



SHAHEED ZULFIKAR ALI BHUTTO
INSTITUTE OF SCIENCE AND TECHNOLOGY

SZABIST

SELF-ASSESSMENT REPORT

**Master of Science in Computing
(MS-CS)**

Islamabad Campus

Spring 2016



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Executive Summary



*Quality Enhancement Cell
Institutional Research Department*

Self-Assessment Report
Executive Summary
MS-CS Program
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 Spring 2016, 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 MS-Computer Science (MSCS) Self-Assessment process were as follows:

1. Nomination of Program Team (PT)

The PT was nominated by the Acting Head of Computer Science Department, Mr. Iqbal Ahmad on March 21st, 2016. Following were the members of the PT:

- (i) *Dr. Muhammad Imran*
- (ii) *Mr. Arshad Beg*

2. Submission of PT Report

The PT submitted the report on April 4th, 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.

3. Nomination of Assessment Team (AT)

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

- (i) *Dr. M. N. Ahmed Khan*
- (ii) *Mr. Sajid Iqbal*
- (iii) *Mr. Zohaib Khan*



4. Date of Submission of AT Report

The AT Report was submitted on July 13th, 2016.

5. AT Findings and Recommendations

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

- (i) MS program particularly CS-stream courses lack diversity, it is recommended that CS-Stream courses should include latest courses as proposed by HEC. Also, course content should be adopted from HEC's suggested course content.
- (ii) Lack of training opportunities for PhD faculty members, it is suggested PhD faculty should be provided with incentives for post-doctorate fellowships. SZABIST may allocate funds for attending of specialized advanced trainings by the PhD faculty.
- (iii) Lesser Impact Factor Publications, it is recommended that, Faculty members may be motivated for further research activities by providing incentives for impact factor publications. The course load may be compensated against publishing impact factor publications
- (iv) Retention rate of PhD faculty is low, it is recommended that Faculty promotion policies should be time-based provided the requisite criteria are met by the faculty members. PhD faculty is lesser empowered and much of administrative powers pertaining to MS CS program management rests with non-PhD faculty members. This trend needs to be reversed for future growth of SZABIST.
- (v) Lack of latest books and software, it is suggested that Latest subject-related books for all the three streams may be procured by consulting the faculty members. Also, specialized tools/software such as Matlab, Prolog etc. May be procured for supporting research activities.

6. Preparation of Assessment Results Implementation Plan Summary

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



SHAHEED ZULFIKAR ALI BHUTTO
INSTITUTE OF SCIENCE AND TECHNOLOGY

SZABIST

SELF-ASSESSMENT REPORT

Master of Science in Computing (MS-CS)

Islamabad Campus

Program Team Report

Spring 2016



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CRITERION 1: PROGRAM MISSION, OBJECTIVES AND OUTCOMES

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Criterion 1: Program Mission, Objectives and Outcomes

Standard 1-1 Program Measurable Objectives¹

a. Mission Statements

Mission Statement of SZABIST

Shaheed Zulfikar Ali Bhutto Institute of Science and Technology (SZABIST) 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 scientific and technological assistance to the Pakistan industry to enable it to compete with the world industries in global trading; of providing highly trained scientific and technological personnel to be able to attract the growth of high-tech industries and foreign and Pakistani investment; and of providing a sound socio-economic and scientific base and infrastructure to Pakistan to be able to meet the economic and technological challenges of the 21st century.

Mission Statement of Computing Department²

The department of Computer Science nurtures its students for pursuing professional and research career in computing and associate fields by allowing them to master the relevant knowledge and skills through comprehensive academic programs.

Program Mission Statement

The aim of MS(CS) program is to produce highly-skilled professionals focused on scholarly research/development in the vast domain of Computer Science. MS(CS) program will provide quality advanced technology education to the Computer Science students through class room teaching, laboratory sessions, research workshops, seminars and projects. The focus of the program is on producing leading technology graduates as *innovators* in their respective fields.

Program Composition

SZABIST Islamabad offers MSCS degree in three domains: Core Computer Science area and in two specialization areas: Software Engineering (SE) and Networks and Security (N&S), in order to cater the market needs. Students have to complete 3 focused courses in any specific domain.

The program is of 2 year duration and is offered in the evening. It requires 33 credit hours to complete, which consists of 9 courses (27 credit hours) and a thesis (6 credit hours). Although

¹ The sources of information is Program Manager

² Source: Prospectus Islamabad Campus, 2015



we emphasize and encourage students to undertake thesis to develop the research and development skills, they also have the option of taking two courses in lieu of the thesis in specific domains. The maximum time limit for MS completion is 5 years.

b. Program Measurable Objectives

1. To equip students with advanced and in-depth knowledge of specialization within the field of Computer Science. They will have the ability to identify and understand new knowledge within the field in an appropriate context, including multi-disciplinary situations.
2. To prepare students for professional advancement in Computer Science by making them capable of integrating basic and advanced knowledge and to apply this knowledge to solve complex computer science problems.
3. To enable students undertake a significant research or development work and to document the results in clear, articulate form. It will help students to equip well to pursue doctoral research programs.

c. Program Outcomes (MS Computing) – 33 Credit Hours

1. Knowledge of advanced topics within the specialization of Computer Science;
2. Ability to understand and integrate basic and new knowledge within the field;
3. Ability to apply knowledge from Computer Science and other disciplines to identify, formulate, and solve novel and complex problems that require advanced knowledge within the field;
4. Ability to apply advanced technical knowledge in multiple contexts;
5. A recognition of the need for, and an ability to engage in, life-long learning;
6. The ability to plan and conduct research on a significant topic within the specialization (thesis option students only); and
7. An ability to convey technical material through formal presentations and written reports which satisfy documented standards.



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

| Objective | Alignment with Program and Institution Mission Statements |
|--|---|
| <p>To equip students with advanced and in-depth knowledge of specialization within the field of Computer Science. They will have the ability to identify and understand new knowledge within the field in an appropriate context, including multi-disciplinary situations.</p> | <p>Institution Mission: producing highly qualified, scientific and technical personnel to meet the country's requirements</p> <p>Program Mission: MS(CS) program will provide quality advanced technology education to the Computer Science students.</p> |
| <p>To prepare students for professional advancement in Computer Science by making them capable of integrating basic and advanced knowledge and to apply this knowledge to solve complex computer science problems.</p> | <p>Institution Mission: providing a sound socio-economic and scientific base and infrastructure to Pakistan to be able to meet the economic and technological challenges of the 21st century.</p> <p>Program Mission: The focus of the program is on producing leading technology graduates as <i>innovators</i> in their respective fields.</p> |
| <p>To enable students undertake a significant research or development work and to document the results in clear, articulate form. It will help students to equip well to pursue doctoral research programs.</p> | <p>Institution Mission: Conducting state-of-the-art scientific and technological research and development in support of the private and public sector</p> <p>Program Mission: To produce highly-skilled professionals focused on scholarly research/development in the vast domain of Computer Science</p> |

Table: 1.1 Alignment with program, and institution mission statement



e. Elements of Strategic Plan

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

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

1. An Integrated Academic Experience: An integrated academic environment fosters connections among disciplines, between faculty and students, and with campus and community. Such an integrated experience is rich in opportunities for 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: Keeping in mind that a well-designed academic curriculum needs not only

to be comprehensive and effective but also flexible. Therefore, as new technology emerges and demands of the field evolve, the curriculum is revised without losing its commitment to quality. For this purpose, a wide range of elective 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. Computing Department engage students as researchers by integrating research opportunities into the curriculum (particularly through Independent Studies and Thesis), by providing training for students in research methodology and responsible research conduct, and by involving graduate students in multi-disciplinary research carried out at SZABIST, such as Renewable Energy, Stem Cell, Remote Distance Learning etc to name a few. SZABIST also aids student research by providing student travel grants to present their work at conferences and creating a campus-based student research journal.

4. Professional Career building: Executive Development Center (EDC) facilitates arranging Internships for all students and acts as a liaison between the industry and the students. Every semester, renowned national and multinational companies contact the EDC to conduct their employment tests, interviews and other on-campus recruitment activities to directly induct SZABIST graduates into their organizations. Additionally, at least once a year, a ‘Job Fair’ is held at the college campus where



many leading companies are invited to explain their recruitment procedures and the scenario about present and future vacancies. A graduate directory is published, once a year. It is a compendium which gives CVs of all students who have graduated during the year and it is distributed free of charge to all leading companies, where it serves as a useful reference book to find appropriate candidates for present and future vacancies.

5. Co-curricular 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, recreational and athletic programs, and co-curricular opportunities, such as, academic societies and student councils. Furthermore, an annual dinner is held with its leading alumni and adjunct faculty, particularly those who are gold medalists or are working in top multinational organizations, to network with the corporate world for innovative curriculum development, internships, placements, sponsorships and joint activities.

f. Program Objectives Assessment

The following table depicts the assessment of program's educational objectives:

| Objectives | How Measured | When Measured | Improvement Identified | Improvement Made |
|----------------------------------|---|-------------------------|-------------------------------|---|
| A. Advanced Knowledge | Course outlines, midterm and final examination, assignments and reports | Every Semester | | Board of studies reviews courses to bring new changes |
| B. Professional Advancement | A. Graduating student survey B. Alumni survey C. Employer survey | Every semester | | In process |
| C. Research Work (Thesis Option) | Proposal defence, Research Progress Reports, Open Defence | On completion of thesis | | In process |

Table: 1.2 Program Objectives Assessment³

³ Table 1.2 of PT Report is the Table 4.1 (Program Objectives Assessment) of AT Report



Standard 1-2: Program Outcomes

a. Outcomes versus Objectives

Following table describes association between MS (CS) program objectives and outcomes. Numbers under the heading ‘Program Outcomes’ refer to program outcomes which support the program objectives (Para. 1.2.1).

| Program Objectives | Program Outcomes | | | | | | |
|--------------------|------------------|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| A | √ | √ | | | | | √ |
| B | | | √ | √ | √ | | √ |
| C | | | | | | √ | √ |

Table 1.3: Outcomes versus Objectives⁴

b. Employer Survey⁵

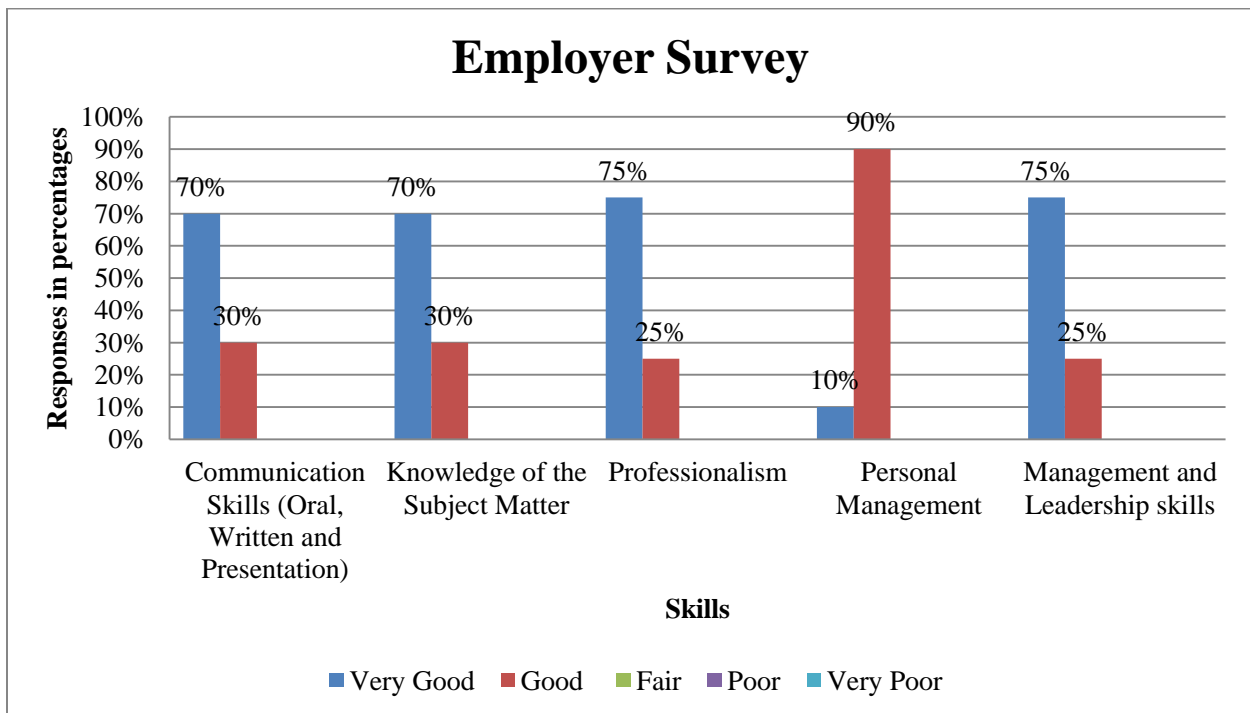


Figure 1.1

⁴ Table 1.3 of PT Report is the Table 4.2 (Outcomes versus Objectives) of AT Report

⁵ The source of information is Employer Survey, SZABIST



c. Alumni Survey⁶

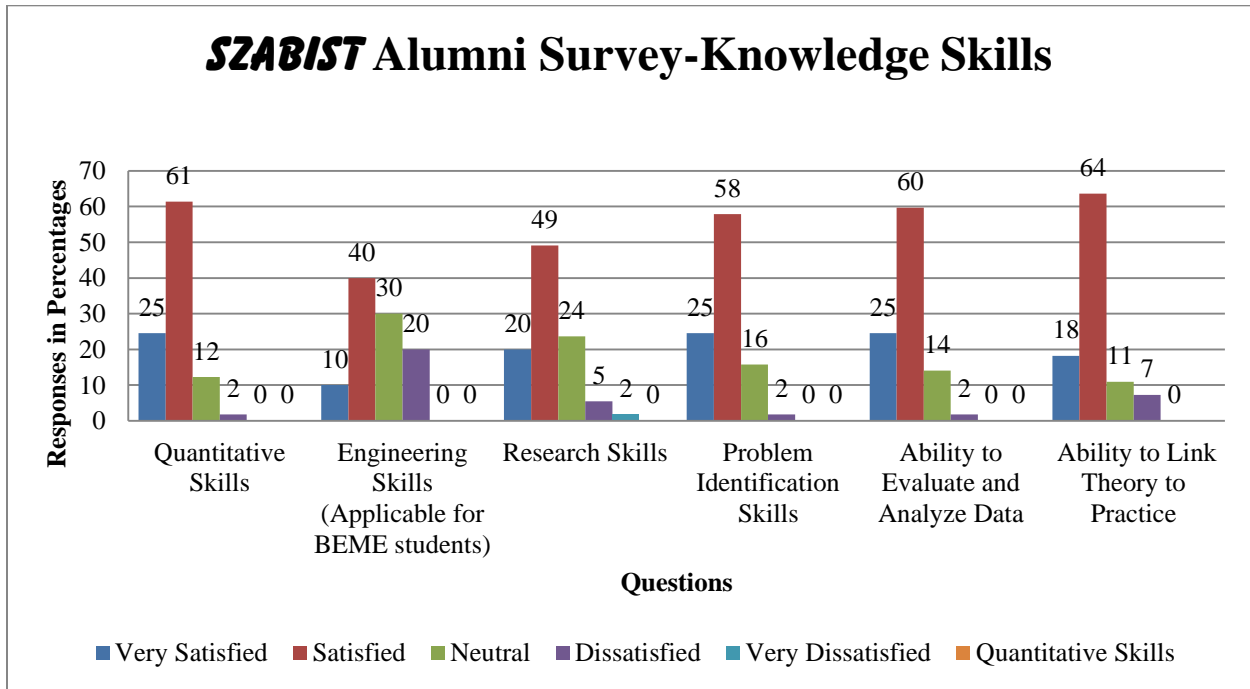


Figure 1.2

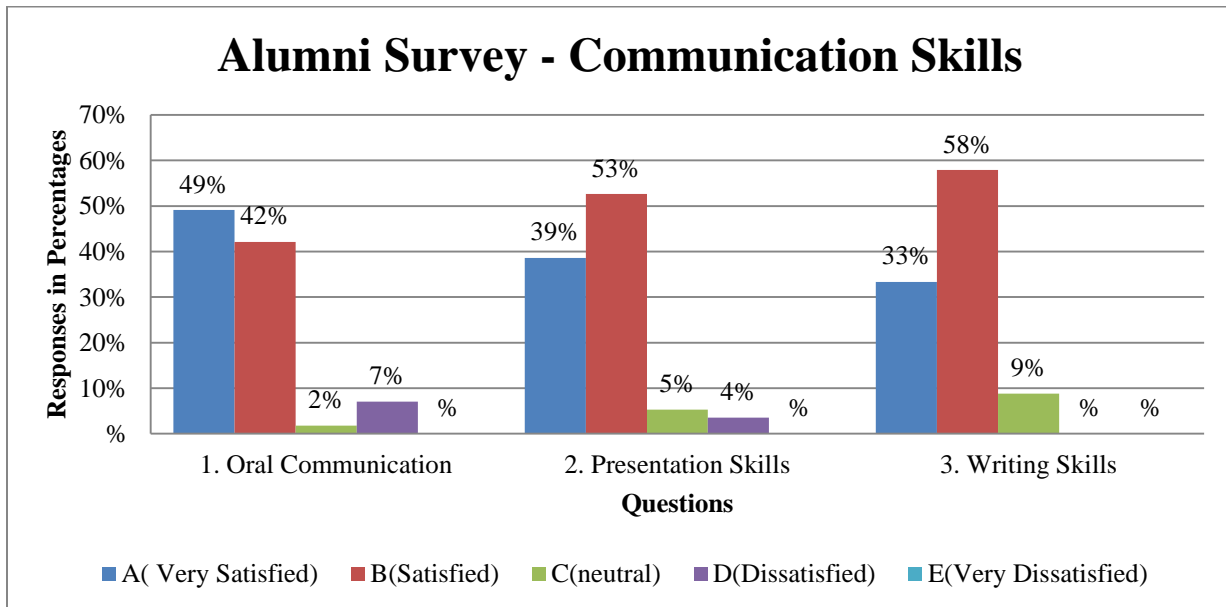


Figure 1.3

⁶ The source of information is Alumni Survey, SZABIST

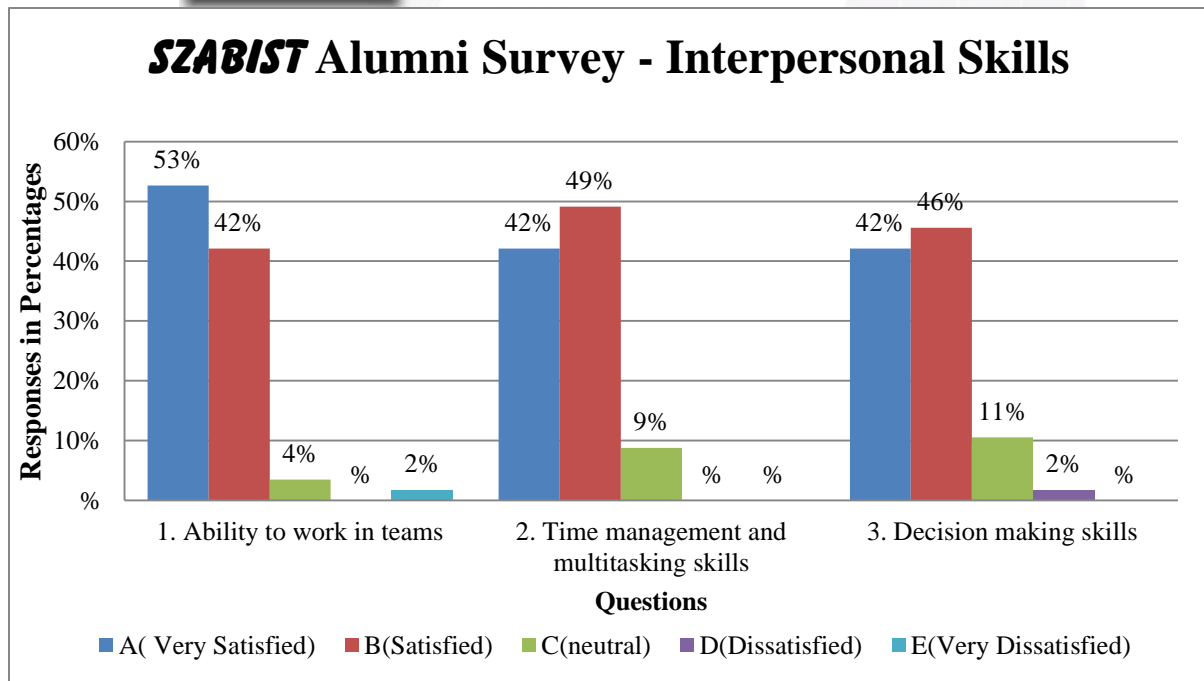


Figure 1.4

d. Graduating Student Survey⁷

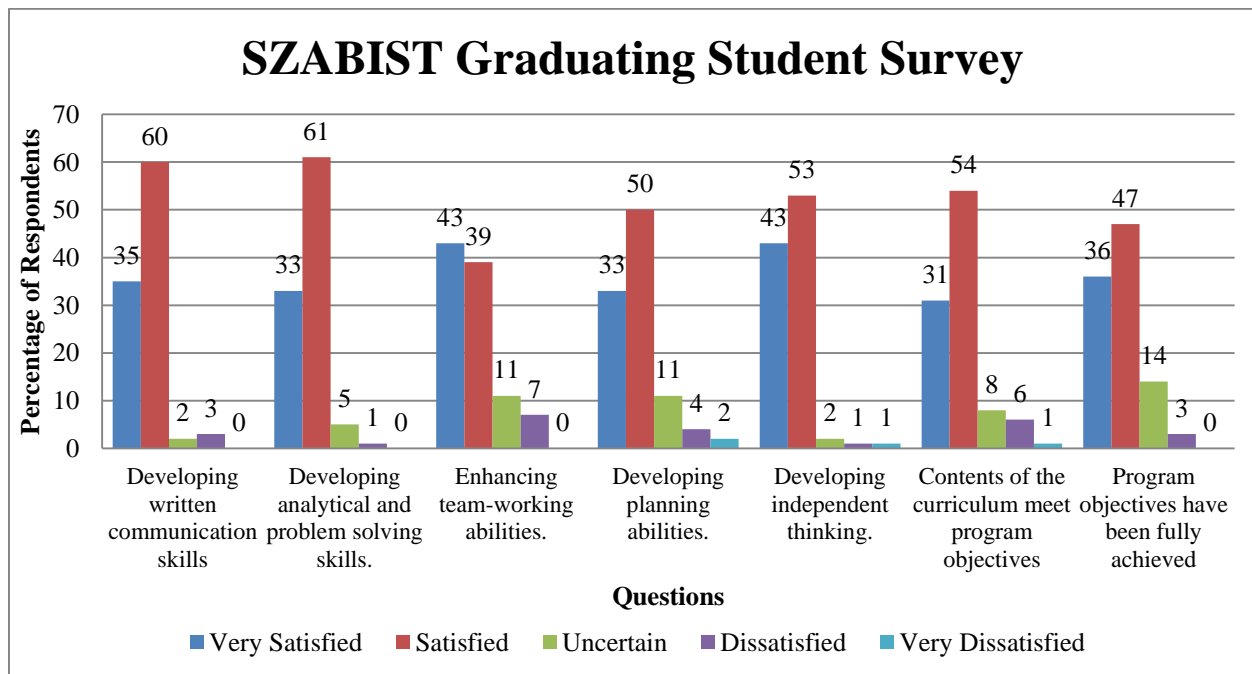


Figure 1.5

⁷ The source of information is Graduating Students Survey, SZABIST



Standard 1-3: Assessment Results and Improvement Plans

a. Describe the action taken on the basis of the periodic assessment⁸

- Board of studies meetings are held to evaluate and upgrade the course contents
- Students counseling is done to encourage more students to pursue doctoral studies
- Students are required to attend different workshops and thesis/ dissertation defense
- Course evaluations are conducted.

b. Describe major future program improvement plans based on recent assessments⁹

Program Improvement Plan based on Recent Assessment

- Integrate research project with the areas of specialization and include industry projects as well along with theoretical and academic research
- Introduce new courses to cater the market needs
- Changing course delivery from traditional classroom teaching to case-based teaching methodology
- Organize National and International Research Conference on more frequent basis

c. List strengths and weaknesses of the program¹⁰

➤ **Strengths**

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

➤ **Weaknesses**

- Need to develop practical lab-related skills
- Require stronger industry collaboration
- Training opportunities offered to faculty

d. List significant future plans for the program

- Introduce new specialization areas

⁸ The sources of information are Academic Office and General Administration, SZABIST

⁹ The sources of information are Academic Office and General Administration, SZABIST

¹⁰ The sources of information is Program Manager, SZABIST



- Changing course delivery from traditional classroom teaching to case-based teaching methodology

Standard 1-4 Overall Performance Using Quantifiable Measures

a. Indicate the percentage of successful students during study years showing i.e. their average, graduating grade point average per semester, time required to complete the program, drop out ratio of students¹¹

➤ **Average GPA** for students in the MS CS program is

| Semester GPA | Fall 2012 | Spring 2013 | Fall 2013 | Spring 2014 | Fall 2014 | Spring 2015 | Total Average |
|--------------------|-----------|-------------|-----------|-------------|-----------|-------------|---------------|
| Average GPA | 3.1 | 3.23 | 3.29 | 3.2 | 3.19 | 3.19 | 3.202 |

Table 1.4: Average GPA

➤ **Drop-out ratio** of student every semester

| | Fall - 2012 | Spring - 2013 | Fall - 2013 | Spring - 2014 | Fall- 2014 | Spring - 2015 | Total Average |
|-----------------------|-------------|---------------|-------------|---------------|------------|---------------|---------------|
| Dropout | 0 | 1 | 1 | 0 | 0 | 1 | 0 |
| Enrollment | 7 | 18 | 17 | 14 | 11 | 12 | 13.17 |
| Drop out Ratio | 0 | 0.056 | 0.058 | 0 | 0 | 0.083 | 0 |

Table 1.5: Drop-out Ratio

¹¹ The sources of information is Academic Office SZABIST



b. Indicate the percentage of employers that are strongly satisfied with the performance of the departments graduates¹²

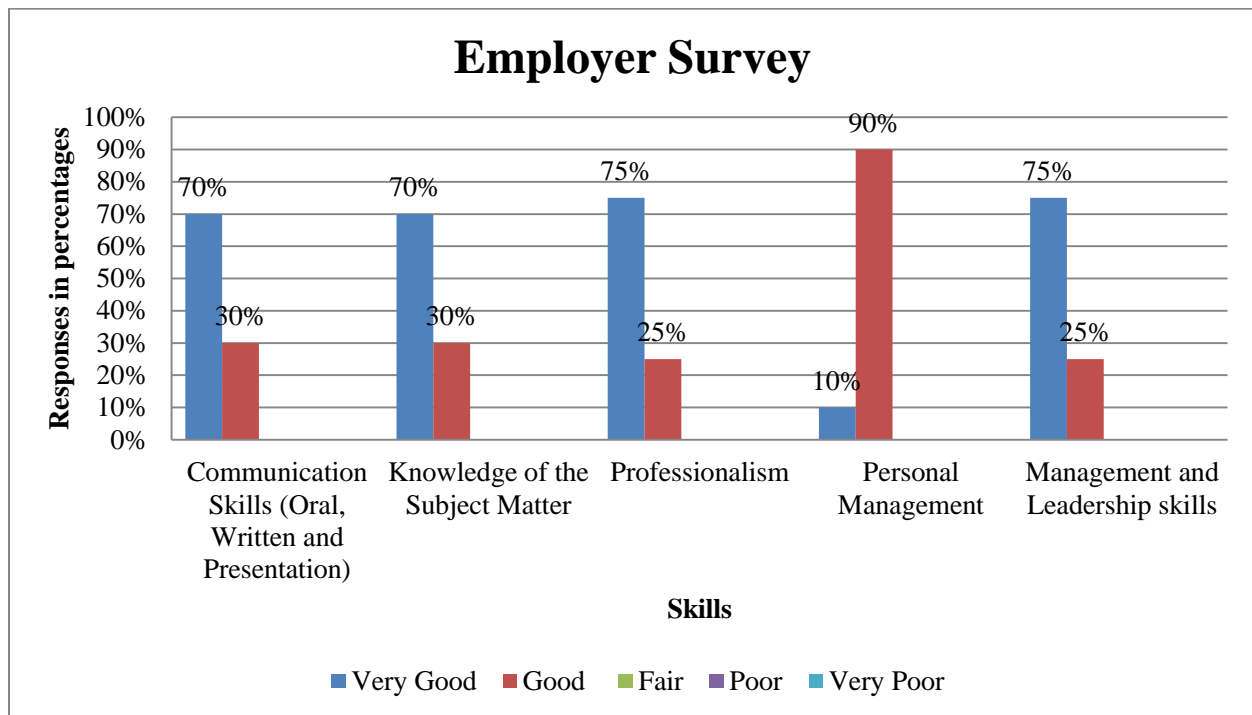


Figure 1.6

c. Percentage of Student Evaluation/Assessment results for all the courses and faculty¹³

| Semester | Faculty and Course Rating (%) | | | | | |
|-------------|-------------------------------|-----------|------|--------------|------------------|------|
| | Excellent | Very Good | Good | Satisfactory | Not Satisfactory | Poor |
| Spring 2015 | 15% | 65% | 20% | 0% | 0% | 0% |
| Fall 2014 | 10% | 75% | 15% | 0% | 0% | 0% |
| Spring 2014 | 12% | 68% | 20% | 0% | 0% | 0% |
| Fall 2013 | 16% | 64% | 10% | 10% | 0% | 0% |
| Spring 2013 | 10% | 85% | 5% | 0% | 0% | 0% |
| Fall 2012 | 12% | 78% | 10% | 0% | 0% | 0% |

Table 1.6: Faculty & Courses Rating

¹² The sources of information is Employer Survey, SZABIST

¹³ The source of information is Academic Office, SZABIST



d. Percentage of research activities i.e. journal publications, funded projects, conference publications per faculty and per year, and the faculty awarded excellence in research¹⁴

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

List of research activities per faculty per year¹⁸

| 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 Chapter |
| Dr. Azhar Mahmood | 6 | 2 | 2 | 1 | 0 | 0 |
| Dr. Muhammad Naeem Khan | 10 | 0 | 0 | 0 | 0 | 0 |
| Dr. Muhammad Imran | 6 | 1 | 9 | 0 | 0 | 4 Book Chapters |
| Dr. Umair Abdullah | | | | | | |
| 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 |
| Arshad Beg | 0 | 1 | 4 | 0 | 0 | 0 |

Table 1.7: List of research activities per faculty

¹⁴ The source of information is Academic Office, SZABIST



List of Publications¹⁹

| Teacher Name : Dr. Muhammad Usman | | |
|--|---|-------------|
| Sr. # | Publication Title | Year |
| 1. | S.A Khan, K. Kenza, M. Nazir, M. Usman "Proficient Lungs Nodule Detection and Classification Using Machine Learning Techniques" International Journal of Intelligent and Fuzzy Systems. vol 28, Issue 2, pp:-905-917, (2015). IOS Press, Netherlands. DOI: 10.3233/IFS-141372 | 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). DOI: http://dx.doi.org/10.1016/j.knosys.2012.11.008 (Impact Factor: 2.9). | 2013 |
| 3. | Muhammad Usman, Russel Pears, A.C.M Fong "Discovering diverse association rules from multidimensional schema" Expert Systems with Application vol.40(15 pp:5975–5996 (2013). DOI:10.1016/j.eswa.2013.05.031 (Impact Factor: 2.24). | 2013 |
| 4. | 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 |
| 5. | 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://ebooks.iospress.nl/volumearticle/39146 | 2015 |
| 6. | Mubashaar Raza and Muhammad Usman. "A Conceptual Model for Software Architecture Design and Evaluation." Sixth International Conference on the Applications of Digital Information and Web Technologies (ICADIWT), IEEE, pp. 247-254, (2015). URL: http://ebooks.iospress.nl/volumearticle/39140 | 2015 |
| 7. | Sajid, Mashood, Rubab Hussain, and Muhammad Usman, "A conceptual model for automated attendance marking system using facial recognition", 9th International Conference on digital Information Management (ICDIM), IEEE, pp. 7-10, 2014. | 2014 |
| 8. | Azeem Muhammad, Muhammad Usman, and Waseem Ahmad, "Intelligent data cube construction and exploration", 9th International Conference on digital Information Management (ICDIM), IEEE, pp. 7-10, 2014. | 2014 |
| 9. | Muhammad Usman, Russel Pears, A.C.M. Fong, "Data guided approach to | 2012 |



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| | generate multidimensional schema for targeted knowledge discovery”, In Proc. Of 10 th Australasian Data Mining Conference (AusDM), vol. 134, pp. 229-234, 2012. | |
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| List of Publications | | |
|--|--|-------------|
| Teacher Name: Dr. Azhar Mahmood | | |
| No. | 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 Prediction”, Journal of Software Engineering Vol.8, No.4 2014. | 2014 |
| 3. | Azhar Mahmood, Jianfeng Xu “A Quotient Space based Clustering 2014 Protocol for Wireless Sensor Networks”, Information Technology Journal Vol.13, No.15 2014. | 2014 |
| 4. | Azhar Mahmood, “A Distributed Data Extraction Method for Mining Sensor Networks data”, International Journal Computer Science Issues, Vol. 10, No. 2, 2013. | 2013 |
| 5. | Azhar Mahmood, “Controlling In-patient Environment by Mining Sensor Networks Data,” in 10th International Conference on Fuzzy Systems and Knowledge Discovery (FSKD) 2013. | 2013 |
| 6. | Azhar Mahmood, “An Approach to Generate Test Goals from Use Case Scenarios”, Information Technology Journal Vol.12 No. 8 2013. | 2013 |
| 7. | Azhar Mahmood “A Novel Framework to Increase Software Quality by Mining Source Code”, Journal of Software Engineering Vol.7, No.3 2013. | 2013 |
| 8. | G.Li, Azhar Mahmood, “Comparison and Evaluation of Source Code Mining Tools and Techniques: A Qualitative Approach”, Intelligent Data Analysis, Volume 17-3 2013. | 2013 |

| List of Publications | | |
|--|---|-------------|
| Teacher Name: Dr. Muhammad Naem | | |
| No. | Publication Title | Year |
| 1. | Ahmed, G., Khan, M. N. A., & Bashir, M. S. (2015). A Linux-based IDPS using Snort. Computer Fraud & Security, 2015(8), 13-18. | 2015 |
| 2. | Rafique, M., & Khan, M. N. A. (2015). Profiling software applications | 2015 |



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| | for forensic analysis. <i>Computer Fraud & Security</i> , 2015(6), 13-18 | |
| 3. | Khan, M., Akram, M., & Riaz, N. (2015). A comparative analysis of software protection schemes. <i>International Arab Journal of Information Technology (IAJIT)</i> , 12(3). | 2015 |
| 4. | Khan, S., Nazir, M., Riaz, N., & Khan, M. (2015), Optimized features selection using hybrid PSO-GA for Multi-View Gender Classification. <i>International Arab Journal of Information Technology (IAJIT)</i> , 12(2). | 2015 |
| 5. | Bashir, M. S., & Khan, M. N. A. (2015). A triage framework for digital forensics. <i>Computer Fraud & Security</i> , 2015(3), 8-18. | 2015 |
| 6. | Ahmad, N., Subhan, F., Haider, S., Khan, N., Ahmed, S., & Saleem A. K. (2014). Positioning in bluetooth networks using lateration approach – a comparative study. <i>Science International</i> , 26(5). | 2014 |
| 7. | Yaqoob, L., Khan, N. A., & Subhan, F. (2014). An Overview of Existing Decision Support Systems for Disasters Management. <i>Science International</i> , 26(4), pp. 1765-1776. | 2014 |

| List of Publications | | |
|---|--|-------------|
| Teacher Name: Dr. Muhammad Imran | | |
| No. | Publication Title | Year |
| 1. | Muhammad Imran, Rathiah Hashim, Noor Elaiza Abd Khalid and Aun Irtaza. Stochastic Optimized Relevance Feedback Particle Swarm Optimization for Content Based Image Retrieval, <i>The Scientific World Journal</i> , Volume 2014, 2014. (ISI IF 1.219). | 2014 |
| 2. | Muhammad Imran, Rathiah Hashim, Noor Elaiza Abd Khalid, Laplace Mutated Particle Swarm Optimization (LMPSO), <i>Life Science Journal</i> , Vol 11, No. 10, 292-299, 2014 (ISI IF .165) | 2014 |
| 3. | Noor Elaiza Abd Khalid, Muhammad Imran, Rathiah Hashim, Aun Irtaza, “Content Based Image Retrieval Through Particle Swarm Optimization And Support Vector Machine,” <i>International Journal Of Academic Research</i> , vol.6, No.6, 2014. | 2014 |
| 4. | Muhammad Imran, Rathiah Hashim, Noor Elaiza Abd Khalid, An Overview of Particle Swarm Optimization Variants, <i>Procedia Engineering</i> , Volume 53, 2013, Pages 491-496. | 2013 |
| 5. | Muhammad Imran, Rathiah Hashim, Aun Irtaza, Noor Elaiza Abd Khalid, CBIR Using Colour Layout Descriptor and Coiflets Wavelets, <i>Journal of Basic and Applied Scientific Research</i> . Vol.4, No. 5. 2014. | 2014 |
| 6. | Muhammad Imran, Rathiah Hashim, Noor Eliza Abd Khalid, “Particle Swarm Optimization (PSO) Variants with Triangular Mutation,” <i>Journal of Engineering and Technology</i> , UTEM Malaysia 2013. | 2013 |



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| 7 | Muhammad Imran, Rathiah Hashim, Noor Elaiza Abd Khalid, Novel Approach to Content Based Image Retrieval Using Evolutionary Computing, Research Journal of Applied Sciences, Engineering and Technology. | 2014 |
| 8 | Muhammad Imran, Rathiah Hashim, Noor Eliza Abd Khalid, “New Approach to Image Retrieval Based on Color Histogram,” Lecture Notes in Computer Science, Volume 7929, 2013, pp 453-462. | 2013 |
| 9 | Muhammad Imran, Rathiah Hashim, Noor Elaiza Abd Khalid, “Content Based Image Retrieval Using Color Layout Descriptor and Generic Fourier Descriptor,” Lecture Notes in Electrical Engineering, Vol. 315. 2014. | 2014 |
| 10 | Muhammad Imran, Rathiah Hashim, Noor Elaiza Abd Khalid, Color Histogram and First Order Statistics for Content Based Image Retrieval, Recent Advances on Soft Computing and Data Mining, volume 287, 153-162, Springer, 2014 | 2014 |
| 11 | Muhammad Imran, Rathiah Hashim, Noor Elaiza Abd Khalid, Content Based Image Retrieval Using MPEG-7 and Histogram, Recent Advances on Soft Computing and Data Mining, volume 287, 453-465, Springer, 2014. | 2014 |
| 12 | Muhammad Imran, Rathiah Hashim, Noor Elaiza Abd Khalid, “Segmentation-based Fractal Texture Analysis and Color Layout Descriptor for Content Based Image Retrieval,” <i>14th International Conference on Intelligent Systems Design and Applications</i> , December 2014, Japan | 2014 |

List of Publications

Teacher Name: Dr. Umair Abdullah

| No. | Publication Title | Year |
|-----|--|------|
| 1. | U. Abdullah, A. Ahmed, S. Asghar, K. Zafar, “ <i>Data mining driven rule based expert system for medical billing compliance: A Case Study</i> ,” Book Chapter included in “Improving Knowledge Discovery through Integration of Data Mining Techniques” by IGI Global. pp:267- 296. 2015. DOI: 10.4018/978-1-4666-8513-0.ch013 | 2015 |
| 2. | Aamir Khan, Nauman A. Qureshi, Umair Abdullah, “ <i>Software Engineering Challenges: A Cloud Based Architecture For Earthquake Forecasting</i> ” Science-International Lahore, (ISI-Indexed Journal), ISSN: 1013-5316, 26(5), pp. 2309-2313, 2014. | 2014 |
| 3. | U. Abdullah, A. Ahmed, S. Asghar, K. Zafar, “ <i>Record-Couple Based Production Rule Mining Algorithm: Tested in Medical Billing</i> ” | 2014 |



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| | Domain, ” Special Issue of Journal of Applied Environmental and Biological Sciences (ISI-Indexed Journal) ISSN: 2090-4274, 4(8S), pp. 275-280, 2014. | |
| 4. | A. Ahmed, K. Zafar, A. B. Siddiqui, U. Abdullah, “Data Warehouse Design For Knowledge Discovery From Healthcare Data,” The 2013 International Conference of Data Mining and Knowledge Engineering (ICDMKE), In: S. I. Ao and Len Gelman and David WL Hukins and Andrew Hunter and A. M. Korsunsky Editors. Proceedings of The World Congress on Engineering 2013, London, U.K., July 3 – 5, 2013. pp1589-1594, ISBN: 978-988-19252-9-9 | 2013 |
| 5. | M. Asif, M. J. Sawar, U. Abdullah, “Design of a Decision Support System in Electronic Medical Record Using Structured Query Language,” 2013 3rd International Conference on Management and Artificial Intelligence - ICMAI 2013, Bangkok, Thailand, April 8-9, 2013. pp 10-15, DOI: 10.7763/IPEDR. 2013. V63. 3 | 2013 |

e. Number of short courses workshops, seminars organized on community service level¹⁵

| 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 & Working of ICRC” | 2015 |
| 10. | SZABIST Islamabad Participates in “The News Education Expo” | 2015 |
| 11. | Seminar on Iqbal, as a Re-structor of Religious Thought in Islam | 2015 |
| 12. | "Harassment" Awareness Seminar | 2015 |
| 13. | Seminar on Electoral Reforms | 2015 |
| CS Program Category | | |
| 1. | Electronics Project Exhibition Held at SZABIST | 2015 |

¹⁵ The source of information is Assistant to Program Managers



| | | |
|----|--|------|
| 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 |

Table 1.8: Activities

f. Faculty and student surveys results to measure the administrative services provided¹⁶

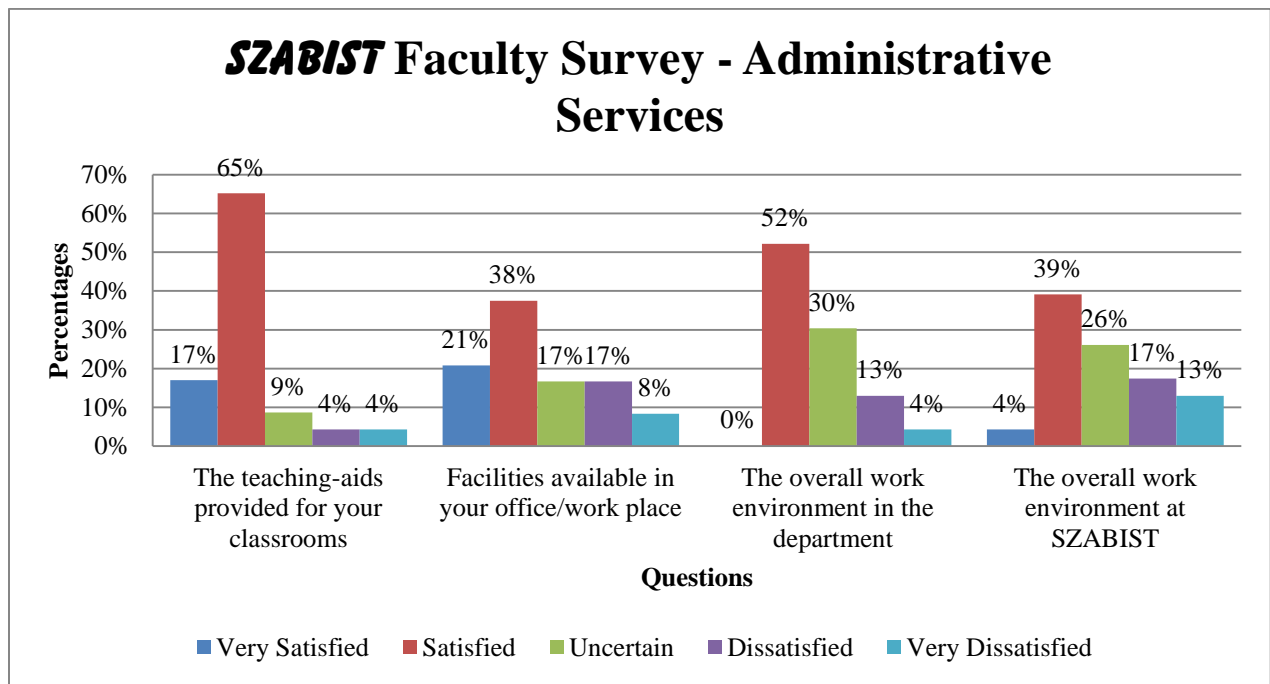


Figure 1.7

¹⁶ The source of information is Faculty Survey and Alumni Survey



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 & Basic Sciences Requirements |
| Standard 2-4 | Major Requirements as Specified by Accreditation Body |
| Standard 2-5 | Humanities, Social Sciences, Arts, Ethical, Professional & Other Requirements |
| Standard 2-6 | Information Technology Content Integration throughout the Program |
| Standard 2-7 | Communication Skills (Oral & Written) |



Criterion: 2 Curriculum Design and Organization¹⁷

Standard 2-1 Courses vs. Objectives

a. Title of degree program

Masters of Science (Computing)/ MS-CS

b. Definition of Credit Hour

It is a 33 credit hours program spanned over 5 core courses, 4 electives and 1 research project. Each course is of 3 credit hours and research project is of 6 credit hours

c. Detailed course plan of MS-CS, credit hours and course outlines are attached in appendix below.

Curriculum Plan¹⁸

Master of Science in Computer Science (In core Computer Sciences)

| First Semester | Second Semester | Third Semester | Fourth Semester |
|--|--|--|--|
| CSC 5105 – Research Methodology | CSC 5201 – Advanced Operating Systems | CSC 5xxx – Thesis or Course work (from CS-Stream II) | CSC 5xxx Thesis or Course Work (from CS-Stream-II) |
| CSC 5101 – Advanced Algorithm Analysis | CSC 5202 – Advanced Computer Architecture | CSC 5xxx – Elective-II (from CS-Stream-I) | CSC 5xxx Elective-IV (from CS-Stream-I) |
| CSC 5102 – Theory of Computation | CSC 5xxx – Elective-I (Independent Study-Topic related to CS Stream-I or II) | CSC 5xxx – Elective-III (from CS-Stream-I) | |

Table 2.1: Curriculum Plan (Core Courses)

¹⁷ The sources of information are Program Managers

¹⁸ Source: SZABIST Islamabad Prospectus 2015



d. Curriculum Course Requirement

Master of Science in Computer Science with Specialization in Software Engineering

| First Semester | Second Semester | Third Semester | Fourth Semester |
|--|--|--|---|
| CSC 5105 – Research Methodology | CSC 5201 – Advanced Operating Systems | CSC/SEC 5xxx – Thesis or Course work (from SE-Stream II or CS-Stream II) | CSC/SEC 5xxx – Thesis or Course Work (from CS-Stream-II or from SE-Stream-II) |
| CSC 5101 – Advanced Algorithm Analysis | CSC 5202 – Advanced Computer Architecture | SEC 5xxx – Elective-II (from SE-Stream-I) | SEC 5xxx Elective-IV (from SE-Stream-I) |
| CSC 5102 – Theory of Computation | SEC 5xxx – Elective-I (Independent Study-Topic related to SE Stream-I or II) | SEC 5xxx – Elective-III (from SE-Stream-I) | |

Table 2.2a: Curriculum Course Requirement (Specialization in Software Engineering) ¹⁹

Master of Science in Computer Science with Specialization in Networks & Security

| First Semester | Second Semester | Third Semester | Fourth Semester |
|--|---|---|--|
| CSC 5105 – Research Methodology | CSC 5201 – Advanced Operating Systems | CSC/NSC 5xxx – Thesis or Course work (from N&S-Stream II or CS-Stream II) | CSC/NSC 5xxx – Thesis or Course Work (from CS-Stream-II or from N&S-Stream-II) |
| CSC 5101 – Advanced Algorithm Analysis | CSC 5202 – Advanced Computer Architecture | SEC 5xxx – Elective-II (from N&S-Stream-I) | SEC 5xxx Elective-IV (from N&S-Stream-I) |
| CSC 5102 – Theory of Computation | NSC 5xxx – Elective-I (Independent Study-Topic related to NSC Stream-I or II) | SEC 5xxx – Elective-III (from N&S-Stream-I) | |

Table 2.2b: Curriculum Course Requirement (Specialization in Networks & Security) ²⁰

¹⁹ Table 2.2a of PT Report is the Table 4.3 (Curriculum Course Requirements) of AT Report

²⁰ Table 2.2b of PT Report is the Table 4.3 (Curriculum Course Requirements) of AT Report



Electives

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

Table 2.1c: Curriculum Course Requirement (Elective Courses) ²¹

Pre-Requisites:²²

- For any advanced course, its basic course or pre-requisite course must have been done before.
- For each track, the following courses must have been done prior to admission:

MS(CS) in Core Computer Sciences

Artificial Intelligence

²¹ Table 2.2c of PT Report is the Table 4.3 (Curriculum Course Requirements) of AT Report

²² Source: SZABIST Islamabad Prospectus 2015



Finite Automata Theory

Digital Logic Design

MS(CS) with Software Engineering Specialization

Artificial Intelligence

Finite Automata Theory

Digital Logic Design

Software Engineering-I

MS(CS) with Networks and Security Specialization

Data Communication and Computer Networks

Finite Automata Theory

Digital Logic Design

e. Courses vs. Program Objectives

| Course Code | Program Objectives | | |
|-------------|--------------------|---|---|
| | A | B | C |
| CSC 5105 | | X | X |
| CSC 5101 | X | X | |
| CSC 5102 | X | X | |
| CSC 5201 | X | X | |
| CSC 5202 | X | X | |
| CSC 5xxx | X | X | X |
| NSC 5xxx | X | X | X |
| SEC 5xxx | X | X | X |

Table 2.3 Courses versus Objectives



f. Courses vs. Program Outcomes

| Courses/ Group of Courses | Program Outcomes | | | | | | |
|---|------------------|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| CSC 5105 – Research Methodology | | | | √ | √ | √ | √ |
| CSC 5101 – Advanced Algorithm Analysis | √ | √ | √ | √ | | | |
| CSC 5102 – Theory of Computation | | √ | √ | √ | √ | | |
| CSC 5201 – Advanced Operating Systems | √ | √ | √ | √ | | √ | |
| CSC 5202 – Advanced Computer Architecture | √ | √ | √ | √ | | √ | |
| CSC 5xxx – Electives Computer Science* | √ | √ | √ | √ | | √ | |
| SEC 5xxx – Electives Software Engineering* | √ | √ | √ | √ | | √ | |
| NSC 5xxx – Electives Networks and Security* | √ | √ | √ | √ | | √ | |
| CS 5xxx (IS-I) | | | √ | √ | √ | √ | √ |
| CS 5xxx (IS-II) | | | √ | √ | √ | √ | √ |

* Elective subject. Outcomes satisfied will depend upon the elective selected by the student.

Table 2.4 Courses versus Outcomes²³

Standard 2.2: Theory, Problem Analysis, Solution and Design

The courses comprise of theoretical knowledge and practical applications. In almost all courses students undergo through rigorous projects to apply the knowledge and skills they acquire in a course. Also these diverse projects help them to equip various skills like team building, conflict resolution, and ethical decision making etc., which are necessary for today’s complex organizations.

| Element | Courses |
|---|---|
| Theoretical Background | Research Methodology, Theory of Computation, Telecom Policies and Regulations |
| Problem analysis and solution *Students select any four Courses according to the stream they have chosen. | Advanced Algorithm Analysis, Advanced Operating Systems, Advanced Computer Architecture, Real-Time Systems, Digital Image Processing, Machine Learning, Data Mining, Reverse Engineering, Digital Forensics and Malware Analysis, Computer Vision, Robotics, Advanced Database Design, Distributed Computing, Systems and Network Programming, and so on. |

²³ Table 2.4 of PT Report is the Table 4.4 (Courses versus Outcomes) of AT Report



| | |
|--|--|
| <p>Research & Applications *If the student is taking a research project/thesis they will have to take 9 courses all together with 6 credit hours of research project.</p> | <p>Research Methodology, IS-I, IS-II</p> |
|--|--|

Table 2.5: Standard 2-2 Requirements²⁴

Standards 2-3, 2-4, 2-5, 2-6 and 2-7

The standards 2-3, 2-4, 2-5, 2-5 and 2-7 are well integrated in the MSCS program. Further, the detail about the major Requirements by Accreditation Body is given below:

Major requirements of HEC as specified in "Curriculum of Computer Science, Software Engineering and Information Technology for BS and MS" Revised in 2009. This document is available at HEC website.

| Program | Core Courses | Specialization Courses | Research Courses |
|--------------------|--|---|---|
| MS 33 Credit Hours | CS 5101, CS 5102, CS 5202, CS 5264. | CS 5123, CS 5128, CS 5146, CS 5237, CS 5266, CS 5267, CS 5268, CS 5269, CS 5271, CS 5272, CS 5273, CS 5274, CS 5275, CS 5276, CS 5279, CS 5282, CS 5283, CS 5284, CS 5305 | CS 5105, CS 5108, CS 5208, CS 5109, CS 5209 |

Table 2.6: List the courses required by the Accreditation Body

Core courses are offered in first two semesters; Electives are offered in all semesters with the exception of Independent Study whose pre-requisite is Research Methodology. Research Project/Thesis is offered in third semester with 3 credit hours in third semester and 3 credit hours in fourth semester. If however student does not opt for a research project/thesis then they have to take 2 courses each of 3 credit hours to compliment for the research project/thesis.

²⁴ Table 2.5 of PT Report is the Table 4.5 (Standard 2-2 requirements) of AT Report

CRITERION 3: LABORATORIES AND COMPUTING FACILITIES

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



Criterion 3: Laboratories and Computing Facilities²⁵

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

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

To avoid disruptions, students are not allowed to enter the labs while classes are in progress. Color and laser printing is available at nominal cost.

To ensure the integrity of the network, students are not allowed to install their own software programs on SZABIST computers. Should additional software be required to undertake a course-related assignment, students first seek the written approval of the concerned faculty and contact the Computer Lab Administrator well in advance to make arrangements for loading the software only on specific workstations.

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

| | |
|---------------------------------|--|
| 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, Printing Assignments, Articles, research papers, Thesis. Internet connectivity with 1GB/Sec LAN and 20 MB bandwidth, Access online digital libraries, SZABIST Islamabad E-Library, Available throughout the week for every student, Provide adequate computing facilities to every individual with diverse study programs Available Dedicated Print Server and enterprise Printers for fast and controlled printing |
| Adequacy for instruction | 52 Desktop Computers with adequacy of 50-60 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 support and help of any faculty students. One Central 20 KVA UPS Power Supply for more than 8-10 minutes backup |

²⁵ Source of Information: System Support Staff, IT department.



| | |
|---|--|
| Courses taught | General Purpose Lab, Trainings and Workshops, Oracle Primavera and SAP |
| Software available if applicable | Microsoft Windows 7 Professional, MS-Office, Oracle Primavera, etc. |
| Major Apparatus | Computer Systems |
| Major Equipment | Dell OptiPlex 330, HP LaserJet P3015, HP Color and LaserJet 500 m551 |
| Safety regulations | Available |

Table 3.1: Computer Lab Information

| | |
|---|--|
| Laboratory Title | Computer Lab 02 |
| Location and area | SZABIST Islamabad Campus Ground Floor-Academic Block |
| Objectives | For Practical courses of MS (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, Practical Examination of computer Science courses, File sharing and Printing services. |
| Adequacy for instruction | 50 Desktop Computers with adequacy of 50-60 students. Four 2-Ton ACs are available for keeping the Computer Labs environment best for sitting and work. Multimedia and Public addressing system. One System Engineer is available for any IT Technical support and help for any need of faculty members/students. One Central 20 KVA UPS Power Supply for more than 8-10 minutes backup. |
| Courses taught | Programming Fundamentals, Object oriented programming, Computer Network and Data, Communication, Relational Database Systems, Web Technologies 1, Operating Systems, Web Technologies-II, Android Application, Development, Data Warehousing & Mining, Projects. |
| Software available if applicable | Windows 7 Professional, Eclipse LUNA, Oracle, 10g client express, VMware Player, Ubuntu VM, Fedora 18 VM, Cisco Packet tracer 5.3, Visual Studio Ultimate 2013, SQL Server 2008, MySQL 5.6, Primavera P-6 8.3. |
| Major Apparatus | Computer Systems |



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

Table 3.2: Computer Lab Information

| | |
|---|---|
| Laboratory Title | Telecom Lab |
| Location and area | SZABIST Islamabad Campus 2nd Floor-Academic Block |
| Objectives | For conducting Practical classes of MS (CS). Equipped with latest software modules for courses e.g. Programming and Development, Databases, Web & Mobile Applications, Operating Systems, IP and Network, Security etc. Prepared for the different Workshops, trainings, Practical Examination of computer Science courses, Internet Usage, File sharing and Printing services. |
| Adequacy for instruction | 32 Desktop Computers with adequacy of 30-40 students, Two ACs (2-Ton) are available for keeping the Computer Labs environment best for sitting and work. Multimedia is available. One System Engineer is available for any IT Technical support and help for any need of faculty members/students. One Central 10 KVA UPS Power Supply for more than 5-10 minutes backup. |
| Courses taught | Computing |
| Software available if applicable | Windows 7 Professional 64 bit, Microsoft Office 2007, Eclipse C/C++, Eclipse Java IDE, STS 3.6, Oracle 10g client express, VMware Player, Ubuntu VM, Cisco Packet tracer 5.3, Visual Studio 2010, Primavera P-6 8.3, E-Views 7, SPSS 20, Wireshark 1.12 |
| Major Apparatus | Intro to Computing, Programming Fundamentals, Data Structure & Algorithm, Software Engineering, Android Application Development |
| Major Equipment | Dell OptiPlex 7010 Core i7, HP Compaq 8200, Core i7, HP Prodesk 400 Core i7, With 8GB, RAM and 750GB HDD Sony VPL-DX 100, Multimedia |
| Safety regulations | Available |

Table 3.3: Telecom Lab

| | |
|-------------------------|----------------|
| Laboratory Title | DLD Lab |
|-------------------------|----------------|



| | |
|---|--|
| Location and area | SZABIST Islamabad Campus 2nd Floor-Academic Block |
| Objectives | The Advanced Computer Architecture Lab is one of the most important and well equipped labs. The Lab is well equipped with both hardware and software facilities required by the students to perform the necessary experiments designed for this lab. |
| Adequacy for instruction | 10 Desktop Computers with adequacy of 40-50 students. Three ACs (2-Ton) are available for keeping the Computer Labs environment best for sitting and work. Multimedia is available. One Telecom Lab Assistant and Lab, Demonstrator is available for any IT/ Electronics, Technical support and help for any need of faculty members/students, One Central 5 KVA UPS Power Supply for more than 5-10 minutes backup. |
| Courses taught | Physics, Digital Logic Design, Computer Architecture |
| Software available if applicable | Windows 7 Professional, Microsoft Office, Mat, Lab R2011B, Cisco packet tracer 5.3, Borland, c++ 5.02, Eclipse java, Dsch2.7 |
| Major Apparatus | Digital Multi meter, Probs, Digital Oscilloscope, Trainer Kit RIMS, Logic Gates, |
| Major Equipment | HP Compaq 2310, Sony Multimedia. |
| Safety regulations | Available |

Table 3.4: DLD Lab

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

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

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

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

To avoid disruptions, students are not allowed to enter the labs while classes are in progress. Color and laser printing is available at nominal cost.

To ensure the integrity of the network, students are not allowed to install their own software programs on SZABIST computers. Should additional software be required to undertake a course-related assignment, students first seek the written approval of the concerned faculty and contact



the Computer Lab Administrator well in advance to make arrangements for loading the software only on specific workstations.

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

b. Are the resources available sufficient for the program?

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 Adequate Support Personnel for Labs

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

Instructions are clearly written on the Notice Boards pertaining to:

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



However, No written easy to use manuals are available in the computer Labs for learning to use ZABDESK, Microsoft Office and other related Programs and software. There must be adequate support personnel for instruction and maintaining the laboratories.

Computer Laboratories are 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. Total of 11 dedicated staff members working at different time slots to ensure unhindered delivery of knowledge.

| 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 |

Table 3.5: Staff Timings

Standard 3-3: The University computing infrastructure and facilities must be adequate to support program's objectives.²⁶

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

The MSCS 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 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 |
| | | |

²⁶ Source of information is: Manager IT



| | | |
|----------|------------------------------|------------|
| 2 | Desktop Computers | 206 |
| | Dell OptiPlex 330 | 52 |
| | HP Compaq dx2310 | 60 |
| | Dell OptiPlex 7010 Core i7 | 10 |
| | HP Compaq 8200 Core i7 | 14 |
| | HP ProDesk 400 Core i7 | 40 |
| | Apple I Mac systems | 8 |
| | Dell OptiPlex 760 core 2 duo | 22 |
| 3 | Multimedia | 26 |
| | | |
| 4 | Printers | 3 |
| | LaserJet Black | 2 |
| | Color | 1 |
| | Scanner | 1 |
| 5 | UPS | 16 |
| | 20 KVA | 2 |
| | 10 KVA | 3 |
| | 5 KVA | 1 |
| | 1 KVA | 6 |
| | 2KVA | 4 |
| | | |

Table 3.6: Computing Support Facilities

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

Based on the information given above, it can be concluded that the computer lab facilities are adequate and up to par for the MSCS at SZABIST, Islamabad. Although the above facilities are shared among SZABIST programs, so the resources are not sufficient for the MSCS 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.

CRITERION 4: STUDENT SUPPORT AND ADVISING

| | |
|--------------|---|
| Standard 4-1 | Sufficient Frequency of Course Offering |
| Standard 4-2 | Effective Faculty / Student Interaction |
| Standard 4-3 | Professional Advising and Counseling |



Criterion 4: Student Support and Advising²⁷

Standard 4-1: Sufficient Frequency of Course Offering

a. Provide Department's strategy for course offering

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 is 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

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 5 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 elective courses are offered

Each Student has to take 6 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

There is in-house Permanent faculty for all courses; therefore students do not need to go outside the department in order to take any course. Our permanent faculty usually teaches core courses.

²⁷ Source: EDC, Student handbook, Prospectus, SSC and Convocation.



Standard 4-2: Effective Faculty and Student Interaction

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

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

Course instructors 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: Professional Advising and Counseling

a. Describe how students are informed about program requirements

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

b. Describe advising system and indicate how its effectiveness measured

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

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

The advising services are provided through professional seminars, orientations, workshops, teachers and Program Managers. The campus has establishing an Executive Development Center (EDC) for providing more facilitation to students.



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

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

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

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

Executive Development Centre (For Student Convenience)

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

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



- e. **Describe opportunities available for students to interact with practitioners, and to have membership in technical and professional societies.**

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.

CRITERION 5: PROCESS CONTROL

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



Criterion 5: Process Control

Standard 5-1: Admission Criteria

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

Admission Process after Announcement of Admission Dates

- 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



Admission Criteria

The MS-CS degree requirements are designed in accordance with the credit hours prescribed by Higher Education Commission.

| MS-CS Program | Criteria |
|-----------------------|--|
| MS-CS 33 Credit hours | <ul style="list-style-type: none">• Minimum of sixteen (16) years of relevant education from any HEC recognized educational institute• Minimum 55% marks / CGPA of 2.5• GAT (General) is mandatory for MS students with minimum 50% score. |

Table 5.1: Admission Criteria

All candidates are required to go through the multi-step admission process that has been illustrated in the flowchart on the following page.

Continuing of Education for Higher Degree

Students completing their MSCS from SZABIST and desiring to continue their studies in the PhD Program should fill out a Program Continuation Form and submit to the Admission Office during their graduating semester. All requisites have to be completed before advancing to a higher degree program. Updated documentation will be required and new registration number will be allocated at the time registration.



b. The admission process flowchart

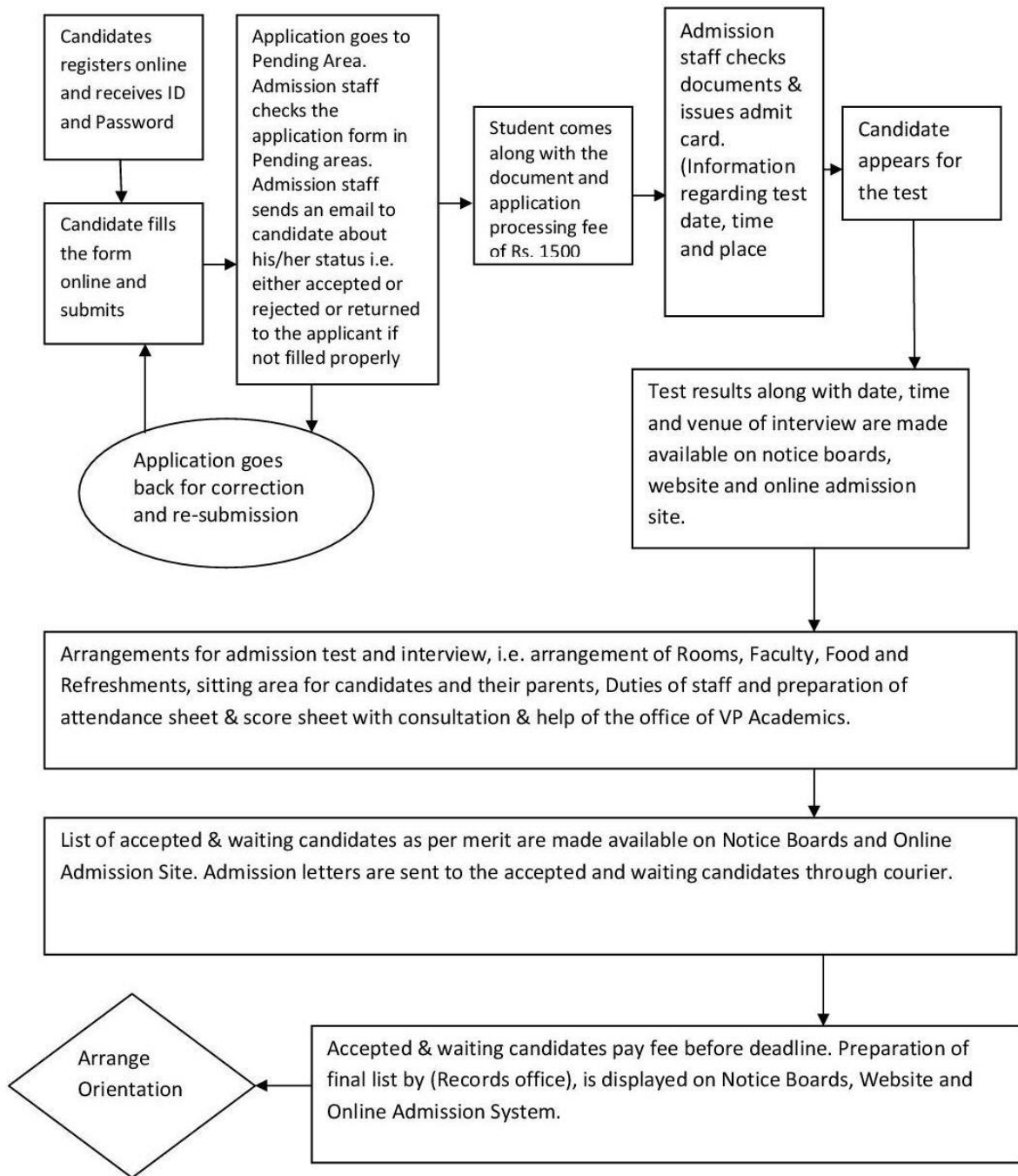


Figure 5.1



c. Describe policy regarding program/credit transfer

Transfer

Following are two types of transfer:

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

Transfer In

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

Transfer Out

- Receive application of the students
- Check transfer criteria of the students (completion of 25% courses at original campus)
- Contact and correspond with the relevant campus
- Get approval for the relevant campus
- Prepare campus transfer file
- Get clearance by Finance Office, Labs and Library
- Transfer from approval by relevant Program Manager
- Send from to Records Office for closing of account and letter grade issuance
- Get final approval from the VP Academics



- Dispatch form and file to the relevant campus
- Keep a photocopy of file with Karachi Campus.
- A maximum of up to 50 credits may be considered for transfer into Bachelor program.

SZABIST Inter-Campus Transfer

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

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

Certificate Course Transfer

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

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

Admission Criteria and processes are reviewed in the Academic Council meeting, which is held twice a year.

Standard 5-2: Registration and Students

a. Registration Process and Policy

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

- Academic Department sends a formal request to ZABSOLUTION which opens all interface of registration for course registration.
- Program Managers offers courses on ZABDESK and then notices for the registration of courses is announced to the students through Emails and website.
- Students must register through ZABDESK, the automated SZABIST Online Registration System and after that they can do manually which is allowed for 2 days only. For further assistance, they can contact Academic Office.
- Registered students who have paid their fee, but have remained absent for the first four classes, will be forced to de-register from the course.



- Students not registered will not be allowed to attend classes. No registration will be allowed two weeks after classes begin.
- Student on probation will be allowed to register for only N-2 courses.

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

Absence Rules

Students are required to maintain a minimum of 80 percent attendance throughout the semester in order to qualify for the Final Examination. Maximum 3 absences (for courses of 3 hour duration classes) and maximum 6 absences (for courses with 3 hour duration classes) allowed per semester per course; these absences are to be used for any emergency purposes like health problem, family death etc. Please note that two late arrivals are equal to 1 absence. Registered students who have remained absent for more than three classes during the semester, will be awarded an 'F' grade in the course.

Leave Rules

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

General Marks Distribution

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

Tests (for 1.5 hour session courses) optional 20 %

Midterm Examination 30 %

Assignments 5-10 %

Quizzes 5-10 %

Term Paper, Project and Presentation 10-15 %

Final Examination 35-40 %

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



Grading Plan

The following Letter Grade Plan is followed at SZABIST:

Letter Range Grade Point

A+ 95 – 100 4.00

A 91 – 94 3.75

A- 87 – 90 3.50

B+ 83 – 86 3.25

B 79 – 82 3.00

B- 75 – 78 2.75

C+ 72 – 74 2.50

C 69 – 71 2.25

C- 66 – 68 2.00

D+ 64 – 65 1.75

D 62 – 63 1.50

D- 60 – 61 1.25

F < 60 0

In certain cases, the following Letter Grades are assigned.

Letter Remarks:

S Satisfactory

U Unsatisfactory

I Incomplete

W Withdrawn

J Result withheld

- All grade points earned will be averaged towards the final grade point for graduation; in case a course is retaken, better grade will be used for calculation.
- There is no provision for giving or requesting grace marks.
- Minimum CGPA required for graduation is given in section on Rules Governing Degree Completion.



- If incomplete grade 'I' is not completed before the specified deadline, the default grade is 'F'.

Minimum Passing Grade

Minimum passing grade for MS-CS program is B- in every course.

Compulsory Repeat Grade

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

Required Maintenance CGPA

Minimum required CGPA for MS-CS program is 2.75, below which a student may face probation.

Dismissal

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

1. Dismissal on Academics Through Probation

SZABIST follows the probation and dismissal policy as recommended by HEC, "Whenever CGPA of a student falls below the required CGPA, he/she will be placed on "First Probation" for



the next semester. If in the First Probation semester the student does not increase his/her CGPA to the required CGPA, he/she will be placed on “Second Probation” for the next semester. If in the Second Probation semester the student does not increase his/her CGPA to the required CGPA, he/she shall be dismissed from SZABIST.

The required maintenance CGPA for different program levels, below which a student shall be on First or Second Probations or Dismissed, are as under:

All Master’s Programs: CGPA of 2.50

Summer semesters are not counted for probations/dismissals, as they are remedial semesters

2. Degree Time-Barring Dismissal

The registration will stand terminated if a student has not completed the degree requirements within five years for Masters.

3. Dismissal Due to Academic Dishonesty

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

4. Dismissal on Disciplinary Grounds

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

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

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

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

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

Evaluation of Registration and Student Monitoring Process

The Student Registration and Student Progress Monitoring processes are regularly reviewed through ZABDESK by the relevant Program Managers. A Program Managers meeting is held once in a month chaired by head of the Campus to discuss all the relevant issues in the Program.



If needed, meeting could be held before the completion of one month. Any necessary amendment in policy and resolving certain individual cases is carried out in these meetings.

Standard 5-3: Faculty Recruitment and Retention Process

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

Recruitment Process:

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

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

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



b. Flow Chart

a. Flow Chart

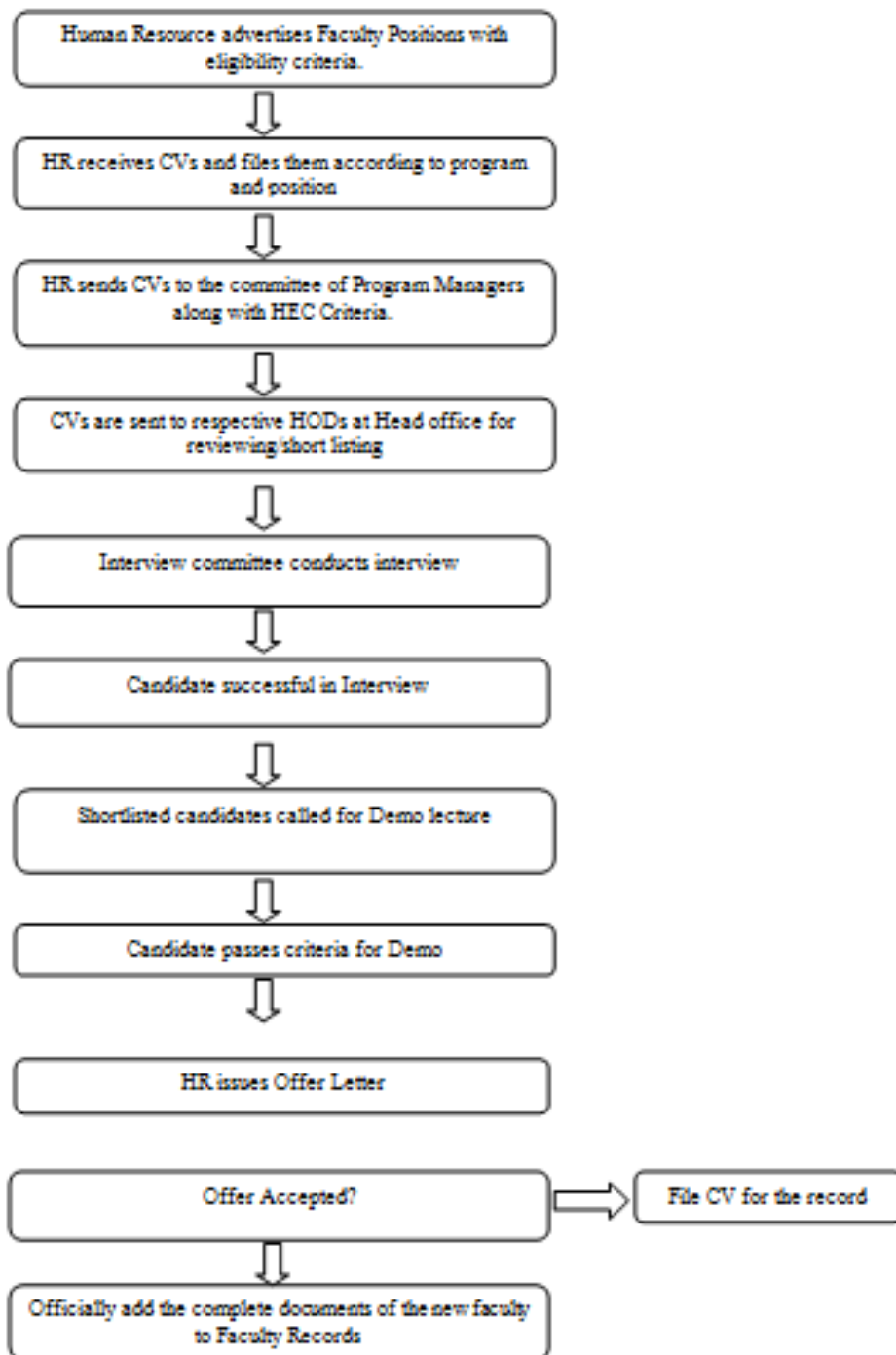


Figure 5.2



c. Indicate methods to retain excellent faculty member.

Retention Process

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

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

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

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.

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

- 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 from 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 experience in the relevant | Nil |
| | | Option II | PhD in relevant field from HEC recognized University / Institution. | 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 out of which 02- years must be teaching experience. | 8 research publications in HEC recognized Journals. |
| C | Associate Professor to Professor | | PhD in the relevant field from an HEC recognized University / Institution. | 12-years teaching/ research in HEC recognized University or postgraduate Institution or professional experience in the relevant field in a National or International organization. | 12 research publications in HEC recognized Journals. |

Table 5.2: Publications required for Associate Professor to Professor

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

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

- i. Promotion policy (as per HEC criteria)
- ii. Performance appraisal (based on teaching, research & development, participation in academic and non-academic activities etc.)

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

- i. Promotion cases are reviewed by the promotion committee annually as per HEC guidelines to promote and retain the qualified faculty members.
- ii. Performance of faculty members is appraised annually to reward and recognize their achievements in the areas of teaching, research and academic and non-academic activities etc.



Standard 5-4: Effective Teaching and Learning Process²⁸

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

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

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

Each, Board of Studies meeting is attended by:

- a) Faculty from all the campuses
- b) Industry experts
- c) Renowned academicians from other institutes

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

Teaching methodology comes next where we employ different techniques to make a course more comprehensible 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

²⁸ Source of Information: ASO Department/Program Manager



The grading policy is designed in such as way that a teacher keeps an ample number of quizzes and assignments. Both of these are used as necessary tools to assess each student's performance in a particular course. Teachers, on the other hands are evaluated anonymously by the students in each semester. These evaluations are sent to the all the program heads that are supposed to take action for any anomaly.

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

- Latest trends in software industry such as new technology innovations e.g. Big Data
- User group sessions on technology such as Java and databases
- Career counseling session to graduating students
- Invited talk of renowned people in IT to share their personal stories with students
- Legal and ethical issues in IT etc.

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

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

Standard 5-5: Program Requirements Completion Process

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

Program Requirements

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 Progress

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

CRITERION: 6 FACULTY

| | |
|--------------|---|
| Standard 6-1 | Program Faculty Qualifications and Number |
| Standard 6-2 | Current Faculty, Scholarly Activities & Development |
| Standard 6-3 | Faculty Motivation and Job Satisfaction |



Criterion: 6 Faculty

Standard 6-1 Program Faculty Qualifications and Number

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

Launched

In MS(CS), there are 3 specializations:

- Computer Science
- Software Engineering
- Networks & Security

In research areas, we have 8 areas of study that are recorded for IS/Thesis:

- Software Engineering
- Computer Networks and Communication
- Data Engineering and AI Systems
- Agent Systems
- e-Business
- Multimedia and HCI Systems
- Compiler Design and Construction
- Information Security

b. Faculty distribution by program's areas²⁹

| 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 |

Table 6.1: Faculty distribution by program's areas³⁰

²⁹ The source of information is HR Department



List of Permanent Faculty – Computing

| Sr. No | Name | Area of Specialization (As per PhD Dissertation) | Areas of Research Interest |
|---------------|-------------------------|---|--|
| 1. | Dr. Muhammad Usman | Computer & Information Sciences | Machine Learning Data Science |
| 2. | Dr. Azhar Mahmood | Computer Applied Technology | Wireless Sensor Networks Data Science Software Engineering |
| 3. | Dr. M. Naeem Ahmed Khan | Computer Systems Engineering | Machine Learning Software Engineering |
| 4. | Dr. Mohammad Imran | Computer Vision & AI | Computer Vision & AI Data Science |
| 5. | Dr. Umair Abdullah | Data Science & Expert System | Expert Systems Data Science |

Table 6.2: List of Permanent Faculty

The list of MS(CS) courses allocated to the faculty of Computer Science:

Semester: Spring 2015

| Course | Faculty Name |
|---------------------------------------|---------------------------|
| CSC 5101 Advanced Algorithms Analysis | Dr. Naeem Ahmed Khan |
| CSC 5201 Advanced Operating System | Dr. Azhar Mahmood |
| CSC 5105 Research Methodology | Dr. Muhammad Usman |
| CSC 5161 Machine Learning | Dr. Muhammad Usman |
| SEC 5161 Software System Architecture | Dr. Naeem Ahmed Khan |
| NSC 5162 Information Security | Dr. Imran Baig (Visiting) |
| NSC 5161 Advanced Computer Networks | Dr. Azhar Mahmood |

Table 6.3: Faculty distribution

³⁰ Table 6.1 of PT Report is Table 4.6 (Faculty Distribution by Program's Areas) of AT Report



| Semester | Class | Course | Faculty Name |
|-----------|----------|---|--------------------------|
| Fall 2015 | MSCS 1 A | CSC 5105 Research Methodology | Dr. Muhammad Usman |
| Fall 2015 | MSCS 1 A | CSC 5102 Theory of Computation | Dr. Naeem Ahmed Khan |
| Fall 2015 | MSCS 1 A | CSC 5202 Advanced Computer Architecture | Dr. Azhar Mahmood |
| Fall 2015 | MSCS 2 A | CSC 5163 Data Mining | Dr. Muhammad Usman |
| Fall 2015 | MSCS 2 A | CSC 5164 Real-Time Systems | Shaftab Ahmed (Visiting) |
| Fall 2015 | MSCS 2 A | SEC 5163 Software Requirement Engineering | Dr. Azhar Mahmood |
| Fall 2015 | MSCS 2 A | SEC 5164 Software Systems Quality | Dr. Naeem Ahmed Khan |

Table 6.4: Faculty distribution

Standard 6-2 Current Faculty, Scholarly Activities and Development³¹

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

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

- i) Participating in academic events like seminars / sessions
- ii) Participating in academic and industry conferences / workshops
- iii) Presenting and publishing papers in conferences / colloquium / monographs
- iv) Publishing research papers in local and international journals
- v) Publishing articles in newspapers and magazines
- vi) Conducting trainings and workshops
- vii) Supervising research at bachelors and masters level
- viii) Supervising research at MSCS/MS/Ph.D. level
- ix) Pursuing further education in their specialized field
- x) Incorporating their research and otherwise learning into their teaching through content and methodology

³¹ The source of information is HR Department



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

- The faculty opting for a full time research activity are facilitated with a reduced course load and relocation to a research facility in order to provide a congenial environment for research. The faculty is also allowed flexible work hours in order to facilitate the balancing of teaching work load and research activities with convenience. However, more facilitation is needed to motivate faculty to research and publications.

c. Describe existing faculty development programs at the departmental and university level. Demonstrate their effectiveness in achieving faculty development.

- The university encourages the faculty to enhance their professional skills by enrolling in MS and PhD programs at SZABIST as a part of continuing education program. The university through this facility provides a free education facility to its full time faculty within SZABIST.
- Faculty is permitted to go on “study-leaves” overseas to attain scholarship in their respective discipline. In past the faculty has availed this facility at the MS and Post Doctorate level.
- Additionally, faculty is also facilitated by nominations to attend seminars and workshops routinely held within Karachi city and nationally to update and enhance their knowledge in their core teaching areas.

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

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

Standard 6-3 Faculty Motivation and Job Satisfaction

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

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

- Cordial working environment
- Flexible faculty timings
- Annual and casual leaves



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

b. Indicate how effective these programs are

Programs are effective as

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



c. Obtain faculty input using faculty survey on programs for faculty motivation and job satisfaction³²

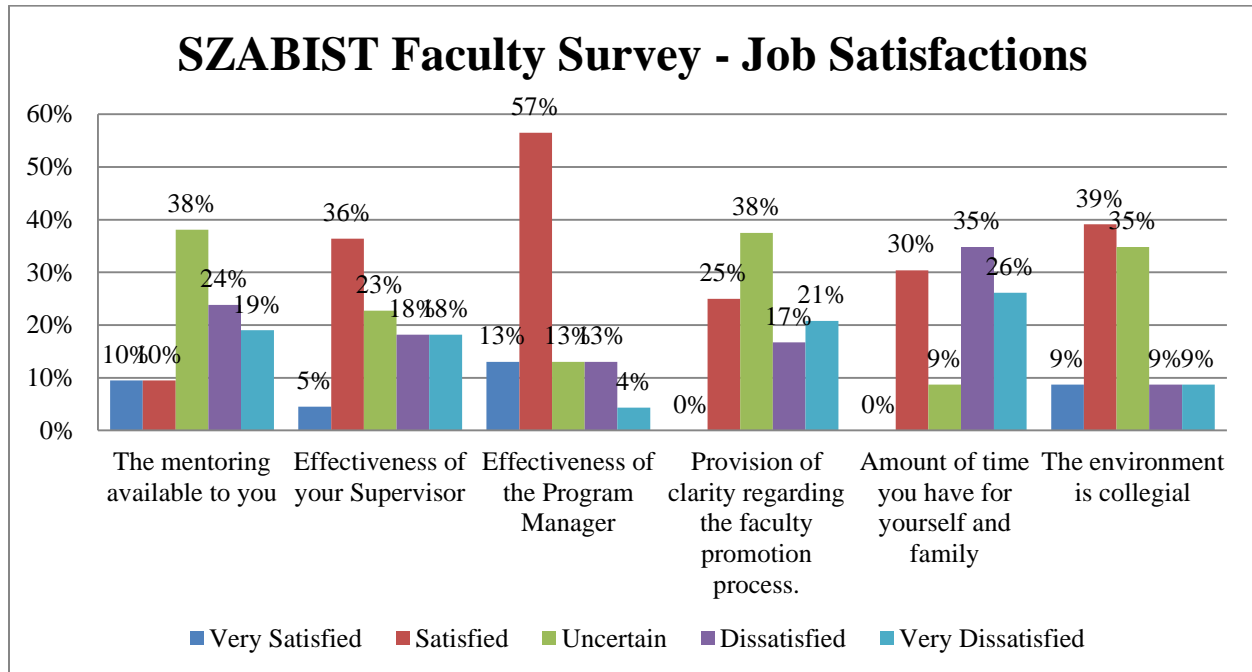


Figure 6.1

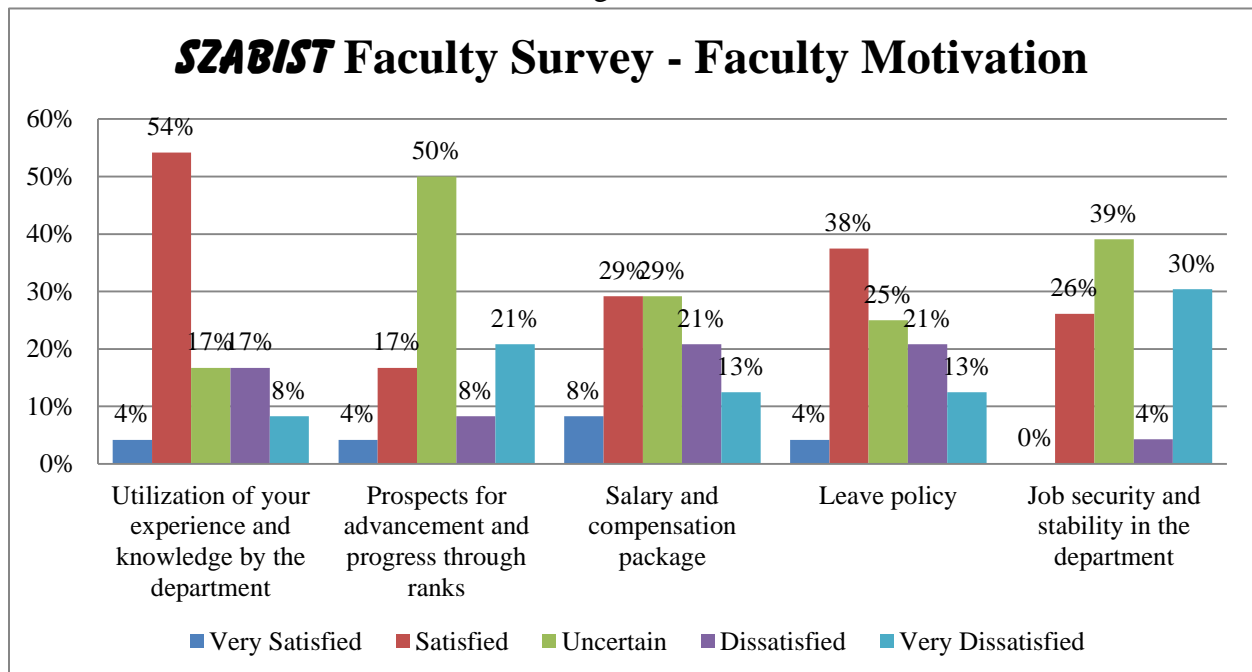


Figure 6.2

³² Source of information: SZABIST Faculty Survey

CRITERION 7: INSTITUTIONAL FACILITIES

| | |
|--------------|--|
| Standard 7-1 | New Trends in Learning (e.g. E-Learning) |
| Standard 7-2 | Library Collections & Staff |
| Standard 7-3 | Class-rooms & Offices Adequacy |



Criterion 7: Institutional Facilities

Standard 7-1: New Trends in Learning

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

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

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

b. Adequacy of Facilities

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

Standard 7-2: Library Collections & Staff

a. Describe the adequacy of library's technical collection

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

1. SZABIST Digital library having more than 25000 eBooks on all discipline developed by the SZABIST librarian.
2. EBSCOHOST Business Source Premier is the industry's most used business research database, providing full text for more than 2,300 journals, including full text for more than 1,100 peer-reviewed titles. This database provides full text back to 1886, and searchable cited references back to 1998. Business Source Premier is superior to the competition in full text coverage in all disciplines of business, including marketing, management, MIS, POM, accounting, finance and economics. This database is updated daily on EBSCOhost.



3. E-library offers a wide variety of content across many subject areas, especially in business and social science and computer science. It acquires integrated collections of eBooks and other content. E-library continues to add quality of eBooks and other authoritative titles to their selection from the world's leading academic and professional publishers.
4. Emerald is a long established publisher with over 200 titles in the field of management, information science and engineering. All of Emerald research journals are peer-reviewed to ensure the highest quality. HEC has provided access to 150 of the total journal titles. You can view by clicking @ [Journals Listing](#)
5. Content in JSTOR spans many disciplines, with over 500 high-quality publications available in the archives.
6. JSTOR provides the ability to retrieve high-resolution, scanned images of journal issues and pages as they were originally designed, printed and illustrated.
7. Project Muse provides online access to 430 full-text journals from 108 publishers in humanities, and social science. MUSE pricing meets library needs around the world. Access URL <http://muse.jhu.edu/>.
8. Springer is the world's second largest STM publisher, delivering high quality peer-reviewed journals through its acclaimed online service - Springer Link. Through Springer Link, Springer publishes more than 1,250 journals online of which 1,030 are now available to Institutes within a range of PERI countries. Springer also offers optional pricing for the remaining (new and takeover journals in its programme).
9. Taylor & Francis 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. Describe the support rendered by the library

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

Active Directory Server

HP Proliant ML-370 G4 Server Intel Xeon dual processor E5-2620 v3 2.40 GHz, 8GB RAM, 1-TB HDD, RAID controller 5. Installed Windows Server 2008 R2 as a Server operating system with Active Directory and DNS Server roles are deployed for Users Accounts.



File and Print Servers

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

Internet Gateway (Proxy) server

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

ZABDESK server:

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

Web server

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

VPN Server

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

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

Standard 7.3: Class-rooms & Offices Adequacy

a. Adequacy of the class rooms

We have following teaching facilities available at SZABIST Islamabad campus

- Classrooms / Lecture rooms: 16
- Seminar / Exam Halls: 03
- Computer Labs 02



- Telecom Lab 01
- Digital Lab 01
- Radio Station 01
- Media Lab 01
- TV Studio 01

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

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

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

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

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

b. Adequacy of Faculty Offices

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

CRITERION 8: INSTITUTIONAL SUPPORT

| | |
|--------------|--|
| Standard 8-1 | Support and Financial Resources |
| Standard 8-2 | Number and Quality of GSs, Students |
| Standard 8-3 | Financial Support for Library and Computing Facilities |



Criterion 8: Institutional Support

Standard 8-1 Sufficient Support and Financial Resources for Faculties

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

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

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

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

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

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

Standard 8-2: Number and Quality of GSs, RAs and Ph.D. Students

- a. Provide the number of graduate students, research assistants and Ph.D. students for the last three years

Number of Graduate Students

| Year | No. of Graduates |
|---------|------------------|
| 2012-13 | 9 |
| 2013-14 | 7 |
| 2014-15 | 9 |

Table 8.1: Number of Graduate Students



b. Graduate to faculty ratio.

Graduates: Faculty Ratio*

| Year | Graduates | No. of Faculty Members | Ratio |
|-----------|-----------|------------------------|-------|
| 2012-2013 | 9 | 8 | 1.1:1 |
| 2013-2014 | 7 | 7 | 1:1 |
| 2014-2015 | 9 | 7 | 1.2:1 |

Table 8.2: Graduate Faculty Ratio

Number of Faculty (MS-CS)

| Particulars | Faculty | | |
|-----------------------------------|---------|---------|---------|
| | 2012-13 | 2013-14 | 2014-15 |
| Total Number of Faculty | 8 | 7 | 7 |
| Full Time faculty | 8 | 7 | 7 |
| Adjunct Faculty ^{**,***} | 0 | 0 | 0 |

Table 8.3: Number of Faculty

* Graduates / Faculty of MS-CS program only

** 3 Adjunct faculty is equal to 1 permanent faculty

*** Adjunct faculty has been counted as per person not according to number of courses taught by them

Standard 8-3: Financial support for Library and computer Facilities³³

a. Describe the resources available for the library

| Particulars | Budgetary Allocation (Rupees) | | |
|-------------|-------------------------------|-----------|-----------|
| | 2012-2013 | 2013-2014 | 2014-2015 |
| Library | 1,000,000 | 1,000,000 | 1,000,000 |

Table 8.4: Resources available for the library

³³ Source of Information: Finance and is of Islamabad Campus



b. Describe the resources available for laboratories.

Not applicable on MS-CS program.

c. Describe the resources available for computing facilities.

| Particulars | Budgetary Allocation (Rupees) | | |
|----------------------|-------------------------------|-----------|-----------|
| | 2012-2013 | 2013-2014 | 2014-2015 |
| Computing Facilities | 5,735,000 | 5,770,000 | 5,675,000 |

Table 8.5: Resources available for the computing



SHAHEED ZULFIKAR ALI BHUTTO
INSTITUTE OF SCIENCE AND TECHNOLOGY

SZABIST

SELF-ASSESSMENT REPORT

Master of Science in Computing (MS-CS)

Islamabad Campus

Program Self-Assessment Checklist



SHAHEED ZULFIKAR ALI BHUTTO
INSTITUTE OF SCIENCE AND TECHNOLOGY

SZABIST

Guidelines for Program Team Report and QEC Review

Program: Master of Science in Computing (MS-CS)

Islamabad Campus

Prepared by QEC Staff:

Ms. Riffat Mughal



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.

| <u>CRITERIA AND ASSOCIATED STANDARDS</u> | | 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 | ✓ | | |
| | b. State program objectives | ✓ | | |
| | c. State program outcomes | ✓ | | |
| | d. Describe how each objective is aligned with program, college, and institution mission statements | ✓ | | |
| | e. Outline the main elements of the strategic plan to achieve the program mission and objectives | ✓ | | |
| | f. Table 4.1 program objectives assessment | ✓ | | |
| | 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) | ✓ | | |
| | b. Employer survey | ✓ | | |
| | c. Alumni survey | ✓ | | |
| | d. Graduating student's survey | ✓ | | |
| Standard 1-3 | Assessment Results And Improvement Plans | | | |
| | a. Describe the action taken on based on the periodic assessments | ✓ | | |
| | b. Describe major future program improvement plans based on recent assessments | ✓ | | |
| | c. List strengths and weaknesses of the programs | ✓ | | |
| | d. List significant future plans for the program | ✓ | | |



| | | | | |
|---|--|---|--|--|
| 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) | ✓ | | |
| | 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. | ✓ | | |
| | 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) | ✓ | | |
| | e. Number of short courses workshops, seminars organized on community service level Please find example attached in Annexure III (pg iv) | ✓ | | |
| | f. Faculty and student surveys results to measure the administrative services provided | ✓ | | |
| 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 | ✓ | | |
| | b. Definition of Credit Hour | ✓ | | |
| | c. Degree Plan: Attach a flow chart showing pre-requisites, core, and elective courses. 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) | ✓ | | |
| | e. Describe how the program content (courses) meets the program Objectives. | ✓ | | |



| | | | | |
|--|---|---|--|--|
| | 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) | ✓ | | |
| Standard 2-2 | Theory, Problem Analysis/ Solution and Design in Program | | | |
| | a. Table 4.5 Standard 2-2 requirements | ✓ | | |
| Standard 2-3 | Mathematics & Basic Sciences Requirements | | | |
| | a. Address standards 2-3, 2-4, and 2-5 using information required in Table 4.4 | ✓ | | |
| Standard 2-4 | Major Requirements as Specified by Accreditation Body | ✓ | | |
| Standard 2-5 | Humanities. Social Sciences, Arts, Ethical. Professional & Other Requirements | | | |
| | a. List the courses required by the Accreditation Body. | ✓ | | |
| Standard 2-6 | Information Technology Content Integration Throughout the Program | | | |
| | a. List the courses required by the Accreditation Body. | ✓ | | |
| | b. Describe how they are applied and integrated throughout the program | ✓ | | |
| Standard 2-7 | Communication Skills (Oral & Written) | | | |
| | a. List the courses required by the Accreditation Body. | ✓ | | |
| | b. Describe how they are applied in the program. | ✓ | | |
| 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 manuals/documentation and instructions | ✓ | | |
| | b. Are the resources available sufficient for the program? | ✓ | | |
| 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) | ✓ | | |



| | | | | |
|---|--|---|--|--|
| Standard 3-3 | Adequate Computing Infrastructure and Facilities | ✓ | | |
| | a. Describe how the computing facilities support the computing component of your program | ✓ | | |
| | b. Are there any shortcomings in the computing infrastructure and facilities? | ✓ | | |
| Criterion 4 – Student Support and Advising | | | | |
| Standard 4-1 | Sufficient Frequency of Course Offering | | | |
| | a. Provide the department’s strategy for course offerings | ✓ | | |
| | b. Explain how often core courses are offered. | ✓ | | |
| | c. Explain how often elective courses are offered. | ✓ | | |
| | d. Explain how required courses outside the department are managed to be offered in sufficient number and frequency | ✓ | | |
| 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 | ✓ | | |
| Standard 4-3 | Professional Advising and Counseling | | | |
| | a. Describe how students are informed about program requirements | ✓ | | |
| | b. Describe the advising system and indicate how its effectiveness is measured | ✓ | | |
| | c. Describe the student counseling system and how students get professional counseling when needed | ✓ | | |
| | d. Indicate if students have access to professional counseling; when necessary | ✓ | | |
| | e. Describe opportunities available for students to interact with practitioners, and to have membership in technical and professional societies | ✓ | | |
| 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) | ✓ | | |
| | c. Describe policy regarding program/credit transfer | ✓ | | |
| | d. Indicate how frequently the admission criteria are evaluated and if the evaluated results are used to improve the process | ✓ | | |
| Standard 5-2 | Registration and Students | | | |
| | a. Describe how students are registered in the program | ✓ | | |
| | b. Describe how students' academic progress is monitored and how their program of study is verified to adhere to the degree requirements | ✓ | | |
| | c. Indicate how frequently the process of registration and monitoring are evaluated and if the evaluation results are used to improve the process | ✓ | | |
| 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) | ✓ | | |
| | c. Indicate methods used to retain excellent faculty members | ✓ | | |
| | d. Indicate how evaluation and promotion processes are in line with institution mission statement | ✓ | | |
| | e. Indicate how frequently this process is 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 | ✓ | | |
| | b. Indicate how frequently this process is evaluated and if the evaluation results are used to improve the process | ✓ | | |
| Standard 5-5 | Program Requirements Completion Process | | | |
| | a. Describe the procedure used to ensure | ✓ | | |



| | | | | |
|------------------------------|--|----------|--|--|
| | that graduates meet the program requirements | | | |
| | b. Describe when this procedure is evaluated and whether the results of this evaluation are used to improve the process | ✓ | | |
| Criterion 6 – Faculty | | | | |
| Standard 6-1 | Program Faculty Qualifications and Number | | | |
| | a. Faculty resumes in accordance with the format | Launched | | |
| | b. Table 4.6 faculty distribution by program's areas Please find example attached in Annexure VII (pg xiii) | ✓ | | |
| 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 | ✓ | | |
| | b. Describe the means for ensuring that full time faculty members have sufficient time for scholarly and professional development | ✓ | | |
| | c. Describe existing faculty development programs at the departmental and university level. Demonstrate their effectiveness in achieving faculty development | ✓ | | |
| | d. Indicate how frequently faculty programs are evaluated and if the evaluation results are used for improvement | ✓ | | |
| Standard 6-3 | Faculty Motivation and Job Satisfaction | | | |
| | a. Describe programs and processes in place for faculty motivation | ✓ | | |
| | b. Indicate how effective these programs are | ✓ | | |
| | c. Obtain faculty input using faculty survey (Appendix C) on programs for faculty motivation and job satisfaction | ✓ | | |



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 | ✓ | | |
| | b. Indicate how adequate the facilities are | ✓ | | |
| Standard 7-2 | Library Collections & Staff | | | |
| | a. Describe the adequacy of library's technical collection | ✓ | | |
| | b. Describe the support rendered by the library | ✓ | | |
| Standard 7-3 | Class-rooms & Offices Adequacy | | | |
| | a. Describe the adequacy of the classrooms | ✓ | | |
| | b. Describe the adequacy of faculty offices | ✓ | | |
| 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 | ✓ | | |
| | b. Describe the level of adequacy of secretarial support, technical staff and office equipment | ✓ | | |
| 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 the last three years | ✓ | | |
| | b. Provide the faculty: graduate student ratio for the last three years | ✓ | | |
| Standard 8-3 | Financial Support for Library and Computing Facilities | | | |
| | a. Describe the resources available for the library | ✓ | | |
| | b. Describe the resources available for laboratories | N/A | | |
| | c. Describe the resources available for computing facilities | ✓ | | |
| Please find examples of Criterion 8 attached in Annexure IX (pg xvii-xix) | | | | |

***Key**

✓ - Yes X- No NA- Not Applicable



SHAHEED ZULFIKAR ALI BHUTTO
INSTITUTE OF SCIENCE AND TECHNOLOGY

SZABIST

SELF-ASSESSMENT REPORT

Master of Science in Computing (MS-CS)

Islamabad Campus

Assessment Team Report



SHAHEED ZULFIKAR ALI BHUTTO
INSTITUTE OF SCIENCE AND TECHNOLOGY

SZABIST

ASSESSMENT TEAM REPORT

Master of Science in Computing (MS-CS)

Islamabad Campus

Spring 2016



Assessment Team Report

The AT report is comprised of the following:

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

A. The Review Report

1. Names of Assessment Team Members

- i. Dr. Muhammad Naeem Khan
- ii. Mr. Zohaib Khan
- iii. Mr. Sajid Iqbal

2. Date of Nomination

June 28th, 2016

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

Ten (10) Days

4. Name of Department and Program being assessed

Department of Computer Sciences and Master of Science in Computing (MS-CS) Program

5. Shortcomings of the PT report

The report lacks some details and content are not up-to-date. Most of the content is not applicable in MS program. There are also grammar and formatting errors etc. Detailed observations are:

- The entire document needs reformatting.
- Page 12. Last column of Table 1.2 filled with “in process” is not clear as no improvements are identified in column 3. Also, in last row 2nd column, “Proposal Defense” should be replaced with “Proposal Evaluation”. Also the word thesis should be written as “Thesis/IS”.
- Page 13. Needs revision as more outcomes can be mapped to objective A, B and C.
- Page 16. Standard 1-3(c). 1st weakness is unclear (needs revision).
- Page 16 part (d). names of new areas should be mentioned.



- Page 17 part (d). second bullet is already covered at page 16, part (b).
- Page 17 Table 1.5. Enrollment for Fall 2012 should be re-checked.
- Page 19. Footnotes are not sequentially numbered in the entire document.
- Contents of Table 1.7 do not match with details of publications of individual faculty members mentioned at page 20 through page 25. Also, publication details of Mr. Nadeem Khokhar, Mr. Zubair, Mr. Arshad Beg and Mr. Shehzad Latif are missing.
- Page 28 (part b). “research project” should be replaced with “research thesis”.
- Page 28 (part c). The word “appendix” should be replaced with Table 2.1 through Table 2.1 c.
- Page 28-30. Table 2.1 and 2.1c are not sequentially numbered.
- Page 32 (Table 2.4). The word “elective” should be replaced with “electives”.
- Page 33 (Table 2.5). “Telecom Policies and Regulation” course is not offered at MS (CS) level.
- Page 50. “time registration” should be replaced with “time of registration”.
- Page 53. Third bullet at top of the page is for BS-CS. Please revise it to make it suitable for MS (CS).
- Page 62. Criteria for promotion as Associate Professor and Professor are out-dated.
- Page 68. IS/Thesis areas are not up-to-date.
- “List of Permanent Faculty” should be replaced with “List of Permanent PhD Faculty”.
- Standard 7-2: Library resource details of computer sciences are missing and shift details are missing (morning and evening).
- Regarding adequacy of faculty offices, faculty resources (quantitatively) are missing.
- The information provided in criterion 3 is not up to date.
- The information provided in criterion 4 standard 4-1 (a, b, c and d) needs to be revised as the information is more relevant with BS program not MS.
- Criterion 4 standard 4-2 the information is not applicable in MS program needs revision.



6. Comments on:

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

Poor (Most of the contents are outdated or are adopted from BS-CS program. Needs revision/improvement)

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

Good (Most of the content have been taken from prospectus and the relevant departments are consulted.)

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

Satisfactory. Summaries/conclusions based on feedbacks/surveys are not adequate.

iv. Observations made during the assessment

Though details are mentioned but some information is missing which need to be incorporated. List of observations are already mentioned in para 5 of this documents. The entire document needs proof reading by the PM.

v. Strengths and weaknesses of the Program

- **Strengths:** All the constituent part of SA manual have been included in PTR.
- **Weaknesses:** The content of some of the criterion are not properly addressed and taken from BS(CS) program. The entire reports needs improvements as per the observations mentioned in para 5.

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

July 15th, 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 items is 5 and the minimum is 1. 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.

| Result | Score |
|--|-------|
| Poor performance in most of the areas. | 1 |
| Fair performance in most of the areas. | 2 |
| Good performance for most areas. No poor performance in any areas. | 3 |
| Good to excellent performance in all areas. | 4 |
| Excellent performance in most of the areas. | 5 |



Criteria Referenced Self-Assessment – Methodology and Evaluation Tool

| Criterion 1 – Program Mission, Objectives and Outcomes | | Weight = 0.05 | | | | |
|---|---|----------------------|---|---|---|---|
| Factors | | Score | | | | |
| 1 | Does the Program have documented measurable objectives that support faculty / college and institution mission statements? | 5 | 4 | 3 | 2 | 1 |
| 2 | Does the Program have documented outcomes for graduating students? | 5 | 4 | 3 | 2 | 1 |
| 3 | Do these outcomes support the Program objectives? | 5 | 4 | 3 | 2 | 1 |
| 4 | Are the graduating students capable of performing these outcomes? | 5 | 4 | 3 | 2 | 1 |
| 5 | Does the department assess its overall performance periodically using quantifiable measures? | 5 | 4 | 3 | 2 | 1 |
| 6 | Is the result of the Program Assessment documented? | 5 | 4 | 3 | 2 | 1 |
| Total Encircled Value (TV) | | 21 | | | | |
| Score 1 (S1) = [TV/(No. of Questions *5)] *100 *Weight | | 3.5 | | | | |
| Criterion 2 – Curriculum Design and Organization | | Weight = 0.20 | | | | |
| Factors | | Score | | | | |
| 1 | Is the curriculum consistent? | 5 | 4 | 3 | 2 | 1 |
| 2 | Does the department assess its overall performance periodically using quantifiable | 5 | 4 | 3 | 2 | 1 |
| 3 | Are theoretical background, problem analysis and solution design stressed within the program’s core material? | 5 | 4 | 3 | 2 | 1 |
| 4 | Does the curriculum satisfy the core requirements laid down by respective accreditation bodies? | 5 | 4 | 3 | 2 | 1 |
| 5 | Does the curriculum satisfy the major requirements laid down by HEC and the respective councils / accreditation bodies? | 5 | 4 | 3 | 2 | 1 |
| 6 | Does the curriculum satisfy the professional requirements as laid down by Accreditation Body? | 5 | 4 | 3 | 2 | 1 |
| 7 | Is the information technology component integrated throughout the program? | 5 | 4 | 3 | 2 | 1 |
| 8 | Are oral and written skills of the students developed and applied in the program? | 5 | 4 | 3 | 2 | 1 |
| Total Encircled Value (TV) | | 29 | | | | |
| Score 2 (S2) = [TV/(No. of Questions *5)] *100 *Weight | | 14.5 | | | | |



| Criterion 3 – Laboratories and Computing Facilities | | Weight = 0.10 | | | | |
|---|--|----------------------|---|---|---|---|
| Factors | | Score | | | | |
| 1 | Are laboratory manuals / documentation / instructions etc. for experiments available and readily accessible to faculty and students? | 5 | 4 | 3 | 2 | 1 |
| 2 | Are there adequate number of support personnel for instruction and maintaining the laboratories? | 5 | 4 | 3 | 2 | 1 |
| 3 | Are the university's infrastructure and facilities adequate to support the program objectives? | 5 | 4 | 3 | 2 | 1 |
| Total Encircled Value (TV) | | 12 | | | | |
| Score 3 (S3) = [TV/(No. of Questions *5)] *100 *Weight | | 8 | | | | |
| Criterion 4 – Student 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 | 4 | 3 | 2 | 1 |
| 2 | Are the courses in the major area structured to optimize interaction between the students, faculty and teaching assistants? | 5 | 4 | 3 | 2 | 1 |
| 3 | Does the university provide academic advising on course decisions and career choices to all students? | 5 | 4 | 3 | 2 | 1 |
| Total Encircled Value (TV) | | 10 | | | | |
| Score 4 (S4) = [TV/(No. of Questions *5)] *100 *Weight | | 6.67 | | | | |
| 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 | 4 | 3 | 2 | 1 |
| 2 | Is the process above clearly documented and periodically evaluated to ensure that it is meeting its objectives? | 5 | 4 | 3 | 2 | 1 |
| 3 | Is the process to register students in the program and monitoring their progress documented? | 5 | 4 | 3 | 2 | 1 |
| 4 | Is the process above periodically evaluated to ensure that it is meeting its objectives? | 5 | 4 | 3 | 2 | 1 |
| 5 | Is the process to recruit and retain faculty in place and documented? | 5 | 4 | 3 | 2 | 1 |
| 6 | Are the processes for faculty evaluation & promotion consistent with the institution mission? | 5 | 4 | 3 | 2 | 1 |
| 7 | Are the processes in 5 and 6 above periodically evaluated to ensure that they are meeting their objectives? | 5 | 4 | 3 | 2 | 1 |



| | | | | | | |
|---|---|----------------------|---|---|---|---|
| 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 | 4 | 3 | 2 | 1 |
| 9 | Is the process in 8 above periodically evaluated to ensure that it is meeting its objectives? | 5 | 4 | 3 | 2 | 1 |
| 10 | Is the process to ensure that graduates have completed the requirements of the program base on standards and documented procedures? | 5 | 4 | 3 | 2 | 1 |
| 11 | Is the process in 10 above periodically evaluated to ensure that it is meeting its objectives? | 5 | 4 | 3 | 2 | 1 |
| Total Encircled Value (TV) | | 38 | | | | |
| Score 5 (S5) = [TV/(No. of Questions *5)] *100 *Weight | | 10.36 | | | | |
| 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? | 5 | 4 | 3 | 2 | 1 |
| 2 | Are the qualifications and interests of faculty members sufficient to teach all courses, plan, modify and update courses and curricula? | 5 | 4 | 3 | 2 | 1 |
| 3 | Do the faculty members posses a level of competence that would be obtained through graduate work in the discipline? | 5 | 4 | 3 | 2 | 1 |
| 4 | Do the majority of faculty members hold a PhD degree in their discipline? | 5 | 4 | 3 | 2 | 1 |
| 5 | Do faculty members dedicate sufficient time to research to remain current in their disciplines? | 5 | 4 | 3 | 2 | 1 |
| 6 | Are there mechanisms in place for faculty development? | 5 | 4 | 3 | 2 | 1 |
| 7 | Are faculty members motivated and satisfied so as to excel in their profession? | 5 | 4 | 3 | 2 | 1 |
| Total Encircled Value (TV) | | 25 | | | | |
| Score 6 (S6) = [TV/(No. of Questions *5)] *100 *Weight | | 10.71 | | | | |



| Criterion 7 – Institutional Facilities | | Weight = 0.15 | | | | |
|---|--|----------------------|---|---|---|---|
| Factors | | Score | | | | |
| 1 | Does the institution have the infrastructure to support new trends such as e-learning? | 5 | 4 | 3 | 2 | 1 |
| 2 | Does the library contain technical collection relevant to the program and is it adequately staffed? | 5 | 4 | 3 | 2 | 1 |
| 3 | Are the class rooms and offices adequately equipped and capable of helping faculty carry out their responsibilities? | 5 | 4 | 3 | 2 | 1 |
| Total Encircled Value (TV) | | 13 | | | | |
| Score 7 (S7) = [TV/(No. of Questions *5)] *100 *Weight | | 13 | | | | |
| Criterion 8 – Institutional Support | | Weight = 0.15 | | | | |
| Factors | | Score | | | | |
| 1 | Is there sufficient support and finances to attract and retain high quality faculty? | 5 | 4 | 3 | 2 | 1 |
| 2 | Are there an adequate number of high quality graduate students, teaching assistants and PhD students? | 5 | 4 | 3 | 2 | 1 |
| Total Encircled Value (TV) | | 10 | | | | |
| Score 8 (S8) = [TV/(No. of Questions *5)] *100 *Weight | | 15 | | | | |

OVERALL ASSESSMENT SCORE = S1 + S2 + S3 + S4 + S5 + S6 + S7 + S8 + S9 + S10

= 81.74



**C. Assessment Results Implementation Plan Summary MSCS – Islamabad
Campus**

| AT Findings | Corrective Action | Implementation Date | Responsible Body | Resources Needed |
|---|--|---|-------------------------|-------------------------|
| 1. MS program particularly CS-stream courses lack diversity | CS-Stream courses should include latest courses as proposed by HEC. Also, course content should be adopted from HEC's suggested course content. | The content of the course has been redesigned and are almost in line with HEC suggested course content. | PM | - |
| 2. Lack of training opportunities for PhD faculty members | PhD faculty should be provided with incentives for post-doctorate fellowships. SZABIST may allocate funds for attending of specialized advanced trainings by the PhD faculty. | Requisite funds have been allocated to adopt this feature. | HR | - |
| 3. Lesser Impact Factor Publications | Faculty members may be motivated for further research activities by providing incentives for impact factor publications. The course load may be compensated against publishing | Effort are been made to promote research publications, adequate reward is granted to the researcher. However in order to reinforce their performance, will be linked with research publication. | Research Committee | - |



| | | | | |
|---|--|---|----|---------|
| | impact factor publications. | | | |
| 4. Lack of latest books and software | Latest subject-related books for all the three streams may be procured by consulting the faculty members. Also, specialized tools/software such as Matlab, Prolog etc. May be procured for supporting research activities. | After consulting the faculty members, the related books as well as specialized tools: Books/software would be provided. | PM | Finance |
| 5. Retention rate of PhD faculty is low | Faculty promotion policies should be time-based provided the requisite criteria are met by the faculty members. PhD faculty is lesser empowered and much of administrative powers pertaining to MS CS program management rests with non-PhD faculty members. This trend needs to be reversed for future growth of SZABIST. | There is a promotion policy enforce for the promotion of the faculty. More faculties in the department are being hired in order to streamline program management. | HR | Finance |



President's Comments: The results of the Self-Assessment Report process will help SZABIST in meeting its commitment towards excellence in education. It is essential that the identified corrective actions are steadily implemented to further improve the quality of this program. I would like to thank the Program Team, Assessment Team and the IR/QEC staff for their efforts in completing this exercise.

Name and Signature:

Madame Shahnaz Wazir Ali

Dean's or HoD's Comments: Effort is being made to promote research publications; adequate award is grant to the researcher. Specialized tools: Book/soft wares would be provided after consulting the faculty and the respective Program Manager. Similarly the course has been redesigned in the resent year and is almost in line with HEC suggested course content.

Name and Signature:

Mr. Iqbal Ahmad

QEC Comments: The evaluation of the MSCS program has highlighted areas for improvement. The implementation of the Assessment Team's recommendation will improve the quality of the program and enhance the overall educational experience of the students. The SAR reached its completion with the support of the Head of Campus, Program Managers and the efforts of the Program Team and Assessment Team and the dedication of the QEC staff.

Name and Signature:

Ms. Faryal Shahabuddin

Ms. Faria Tausif



President's Comments :

The results of the Self-Assessment Report process will help SZABIST in meeting its commitment towards excellence in education. It is essential that the identified corrective actions are steadily implemented to further improve the quality of this program. I would like to thank the Program Team, Assessment Team and the IR/QEC staff for their efforts in completing this exercise.

Name and Signature:

Madame Shahnaz Wazir Ali

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

Effort is being made to promote research publications; adequate reward is grant to the researcher. Specialized tools: Books/soft wares would be provided after consulting the faculty and the respective Program Manager. Similarly the course has been redesigned in the resent year and is almost in line with HEC suggested course content.

Name and Signature:

Mr. Iqbal Ahmad

QEC Comments :

The evaluation of the MSCS program has highlighted areas for improvement. The implementation of the Assessment Team's recommendation will improve the quality of the program and enhance the overall educational experience of the students. The SAR reached its completion with the support of the Head of Campus, Program Managers and the efforts of the Program Team and Assessment Team and the dedication of the QEC staff.

Name and Signature:

Ms. Faryal Shahabuddin

Ms. Faria Tausif



SHAHEED ZULFIKAR ALI BHUTTO
INSTITUTE OF SCIENCE AND TECHNOLOGY

SZABIST

SELF-ASSESSMENT REPORT

Master of Science in Computing (MS-CS)

Islamabad Campus

Program Team Registration Forms



Registration Form

Program Team

Program Team of (Name of Department / Faculty): computer science (MS-CS)
 Team Leader: Dr. Muhammad Imran
 Name: Dr. Muhammad Imran Position: Assistant Professor
 Institution: SZABIST-156 Contact No: (Office) EXT: 446
 Mobile No: 0321 8662661 Email Address: dr.imran@szabist-156.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]
 (Signature of PT Member) **IOBAL AHMAD**
 Senior Manager
 Admin and Finance
 SZABIST, Islamabad

24-03-2016

Date

Approved By: [Signature]

(Head of the Department)

Note: Completed form should be sent to the QEC



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INSTITUTE OF SCIENCE AND TECHNOLOGY**



**SHAHEED ZULFIKAR ALI BHUTTO
INSTITUTE OF SCIENCE AND TECHNOLOGY
Islamabad Campus**

Registration Form

Program Team

Program Team of (Name of Department / Faculty): Computer Science (MS-CS)

Team Leader: Dr. Muhammad Imran.

Name: Arshad Beg

Position: Lecturer

Institution: SZABIST - Islamabad Campus.

Contact No: (Office) 443

Mobile No: 0324-5275807

Email Address: arshad.beg@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.

Arshad Beg

24-03-2016

(Signature of PT Member)

Date

IOBAL AHMAD
Senior Manager
Admin and Finance
SZABIST, Islamabad

Approved By: _____

(Head of the Department)

Note: Completed form should be sent to the QEC



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INSTITUTE OF SCIENCE AND TECHNOLOGY

SZABIST

SELF-ASSESSMENT REPORT

Master of Science in Computing (MS-CS)

Islamabad Campus

Assessment Team Registration Forms



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INSTITUTE OF SCIENCE AND TECHNOLOGY**
Islamabad Campus

Registration Form

Assessment Team

Assessment Team of (Name of Department / Faculty): Computing (MS-CS)
Team Leader: Dr. M. Naeem Khan
Name: Dr. Muhammad Naeem Khan Position: Assistant Professor
Institution: SZABIST Contact No: (Office) 4863363
Mobile No: 03345471861 Email Address: dr.naeem@szabist-

Role in Assessment Team:

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

Declaration of the Assessment Team Member:

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

[Signature]

(Signature of AT Member)

28-6-2016

Date

Approved By: [Signature]

(Head of the QEC)



**SHAHEED ZULFIKAR ALI BHUTTO
INSTITUTE OF SCIENCE AND TECHNOLOGY**



**SHAHEED ZULFIKAR ALI BHUTTO
INSTITUTE OF SCIENCE AND TECHNOLOGY
Islamabad Campus**

Registration Form

Assessment Team

Assessment Team of (Name of Department / Faculty): Computing (MS-CS)
Team Leader: Dr. M. Naeem Khan
Name: M. Sajid Iqbal Position: Manager IT
Institution: S2ABIST Contact No: (Office) _____
Mobile No: 0335298077 Email Address: sajid@csabist-istd.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.

[Signature]

(Signature of AT Member)

28/06/2018

Date

Approved By: [Signature]

(Head of the QEC)



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INSTITUTE OF SCIENCE AND TECHNOLOGY



SHAHEED ZULFIKAR ALI BHUTTO
INSTITUTE OF SCIENCE AND TECHNOLOGY

Islamabad Campus

Registration Form

Assessment Team

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

Team Leader: Dr. M. Naeem Khan

Name: Zohaib Khan

Position: Lecturer-Manager

Institution: SZABIST, Islamabad

Contact No: (Office) Ext # 539

Mobile No: 0333-6182868

Email Address: Zohaib.Khan@

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.

Zohaib Khan

(Signature of AT Member)

June 28, 2016

Date

Approved By: Taryal

(Head of the QEC)