
- List of accepted & waiting candidates as per merit are made available on Notice Boards, Website and Online Admission Site, Admission letters are sent to the accepted and waiting candidates through courier.
- Accepted & Writing candidates pay fee before deadline. Preparation of final list by (Records Office), is displayed on Notice Boards, Website and Online Admission System.
- Arrange Orientation

[48] Source of Information: Admissions

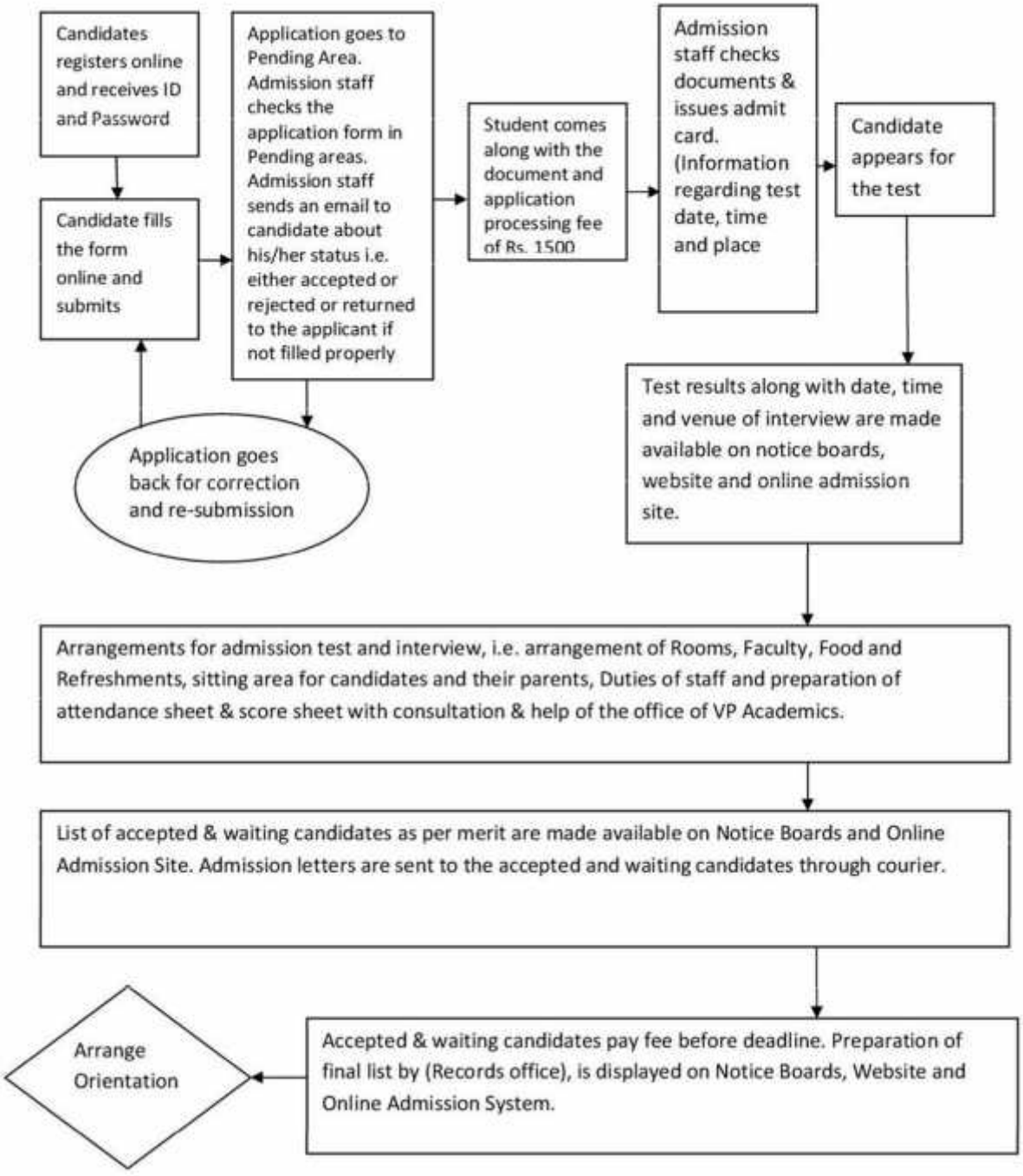


Figure 4: Admission Process Flow Chart[49]

b. Describe policy regarding program/credit transfer.

[49] Source of Information: Admissions Dept

Transfer Policy

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 get 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.

Internal Transfer policy

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.

Certificate Course Transfer

For transfer candidates from the SZABIST Certificate Programs, all courses having a letter grade C- or above for the BBA are transferable within one year.

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

Admission Criteria and processes are reviewed in the Academic Council meeting, which is held twice a year. Some of the positive changes in the Admission process during the last year:

i) Extended office hours from 9am to 9pm to facilitate applicants during June and July.

Standard 5-2: The process by which students are registered in the program and monitoring of students' progress to ensure timely completion of the program must be documented this process must be periodically evaluated to ensure that it is meeting its objectives. [50]

a. Describe how students are registered in the program.

Registration Procedure

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

1. Academic Department sends a formal request to ZABSOLUTION which opens all interface of registration for course registration.
2. Program Managers offers courses on ZABDESK and then notices for the registration of courses is announced to the students through Emails and website.
3. 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.
4. Registered students who have paid their fee, but have remained absent for the first four classes, will be forced to de-register from the course.
5. Students not registered will not be allowed to attend classes. No registration will be allowed two weeks after classes begin.
6. For continuing students, only students with a CGPA of 2.00 will be allowed to register in one additional course, which has to be approved by the Program Manager.
7. Student on probation will be allowed to register for only N-2 courses.
8. Students can register for maximum 02 courses 06 Credit Hours in summer semester. Summer semester is a remedial semester.

[50] Source of Information: Admissions Dept

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

Students' academic progress is monitored regularly through Zabdesk. Faculty updates the Zabdesk by uploading the students' attendance and marks and their attendance and grades are monitored automatically through the online system.

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

The student Registration and Student Progress Monitoring processes are regularly reviewed in the

ZABDESK through Program Managers.

Academic Heads meeting held once a month. Any necessary amendment in policy and resolving of individual cases is carried out at these meetings.

The speed and rate of timely registration by students has been made possible via stringent monitoring of registrations and maintaining strict deadlines and enforcing a hefty fine for late registration. Due to this improvement, class allocation is more accurate and records are updated well in time.

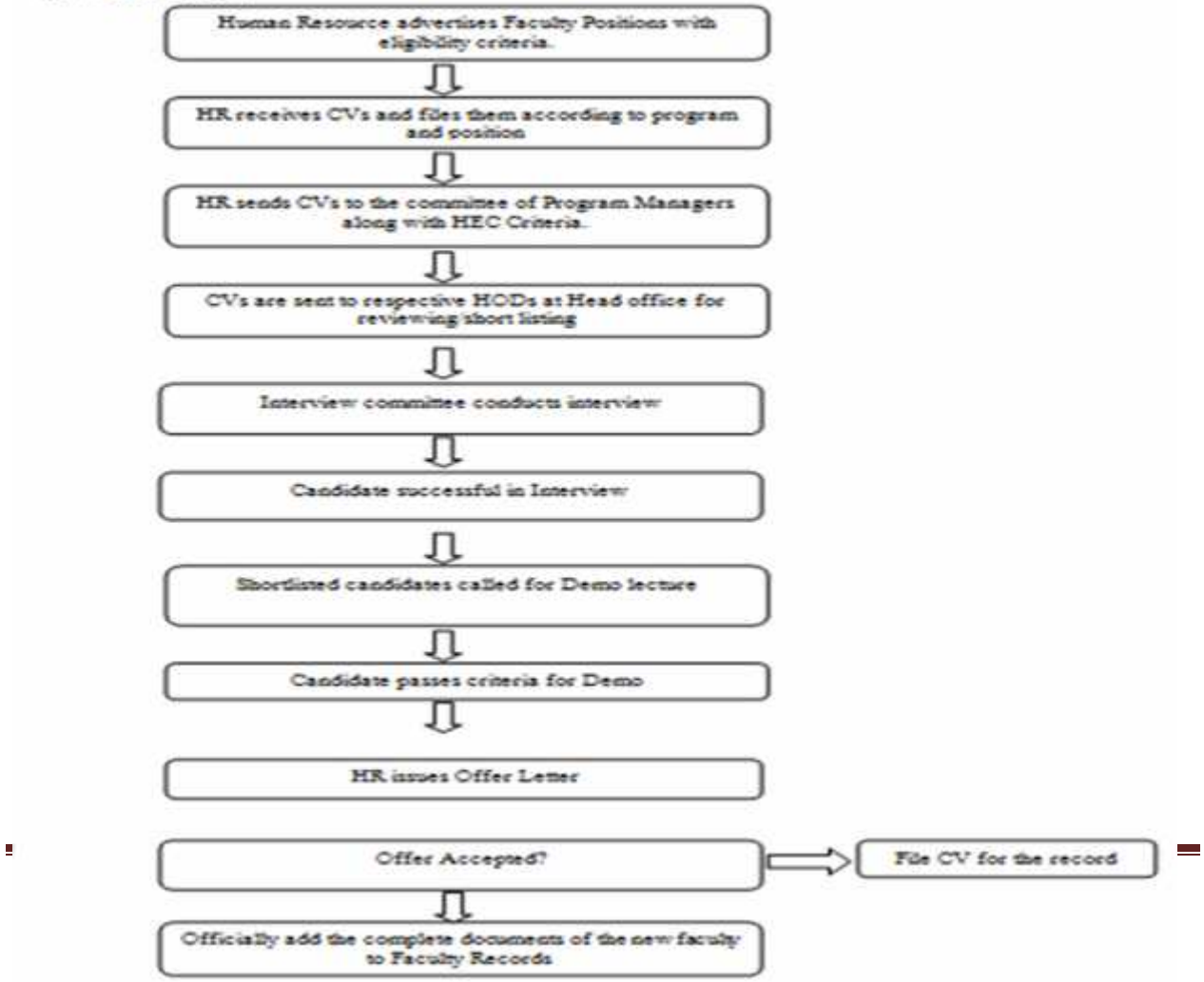
Standard 5-3: The process of recruiting and retaining highly qualified faculty members must be in place and clearly documented. Also processes and procedures for faculty evaluation, promotion must be consistent with institution mission statement. These processes must be periodically evaluated to ensure that it is meeting with its objectives. [51]

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

Description of 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.

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

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.

b. Indicate methods used to retain excellent faculty members.[52]

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

c. Indicate how evaluation and promotion processes are in line with institution mission statement. [53]

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.

HEC Criteria for the Promotion of Higher Grade Position

The Higher Education Commission of Pakistan enumerates the following criteria for each faculty promotion in various ranks.

[52] Source of Information: HR

[53] Source of Information: HR

i. Qualification

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

Faculty of Computing [54]

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. Assistant Professor to Associate Professor

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. Associate Professor to Professor

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	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 international organization	8 research publications in HEC recognized Journals.
C	Associate Professor to Professor		PhD in the relevant field from an HEC recognized University /	12-years teaching/ research in HEC recognized University or postgraduate Institution or professional experience	12 research publications in HEC recognized

d. Indicate how frequently this process in evaluated and if the evaluation results are used to improve the process. [55]

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)

Standard 5-4: The process and procedures used to ensure that teaching and delivery of course material to the students emphasizes active learning and that course learning outcomes are met. The process must be periodically evaluated to ensure that it is meeting its objectives.

a. Describe the process and procedures used to ensure that teaching and delivery of course material is effective and focus on students learning. [56]

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

he 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

[56] Source of Information: ASO Dept/Program Manager

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. [57]

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: The process that ensures that graduates have completed the requirements of the program must be based on standards, effective and clearly documented procedures. This process must be periodically evaluated to ensure that it is meeting its objectives

a. Describe the procedures used to ensure that graduates meet the program requirements. <u>Program Requirement</u>

Records office will make sure that the student has completed all core courses and all elective courses with minimum credits for the degree requirement.

When student apply for their final transcript his/her credential will be checked and verified through the Zabdesk by records office.

Following points to be noted when students apply for his/her final transcript.

- Passed all required courses for completion of degree.
- Passed comprehensive Exam.
- Complete minimum 06 weeks internship (internship appraisal form to be filled, attached with final transcript form).
- In case of job, job letter/experience certificate to be attached with request and form internship waiver form to be filled (attached with final transcript request form)
- Student has to filled Survey of Graduating Students (form attached with final transcript form)
- Student has to fill the Alumni Database Form.
- Submission of final transcript request form in records office.
- Submission all necessary documents (previous documents) with final transcript request form.
- After submission of final transcript request form, records office is scrutinize all the documents and information given by the student on final transcript form. In case of any deficiency records office is informed to the student to complete all the necessary requirements.
- After getting final transcript form records office will update Survey of Graduating Students in soft copy

Completion Process

Final transcript will be duly signed by Controller Records, Controller Examination, Head of Campus and then President. Degree will be conferred in Convocation which will be duly signed by President and Chancellor. SZABIST Islamabad is arranging graduation ceremony every year to award the degree to their graduates, gold medals, special certificates and awards to position holders.

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

When student is applied for final transcripts / pass certificates are ready for final signature. The quarterly Academic Heads meeting, the bi-annual Academic Council meeting and bi-annual meeting of newly formed Board of Studies, regularly discuss, evaluate the procedures that ensure completion

of BSCS Degree program requirements. These discussions lead to improvements and amendments in the processes and procedures.

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**

Standard 6-1: There must be enough full time faculty who are committed to the program to provide adequate coverage of the program areas/courses with continuity and stability. The interests and qualifications of all faculty members must be sufficient to teach all courses, plan, modify and update courses and curricula. All faculty members must have a level of competence that would normally be obtained through graduate work in the discipline. The majority of the faculty must hold a Ph.D. in the discipline.

a. Complete the following table indicating program areas and number of faculty in each area. [59]

Program area of specialization	**Courses in the area and average number of sections per year**	**Number of faculty members in each area**	**Number of faculty with Ph.D. degree**
Core Computer Sciences & Software Engineering	7 course 1 section	Full Time: 2	1
Information Systems	1 course 1 section	Full Time: 1	0
Databases	1 course	Full Time: 1	1
Information Technology	1 course 1 section	Full Time: 1	1
Programming & Algorithms	4 course 1 section	Full Time: 1	0
Physics and Electronics	1 course 1 section	Full Time: 1	0
Management and Humanities	4 courses 1 section	Full Time: 0	0
Mathematics	5 courses 1 section	Full Time: 0	0

List of Permanent Faculty - Computing[60]

Sr. No	**Name**	**Area of Specialization**	**Courses Fall Semester**	**Courses Spring Semester**

1.	Dr. Muhammad Usman	Computer & Information Sciences	Research Report	Software Engineering
2.	Dr. Azhar Mahmood	Computer Applied Technology	Data Warehousing & Data Mining, Relational	Data Warehousing & Data Mining,

[59] Source of Information: Program Manager

[60] Source of Information: ASO

				Database Systems,
3.	Dr. M. Naeem	Computer Systems	Calculus, Software	Software
4.	Dr. Mohammad	Statistics	Statistics & Probability	Statistics and
5.	Mr. M. Nadeem Khokhar	Computer Information System	Programming Fundamentals, Discrete Mathematical Structures, Data Structures and	Algorithms and Data Structures, Finite Automata Theory and Formal language
6.	Mr. Shahzad Latif	Electronics	Calculus and Analytical Geometry, Multivariate Calculus, Linear Algebra & Differential Equations, Numerical and Symbolic Computation	Multivariate Calculus, Linear Algebra and Differential Equations, Digital Logic Design, Physics , Data Communication and Computer
7.	Mr. Zubair Ahmed Chattha	Software Engineering	Object Oriented Programming, Web Technologies-I, Web Technologies-II, Project I	Object Oriented Programming, Web Technologies-I, Web Technologies-I, Introduction to Software

b. Each faculty member should complete a resume, prepared in a format included in email. [61]

RESUME Attached in Appendix A.

Standard 6-2: All faculty members must remain current in the discipline and sufficient time must be provided for scholarly activities and professional

development. Also, effective programs for faculty development must be in place.

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.

[61] Source of Information: Faculty Members

The criteria are as under: [62]

1. Presenting and publishing research papers in national/international conferences
2. Publishing research papers in national/international journals
3. Supervising research related assignments and projects
4. Participation in academic/professional activities i.e. seminars, training sessions, conferences, workshops organized in campus
5. Keeping abreast of latest developments and concepts in the field and incorporating them in lecture delivery
6. Pursuing higher studies under continuing education program and study leave policy

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. [64]

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.

Presently the HR office is not involved in this process. Program Teams should better consult the Academics office and Program Mangers for information.

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

[62] Source of Information: HR

[63] Source of Information: HR

[64] Source of Information: HR

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

iii. Promotion policy (as per HEC criteria)

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

Standard 6-3: All faculty members should be motivated and have job satisfaction to excel in their profession. [65]

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

2. Performance bonus
3. Conference sponsorship one per year for main author in a reputed conference nationally that is completely sponsored by SZABIST and one per two years internationally sponsored 50 %.
4. Honoraria for publishing research papers in reputed journals.
5. Continuing education facility
6. Flexible working hours
7. Study leave

b. Obtain faculty input using faculty survey (Appendix C) on programs for faculty motivation and job satisfaction.

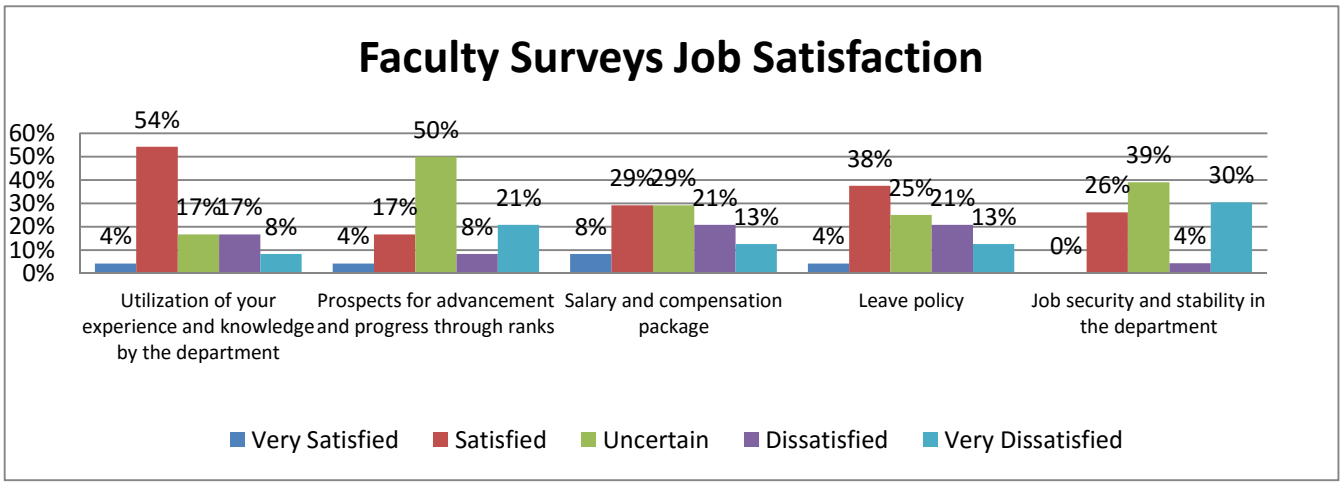


Figure 5: Faculty Job Satisfaction[66]

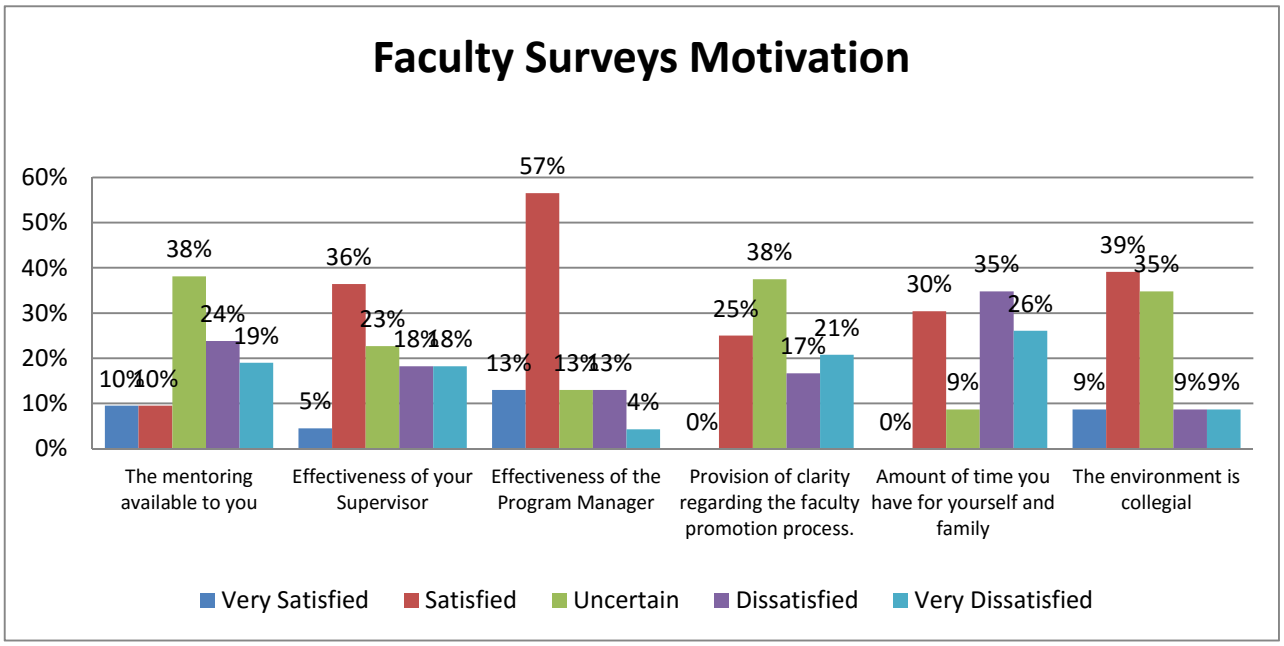


Figure 6: Faculty Motivation[67]

1. Performance based increments and bonus encourage the employees to perform more Efficiently and effectively.
2. Personal and professional development through continuing education program, honoraria and institutional sponsorship for participation in conferences.
3. Flexible work hours help the employees to manage their time on campus without Compromising on their academic commitments. Flexible work hours also help the employees to have work-life balance.

CRITERION –7 Institutional Facilities

Standard 7-1	**E-Learning Trends**
Standard 7-2	**Library Collection and Staff**
Standard 7-3	**Equipped Class Rooms and Office**

Standard 7-1: The institution must have the infrastructure to support new trends in learning such as e-learning.

a. Describe infrastructure and facilities that support new trends in learning. [69]

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.

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

1. SZABIST Digitallibrary 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.

[69] Source of Information: Library Dept

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 have 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.

b. Indicate how adequate the facilities are. [70]

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:

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[70] Source of Information: System Dept.

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 MS Windows Server 2008 R2 using VPN over Intranet with other Campuses.

The above facilities are exclusively used by the computer science students; all these facilities are shared and accessible within campus to all the students of SZABIST. Having stated the above, I think they are sufficient for the students of Computer science.

Standard 7-2: The library must possess an up-to-date technical collection relevant to the program and must be adequately staffed with professional personnel. [71]

a. Describe the adequacy of the library‘s technical collection.

The total number of books available in the library to be used by Computer Science department for reference purposes is shown in the table below.

Library Resources

Table 2.5: SZABIST Islamabad Campus-Library Resources 2014-2015		
No.	**Particulars**	**Quantity**
1	**Printed Form**	
	A. Books	14727
	a. Management Sciences	5896
	b. Computer Sciences	3647
	c. Media Sciences	92
	d. Social Sciences	2572
	e. Economics	1478
	f. Engineering	922
	g. Law	96
	h. Miscellaneous	24
	B. Reports	**3698**
	a. Independent Study	2623
	b. Project	303
	c. Thesis	618
	d. Practicum	154
	C. 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
	D. DVD's (Video Lectures)	200
	E. 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

b. Describe the support rendered by the library. [72]

Following are the ways in which the library staff supports the faculty and students**.**

1. Library is well furnished with necessary resources which include human and learning materials.
2. At SZABIST Islamabad Campus, we have one main library comprising more than 14700 books in printed form and 25000 books in e-form.
3. Respond to daily-on-site reissue requests for books.
4. Arranged Training & Orientation sessions for the newly enrolled students along with new faculty & staff.
5. Book and other reading materials lending services.
6. Receiving and preserving all reading materials.
7. Information access in digital form.
8. To search newly available books in market and on internet and make a list of required ones.
9. Provide SDI/CAS (Selective Dissemination of Information & Current Awareness services to Library Users especially to Researchers.
10. Update the Digital Library (e-books) and download research papers for students and faculty from external resources on demand.
11. Interaction with students to guide them that how to use the HEC e-Databases, Digital library and library resources.
12. A total of 5 full time staff members are dedicated to provide continuous support to students and faculty on each working day in the library.

Shifts	**Time Slots**	**Personnel(s)**
Morning	08:00am--------04:00pm	02
Evening	01:30pm--------09:30pm	03

Standard 7-3: Class-rooms must be adequately equipped and offices must be adequate to enable faculty to carry out their responsibilities

a. Describe the adequacy of the classrooms. [73]

We have the following facilities;

#	Teaching Facilities	Quantity
1	Classrooms/Lecture rooms	16
2	Seminar/Exam Halls	03
3	Computer Labs	03
4	Telecom Lab	01

[72] Source of Information: Library Dept

[73] Source of Information: ASO Dept

5	Digital Lab	01
6	Media Lab	01
7	TV Studio	01
#	**Facilities in the classrooms**	
1	Automatic Multimedia	
2	Computer System with UPS backup	
3	ACs	
4	Fans	
5	24/7 Power Generators	
6	Heaters	
7	Whiteboards	
8	Comfortable Chairs	
9	Rostrum/Dyce	
10	Marble floors	
11	Celling roofs	
#	**Facilities for Seminars**	
1	Portable sound system	
2	Electronic Dyce	
3	Wireless Mics	
4	Video Conferencing facilities	
5	Portable/fixed LCDs	

b. Describe the adequacy of faculty offices [74]

Rooms are allocated for permanent and visiting faculties where latest Inel Core i5 & i7 PCs are available with full internet facilities, landline extensions, Split air conditioners, shelves display boards to display their objectives schedules and more over it is essential for all faculty member's to display their semester schedule on their doors for consulting and faculty's availability.

CRITERION – 8 Institutional Support

Standard 8-1	**Support and Financial Resources**
Standard 8-2	**Number of Quality Graduates, Research Assistants and Ph.D. Students**
Standard 8-3	**Financial Support for Library, Computing and Laboratories Facilities**

Standard 8-1: There must be sufficient support and financial resources to attract and retain high quality faculty and provide the means for them to maintain competence as teachers and scholars.

a. Describe how your program meets this standard. If it does not explain the main causes and plans to rectify the situation. [75]

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.

SZABIST Islamabad Campus makes sure that adequate resources are available to facilitate the faculty members i.e. computer, internet, stationery, writing material, phone lines, proper rooms with adequate seating arrangements, photocopying and printing facilities etc to help them plan their lectures.

b. Describe the level of adequacy of secretarial support, technical staff and office equipment. [76]

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

a. Class management
b. Attendance sheet circulation
c. Time table maintenance
d. Schedule circulation

Standard 8-2: There must be an adequate number of high quality graduate students, research assistants and Ph.D. students.

a) Provide the number of graduate students, research assistants and Ph. D students for the last three years. [77]

Particular	No. of Students		
Graduates	13	23	9

b) Provide the faculty: graduate student ratio for the last three years. [78]

Particular	Faculty		
	2012	**2013**	**2014**
Full Time Faculty	8	7	7
Adjunct Faculty	11	11	12
Total	19	18	19

Particular	Faculty		
~~**Graduate Students \ Faculty**~~ **Ratio**	**2012**	**2013**	**2014**
	0.68:1	1.27:1	0.47:1

Standard 8-3: Financial resources must be provided to acquire and maintain Library holdings, laboratories and computing facilities. [79]

Particular	Budgetary Allocation		
	2011-12	**2012-13**	**2013-14**
Library	1,000,000	1,000,000	1,000,000
Computer Science and Laboratories	5,735,000	5,770,000	5,675,000

[77] Source of Information: Records

[78] Source of Information: Records & ASO

[79] Source of Information: Finance Office

SHAHEED ZULFIKAR ALI BHUTTO
INSTITUTE OF SCIENCE AND TECHNOLOGY

SZABIST

Guidelines for Program Team Report and QEC Review

Program:BS Computer Science

Date: May 5th, 2014

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	Yes		
	c. Alumni survey	Yes		
	d. Graduating student's survey	Yes		
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		
	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

SELF-ASSESSMENT REPORT

BS 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

Names of Assessment Team Members

Dr. Umair Abdullah
Mr. Tousif Ur Rehman
Date of Nomination

28 June 2016

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

Name of Department and Program being assessed.
BS Computer Sciences

Shortcomings of the PT report

PTR of BS(CS) has following short comings;

- [page: 9] in program outcomes 1 and 2 term ‘computer science problems’ has been used, which seems to be for ‘real world problems’ solvable with the help of computer science (not specifically for problems of computer science domains).
- [page: 9] program outcome 4 does not seem to match with any of the program objectives listed on the same page.
- [page: 10] Table 1.1 for showing alignment of objectives with mission statements is totally wrong as currently it is mapping program objectives with outcomes (not mission statements).
- [page: 12] Table 1.2, program objective 1 is missing, while objective 3 has been duplicated.
- [page: 12] Table 1.2, for objective 4, ‘No course related this’ has been written as improvement identified, while in fact course of ‘Professional Practices’ covers this objectives.
- [page: 14] Table 1.3: Outcomes vs Objectives
- Outcomes 1 and 2 marked to link with objective 4, which seems not logical

- Similarly, outcome 4 (related to acquisition of in-depth knowledge) has been mapped to objectives 1 and 2, which seems to be not suitable.
- As mentioned earlier, outcome 9 (knowledge of contemporary issues) seems to be incomplete and cannot mapped to any of the program objectives.
- Standard 1-3 Need to mention how IT shared information/instruction and policy notification to student and faculty member.
- [page 15,16,19] all graphs printed as gray scale are not readable. Instead of values legend headings may better be shown on bars.
- [page 17] assessment results and improvement plan has been written in a very generic abstract form. Could it be more specific? Like it may include dates when board of studies meetings were held and summary of decisions made.
- [page: 18] Total average drop out ratio has been shown to be 0, which is misleading. I think 'Overall drop out ratio', which is 9 / 148 (i.e. 0.0608 or 6%) should be shown after the table 1.5
- [page: 20] Table 1.7 is showing count of publications done by faculty, which includes publications done prior to the evaluation period (which is 2012 – 2015). As data of new faculty has been deleted from the report similarly old data of existing faculty should also be removed from the report and Table 1.7 may be updated accordingly.
- [page: 29] in definition of credit hour;
- point 2 and 3 are duplicate.
- Point 6 is not consistent with point 2 of credit hour definition. Point 2 says two hours of lab and in point 6, total hour of week should be 5 (not six). In my view point 2 should be correct i.e. one credit hour of lab is equal to two or three contact hours per week (currently it mentions only two hours)
- [page: 29] Degree plan table has following problems;
- Pre-requisites should be included in the table.
- Credit-hours should be in single column in the format mentioned in point 6 of credit hour definition.
- It would be better to format the table as per HEC curriculum 2013.
- List of elective courses should be provided separately. On [page 31] a merged list is given which is wrong.
- Following courses have different credit hours as compared to HEC curriculum 2013, matter should be brought up in BOS.

Course Title	Credit Hours at SZABIST	Credit Hours in HEC Curriculum 2013
Islamiat and Pak Studies \ Humanities	3(3,0)	4(4,0)
Object Oriented Programming	3(2,1)	4(3,1)
Digital Logic Design	4(3,1)	3(2,1)

Data Structures and Algorithms	4(3,1)	3(2,1)
Data Communication and Computer Networks	4(3,1)	3(2,1)
Computer Organization and Assembly Language	3(3,0)	3(2,1)
Software Engineering Concepts	4(3,1)	3(3,0)
Human Computer Interaction	3(3,0)	3(2,1)
Numerical Computing	3(3,0)	3(2,1)
Compiler Construction	3(3,0)	3(2,1)
Artificial Intelligence	3(3,0)	3(2,1)

- Following elective courses being offered at SZABIST-ISB are not included in prospectus and their approval from BOS cannot be verified easily;
- Programming Techniques in AI using Prolog
- Data Warehousing and Data Mining
- Internetworking Technology
- Information Security

Following two courses are compulsory at SZABIST, while they are not in HEC curriculum 2013;

- Introduction to Software Development
- Physics (it should be replaced with Basic Electronics course after approval from BOS)
- Following course is compulsory at in HEC curriculum 2013, which it is elective at SZABIST;
- Information Security
- 'Android development' course is being offered at SZABIST as university elective with Lab, while in degree plan no elective has lab, all electives have credit hour 3(3,0).
- Android development (LAB)
- Computer Architecture course has no lab in SZABIST degree plan i.e. credit hours 3(3,0) (neither in HEC curriculum), while at SZABIST-ISB it is being offered with lab;
- Computer Architecture (LAB)
- [page: 31] Curriculum course requirement Table 4.3 (SA Manual page 16) is missing in PTR.
- [page: 37] Table 2.6 is not following format of SA manual table Appendix Table A.1. It should include credit hours information, and the justification if credit hours distribution in different areas being offered at SZABIST deviates from HEC curriculum.

- [page: 38] In my view three separate tables should be created to list the courses for standard 2-3, 2-4, 2-5 (as 2-6 and 2-7 has).
- [Page: 67] caption mission for Figure 5.2
- For validation of criterion 6-1, Faculty resume in format of Appendix B should be included in PTR.
- [Page: 78], criteria for faculty to be deemed current is given but percentage is missing
- [Page: 80] indicating effectiveness of faculty development of programs should be given as part c (not b) and should analyze and discuss faculty survey results.
- p-44 (3.1-a) Need to mention sharing of information/instruction and policy notification to student and faculty member like through emails, notice board and notification on computer log-in.
- p-55 (4.3-d) Mention internships and job placements in software houses/industry
- p-86 (7.2-b) Mention computer facilities and seating capacity
- p-87 (7.2-b) need to update number of staff members and time slots

Comments on:

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

Almost all the points and criteria mentioned in SA Manual have been addressed in the PTR. Missing parts have been mentioned above.

Authenticity of the information / data provided in the report

Data seems to be authentic as references of data sources have been provided.
Further, Program managers can better comment on the authenticity of data provided in the reported.

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

Summaries and conclusions on the basis of feedbacks / surveys are not adequate

Observations made during the assessment

document should be proof read and need updates in some section as mentioned in its short comings.

Strengths and weaknesses of the Program

Strengths: All ingredients of SA manual have been included in PTR
Weaknesses: Some portions need improvements (problems listed above).

Date of the presentation of AT report in the exit meeting

14th July 2016

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?	4
2. Does the Program have documented outcomes for the graduating students?	5
3. Do these outcomes support the program objective?	3
4. Are the graduating students capable of performing these outcomes?	4
5. Does the department assess its overall performance periodically using quantifiable measures?	4
6. Is the result of the Program Assessment Documented?	4
Total Encircled Value (TV)	24
SCORE 1 (S1) = [TV / (No. of questions * 5)] * 100 * Weight	4

Criterion 2 - Curriculum Design and Organization	Weight
Factors	**Score**
1. Is the curriculum consistent?	4
2. Does the department assess its overall performance periodically using quantifiable measures?	4
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?	4
7. Is the information technology component integrated throughout the program?	4
8. Are oral and written skills of the students developed and applied in the program?	4
Total Encircled Value (TV)	35
SCORE 2 (S2) = [TV / (No. of questions * 5)] * 100 * Weight	17.5

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?	4
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?	3
Total Encircled Value (TV)	11
SCORE 3 (S3) = [TV / (No. of questions * 5)] * 100 * Weight	7.33

Criterion 4 – Students Support and Advising Weight = 0.10	
Factors	**Score**
1. Are the Courses being offered in sufficient frequency and number for the students to complete the program in a timely manner?	5
2. Are the courses in the major area structured to optimize interaction between the students, faculty and teaching assistants?	5
3. Does the university provide academic advising on course decision and career choices to all students?	4
Total Encircled Value (TV)	14
SCORE 4 (S4) = [TV / (No. of questions * 5)] * 100 * Weight	9.333

Criterion 5 - Process Control **Weight = 0.15**	
Factors	**Score**
1. Is the process to enroll students to a program based on quantitative and qualitative criteria?	5
2. Is the process above clearly documented and periodically evaluated to ensure that it is meeting its objectives?	4
3. Is the process to register students in the program and monitoring their progress documented?	5
4. Is the process above periodically evaluated to ensure that it is meeting its objectives?	5
5. Is the process to recruit and retain faculty in place and documented?	3
6. Are the processes for faculty evaluation and promotion consistent with the institution mission?	4
7. Are the processes in 5 and 6 mentioned above are periodically evaluated to ensure that they are meeting their objective?	3
8. Do the processes and procedures ensure that teaching and delivery of course material emphasize active learning and that course learning outcomes are met?	5
9. Is the process in 8 mentioned above periodically evaluated to ensure that it is meeting its objectives?	4
10. Is the process to ensure that graduates have completed the requirements of the program based on standards and documented procedures?	5
11. Is the process in 10 above periodically evaluated to ensure that it is meeting its objectives?	4
Total Encircled Value (TV)	47

SCORE 5 (S5) = [TV / (No. of questions * 5)] * 100 * Weight	12.81

Criterion 6 - Faculty	**Weight = 0.15**
Factors	**Score**
1. Are there enough full time faculty members to provide adequate coverage of the program areas / courses with continuity and stability?	2
2. Are the qualification and interests of faculty members sufficient to teach all courses, plan, modify and update courses and curricula?	3
3. Do the faculty members possess a level of competence that would be obtained through graduate work in the discipline?	3
4. Do the majority of faculty members hold a PhD degree in their discipline?	3
5. Do faculty members dedicate sufficient time to research to remain current in their disciplines?	3
6. Are the mechanisms in place for faculty development?	2
7. Are faculty member motivated and satisfied so as to excel in their profession?	3
Total Encircled Value (TV)	19
SCORE 6 (S6) = [TV / (No. of questions * 5)] * 100 * Weight	8.142

Criterion 7 – Instructional Facilities	**Weight = 0.15**
Factors	**Score**
1. Does the institution have the infrastructure to support new trends such as e-learning?	5
2. Does the library contain technical collection relevant to the program and it is adequately staffed?	4
3. Are the class rooms and offices adequately equipped and capable of helping faculty carry out their responsibilities?	4
Total Encircled Value (TV)	13
SCORE 7 (S7) = [TV / (No. of questions * 5)] * 100 * Weight	13

Criterion 8 – Instructional Support	**Weight = 0.15**
Factors	**Score**
1. Is there sufficient support and finances to attract and retain high quality faculty?	3
2. Are there an adequate number of high quality graduate students, teaching assistants and PhD students?	2
Total Encircled Value (TV)	5
SCORE 8 (S8) = [TV / (No. of questions * 5)] * 100 * Weight	7.5

Overall Assessment Score = S1 + S2 + S3 + S4 + S5 + S6 + S7 + S8 =79.62

C. Assessment Results Implementation Plan Summary-BSCS

AT Findings	Corrective Action	Implementation Date	Responsible Body	Resources Needed
1. Degree plan format is not according to HEC curriculum 2013.	**Degree plan format should be according to HEC (curriculum 2013)** **Prospectus of SZABIST should also be updated accordingly**	**Will be implemented in the coming prospectus 2017**	**Admissions/Department of Computer Sciences**	**Already Provided**
2. Lack of support and financial resources for faculties and secretarial support	**Need to improve support and financial resources for faculties and secretarial support**	**Already implemented**	**HR/Finance**	**Already provided**

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President's Comments :
The smooth implementation of the SAR process and the AT findings will augment the quality and standards of the program. I appreciate the efforts rendered by the Program Team, Assessment Team and QEC staff for the preparation and completion of the Self-Assessment Report of MS-Educational Leadership and Management program.

Name and Signature:

Shahnaz Wazir Ali

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

Since the prospectus 2016 has already been published the degree plan format as suggested above would be updated in the prospectus next year. The post of PSO has already been created in the department as a staff support to the respective faculties'. The financial resources have also been provided during the current year budget grant.

Name and Signature:

Mr. Iqbal Ahmad

19/7

QEC Comments :

The evaluation of BS Computing program has highlighted areas for improvement. The implementation of the assessment team's recommendations will ensure improving the quality of the program, as well as, timely documentation completion in future thus, leading to enhancing over all education experience of the students.

Name and Signature:

Ms. Faryal Shahabuddin

Ms. Faria Tausif

19/7/2016

SHAHEED ZULFIKAR ALI BHUTTO
INSTITUTE OF SCIENCE AND TECHNOLOGY

SZABIST

SELF-ASSESSMENT REPORT

BS 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): BS CS

Team Leader: DR AZHAR MAHMOOD

Name: SHAHZAD LATIF

Position: ASST. PROFESSOR

Institution: SZABIST ISLAMABAD

Contact No: (Office) 051-4863363

Mobile No: _____

Email Address: Shahzade 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)

19-8-2015
Date

Approved By: 20/8/15

(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): BS CS

Team Leader: Dr. AZHAR MAHMOOD

Name: DR. AZHAR MAHMOOD

Position: ASST. PROFESSOR

Institution: SZABIST ISB

Contact No: (Office) 051-4863363

Mobile No: _____

Email Address: dr.azhar@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.
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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.

_____ 19/08/2015

(Signature of PT Member) Date

Approved By: _____ 20/8/15

(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

BS Computer Science

Assessment Team Registration Forms

J

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INSTITUTE OF SCIENCE AND TECHNOLOGY
Islamabad Campus

Registration Form

Assessment Team

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

Team Leader: Dr. Umair Abdullah

Name: Dr. Umair Abdullah Position: Assistant Professor

Institution: SZABIST- Isb Campus Contact No: (Office) _____

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

_____ 28/6/2016

(Signature of AT Member) Date

Approved By: _____

(Head of the QEC)

SHAHEED ZULFIKAR ALI BHUTTO
INSTITUTE OF SCIENCE AND TECHNOLOGY
Islamabad Campus

Registration Form

Assessment Team

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

Team Leader: Dr. Umair Abdullah

Name: TOUSIF-UR-REHMAN

Position: Software Engineer

Institution: SZABIST

Contact No: (Office) Ext. 202

Mobile No: 0345-5117391

Email Address: tousif@szabist-isb.edu.pk

Role in Assessment Team:

- Beside his / her own responsibilities, He/ She will also be responsible for the following:
- The review of SAR
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(Signature of AT Member)

28/06/2016
Date

Approved By: _____

(Head of the QEC)